



Bat Survey - Emergence and Activity Surveys

Boarman's Farm, Boarman's Lane, Brookland, Romney Marsh, Kent TN29 9TS

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Executive summary

Arbtech Consulting Ltd. undertook a suite of emergence/re-entrance surveys on Barn at Boarmans Farm, Boarmans Lane, Brookland, Romney Marsh, Kent TN29 9TS on 13th Jun 2017.

The aim of the assessment was to confirm the presence/likely-absence of a bat roost and to provide an assessment of the current status on all survey features.

This includes providing evidence for species, numbers and levels of activity, to identify any entrance and egress points, and to gain an understanding of the activity of bats using the site in the local landscape

The development proposals are for a currently undecided planning application with Shepway District Council, described below:

- Erection of a replacement dwelling house, following demolition of barn and dwelling [Y16/0209/SH]

Recommendations

Survey feature	Recommendation
B1	In the unlikely event that bats are unexpectedly found during any stage of the development, work should stop immediately and a suitably qualified ecologist should be contacted to seek further advice. • Lighting will be controlled across the developed site. Research into the effects of artificial lighting on bats has shown that it can impact upon bat emergence times and lead to a reduced foraging time. As bats are faithful to their roost sites, often returning to the same site for many years, the impact of lighting on emergence times and in turn reduced foraging times can ultimately result in the roosts being abandoned. • Key areas of the site which are sensitive to artificial lighting are the site boundaries which consist of hedgerows and tree lines providing foraging and commuting routes for bats, and the dark farmyard between the buildings and road. • The lighting on the developed site will be limited to the new building only. No lighting will be installed within the hedge or farmyard area, thereby maintaining the existing dark areas within the developed site for bats. • Low impact lighting strategies will be adopted from the guidance outlined in the Bat Conservation Trust “Bats and Lighting” publications: http://www.bats.org.uk/pages/bats_and_lighting.html • The lighting on the site will:

	- Use narrow spectrum light sources to lower the range of species affected by lighting - Use light sources that emit minimal ultra-violet light - Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin. - Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be positioned below the eaves, be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats), and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available. All of the above will ensure that the replacement bat roosts within the developed site will not be affected by any external lighting ensuring their long term use.
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For full justification of these recommendations, please go straight to section [4.0 Conclusions, Impacts and Recommendations](#). Otherwise, the full report starts below.

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1.0 Introduction and Context

1.1 Background

Arbtech were commissioned by Client Name to undertake an emergence/re-entrancesurvey at Barn at Boarmans Farm, Boarmans Lane, Brookland, Romney Marsh, Kent TN29 9TS. The assessment is informed by the Bat Conservation Trust Publication *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, J. (Ed.) 2016).

This survey was completed following recommendations made in the Preliminary Roost Assessment Survey report (Arbtech Consulting Ltd. April 2016).

1.2 Site Context

The site is located at National Grid Reference TQ 9995 2601. There is one affected survey building, B1.

➤ B1 – Timber barn

Building description

B1 is a dilapidated timber framed barn. It is clad in weatherboarding, which are mainly intact where they can be observed. However, most of the building's roof and walls is obscured from view by ivy, vines and surrounding trees. This may shield broken weatherboarding (of bat roosting potential) from view. A timber post porch area at the front of the building has a sloping roof of corrugated asbestos. This too is covered in ivy, and nettles grow in the grooves where decaying biomass has provided a substrate. Another small timber shed area can be found to the south-east of the main barn. This has an asbestos board roof and lacks soffits.

The interior of the barn is full of storage items, in-growing ivy and cobwebs. A sloped timber ladder leads to a small upper section. From the inside, it can be seen the main roof is formed of corrugated and board asbestos, which appears generally intact.

Bat evidence found on site

No bat evidence (droppings, staining, feeding remains etc.) was found inside the building or externally. It is therefore unlikely that bats are roosting internally within the building. However, the mass of ivy across the roof and walls provide small crevices and gaps that bats may use for roosting within the active season. These cannot be discounted at this stage.

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1.3 Scope of the report

This report provides a description of the bat activity observed and recorded during the survey. The aim of the assessment was to confirm and/or characterise any roosts present including species, numbers and access points, roosting locations, timing of use and type of roost, and to gain an understanding of how bats use the site.

Robust data has been collected, following good practice guidelines, to inform an assessment of the potential impacts of the proposed development on bats, and inform mitigation and enhancement. This report provides information on constraints to the proposals as a result of roosting bats, and summarises any mitigation required to achieve planning permission, and statutory consent to comply with wildlife legislation.

To achieve the aims of the assessment, the following steps have been taken:

- A desk study has been carried out, including a request for information from the local records centre.
- A field survey has been undertaken, including an external survey and internal inspection.
- An outline of likely impacts on any known roosts has been provided, based on current development proposals.
- Recommendations for further survey and assessment have been made, along with advice on European Protected Species Mitigation Licensing if appropriate.

A survey plan is presented in Appendix 1 showing the location of each surveyor and the bat activity observed and recorded during each survey, the proposed plan is included in Appendix 2 (where available), desk study results are provided in Appendix 3, and a summary of relevant legislation can be found in the Appendix 4.

1.4 Project Description

The development proposals are for a currently undecided planning application with Shepway District Council, described below:

- Erection of a replacement dwelling house, following demolition of barn and dwelling [Y16/0209/SH]

The proposed site plan is included in Appendix 2 (where available).

2.0 Methodology

2.1 Desk Study

Existing bat records relating to the site and a surrounding 2km radius (the study area) are required to conform to national guidelines and these have been requested from the Kent and Medway Biological Records Centre (KMBRC).

A review of the landscape structure using aerial images from Google Earth and OS maps, and designated sites, habitat and granted EPSL records held on Magic.gov.uk was also completed to inform these surveys:

2.1.1 Desk Study Results

A summary of desk study results are provided below, more details are included in Appendix 3.

2.1.2 Designated sites

Table 1 provides details of any designated sites including their reasons for notification. Any relevant locations and extents are illustrated in Appendix 3.

Table 1: Designated sites within 2km radius of the site

Designated Site Name	Distance from Site (approx.)	Reasons for Notification from Natural England and/or BRD or LPA policy maps
Statutory Sites		
Dungeness, Romney Marsh and Rye Bay SSSI	1.9km south-west	Site of special scientific interest.
Non-statutory Sites		
None known	-	-

2.1.3 Landscape

A review of the designated sites, aerial photographs (Figure 1), the Magic database and OS maps has been undertaken. Collated together, the site's local habitat is described below:

- The site is situated in rural south-eastern Kent, is a small farm, with scattered trees and small pasture fields lined with hedges. Surrounding this are large arable fields with only intermittent hedgerows along boundaries. This might make bat commuting difficult, however a hedge-lined railway line passes ~50m to the east of the survey site and will provide a good commuting and foraging resource. A small stream passes the buildings on site, and many others as well as irrigation ditches are located around nearby fields. These could provide foraging resources for bats. There is no nearby woodland, which reduces the landscapes habitat value slightly

Priority habitats within 2km of the site are listed in Table 2.

Table 2: Priority Habitat Inventory within 2km (Magic.gov.uk):

Habitat	Closest distance from site
Coastal and Floodplain Grazing Marsh	~700m north-west
Reedbeds	~1130m south



Figure 1: Aerial photo of site

2.1.4 Historical records

- The local biological records centre (KMBRC) has been commissioned to provide biological records data for a 2km radius of the site. These are summarised in Table 3 below:

Table 3: Historical records within 2km of the site

Common name	Scientific binomial	Roosting record(s)?
Serotine Bat	<i>Eptesicus serotinus</i>	Yes
Daubenton's Bat	<i>Myotis daubentonii</i>	No
Noctule Bat	<i>Nyctalus noctula</i>	No
Pipistrelle Bat (45kHz)	<i>Pipistrellus pipistrellus</i>	Yes
Pipistrelle Bat (55kHz)	<i>Pipistrellus pygmaeus</i>	No
Long-eared Bat Brown	<i>Plecotus auritus</i>	Yes

A search was undertaken of the Magic database for granted European Protected Species Mitigation Licences (EPSMLs) within a 2km radius. The results of this is provided in Table 4 below.

Table 4: Granted EPSMLs within 2km of the site

Case reference of granted application	Approx. distance from site	Species Effected	Licence Start Date:	Licence End Date:	Impacts allowed by licence
None within 2km					

2.2 Site Survey methodology

The survey methods were informed by the Preliminary Roost Assessment Survey completed by Arbtech Consulting Ltd (April 2016). This survey identified the following survey requirements in line with best practice:

B1: Suspected bat roost of low value – one roost presence/likely-absence surveys required.

The surveys involved surveyors positioned around the building ensuring that all elevations and roof sections could be clearly observed. Particular attention was paid to the areas of the building identified as providing suitable access points to bat roosts. The location of each surveyor during each survey is shown in Appendix 1. Each surveyor was assigned an area of the building to observe for the duration of the survey. Surveyors used Heterodyne and Frequency Division bat detectors, and Wildlife Acoustics EM3+ and Echo Meter Touch detectors connected to iPads. Bat echolocation calls recorded during the surveys were analysed using Wildlife Acoustics sound analysis software Kaleidoscope V3.1.7 when required. That is, the Echo Meter Touch includes an Auto ID bat species, however this is not 100% accurate and further post-survey sound analysis is often required to confirm species misidentified by the Auto ID software during the survey. Surveyors also used survey record sheets, pens/pencils, head torches for recording all activity observed during the surveys including foraging and commuting behaviour as well as emergence/re-entries by bats. Surveyors equipped with night vision binoculars and/or thermal imaging equipment are identified by “NV” or “ThIm” in Table 7. All surveyors had hand held radios for communication between surveyors to assist with confirming obscure bat activity e.g. a bat emergence or a bat passing over the building.

In accordance with the latest bat survey guidelines (Collins, J. 2016) dusk emergence surveys commenced 15 minutes before sunset and continued for 1½ - 2 hours after sunset – depending upon bat activity and surveyor visibility. Dawn re-entry surveys commenced 2-1½ hours before sunrise and continued until 15 minutes after sunrise.

Surveys were completed during optimal weather conditions i.e. when temperatures were above 10°C, with no rain or strong winds, as these environmental variables can impact upon bat emergence and foraging behaviour.

2.3 Surveyors

The lead surveyor is Craig Williams MSc MRSB GradCIEEM [2015-11169-CLS-CLS] and was assisted by two other surveyors for the visit, all with several years of bat survey experience.

Three surveyors were used to provide sufficient cover of the building during the survey.

The designated position of each surveyor during each survey is detailed in the tables in Section 3.6 below, and shown on the plan in Appendix 1.

2.4 Survey Timings and Weather Conditions

The dates and times of each survey are presented in Table 5, along with sunset/sunrise times as applicable and the weather conditions at the start and end of each survey.

Table 5: Survey schedule and weather conditions

Emergence and Activity Bat Surveys

Reference	Survey date	Survey Start and End Times Sunset/sunrise time	Weather Conditions Start	Weather Conditions END
B1	13/06/17	Sunset: 21:11 20:56– 22:41	Temp: 15°C Humidity: 73% Cloud Cover: 10% Wind: 2m/s Rain: None	Temp: 14°C Humidity: 74% Cloud Cover: 30% Wind: 2m/s Rain: None

2.5 Limitations – evaluation of the methodology

This survey follows best practice guidance to confirm presence/absence of roosting bats and where present, characterise the roost. However, this information is collected at finite dates and times, and provides an indication of the conditions on site only. The use of the building/structure/tree, and the site as a whole by bats, at all times cannot be established based on this information.

The survey was visually limited by the foliage across and around the subject building. This is discussed in the conclusions of this report.

3.0 Results and Evaluation

3.6 Survey Results

The results of the survey are provided in the table below.

Table 6.1: Survey results – Dusk Emergence Survey

Date		13/06/17
Start and End Times		Sunset: 21:11 20:56– 22:41
Surveyor (position) As shown in Appendix 1		Craig Williams - Natural England Bat Licence Number: 2015-11169-CLS-CLS: Position 1 – looking east at B1 Mark Taroni - 2 years' experience of conducting these types of surveys Position 2 – looking north-west at B1 Hannah Grimsdale - 2 years' experience of conducting these types of surveys: Position 2 – looking south-east at B1
Building/Tree Reference	Surveyor Position	Notes/observations:
B1	1	Common pipistrelles were observed to fly in the farm yard to the south and east of B1 starting at 21:31 and again at 21:32, 21:51 to 21:54, 21:55, 21:59 to 22:05, 21:14, 21:16 and 22:34. Soprano pipistrelles were also heard and seen to fly around the site at 21:37, 21:38, 21:39, 21:40, 21:56, 22:07 and 21:16.
B1	2	Common pipistrelles were observed to fly in the lawn to the south of B1, in the hedge and circling a small duckpond at 21:30, 21:38, 21:39, 21:40, 21:44, 21:56, 21:59, 22:10 and 22:14. Soprano pipistrelles were observed at 21:51 and 22:00.
B1	3	Common pipistrelles were observed to fly up and down the hedgerow and in the field to the east of B1 at 21:58, 22:00, 22:04, 22:07, 22:10, 22:11, 22:14 and 22:28. Soprano pipistrelles were heard at 21:40 and 21:48.

4.0 Conclusions, Impacts and Recommendations

4.1 Informative guidelines

The surveys undertaken to date in and around B1 provide sufficient information to inform a European Protected Species Mitigation Licence (EPSML). An EPSML will be required to enable the proposed works to be lawfully undertaken, whilst ensuring the favourable conservation status of the species concerned in their natural range; detailed mitigation will be described in the EPSML Method Statement.

Natural England's European Protected Species Guidance: How to get a licence states:

"In order to obtain a licence to allow for the capture of EPS, damage or destruction of breeding sites, etc., in advance of any otherwise legitimate activity which may impact on the favourable conservation status of the EPS concerned, you ... must demonstrate that the damage will be adequately compensated for to satisfy Regulation 53(9)(b)"..... "Current Natural England advice is that there should be no net loss in the local population status of the species concerned, taking into account factors such as population size, viability and connectivity. Hence, when it is unavoidable that an activity will affect an EPS population, the mitigation should aim to maintain a population of equivalent status on or near the original site."

Appropriate justification for this assessment is provided in Section 3 and Tables 1 and 2 of this report.

4.2 Evaluation

Taking the desk based assessment and site survey results into account, the following recommendations are reached for each site survey feature.

Table 7: Evaluation of buildings/trees/structures on site

Ref	Survey assessment conclusions (Type of bat roost present)	Foreseen impacts	Recommendations / Mitigation	Enhancements
B1	No roost confirmed	No bat roost confirmed in B1. Although the foliage around the barn mean a direct view of the fabric of the building could not be achieved, the lack of bat flight or investigation near the barn paired with a total lack of bat evidence found over this and the two preliminary visits mean that a conclusion of likely absence is reached. Bats are very unlikely to be roosting within B1 and as such, there are not anticipated to be any impacts on	In the unlikely event that bats are unexpectedly found during any stage of the development, work should stop immediately and a suitably qualified ecologist should be contacted to seek further advice. - Lighting will be controlled across the developed site. Research into the effects of artificial lighting on bats has shown that it can impact upon bat emergence times and lead to a reduced foraging time. As bats are faithful to their roost sites, often returning to the same site for many years, the impact of lighting on emergence times and in turn reduced foraging times can ultimately result in the roosts being abandoned. - Key areas of the site which are sensitive to artificial lighting are the site boundaries which consist of hedgerows and tree lines providing foraging and commuting routes for bats, and the dark farmyard between the buildings and road. - The lighting on the developed site will be limited to the new building only. No lighting will be installed within the hedge or farmyard area, thereby maintaining the existing dark areas within the developed site for bats.	The Local Planning Authority has a duty to ask for enhancements under the NPPF and circular 06/2005: Biodiversity and Geological Conservation. Para.99 The developed site can be enhanced for the bat species observed to be foraging and commuting across the site during the surveys by installing of a minimum of 3x Schwegler 2FR bat tubes within the new brick walls, and 2x 2F Schwegler bat boxes on mature trees around the site boundaries. Bat boxes should be positioned 3-5m above ground level facing in a south/south-westerly direction with a clear flight path to and from the entrance.

		roosting bats as a result of the proposed works. Bats were observed to use the farmyard for commuting and foraging however, and any increased light spill could disrupt them.	• Low impact lighting strategies will be adopted from the guidance outlined in the Bat Conservation Trust “Bats and Lighting” publications: http://www.bats.org.uk/pages/bats_and_lighting.html • The lighting on the site will: - Use narrow spectrum light sources to lower the range of species affected by lighting - Use light sources that emit minimal ultra-violet light - Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue short wave length content they should be of a warm / neutral colour temperature <4,200 kelvin. - Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be positioned below the eaves, be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats), and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be ‘dimmable’ and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available. All of the above will ensure that the replacement bat roosts within the developed site will not be affected by any external lighting ensuring their long term use.	Bat boxes should also be positioned away from any artificial light sources.
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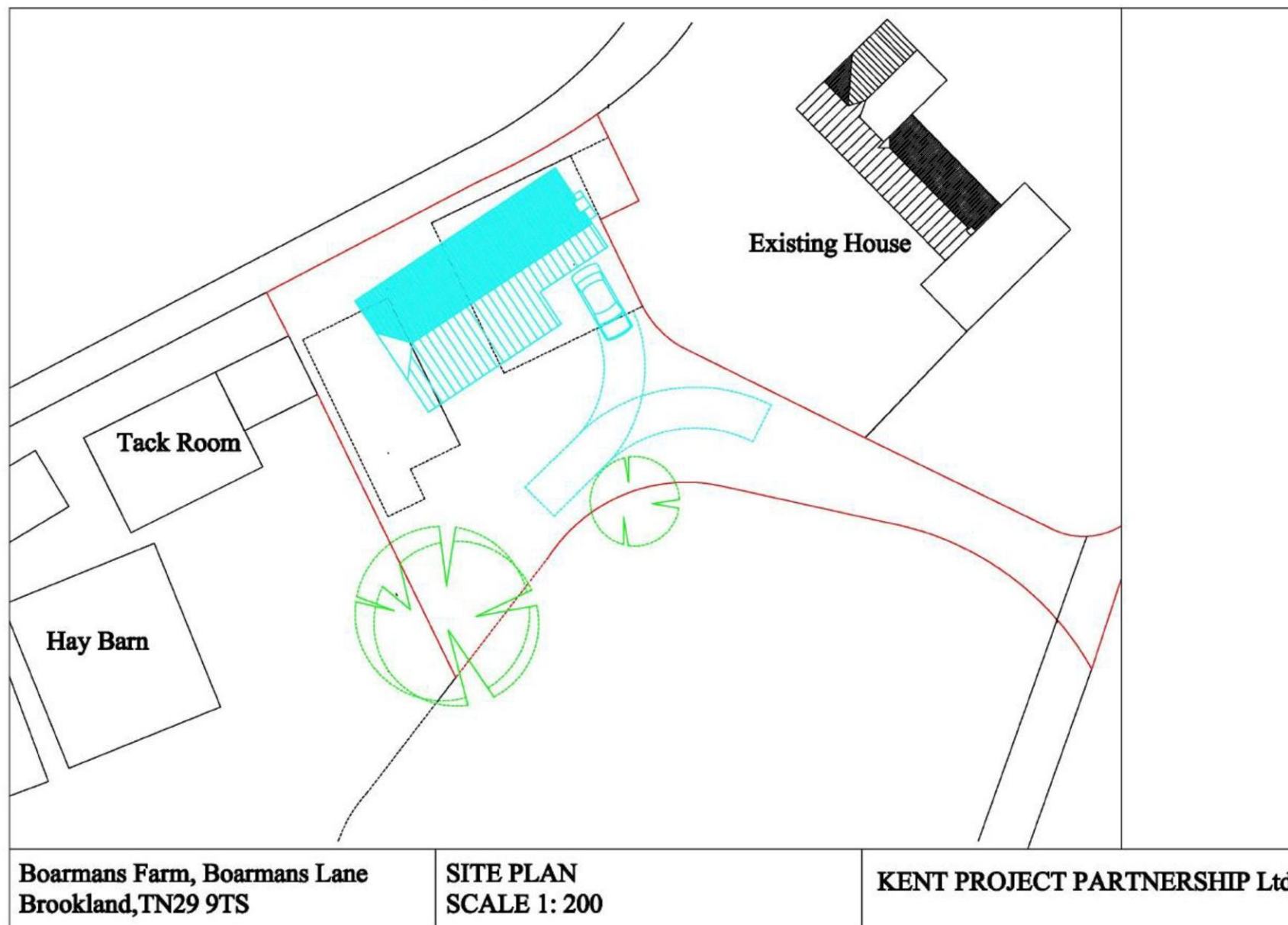
5.0 Bibliography

- Collins, J. (ed.) (2012). Bat Surveys for Professional Ecologists —Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London.
- Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected?
- Google Earth (2017)
- Magic database (2017) <http://www.magic.gov.uk/MagicMap.aspx>
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.

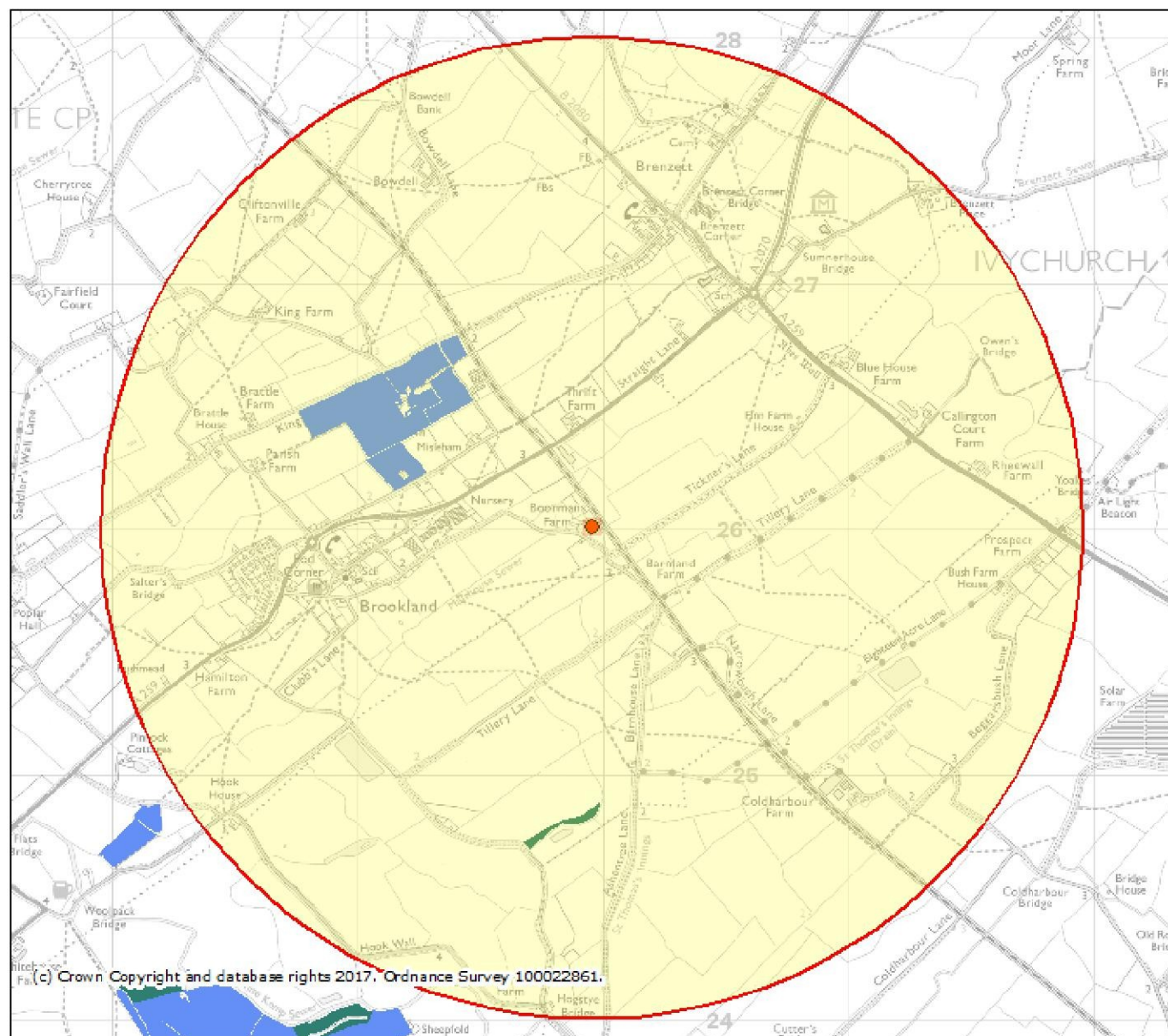
Appendix 1: Survey Plan



Appendix 2: Proposed Site Plan



Appendix 3: Desk study information



Legend

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

Projection = OSGB36

xmin = 593900

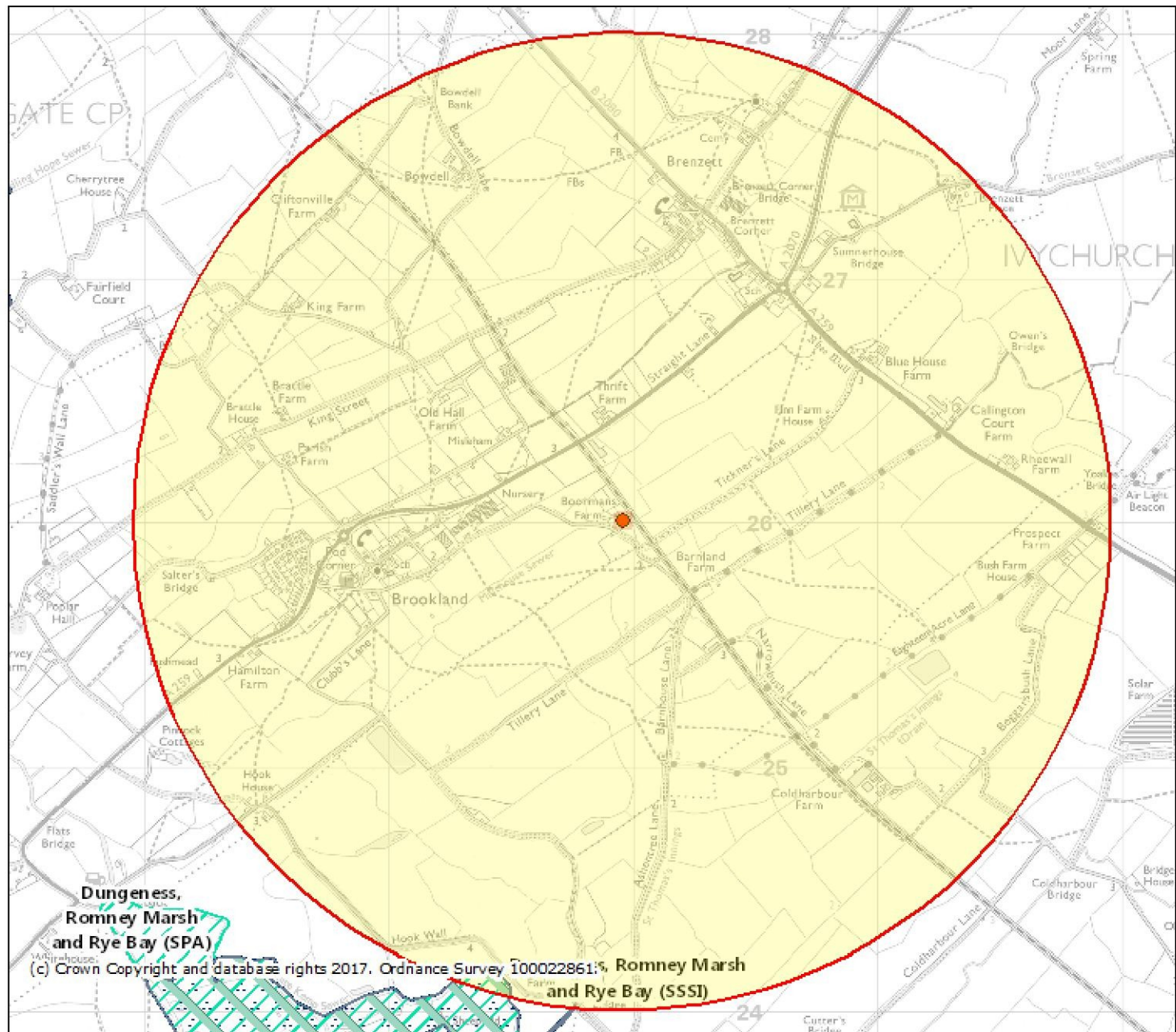
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ymax = 129000

Map produced by MAGIC on 14 June, 2017.

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Legend

-  Ramsar Sites (England)
-  Sites of Special Scientific Interest (England)
-  Special Protection Areas (England)

Projection = OSGB36

xmin = 593700

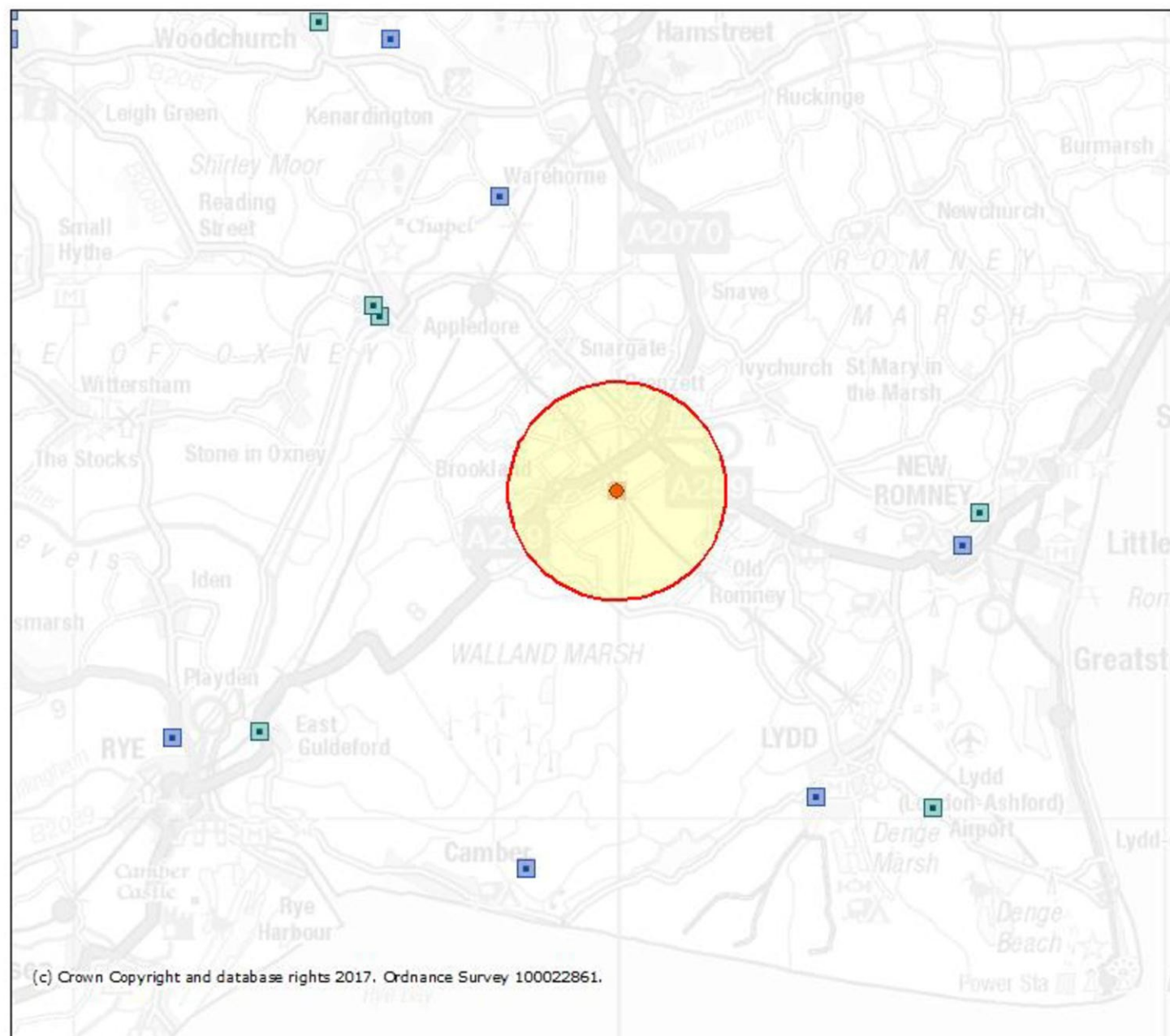
ymin = 123000

xmax = 605900

ymax = 129000

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Legend

Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile

Projection = OSGB36

xmin = 572100

ymin = 111800

xmax = 627000

ymax = 138900

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Appendix 4: Legislation and Planning Policy related to bats

LEGAL PROTECTION

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2.

Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young
 - (ii) to hibernate or migrate
 - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place

Bats are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

Effect on development works:

A European Protected Species Mitigation (EPSM) Licence issued by the relevant statutory authority (e.g. Natural England) will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored.

The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008)

NATIONAL PLANNING POLICY (ENGLAND)*National Planning Policy Framework*

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as UK Biodiversity Action Plan priority species) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act, 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity.' This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.