

Land at Keepers Cottages, Coolham

Bats and Artificial Lighting Report

December 2025

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1. Introduction

Background

- 1.1 Phlorum Limited was commissioned by Savills UK to compile a Bat & Artificial Lighting Report (BALR) in relation to the proposed development at and at Keepers Cottages, Coolham, here on referred to as 'The Site'. The site address is Land at Keepers Cottages, Coolham Road, Coolham, RH13 8GP.
- 1.2 Phlorum previously produced Preliminary Ecological Appraisal report and Bat Activity Report (Phlorum, 2024/2025). The report recommended a series of bat activity surveys, which were completed during 2024.
- 1.3 A series of three bat activity and emergence surveys were undertaken at the site during the bat survey season in 2024. There was a high level of bat activity recorded at the site. Soprano pipistrelles were observed entering and emerging from building 1 on all three survey visits. Therefore, it was determined that a bat roost is present within the roof space of Building 1 for soprano pipistrelles. Based on the results of the surveys and the conditions supported at the building, the building was considered to support either a feeding roost or a possible day or night roost which may be used by small numbers of soprano pipistrelles. An EPSL is required (Condition 3).

Proposed Development

- 1.4 It is understood that the proposed development involves the demolition of the existing buildings and construction of a new dwelling with associated landscaping and parking areas.
- 1.5 The proposed development area is shown in Appendix A.

Planning

- 1.6 Planning permission has been granted, subject to various conditions, which include the following ecological conditions:
 -  Condition 3: a European Protected Species Mitigation Licence (EPSML) is required;
 -  Pre-Commencement Condition 4: a precautionary working method statement (PWMS) is required;
 -  Pre-Occupation Condition 10; A lighting scheme for biodiversity is required, and;

- Regulatory Condition 11: all mitigation and enhancement measures set out in the PEA, Phlorum, 2024 must be carried out.

1.7 This report is focused on Pre-Occupation Condition 10; A lighting scheme for biodiversity is required.

1.8 Condition 10 states the following:

"The development hereby permitted shall not be occupied until a lighting design scheme for biodiversity has been submitted to and approved in writing by the Local Planning Authority. The scheme shall identify those features on site that are particularly sensitive for bats and that are likely to cause disturbance along important routes used for foraging; and show how and where external lighting will be installed (through the provision of appropriate lighting contour plans, Isolux drawings and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent bats using their territory.

All external lighting shall be installed in accordance with the specifications and locations set out in the scheme and maintained thereafter in accordance with the scheme. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.

Reason: To allow the LPA to discharge its duties under the Conservation of Habitats and Species Regulations 2017 (as amended), the Wildlife & Countryside Act 1981 as amended and s40 of the NERC Act 2006 (Priority habitats & species) and Policy 31 of the Horsham Development Framework."

Site Description

- 1.9 The site is in a rural location, accessed by private road off a minor country road. There is no other housing within 500m of the site, and the immediate surroundings include priority habitat, such as the hedgerows across the surroundings, streams to the east within the woodland and north, and ancient woodland and deciduous woodland habitats. In the wider surroundings are minor and major roads, towns and rural residential homes.
- 1.10 The National Grid Reference for the centre of the site is TQ11132411. The survey area extended over approximately 0.09 hectares (ha).
- 1.11 There are offsite wooded areas and streams within 500m of the site boundary and the site is surrounded by agricultural fields and scattered woodland pockets.
- 1.12 The site is 7.4Km away from The Mens Special Area of Conservation (SAC), which has barbastelle bats (*Barbastella barbastellus*) as one of its qualifying species. The core sustenance distance for barbastelle bats is 6km to 6.5km (Collins, 2023). Barbastelle bats forage among woodland, hedgerows, unimproved grassland, field margins, riparian zones.

- 1.13 The site is accessed off a slip road from Coolham road and which becomes a private access road. The road winds through agricultural fields, scattered woodland and passes over several woodland streams. The site is bound on all sides by agricultural fields with an access track to the site. A series of hedgerows connects the site boundaries to a series of hedgerows bounding the adjacent agricultural fields and woodlands to the north, east and south. There is very little artificial lighting within 500m of the site.
- 1.14 To the east of the site there is the access track which leads to a small, wooded area mapped as Court Plantation, connected by hedgerows bound by agricultural fields. A small stream runs through the woodland.
- 1.15 Directly adjacent to the site, to the south, is the access track. The south of the access track is dominated by agricultural fields, with hedgerows and small pockets of woodland present further south.
- 1.16 West of the site is dominated by agricultural fields, with a small residential area to the southwest consisting of small residential areas along Coneyhurst road and West Chilton Lane, farms and farm cottages, hedgerows and small pockets of woodland present further south.
- 1.17 North of the site the area is dominated by agricultural fields, several large farms and the river Adur further to the north but within 500m of the site boundary.

Scheme Information

- 1.18 The proposed development involves the demolition of the existing buildings and construction of a new dwelling with associated landscaping and parking areas.
- 1.19 The landscape proposals for the site include the retention of the hedges and hedges with trees around the perimeters of the site. The plans include new native hedge planting, new grassland and shrub creation. The scheme will also provide new habitat in the form of barn owl boxes, bird boxes and bat boxes to be installed around the site.

2. Methodology

Bat Conservation Trust Guidelines

- 2.1 The BCT (Bat Conservation Trust) have produced a guidance note with collaboration with the ILP (Institute of Lighting Professionals) titled '*Bats and Artificial Lighting in the UK*¹ and dated 2018. In 2023 the BCT and ILP produced '*Bats and Artificial Lighting at night*²'.
- 2.2 This section is based on the flowchart set out in the BCT and ILP guidance (2018, but expanded in 2023). The key stepwise process plus the follow-up actions are outlined below:
 -  Step 1: Could bats be present on site?
 -  Step 2: Determine the presence of – or potential for –roosts, commuting habitat and foraging habitat and evaluate their importance;
 -  Step 3: Avoid lighting on key habitats and features altogether;
 -  Step 4: In other locations of value for bats on site, apply mitigation methods to reduce lighting to a minimum; and
 -  Step 5: Demonstrate compliance with lux limits and buffers.
 -  Consult local sources of ecological information or seek advice from an ecologist;
 -  Appoint ecologist to carry out daytime and, if necessary, night-time bat surveys. Ecologists to evaluate the importance of the site to bats and identify key and supporting habitats;
 -  No illumination of any roost entrances and associated flightpaths, not on habitat and features used by large numbers of bats, by rare species or by highly light-averse species;
 -  Set dark habitat buffers and acceptable lux limits with ecologists and lighting professional guidance:
 - Spatial Design – configuration of roads, buildings and essentially-lit areas;
 - Building Design – Building scale, glazing and internal layout areas;
 - Lighting Design – Luminaire specification, height and controls; and

¹ BCT and ILP (2018). *Bats and Artificial Lighting in the UK. Bats and the Built Environment Series* - Guidance Note 08/18.

² BCT and ILP (2023) *Bats and Artificial Lighting at Night*. Guidance Note 08/23.

- Landscaping – Fencing, walls, levels and planting.

- 2.3 Artificial lighting at night (ALAN) is thought to increase the risk of predation by avian predators, such as owls and hawks; consequently, bats are thought to modify their behaviour to this threat. The illumination of a roost can cause disturbance, which may result in a roost being abandoned, or even bats becoming entombed within it. Light falling on a roost may delay when bats emerge from the roost and could shorten the time available to forage for food. The peak of nocturnal abundance is at and soon after dusk; therefore delaying emergence may result in missed foraging opportunities for bats, especially as the main peak of nocturnal insect abundance occurs at and soon after sun set Excessive light can also block flights paths to and from roosts, which may also constitute an offense under the legislation.
- 2.4 In addition, artificial lighting can affect the feeding behaviour of bats. Firstly, lit conditions can pose as a barrier to movement and secondly, certain light sources attract different ranges of insects. Studies have shown that noctule bat (*Nyctalus noctula*), Leisler's bat (*Nyctalus leisleri*), serotine bat (*Eptesicus serotinus*) and pipistrelle bat (*Pipistrellus sp.*) congregate around mercury lights that attract insects. However, further studies have shown that slower-flying broad winged species such as long-eared bats (*Plecotus auritus* and *Plecotus austriacus*), Myotis species (brandt's bat (*Myotis brandtii*), whiskered bat (*Myotis mystacinus*), Daubenton's bat (*Myotis daubentonii*), barbastelle bat (*Barbastella barbastellus*), and greater and lesser horseshoe bats (*Rhinolophus ferrumequinum* and *Rhinolophus hipposideros*) generally avoid all streetlights.
- 2.5 Artificial light can also attract some invertebrate such as moths, crane flies, midges and lacewings. This attraction of some insects can result in a 'vacuum effect' removing invertebrate prey from areas.
- 2.6 Bats less tolerant to light are put at a disadvantage and lighting may affect their foraging behaviour.
- 2.7 The spectral impacts of light can also impact on bat behaviour. Slow flying bats, such as *Plecotus* and *Myotis* species avoid white and green light, but fast flying bats, such as pipistrelles species have been found to be more abundant in these areas. Both slow-flying and fast-flying bats have been found present in red light areas, compared to dark control.
- 2.8 Studies have shown that lighting in the landscape can have a negative effect on how bats move around the landscape and their use of linear habitats such as roads, waterways hedges and trees and woodland.
- 2.9 Table 1 below shows lux levels for different lighting conditions in the UK. Good road lighting is between 5 to 20 lux and moonlight is 1 lux.

Table 1: Lighting conditions and lux levels

Chart of example lux levels for reference			
Lighting conditions	Lux level	Lighting conditions	Lux level
British summer sunshine	50,000	Typical side road lighting	5
Overcast sky	5,000	Minimum security lighting	2
Well-lit office	500	Twilight	1
Minimum for easy reading	300	Clear full moon	0.25 to <1
Passageway or outside working area	50	Typical moonlight/cloud sky	0.1
Good main road lighting	5-20	Typical starlight	0.001
Sunset	10	Poor starlight	0.0001

(Ref BCT and ILP 2018)

- 2.10 Lesser horseshoe bats are known to change their flight paths as the result of low levels of light impacting on commuting routes. Significant impacts have been recorded at 3.6 lux and studies have shown that the average light level of hedgerows used by this species has been recorded at 0.45 lux. It is likely that other species are impacted in similar ways.

Mitigation Hierarchy

- 2.11 Under planning the mitigation hierarchy should be applied when assessing artificial light at night impact. A lighting design needs to demonstrate that impacts to biodiversity have been avoided in the first instance, and then if it is clearly demonstrated as not possible, then mitigation should be put in place. Compensation is considered the least favourable option.

Table 2: Mitigation hierarchy

Type of mitigation	Description	Preference
Avoidance	Alternative development site or retention of roost/foraging /commuting feature or timing of works	Common, preferable
Mitigation	Actions during the development or works process to minimise impacts to the roost, foraging or commuting habitat	
Compensation	Used as a last resort to off-set any remaining impacts	Rare, undesirable

(Ref BCT and ILP 2023)

Lighting Types

2.12 There are eight main light types commonly used in exterior lighting applications. These are listed below:

-  Low-pressure sodium lamps (SOX);
-  High-pressure sodium lamps (SON);
-  Mercury lamps (MBF);
-  White SON;
-  Metal halide;
-  Light emitting diodes (LEDs);
-  Tungsten halogen; and
-  Compact fluorescent.

2.13 From a bat perspective LED luminaires sources should be used where possible, and metal halide and compact fluorescent sources should be avoided.

Impact on Key Species

2.14 Table 3 below is a summary of the key impacts per species according to behaviour types resulting from artificial light at night (ALAN).

Table 3: Summary of the effect of ALAN on UK bat species

Species	Roost	Flight corridor	Foraging area	Drinking site	Migration	Landscape level	Habitat type
Greater horseshoe	negative	na	na	na	na	na	Clutter
Lesser horseshoe	negative	negative	na	na	na	negative	Clutter
Brown long-eared	negative	negative	negative	negative	na	negative	Clutter
Grey long-eared	na	na	na	na	na	na	Clutter
Bechstein's	na	na	na	na	na	na	Clutter
Natterer's	negative	na	na	negative	na	na	Clutter
Daubenton's	na	No effect	negative	na	na	negative	Edge
Brandt's/ Alcathoe/ Whiskered	na	na	na	na	na	na	Edge
Barbastelle	negative	negative	negative	negative	na	negative	Edge
Common pipistrelle	na	No effect	No effect	negative	na	negative/positive	Edge
Soprano pipistrelle	negative	No effect	No effect	na	negative	No effect	Edge
Nathusius' pipistrelle	na	na	na	na	negative	negative/positive	Edge
Noctule	na	No effect	negative/positive	na	na	negative/positive	Open
Leisler's	na	na	na	No effect	na	Positive	Open
Serotine	na	na	na	na	na	Positive	Open

(Ref: BCT & ILP 2023)

Roost Characterisation

2.15 Natural England (2015) use the following descriptions to define bat roosts:

-  day roost - where individual bats, or small groups of males, rest or shelter in the day, but rarely on summer nights;

-  night roost - where bats rest or shelter at night, but rarely during the day;
-  feeding roost - where bats rest at night between feeding sessions, but rarely during the day;
-  hibernation roost - where bats are found during winter;
-  transitional or occasional roost - where bats gather at a temporary site before and after hibernation;
-  mating site - where males and females gather from late summer to early winter;
-  maternity roost - where babies are born and raised until they're independent;
-  satellite roost - where breeding females roost close to the main nursery colony in the breeding season; and
-  swarming site - where bats gather in large numbers from late summer to autumn.

2.16 The discovery of a bat roost and how bats use the site will determine whether or not the impact of the proposed scheme is low, moderate or high.

3. Previous Reports

- 3.1 The following reports were reviewed prior to completion of this report.

Preliminary Roost Assessment (Phlorum, 2024)

Main House (Building 1)

- 3.2 The main house was a large dilapidated residential house. The walls were brick and were worn with several areas buckling around the window and door frames. The roof is in a state of disrepair, the timber frame was exposed across the entire roof with the roof lining exposed and several bare areas of lining. There are two intact chimneys which had gaps in the brickwork.
- 3.3 Internally the structure was timber built, the interior was inaccessible due to its condition. Aspects of the internal structure were viewed from the windows where possible, the internal ceilings had collapsed and were stripped of materials. There are multiple access points for bats across the entire building.
- 3.4 No bats or secondary evidence of bats were found during the initial inspection.
- 3.5 Ingress opportunities were present across the entire roof, with access also possible through the window and door frames. As these features were located in a dilapidated building this would likely create extreme temperature fluctuations throughout the year, so it is considered the structure is only likely to provide habitats for temporary roosts or feeding/night roosts for a small number of bats rather than larger and more significant maternity and hibernation roosts.
- 3.6 Overall, the main house was assessed as having **high** potential to support roosting bats.

Building 2

- 3.7 Building 2 was a small outbuilding comprised of brick walls. The roof is missing and there is vegetation growing within the walls of the building.
- 3.8 During the survey, the only potential bat roosting areas were in gaps in the brickwork and timber door frames.
- 3.9 Overall, building 2 was assessed as having **low** potential to support roosting bats.
- 3.10 Both buildings were examined externally but not internally. No evidence of use by bats was seen.
- 3.11 A series of bat surveys was recommended for Building 1 (B1).

Bat Activity/Emergence Surveys (Phlorum, 2024)

- 3.12 The data search showed records of bats from the genera pipistrelle (*Pipistrellus*), long eared (*Plecotus*), myotis (*Myotis*), serotine (*Eptesicus*), Noctule/Leisler's (*Nyctalus*), within the 2km search area in the past 15 years.
- 3.13 A series of three activity surveys were carried out on the 17th June 2024, 23rd July 2024 and 02nd September 2024. Four surveyors were used to assess the site for roosting, foraging and commuting activity.
- 3.14 The survey focused on the onsite main building B1. During the survey the lead surveyor was positioned to the south of the site with a view of the southern aspect of B1. The assistant surveyors were positioned around the site at the north, east and west of the site in order to provide adequate coverage of the buildings, where PRFs had been identified.
- 3.15 The evening surveys commenced at least 15 minutes before sunset and lasted for at least two hours after sunset.
- 3.16 All surveys followed standard protocols and accepted standards (Mitchell-Jones and McLeish, 2004; Collins, 2023 and Reason, 2023).

Results

- 3.17 Bats were seen emerging from the building B1 across all three of the surveys.
 -  Two soprano pipistrelles were seen emerging from the building during the first survey,
 -  Two soprano pipistrelles (*Pipistrellus pygmaeus*) and one barn owl (*Tyto alba*) were seen emerging from the building during the second survey
 -  One soprano pipistrelle and two barn owls were seen emerging from the building on the third survey.
- 3.18 There was a high level of bat activity recorded at the site. A total of eight bat species were recorded emerging, foraging, socialising and commuting at the site which included common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle, noctule (*Nyctalus noctule*), Leisler's (*Nyctalus leisleri*), serotine (*Eptesicus serotinus*), Daubentons myotis (*Myotis daubentonii*), brown-long eared bat (*Plecotus auritus*) and western barbastelle (*Barbastella barbastellus*). Common pipistrelle was the most frequently recorded bat species.

Summary

- 3.19 Overall, there was a **high** level of bat activity recorded at the site. A total of seven bat species were recorded foraging, socialising and commuting at the site.

- 3.20 Soprano pipistrelles were observed emerging from the building during all three surveys. The roost was considered to be either a feeding roost or a possible day or night roost. Reviewing the data it is considered that this is a single roost present in building (B1). This has been assessed as a roost of low/medium conservation importance.
- 3.21 During the bat activity surveys, barn owls were observed emerging from and recorded within the roof structure. One barn owl was observed emerging on the second survey and two were observed emerging on the third survey. Therefore, all works to the building must be undertaken outside of the main nesting season for this species which runs from march to august, and compensatory habitat must be in place prior to works commencing and for the duration of works at site. Post development compensatory habitat must be provided and maintained.
- 3.22 The site is 7.4Km away from The Mens SAC, which has barbastelle bats as one of its qualifying species. The core sustenance distance for barbastelle bats is 6km to 6.5km (Collins, 2023). Barbastelle bats forage among woodland, hedgerows, unimproved grassland, field margins, riparian zones.
- 3.23 Therefore, it was determined that a bat roost is present within the roof space of Building 1 for soprano pipistrelles. Based on the results of the surveys and the conditions supported at the building, the building was considered to support either a feeding roost or a possible day or night roost which may be used by small numbers of soprano pipistrelles. A European Protected Species Mitigation (EPSM) licence **will be required**.

External Lighting Report (Delta Green, 2025)

- 3.24 An external lighting report was produced by Delta Green for the site.
- 3.25 As summary of the report includes the following;
-  As the development is located within an area of sparsely inhabited rural character, the external lighting scheme for the site has been designed in accordance with Dark Sky Policies in addition to other local and national standards and regulations.
 -  The development is deemed as an Environmental Zone E2, described as "Rural or low district brightness areas", such as villages, small settlements, and relatively dark suburban locations. ILP guidance notes for the reduction of obtrusive light (GN01) have been closely followed in the development of the external lighting scheme. Luminaires have been carefully selected to minimise spill to the surrounding areas, with an upward light ratio (ULR) of no more than 2.5% in line with E2 design requirements, and vertical illuminance at nearby properties limited to 5.0 lx before curfew and 1.0 lx after curfew.
 -  The level of light has been kept to a minimum, as portrayed by the isoline value of 0.5lux, which is in accordance with the recommendation of ILP Guidance Note 08 for Bats.

-  The external lighting scheme will be controlled via integral presence detection and manually switched separately on the ground floor, by the door.
-  Wall mounted fittings have been used for the external lighting scheme. Lighting has been positioned to suit the proposed building plans, and to target the minimum recommended lux levels and uniformity.
-  Luminaires have been carefully selected to ensure that suitable light levels and uniformity can be achieved whilst preventing light spill to the surrounding environment. It has been noted that light levels and uniformity do not fully conform with the recommendations of CIBSE lighting guide 6 (generally being lower than recommended), however they have been designed appropriately for the site.
-  All luminaires used within the design have LED light sources with a 2,700°K warm white colour temperature. Luminaires have also been carefully selected with a 0% upward light component to satisfy the requirements set out by dark skies policies.

4. Bat Impact Assessment

Current Baseline

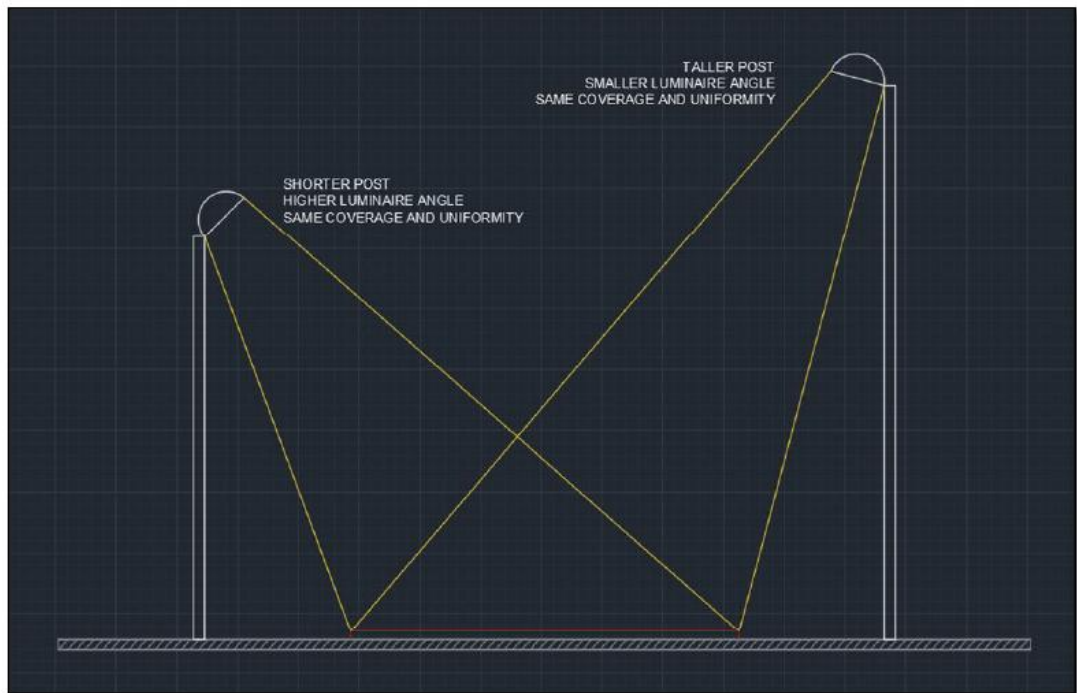
- 4.1 The surveys undertaken in 2024 and 2025 identified the site as within an agricultural field off Coolham road, Coolham West Sussex. The site is rural. Although there are roads and developments within 500m west of the site, the site is bound by agricultural fields in a predominantly rural area. There are no artificial lights within 250m of the site and the closest artificially lit area is at Court farm which is approximately 350m to the northwest. Ariel Mapping (Magic, 2025) show the closest likely areas of artificial lighting to be over 0.7km to the south, 0.6km to the north and over 1km to the east. Therefore, it is considered that the site is not subject to artificial light due to the distances of the nearest residential areas.
- 4.2 The site is 7.4Km away from The Mens Special Area of Conservation (SAC), which has barbastelle bats (*Barbastella barbastellus*) as one of its qualifying species. The core sustenance distance for barbastelle bats is 6km to 6.5km (Collins, 2023). Barbastelle bats forage among woodland, hedgerows, unimproved grassland, field margins, riparian zones.
- 4.3 There is no external lighting at the site. Due to the location of the development, it has been classed as an Environmental Zone E2 as defined within the Institution of Lighting Professionals (ILP) guidance notes for the Reduction of Obtrusive Light. The guidance document defines an Environmental Zone E2 as an “Sparsely inhabited rural areas” area, such as a village and dark outer suburban locations” (Delta Green, 2025).
- 4.4 As shown in Table 1 the lux levels for street lighting are often between 5 and 20. However, without a lighting report and subsequent lighting contour plan of the site it is hard to accurately state what the lux levels would have been.
- 4.5 During the survey the majority of the site and hedgerow along the southern boundary appeared very dark to the surveyor’s eyes. Table 1 indicates that light conditions vary from 0.001 to 0.1 for typical starlight and typical moonlight/cloud sky, respectively.

Predicted Operational Impacts

- 4.6 The proposed development involves the demolition of the existing buildings and construction of a new dwelling with associated landscaping and parking areas.

- 4.7 The landscape proposals for the site include the retention of the hedges and hedges with trees around the perimeters of the site. The plans include new native hedge planting, new grassland and shrub creation. The scheme will also provide new habitat in the form of barn owl boxes, bird boxes and bat boxes to be installed around the site.
- 4.8 The indicative external lux contour map, produced by Delta Green, 2025, are provided in Appendix A.
- 4.9 The lux isolines plan show lux level between 10lux and 0.5lux at a small section to the property entrance, and minor area between 0.5 and 2.5 lux close to the proposed hedge along the northeastern boundary. However the remainder of the light spill is 0.5 lux around the site. The central area between the buildings is between 20lux to 10lux.
- 4.10 Wall mounted luminaires are proposed for this site. The wall mounted fittings are placed either side of any entrance/exit and to illuminate the driveway, to allow safe egress from the building, causing light 'overspill' in those areas which decreases the overall uniformity. However, in the context of the scheme, it will provide safe circulation for residents (Delta Green, 2025).
- 4.11 All luminaires used within the design have LED light sources with a 2700°K warm white colour temperature. Luminaires have also been carefully selected with a 0% upward light component to satisfy the requirements set out by dark skies policies. Luminaires have been carefully selected to help provide the correct light levels and uniformity across the development whilst minimising the overall spill of light to the surrounding environment. The selected luminaires are equipped with integrated LED light sources and a screen-printed lower glass that softens the output while the AF (down) optic provides precise light control. This combination ensures comfortable illumination with reduced glare. The luminaires also feature a 0% upward light ratio, minimising obtrusive light and spill to the surrounding environment. Wall mounted fittings have been used for the external lighting scheme. Lighting has been positioned to suit the proposed building plans, and to target the minimum recommended lux levels and uniformity (Delta Green, 2025).
- 4.12 As the angle of luminaires reduces, both the glare and spill from the fittings are reduced. Plus, the height of the luminaire posts will also influence the angle of the luminaire. As the post height is increased, the angle of luminaire can be further reduced whilst still achieving the same lux level and uniformity. This can be confirmed and further explained by a light engineer.

Table 4: The sketch demonstrates the relationship between luminaire height and beam angle.



- 4.13 The site has been assessed as Environmental Zone E2, based on the ILP Guidance Notes for the Reduction of Obtrusive Light (2020).

Table 5: Extract from ILP Guidance Notes for Reduction of Obtrusive Light

Environmental Zones			
Zone	Surrounding	Light Environment	Examples
E0	Protected	Dark	Astronomical observable dark skies, UNESCO starlight reserves,
E1	Natural	Dark	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty,
E2	Rural	Low district brightness	Sparsely inhabited rural areas, villages or relatively dark outer suburban locations.
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations.
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

(Ref: ILP 2021)

5. Discussion

- 5.1 The bat activity surveys in 2024 recorded a high level of bat activity recorded at the site. A total of seven bat species were recorded foraging, socialising and commuting at the site.
- 5.2 Soprano pipistrelles were observed emerging from the building during all three surveys. The roost was considered to be either a feeding roost or a possible day or night roost. Reviewing the data it is considered that this is a single roost present in building (B1). This has been assessed as a roost of low/medium conservation importance.
- 5.3 Based on the findings of the activity surveys at the site (Phlorum, 2024) a Bat Mitigation Class Licence (BMCL) or a European Protected Species Mitigation (EPSM) licence **will be required**.
- 5.4 The site is 7.4Km away from The Mens Special Area of Conservation (SAC), which has barbastelle bats (*Barbastella barbastellus*) as one of its qualifying species. The core sustenance distance for barbastelle bats is 6km to 6.5km (Collins, 2023). Barbastelle bats forage among woodland, hedgerows, unimproved grassland, field margins, riparian zones. As the site is over the core sustenance distance for this species and the predicted level of light spill on suitable foraging/commuting habitat is low, the proposed lighting scheme is not considered to have a significant impact on this species.
- 5.5 The Masterplan includes the creation of native hedgerow habitat and grassland habitat, which will result in the creation of new potential foraging habitat not currently present at the site. There will also be provision of bat boxes to provide new habitat for roosting bats. These newly created habitats, along with the retained existing hedgerow and hedgerow with trees will be dark or subject to low lux levels, similar to moonlight.
- 5.6 The fast-flying bat species observed using the site are considered to be less sensitive to light than some of the slower flying bat species. Based on the proposed lux levels along the northern and southern boundaries, sensor and manual external lighting it is considered the impact on the species and their commuting and foraging behaviour would be low.

6. Conclusion

- 6.1 A series of bat activity/emergence surveys were undertaken in 2024, which identified a pipistrelle bat roost within the main building on site (B1) (Phlorum, 2024).
- 6.2 During the bat activity surveys undertaken at the site in 2024, bat activity was considered to be high. Overall, there was a high level of bat activity recorded at the site. A total of eight bat species were recorded foraging and commuting at the site which included common and soprano pipistrelle, noctule, Liesler's, serotine, brown long eared bat, Daubentons myotis and western barbastelle. Individuals were mainly observed emerging, foraging, socialising and commuting. Common and soprano pipistrelle was the most frequently recorded bat species.
- 6.3 The post development lighting impacts on the northern and southern boundaries is low. According to research on bat species and artificial lighting it is considered that the artificial lighting would have low impact commuting and foraging bats observed during the surveys.
- 6.4 The Masterplan includes the creation of hedgerow and grassland habitat, which will attract insects to the area and potentially create new foraging habitat for bats. There will also be provision of bat boxes to provide new habitat for roosting bats.

7. References

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Appendix A
Lux Map & Indicative External
Lighting Scheme Plans



ISOLINE KEY	
	0.5 lx
	1.0 lx
	2.5 lx
	5.0 lx
	10.0 lx
	20.0 lx

LEGEND	
	IGuzzini - Allure WALL MOUNTED FITTING
	PIR DETECTOR
	PHOTOCELL
	TIME SWITCH



IGUZZINI LIGHTING - ALLURE WALL MOUNTED LED FITTING

High performance LED light fitting with a 577 lumen output.

Warm white 2700K colour temperature.

Provided with a downward optic only, achieving 0% upward light ratio compliant with Dark Sky Policies.

Black finish with a 'Brown Rust' insert.

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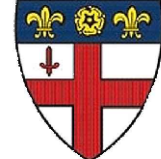
Related Documents:
This drawing must be read in conjunction with the DG specification & schedules & relevant Architectural, Structural & Specialist Drawings & specifications.

Notes:
Any discrepancy in or between the drawings, specifications & schedules must be brought to the attention of the Engineer prior to commencing any works.
All other services shown are purely indicative & must be verified & coordinated by qualified parties prior to the commencement of any work on site.
All dimensions shown are in millimetres & do not take into account applied finishes unless specifically indicated otherwise. Only 'fixed' dimensions to be followed. Do not scale.
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Client/Contractor



CHRIST'S HOSPITAL

Project

KEEPERS COTTAGE
COOLHAM
SUSSEX



Delta Green
environmental design

Drawing Title

ELECTRICAL SERVICES
EXTERNAL LIGHTING
ISOLINE PLOT

Date

SEP 2025

Scale

1:50

Drawn/Check

JP/PH

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Notes

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PRELIMINARY ISSUE

Revision Notes

Appendix B

Legislation

Legislation

Bats

Bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). This act protects individuals from:

-  intentional or reckless disturbance (at any level);
-  intentional or reckless obstruction of access to any place of shelter or protection; and
-  selling, offering or exposing for sale, possession or transporting for purpose of sale.

In addition, all species of bat are fully protected under The Conservation of Habitats and Species Regulations 2017 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

-  deliberate killing, injuring or capturing of Schedule 2 species (all bats);
-  deliberate disturbance of bat species as to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young; and
 - (ii) to hibernate or migrate.
-  deliberate disturbance of bat species as to affect significantly the local distribution or abundance of the species;
-  damage or destruction of a breeding site or resting place; and
-  keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

A European Protected Species Mitigation (EPSM) Licence issued by Natural England will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake activities listed above. A licence is required to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and monitored.



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