KB Ecology
A Kent Based Ecological Consultancy

Elite, Hornash Lane, Shadoxhurst, Kent

Preliminary Ecological Appraisal

27th April 2018, amended 30th October 2017 / Ref No 2017/04/22

Client: Mr and Mrs Ransley

Prepared by Katia Bresso CEnv MCIEEM
Trading as 'KB Ecology Ltd' (Reg 7595382)
9 Barleyfields,
Weavering, Maidstone
ME145SW Kent
Tel: 07810 412 773
Email: katia.bresso@kbecology.co.uk

Contents

1 Introduction

1.1 Background to the Scheme

KB Ecology Ltd has been commissioned to undertake a baseline ecological survey and a preliminary ecological appraisal with regards to a proposed development at Elite, Hornash Lane, Shadoxhurst, Kent, in support of a planning application for the development of the site.

1.2 Survey Location/Area

The site is located at approximately TQ 982 377. The location of the site is shown on Figure 1 and Figure 2.

1.3 Survey Objectives

The purpose of this survey is to provide a scoping assessment and to assist in demonstrating compliance with wildlife legislation and planning policy objectives.

The key objectives are as follows:

- Identify all relevant statutory and non-statutory designated sites and features of ecological significance within the site and its surroundings.
- Assess the potential for the presence of protected species and species of principal conservation importance, important habitats or other biodiversity features within the site and its surroundings.
- Provide recommendations for further surveys where assessed as necessary and suggest potential enhancements.
- Present the likely significance of ecological impacts on the proposed development.
- Provide an early indication of potential ecological mitigation and compensation requirements necessary as part of any development proposals.

A summary of wildlife legislation and policy has been included in Appendix A.

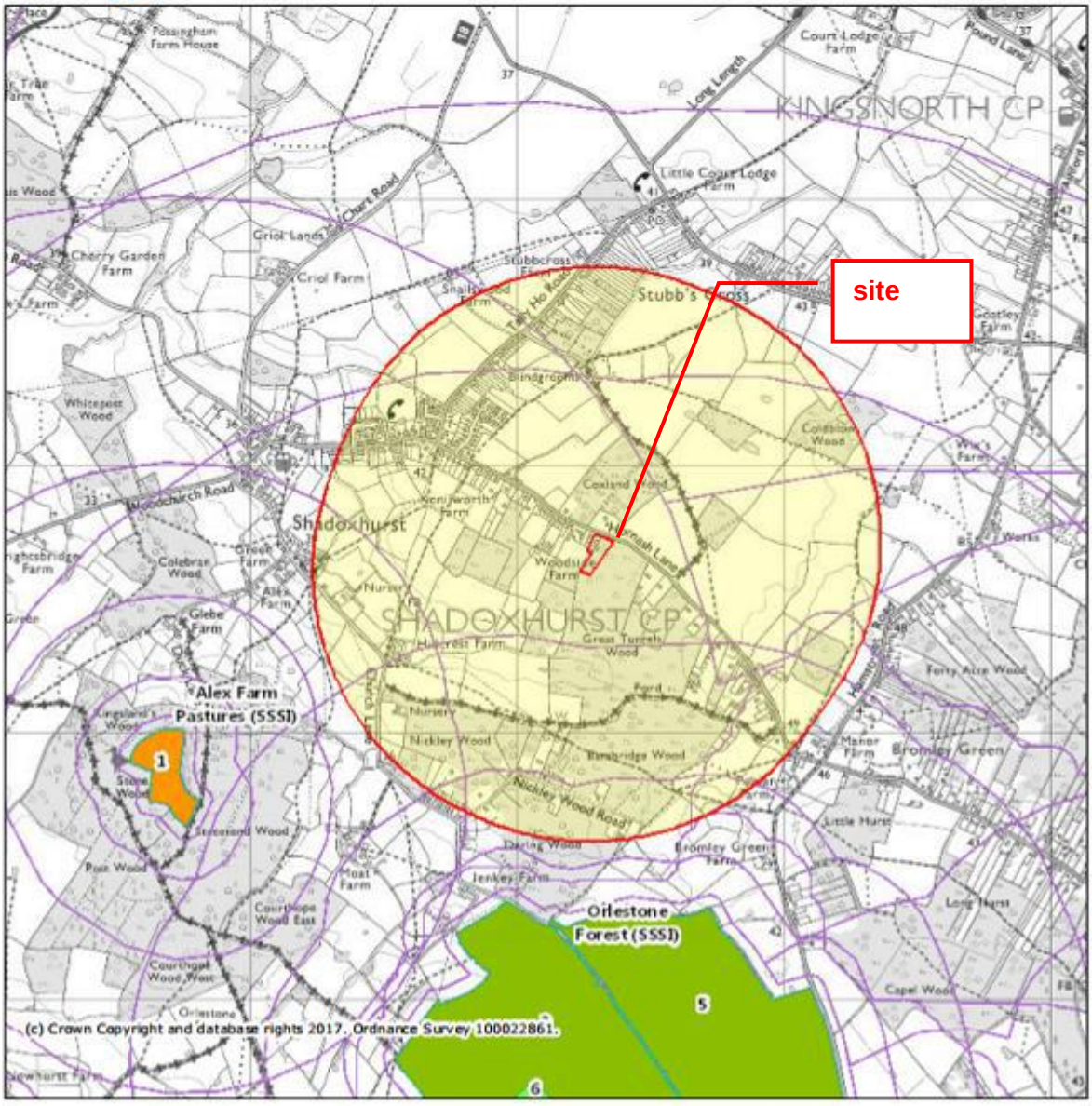
1.4 Limitations

This report has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct and the opinions expressed are true and professional bona fide opinions. It records the potential for flora and fauna evident on the days of the site visits. It does not record any flora or fauna that may appear at other times of the year and, as such, were not evident at the time of visit.

The findings of this report represent the professional opinion of a qualified ecologist and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.

MAGIC

Figure 1



Legend

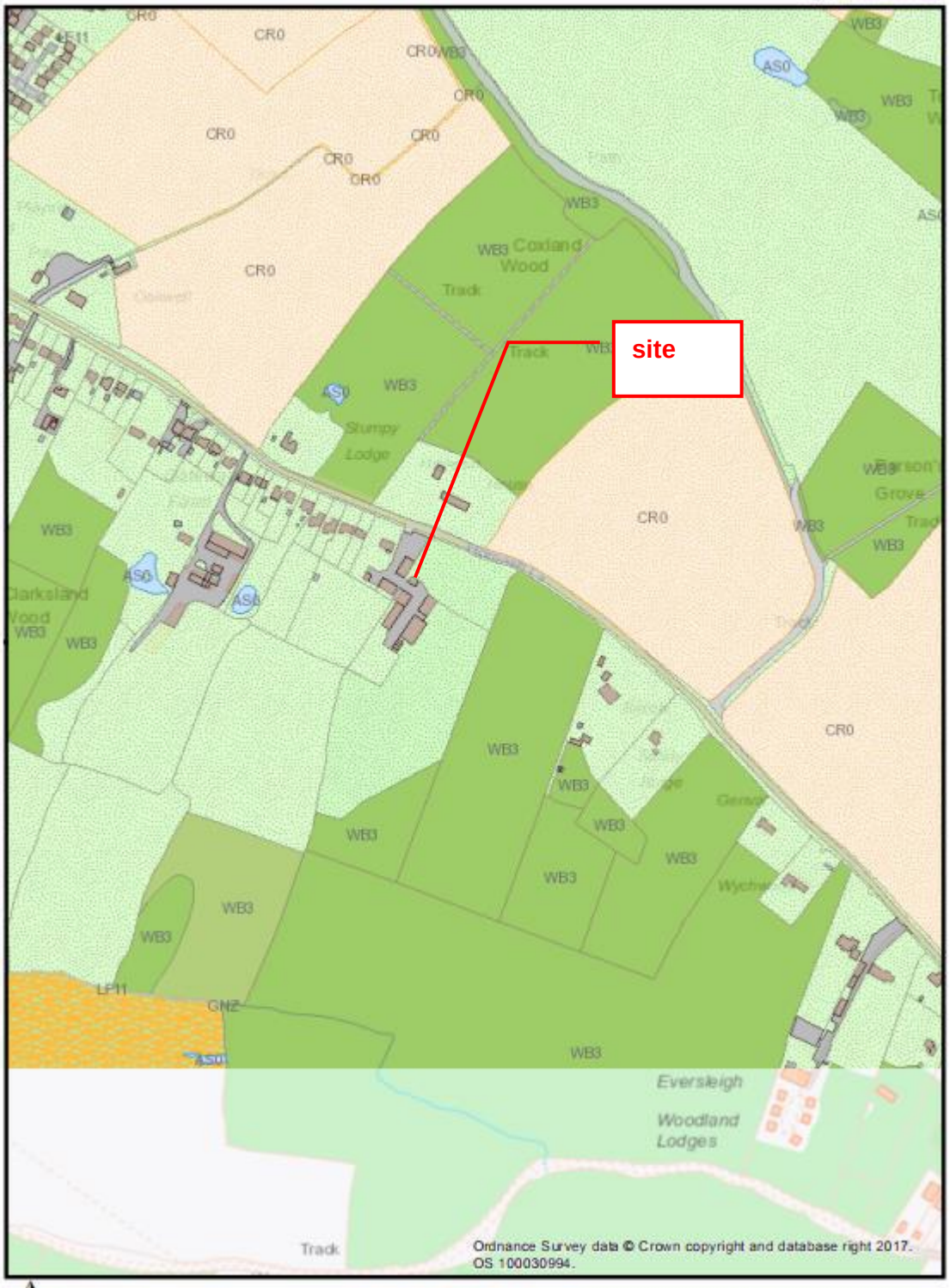
- Limestone Pavement Orders (England)
- Local Nature Reserves (England)
- Moorland Line (England)
- National Nature Reserves (England)
- National Nature Reserves (Scotland)
- National Nature Reserves (Wales)
- National Parks (England)
- Ramsar Sites (England)
- Ramsar Sites (Scotland)

Projection = OSGB36
xmin = 594700
ymin = 135200
xmax = 601600
ymax = 140100

Map produced by MAGIC on 4 July, 2017.

Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

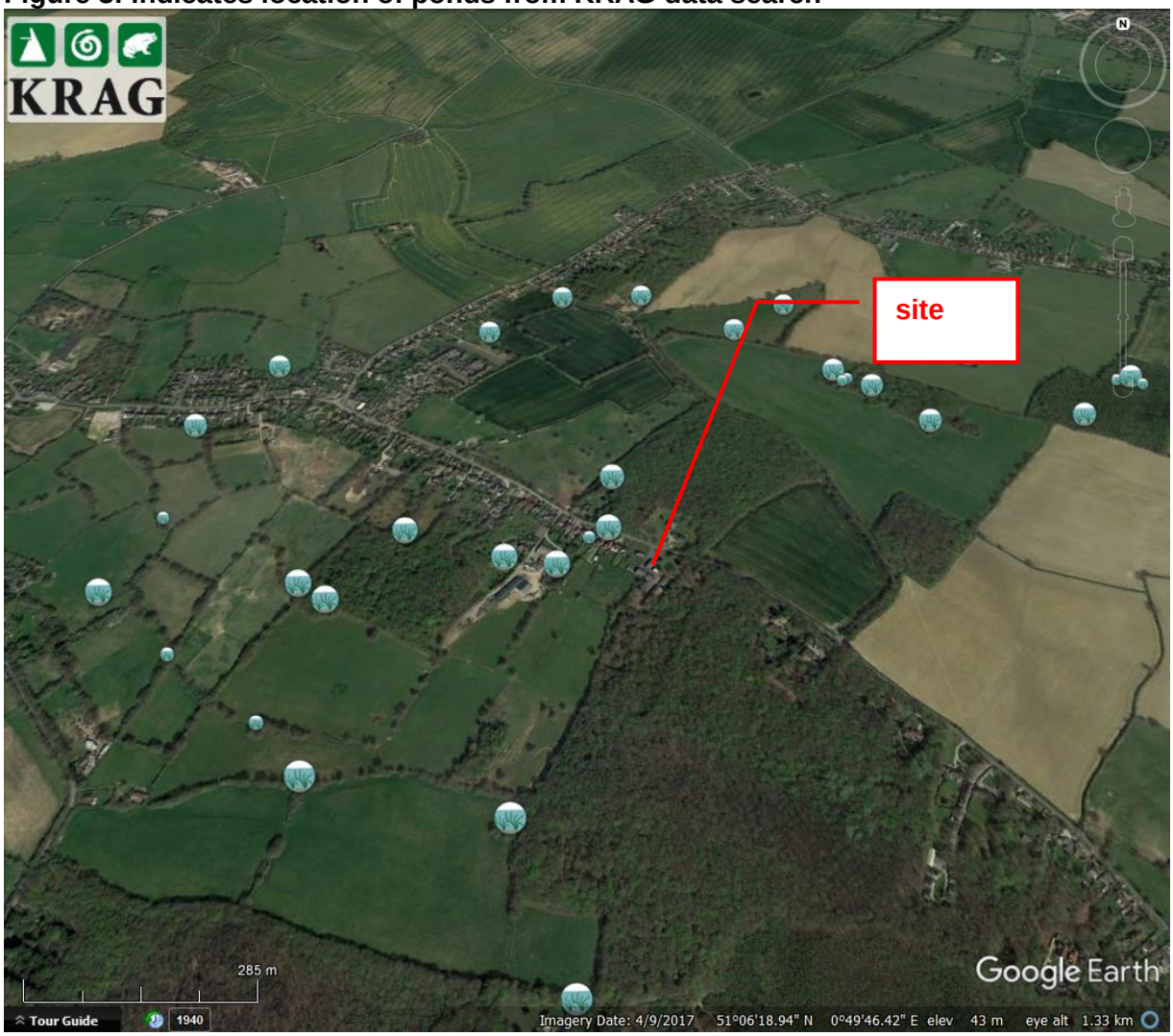
FIGURE 2



Scale 1:5,000

Map Dated: 04 Jul 2017

Figure 3: indicates location of ponds from KRAG data search



2 Methodology

2.1 Desk Study

Internet-based resources were consulted to identify designated nature conservation sites within 1km of the site and habitats of potentially high ecological importance and sensitivity within 500m of the site (e.g. ancient woodlands, ponds).

A data search was carried out with the Kent Reptile and Amphibian Group KRAG[1],[2].

2.2 Scoping Survey

The site and its immediate surroundings were considered in terms of habitats, protected species and species of principal conservation importance during a walkover survey undertaken on 12th June 2017 by Katia Bresso CEnv MCIEEM, a qualified professional consultant ecologist with over 15 years of experience[3], licensed bat surveyor (Class Survey Licence Registration Number 2015-11917-CLS-CLS (CL15 Bat Roost Visitor Level 1), 2015-11918-CLS-CLS (CL18 Bat Survey Level 2) and 2016-27133-CLS-CLS (WML-A34 - Level 3 Class Licence) and Registered Consultant of the Bat Low Impact Class Licence WML-CL21 with Natural England (since May 2015), licensed dormouse surveyor (Class Survey Licences Registration Number 2016-22060-CLS-CLS) and licensed great crested newt surveyor (Class Survey Licences Registration Number Level 1 2015-16268-CLS-CLS and Class Survey Licences Registration Number Level 2 2017-30955-SCI-SCI). Evidence of the use of the site by species was recorded (i.e. field signs).

The habitat survey was undertaken in general accordance with Phase 1 Habitat Survey (JNCC 2010), i.e. within the survey area every parcel of land is classified, recorded and mapped in accordance with a list of ninety specified habitat types using standard colour codes to allow rapid visual assessment of the extent and distribution of different habitat types.

The survey and report aim at following the guidance and recommendations in the 'British Standard Biodiversity Code of Practice for Planning and Development (BS 42020: 2013)'.

Particular attention was given to signs of use by bats and barn owls. A visual survey was undertaken looking for evidence of roosting bats and roosting/nesting barn owls, including signs such as live or dead bats/owls, feathers, droppings, pellets, nest debris and eggs, using an endoscope4, high powered torch (Cluson CB1 Clubman Standard High Power, 500,000 candle power), night vision scope and binoculars where needed.

[1] Please note that absence of records should not be taken as confirmation that a species is absent from the search area.

[2] Due to the scale of the project, it was judged disproportionate to undertake a costly data search with the Kent and Medway Biological Record Centre KMBRC as the data would be unlikely to be relevant to this site.

[3] Katia Bresso is a Suitably Qualified Ecologist with regards to Code for Sustainable Homes assessment and BREEAM

2.3 Bats in trees assessment

The survey entailed a preliminary ground level roost assessment, i.e. an external inspection of all trees present within the survey area, looking at potential to support bats and looking for actual signs of bats, using an endoscope, high powered torch and binoculars where needed (from the ground only).

The features of trees that can be used as bat roosts include:

- Natural holes, woodpecker holes, rot cavities that orient upwards from the entrance,
- Cracks/splits in major limbs
- Loose bark
- Behind dense, thick-stemmed ivy
- Hollows/cavities
- Within dense epicormic growth
- Bird and bat boxes

Each tree was classified as follows:

Suitability	Description Roosting habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[c]
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.

No climbing inspections of trees and no emergence or dawn surveys were undertaken as part of this work.

3 Baseline Ecological Conditions

3.1 Designated Nature Conservation Sites

The site is not part of, nor directly adjacent to, any statutory designated sites and none are located within 1km of the site.

One local wildlife site[4], 'AS21 Shadoxhurst woods and pasture', is present directly adjacent to the South of the site. It is also ancient woodland[5].

3.2 Habitats

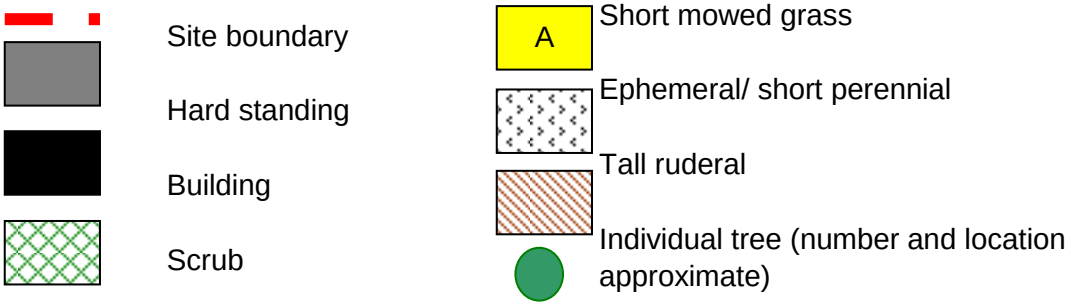
The site is located on the outskirts of Shadoxhurst, surrounded by a few dwellings, woodland and pasture.

The Integrated Habitat System (IHS) classification in the Kent Habitat Survey 2012 describes the site as

- *GI0.TS01.GL2 - Improved grassland with broadleaved trees; non-amenity grassland*
- *UR0.UA31 - Built-up areas and gardens; housing/domestic outbuildings*
- *UR0.UAZ - Built-up areas and gardens; other extended built environment*

Indeed, the site consists of farm buildings with short mowed grass to the front, as well as mature trees. To the back of the site are areas of seldom managed grassland, turning to low bramble *Rubus fruticosus agg* and trees. The ground flora includes bristly oxtongue *Picris echioides*, wild angelica *Angelica sylvestris*, wood avens *Geum urbanum*, daisy *Bellis perennis*, creeping buttercup *Ranunculus repens*, white clover *Trifolium repens*, dandelion *Taraxacum officinale agg*., rushes *Juncus sp*, foxglove *Digitalis purpurea*, silverweed *Argentina anserine*, hedge woundwort *Stachys sylvatica* fleabane *Pulicaria dysenterica*. Some areas of common nettles *Urtica dioica* are also present at the back of some buildings. The trees are willow *Salix sp*, hornbeam *Carpinus betulus*, beech *Fagus sylvatica*, pedunculate oak *Quercus robur*, English elm *Ulmus procera*, alder *Alnus glutinosa*. A beech hedge is present along the road and some Leylandii are present near buildings. A dry ditch forms the boundary with the ancient woodland. A pile of rubble is present to the back. Plates are present in Appendix B. Figure 4 below shows the location of the habitats.

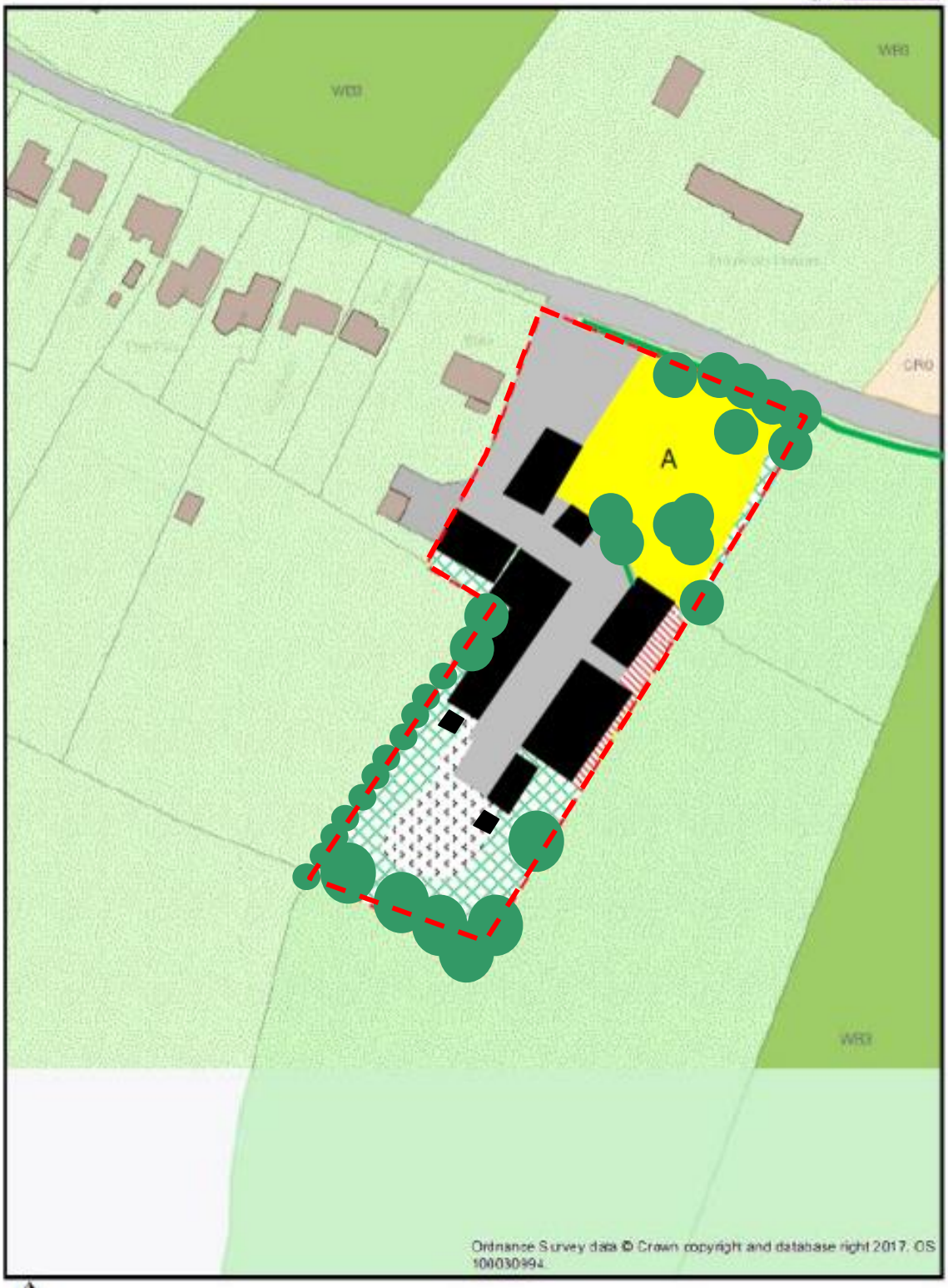
Legend of Phase 1 habitat survey map hereafter:



[4] In Kent, there are over 460 Local Wildlife Sites, covering a total area of over 27,500 hectares, (roughly 7% of the county). They range from a 0.13 hectares churchyard important for its orchids, to grazing marsh sites of over 1,000 hectares.

[5] Land that has had continuous woodland cover since at least 1600 AD

FIGURE 4



Scale 1:1,250

Map Dated: 04 Jul 2017

3.3 Amphibians

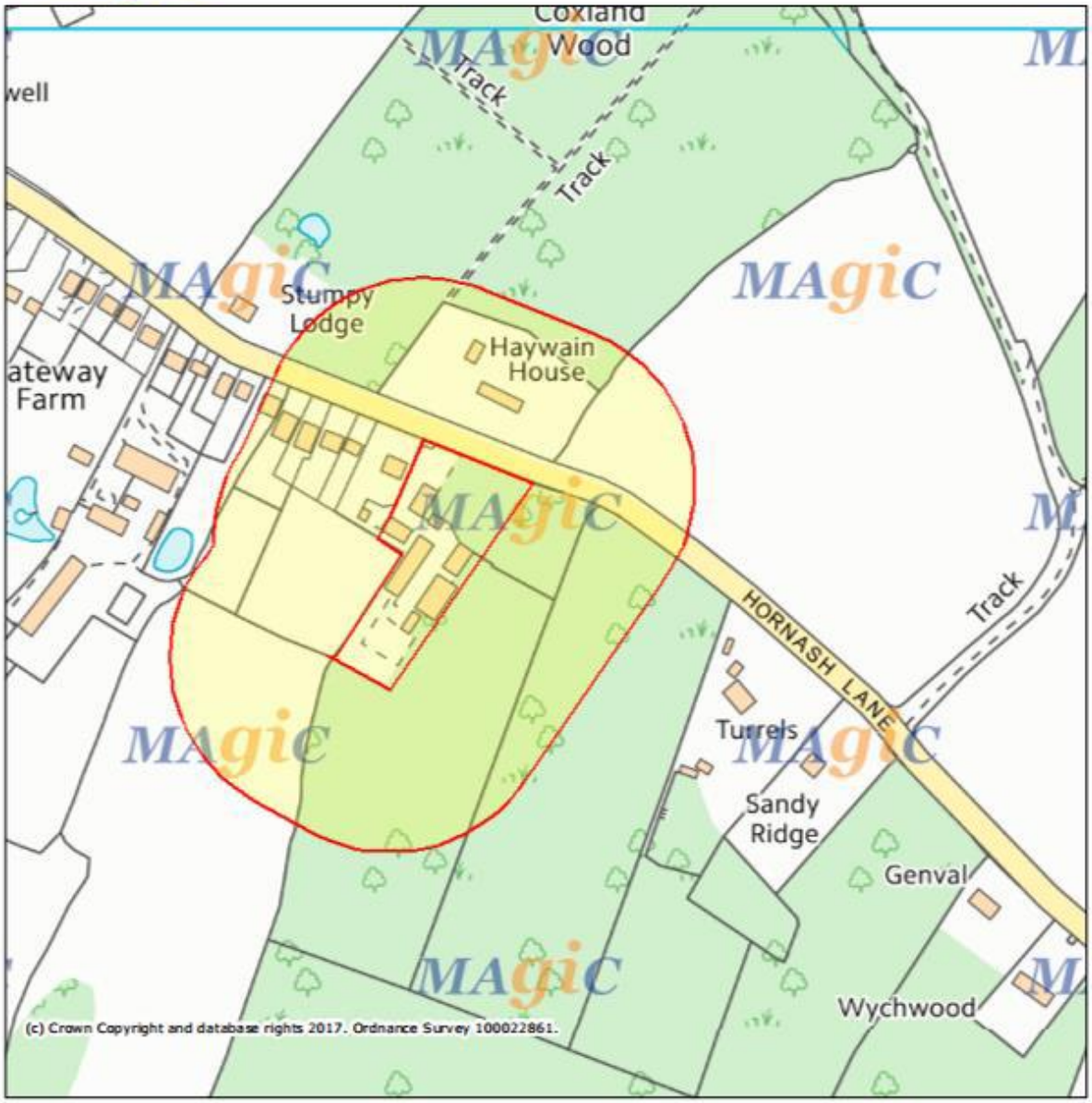
The data search carried out with KRAG (Enquiry No: CES/17/064) revealed that the closest recorded Great Crested Newt *Triturus cristatus* site is located at [Private Residence], 1.36 km to the NE (record id: 72674).

Great crested newts favour areas of high pond density and occupancy levels can exceed 40% of ponds when conditions are favourable. KRAG's database risk assessment indicates that the likelihood of presence of great crested newts *in the overall area* is *'High'*[6], with 33 ponds within 1km of the site.

Some of the habitats present on site offer potential as terrestrial habitat for amphibians (such as woodland, scrub, ditches, hedgerows, taller/rougher grassland). However, Natural England (2007) states:
'Great crested newt may disperse several hundred metres, sometimes over 1km, from the breeding pond, though at most sites the majority of the population is normally found within around 100m of it.'

[6] Likelihood of Presence Scores are described using the following categories: Unlikely<Possible<Likely<High

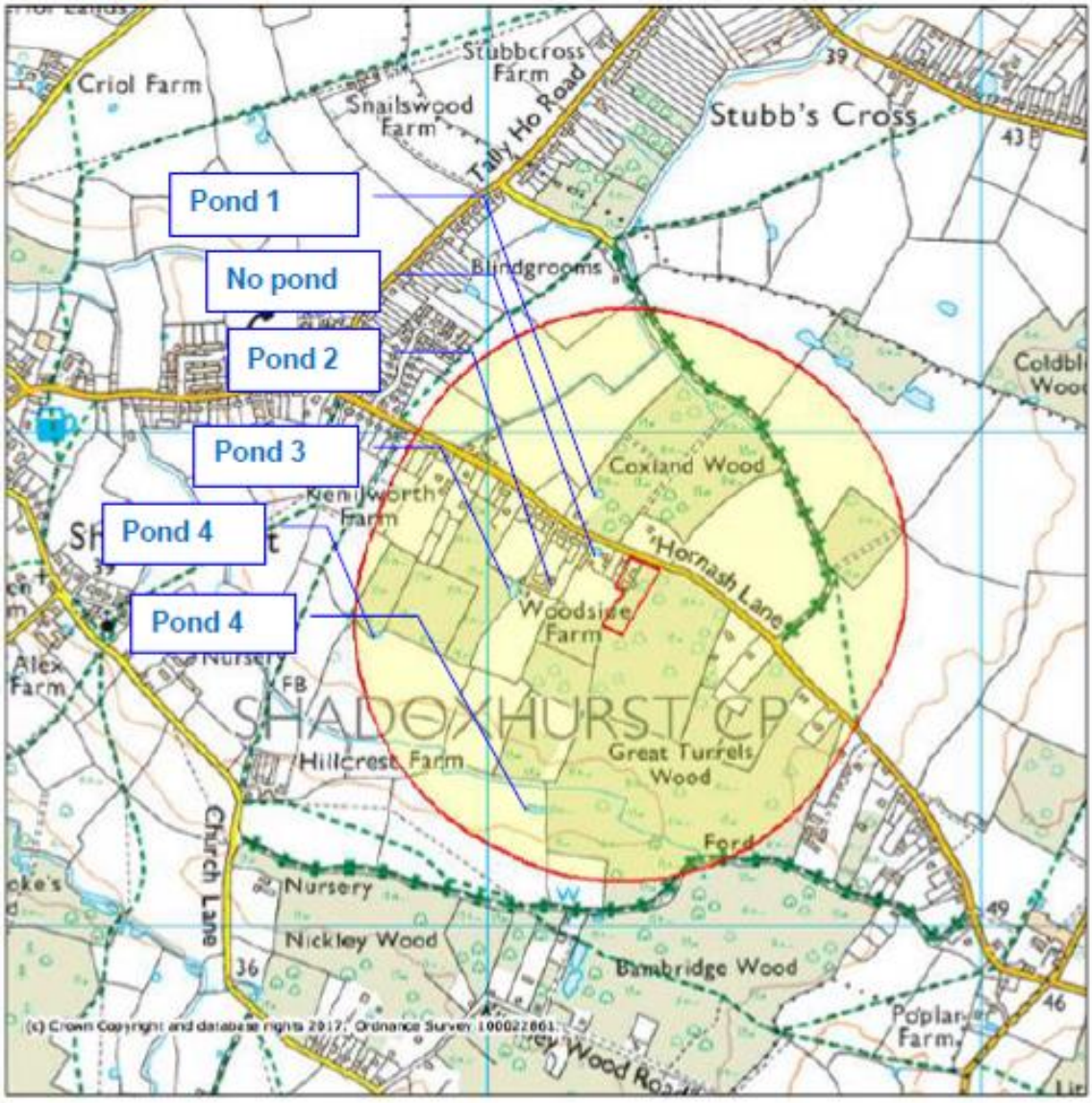
MAGIC **Figure 5 - 100m buffer**



Projection = OSGB36
xmin = 597800
ymin = 137300
xmax = 598900
ymax = 138100

Map produced by MAGIC on 4 July, 2017.
Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

MAGIC **Figure 6 - 500m radius**



Projection = OSGB36
xmin = 596300
ymin = 136400
xmax = 600000
ymax = 139100
Map produced by MAGIC on 5 July, 2017.
Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

No ponds were present on site or within 100m (see Figure 5 below). Figures 3 and 6 also show that all the ponds are located to the west of the site[7] and that there is significant good quality terrestrial habitat around each pond.

Therefore, due to the distance to the nearest ponds, it is judged unlikely that great crested newts would be present on site, other than occasionally commuting from one pond to another, as there is more optimal habitat nearer the ponds and if GCN are present in ponds, they are more likely to utilise that habitat.

Common amphibian species are afforded limited legal protection under the Wildlife & Countryside Act 1981 (as amended). The great crested newt is afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). It is also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010 and are therefore a European Protected Species (EPS). Great crested newts and common toads are also listed as species of principal conservation importance (See Appendix A).

For more information, guidance from Natural England is available at
https://www.gov.uk/great-crested-newts-protection-surveys-and-licences

3.4 Reptiles

The KRAG datasearch revealed that the closest recorded reptile is Viviparous Lizard, located at [Private Residence], 0.85 km to the W (record id: 15745). The likelihood of reptiles to be present *in the overall area* is judged as per table below:

Reptiles

	Likelihood of Presence	
	Score	Dist (km)
Viviparous Lizard:	Likely	0.85
Slow-worm:	Possible	1.39
Sand Lizard:	*unlikely*	*43.93*
Grass Snake:	Likely	1.39
Adder:	*unlikely*	*5.96*
Smooth Snake:	n/a	n/a

Reptile survey effort in local area is considered to be below average. Results should be interpreted with caution.

The areas of seldom managed grassland, low bramble and nettles provide potential habitat for reptiles, namely slow worms *Anguis fragilis*, common lizards *Zootoca vivipara* and grass snakes *Natrix natrix*. The owner reported having seen slow worms some years ago but not recently.

3.5 Birds

It is considered that the site has high potential to support breeding birds within the trees, hedges and scrub.

[7] Access was sought to the ponds by the client but was not granted.

No signs of barn owl Tyto alba were found during the survey. No white droppings, black/grey pellets or white/buff feathers (specific signs of barn owls) were found. Some bird nests were present in most of the buildings, but not of barn owls.

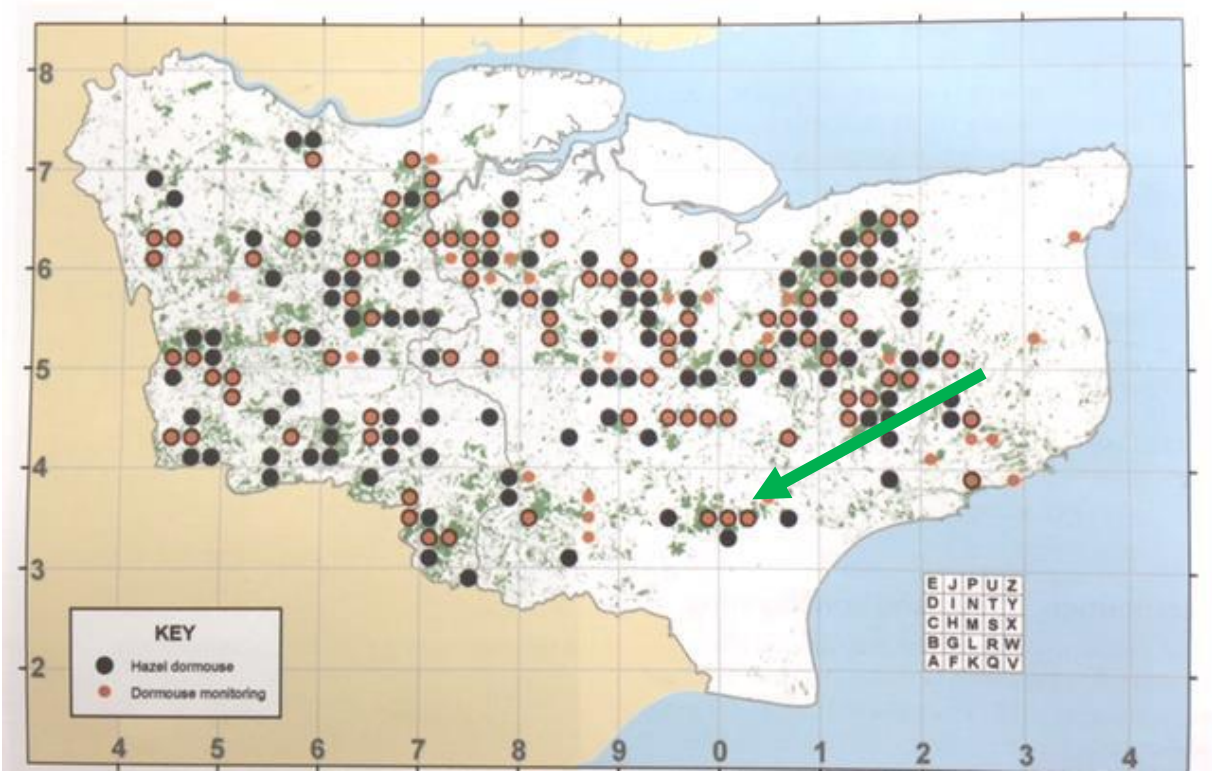
All species of bird whilst actively nesting are afforded legal protection under the Wildlife & Countryside Act 1981 (as amended) and special penalties are available for offences related to birds listed on Schedule 1. Some species are also listed as species of principal conservation importance, including sky lark, common cuckoo, house sparrow, tree sparrow and song thrush (See Appendix A).

For more information, guidance from Natural England is available at https://www.gov.uk/wild-birds-protection-surveys-and-licences

3.6 Hazel Dormouse

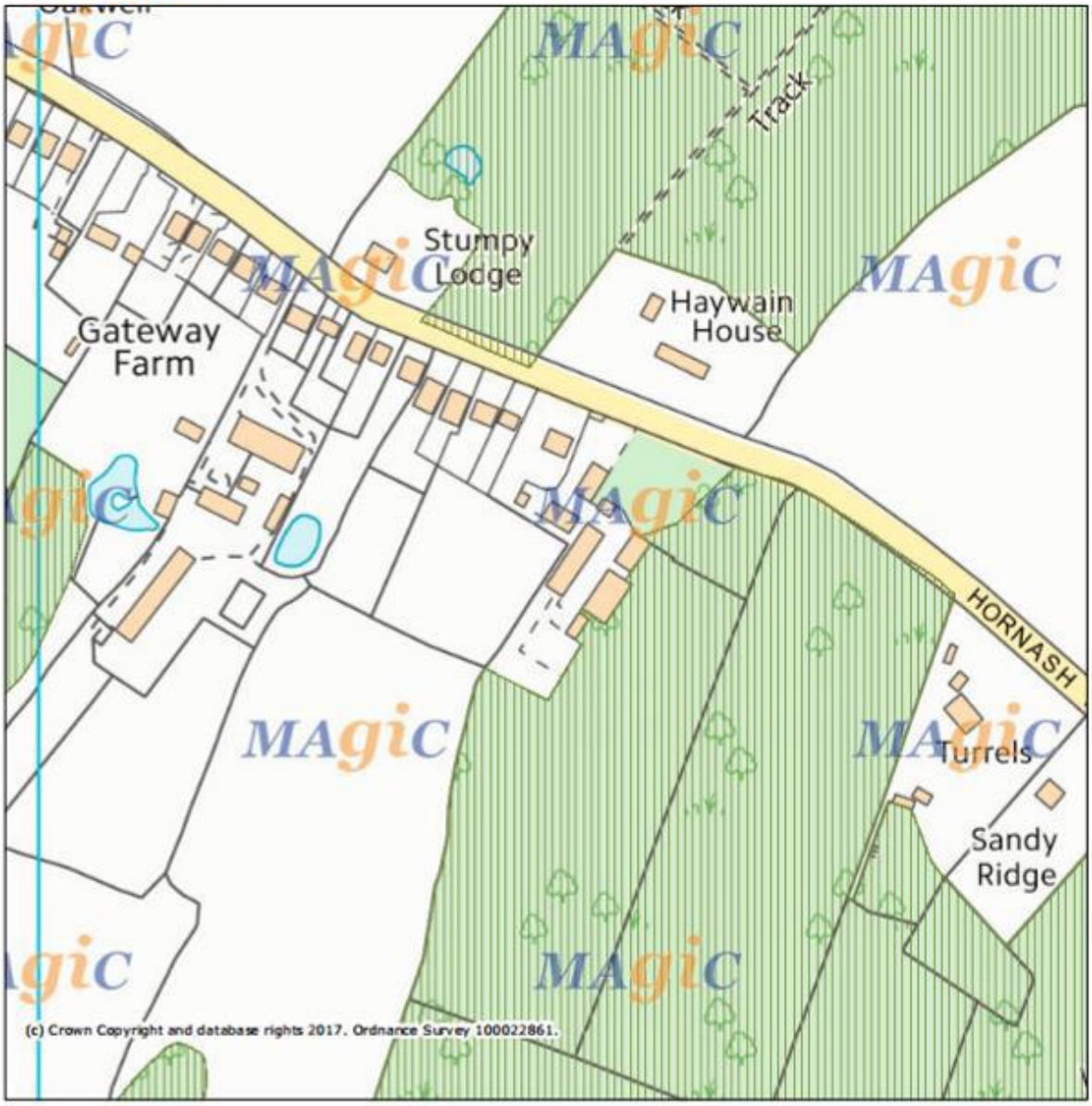
It is considered that the hedges and trees have high potential to support the hazel dormouse *Muscardinus avellanarius* as it is adjacent to ancient woodland.

Map from Mammals of Kent (2015):



MAGIC

Figure 5



Legend

Ancient Woodland (England)

Ancient and Semi-Natural Woodland

Ancient Replanted Woodland

Projection = OSGB36
xmin = 597800
ymin = 137300
xmax = 598700
ymax = 138000

Map produced by MAGIC on 4 July, 2017.

Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGIC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

The dormouse is afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). It is also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010 and are therefore a “European Protected Species” EPS) . The dormouse is also listed as species of principal conservation importance (See Appendix A).

For more information, guidance from Natural England is available at https://www.gov.uk/hazel-dormice-protection-surveys-and-licences

3.7 Badger

The grassland habitat on site provides foraging opportunities for badgers *Meles meles* and the back of the site provides refuge and sett digging opportunities for badgers. However, no setts or signs of badgers *Meles meles* were identified during the survey.

The Protection of Badgers Act 1992 was introduced in recognition of the additional threats that badgers face from illegal badger digging and baiting. Under the Act, it is an offence inter alia to:

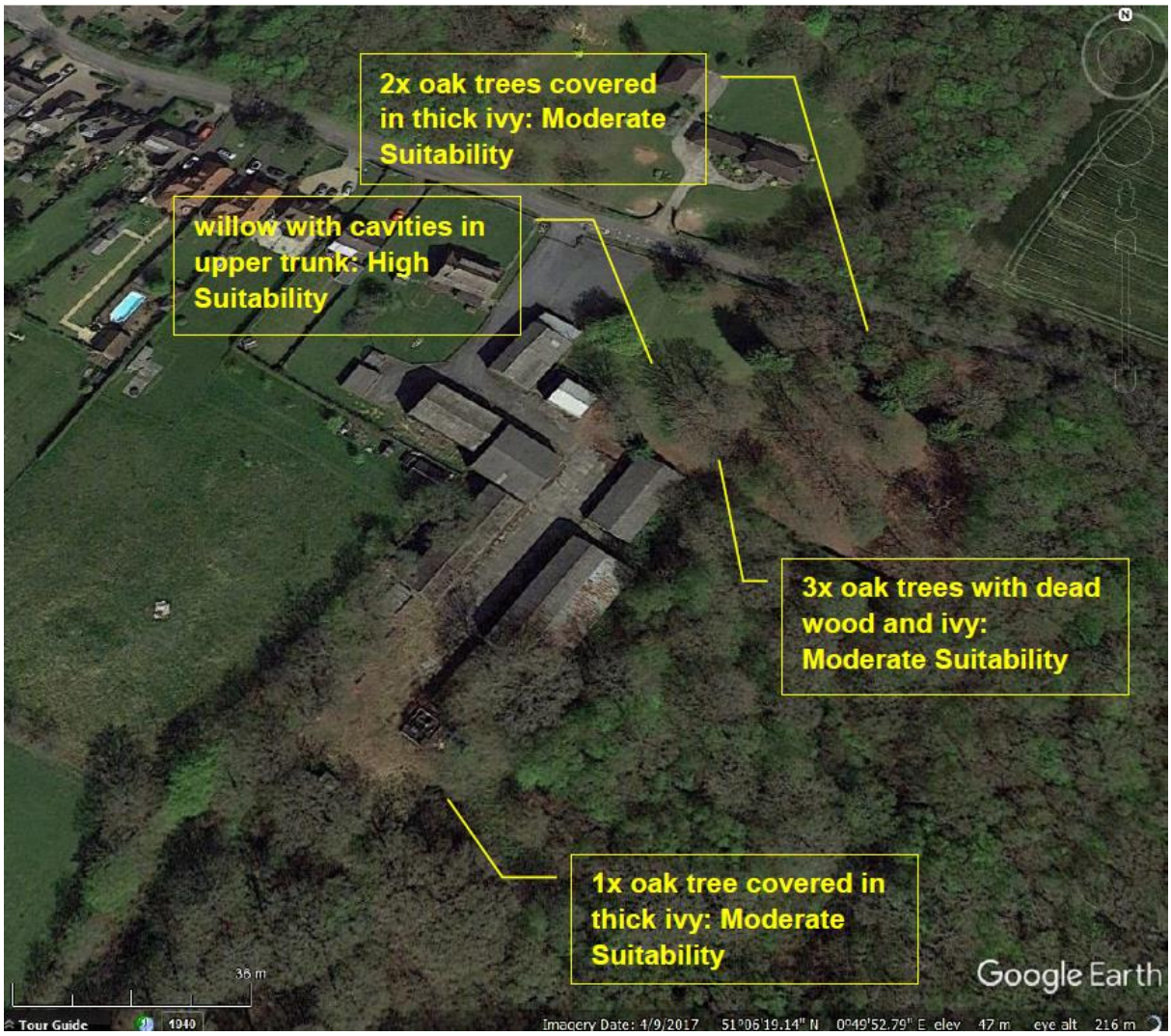
- Wilfully kill, injure or take a badger, or to attempt to do so;
- Cruelly ill-treat a badger; or
- Intentionally or recklessly interfere with a badger sett by (a) damaging a sett or any part of one; (b) destroying a sett; (c) obstructing access to or any entrance of a sett; (d) causing a dog to enter a sett; or (e) disturbing a badger when it is occupying a sett.

For more information, guidance from Natural England is available at https://www.gov.uk/badgers-protection-surveys-and-licences

3.8 Bats

No bats nor signs of bats were found during the internal/external inspection of the buildings. All were judged as offering negligible potential for roosting bats due to their open single skin structure apart from the coldstore which has some wood cladding which could be used by crevice dwelling bats (low potential).

A number of trees were identified as offering moderate or high suitability for roosting bats as shown below:



The site is likely to be used by foraging and commuting bats.

All species of bat are afforded full legal protection under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). They are also listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2010 and are therefore a "European Protected Species" (EPS). Some species of bats (noctule, soprano pipistrelle, brown long-eared bat, barbastelle) are also listed as species of principal conservation importance.

Bats rarely use the same roosting place all year round as they need different conditions for breeding and hibernating. But bats are creatures of habit and tend to return to the same sites at the same time year after year. For this reason, roosts are legally protected even if bats don't seem to be living there at certain times of year.

The legislation makes it a criminal offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat;
- Intentionally or recklessly obstruct access to a bat roost.

For more information, guidance from Natural England is available at https://www.gov.uk/bats-protection-surveys-and-licences

3.9 Other Species

It is considered that the site has moderate potential to support hedgehogs (*Erinaceus europaeus*), which are a Species of Principal Importance under Section 41 of the NERC Act (2008 updated list).

Common mammal species such as rabbit (*Oryctolagus cuniculus*), mole (*Talpa europea*), field vole (*Microtus agrestis*) and fox (*Vulpes vulpes*) are likely to be present on site.

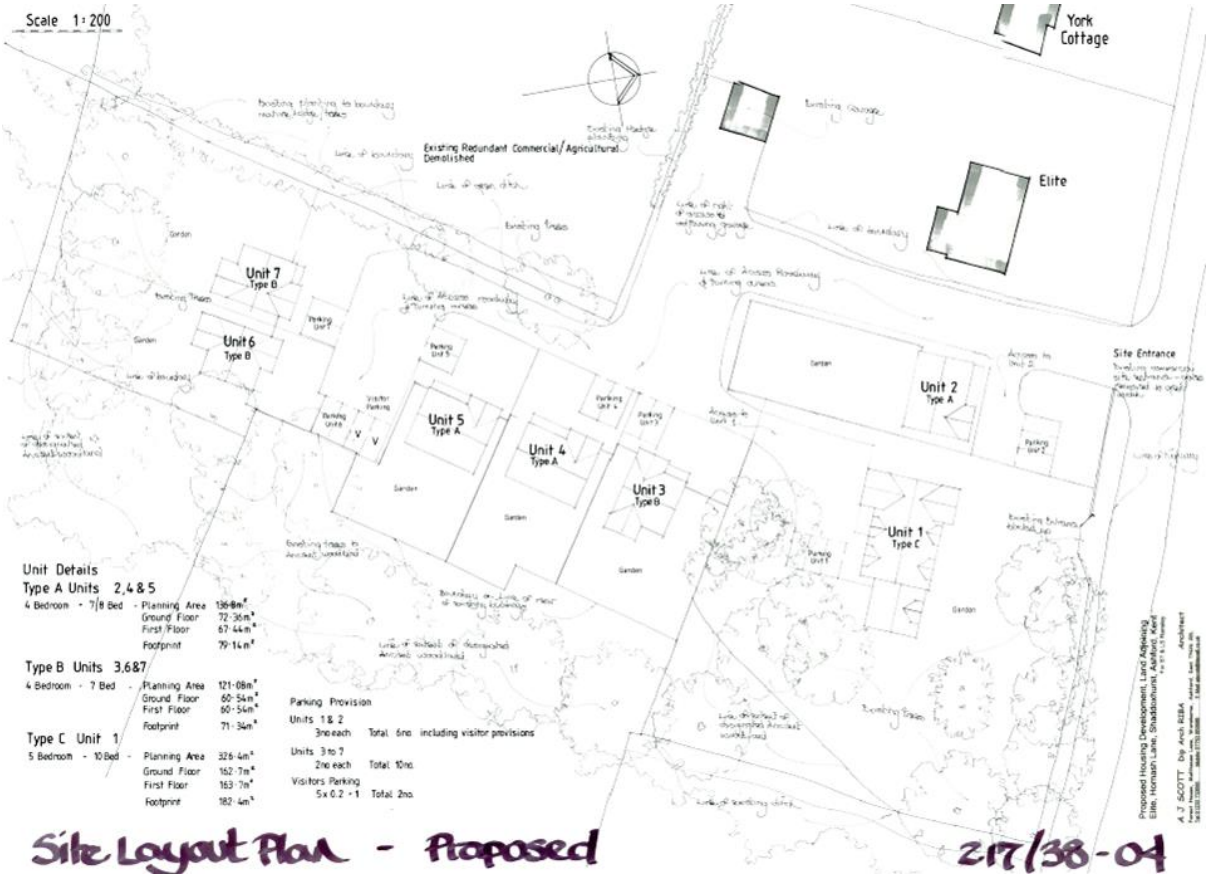
All mammals are afforded protection against unnecessary suffering by the Wild Mammals (Protection) Act 1996 (see Appendix A).

It is considered that the site also has potential to support stag beetles *Lucanus cervus*[8], which are protected against illegal trade under schedule 5 of the Wildlife and Countryside Act 1981 and are a priority Biodiversity Action Plan species in the UK.

[8] For more information, see http://ptes.org/campaigns/stag-beetles/stag-beetle-facts/

4 Ecological constraints and opportunities, recommendations for mitigation, compensation and further survey

The details of the proposed development were as below at the time of writing this report.



Should the scope of the proposed works be amended following the completion of this scoping survey, or be deferred for an extended period of time, there may be a requirement to update this scoping report and its recommendations.

4.1 Designated Nature Conservation Sites

A site check report was generated for the site using the Impact Risk Zones on the Magic website[9]:

[9] The Impact Risk Zones (IRZs) dataset is a GIS tool which maps zones around each SSSI according to the particular sensitivities of the features for which it is notified and specifies the types of development that have the potential to have adverse impacts.

Natural England uses the IRZs to make an initial assessment of the likely risk of impacts on SSSIs and to quickly determine which consultations are unlikely to pose risks and which require more detailed consideration. Publishing the IRZs will allow LPAs, developers and other partners to make use of this key evidence tool.

http://www.naturalengland.org.uk/ourwork/planningdevelopment/impactriskzonesgistoolfeature.aspx

04/07/2017

Site Check Report Report generated on Tue Jul 04 2017
You selected the location: Centroid Grid Ref: TQ982376
The following features have been found in your search area:

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

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, pig & poultry units, slurry lagoons > 200m² & manure stores > 250t).
Combustion	General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.
Discharges	
Water Supply	Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI_IRZ_User_Guidance_MAGIC.pdf
Notes	

The type of development proposed is not listed as being a category for which the LPA should consult Natural England. The proposal is not judged detrimental to any protected sites.

4.2 Habitats

Habitats present outside the works footprint should be suitably protected against any damages during works.

Trees to be retained should be protected during any construction work and guidance is given in the 'BS 5837:2012 Trees in relation to design, demolition and construction. Recommendations' document. This standard requires a tree protection plan to be developed which involves erecting physical barriers to prevent damage to existing trees, with an exclusion area around the trees. It also looks at defining a root protection area and requires consideration when compulsory work is carried out within the root protection area.

Ancient woodland and veteran trees support a very large number of species, many of them rare and threatened, and therefore protected. Ancient woodland and veteran trees are an important and historic part of the landscape, and cannot be replaced because they take hundreds of years to develop. For these reasons, planning authorities should refuse planning permission for any development that leads to their loss or damage. The only exceptions are when the benefits of a development clearly outweigh that loss or damage[10].

Natural England's standing advice for Ancient Woodland and Veteran Trees paragraph 6.4 states: "Development must be kept as far as possible from ancient woodland, with a buffer area maintained between the ancient woodland and any development boundary. An appropriate buffer area will depend on the local circumstances and the type of development. In a planning case in West Sussex the Secretary of State supported the arguments for a 15m buffer around the affected ancient woodland, but larger buffers may be required."

[10] For more information see https://www.gov.uk/ancient-woodland-and-veteran-trees-protection-surveys-licences

It also further states that: “The permanent retention of buffer zones must be secured as part of the planning permission. These should be allowed to develop into semi-natural habitat. Developments such as gardens must not be included within buffer zones as there is limited control over how they may be used, or developed in the future; for example, they might be paved or decked without the need for planning permission or they may include inappropriate species which could escape into the woodland.”

4.3 Amphibians

There are a number of development activities which can affect great crested newts, which should be fully considered at the application stage. Great crested newts can migrate more than 500 metres from their breeding ponds in areas of suitable terrestrial habitat. However, generally the scale of potential impacts will decrease as the distance from the breeding pond increases. Impacts on great crested newts could include:

	If GCN are present, would it be the case for this project?	
Habitat loss	Both the loss of breeding ponds and terrestrial habitat can have significant impacts upon great crested newts since newts live on land for the majority of their lives. Populations can be reduced or even go extinct where there is a major loss of habitat due to reduced foraging, breeding and refuge opportunities. Consequently, the mitigation strategy must ensure that there is no net loss of habitat (be it breeding ponds or terrestrial habitat) for newts.	**No**
Habitat modification	Although some development may not replace newt habitat with built land, it can be made less suitable. For example, changing an area of rough grassland used by newts as terrestrial habitat into amenity grassland could have a negative impact on the population. Therefore the mitigation strategy should ensure that there is no net loss in quantity and quality of habitat.	**No**
Habitat fragmentation and isolation	Habitat fragmentation and isolation of great crested newt populations can be caused when development imposes barriers to newt dispersal. These barriers can include built land, fast flowing water bodies or extreme landforms. Isolation of great crested newts can result in population number declines and a decrease in genetic viability. Therefore the mitigation strategy should include measures to maintain habitat linkages and preferably reconnect fragmented areas.	**No**
Miscellaneous	Other more indirect impacts caused by development also need to be fully considered, such as increased shading and siltation of ponds, water table alteration and potential for increased chemical run-off into waterbodies. Great crested newts can also be impacted by interference following a development, such as the introduction of fish to breeding ponds which will predate the young life stages of newts.	**No**

Although it is known that great crested newts can disperse up to 500 metres through suitable terrestrial habitat from their breeding pond, it is widely accepted that they tend to utilise suitable terrestrial habitat within a much closer distance. Activity is usually concentrated

within 100 metres of breeding ponds and key habitat is located within 50 metres (termed by Natural England as core habitat).

In a document published by English Nature in 2004, it is stated that, regarding great crested newts, '*the most comprehensive mitigation, in relation to avoiding disturbance, killing or injury is appropriate within 50m of a breeding pond. It will also almost always be necessary to actively capture newts 50-100m away. However, at distances greater than 100m, there should be careful consideration as to whether attempts to capture newts are necessary or the most effective option to avoid incidental mortality. At distances greater than 200-250m, capture operations will hardly ever be appropriate.* '

A number of ponds are present within 500m of the proposed development site. Although no surveys have been undertaken of these ponds, it is judged highly unlikely that any great crested newts be present on site and therefore no further survey work or mitigation works are proposed with regards to this species.

4.4 Reptiles

It is judged possible that reptiles are present on small parts of the site. Should this be the case, the proposed development would entail the loss of a small area of reptile habitat and the potential killing and injuring of animals during ground clearance. To avoid this, a mitigation strategy is proposed, entailing the installation of a reptile exclusion fence and trapping and translocation of reptiles during suitable weather conditions between March and October. Captured animals should be released outside the works area.

It is expected that a reptile survey, to confirm the above mitigation strategy, can be conditioned, should planning permission be granted.

The survey would consist of placing artificial refuges (i.e. 0.5 m^2 tins or roofing felt) in areas of suitable reptile habitat and leaving them in place for at least 1 week prior to the survey commencing. The refuges would be checked on seven separate occasions, over four weeks at least, to establish presence / likely absence during suitable weather conditions (i.e. cool weather with no heavy rain but sunny intervals between showers, and ambient air temperatures between 10-20^oC).

Reptile surveys can be undertaken between March and October, the optimal months being April, May, June and September. Mid-summer temperatures and general activity levels are usually too high for refuges to be successfully used (surveys are highly weather dependent).

4.5 Birds

Although a breeding bird survey is not deemed to be necessary, on the basis that the site contains suitable habitat for breeding birds, consideration must be given to the timing of the clearance works, if any is to take place.

The effect on birds can be avoided by removing any vegetation outside of the nesting season (which extends from March – August inclusive[11]) or only after a survey has confirmed the

[11] It should be noted however that certain species are known to breed throughout the year (e.g. collard dove) and remain protected.

absence of nesting birds[12]. New hedgerow/trees/scrub planted and bird nesting boxes erected as part of the proposed development can replace the habitat lost.

4.6 Hazel Dormouse

No tree clearance is expected on site but some bramble clearance is expected. Therefore it is recommended to check the vegetation for dormice nests prior to any clearance, as per standing advice from Natural England / DEFRA:

Survey methods

You need to be a suitably experienced ecologist with a dormice licence to survey for dormice. You do not need a licence just to search for evidence of dormice such as hazelnut marks.

You can limit surveys to visual searches for nests and opened nuts if the work only involves losing a small amount of habitat, for example:

- gaps in hedgerows
- removing a small amount of bramble scrub

For more damaging projects and licence applications, acceptable methods for surveying dormice are:

- using nest tubes
- using nest boxes

You can combine using either nest tubes or nest boxes with checking hazelnuts for dormouse marks.

Once you've found dormice, assume they're present in all suitable habitat on the site.

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

4.7 Badger

No further work is recommended with regards to badgers.

4.8 Bats

Should bats be roosting in the coldstore, the proposed development would lead to a loss of habitat and animals could be killed or injured during the building demolition (no tree clearance is expected on site).

The Bat Conservation Trust's guidelines provide a table stating the 'minimum number of presence/absence survey visits required to provide confidence in negative preliminary roost assessment from buildings, built structures and trees in summer.

[12] Inspection by a qualified ecologist must first be completed a maximum of 48hrs before clearance works commence. If during the inspection a nest considered to be in use is discovered, works must be delayed until the young have fledged.

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey[a] (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey.[b]	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn.[b]

[a] Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

[b] Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

Table 7.1 Recommended timings for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
May to August (structures) No further surveys required (trees)	May to September[a] with at least one of surveys between May and August[b]	May to September[a] with at least two of surveys between May and August[b]

It is therefore recommended to undertake one night-time survey of the coldstore (two surveyors will be necessary to cover all sides of the building with potential access points).

Besides, as lighting can be detrimental to roosting, foraging and commuting bats[13], the recommendations from the Bat Conservation Trust, titled Bats and Lighting in the UK, should be considered, when designing any lighting scheme for the proposed development (see Appendix C).

4.9 Other Species

There is some potential for hedgehogs to be present on site. Therefore any areas where mammals could be sheltering should be hand searched prior to disturbance. Excavations should not be left open for animals to fall into, or planks of wood should be placed to enable any animals which may fall into such a hole to escape.

No tree clearance is expected on site thus there are no further recommendations with regards to stag beetles.

4.10 Additional Recommendations: Enhancements

Ecological enhancements should where possible be incorporated into the proposed development to contribute towards the objectives of planning legislation below:
On 27 March 2012, the UK Government published the National Planning Policy Framework (NPPF) which states that “opportunities to incorporate biodiversity in and around developments should be encouraged“(Para 118).

[13] http://www.bats.org.uk/pages/bats_and_lighting.html and http://www.batsandlighting.co.uk/index.html for more information

The design and implementation of habitat enhancements could also be used to contribute towards the 'Home Quality Mark' or similar accreditation, should this be a consideration for this site.

The site is present within 'Low Weald Woodland' Biodiversity Opportunity Area (BOA). The BOA maps can be seen as a spatial reflection of the Kent Biodiversity Action Plan. The BOA statement documents will provide guidance on the conservation priorities which should be adopted in each area.

The Targets of the 'Low Weald Woodland' BOA are:

1 Enhance or reinstate woodland management, including restoration of rides and glades, and restore plantations on ancient woodland sites to native woodland.

2 Extend and reconnect fragmented woodlands where this would not conflict with grassland conservation and enhancement.

3 Pursue opportunities to create new species-rich neutral grassland where this will contribute to meeting the county-wide target of 37ha, in blocks of 2ha or more, by 2020. Enhance at least 30ha of species-rich neutral grassland to bring it to UK BAP priority habitat Lowland Meadow quality.

4 Maintain, restore, recreate and buffer ponds, particularly to establish networks of sites to support great crested newt, and to create new woodland ponds.

5 Recreational opportunities (particularly in association with Ashford's regeneration) should be exploited where they will not conflict with nature conservation objectives. 6 Action for naturally widely dispersed habitats (ponds, traditional orchards), wildlife associated with arable farmland, and widely dispersed species such as great crested newt will need to focus across the whole of the area and not just within the Biodiversity Opportunity Area boundary

It is recommended that any enhancements are done in the spirit of the BOA targets listed above. http://www.kentbap.org.uk/kent-boas/

Biodiversity enhancements for the site could include the following:

- Provision of 12cm square gaps under any new fencing to allow hedgehogs access onto all garden areas.
- Provision of ready-made bird boxes (sparrow terrace timber boxes or house martin nests for instance[14] or mix of open-fronted and hole-nesting boxes and constructed from woodcrete)[15].
- Provision of bat roosting spaces within the new buildings (examples can be found in: Williams, C (2010*). Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build*. RIBA) or installation of ready-made bat boxes (such as Kent Bat Box[16], Habibat[17], EcoSurv Bat Box or Schwegler Bat tube[18])[19].

[14] to benefit these declining urban bird species

[15] In order not to damage trees, free-hanging nesting boxes can be hung from a loop or hook over a branch. This method avoids the use of nails. It is also helpful to avoid predation.

[16] http://www.teach-organic.org.uk/uploadedfiles/CMS/pdf/bat_box.pdf

[17] Habibat is a large, solid bat box made of concrete with an internal roost space, which can be incorporated into the fabric of a building http://www.habibat.co.uk/

[18] http://www.bats.org.uk/publications_download.php/1109/BCT_BatBoxProductList_v4a.pdf http://www.bats.org.uk/pages/accommodating_bats_in_buildings.html http://www.habibat.co.uk/about-habibat

[19] It is highly recommended to install bird boxes near bat boxes to avoid birds from using the bat boxes to the detriment to bats.

- Provision of bat friendly planting within the gardens[20]
- Provision of barn owl boxes[21] as the surrounding landscape is judged suitable[22]
- Provision of owl boxes in trees[23]
- Provision of reptile / amphibian hibernacula[24].
- Provision of brash/log piles[25],
- Establish climbing plants on walls and other vertical structures[26].
- Establish wildflower plug/bulb planting in amenity grassland and private gardens [27].
- Integration of Sustainable Urban Drainage Systems (SUDS)[28].
- Consider using grid mesh system (or Ground Reinforcement Grids) with topsoil and seeding with a wildflower species mix, to car parking areas and new access drives to retain some vegetation as well as drainage, or Gravel turf[29].
- Establish Fruit Espaliers[30].

Priority should be given to species present on the Kent BAP species list, which include great crested newt, common toad, viviparous lizard, slow-worm, grass snake, adder, house sparrow, tree sparrow, hedgehog, noctule, soprano pipistrelle, brown long-eared bat, brown hare, water vole, harvest mouse, dormouse, otter as well as many more species (see http://www.kentbap.org.uk/habitats-and-species/priority-species/).

[20] More information can be found here http://www.bats.org.uk/publications_download.php/231/Encouraging_bats_English_2010.pdf

[21] More information can be found here: http://www.barnowltrust.org.uk/infopage.html?Id=42

[22] http://www.barnowltrust.org.uk/content_images/gallery/ENGLAND_Southern1159973743.jpg

[23] More information can be found here http://www.barnowltrust.org.uk/infopage.html?Id=56

[24] http://www.rspb.org.uk/advice/gardening/reptiles_amphibians/hibernacula.aspx

[25] Brash and log piles will be at least one meter high and two metres in diameter. They will comprise a mix of large and small diameter material. The centre of the pile will be compacted, but the outer part will be un-compacted. They will be located in sunny positions. They will be topped up periodically (for example every five years) with further material.

[26] More information can be found here: http://www.greenblueurban.com/climbing-plant-guide.php and http://www.london.gov.uk/priorities/environment/urban-space/parks-green-spaces/green-roofs-walls

[27] Spring flowering bulbs and plugs of nectar rich flowering plants should be embedded into amenity grassland to increase the biodiversity and amenity value of the grassland and to provide early sources of nectar for insects. Suitable bulbs include Snake's head fritillary *Fritillaria meleagris*, Ramsons *Allium ursinum*, Snowdrop *Galanthus nivalis*, Primrose *Primula vulgaris*, Bluebell *Hyacinthoides non-scriptus*, Wild daffodil *Narcissus pseudonarcissus*, Lesser celandine *Ranunculus ficaria*

[28] http://www.ciria.org.uk/suds/index.html for more information

[29] http://www.schotterrasen.at/e_index.htm

[30] http://apps.rhs.org.uk/advicesearch/profile.aspx?PID=319 for more information

5 References and Bibliography

- Joint Nature Conservation Committee (2003). *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. JNCC, Peterborough. [31]

Websites Visited:

- http://www.archnature.eu/mapping-tools.html
- http://bbowt-extra.org.uk/KWTWebMap/
- http://magic.defra.gov.uk/MagicMap.aspx

With kind permission from Google Earth Brand

[31] http://www.jncc.gov.uk/pdf/pub90_HandbookforPhase1HabitatSurveyA5.pdf

Appendix A – Wildlife Legislation & Policy

The following is a summary of wildlife legislation and planning policy which affords protection to plants and animals and seeks to conserve, enhance and restore biodiversity. This section is provided for general guidance only. While every effort has been made to ensure accuracy, this section should not be relied upon as a definitive statement of the law.

For further information, please see:
https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals
and
https://www.gov.uk/government/policies/protecting-biodiversity-and-ecosystems-at-home-and-abroad/supporting-pages/species-protection

Commonly encountered protected species

Many species of plants, invertebrates and animals receive protection under the legislation detailed above. However, of these, the following are the most likely to be affected by development in the southeast:

Species	Legislation
Bats (all species) Dormice Great crested newts Otters Sand lizards and smooth snakes	The Wildlife and Countryside Act 1981 (as amended) & The Conservation of Habitats and Species Regulations 2010. These make it an offence to: • Deliberately or recklessly capture, injure or kill any wild animal of a European protected species • Deliberately or recklessly disturb wild animals of any such species • Damage or destroy their breeding site or resting place • Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead animal, or any part of, or anything derived from these species. Disturbance of animals includes in particular any disturbance which is likely • to impair their ability: - to survive, to breed or reproduce, or to rear or nurture their young, or - in the case of animals of a hibernating or migratory species, to hibernate or migrate; • to affect significantly the local distribution or abundance of the species to which they belong.
Breeding birds	The Wildlife and Countryside Act 1981 (as amended). This makes it

Species	Legislation
(in particular barn owls)	illegal to intentionally kill, injure or take any wild bird and to take, damage or destroy the nest (whilst being built or in use) or eggs.
Adders, grass snakes, common lizards and slow worms	The Wildlife and Countryside Act 1981 (as amended) (intentional killing and injuring only). This makes it illegal to kill or injure these animals.
Water voles	The Wildlife and Countryside Act 1981 (as amended). This makes it illegal to intentionally damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection; it is also an offence to intentionally disturb water voles while they are using these places.
White clawed crayfish	The Wildlife and Countryside Act 1981 (as amended). This makes it an offence to: • intentionally, or recklessly, kill or injure any of the above species, and/or; • sell, or attempt to sell, any part of the species, alive or dead. Advertises that he buys or sells, or intends to buy or sell.
Badgers	The Protection of Badgers Act 1992. This makes it an offence to: • Willfully killing, injures or takes, or attempts to kill, injure or take, a badger. • Cruelly ill-treating a badger, digging for badgers, using badger tongs, using a firearm other than the type specified under the exceptions within the Act. • Interfering with a badger sett by damaging, destroying, obstructing, causing dog a dog to enter a sett, disturbing an occupied sett - either by intent or by negligence. • Selling or offering for sale a live badger, having possession or control of a live badger. • Marking a badger or attaching any ring, tag, or other marking device to a badger.

The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) implements the Birds Directive (1979) and the Berne Convention (1979) into national legislation. The Wildlife and Countryside Act 1981 (as amended) includes a number of Schedules which are reviewed (usually every five years) on which details of the protected species, and their level of protection, are detailed. A detailed summary of the sections of the Wildlife and Countryside Act, along with the

protection afforded under them can be found within Paragraphs 118-122 of ODPM Circular 06/2005 (Circular06/2005)

Full details of the legislation can be found at www.jncc.gov.uk/page-3614 and details of the species listed on the Schedules can be found at:

- Birds www.jncc.gov.uk/PDF/waca1981_schedule1.pdf
- Animals www.jncc.gov.uk/page-1815
- Plants www.jncc.gov.uk/page-1816

There are no licensing functions within the Wildlife and Countryside Act for development activities which may affect a species protected under The Wildlife and Countryside Act 1981 (as amended) and works need to proceed following good practice and if appropriate rely on the 'incidental result of an otherwise lawful operation defence'. However, with regards to the water vole, where translocation of animals is proposed, Natural England does not feel this could be considered the incidental result of other activities and so would not be covered by the defence in the legislation. If there is no alternative to translocation, Natural England may be able to issue a licence to trap and translocate the water voles for the purpose of conservation.

The Countryside and Rights of Way Act 2000

The Wildlife and Countryside Act 1981 was amended by the Countryside and Rights of Way Act (CRoW Act) in 2000. The CRoW Act strengthened the protection afforded to species listed within the Schedules of the Wildlife and Countryside Act by adding 'reckless' to several of the offences and increased the penalties for wildlife offences.

In addition, Section 74 of the CRoW Act introduced a new duty on Government Ministers and Department to further the conservation of biodiversity for habitats and species of principal importance. This was superseded by Sections 40 and 41 of the Natural Environment and Rural Communities (NERC) Act of 2006. Section 40 provides that every public authority must, in exercising its functions, have regard to the purpose of conserving biodiversity. Details of the lists of habitats and species provided for at Section 41 of the NERC act can be found at www.ukbap-reporting.org.uk/news/details.asp?X=45. The ODPM Circular 06/2005 (Circular06/2005) place a clear responsibility on Local Planning Authorities to further the conservation of habitats and species of principal importance where a planning proposal may adversely affect them.

Full details of the legislation contained within the Countryside and Rights of Way Act can be found at www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_1.

The Protection of Badgers Act 1992

The legislation affording protection to badgers is primarily concerned with animal welfare and the need to protect badgers from activities such as baiting and deliberate harm. The Protection of Badgers Act 1992 makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- To intentionally or recklessly interfere with a sett (this includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it).

As with The Wildlife and Countryside Act 1981 (as amended), there are several defences to prosecution in the legislation and the text should be consulted for details of these. Penalties

for offences include fines up to £5,000, plus up to six months imprisonment for each illegal sett interference, or badger death or injury.

Full Details of the legislation can be found at
www.opsi.gov.uk/ACTS/acts1992/ukpga_19920051_en_1.

Conservation of Habitats and Species Regulations 2010 (SI 2010/490) came into force (the "2010 Regulations").

From 1st April 2010, these are now the principal means by which the Habitats Directive is transposed in England and Wales. This updates and consolidates all the amendments to the Regulations since they were first made in 1994.

The 2010 Regulations implement the European Habitats Directive into national legislation. Details of those species (often referred to as European protected species or EPS) which receive protection under these regulations can be found in Schedule 2 of the 2010 Regulations.

Full details of the legislation can be found at
http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1

The Regulations state that:

Part 3 - 41.—
(1) A person who:
(a) deliberately captures, injures or kills any wild animal of a European protected species,
(b) deliberately disturbs wild animals of any such species,
(c) deliberately takes or destroys the eggs of such an animal, or
(d) damages or destroys a breeding site or resting place of such an animal,

is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely:

(a) to impair their ability:

(i) to survive, to breed or reproduce, or to rear or nurture their young, or
(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate;

Or

(b) to affect significantly the local distribution or abundance of the species to which they belong.

(3) It is an offence for any person:
(a) to be in possession of, or to control,
(b) to transport,
(c) to sell or exchange, or
(d) to offer for sale or exchange, anything to which this paragraph applies.

(4) Paragraph (3) applies to—
(a) any live or dead animal or part of an animal—
(i) which has been taken from the wild, and

(ii) which is of a species or subspecies listed in Annex IV(a) to the Habitats Directive; and

(b) anything derived from such an animal or any part of such an animal.

(5) Paragraphs (1) and (3) apply regardless of the stage of the life of the animal in question.

(6) Unless the contrary is shown, in any proceedings for an offence under paragraph (1) the animal in question is presumed to have been a wild animal.

(7) In any proceedings for an offence under paragraph (3), where it is alleged that an animal or a part of an animal was taken from the wild, it is presumed, unless the contrary is shown, that that animal or part of an animal was taken from the wild.

(8) A person guilty of an offence under this regulation is liable on summary conviction to imprisonment for a term not exceeding six months or to a fine not exceeding level 5 on the standard scale, or to both.

(9) Guidance as to the application of the offences in paragraph (1)(b) or (d) in relation to particular species of animals or particular activities may be published by—

(a) the appropriate authority; or

(b) the appropriate nature conservation body, with the approval of the appropriate authority.

(10) In proceedings for an offence under paragraph (1)(b) or (d), a court must take into account any relevant guidance published under paragraph (9).

(11) In deciding upon the sentence for a person convicted of an offence under paragraph (1)(d), the court must in particular have regard to whether that person could reasonably have avoided the damage to or destruction of the breeding site or resting place concerned.

Licences may be obtained to permit activities that would otherwise be unlawful, but they can only be granted for certain purposes. Those purposes include that of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment (Regulation 42(10). It is the imperative reasons of overriding public interest element of this that is relied upon by those seeking to carry out development where those activities affect a European protected species or their places used for shelter or protection. Even where that purpose is met, however a licence may only granted where:

- There is “no satisfactory alternative”; and
- The action authorised “will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”

Natural England issues licences for this purposes under Regulation 44(2)(e).

It is not the responsibility of Natural England staff to decide when a licence is required/recommended. This decision is down to the proposer of the operation who should consider whether, on balance and usually with the assistance of an ecological consultant, the operation would be reasonably likely to result in the commission of an offence under these Regulations. This view should be formed in the light of survey information and specialist knowledge. A licence simply permits an action that is otherwise unlawful. A licence should be applied for if, on the basis of survey information and specialist knowledge, it is considered that the proposed activity is reasonably likely to result in an offence (killing, breeding site destruction, etc – see above).

It should be noted that the protection afforded to species under the UK and EU legislation referred to here is in addition to that provided by the planning system and the applicant must ensure that any activity they undertake on the application site (regardless of whether or not planning permission has been obtained) complies with the appropriate wildlife legislation. Failure to do so may result in fines and, potentially, a custodial sentence.

Biodiversity Action Plans

Biodiversity Action Plans (BAPS) set out actions for the conservation and enhancement of biological diversity at various spatial scales. They consist of both Habitat Action Plans (HAPs) and Species Action Plans (SAPs).

The UK BAP was the UK's response to the 1992 Convention on Biological Diversity in Rio de Janeiro. Following a review in 2007 a list of 1149 priority species and 65 priority habitats has been adopted, which are given a statutory basis for planning consideration under Section 40 of the NERC Act 2006.

The UK Post-2010 Biodiversity Framework was published on 17 July 2012. It covers the period from 2011 to 2020, and was developed in response to two main drivers: the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020 and its 5 strategic goals and 20 'Aichi Biodiversity Targets', published in October 2010; and the EU Biodiversity Strategy (EUBS), released in May 2011. http://jncc.defra.gov.uk/page-6189

Further information about Kent BAP can be found here: http://www.kentbap.org.uk/habitats-and-species/priority-species/

Red Data Books

British Red Data Books (RDB) are an additional method for classifying the rarity of species, and are often seen as a natural progression from Biodiversity Action Plans.

RDB species have no automatic legal protection (unless they are protected under any of the legislation previously mentioned). Instead they provide a means of assessing rarity and highlight areas where resources may be targeted. Various categories of RDB species are recorded, based on the IUCN criteria and the UK national criteria based on presence within certain numbers of 10x10km grid-squares (see http://www.jncc.gov.uk/page-3425). As with Biodiversity Action Plans, where possible, steps should be taken to conserve RDB species which are to be affected by development.

Appendix B – Plates

IMG_8992

IMG_8993

IMG_8994

IMG_8995

IMG_8996

IMG_8997

IMG_8998

IMG_9002

IMG_9003

IMG_9004

IMG_9005

IMG_9006

IMG_9007

IMG_9008

IMG_9009

IMG_9010

IMG_9011

IMG_9012

IMG_9013

IMG_9014

IMG_9016

IMG_9017

IMG_9018

IMG_9019

IMG_9020

IMG_9021

IMG_9022

IMG_9023

IMG_9024

IMG_9025

IMG_9026

IMG_9027

IMG_9028

IMG_9029

IMG_9030

IMG_9031

IMG_9032

IMG_9033

IMG_9034

IMG_9035

IMG_9037

IMG_9038

IMG_9039

IMG_9040

IMG_9041

Appendix C - Bats and Lighting in the UK

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.