



**Barratt Homes**

**Land at Havant Road, Emsworth**

**Bat Activity Survey**

**July 2016**

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## Executive Summary

| Contents                                        | Summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site location</b>                            | The site comprises approximately 6.23 hectares, located to the east of Havant in Hampshire, centred on Ordnance Survey grid reference SU 734 062. The site is bordered to the north west by the A27, residential development to the east and to the south by the A259.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Previous Reports/Surveys</b>                 | An extended Phase 1 habitat survey was completed at the site on 1 <sup>st</sup> July 2014. The survey identified habitat on site considered to be of low suitability for foraging and commuting bats.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>WYG Survey</b>                               | In accordance with the Bat Conservation Trust (Hundt, 2012) guidelines, bat activity surveys are recommended to be carried out along one transect on a seasonal basis. However, due to the timescales of the projects it was agreed with the LPA ecologist that bat activity surveys could be completed on three occasions between August and September 2014 which was agreed verbally with the LPA ecologist.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Survey Results</b>                           | Up to six species of bat were recorded using the habitats across the site. The species recorded include common pipistrelle, soprano pipistrelle, serotine, noctule a bat of the <i>Myotis</i> genus (likely whiskered / Brandt's).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Further Recommendations &amp; Mitigation</b> | <p>Results of the survey will remain valid for 2 years (i.e. until September 2016). If planning submission has not taken place by this time, it is recommended that the requirement for an update survey is considered to determine whether there have been any changes in bat activity across the site.</p> <p>The existing young tree plantation along the north western boundary of the site will be retained with a grassland buffer comprising 7-10m separating the trees from the development. Five Schwegler 2F bat boxes will be installed on existing trees on site (see WYG, 2016 Extended Phase 1 Habitat Assessment).</p> <p>To help maintain the favourable conservation status of bats on site the following measures will be incorporated within the masterplan and construction phase:</p> <ul style="list-style-type: none"> <li>• Construction activity during the summer will cease at sunset to avoid impacts to bats during the construction phase; and</li> <li>• Lighting across the development will be designed to reduce impacts on bat foraging and commuting habitat during the operational phase;</li> </ul> |
| <b>Enhancement</b>                              | <ul style="list-style-type: none"> <li>• Planting species of value to foraging and commuting bats will be incorporated into the landscape plan;</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |



## 1.0 Introduction

### 1.1 Background

WYG was commissioned by Barratt Homes to complete bat activity surveys to inform proposed development at Land at Havant Road, Emsworth (hereafter referred to as 'the site'). This follows an extended Phase 1 habitat survey completed by WYG on 1<sup>st</sup> July 2014, which identified the potential for bats to use the habitat on site for foraging and commuting.

Bat activity surveys were recommended based on:

- The occurrence of bat records in the local area;
- The presence of suitable foraging and commuting habitat on site and in the surrounding landscape (hedgerows, grassland etc); and
- Potential direct/indirect impacts to some of these habitats as a result of the development proposals.

The current report details the findings of bat activity surveys and recommends, where necessary, measures to avoid, minimise and offset the potential impacts to commuting and foraging bats as a result of the proposed development. This report will provide information to inform a planning application for the site.

### 1.2 Site Location and General Description

The site covers approximately 6.23 hectares, located to the east of Havant in Hampshire, centred on Ordnance Survey grid reference SU734062. The site is bordered to the North West by the A27, residential development to the east and to the south by the A259. The site comprises very short, cattle grazed improved grassland, areas of bare ground, scattered scrub and trees, bramble and defunct hedgerows. Along the north western boundary adjacent to the A27 is young tree belt plantation mainly comprising field maple and hawthorn. The eastern boundary comprises back garden fencing with planted shrubs with scrub and tall ruderal becoming established. To the south of the site is a hedgerow adjacent to the footway of the A259 comprising mainly sycamore. Scrub dominates the north eastern extent of the site and two defunct hedgerows run north to south separating the fields from one another.



### 1.3 Development Proposals

It is proposed to develop the site for approximately 192 residential properties, with associated parking, access, landscaping, and surface water drainage, pumping station and sub station. An area of open space will be retained within the north east of the site which will be managed as tall grassland with scattered trees, there will also be public open space within the south east corner of the site.

### 1.4 Planning Guidance: Natural England's Standing Advice

The National Planning Policy Framework (NPPF) sets out the principles to which Local Planning Authorities (LPAs) should adhere to when considering planning applications. These include:

- *Planning decisions should be based upon up-to-date information about the environmental characteristics of their areas. These characteristics should include the relevant biodiversity and geological resources of the area. In reviewing environmental characteristics local authorities should assess the potential to sustain and enhance those resources.*
- *Planning decisions should aim to maintain, and enhance, restore or add to biodiversity and geological conservation interests. In taking decisions, local planning authorities should ensure that appropriate weight is attached to...protected species; and to biodiversity and geological interests within the wider environment.*
- *The aim of planning decisions should be to prevent harm to biodiversity and geological conservation interests. Where granting planning permission would result in significant harm to those interests, local planning authorities will need to be satisfied that the development cannot reasonably be located on any alternative sites that would result in less or no harm. In the absence of any such alternatives, local planning authorities should ensure that, before planning permission is granted, adequate mitigation measures are put in place. Where a planning decision would result in significant harm to biodiversity and geological interests which cannot be prevented or adequately mitigated against, appropriate compensation measures should be sought. If that significant harm cannot be prevented, adequately mitigated against, or compensated for, then planning permission should be refused.*

The NPPF also provides the following advice:



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*It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by the development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and/or planning obligations, before the permission is granted.*

Natural England's standing advice to LPAs follows the principles and advice set out in the NPPF. Where there is a reasonable likelihood that a protected species being present, sufficient information (in the form of species surveys) should be undertaken before the planning application is considered.

The UK Post-2010 Biodiversity Framework was published on 17 July 2012. However, many of the tools developed under the UK BAP remain of use; including the lists of priority habitats and species. In terms of national conservation policy, seven of the 18 British species of bat are Priority Species covered by Biodiversity Action Plans (BAPs) of which, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), barbastelle (*Barbastella barbastellus*), Bechstein's (*Myotis bechsteinii*) and brown long-eared bats (*Plecotus auritus*) might be expected to be found on/in proximity to the site. These BAPs highlight the importance of certain habitats to species, detail the threats they face and propose measures to aid in the reversal of declines.

The effects of development proposals should be considered when assessing the impact of the maintenance of favorable conservation status of local bat populations, especially those mentioned on the BAP. The presence of BAP species is a material consideration in determining a planning application and it is therefore appropriate for the LPA to ensure that these species are not adversely affected by development.

Barbastelle, serotine (*Eptesicus serotinus*), Bechstein's, soprano pipistrelle and greater horseshoe (*Rhinolophus ferrumequinum*) bats are listed on the Hampshire BAP. The Hampshire BAP species are of material consideration in the determination of the planning application.



## 1.5 Legislative Considerations

All 18 British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and under Schedule 2 of the *Conservation of Habitats and Species (Amended) Regulations 2010* as European protected species. Furthermore, the *Countryside and Rights of Way Act 2000* (Schedule 12, Paragraph 5) has amended Section 9 of the 1981 Act. They are, therefore, fully protected under Section 9 of the 1981 Act and under Regulation 41 of the *Conservation of Habitats and Species (Amended) Regulations 2010* which transposes the Habitats Directive into UK law.

This makes it an offence to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb bats, in particular where it is likely to:
  - Impair their ability to breed or reproduce, or to rear or nurture their young;
  - Impair their ability to hibernate or migrate; or
  - Affect significantly the local distribution or abundance of bats.
- Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
- Damage or destroy a bats breeding site or resting place.

Unmitigated removal of linear corridors such as sections of hedgerows and increases in habitat disturbance (through lighting, noise and vibration impacts) during construction and operational phases of a proposed development could indirectly impact bats that use the site to forage and commute.

Furthermore direct impacts to bats may occur through road traffic mortalities in the operational phase of a proposed development.



## 2.0 Methodology

### 2.1 Data Search

As part of the extended Phase 1 habitat survey completed by WYG in July 2014, site and species specific information was sourced through direct consultation with the Hampshire Biodiversity Information Centre (HBIC). HBIC provided information in relation to the presence of protected species, designated sites and areas of particular regional, national or international importance within 2 km of the site.

### 2.2 Bat Activity Survey

According to the guidance set out in the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines, 2<sup>nd</sup> Edition* (Hundt, 2012), the site is a medium-sized site (site area 1 - 15ha) and the habitat on site is considered to be of 'low habitat quality'. Based on this, one transect completed along with one automated bat detector left out on a seasonal basis (spring, summer and autumn) was recommended. Based on this, one transect completed on a seasonal basis (spring, summer and autumn) is recommended. The bat activity surveys and automated bat surveys were undertaken between August and September as agreed with the LPA ecologist. Although a bat activity survey was not undertaken in the spring, additional data was collected during the autumn and therefore this is not considered to represent a significant limitation. All surveys were completed when weather conditions were suitable (i.e. not during heavy rain, low temperatures or strong winds) as recommended within the BCT guidance (Hundt, 2012).

Activity surveys were subsequently carried out at all compartments of the site on 20<sup>th</sup> August, 3<sup>rd</sup> September and 24<sup>th</sup> September 2014. Two surveyors were used for each survey, walking one transect route, which incorporated all areas of the site.

Dusk surveys commenced 15 minutes prior to sunset and concluded approximately two and quarter hours after sunset. Weather conditions (temperature, precipitation and wind speed) were recorded on each survey.

The surveyors made a note of bat activity, using both visual observation and audio bat detectors, to identify foraging and / or commuting behaviour. Surveyors recorded the time and description of any activity. Additionally, where bats could be seen, the patterns / directions of the bats' flight were also recorded. Surveyors were all qualified ecologists and experienced at conducting bat surveys. All surveyors used a Batbox Duet (frequency division and heterodyne), or an Elekon Batlogger (time expansion) bat detector



## Land at Havant Road, Emsworth: Bat Activity Survey

and walked along the transect routes at a steady pace with listening stops. The direction in which the transect was walked varied between survey visits to record activity in different locations at different times. Surveyors also stopped in a number of places along the transect route. Any notable calls were recorded on Zoom H2 digital audio recorders and later analysed using specialist software (BatSound) on a PC. When using an Elekon Batlogger, all calls were recorded during the survey and analysed later using Bat Explorer software. The recordings and the field notes were used to help build a picture of bat use across the site and to identify areas of relatively higher use.

### 2.3 Automated bat activity surveys

In accordance with BCT (Hundt, 2012) guidelines, automatic bat detectors (Song Metre 2 and Anabat Express) were left for three nights on three occasions between August and September to record bat passes at one location along the transect. These were analysed to gain further information on the species present and relative amount of activity through the night. Locations of the transect Song Metre 2 (SM2) and Anabat Express placements are shown in Figures 4, Appendix A.

### 2.4 Value of the on-site protected species population in a wider ecological context

The assessment of the value of the bat population on site is based on the article in the Institute of Ecology and Environmental Management (IEEM) In Practice magazine – *Valuing Bats in Ecological Impact Assessment*, No. 70, December 2010 (Wray *et al.* 2010). Where bats (species and number) are found using certain habitats (to roost, commute or forage) their population is assigned a relative ecological value. The value to the species is partly based upon how well used a habitat is and also upon how rare the bat species is. In the case of commuting routes or foraging areas the number of roosts nearby is also a factor. Once the value of the bat population has been calculated, robust mitigation for any impact on the bats can be determined.

British bat species have been subdivided into groups, dependant on how common they are: common, rarer and rarest. These have been further subdivided based upon the location surveyed. Table 1 presents the rarity categorisation of bats in England. The tables in the following sections have been adapted from *Valuing Bats in Ecological Impact Assessment* (Wray *et al.* 2010).



## Land at Havant Road, Emsworth: Bat Activity Survey

**Table 1:** Categorising Bats by Distribution and Rarity in England

| Rarity | Country                                                                                                                              |
|--------|--------------------------------------------------------------------------------------------------------------------------------------|
|        | England                                                                                                                              |
| Rarest | Greater horseshoe<br>Bechstein's<br>Alcathoe<br>Greater mouse-eared<br>Barbastelle<br>Grey long-eared                                |
| Rarer  | Lesser horseshoe<br>Whiskered<br>Brandt's<br>Daubenton's<br>Natterer's<br>Leisler's<br>Noctule<br>Nathusius' pipistrelle<br>Serotine |
| Common | Common pipistrelle<br>Soprano pipistrelle<br>Brown long-eared                                                                        |

The value assigned for rarity is combined with the type of roost found to give a value for bats as an ecological receptor, as detailed in Table 2.

**Table 2:** Valuing Bat Roosts

| Geographic frame of reference | Roost types                                                                                                                                                                                                                                      |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| District, Local or Parish     | Feeding perches (common species)<br>Individual bats (common species)<br>Small numbers of non-breeding bats (common species)<br>Mating sites (common species)                                                                                     |
| County                        | Maternity sites (common species)<br>Small number of hibernating bats (common and rarer species)<br>Feeding perches (rarer/rarest species)<br>Individual bats (rarer/rarest species)<br>Small numbers of non-breeding bats (rarer/rarest species) |
| Regional                      | Mating sites (rarer/rarest species) including well-used swarming sites<br>Maternity sites (rarer species)<br>Hibernation sites (rarest species)<br>Significant hibernation sites for rarer/rarest species or all species assemblages             |



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| Geographic frame of reference | Roost types                                                                                              |
|-------------------------------|----------------------------------------------------------------------------------------------------------|
| National/UK                   | Maternity sites (rarest species)<br>Sites meeting Sites of Special Scientific Interest (SSSI) guidelines |
| International                 | Special Areas of Conservation (SAC) sites                                                                |

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together. These are detailed in Table 3 and 4.

**Table 3:** Valuing Commuting Routes

| Species     | Number of bats            | Roosts/potential roosts nearby                | Type and complexity of linear features                                                         |
|-------------|---------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------|
| Common (2)  | Individual bats (5)       | None (1)                                      | Absence of (other) linear features (1)                                                         |
| -           | -                         | Small number (3)                              | Unvegetated fences and large field sizes (2)                                                   |
| Rarer (5)   | Small number of bats (10) | Moderate number/Not known (4)                 | Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3) |
| -           | -                         | Large number of roosts or close to a SSSI (5) | Well grown and well connected hedgerows, small field sizes (4)                                 |
| Rarest (20) | Large number of bats (20) | Close to or within a SAC for the species (20) | Complex network of mature well-established hedgerows, small fields and rivers/streams (5)      |

**Table 4:** Valuing Foraging Areas

| Species    | Number of bats            | Roosts/potential roosts nearby | Foraging habitat characteristics                                                    |
|------------|---------------------------|--------------------------------|-------------------------------------------------------------------------------------|
| Common (2) | Individual bats (5)       | None (1)                       | Industrial or other site without established vegetation (1)                         |
| -          | -                         | Small number (3)               | Suburban areas or intensive arable land (2)                                         |
| Rarer (5)  | Small number of bats (10) | Moderate number/Not known (4)  | Isolated woodland patches less intensive arable and/or small towns and villages (3) |



## Land at Havant Road, Emsworth: Bat Activity Survey

| Species     | Number of bats            | Roosts/potential roosts nearby                | Foraging habitat characteristics                                                      |
|-------------|---------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------|
| -           | -                         | Large number of roosts or close to a SSSI (5) | Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4) |
| Rarest (20) | Large number of bats (20) | Close to or within a SAC for the species (20) | Mosaic of pasture, woodlands and wetland areas (5)                                    |

Finally, for commuting routes and foraging areas the ecological value is based upon the following scoring system.

**Table 5:** Scoring system for valuing commuting and foraging bats

| Geographic frame of reference | Score |
|-------------------------------|-------|
| International                 | >50   |
| National                      | 41-50 |
| Regional                      | 31-40 |
| County                        | 21-30 |
| District, local or parish     | 11-20 |
| Not important                 | 1-10  |



### 3.0 Limitations to survey

The bat activity surveys and automated bat surveys were completed between August and September as agreed with the LPA ecologist. Although a bat activity survey was not completed in the spring, due to the timescale of the project, it is considered that enough data was collected in summer and autumn to accurately interpret the bat activity onsite and therefore this is not considered to represent a significant limitation. All surveys were completed when weather conditions were suitable (i.e. not during heavy rain, low temperatures or strong winds) as recommended within the BCT guidance (Hundt, 2012).

An automated bat recorder was left out between 28/08/14 – 01/09/15 in order to record any summer activity however this device failed to record therefore missing the summer season to collect the data. However autumn data was collected on two occasions, and therefore it is considered that enough data was recorded to make an accurate interpretation of the site.

Some bat species, such as some bats of the *Myotis* genus, are more difficult to detect as their calls are quieter than other bats such as those of the *Pipistrellus* genus. As such, the louder bats are likely to have been identified more often than quieter species, which may have been under recorded.

The survey results will remain valid for two years (i.e. until September 2016). It may be necessary to consider updating the survey after this time, or if either the development impacts or the habitat conditions on site change within two years. This will help to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.

The behaviour of animals can be unpredictable and may not conform to standard patterns recorded in current scientific literature. This report therefore cannot predict with absolute certainty that animal species will occur in apparently suitable locations or habitats, or that they will not occur in locations or habitats that appear unsuitable.



## 4.0 Survey results

### 4.1 Weather Conditions and Timings for Nocturnal Bat Survey

Table 6 shows the survey dates, times and weather conditions during each of the surveys. All weather conditions were recorded at the start of the surveys and temperatures were taken using a thermometer.

**Table 6:** Weather conditions during nocturnal bat surveys

| Survey                  | Date       | Dusk / Dawn times | Survey Time(s) | Weather                                                 |
|-------------------------|------------|-------------------|----------------|---------------------------------------------------------|
| Manual Activity Surveys | 20/08/2014 | 20:14             | 19:59 – 22:29  | 16.0°C; 20% cloud cover; light breeze; no precipitation |
|                         | 03/09/2014 | 19:45             | 19:30 – 21:45  | 22.0°C; 5% cloud cover; still; no precipitation         |
|                         | 24/09/2014 | 18:58             | 18:43 – 21:58  | 17.0°C; 0% cloud cover; light breeze; no precipitation  |

### 4.2 Data Search

HBIC provided records for up to thirteen species of bat within 2 km of the development site comprising serotine (*Eptesicus serotinus*); unidentified bat of the *Myotis* genus (*Myotis* sp.); Bechstein's bat (*Myotis bechsteinii*); Brandt's bat (*Myotis brandtii*); Daubenton's bat (*Myotis daubentonii*); whiskered Bat (*Myotis mystacinus*); Natterer's bat (*Myotis nattereri*); noctule (*Nyctalus noctula*); an unidentified bat of the pipistrelle genus (*Pipistrellus* spp.); common pipistrelle (*Pipistrellus pipistrellus*); soprano pipistrelle (*Pipistrellus pygmaeus*); an unidentified long-eared bat (*Plecotus* sp.) and brown long-eared bat (*Plecotus auritus*). The closest record is for soprano pipistrelle, located approximately 0.3 km south of the site. Bechstein's bat have been record within 2 km of the site however the woodland/grassland matrix habitat required for these bats is not present on site and therefore there is negligible potential for them to be present.



### 4.3 Activity Transects

#### 20<sup>th</sup> August 2014

During the first bat activity survey up to four species of bat were recorded including both common and soprano pipistrelles and a bat of the *Myotis* genus considered most likely to be whiskered/ Brandt's. The first bat recorded was a soprano pipistrelle foraging along the central hedgerow of the southern field in a northerly and southerly direction at 20:36, approximately 17 minutes after sunset. At 20:43 a *Myotis* (likely whiskered/ Brandt's) was heard but not seen along the western boundary whilst surveyors were in the southern field. The highest level of activity occurred between 20:47 – 21:07 where common and soprano pipistrelles were seen to be commuting along the young plantation trees along the north western boundary. A *Myotis* bat (likely whiskered/ Brandt's) was also seen in this area however it was flying above the field but still following the tree line. No bats were recorded in the northern most section of the site. Between 21:36 - 21:54 all species of bat were recorded but not seen within the southern area of the northern field. Towards the end of the survey a soprano pipistrelle was heard but not seen near the entrance of the site along the eastern boundary.

See Figure 1, Appendix A for a plan showing bat activity during this survey.

#### 3<sup>rd</sup> September 2014

During the second bat activity survey four species of bat were recorded including both common and soprano pipistrelle, serotine and noctule. The first bat recorded was a soprano pipistrelle foraging along the northern hedgerow of the southern field of the site at 20:16, approximately 31 minutes after sunset. The highest level of activity occurred from both common and soprano pipistrelles, both species were heard but not seen multiple times within the central location of the site along the young tree plantation along the north western boundary. A noctule was heard and not seen at 20:21, as the Elekon Batlogger is sensitive and fixed with a GPS it recorded the bat offsite over the road and road verge north west of the site. Between 20:30 – 20:45 there was a multiple recordings of common pipistrelles which were heard not seen around the western hedgerow of the northern field. Within this area a common pipistrelle was seen to be foraging. Only two bats were recorded within the most northern extent of the site, these were both common pipistrelles. Within the southern extent of the northern field a single serotine was recorded at 21:15, this bat was heard and not seen. The last two bats were recorded at the entrance of the site along the eastern boundary at 21:57; comprising a common and soprano pipistrelle. No bats were recorded in the most southern section of the site.



## Land at Havant Road, Emsworth: Bat Activity Survey

See Figure 2, Appendix A for a plan showing bat activity during this survey.

### 24<sup>th</sup> September 2014

During the third bat activity survey three species of bat were recorded including both common and soprano pipistrelles and a serotine bat. The first bat recorded was a soprano pipistrelle which was heard but not seen near the central hedgerow within the southernmost field at 19:30, approximately 32 minutes after sunset. At 19:43 a serotine bat was heard but not seen at the most northern end of the hedgerow located within the centre of the southern field of the site. The highest level of activity occurred between 20:47 – 19:56 where all species of bat were heard but not seen multiple times. Common pipistrelle bats were seen flying along the young plantation trees along the north western boundary between 19:52 and 19:56. Only one bat was recorded towards the most northern extent of the site, this was a common pipistrelle at 20:07. The next bat was not recorded until 20:48; this was a soprano pipistrelle located near the entrance of the site along the eastern boundary. The final bat was, also recorded within this area, was a common pipistrelle at 21:13.

See Figure 3, Appendix A for a plan showing bat activity during this survey.

## **4.4 Automated bat activity surveys**

The automated bat detector (SM2) or Anabat Express was placed within the young plantation trees along the north western boundary of the site. Up to five species of bat were recorded on the SM2 or Anabat Express, comprising common pipistrelle, soprano pipistrelle, serotine and bats of the *Myotis* genus (likely whiskered / Brandt's). The most frequently recorded bat calls were common pipistrelle. Table 7 details the species recorded.

See Figure 4 for location of automated bat recorder.



# Land at Havant Road, Emsworth: Bat Activity Survey

**Table 7:** SM2 Records

| Season    | Date                                                                                              | Weather                                                  | Species                                     | No. of passes |
|-----------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------|---------------------------------------------|---------------|
| August    | An automated bat detector was left out between 28/08/14 and 1/09/14, however it failed to record. |                                                          |                                             |               |
| September | 15/09/14                                                                                          | 13.0°C; partly cloudy; light breeze; no precipitation    | No bats recorded                            |               |
|           | 16/09/14                                                                                          | 13.0°C; partly cloudy; light breeze; no precipitation    | Serotine                                    | 1             |
|           | 17/09/14                                                                                          | 17.0°C; partly cloudy; moderate breeze; no precipitation | No bats recorded                            |               |
| September | 22/09/14                                                                                          | 13.0°C; partly cloudy; light breeze; no precipitation    | Common pipistrelle                          | 75            |
|           |                                                                                                   |                                                          | Soprano pipistrelle                         | 78            |
|           |                                                                                                   |                                                          | Serotine                                    | 1             |
|           |                                                                                                   |                                                          | <i>Myotis</i> (likely whiskered / Brandt's) | 16            |
|           | 23/09/14                                                                                          | 13.0°C; no cloud; light breeze; no precipitation         | Common pipistrelle                          | 81            |
|           |                                                                                                   |                                                          | Soprano pipistrelle                         | 67            |
|           |                                                                                                   |                                                          | Serotine                                    | 1             |
|           |                                                                                                   |                                                          | <i>Myotis</i> (likely whiskered / Brandt's) | 39            |
|           | 24/09/14                                                                                          | 8.0°C; no cloud; moderate breeze; no precipitation       | Common pipistrelle                          | 23            |
|           |                                                                                                   |                                                          | Soprano pipistrelle                         | 8             |
|           |                                                                                                   |                                                          | Serotine                                    | 2             |
|           |                                                                                                   |                                                          | <i>Myotis</i> (likely whiskered / Brandt's) | 6             |



## 5.0 Interpretation

Up to six species of bat were recorded using the habitats across the Havant road, Emsworth site. The species recorded include common pipistrelle, soprano pipistrelle, serotine, noctule and a bats of the *Myotis* genus (likely whiskered / Brandt's).

Common pipistrelle bats were the most frequently encountered species, as they were recorded on all transects on each activity survey visit as well as recorded by the automated recorders every night between 22<sup>nd</sup> September and 24<sup>th</sup> September on the automatic bat detector. Soprano pipistrelle was the second most frequently recorded bat at the site. In general a higher level of *Myotis* likely whiskered / Brandt's and serotine were recorded by the automated recorder than during the activity surveys.

Over the three bat activity survey visits, the majority of the activity was located within the central area of the site, focused along the north western boundary of this area. The habitat being used most was the young tree plantation along the north western boundary with the results showing bats using this habitat as a foraging and commuting corridor within the site. There was small amount of activity seen within the southernmost field along the central hedgerow. Bats were seen to be foraging along this hedgerow. There was very little activity recorded around the hawthorn scrub within the north of the site during the surveys. However this habitat does provide suitable bat foraging habitat despite little activity being recorded. The young tree plantation was found to be of higher value for bats.

The main commuting activity was recorded along the north western boundary of the site where young plantation trees line the A27 providing a good commuting route for bats.

There was a mixture of both foraging and commuting activity on the site throughout the surveys. Some bats recorded were common species including common and soprano pipistrelles, some of which were heard simultaneously but a number of rarer bats were also recorded intermittently, including unidentified bats of the *Myotis* genus considered most likely to be whiskered and/or Brandt's, noctule and serotine. Based on the assessment in Table 3, the commuting bat score on site is 14; therefore, the commuting bat value on site is considered to be of up to **district, local or parish level**. Based on the assessment in Table 4, the foraging bat score on site is 13; consequently, the foraging bat value on site is also considered to be of up to **district, local or parish level**.



## 5.1 Effects on roosts

The bat activity surveys at the site did not confirm the presence of any bat roosts within the proposed development site. During the extended Phase 1 habitat survey no trees were identified as holding potential for roosting bats, therefore no effect on roosts is likely to be caused onsite as a result of the proposed development.

## 5.2 Effects on foraging / commuting habitat

The development proposals include the construction of residential properties, with associated access, car parking, landscaping and public open space. The proposed development will result in the loss of tall scrub habitat, grassland margins, grazed fields and two hedgerows that lie within the central area of the site. These areas have been shown to provide foraging and commuting habitat for bats, however the site was deemed to be of relatively low value to foraging and commuting bats as it was considered to be only of district / local / parish value.

There is also the potential for bats to forage and commute within areas of retained habitat (the remaining hedgerows). These may be impacted by lighting during the construction and operational phases of the development. Some common bats, such as those of the *Pipistrellus* genus, are attracted to certain types of lighting as it attracts their invertebrate prey (Rydell and Racey, 1995). However lighting can also illuminate the bats themselves and make them more vulnerable to being preyed upon. Lighting a commuting or foraging route may also affect bats. A number of the bat species recorded on site are more sensitive to lighting impacts and will actively avoid illuminated areas. Bats from the *Myotis* genus are more sensitive to ambient lighting and may be deterred from using areas of the site, if the lighting is not sensitively designed.

Loud noise and vibrations during the construction phase could potentially disturb roosting bats, where they potentially occur in proximity to the development footprint. Furthermore noise in the operational phase e.g. from increased public pressure within the area, could further disturb bats and lead to habitat degradation.

During the operational phase there is potential for there to be an increase in predation pressure on roosting bats potentially on site and in the locality through an increase in domestic cats. Mitigation recommendations to offset the potential development impacts are provided in the following section.



## 6.0 Recommendations and mitigation

### 6.1 Survey recommendations

The results of the bat activity surveys will remain valid for two years (i.e. until September 2016). If works have not commenced by that time, it is recommended that the survey data is considered for updating to determine whether there are any changes to bat roosting, foraging and commuting across the site. The survey should also be repeated if site conditions change.

### 6.2 Avoidance

According to the current proposed masterplan (drawing number 1720-PS05), an ecological buffer of 7-10 meters is being retained between the hedgerow running along the northern and western boundaries of the site and any development works. 5m column lighting will be used within the residential areas of the site and will be fitted with hoods to ensure the lighting is directional with no backspill. There will be no lighting adjacent to the boundary features and hence commuting and foraging bats are not considered to be impacted. During the construction phase, all works will cease on site before dusk so the site remains dark and hence avoid impacts to any emerging, foraging and commuting bats in the area. All lighting associated with the construction phase will be located away from any vegetated boundaries and hence no impacts on bats are considered. It is understood that the lighting across the development footprint will be sensitively designed with bats in mind, so that valuable foraging and commuting areas / new roost sites are not impacted by ambient light.

### 6.3 Mitigation

In order to maintain the current status of the bats using the site to forage and commute, it is recommended that a suitably qualified ecologist continues to be consulted throughout the design stage so as to help avoid impacts to bats, and to advise as to suitable mitigation measures.

Through attendance at various design team meetings, the ecologists have inputted into the design of the masterplan and the existing young tree plantation line along the northern western boundary of the site will be retained with a grassland buffer 7 – 10 m wide separating the tree line from the development.

It is also recommended that five bat boxes be installed on the existing trees within the centre of the southern field and within the young tree plantation along the north western boundary.



## Land at Havant Road, Emsworth: Bat Activity Survey

The following mitigation measures are recommended to help offset the predicted impacts of the development proposals:

### **6.3.1 Tree and hedgerow retention and replacement**

Ideally, all trees will be retained and protected within the development, from the master plan it can be seen that trees along the north western boundary and within the central hedgerow of the southern field will remain. It is understood that a 133m and 77m section of defunct hedgerow used by foraging/commuting bats within the central location of the site will be lost due to the development. As such, swale systems will be created as part of the development creating a damp area and hence encouraging foraging bats within the centre of the southern field running parallel to the existing hedgerow within the site and the grassland buffers along the north western boundary will be left to grow tall and comprise a tall grassland meadow habitat, again increasing the likely invertebrate assemblage along these boundaries compare to the tightly grazed habitat that is currently present. These features will provide suitable habitat for foraging and commuting bats during the operational phase of the development.

### **6.3.2 Landscaping design**

A diverse collection of native planting should be incorporated into the landscaping design within the proposed development site (refer to Appendix C for recommended 'bat' plants). Structurally diverse vegetation and inclusion of native evening-blooming plants will attract insects which in turn will help to enhance the site for foraging bats.

### **6.3.3 Lighting**

The lighting across the development footprint will be sensitively designed with bats in mind, so that valuable foraging and commuting areas are retained and new roost sites are not impacted by ambient light. Permanent lighting on site will be minimised in proximity to any areas of habitat to be retained.

Where illumination is unavoidable, the following measures should be considered in order to avoid disrupting bat commuting corridors and foraging areas. Refer to the BCT 'Bats and Lighting' document (BCT, 2009) for further details:

- i) Careful aiming, placement and mounting of luminaries;
- ii) Minimising column heights and mounting of multiple luminaries on single columns in order to reduce column numbers; and



## Land at Havant Road, Emsworth: Bat Activity Survey

- iii) Post installation light monitoring.

Other possible mitigation measures could include:

- i) illuminated road studs instead of lighting columns;
- ii) glass lantern covers to filter UV light;
- iii) flat lantern covers result in less light spill than dished covers;
- iv) reduced brightness of lights;
- v) increased spacing of lanterns;
- vi) timed lighting to provide dark periods;
- vii) directional lighting, using hoods, cowls, louvers and shields;
- viii) avoid using reflective surfaces under lights; and
- ix) use of temporary close boarded fencing to shield light until dense vegetation is established for screening.

### 6.3.4 Construction recommendations

Construction activity during the summer (April – September) in proximity to mature trees and hedgerows will cease at sunset, if not before, to avoid delaying the emergence of locally roosting bats. No pile driving will be undertaken and hence the noise and vibration is not considered to cause an impact if bats are roosting offsite. No roosting sites were identified on site during the activity surveys.

## 6.4 Enhancement

Whilst enhancement is not a legal requirement, it is encouraged on site as it helps to meet the government objectives for planning to protect and enhance biodiversity, in accordance with the *National Planning Policy Framework (NPPF)*.

A number of the measures outlined in the mitigation section, such as the planting of 'bat-friendly' plants have the potential to enhance the site for bats.



#### 6.4.1 Artificial roost provision

Additional measures to enhance the site for bats include the provision of artificial bat roosts, which will be attached to trees that are being retained on the proposed development site. Five Schwegler 2FF bat boxes will be installed on mature trees within the central hedgerow within the southern field and within the north western boundaries of the site (see WYG, 206 Extended Phase 1 Habitat Assessment for locations).

Tree bat boxes should be sited as high as possible (no lower than 4m) and clear of any overhanging branches so that the bats have direct and easy access to them. Boxes should be oriented between south east and south west. Boxes will be attached to the tree using an aluminium nail or tied in position using wire/leather.

In the new buildings, the use of Breathable Roof Membranes (BRM) should be avoided. Instead, Type 1F bitumen and hessian under felt will be used as an alternative. Ongoing research has confirmed that no BRM are bat-friendly and all pose a risk to bats. As the membranes wear over time the fibres in the membrane become loose. Bats become entangled in the fibres and, unable to escape, dehydrate, and starve to death. As well as posing a risk to bats, BRMs are also degraded by bats and the efficiency of the membrane is impaired (i.e. the use of BRMs in situations where bats are present is detrimental to the efficient functioning of the BRM as well as to bats. The research is summarized at <http://www.batsandbrms.co.uk/images.php>), further detail is provided in Waring *et al.* (2013).



## Land at Havant Road, Emsworth: Bat Activity Survey

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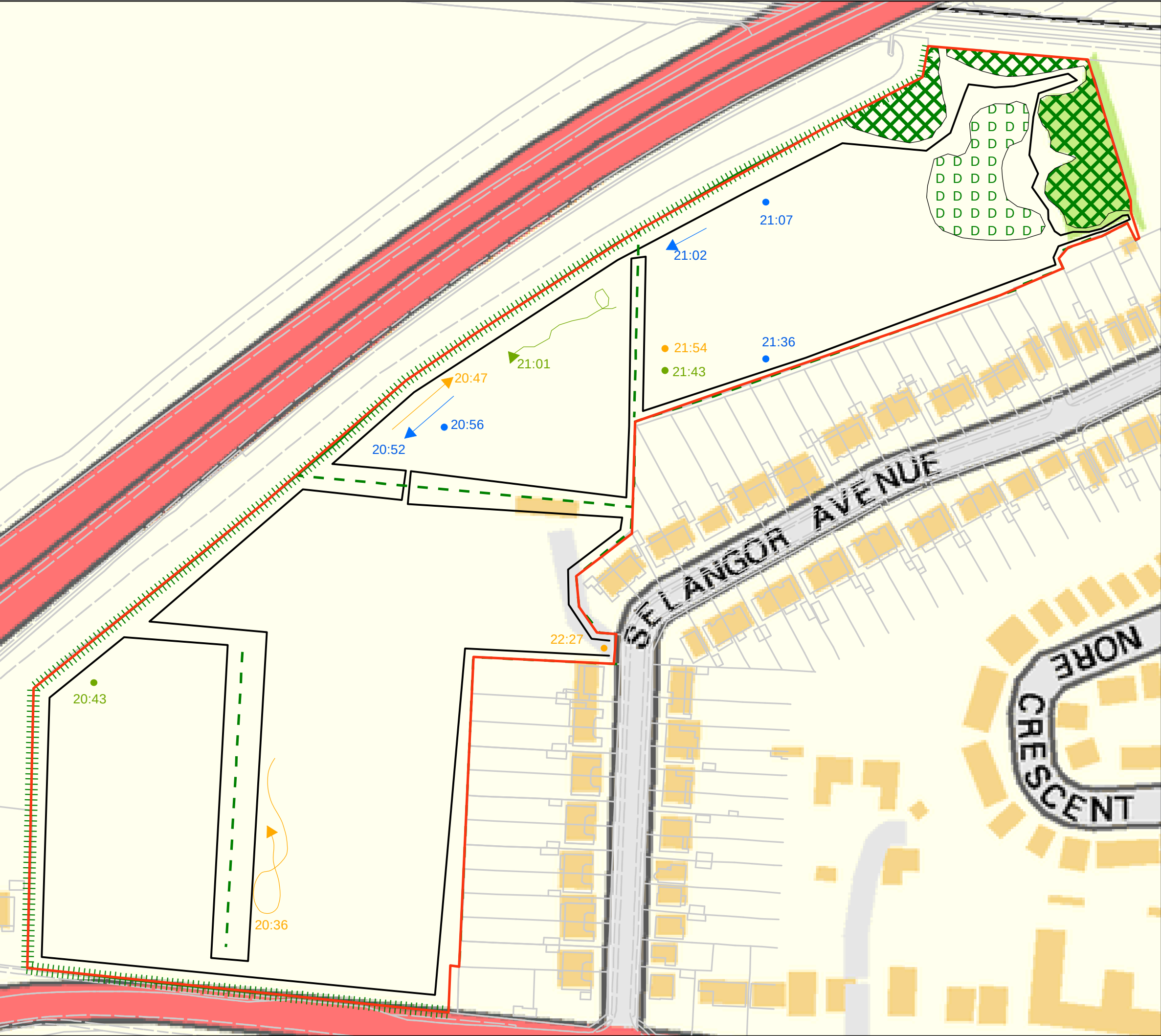
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## Appendix A - Figures



Legend

- Common pipistrelle heard not seen
- Myotis (likley whiskered / Brandt's) heard not seen
- Soprano pipistrelle heard not seen
- Common pipistrelle
- Myotis (likely whiskered / Brandt's)
- Soprano pipistrelle
- Transect Route
- Defunct species poor hedge
- Species poor hedge/tree line
- Site boundary
- Dense scrub
- Scattered scrub



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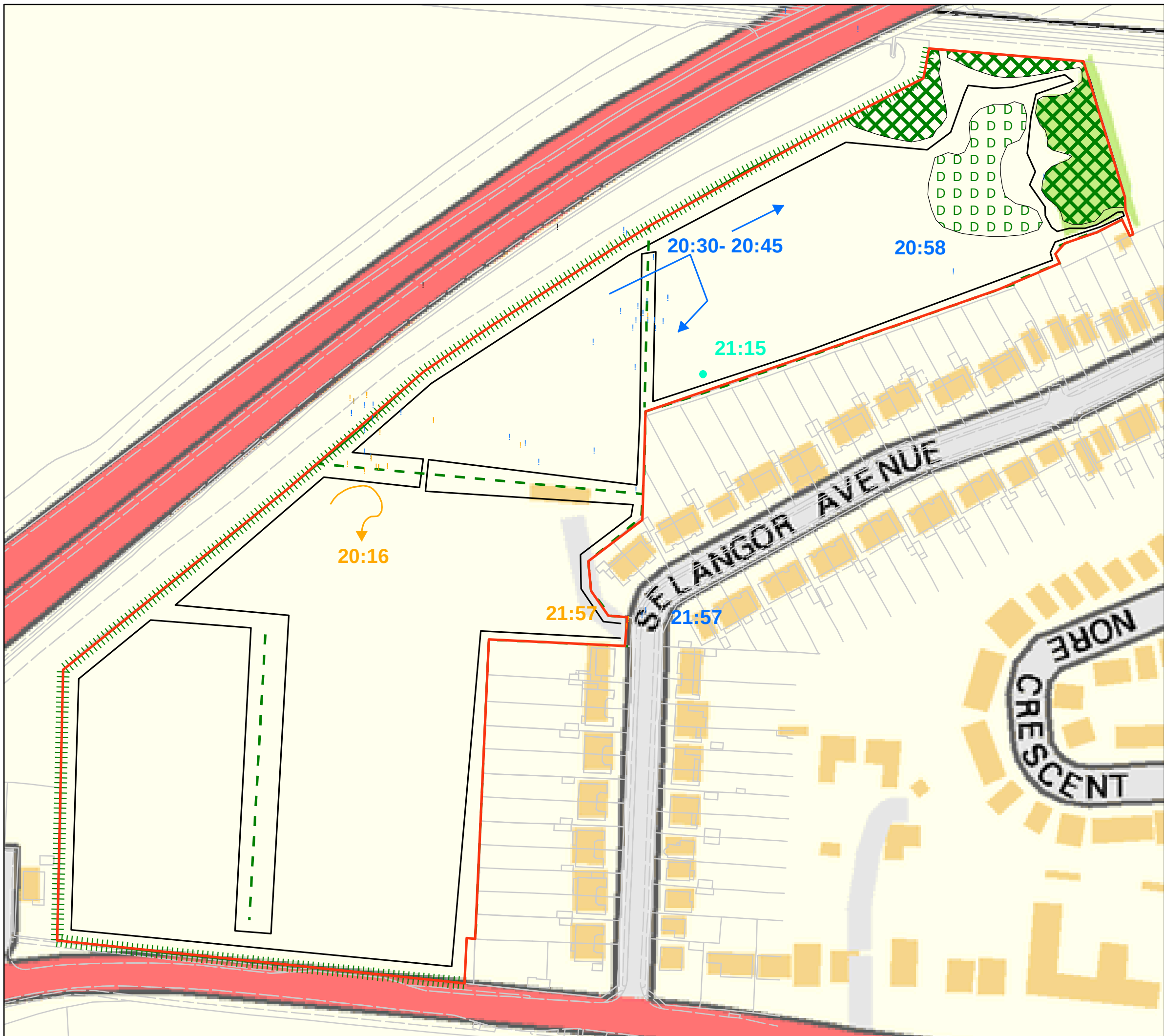
creative minds safe hands

Havent Road, Warblington

Activity survey 20/08/2014

|              |                 |                   |                    |
|--------------|-----------------|-------------------|--------------------|
| Scale at A3: | Drawn by: Date: | Checked By: Date: | Approved By: Date: |
|              | EA 21/11/14     | EH 21/11/14       | CM 21/11/14        |
| Project No:  | Office          | Type              | Drawing No.        |
| A088368      | 45              | 94                | Figure 1           |

Base map provided by



# Legend

- Common pipistrelle, heard not seen
- Soprano pipistrelle, heard not seen
- Serotine, heard not seen
- Noctule, heard not seen
- Common pipistrelle
- Soprano pipistrelle
- Dense scrub
- Scattered scrub
- Defunct species poor hedge
- Species poor hedge/tree line
- Site boundary



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Activity survey 03/09/2014

|                     |                             |                               |                                |
|---------------------|-----------------------------|-------------------------------|--------------------------------|
| Scale at A3:        | Drawn by: Date: EA 02/03/15 | Checked By: Date: EH 02/03/15 | Approved By: Date: CM 02/03/15 |
| Project No: A088368 | Office 45                   | Type 94                       | Drawing No. Figure 2           |

Base map provided by





## **Appendix B - Report Conditions**





## Land at Havant Road, Emsworth: Bat Activity Survey

### **Report Conditions** **Land at Havant Road, Emsworth – Bat Activity Survey**

This report is produced solely for the benefit of Barratt Homes, and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG Environment. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG Environment by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties. The performance of environmental protection measures, e.g. of buildings and other structures in relation to acoustics, vibration, noise mitigation, and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors.