



Hampshire Homes Ltd.

College Road, Campdown

Bat Survey Report

October 2019

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APPENDIX A – Native/Wildlife Friendly Plant Species

Executive Summary

Contents	Summary
Site Location and Proposals	The site mainly consists of large semi improved grassland fields c. 31 ha in area, located to the west of Havant in Hampshire, centred on OS grid reference SU690069. The proposed application is for a residential development of a minimum of 400 dwellings, public open space and sports facilities.
Previous Reports / Surveys	The extended Phase 1 habitat survey completed by WYG in November 2016 identified the site as having low suitability for foraging and commuting bats, and several trees were considered as having potential suitability to support roosting bats.
This Survey(s)	Three activity surveys were carried out during the optimal surveying season. Surveyors walked on a transect route that incorporated all areas of the site including all habitats likely to be used by foraging and commuting bats. An automated bat detector was left at the site for at least five nights during each season; Spring (April -May), Summer (June-August) and Autumn (September-October). Data from this detector helped to gain further information on the species present and relative amount of activity through the night. Emergence surveys were carried out during the optimal surveying season on a cluster of trees within the south-western extent of the site which was assessed as having moderate suitability for roosting bats.
Results	Two of the activity surveys recorded a relatively low level of bat activity across the site with the spring survey (April 2017) recording a higher level of bat activity. Three bat species were recorded during that surveys; common pipistrelle, soprano pipistrelle and serotine. No bats were confirmed to be roosting within any of the cluster of trees within the south-western extent of the proposed development site.
Recommendations	The results of the activity survey will remain valid for two years and the results of the dusk emergence survey will remain valid for one year. If works have not commenced within this time, it is recommended that a review of the findings and site conditions is completed to determine whether updated surveys are required. As bats were not confirmed to be roosting within the trees on site, works to the trees can proceed without further mitigation. To enhance the site for roosting, foraging and commuting bats on site the following measures are proposed to be incorporated within the master plan and proposals: • Lighting across the development designed to reduce impacts on bat foraging and commuting habitat; • Avoidance of breathable roof membranes;



	• Enhancement of connectivity between open space areas through hedgerow planting; • Incorporation of grassland areas and planting of native species of value to foraging and commuting bats into landscape plan; It is recommended that construction activity should cease 30 minutes prior to sunset to avoid impacts to bats during the construction phase. Additional enhancement measures for the proposed developments include the provision of bat boxes on retained trees within the site. Additional planting across the site will incorporate species of value to foraging and commuting bats.
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1.0 Introduction

1.1 Background

The extended Phase 1 habitat survey completed by WYG in November 2016 at College Road, Campdown (here after referred to as 'the Site') identified the Site as having low suitability for foraging and commuting bats, and a cluster of on-site trees as having moderate suitability for roosting. WYG were commissioned to undertake bat activity and dusk emergence/dawn return surveys.

Bat 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 including trees as a result of the development proposals.

This report details the findings of bat activity surveys and dusk emergence surveys of buildings and recommends, where necessary; measures to avoid, minimise and offset the potential impacts to roosting, commuting and foraging bats as a result of the proposed development. This report provides information for the proposal of residential development at the site.

This report was prepared by WYG Consultant Ecologist Ben Cooke Grad CIEEM.

1.2 Site Location

The proposed development site mainly consists of large semi improved grassland fields c. 31 ha in area, located to the west of Havant in Hampshire, centred on Ordnance Survey grid reference SU690069.

The site is bounded by Scratchface Lane and the A3 (M) along the eastern boundary and College Road forming the western boundary. Further east of the site lies the residential area of Bedhampton. South of the site are agricultural fields with the B2177 Portsdown Hill Road and the residential dwellings of Farlington beyond. Directly north of the site is Littlepark Wood. Portsmouth Golf Course lies directly south west of the site. On the north-western corner of the site lies South Downs College. Further south lies Chichester and Langstone Harbour, a designated Ramsar Site, Special Protection



Area (SPA) and Site of Special Scientific Interest (SSSI), along with Farlington Marshes; a designated Local Nature Reserve (LNR).

1.3 Development Proposals

Development of land at Campdown for the provision of circa 735 dwellings (Use Class C3), sports facilities, formal and informal open space, landscaping, the provision of new access onto College Road and necessary associated works and infrastructure.

1.4 Survey & Reporting Objectives

Bat survey report consists of the following:

- Seasonal activity surveys to record the species present and their activity at the site;
- Dusk emergence/dawn return surveys to investigate whether the grouping of trees identified as holding bat roosting potential, support bats;
- An assessment of the potential ecological constraints to the proposed works at the site and recommendations for avoidance, mitigation and enhancement where appropriate.



2.0 Planning Policy & Legislation

2.1 National Planning Policy

A revised NPPF was issued in February 2019 (Ministry of Housing Communities and Local Government, 2019) and currently supplements government Circular 06/2005, Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System (Office of the Deputy Prime Minister, 2005).

Circular 06/2005 states that the presence of protected species is a material consideration in the planning process. Paragraph 170 of the NPPF also states that:

'Planning policies and decisions should contribute to and enhance the natural environment by:

- a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)*
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland*
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate*
- d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*
- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

The conservation and enhancement of wildlife is also specifically reference re: development within the National Parks or the Broads. Paragraph 174 then goes on to confirm that:

When determining planning applications, local planning authorities should apply the following principles:



- a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*

Regarding EcIAs and HRAs – any sites identified, or required, as compensatory measures for adverse effects on any Natura 2000/habitats site should also be given the same level as protection as the pSPAs and cSACs themselves. In addition, when an application is being determined, Paragraph 177 clarifies that:

"The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site. The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site"

Paragraph 180 is also relevant as;

Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should...

limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.



2.2 Local Planning Policy

The Havant Borough Local Plan (Core Strategy) includes Policy CS11 Protecting and Enhancing the Special Environment and Heritage of Havant Borough

Planning permission will be granted for development that:

- Has particular regard to the following hierarchy of nature conservation designations within the borough (i) Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar (ii) Sites of Special Scientific Interest (SSSI) and National Nature Reserves. (iii) Sites of Importance for Nature Conservation (SINC), Local Nature Reserves (LNR) and other Ancient Woodland.
- Protects and where appropriate enhances the borough's statutory and non-statutory heritage designations by appropriately managing development in or adjacent to conservation areas, listed buildings, scheduled ancient monuments, historic parks and gardens, archaeological sites, buildings of local historic or architectural interest.
- Protects wildlife habitats and wildlife corridors to prevent the fragmentation of existing habitats and to allow species, for example Brent Geese, to respond to the impacts of climate change by making provision for habitat adaptation e.g. coastal managed realignment and species migration.

2.3 Legislation

All 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 Regulations 2017* 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 Regulations 2017* 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 bat's 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. For example, lighting impacts could potentially sever a commuting route between a nursery roost and foraging ground such that it impairs bat's ability to rear young.

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

Such indirect and direct impacts could result in an offence being committed.



3.0 Methodology

3.1 Desk Study

3.1.1 Previous Reports

As part of the extended Phase 1 habitat survey completed by WYG in November 2016 (WYG, 2016), site and species-specific information were 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.

Five European designated sites are present within 2km radius from the site. The internationally designated sites present are mainly wetlands designated for the occurrence of overwintering and breeding birds.

The data search conducted on behalf of the extended Phase 1 report identified some bat records within 2km, although these do not necessarily relate to roosts (refer to Extended Phase 1 Report (WYG, 2016) for the list of these records). Based on the habitat assessment in the Phase 1 report, the site was considered to have 'low suitability' for both foraging and commuting bats. A site of this level of suitability based on methodology outlined in the Bat Conservation Trust's (BCT) Bat Surveys for Professional Ecologist: Good Practice Guidelines (Collins, 2016) has a recommended survey effort of three bat activity surveys conducted between March and October with one survey visit per season (spring – April/May, summer – June/July/August, autumn – September/October) in appropriate weather conditions for bats. The deployment of an automated static bat detector is also recommended alongside the suite of surveys conducted on-site (i.e. once per season). The static detector is to be left on-site for a minimum of five consecutive nights in appropriate weather conditions for bats.

A climbed and ground inspection of trees on site assessed a group of trees in the south west of the site as having moderate suitability to support roosting bats. The assessment was based on methodology outlined in the Bat Conservation Trust's (BCT) Bat Surveys for Professional Ecologist: Good Practice Guidelines (Collins, 2016). Based on this, a minimum of one dusk emergence and a dawn re-entry survey was recommended for the trees assessed as having moderate suitability to support roosting bats with at least one of the survey to be conducted between May to August.



3.2 Field Surveys

3.2.1 Bat Activity Surveys

The activity surveys were carried out on 26th October 2016, 10th April 2017 and 22nd June 2017. Two surveyors were present on site for each survey, with the surveyors walking together on a single transect route. The transect routes incorporated all areas of the site including all habitats likely to be used by foraging and commuting bats including dense scrub, scattered trees, grassland, tall ruderal vegetation and buildings. The surveys commenced 15 minutes prior to sunset and concluded approximately two and quarter hours after. Weather conditions (temperature, precipitation and wind speed) were recorded on each survey.

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 (Collins 2016). 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 a description of any activity. Additionally, where bats could be seen, the patterns/directions of the bats' flight were also recorded. Surveyors were qualified ecologists and were either experienced at undertaking bat surveys or were in training and were supported by experienced surveyors. All surveyors used an Elekon Batlogger (full spectrum). Surveyors walked along the transect routes at a steady pace and stopped in several places along the transect route. The data recorded during the suite of surveys were analysed using the Bat Explorer software. The transect route is shown on Figures 3-5.

3.2.2 Automated Bat Activity Surveys

One automated bat detector, Anabat Express, was left at the site for at least five days during each survey period (Autumn 2016, Spring 2017 and Summer 2017). The detector was placed in the same location for each period shown on Figures 3-5. Data from this detector was analysed using Analook W to gain further information on the species present and relative amount of activity through the night.

3.2.3 Dusk Emergence/Dawn Return Surveys of Trees

Dusk emergence/dawn return surveys were carried out on 24th August and 31st August 2017. Surveyors were positioned appropriately around the trees so that all potential bat access points or roosting features could be seen. Positions of surveyors around the cluster of trees are shown on Figure 6. Surveyors each used an Elekon Batlogger (full spectrum). The dusk emergence survey commenced approximately 30 minutes before sunset and lasted for approximately 90 minutes after



sunset. The dawn pre-return commenced approximately 90 minutes before sunrise and 15 minutes following sunrise.

3.3 Limitations

One automated bat detector was left at the site during each seasonal period for at least five consecutive nights. The detector placed during the Autumn 2016 season could not be found during collection appearing to have been stolen. The Autumn survey season (September/October 2016) had lapsed before an additional detector could be placed during the same timeframe. Therefore, no recordings were present for this period. The automated detector placed on-site during the Summer 2017 seasonal window suffered a mechanical failure and the sound files were found to be corrupted and unreadable. This limited the potential to assess temporal bat activity on-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.

Further ecological surveys were conducted on site until October 2017 during which time there was no change to the conditions on site. The details of this report are therefore considered to remain valid for a period of two years from that date (until October 2019). Beyond this period, if works have not yet been started, it is recommended that the findings of this assessment are reviewed in order to determine any need for update surveys.

3.4 Valuing On-site Bat Population

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 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).

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 below.

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
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 Tables 3 and 4 below.

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)
		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 as detailed in Table 5 below.



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

4.0 Survey Results

4.1 Timings and Weather Conditions for Nocturnal Bat Surveys

Table 6 and 7 show the survey dates, times and weather conditions during each of the surveys. Weather conditions during activity transect and emergence surveys were recorded by Elekon Batlogger and noted down at the beginning and at the end of the surveys. Weather conditions during automated bat surveys were taken from www.wunderground.com.

Table 6: Weather conditions during nocturnal activity bat surveys

Survey	Date	Dusk / Dawn Times	Survey Time(s)	Weather at the start/end of survey
Transect Activity Surveys	26 th October 2016	17:49	17:34-20:04	St: 12.3°C; 10% cloud cover; very light breeze; very light precipitation E: 11°C; 40% cloud cover; light breeze; nil precipitation
	10 th April 2017	19:51	19:36-22:41	St: 12.7°C; 60% cloud cover; very light breeze; nil precipitation E: 10.6°C; 10% cloud cover; very light breeze; nil precipitation
	22 nd June 2017	21:26	21:11-23:41	St: 18.5°C; 20% cloud cover; very light breeze; nil precipitation E: 16.7°C; 10% cloud cover; very light breeze; nil precipitation
Emergence / Re-entry of Buildings	24 th August 2017	20:07	19:37-21:37	St: 16.7°C; 60% cloud cover; very light breeze; nil precipitation E: 13.7°C; 10% cloud cover; very light breeze; nil precipitation
	31 st August 2017	06:15	04:45-06:30	St: 9°C; 5% cloud cover; nil precipitation E: 8.1°C; 10% cloud cover; nil breeze; nil precipitation

Table 7: Weather conditions during automated bat surveys

Month	Date	Weather
September	26/10/2016	12°C; wind speed 5km/h; Scattered Clouds
	27/10/2016	10°C; wind speed 6km/h; Mostly Cloudy
	28/10/2016	12°C; wind speed 9km/h; Mostly Cloudy
	29/10/2016	12°C; wind speed 2km/h; Mostly Cloudy
	30/10/2016	11°C; wind speed 5km/h; Mist
April	11/04/2017	8°C; wind speed 6km/h; Clear
	12/04/2017	10°C; wind speed 13km/h; Partly Cloudy
	13/04/2017	8°C; wind speed 8km/h; Mostly Cloudy
	14/04/2017	8°C; wind speed 6km/h; Scattered Clouds
	15/04/2017	10°C; wind speed 9km/h; Partly Cloudy

Month	Date	Weather
	16/04/2017	9°C; wind speed 10km/h; Partly Cloudy
	17/04/2017	10°C; wind speed 9km/h; Mostly Cloudy
	18/04/2017	6°C; wind speed 10km/h; Clear
June	11/08/2017	16°C; wind speed 19km/h; Partly Cloudy
	12/08/2017	14°C; wind speed 11km/h; Clear
	13/08/2017	14°C; wind speed 3km/h; Clear
	14/08/2017	16°C; wind speed 6km/h; Clear
	15/08/2017	15°C; wind speed 10km/h; Scattered Clouds
	16/08/2017	16°C; wind speed 8km/h; Clear
	17/08/2017	19°C; wind speed 5km/h; Clear

All the bat surveys were carried out between September 2016 and August 2017. These timings are within the optimal period for these surveys. All the surveys were carried out during periods of suitable weather conditions (i.e. not during heavy rain, low temperatures or strong winds) as recommended within BCT Guidelines (2016).

4.2 Activity Transects

26th October 2016

Three bat species were identified during the survey; common pipistrelle, soprano pipistrelle and serotine. The survey was dominated by common pipistrelles with both foraging and commuting behaviour noted (a total of 16 passes, between 21:56 and 23:38). Soprano pipistrelle were recorded occasionally throughout the survey, with serotine activity restricted to a single pass at 22:16, foraging along the eastern site boundary. Most of the observed activity was restricted to the eastern and south-eastern corner of the site. Further activity was noted along the northern extent of the site, south western corner and the western boundary adjacent to College Road. All of this activity was attributed to common pipistrelle.

Refer to Figure 3 for a plan showing the bat activity across the site during the survey.

10th April 2017

A higher level of bat activity was noted on site than that recorded during the survey conducted during the autumn, attributable to common and soprano pipistrelle. As with the previous survey the level of common pipistrelle activity far exceeded that of soprano pipistrelle with 22 passes to two passes. The on-site activity was spread across much of the survey from 20:05 – 22:04 and was a combination of foraging and commuting activity. Activity was observed around much of the peripheries of the

proposed development site, although the level of activity noted within the western half of the site was much lower than that observed within the eastern half.

Refer to Figure 4 for a plan showing the bat activity across the site during the survey.

22nd June 2017

Bat activity was noted from the 18:11 (22 minutes after sunset) and continued until eight minutes prior to the end of the survey with two species noted; common pipistrelle and soprano pipistrelle. The common pipistrelle was recorded at a greater frequency than the soprano pipistrelle with both species noted foraging and commuting throughout the site. All activity noted during the survey was confined to the southern half of the site, except for a common pipistrelle foraging adjacent to the South Downs College between 19:54-19:58.

Refer to Figure 5 for a plan showing the bat activity across the site during the survey.

4.3 Automated Activity Surveys

The automated bat detector at the site recorded up to three bat species between September 2016 and August 2017. Passes recorded were strongly dominated by common pipistrelle, and other species included soprano pipistrelle and serotine.

Table 8 provides details of bat calls recorded during automated surveys.

Table 8 Automated Bat Detector Survey Results

Month	Date	Species	No. of passes
September	26/10/2016	No bats recorded (detector lost)	
	27/10/2016	No bats recorded (detector lost)	
	28/10/2016	No bats recorded (detector lost)	
	29/10/2016	No bats recorded (detector lost)	
	30/10/2016	No bats recorded (detector lost)	
April	10/04/2017	Common Pipistrelle	21
		Soprano Pipistrelle	5
	11/04/2017	Soprano Pipistrelle	1
	12/04/2017	Common Pipistrelle	5
		Soprano Pipistrelle	3
	13/04/2017	Common Pipistrelle	36
		Soprano Pipistrelle	3
	14/04/2017	Common Pipistrelle	1
		Soprano Pipistrelle	2

Month	Date	Species	No. of passes
	15/04/2017	Common Pipistrelle	2
	16/04/2017	Serotine	2
		Common Pipistrelle	5
		Soprano Pipistrelle	3
	17/04/2017	Common Pipistrelle	51
		Soprano Pipistrelle	13
	18/04/2017	No bats recorded	
June	11/08/2017	No bats recorded (mechanical failure)	
	12/08/2017	No bats recorded (mechanical failure)	
	13/08/2017	No bats recorded (mechanical failure)	
	14/08/2017	No bats recorded (mechanical failure)	
	15/08/2017	No bats recorded (mechanical failure)	
	16/08/2017	No bats recorded (mechanical failure)	
	17/08/2017	No bats recorded (mechanical failure)	

4.4 Dusk Emergence/Dawn Return Surveys of Trees

24th August 2017: Dusk Emergence Survey

No bats were recorded emerging from any of the trees present within the cluster under observation during the dusk emergence survey.

The cluster of trees was surveyed by three surveyors positioned equidistant from each other around the stand. A total of four species were recorded; common pipistrelle, soprano pipistrelle, brown long-eared bat and serotine.

- The surveyor at the northern eastern edge of the cluster of trees observed a total of two brown long-eared bat passes commuting southwards at 20:43 and 20:54 to the north east of the tree cluster. No further brown long-eared bat activity was noted by the surveyor. A total of 10 common pipistrelle passes were noted during the survey. Except for an individual commuting westwards to the north of the stand of trees at 21:02, all other activity was heard and not seen. Two passes attributed to soprano pipistrelle were recorded at 21:29 and 21:32.
- The surveyor at the western side of the stand of trees observed three brown long-eared bat passes at 20:45, 20:47 and 20:53 foraging in proximity to the stand of trees. A common pipistrelle was observed foraging around the cluster of trees at 20:59. All remaining common pipistrelle activity was heard not seen. A single serotine was recorded commuting at 20:43, the bat was not seen.
- The surveyor at the south-eastern side of the cluster of trees observed a brown long-eared bat constantly foraging, circling the stand between 20:44 and 20:49. All other activity was



related to two bat species common pipistrelle and serotine. Common pipistrelle were recorded a total of six times between 20:33- 21:29. A single serotine was recorded commuting at 20:42.

Refer to Figure 6 for a plan showing the bat activity around the tree during the survey.

31st August 2017: Dawn Return Survey

No activity was noted during the duration of the survey.



5.0 Discussion

5.1 Bat Activity Surveys

During bat activity transects and automated static surveys, up to three bat species were recorded onsite. These were common pipistrelle, soprano pipistrelle and serotine. Common pipistrelle was the most frequently recorded species by the automatic bat detector and during transects.

Areas of the site where the most bat activity was recorded included the treelines and hedgerows along the peripheries of site particularly the south-eastern site extent, although some activity was noted along the central hedgerow traveling east to west, in the eastern half of the site. A small number of bat passes were recorded in the corners of the southern edge of the site. Activity included a mixture of commuting and foraging.

There was a mixture of foraging and commuting activity on this site throughout the manual surveys. The majority of bats recorded were common pipistrelles with soprano pipistrelles recorded occasionally and a single pass by a serotine. According to Table 1, serotine is considered 'rarer'. Based on the assessment in Table 3, the commuting bat score on site is 13 (rarer species, individual bats, no roosts, isolated well-grown hedgerows, moderate field sizes). 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 (rarer species, individual bats, no roosts, suburban areas or intensive arable land). Therefore, the foraging bat value at this site is considered to be of up to **District, local or parish level**.

5.2 Dusk Emergence and Pre-Dawn Return Survey

Four bat species were recorded within the vicinity of the cluster of trees, these included common pipistrelle, soprano pipistrelle brown long-eared bat and serotine. Common pipistrelle was the most commonly recorded while the remaining species were recorded occasionally. No bats were recorded emerging from the trees surveyed.

Surveys were carried out during optimal conditions for carrying out bat surveys although temperatures did fall to 8.1°C during the pre-dawn survey on 31st August 2017. This is at the lowest extent for optimal temperature conditions for a bat survey. No roosts were identified during the course of the dusk emergence/dawn return surveys of trees or during bat activity surveys.



6.0 Potential Impact of the Development on Bats

6.1 Effects on Roosts

No evidence of bat roosts was observed during either the bat activity surveys or the emergence surveys. It is therefore considered that bat roosts are likely absent from site and will not be impacted by the proposed development.

6.2 Effects on Foraging / Commuting Habitat

The site has been assessed as having value at the district, local or parish level for foraging and commuting bats. The development proposal includes the construction of residential properties with associated access, public open space and sports facilities. It is likely that this will result in the loss of some habitat used by foraging and commuting bats (such as the central east – west hedgerow), although boundary habitats will be retained and protected. The creation of gardens, along with informal open space will provide suitable foraging habitat during the occupation phase of the development to compensate for this loss.

There is also the potential for bats that continue to forage and commute within areas of retained habitat to be impacted by lighting during the construction and operational phases of the development. Some common species, 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 predation. Where inappropriate lighting occurs close to roost sites, bats may abandon their roost or delay their emergence, which limits their foraging opportunities. Lighting a commuting or foraging route may also impact upon the integrity of a roost, even if the roost itself is not directly affected. Several 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.

Mitigation recommendations to offset the potential development and operational impacts are provided in the following section.



7.0 Recommendations and Mitigation

7.1 Further Work

If the proposed development does not proceed within the next two years (i.e. before June 2019) it is recommended that a review of the site conditions is undertaken to determine whether updated surveys are necessary. This will help to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.

No bats were recorded roosting within the site. It is therefore considered unlikely that these buildings support roosting bats. Should works not commence by June 2018 it is recommended that a review of the findings is undertaken. In the unlikely event that a bat is encountered during the demolition of the building, it is recommended that all works cease and a suitably qualified and licensed bat ecologist is contacted for advice.

7.2 Avoidance

7.2.1 Lighting

Stone (2013) summarises the findings of the Bats and Lighting Research Project to date. This has found that artificial lighting tends to have an adverse effect on bats and recommends a series of measures to avoid or reduce this impact. If lighting is required within the proposed development, it is recommended that it comprise LED lamps, with a low colour correlated temperature – preferably below 3500K (warm white). Lighting should be directed groundward to avoid light spillage, with hoods/shields as necessary. Light spill on boundary features to be used by commuting bats should be a maximum of 1lux. It is recommended that the allotments and informal open space are unlit as these areas are likely to be highly used by foraging bats.

During the construction phase (between April and October), it is recommended that construction activity ceases 30 minutes before sunset, to avoid delaying the emergence of locally roosting bats because of artificial lighting. It is also recommended that construction activity commences again after sunrise to ensure that impacts to bats returning to local roosts does not occur.

7.2.2 Breathable Roof Membranes

In new buildings, best practice should be considered and the use of Breathable Roof Membranes (BRM) avoided. Instead, Type 1F bitumen and hessian under-felt should be considered 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).

7.3 Mitigation

7.3.1 Habitat Retention and Replacement

Suitable foraging habitat will be created as part of the development in the form of gardens and informal open space to compensate for the loss of exiting suitable habitat during the construction phase.

It is recommended that a diverse collection of native planting is incorporated into the landscaping design within the proposed development site (refer to Appendix A for recommended 'bat friendly' 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.

7.4 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.

Additional measures to enhance the site for bats include the provision of a minimum of five artificial bat roosts, which will be attached to trees that are being retained on the proposed development site. A minimum of 20 boxes should also be installed on new dwellings. Lighting should be directed away from these new roost sites.

Bat boxes will be located away from footpaths and areas subject to disturbance, which will reduce recreational pressure on these new roosting locations.



Two tree bat boxes will be sited as high as possible (no lower than 3m) and clear of any overhanging branches so that the bats have direct and easy access to them. Ideally several boxes should be erected facing in differing directions around the trunk of the tree, so that if one box gets too hot or cold the bats can move to another. Boxes should be attached to the tree using an aluminium nail or tied in position using wire/leather. A suitable model is the Schwegler 2FN or similar. The building-mounted boxes should be installed on south-facing walls at a minimum height of 4m. These should be Schwegler 2FE or similar.



8.0 Summary

8.1 Recommendations and mitigation

8.1.1 Further Survey

- The results of the bat surveys will remain valid for two years. If works have not commenced by that time, it is recommended that the results of the surveys are reviewed to determine any need for updates.

8.1.2 Avoidance

- It is recommended that lighting comprises warm white LED lamps to reduce potential disturbance to bats to a minimum.
- Lighting should be directed groundward to avoid light spillage, using light hoods/shields as necessary to keep light spill on boundaries to 1lux.
- During the construction phase (between April and October), it is recommended that construction activity ceases 30 minutes before sunset, if not before and commences again after sunrise.
- The use of Breathable Roof Membranes (BRM) avoided. Instead, Type 1F bitumen and hessian under-felt should be considered as an alternative.

8.1.3 Mitigation

- Ideally, all trees will be retained and protected within the development. Otherwise, they should be replaced with hedgerows to create a continuous bat foraging corridor.
- It is recommended that additional trees are planted within the gardens and areas of public open space.
- It is recommended that a diverse collection of native planting will be incorporated into the landscaping design within the proposed development site (refer to Appendix A for recommended 'bat' plants).

8.1.4 Enhancement

- 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.
- Artificial bat roosts will be attached to trees that are being retained on the proposed development site and new dwellings. Bat boxes will be located away from footpaths and



areas subject to disturbance, which will reduce recreational pressure on these new roosting locations.



9.0 References

- Bat Conservation Trust, (2009). *Bats and Lighting in the UK*. Bats and the Built Environment Series. Available from: http://www.bats.org.uk/data/files/bats_and_lighting_in_the_uk_final_version_version_3_may_09.pdf [Viewed 18/11/2013].
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- WYG (2016) *College Road, Campdown: Extended Phase 1 Habitat Survey*.



FIGURES

Figure 1 - Site Location Plan

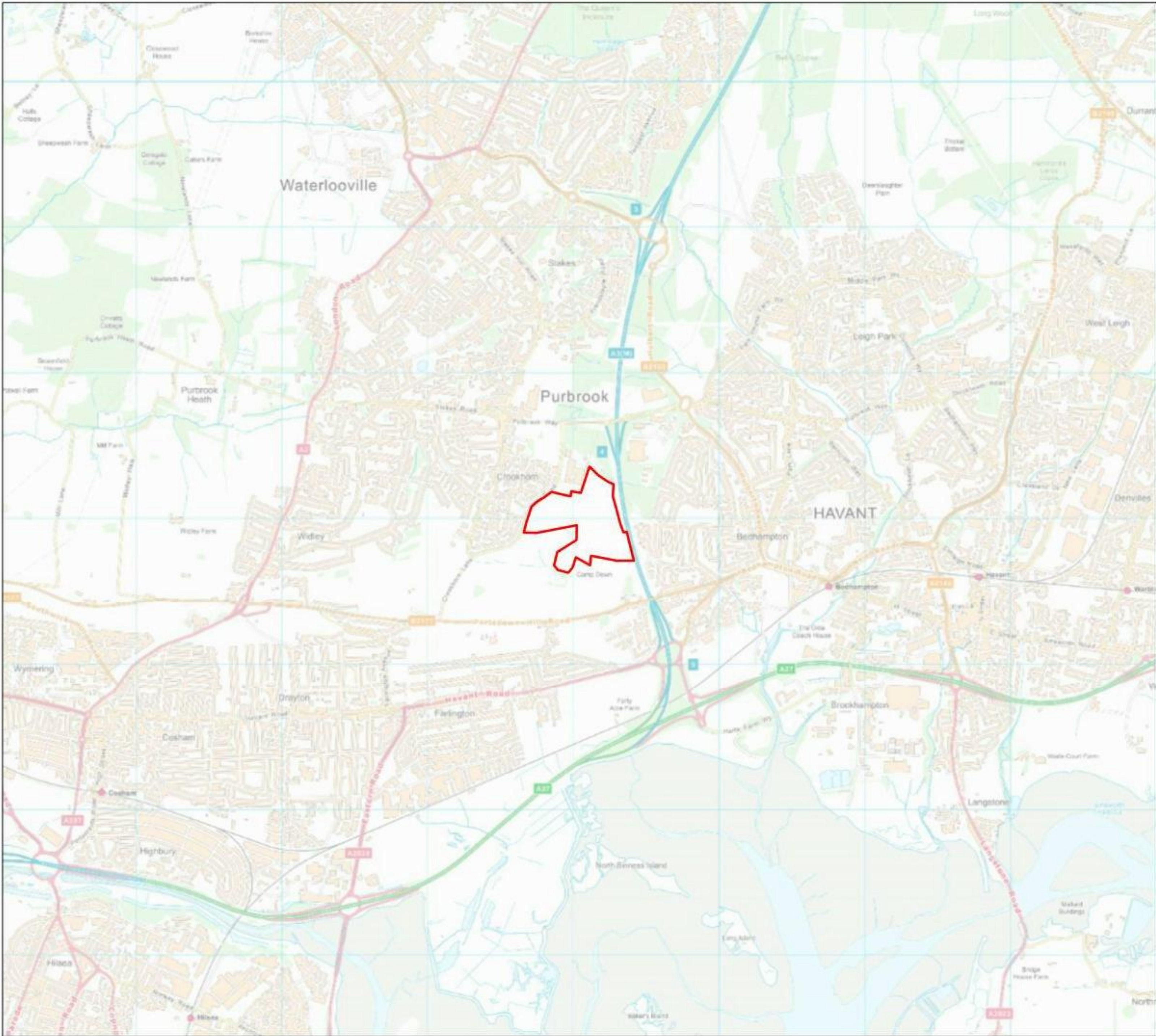
Figure 2 - Phase 1 Habitat Plan

Figure 3 - Bat Activity Survey (26th October 2016)

Figure 4 - Bat Activity Survey (10th April 2017)

Figure 5 - Bat Activity Survey (22nd June 2017)

Figure 6 - Dusk Emergence Surveys of Trees (24th August 2017)



Rev	Date	Notes
A	07/12/17	Initial map production

Legend

— Site boundary

0 250 500 1,000 Metres

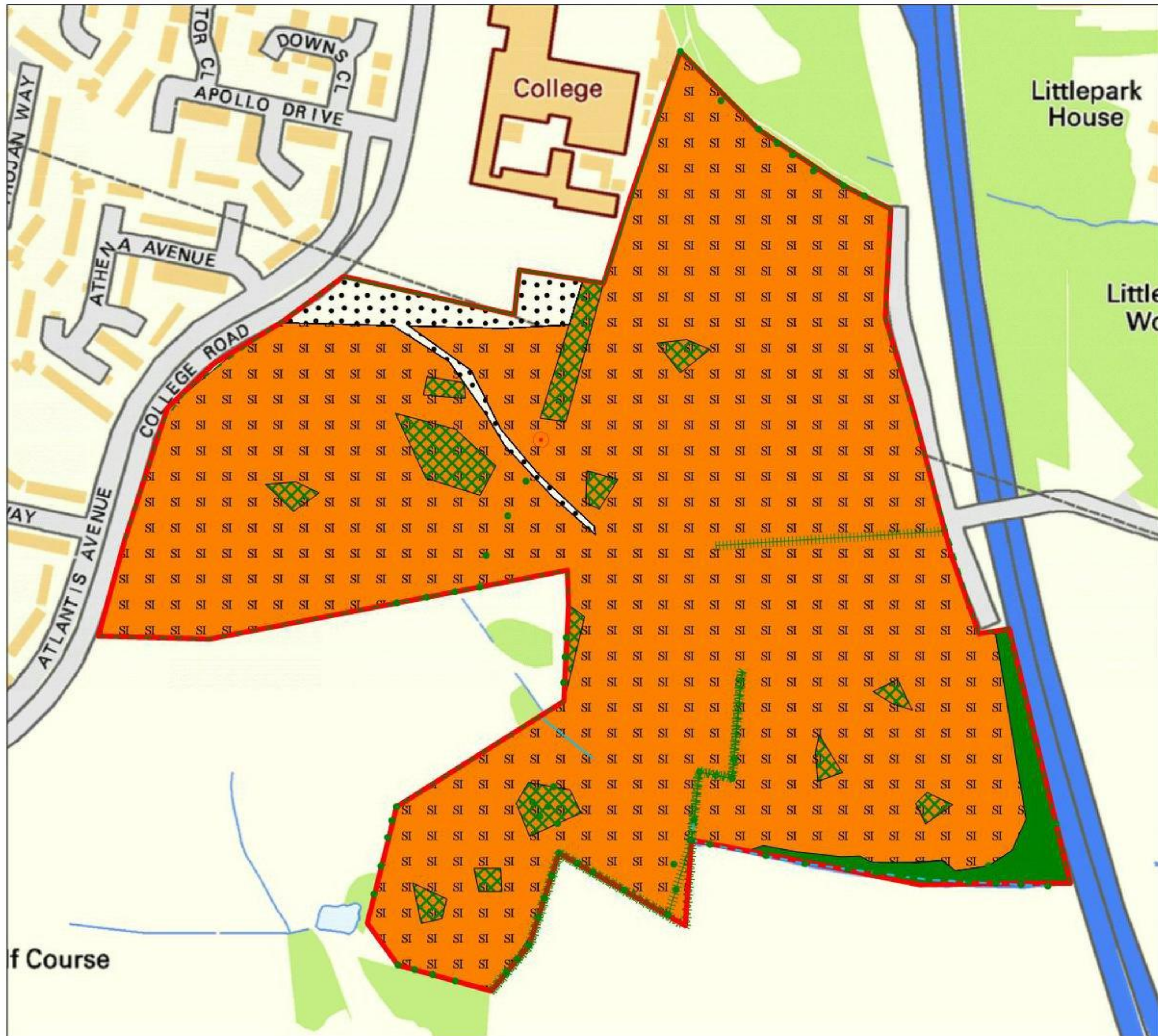


Site Location Plan

Campdown
Hampshire Homes Ltd

Scale at A3: 1:25,000	Project No: A100376	Drawing No: Figure 1	Revision: A
Drawn by: Ben Blowers	Drawn date: 19/12/2017	Approved by: Ben Cooke	

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Rev	Date	Notes
A	DD/MM/YY	Initial map production

Legend

- Site boundary
- Scattered tree
- Intact Hedgerow
- Defunct Species-poor
- Dry ditch
- Deadwood
- ||||| Species poor hedge and trees
- Bare Ground
- X Dense scrub
- Pond
- Standing water
- ~~~~~ Hedgerow
- Broadleaved woodland
- SI Semi improved grassland

0 25 50 100 Metres



Phase 1 Habitat Plan

College Road, Campdown

Scale at A3: 1:0	Project No: A100376	Drawing No: Figure 2	Revision: A
Drawn by: Ben Blowers	Drawn date: 10/01/2018	Approved by: Ben Cooke	

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Rev	Date	Notes
A	07/12/17	Initial map production

Legend

- Site boundary
- Common Pipistrelle heard not seen
- Soprano Pipistrelle heard not seen
- Common Pipistrelle
- Soprano Pipistrelle

0 25 50 100 Metres



Bat Activity Survey Results
26/10/17

Campdown
Hampshire Homes Ltd

Scale at A3: 1:3,000	Project No: A100376	Drawing No: Figure 3	Revision: A
Drawn by: Ben Blowers	Drawn date: 19/12/2017	Approved by: Ben Cooke	

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Rev	Date	Notes
A	07/12/17	Initial map production

Legend

- Site boundary
- Common Pipistrelle heard not seen
- Soprano Pipistrelle heard not seen
- Brown long eared heard not seen
- Serotine heard not seen
- Common Pipistrelle
- Brown long-eared



Dusk Emergence Survey of Trees
24/08/17

Campdown
Hampshire Homes Ltd

Scale at A3: 1:1,000	Project No: A100376	Drawing No: Figure 6	Revision: A
Drawn by: Ben Blowers	Drawn date: 19/12/2017	Approved by: Ben Cooke	

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APPENDIX A – 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

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

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