



Barratt Homes

Havant Road, Emsworth

Bat Activity Survey

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Executive Summary

Contents	Summary
Site location	The site comprises approximately 6.1 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. The site comprises very short, cattle grazed, improved grassland with scattered scrub bordered by hedgerows. Cattle were removed in September and were not seen during the last two activity transects. During the update site visit in June 2016 whilst cattle were not present on the site, the site still supported short grassland with areas of bare ground indicating recent cattle poaching. Along the north western boundary adjacent to the A27 there is a strip of young plantation trees dominated by field maple and hawthorn. The fields are bordered by hedgerows mainly comprising of hawthorn and bramble with the exception of the south eastern boundary where there is no hedgerow and the site backs directly onto residential gardens. Within the centre of the fields there are three defunct hedgerows all of which are species poor.
Previous Reports/Surveys	An extended Phase 1 habitat survey was completed at the site on 1st July 2014 and subsequently updated in June 2016. The survey identified habitat on site considered to be of low suitability for foraging and commuting bats, given that the site is bordered to the north by a railway line, to the west by the A27 and to the south by the A259.
WYG Survey	In accordance with the Bat Conservation Trust (Hundt, 2012) guidelines (these have since been superseded by the Bat Conservation Trust 3rd edition 2016 guidelines but the previous guidelines were used as the surveys were completed in 2014), bat activity surveys were 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. Automatic bat detectors were also left for three consecutive nights on three occasions between August and September 2014 to record bat passes at one location along the transect.
Survey Results	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).
Further Recommendations &	The results of the survey have been assessed as a part of this February 2017 update. Due to the conditions on site remaining in a



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Mitigation	comparable condition, the original 2014 survey findings are considered to remain valid. It is recommended that a further review of the survey results are undertaken if works have not commenced within one year of the date of this update – i.e. February 2018 to determine whether there have been any changes in bat activity across the site. It is understood that 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 (refer to Planning Layout Drawing No. 18-2059-100). Five Schwegler 2F bat boxes will be installed on existing trees along the retained western boundary (Refer to Figure 4, Appendix A). To help maintain the favourable conservation status of bats on site the following measures will be incorporated within the masterplan and construction phase: • Construction activity will cease at sunset to avoid impacts to bats during the construction phase; and • Lighting across the development will be designed to reduce impacts on bat foraging and commuting habitat during the operational phase;
Enhancement	Additional enhancement measures to be incorporated within the development will include: • Planting species of value to foraging and commuting bats will be incorporated into the landscape plan (Appendix C); • An area of open space will be created in the south-western corner of the site which will create a foraging resource and links to the woodland edge on the western boundary important for commuting bats.



1.0 Introduction

1.1 Background

WYG was commissioned by Barratt Homes to complete bat activity surveys to inform proposed development at Havant Road, Emsworth (hereafter referred to as 'the site'). This follows an extended Phase 1 habitat survey completed by WYG on 1st July 2014 subsequently updated in June 2016 and February 2017, 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.

This updated report reviews the findings of bat activity surveys completed in 2014 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 comprises approximately 6.1 hectares, located to the east of the town 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.

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 south eastern boundary comprises back garden fencing with planted shrubs with scrub and tall ruderal becoming established. To the south of the site lies a hedgerow adjacent to the footway of the A259 comprising mainly sycamore. Scrub dominates



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the north eastern extent of the site and three defunct hedgerows; two of which run north to south and one runs east to west separating the fields from one another.

1.3 Development Proposals

It is proposed to develop the site for 161 residential properties, with associated parking, access, gardens, hard and soft landscaping and areas created for local wildlife. An area of open space will be retained within the southern area of the site, in addition to several areas of public open space throughout the scheme including a buffer varying between 5.6m and 8.3m along the south eastern boundary which will be managed as tall grassland with one cut a year in September along with a tall grassland-scrub mosaic area along the eastern extent of the site. The scheme will be accessed from the southern boundary, with additional foot access provision along the south eastern boundary. There will be a trim trail that forms the circular route surrounding the development boundaries. For the most up to date layout plan please refer to Layout Plan drawing No. 18-2059-100, contained in Appendix A. 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*



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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:

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.



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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.

1.4 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, Information specific to designated sites and records of protected and notable species within 2km of the application boundary was sourced through direct consultation with the Hampshire Biodiversity Information Centre (HBIC).

2.2 Bat Activity Survey

According to the guidance set out in the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines*, 2nd Edition (Hundt, 2012) (since superseded by the Bat Conservation Trust's *Bat Surveys: Good Practice Guidelines*, 3rd Edition (Collins, 2016) however the BCT (2012) guidance was used as the surveys were completed in 2014), 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. Bat activity surveys and automated bat surveys were undertaken between August and September in suitable weather conditions with verbal agreement 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 in line with BCT guidance (Hundt, 2012).

Activity surveys were subsequently carried out at all compartments of the site on 20th August, 3rd September and 24th September 2015. 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 and walked along the transect routes at a steady pace with listening stops. The direction in which the



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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).



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Table 1: Categorising Bats by Distribution and Rarity in England

Rarity	Country
	England
Rarest	Greater horseshoe Bechstein's Alcathoe Greater mouse-eared Barbastelle Grey long-eared
Rarer	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle 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) Individual bats (common species) Small numbers of non-breeding bats (common species) Mating sites (common species)
County	Maternity sites (common species) Small number of hibernating bats (common and rarer species) Feeding perches (rarer/rarest species) Individual bats (rarer/rarest species) Small numbers of non-breeding bats (rarer/rarest species)
Regional	Mating sites (rarer/rarest species) including well-used swarming sites Maternity sites (rarer species) Hibernation sites (rarest species) 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) 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)



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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 summer data was captured during the walked transect in August 2014. Further, 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 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.

The results of the surveys completed in 2014 have been reviewed, and due to the condition of the site remaining comparable, are considered to remain valid. If works have not commenced within one year of the production of this report (i.e. by February 2018) a further review of the survey results should be undertaken to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.



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

20th 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.

3rd 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.



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

24th 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.



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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 22nd September and 24th 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 north western boundary of the site. 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 running east to west. 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 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 scrub habitat including three defunct hedgerows, and grazed improved grassland fields. Of these habitats, the defunct hedgerow that runs north to south within the site was used the most by bats however the level of bat use along these habitats was low compared to the north western boundary. Further, whilst the site has shown to provide foraging and commuting habitat for bats, 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 predated 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 activity surveys have been reviewed as part of this update, and due to the conditions on site being comparable, they are considered to remain valid. If works have not commenced within one year of the production of this report (i.e. by February 2018) it is recommended that a further review is undertaken to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.

6.2 Avoidance

According to the Planning Layout Drawing No. 18-2059-100, an ecological buffer of 5.8-8.3 metres is being retained along the south eastern boundary which connects to the reptile receptor site in the eastern extent. 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 as a result, it is considered that there will be no significant effects on bats utilising these features during the construction phase. 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.



Havant Road, Emsworth: Bat Activity Survey

It is also recommended that five bat boxes be installed on the existing trees along the western boundary in order to provide additional roosting opportunities for bats within the immediately local area.

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

All trees running along the north western site boundary are to be retained and protected from construction impacts by way of a buffer zone in line with Planning Layout drawing No. 18-2059-100. It is understood that a total of 210m of defunct hedgerow used by foraging/commuting bats within the central location of the site will be lost to facilitate the development. As such, the areas of open space that will be created as part of the scheme will be sympathetically planted with native species wherever possible, and the area of retained grassland along the south eastern and eastern extent of the site will be managed as rough grassland. Creation and management of these features will encourage a rich invertebrate assemblage on the site which in turn will provide foraging opportunities for bats. 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;



Havant Road, Emsworth: Bat Activity Survey

- ii) Minimising column heights and mounting of multiple luminaries on single columns in order to reduce column numbers; and
- 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 Reducing the risk of predation by pets

Reducing the impact of predating cats on bats is not easy - one answer would be to recommend that new home owners keep their cat indoors around the time bats are likely to be emerging, to allow roosting bats uninterrupted access to and from their roosts. However this measure is difficult to enforce. New roost sites for bats will be provided on the existing trees across the site to provide increased roosting opportunities to bats. Any new roost sites must not be accessible to cats. This will be achieved by positioning bat boxes at a suitable height away from overhanging branches.

6.3.5 Construction recommendations

Construction activity 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 along the south east boundary. Five Schwegler 2F bat boxes will be installed on mature trees along the e north western boundaries of the site. At least one bat box on each tree will face in a south-west or south-east direction. Locations shown in Figure 4, Appendix A.

Numerous types of artificial bat roost and access provision are available and can be easily installed onto retained trees to benefit local bats. Information regarding commonly used bat boxes is provided in Appendix D. Artificial roosts should face to the south-west or south-east if possible and should not be illuminated. It is recommended that five bat boxes are installed within the proposed development site in groups of two.

Tree bat boxes should be sited as high as possible (no lower than 2m) and clear of any overhanging branches so that the bats have direct and easy access to them. Two boxes will be erected facing in differing directions around the trunk of the tree, so that changes in temperature can be accounted for, helping to ensure the suitability of the roosting provision. 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.



Havant Road, Emsworth: Bat Activity Survey

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).



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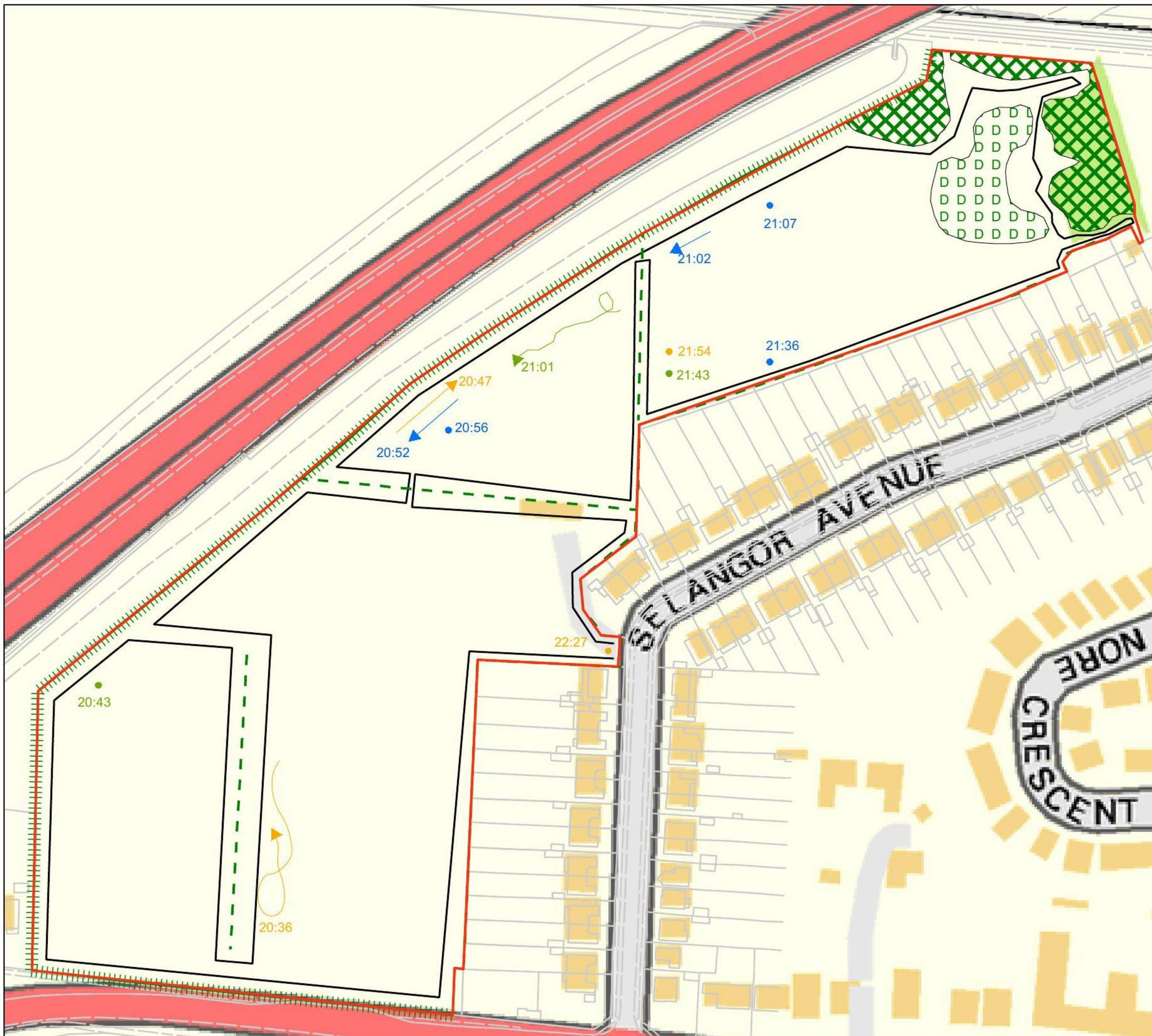


Appendices



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

0 20 40 80 Meters

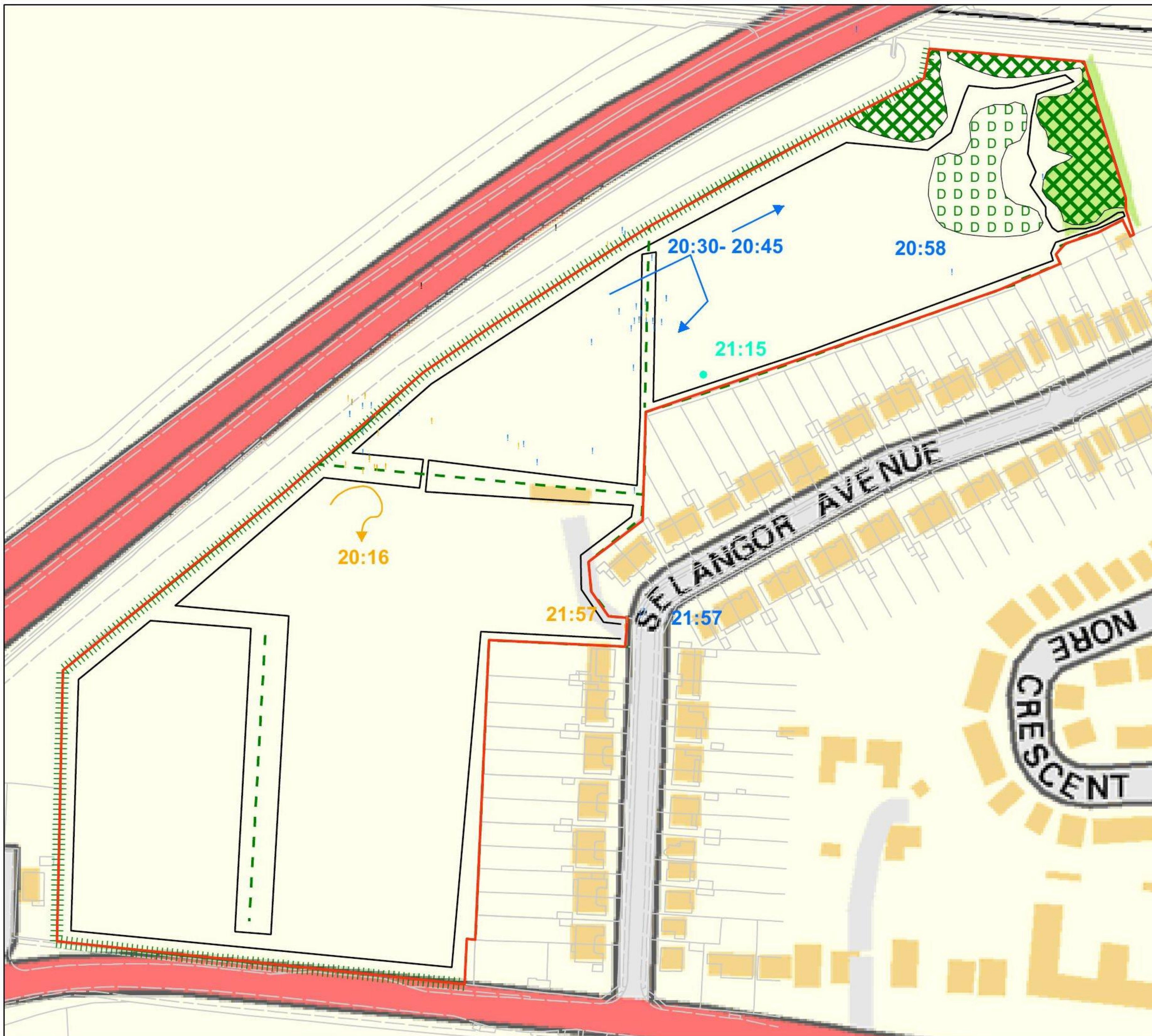
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 creative minds safe hands

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
Revision			

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

0 20 40 80 Meters

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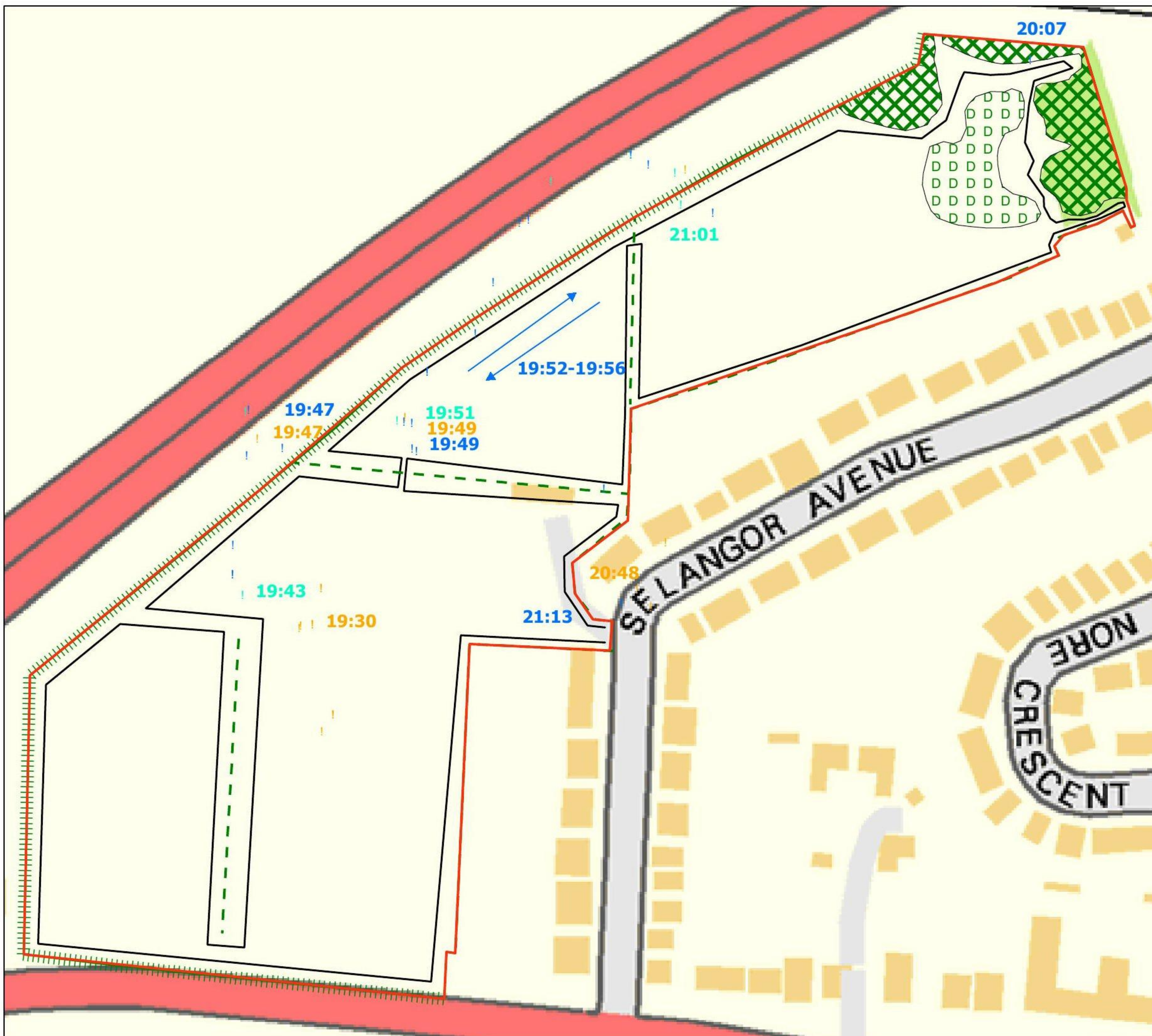
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Activity survey 03/09/2014

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

Base map provided by



Legend

- | Common pipistrelle, heard not seen
- | Soprano pipistrelle, heard not seen
- | Serotine, heard not seen
- Common pipistrelle
- Transect Route
- - - Defunct species poor hedge
- ||||| Species poor hedge/tree line
- Site boundary
- XXXX Dense scrub
- DDDD Scattered scrub

0 20 40 80 Meters

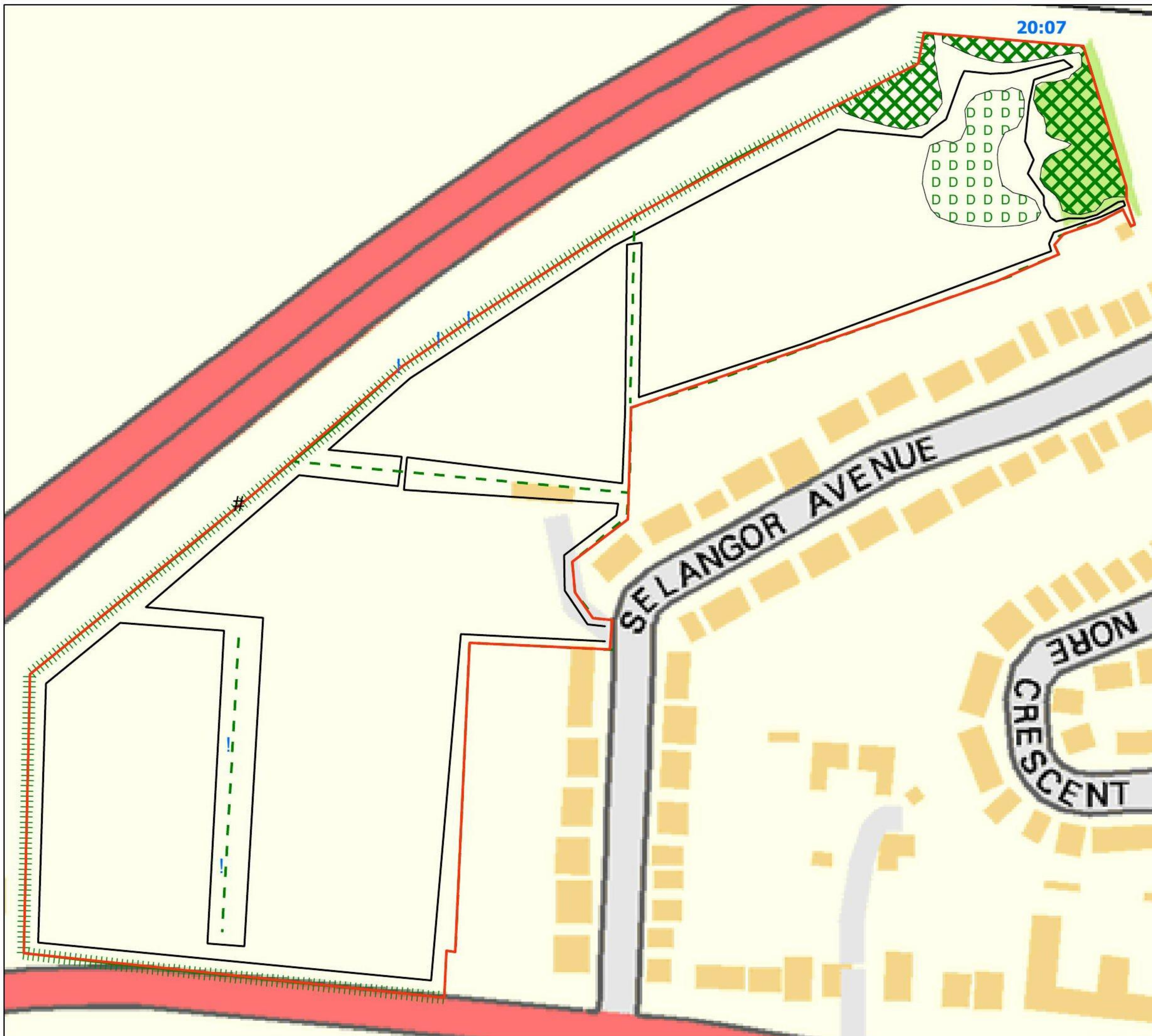
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Havent Road, Warblington

Activity survey 24/09/2014

Scale at A3:	Drawn by: EA	Date: 02/03/15	Checked By: EH	Date: 02/03/15	Approved By: CM	Date: 02/03/15
Project No: A088368	Office: 45	Type: 94	Drawing No.	Figure 3	Revision	

Base map provided by



Legend

- # Automatic bat detector location
- ! Artificial bat roosts
- Transect Route
- - - Defunct species poor hedge
- ||||| Species poor hedge/tree line
- Site boundary
- Dense scrub
- Scattered scrub

0 20 40 80 Meters

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Havent Road, Warblington

Artificial bat roosts and automatic bat detector locations

Scale at A3:	Drawn by: EA	Date: 02/03/15	Checked By: EH	Date: 02/03/15	Approved By: CM	Date: 02/03/15
Project No: A088368	Office: 45	Type: 94	Drawing No. Figure 4	Revision		

Base map provided by



Appendix B – Data Search Results



Havant Road, Emsworth: Bat Activity Survey

Taxon Name	Common Name	Status	Grid Ref.	Location	First Year	Last Year	No. of Records	Max Count
<i>Pipistrellus</i>	Pipistrelle Bat species	Sensitive WCA_s5s94b WCA_s5s94c HabReg_s2	SU646356	Sensitive	2006	2006	1	0
			SU653349	Sensitive	2001	2001	1	20
			SU667359	Sensitive	2010	2010	1	1
			SU673350	Sensitive	1999	2000	2	0
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Sensitive EU_Hab_4 HBAP WCA_s5s94b WCA_s5s94c HabReg_s2	SU667359	Sensitive	2011	2011	2	3
			SU667359	Sensitive	2011	2011	2	3
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	Sensitive EU_Hab_4 HBAP NERC_s41 WCA_s5s94b WCA_s5s94c HabReg_s2	SU667359	Sensitive	2011	2011	2	2
<i>Plecotus</i>	Long-eared Bat species	Sensitive WCA_s5s94b WCA_s5s94c HabReg_s2	SU655355	Sensitive	2001	2001	1	1
			SU667359	Sensitive	2010	2010	1	1
<i>Plecotus auritus</i>	Brown Long-eared Bat	Sensitive EU_Hab_4 NERC_s41 WCA_s5s94b WCA_s5s94c HabReg_s2	SU655359	Sensitive	2001	2001	1	0
			SU667359	Sensitive	2011	2011	2	20
			SU671358	Sensitive	2004	2004	1	0

Status codes and abbreviations:

EU_Hab_4	Annex IV of the Habitats Directive
HBAP	Hampshire Biodiversity Action Plan species
WCA_s5s94b	Schedule 5 Section 9 Part 4b of the Wildlife and Countryside Act 1981 (as amended)
WCA_s5s94c	Schedule 5 Section 9 Part 4c of the Wildlife and Countryside Act 1981 (as amended)
HabReg_s2	Schedule 2 of Conservation of Habitats and Species Regulations 2010 (European Protected Species animal)



Appendix C – Native/Wildlife Friendly Plant Species



Gardening for bats

Aim at having flowers in bloom through the year, including both annuals and herbaceous perennials. Below are some suggestions, but this is by no means an exhaustive list. See what grows well in YOUR garden, and what seems most attractive to insects. Flowering times are approximate, varying in different areas. Regular dead-heading extends flowering period in many flowers. A=annual, HA=hardy annual, HHA=half-hardy annual, P=perennial, W=wild flower.

Flowers for borders			
St John's Wort	<i>Hypericum</i>	P	March -
marigolds	<i>Calendula</i>	H/A	March - Oct.
aubretia	<i>a. deltoidea</i>	P	March-June
honesty	<i>Lunaria rediva</i>	HB	March
forget-me-not	<i>Myosotis sp.</i>	A/P	March - May
elephant ears	<i>Bergenia</i>	P	April
Wallflowers	<i>Erysimum</i>	B	April - June
Cranesbills	<i>Geranium sp.</i>	P	May - Sept.
Yarrow	<i>Achillea</i>	P	May -
Poppies	<i>Papaver sp.</i>	A	May - July
Dames violet	<i>Hesperis matronalis</i>	P	May - August
Red Valerian	<i>Centranthus ruber</i>	P	May - Sept.
Poached egg plant	<i>Linnanthes</i>	HA	June - Aug.
Knapsweed	<i>Centaurea nigra</i>	P	June - Sept.
Phacelia		HA	June - Sept.
Ox-eye daisy	<i>Leucanthemum vulgare</i>	P	June - Aug.
Evening primrose	<i>Oenothera biennis</i>	B	June-Sept.
Candytuft	<i>Iberis umbellata</i>	HA	June - Sept.
Sweet William	<i>Dianthus barbatus</i>	B	June - July
Blanket flowers	<i>Gaillardia</i>	P	June -
Verbena	<i>V. bonariensis</i>	HHA	June - Oct.
Scabious	<i>knautila arvensis</i>	P	July-Aug.
Night-scented stock	<i>matthiola bicomia</i>	HA	July-Aug.
Pincushion flower	<i>Scabious sp.</i>	A/P	July - Sept.
Cherry pie	<i>heliotrope</i>	HHA	July - Oct.
Mexican aster	<i>Cosmos sp.</i>	A/P	July - Oct.
Cone flower	<i>Rudbeckia sp.</i>	A/P	August-Nov.
Mallow	<i>lavatera sp.</i>	P	August-Oct.
Michaelmas daisy	<i>Aster sp.</i>	P	August-Sept.
Ice plant 'Pink lady'	<i>Sedum spectabile</i>	P	Sept.
Herbs - both leaves and flowers are fragrant			
Fennel	<i>Foeniculum vulgare</i>		July - Sept.
Bergamot	<i>Monarda didyma</i>		June - Sept.
Sweet Cicely	<i>Myrrhis odorata</i>		April - June
Hyssop	<i>Hyssopus officinalis</i>		July - Sept.
Feverfew	<i>Tanacetum parthenium</i>		June - Sept.
Borage	<i>Borago officinalis</i>		May - Sept.

Rosemary	Rosemary officinalis	March - May
Lemon balm	<i>Melissa officinalis</i>	
Coriander	<i>Coprantrum sativum</i>	June - August
Lavenders	<i>Lavendula sp.</i>	
Marjoram	<i>Origanum sp.</i>	
Trees, shrubs and climbers important to insects		
Oak	<i>Quercus sp.</i>	large gardens only
Silver birch	<i>Betula pendula</i>	
Common alder	<i>Alnus glutinosa</i>	Suitable for coppicing
Hazel	<i>Corylus avellana</i>	Suitable for coppicing
Elder	<i>Sambucus nigra</i>	Small
Pussy willow	<i>Salix caprea</i>	Suitable for coppicing
Hawthorn	<i>Crataegus monogyna</i>	Suitable for coppicing
Honeysuckle	<i>Lonicera sp.</i>	grow a variety for succession.
Dog rose	<i>Rosa canina</i>	Climber
Bramble	<i>Rubus fruticosus</i>	Climber
Ivy	<i>hedera helix</i>	Climber
Buddleia	<i>Buddleia davidii</i>	shrub
Guelder rose	<i>Viburnum opulus</i>	shrub
Gorse	<i>Ulex sp.</i>	shrub
Plants for pond edges and marshy areas		
Purple loosestrife	<i>Lythrum salicaria</i>	W
Meadow sweet	<i>Filipendula ulmaria</i>	W
Lady's smock	<i>Cardamine pratensis</i>	W
Water mint	<i>mentha aquatica</i>	W
Angelica	<i>Angelica sylvestris</i>	W
Hemp agrimony	<i>Eupatorium cannabinum</i>	W
Marsh marigold	<i>Caltha palustris</i>	W
Creeping Jenny	<i>Lysimachia nummularia</i>	W
Fringed water lily	<i>Nymphoides peltata</i>	W
Water forget-me-not	<i>Myosotis scorpioides</i>	W

Allow part of your lawn to grow long in summer and cut in autumn, removing the clippings. Avoid using fertilizers. Compost heaps are good producers of insects too.

Add a seat to watch your garden come to life!



Appendix D – Bat Boxes, Bricks and Tubes

Bat Boxes for Trees



Woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are long lasting (approx. 25 years) and are rot- and predator-proof. Hang from a tree branch near the trunk, or fix to a trunk with the supplied 'tree-friendly' aluminium nail. This box is attractive to the smaller British bats.

Material: Woodcrete (75% wood sawdust, concrete and clay mixture)

Diameter: 16cm

Height: 33cm

Weight: 4kg

Hibernation Box for Crevice Dwelling Species



This box is designed to provide a protected environment, particularly through the cold winter months when bats hibernate. It has three internal wooden panels imitating crevices.

Schwegler woodcrete boxes have the highest rates of occupation of all box types. The 75% wood sawdust, concrete and clay mixture allows natural respiration, stable temperature, and durability. They are extremely long lasting and rot- and predator-proof.

This very heavy box (30kg) is supplied complete with special fixing brackets. It is important to fit it very securely if mounting above the ground, and to site it well away from public areas.



Appendix E - Report Conditions



Havant Road, Emsworth: Bat Activity Survey

Report Conditions **Havant Road, Emsworth – Bat Activity Survey**

This report is produced solely for the benefit of Barratt David Wilson, 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.