



Delta Green
environmental design

Keepers Cottage, Horsham External Lighting Report

Revision: S2/P02
13th October 2025

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Rev	Originator	Approved	Date
P01	OM	JP	2025.09.29
P02	OM	JP	2025.10.13

1.0 SITE DETAILS

1.1 LOCATION

Keepers Cottage is located approximately 700m to the northeast of Coneyhurst, east of West Chiltington Lane, and accessed via an established track.

The proposed scheme includes demolition of existing semi-detached cottages and an outbuilding, and the erection of a new single dwelling within the curtilage of the existing Keepers Cottages.

The new development comprises a 2-storey, four-bedroom dwelling, with ensuite, family bathroom, WC, kitchen, utility space, living room and study.

The development is in a generally rural area with no properties immediately neighbouring the development area. The main road, West Chiltington Lane has no street lighting at present. 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.

This report forms part of the external lighting package, which reviews the impact of introducing new external lighting to this area for the purpose of the Keepers Cottage development. The sole purpose of the lighting scheme is to provide low output lighting around the building perimeters and facilitate safe egress from the building.

1.2 DEVELOPMENT TYPE

Keepers Cottage is an existing site where it is proposed to demolish the existing buildings and construct two new buildings comprising a 2-storey, four-bedroom dwelling, with ensuite, family bathroom, WC, kitchen, utility space, living room, and study.

1.3 ENVIRONMENTAL TYPE

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.

The development is protected in part by the existing landscape, and there's no neighbouring properties. Therefore, light spill to the surrounding environment is the focus of this external lighting assessment.

2.0 DESIGN STANDARDS AND GUIDELINES

2.1 BRITISH STANDARDS

BS EN 12464 – Light and Lighting

This standard details the requirements of external lighting and refers to the reduction of obtrusive light. It forms the basis of the CIBSE lighting guides and the ILP lighting guides. The standard defines the different environmental zones and details the lighting requirements for each.

2.2 INTERNATIONAL DARK-SKY ASSOCIATION – DARK SKIES GUIDANCE

Dark Night Skies states that development must conserve and enhance the intrinsic quality of dark night skies and the integrity of the Dark Sky Core. It notes that applications must demonstrate that all opportunities to reduce light pollution have been taken and ensure that the measured and observed sky quality in the surrounding area is not affected.

The proposals are not strictly obligated to comply with Dark Sky Policies; however, local authority planning guidance sets out requirements relating to light pollution. Accordingly, the design has adopted the Dark Skies principles as good practice to demonstrate that opportunities to minimise light pollution have been fully considered.

2.3 CIBSE LIGHTING GUIDELINES

CIBSE Lighting Guide 6 – The Outdoor Environment

LG6 is a CIBSE lighting guide which relates generally to external lighting. The guide details the recommended lux levels and uniformity for various scenarios and areas (for example, parking areas, pathways, escape routes etc.). In this case, LG6 has been used to identify a recommended level of light for the external pathways and parking areas.

CIBSE SLL Code for Lighting

The SLL Code for Lighting is a covering guidance document which summaries the specific lighting guides and provides broader detail of the requirements for external lighting. The CIBSE Code for Lighting has been used in accordance with Lighting Guide 6 to determine the design criteria for the proposal.

2.4 ILP GUIDELINES

ILP Guidance Notes for the Reduction of Obtrusive Light

The ILP guidance for the reduction of obtrusive light is one of the most common documents referred to when reviewing the impact of external lighting to the surrounding environment. The document details strict parameters for which external lighting must comply. The parameters are determined by the location of the development.

ILP Guidance Note 08 – Bats and Artificial Lighting in the UK

The ILP Guidance note 08 gives specific guidance on the provision of artificial lighting and the associated impact on bats. The guide outlines additional design parameters and assessment tools that must be utilised to demonstrate a compliant scheme. Whilst the presence of bats is not always clear, the guidance can be treated as good practice for all external lighting schemes.

2.5 DESIGN CRITERIA

The development falls into the environmental zone E2. Environmental Zone E2 is defined in the ILP Guidance notes for the reduction of obtrusive light as a “Low district brightness” area, such as “Sparsely inhabited rural areas, village or relatively dark outer suburban locations”. Definitions for all Environmental Zones can be found within Table 2.4.1 below, taken from the ILP guidance documentation.

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village 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

Table 2.4.1 – Extract from ILP Guidance Notes for the Reduction of Obtrusive Light

The proposed lighting scheme has been designed in accordance with the standards detailed in section 2.0. The external lighting proposal has been developed in accordance with the Dark Skies Policy, avoiding the introduction of unnecessary or excessive lighting beyond what is required by relevant standards and regulations. Lighting has been introduced to facilitate the safe movement of residents in key access areas around the building perimeters and for the driveway.

The external lighting scheme will be controlled via integral presence detection and manually switched separately on the ground floor, by the door.

CIBSE Lighting Guide 6 (LG6) outlines recommended lux levels and uniformities for external lighting. For this site it recommends 5.0 lux to all residential access areas. This has generally been followed as a minimum across the relevant perimeters of the building and driveway.

Lighting uniformity is used to assess the difference between the darkest areas and the average overall lux levels. Wall mounted luminaires were used to light up the areas of focus for this site.

The wall mounted fittings were 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.

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 and ILP Guidance Note 08 for 'Bats and Artificial Lighting'.

3.0 LIGHTING DESIGN

3.1 SELECTED LUMINAIRES

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.

3.2 LIGHTING CALCULATIONS

The lighting scheme has been calculated using software called DIALux, developed by DIAL GmbH. The software allows the user to build a 'model space' which represents the site and then add light fittings from a selection of various manufacturers by means of an eulumdat file. The eulumdat file contains photometric data which is specific to each fitting and includes information regarding the light output levels, colour temperature, and distribution curves.

Once the model has been set up, and luminaires have been added, the user can analyse the effect that these different luminaires have with regards the level and uniformity of light on a given surface.

Figure 3.2.1 is a screen shot from the model showing how it calculates the external lighting in relation to the development and surrounding environment.

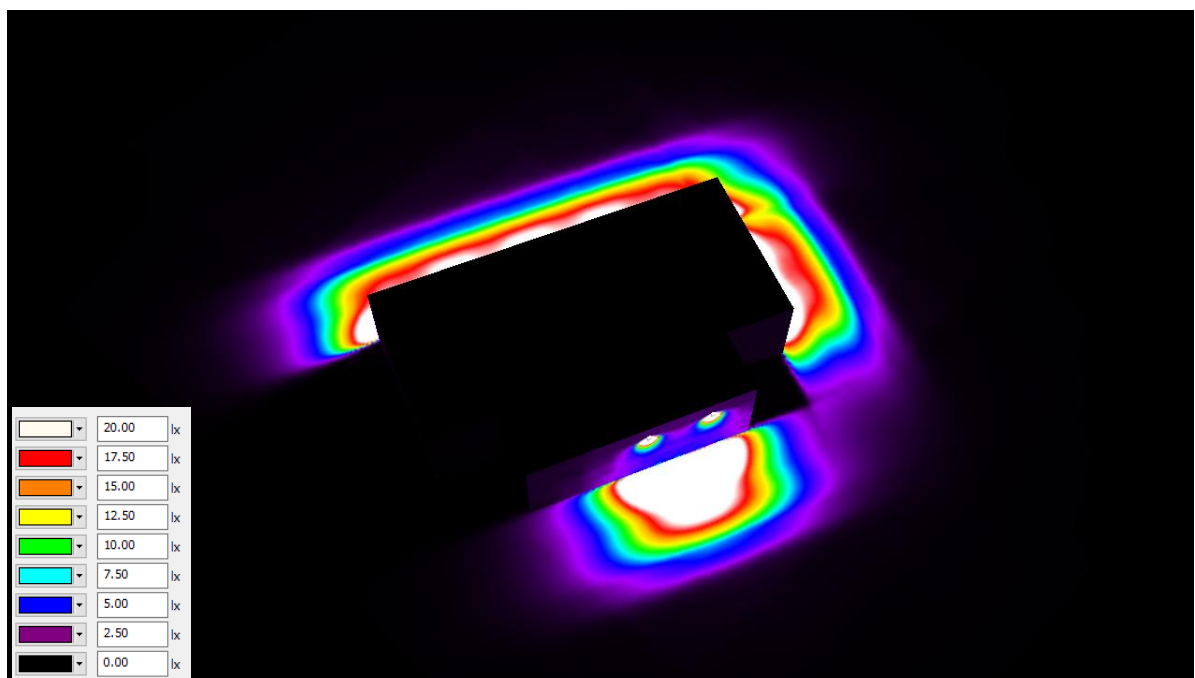


Figure 3.2.1 – False Colour Rendering for the External Lighting

*The external lighting model has been constructed for the purpose of expressing lux levels and uniformity only and does not accurately reflect the visual appearance of the development.

3.3 LIGHTING DRAWINGS

An isoline plot drawing has been issued to accompany this report, which shows light distribution across the site and the general lighting layout of luminaires.

The Isoline Plot shows the extent of light spill to the surrounding environment. Each isoline is assigned a lux level (as detailed on the drawing legend) and is expressed as the extent at which this level of light reaches across the site. The isoline values drop as they move away from the source of light. The isoline plot is a 2D plan representation of light levels, at floor level, and does not take account of illuminance on walls or other objects.

This drawing also shows the luminaire positions and type which can be cross-referenced with the luminaire schedule. The luminaire schedule shows details of the light source, including post heights, number of luminaires, colour temperature, lumen output and dimensions.

3.4 LIGHTING CONTROLS

Lighting controls can be used to help further reduce the impact of lighting on the surrounding environment. Lighting controls can ensure that lighting is used correctly for the intended purpose and is not used unnecessarily or excessively.

Lighting will be controlled by presence detection to ensure lighting is only called to operate when residents require it, mitigating the impact on the surrounding environment and to nearby neighbours. Manual override switches will be installed inside the premises to allow users to keep the lights on in suitable scenarios.

4.0 MITIGATION OF LIGHT SPILL

4.1 MITIGATION METHODS

Several mitigation methods have been proposed to help reduce the overall spill of light to the surrounding environment, and to improve the visual comfort from the luminaires.

Set an appropriate height for the luminaires

The height of a luminaire can significantly affect the light levels and distribution. The scheme has been designed using wall mounted fittings at 2500mm in co-ordination with the building Architecture.

Provide appropriate lighting control

Lighting control shall be provided in accordance with Section 3.4. All lighting will have integrated PIR motion sensors to ensure that the luminaires are only used as required, and not excessively.

Provide obstructions to the light

For the purpose of lighting calculations, landscaping has been excluded. However, landscaping can have a significant impact on the effects of lighting which is particularly relevant at this site. Site levels, trees, and other such foliage will all reduce the level of light spill. The external lighting scheme has been co-ordinated with the proposed landscape, to ensure light spill is mitigated further.

5.0 SUMMARY

In summary, the external lighting proposal has been designed in a way to reduce the level of light spill as far as is practicably possible without being at the detriment of the development use.

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.

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 have been selected with a 0% upward light component in compliance with dark skies policies.

Altogether, the proposed lighting scheme has been designed with the surrounding environment in mind, and in such a way to minimise the overall effect of the scheme, rather than pushing the boundaries which are deemed acceptable by supporting publications. The scheme provides appropriate levels of lighting, fit for use, across the development whilst minimising light spill and providing visual comfort to persons using the site.

Lighting has been designed in accordance with relevant standards and makes reference to relevant supporting publications.