

Windroos Nursery, Worthing Road, Littlehampton, West Sussex, BN17 6LY

Composite Report

Desk Study 23/05/2016

Preliminary Roost Assessment 24/05/2016

Bat Emergence Survey 12/06/2016

Document Production and Approval Record

Status	Issue	Author/Reviewer	Date
Desk Study			
Draft	1.0	Julie Powell MSc (Hons) MCIEEM, Technical Lead	23/05/2016
Draft (<i>exc searches</i>)	1.1		
QC	1.2		
Draft (<i>inc searches</i>)	1.3		
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Preliminary Roost Assessment			
Draft (<i>exc DNA</i>)	1.0	Natalie Evans BA (Hons), MA, MRSB	26/05/16
Draft (<i>inc DNA</i>)	1.1		
QC	1.2	Jo Gregory BA (Hons) MSc GradCIEEM, Senior Consultant	27/05/2016
Final (minus records)	2.0	Natalie Evans BA(Hons), MA, MRSB	31/05/16
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Bat Emergence Survey			
Draft	1.0	Natalie Evans BA(Hons), MA, MRSB	14/06/16
QC	1.1	Jo Gregory BA (Hons) MSc GradCIEEM, Senior Consultant	16/06/16
Final	2.0	Natalie Evans BA(Hons), MA, MRSB	16/06/16

Guidelines

This assessment has been designed to meet:

- Chartered Institute of Ecology and Environmental Management 'Guidelines for Preliminary Ecological Appraisal' (2013); and
- British Standard 42020 (2013) 'Biodiversity – Code of Practice for Planning and Development'.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

This approach is enshrined in Government planning guidance, for example, paragraph 193 of the National Planning Policy Framework for England.

The desk studies and field surveys undertaken to provide a preliminary ecological appraisal (PEA) might in some cases be all that is necessary.

(BS42020, 2013)

In consequence of the scale and intensity of the proposed development, the low impact on ecological receptors identified through both the site survey and search of local biological records, and the passive interface with the mitigation hierarchy, this plan-led report is considered adequate and proportionate. It communicates all relevant information necessary to determine a planning application, or support the recommendation for further survey.

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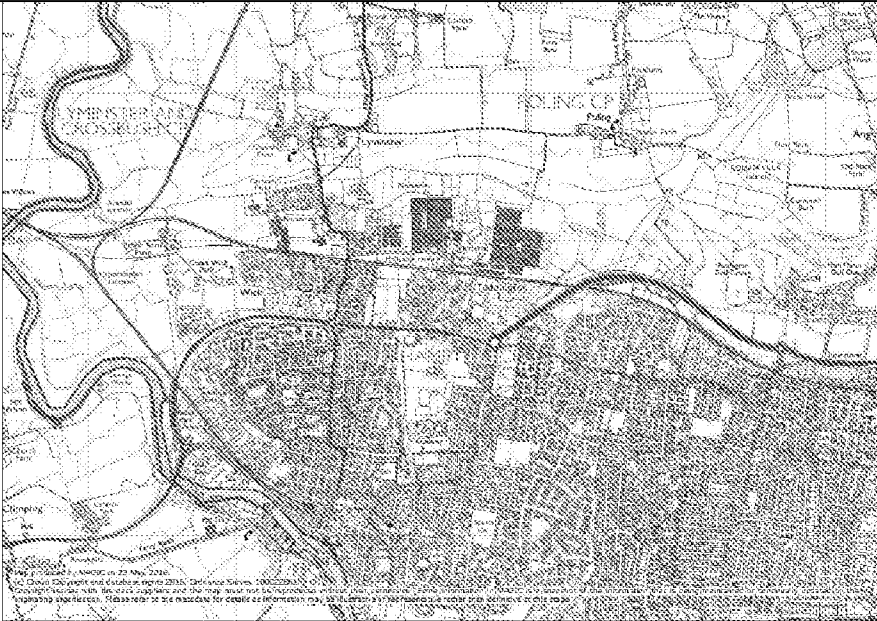
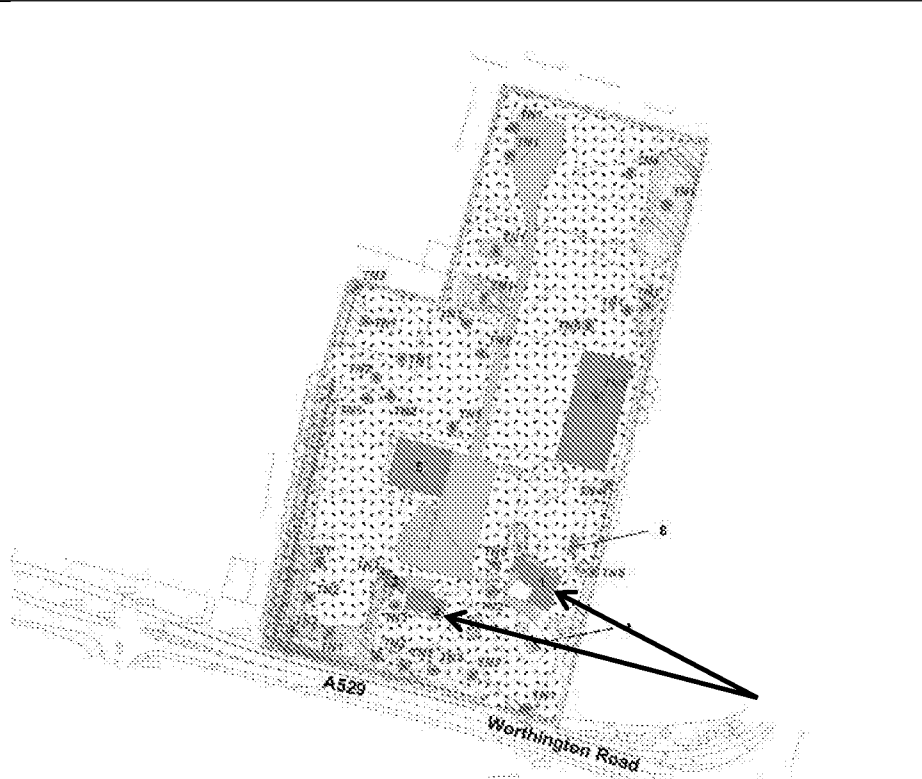
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The Development	
Site Location	Windroos Nursery, Worthing Road, Littlehampton, West Sussex, BN17 6LY
National Grid Reference	TQ 035033
Local Planning Authority	Arun District Council
Site Area	2.3Ha
Application Description	Demolition of buildings on site; construction of housing
 Figure 1: Site location plan (http://www.magic.gov.uk/MagicMap.aspx [accessed on 23.05.16])  Figure 2: Existing site plan (drawn by Ecology Consultancy, 2015)) arrows indicate buildings highlighting for further survey.	

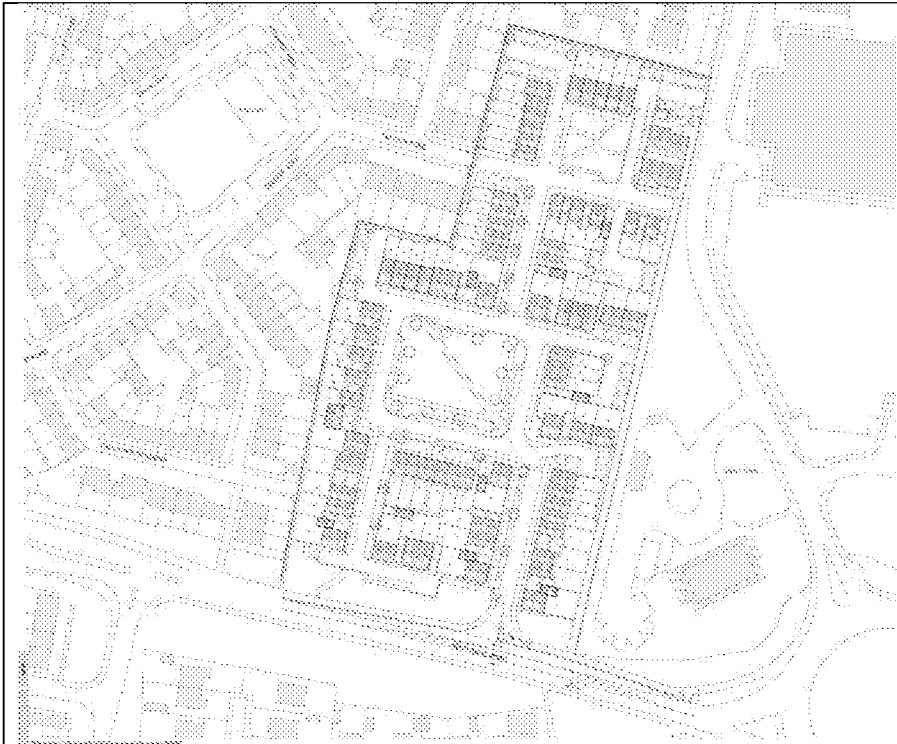


Figure 3: Proposed site layout (drawn by Boyle and Summers)



Figure 4: Aerial photograph [red marker delineates approximate location of site
(<https://www.google.co.uk/maps/place/Wick,+Littlehampton,+West+Sussex+BN17+6LY/@50.8195602,-0.5224739,6498m/data=!3m1!1e3!4m5!3m4!1s0x4875a56b24204d0d:0xb708a6a461e89272!8m2!3d50.8206743!4d-0.5309301> [accessed on 23.05.2016]))

The Desk Study	
Landscape Characterisation	A flat, coastal landscape with an intricately indented shoreline lying between the dip slope of the South Downs and South Hampshire Lowlands and the waters of the English Channel, Solent and part of Southampton Water.
Key Characteristics	■ The plain slopes gently southwards towards the coast. From the coastal plain edge there are long views towards the sea and the Isle of Wight beyond. ■ The underlying geology of flinty marine and valley gravels extends several miles inland to the dip slope of the South Downs and the South Hampshire Lowlands. This gives rise to deep and well-drained highquality soils. ■ In places, streams and rivers flow south from the higher land of the Downs to the sea. ■ Coastal inlets and 'harbours' contain a diverse landscape of narrow tidal creeks, mudflats, shingle beaches, dunes, grazing marshes and paddocks. These include the internationally important Chichester, Langstone, Portsmouth and Pagham harbours, the Hamble Estuary and the recent coastal realignment site at Medmerry between Chichester Harbour and Selsey. ■ There are stretches of farmed land between developed areas, often with large arable fields defined by low hedges or ditches. ■ There are isolated remnants of coastal heath in the west. ■ Sand dune grasses and intertidal marsh communities are characteristic of the coastline, while small areas of species-rich meadow remain inland. ■ The coastline provides feeding grounds for internationally protected populations of overwintering waders and wildfowl and is also extensively used for recreation. ■ Along the exposed, open coastal plain and shoreline, tree cover is limited to isolated wind-sculpted woodlands and shelterbelts. ■ The area has significant urban development, with settlements along the coastline dominated by the Portsmouth conurbation, suburban villages and seaside towns including Bognor Regis, Littlehampton and Worthing linked by major road and rail systems. ■ Historic fortifications along the coast include the Roman fort at Portchester and 19th-century defences and later naval installations built to protect the Portsmouth naval dockyard. (publications.naturalengland.org.uk/file/5212877774389248 [accessed on 23.05.2016])
Previously Granted EPSL	Within 1km of the site boundary there are two previously granted EPSMLs recorded on Magic: Case reference of granted application: EPSM2009-946

	Species group to which licence relates: Bats Species on the licence: Common pipistrelle (C-PIP); Soprano pip; Brown long-eared (BLE) Licence Start Date: 04/06/2010 Licence End Date: 31/12/2011 Does licence impact on a breeding site: Y Does licence allow damage of breeding site: Y Does licence allow damage of a resting place: Y Does licence allow destruction of breeding site: Y Does licence allow destruction of a resting place: Y Case reference of granted application: EPSM2012-4965 Species group to which licence relates: Bats Species on the licence: C-PIP;BLE; Natterer's (NATT) Licence Start Date: 05/11/2012 Licence End Date: 31/08/2014 Does licence allow damage of a resting place: Y Does licence allow destruction of a resting place: Y
Designated Sites	There are no designated sites within 1km of the site boundary.
Priority Habitats	There is notable deciduous woodland adjacent to the site to the northwest. There are other patches of deciduous woodland within 1km, in all directions. The site is situated in an exceptional landscape. • Coastal and floodplain grazing marsh • Woodland (http://www.magic.gov.uk/MagicMap.aspx [accessed on 23.05.2016])

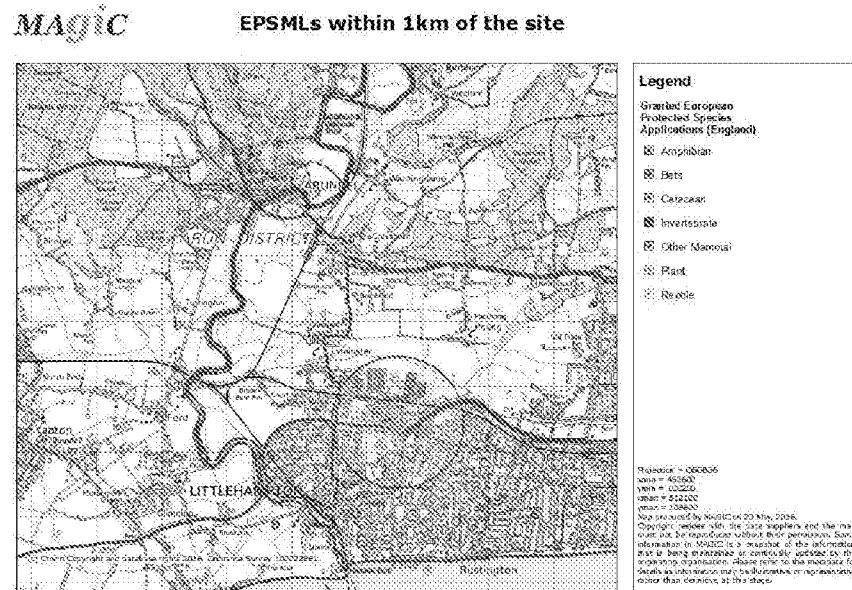


Figure 5: European protected species mitigation licences
(<http://www.magic.gov.uk/MagicMag.aspx> [accessed on 23.05.2016])

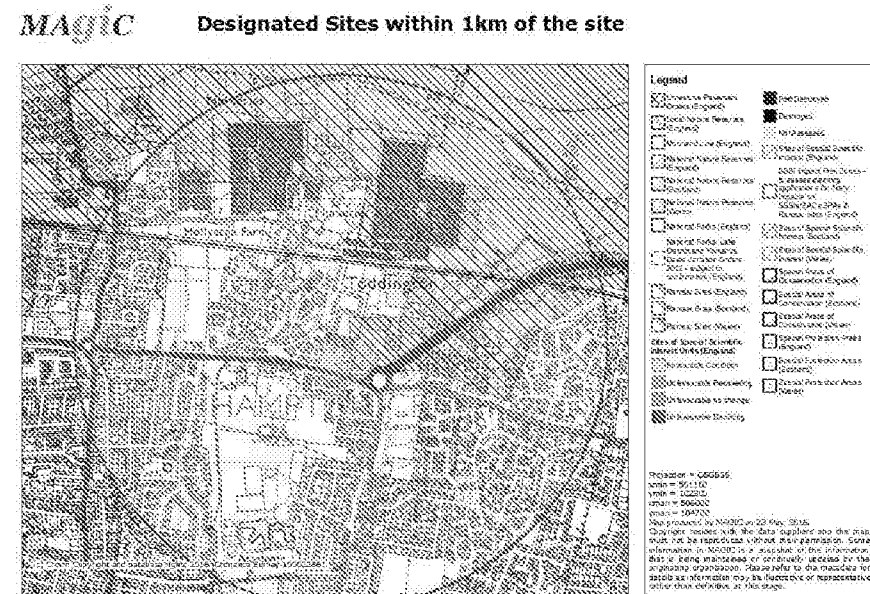


Figure 6: Site Designations (<http://www.magic.gov.uk/MagicMap.aspx> [accessed on 23.05.2016])



Biological Records Data ("BRD") Searches (Bats)			
Search		2km: Sussex Biodiversity Records Centre	
Bat Species	Present within 2km	Roosting within 2km	Species code
Alcathoe bat <i>Myotis alcathoe</i>			ALC
Barbastelle bat <i>Barbastella barbastellus</i>			BRB
Bechstein's bat <i>Myotis bechsteinii</i>			BEC
Brandt's bat <i>Myotis brandtii</i>	X		BRD
Brown long-eared bat <i>Plecotus auritus</i>			BLE
Common pipistrelle bat <i>Pipistrellus pipistrellus</i>	X		CP
Daubenton's bat <i>Myotis daubentonii</i>	X		DAU
Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>			GHS
Grey long-eared bat <i>Plecotus austriacus</i>			GLE
Leisler's bat <i>Nyctalus leisleri</i>			LEI
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>			LHS
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	X		NP
Natterer's bat <i>Myotis nattereri</i>	X		NAT
Noctule bat <i>Nyctalus noctula</i>	X		NOC
Serotine bat <i>Eptesicus serotinus</i>	X		SER
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	X		SP
Whiskered bat <i>Myotis mystacinus</i>	X		WHS
Greater mouse-eared bat <i>Myotis myotis</i>			GME

Summary of Desk Study

The site is situated in a residential area with light industry to the north and east. A dual carriageway fragments the site from the landscape to the south for many species; large expanses of open water are situated to the north, west and southwest.

There are two bat EPSMLs within 1km of the site; one is for impacts on a breeding site.

Although there are no designated sites within 1km, there are notable habitats nearby, including floodplain grazing marsh and woodlands.

The 'batscape' is poor, although the areas of water and notable habitats provide some commuting and foraging resource.

Preliminary Roost Assessment (“PRA”)	
Surveyor(s)	Natalie Evans MA
Bat licence number(s)	England: 2015-11257-CLS-CLS
Date of physical inspection	24/05/2016
External temperature (°C)	19
Internal temperature (°C)	23
External relative humidity (%)	52
Internal relative humidity (%)	43-45
Average wind speed (mph)	2
Wind direction	SW
Precipitation	None

Aims, Methods, and Limitations	
Scope of the Report	This Report provides a description of all structural features in buildings and structures (“the survey area”), suitable for roosting bats, and evaluates those features in the context of the site and wider environment. It further documents any physical evidence collected or recorded during the site survey that establishes the presence of roosting bats. This Report provides information on constraints to the proposals as a result of roosting bats, and summarises the requirements for any further surveys, to inform subsequent mitigation proposals, a planning decision, or other statutory consent, and to comply with various wildlife legislation (presented in the “Legislation Overview” section of this Report). The aim of the assessment was to determine the presence or evaluate the likelihood of presence of roosting bats, and to gain an understanding of how they could use the buildings and structures, within the survey area. To achieve this, the following steps have been taken: • A field survey has been undertaken, including an external and internal inspection of the survey area; • An outline of likely impacts on any known roosts has been provided, based on current development proposals; • Recommendations for further survey effort and any otherwise assessment or analysis have been made, along with advice on European protected species licencing (if appropriate); and • A thorough desk study has been undertaken and is presented in the “Desk Study” sections of this Report.
Scope of the PRA	All buildings and structures that will be impacted by the project proposals (the survey area) were assessed for their suitability to support roosting bats. The surveyor systematically searched for features suitable for roosting bats and signs of bat activity, by conducting a non-intrusive visual appraisal from the ground using binoculars, inspecting the external features of the buildings for roosting features, access/egress points, and for signs of bat use. An internal inspection of the building was also made including the living areas of derelict or abandoned buildings and the roof spaces of all buildings, using an endoscope, torch and ladders where safe to do so. The surveyor paid particular attention to the floor and flat surfaces, any window shutters and frames, lintels above doors and windows, and carried out a detailed search of features within the roof spaces where existing and possible. Any limitations reference the external or internal survey is set out in the “Specific Limitations” section of this Report.

Suitability Assessment and Evaluation of Impacts	The survey area was categorised as to the likelihood of bats being present, in line with best practice guidelines (Collins, 2016). The features of the buildings and structures that dictate the likelihood of roosting bats are summarised in Table 1. Roost suitability is classified as high, moderate, low, and negligible; and informs any further survey effort required to enable a planning decision. <i>Table 1: Features of a building that are correlated with use by bats during the summer</i> <table border="1"> <thead> <tr> <th data-bbox="763 518 1081 592">Likelihood of bat occupancy</th><th data-bbox="1081 518 2016 592">Features and context of the survey area</th></tr> </thead> <tbody> <tr> <td data-bbox="763 592 1081 959">Higher</td><td data-bbox="1081 592 2016 959"> - Buildings/structures with features of particular significance for roosting bats e.g. mines, caves, tunnels, icehouses and cellars; - Habitat on site and surrounding landscape of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland; - Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river and or stream valleys and hedgerows; and - Site is proximate to known or likely roosts (based on historical data). </td></tr> <tr> <td data-bbox="763 959 1081 1177">Lower</td><td data-bbox="1081 959 2016 1177"> - A small number of possible roost sites/features, used sporadically by more widespread species; - Habitat suitable for foraging in close proximity, but isolated in the landscape. Or an isolated site not connected by prominent linear features; and - Few features suitable for roosting, minor foraging or commuting. </td></tr> </tbody> </table>	Likelihood of bat occupancy	Features and context of the survey area	Higher	- Buildings/structures with features of particular significance for roosting bats e.g. mines, caves, tunnels, icehouses and cellars; - Habitat on site and surrounding landscape of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland; - Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river and or stream valleys and hedgerows; and - Site is proximate to known or likely roosts (based on historical data).	Lower	- A small number of possible roost sites/features, used sporadically by more widespread species; - Habitat suitable for foraging in close proximity, but isolated in the landscape. Or an isolated site not connected by prominent linear features; and - Few features suitable for roosting, minor foraging or commuting.
Likelihood of bat occupancy	Features and context of the survey area						
Higher	- Buildings/structures with features of particular significance for roosting bats e.g. mines, caves, tunnels, icehouses and cellars; - Habitat on site and surrounding landscape of high quality for foraging bats e.g. broadleaved woodland, tree-lined watercourses and grazed parkland; - Site is connected with the wider landscape by strong linear features that would be used by commuting bats e.g. river and or stream valleys and hedgerows; and - Site is proximate to known or likely roosts (based on historical data).						
Lower	- A small number of possible roost sites/features, used sporadically by more widespread species; - Habitat suitable for foraging in close proximity, but isolated in the landscape. Or an isolated site not connected by prominent linear features; and - Few features suitable for roosting, minor foraging or commuting.						
General Limitations	Every effort has been made to describe the survey area in the context of its suitability for roosting bats, however this does not provide a complete characterisation of the site. A reasonable shelf-life for this Report to remain suitable to base a planning decision on is 12 months from the date of survey. After this time, it may be necessary to update the Report as to any material changes to the site conditions, results, evaluation, and recommendations.						

	Where only four figure grid references are provided for bat records, it is not possible to determine their precise location as they could be present anywhere within a given 1km x 1km National Grid square; an area equivalent to 100Ha. This Report presents a preliminary understanding of the likelihood of bat occupancy and use of the survey area, based on empirical evidence. This understanding is informed by the value and suitability of habitat on the site, and in the local area. The recommendations of this Report are guided by the results of the PRA; the biology of bats as currently understood in the weight of the scientific literature; the known distribution of bats as analysed during the desk study; and the probable impacts from the proposed development (if any).
Specific Limitations	None.

Legislation Overview

SPECIES LEGAL PROTECTION: BATS (UK)

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

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

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

1. Intentional or reckless disturbance (at any level);
2. Intentional or reckless obstruction of access to any place of shelter or protection; and
3. Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How the legislation affects development

A European protected species mitigation licence issued by the relevant statutory conservation organisation (e.g. Natural England, Natural Resources Wales, Scottish Natural Heritage) will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate).

The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored.

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

NATIONAL PLANNING POLICY (ENGLAND)

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

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

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

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

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

their protection has been adequately addressed within a development proposal.

Technical Advice Note 5 (TAN5) Nature Conservation and Planning (2009)

Technical Advice Note 5 (TAN5) provides formal advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It establishes the manner in which planning authorities should comply with their duty under the NERC Act 2006. It is intended to be used in parallel with Planning Policy Wales. TAN5 contains a set of key principles. One of these principles is that the town and country planning system in Wales should “integrate nature conservation into all planning decisions” and another is that it should look for development to provide a net benefit for biodiversity conservation with no significant loss of habitats or populations of species, locally or nationally.

Results ¹	
Building/Structure Number	B1
Summary description	B1 is a detached bungalow with a cross gabled roof. There is a hole in the soffit board on the flat roofed section on the northern elevation (photo 7). There are areas of missing mortar and raised tiles around the roof (photos 2, 3, 4 and 5). These features provide roosting opportunities for crevice dwelling bat species and will be destroyed when the building is demolished. There is a single loft with no evidence of bat use.
Roof description	The roof is clad in concrete interlocking tiles which have raised areas. The flat roof extension has a bitumen felt roof.
Masonry description	The walls are of brick construction and are in generally good condition.
Loft-space(s) description	There is a single L shaped loft space with an area of approx. 110 meters squared and a ridge height of approx. 1.5m. The roof is bitumen lined and modern timber rafters and ridge are present. There are heavy cobwebs floor to ceiling and covering roof timbers which suggests a lack of bat use. Rat and mouse droppings were present.
Underground areas	There are no underground areas.
Live bats present	No live bats were observed during the survey.
Dead bats present	No dead bats were present.
Secondary evidence of bat usage	No evidence of bat use was present.
Avian use	The gaps around the roof of the building provide potential nesting sites for birds although none were observed.
Evaluation	B1 has low roost suitability. B1 requires a presence/likely-absence survey to inform appropriate mitigation design and enable a planning decision.
Specification for further survey effort²	1 survey at dusk or dawn between May and August. 3 surveyors will be required to adequately cover all elevations of the building. Surveyor positions are described on the PRA Survey Results Plan, below.
Building/Structure Number	B2
Summary description	B2 is a detached bungalow with a shallow pitched, bitumen felt roof. There is damage to the timber soffit boards on three areas of the building that provide suitable roosting features for crevice dwelling bats (photos 2, 5 and 7). There is a single loft void with a very low sloped and flat roof in which no evidence of bat use was found (photo 8).

¹ Corresponds with The Site Plan, and the Photographs section of this Report.

² Depending upon the roost type and suitability, and the outcome of further surveys, it may be necessary to further restrict this seasonal window.

Roof description	The roof has a very shallow pitch and is lined with bitumen felt. The soffit boards are timber and damaged in several areas.
Masonry description	The building is of brick construction.
Loft-space(s) description	The loft is a low ceilinged crawl space with modern timber rafters and boarded roof. The floor is unboarded and has mineral wall insulation between ceiling joists. No evidence of bat use was present. Floor to ceiling cobwebs indicate a lack of bat activity.
Underground areas	There are no underground areas.
Live bats present	No live bats were observed during the survey.
Dead bats present	No dead bats were present.
Secondary evidence of bat usage	No evidence of bat use was present.
Avian use	The gaps around the soffit boards of the building provide potential nesting sites for birds although none were observed.
Evaluation	B2 has low roost suitability. B2 requires a presence/likely-absence survey to inform appropriate mitigation design and enable a planning decision.
Specification for further survey effort³	1 survey at dusk or dawn between May and August. 2 surveyors will be required to adequately cover all elevations of the building. Surveyor positions are described on the PRA Survey Results Plan, below.

³ Depending upon the roost type and suitability, and the outcome of further surveys, it may be necessary to further restrict this seasonal window.

PRA Survey Results Plan



Figure 1 – showing the site plan with PRA results and recommended emergence survey surveyor locations.

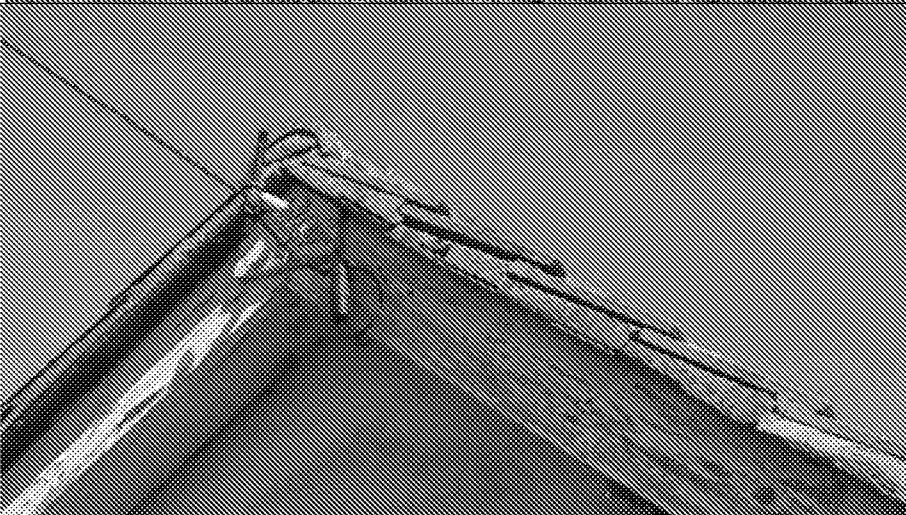
Photographs		
Building reference	B1	
Photo 1: southern elevation.		
Photo 2: gaps under roof tiles on southern gable end.		

Photo 3: gap under roof tile into soffit on corner of southern and eastern elevations.

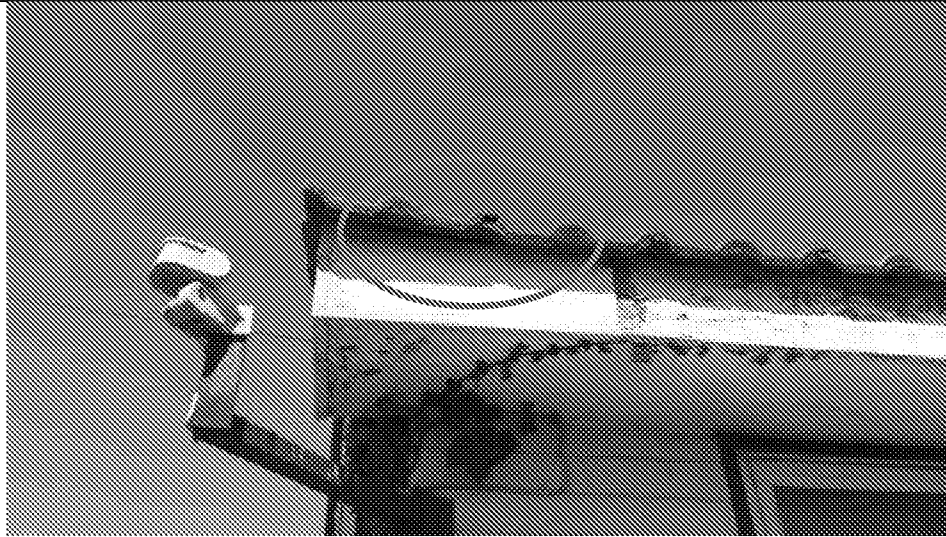


Photo 4: gaps under roof tiles on eastern elevation.



Photo 5: raised tiles on the eastern gable end.



Photo 6: eastern elevation.



Photo 7: damaged soffit on northern elevation.

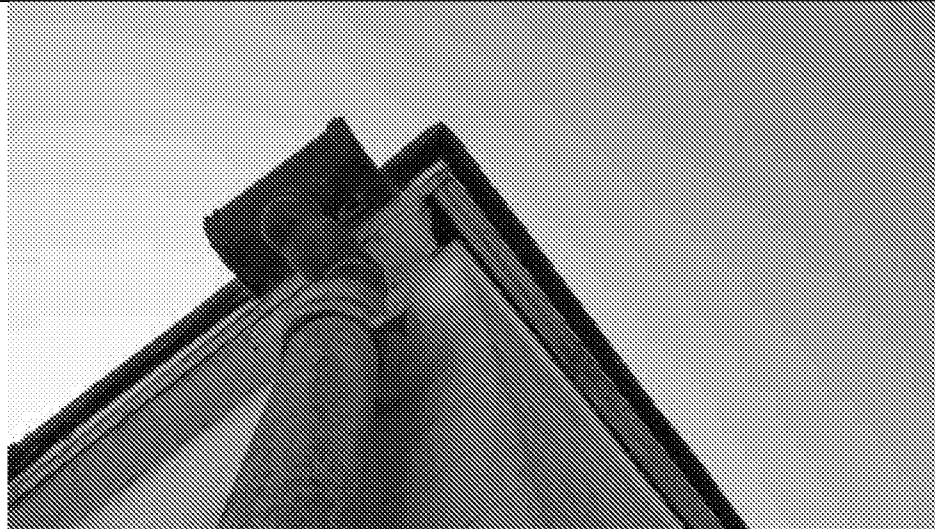


Photo 8: northern elevation.



Photo 9: western elevation.



Photo 10: loft.



Building reference	B2
Photo 1: north east elevation.	
Photo 2: gap in soffit board on north east/south east elevation corner.	

Photo 3: south east elevation.



Photo 4: south west elevation.



Photo 5: gap in soffit board on south west elevation.



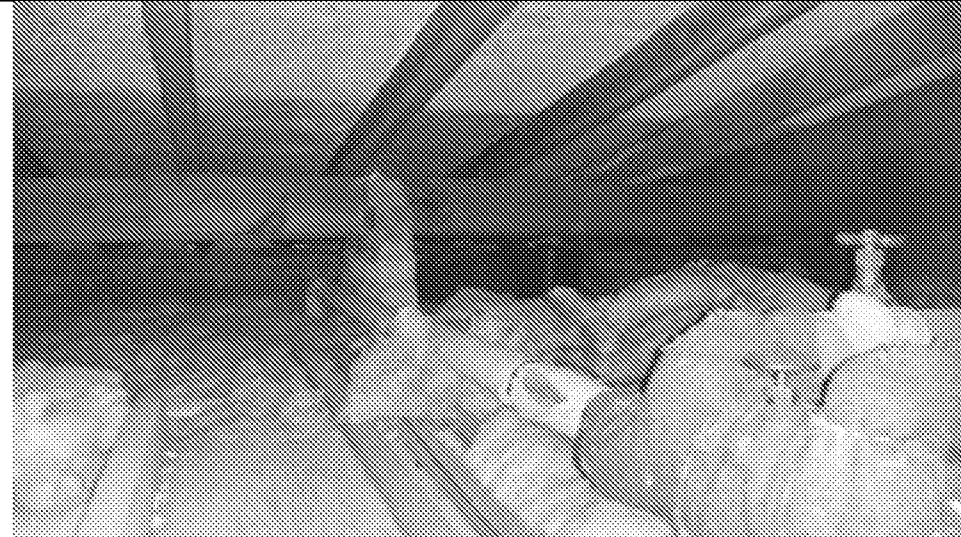
Photo 6: north west elevation.



Photo 7: gap in soffit on north west elevation.



Photo 8: loft.



Summary of Impacts and Recommendations		
Building Reference	Roost Suitability	Recommendations ⁴
B1	Low	The building provides suitable external roosting features which will be destroyed. If bats are present they could be killed or injured. 1 survey at dusk or dawn between May and August. 3 surveyors will be required to adequately cover all elevations of the building.
B2	Low	The building provides suitable external roosting features which will be destroyed. If bats are present they could be killed or injured. 1 survey at dusk or dawn between May and August. 2 surveyors will be required to adequately cover all elevations of the building.

⁴ Compliant to the Bat Conservation Trust publication 'Bat Surveys for Professional Ecologists – Good Practice Guidelines', 3rd ed. (Colins, 2016).

Bat Emergence/Re-entry Survey (“BERS”)	
Lead Surveyor and years experience	Natalie Evans MA, MRSB Bat survey experience: 3 years
Lead Surveyor bat licence number(s)	England: 2015-11257-CLS-CLS
Assistant surveyor 1	Joanna Andrews
Assistant surveyor 2	Toby Bowman
Assistant surveyor 3	Jonathan Kewell
Assistant surveyor 4	Hetty Wakeford
Surveyors present on date(s) of survey⁵	12/06/2016 – NE, JK, JA, TB, HW

Aims, Methods, and Limitations	
Scope of the Report	This Report provides a description of all bat activity observed in the vicinity of the survey area, and evaluates this data in the context of the development. It further documents any physical evidence collected or recorded during the BES, that may establish or help to establish the presence of roosting bats, or characterise that roost. This Report provides information on constraints to the proposals as a result of roosting bats, summarises the impacts (<i>if any</i>), and offers appropriate avoidance, mitigation and compensation recommendations sufficient to make a planning decision, apply for other statutory consents e.g. a European protected species licence, and to comply with various wildlife legislation (presented in the “Legislation Overview” section of this Report). Building on the PRA, the aim of the BERS was to determine the presence of roosting bats, and characterise the nature of the roost. To achieve this, the following steps have been taken: • A PRA has been undertaken, including an external and internal inspection of the survey area; • A BES has been undertaken, including a visual and audio record of bat activity within the survey area; • An outline of likely impacts on the roost(s) identified has been provided, based on current development proposals; • Recommendations are provided for the avoidance, mitigation and compensation for the impacts (<i>if any</i>), along

⁵ Surveyor number corresponds with the Bat Activity Plan and Results section of this Report.

	with advice on European protected species licencing (if appropriate); and • A thorough desk study has been undertaken and is presented in the “Desk Study” sections of this Report.
Scope of the BES	The aims of the survey are: • To determine presence/likely-absence of roosting bats i.e., the species present and whether they emerge from or re-enter a structure or feature within a structure; • To determine the intensity of bat activity both spatially and temporally i.e., to help estimate bat populations; • To determine the type of activity, most usually foraging (e.g. by feeding buzzes), commuting (e.g. by high directional pass rates), and mating (e.g. by mating social calls); • To locate roosts by tracking back bat flight paths, or observing flight activity at dawn. The survey involves for the observation by suitably experienced bat surveyors of all elevations of structures identified in PRA has requiring further survey effort, either to establish presence/absence of roosting bats, or to characterise the roost(s). The surveyors utilise broadband bat detectors to assist with the bat observations. Equipment used during the survey: • Echo Meter Touch (and iPad) • Bat box Duet The survey has been undertaken in accordance with the guidance offered in sections 7.1.4 Methods, 7.1.5 Complementary methods, 7.1.7 Timing, 7.1.8 Survey effort, 7.2.4 Methods, 7.2.5 Complementary methods, 7.2.7 Timing, 7.2.8 Survey effort, and 7.2.9 Weather conditions, of Colins (2016). Any limitations reference the external or internal survey is set out in the “Specific Limitations” section of this Report.
General Limitations	Every effort has been made to describe the survey area in the context of its suitability for roosting bats, however this does not provide a complete characterisation of the site. A reasonable shelf-life for this Report to remain suitable to base a planning decision on is 12 months from the date of survey. After this time, it may be necessary to update the Report as to any material changes to the site conditions, results, evaluation, and recommendations.

	Colins (2016) notes that: <i>“In general:</i> • <i>April surveys may detect transitional roosts;</i> • <i>May to August surveys may detect maternity colonies and males/non-breeding females in summer roosts;</i> • <i>August is particularly good for maximum counts of both adults and juveniles [and] can be useful to observe roost re-entry;</i> • <i>August to October surveys may detect mating bats; and</i> • <i>September and October surveys may detect transitional roosts.”</i> However, local and annual trends in prevailing climatic conditions provide useful context when evaluating the efficacy of surveys undertaken during recommended timings, and it may be appropriate to adjust these survey windows “earlier or later” (Colins, 2016), as determined by the Lead Surveyor.
Specific Limitations	None.

Climatic Conditions				
Date	Survey	Time (sunset or sunrise)	Weather: Start	Weather: Finish
12/06/2016	Dusk	20:45 (21:15)	Temp: 17.7°C Humidity: 79% Cloud: 80% Wind: 1/8 Precipitation: None	Temp: 16.6°C Humidity: 89.8% Cloud: 90% Wind: 1/8 Precipitation: None

Results (Full) ⁶				
Building/Structure Number		B1		
Summary description		B1 is not a roost.		
Surveyor	PRF	Date/Time	Records of significance	Occupancy and use
NE	B1	12/06/2016 20:45 – 22:45	Negative	No activity
JK	B1	12/06/2016 20:45 – 22:45	Two common pipistrelles heard briefly in the distance at 21:33 and 21:43.	Activity
Building/Structure Number		B2		
Summary description		B2 is not a roost.		
Surveyor	PRF	Date/Time	Records of significance	Occupancy and use
JA	B2	12/06/2016 20:45 – 22:45	Negative.	No activity
HW	B2	12/06/2016 20:45 – 22:45	Negative.	No activity
TB	B2	12/06/2016 20:45 – 22:45	Negative.	No activity

⁶ Corresponds with the Bat Activity Plan.

Results (Summary)								
Structure	Roost type ⁷ , species, and population estimate							
	Day	Night	Feeding	Transitional /Occasional	Swarming/ Mating Site	Maternity	Satellite	Hibernation
B1	None	None	None	None	None	None	None	None
B2	None	None	None	None	None	None	None	None

Table 1: Bat species definitions for Results Summary

Alcathoe bat <i>myotis alcathoe</i>	ALC
Barbastelle bat <i>Barbastella barbastellus</i>	BRB
Bechstein's bat <i>Myotis bechsteinii</i>	BEC
Brandt's bat <i>Myotis brandtii</i>	BRD
Brown long-eared bat <i>Plecotus auritus</i>	BLE
Common pipistrelle bat <i>Pipistrellus pipistrellus</i>	CP
Daubenton's bat <i>Myotis daubentonii</i>	DAU
Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	GHS
Grey long-eared bat <i>Plecotus austriacus</i>	GLE
Leisler's bat <i>Nyctalus leisleri</i>	LEI
Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	LHS
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	NP
Natterer's bat <i>Myotis nattereri</i>	NAT
Noctule bat <i>Nyctalus noctula</i>	NOC
Serotine bat <i>Eptesicus serotinus</i>	SER
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	SP
Whiskered bat <i>Myotis mystacinus</i>	WHS
Greater mouse-eared bat <i>Myotis myotis</i>	GME

⁷ Based upon roost definitions in the Bat Mitigation Guidelines (Mitchell-Jones, 2004).

Bat Activity Plan



Figure 1 – showing the site plan annotated with the pertinent results of the PRA, including the various self-contain cells which form the roof voids in buildings B1 (1.1 to 1.4) and B2 (2.1 to 2.3).

Evaluation and Recommendations		
Building Reference	Occupancy	Evaluation
B1	Negative	Bats are not roosting within this structure.⁸ No further assessment is considered necessary. There are no significant impacts on bat species as a result of the development. This Report contains adequate information to enable a planning decision.
B2	Negative	Bats are not roosting within this structure.⁹ No further assessment is considered necessary. There are no significant impacts on bat species as a result of the development. This Report contains adequate information to enable a planning decision.

⁸ The factual evaluation outcome is *likely-absence*, and thus an acceptably low risk of harm.

⁹ The factual evaluation outcome is *likely-absence*, and thus an acceptably low risk of harm.

Bibliography

- Google Maps (2016). *Littlehampton, West Sussex*.
(<https://www.google.co.uk/maps/place/Wick,+Littlehampton,+West+Sussex+BN17+6LY/@50.8195602,-0.5224739,6498m/data=!3m1!1e3!4m5!3m4!1s0x4875a56b24204d0d:0xb708a6a461e89272!8m2!3d50.8206743!4d-0.5309301>) [viewed on 23.05.2016]
- Magic (2016). *Littlehampton, West Sussex* - . <http://www.magic.gov.uk/MagicMap.aspx> [viewed on 23.05.2016]
- Landscape Character Areas ((<http://publications.naturalengland.org.uk/publication/5018311469301760>) [accessed on 23.05.2016]) [accessed on 23.05.2016]
- Collins, J. (Ed) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.
- Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.

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