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Our ref: 22/129/HHG

17th May 2023

Rev.*

Statement in Support of the Condition 14 for Planning reference No. 22/503658/FULL and Condition 6 for Planning reference No. 23/500826/FULL for Hillside, Headcorn Road, Grafty Green, Kent, ME17 2AP.

The conditions are:

Condition 14 (22/503658/FULL) & Condition 6 (23/500826/FULL)

14 & 6) The proposed development shall not commence above slab level until a “lighting plan for bats” has been submitted to and approved in writing by the local planning authority. The lighting plan shall:

a) Identify those areas/features on site that are particularly sensitive for bats and that are likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory.

b) Show how and where external lighting will be installed so that it can be clearly demonstrated that areas to be lit will not disturb or prevent bats using their territory, including any newly provided roost features.

All external lighting shall be installed in accordance with the specifications and locations set out in the plan and these shall be maintained thereafter in accordance with the plan.

Reason: To safeguard protected species and the night-time amenity of the area in general.

The aim of this Lighting Plan Statement is to satisfy condition 14 for 22/503658/FULL & condition 6 for 23/500826/FULL and describes the indicative exterior lighting works to be provided at the proposed residential development.

The statement details the key principles the exterior lighting design follows. These principles are in place to ensure adequate illumination of external areas, and that the design meets the criteria of the documents detailed in Table 1.

Accompanying this statement, an indicative **External Lighting Plan for Bats** (APPENDIX A) has been prepared to demonstrate exterior lighting at the proposed development has a minimal impact on bats.

LIGHTING CRITERIA:

1. Standards and Guidance

An exterior lighting system is required for security purposes and to facilitate safe movement around the proposed development for all users. Exterior lighting is to be in accordance with the below list of documents and site-specific design criteria:

Table 1: Standards and Guidance Documents	
Document Reference	Document Title
1	ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2020
2	ILP and BCT GN08:2018 Bats and artificial lighting in the UK




2. Artificial lighting

Research indicates that while lower UV components attract fewer invertebrates, warmer colour temperatures with peak wavelengths greater than 550nm (~ 3000°K) cause less itttt on bats (Stone, 2012, 2015a, 2015b). Therefore, a warm white spectrum should be adopted to reduce the blue light component.

Table 2 (2. Artificial lighting GN08/18): Types of Lights recommended for use in exterior lighting applications		
Light source	Spectral ranges	Description
Metal Halide	~ 400 to 800	A small lamp and therefore easier to focus light and make directional. Emits a small UV content. Still used by some for exterior lighting applications.
Tungsten Halogen	~ 400 to 800	Is not used in new lighting schemes but may be encountered as a security light in a private household.
LEDs	~ 410 to 750	This is the light source of choice for most local authorities. The light emitted is more directional and normally controlled by lenses or sometimes reflectors. LED is available in a number of colour temperatures. Warm white (more yellow/orange colour) at around 3000°K and as low as 2700°K can now be used with little reduction in lumen output.
Compact fluorescent	~ 410 to 820	Mostly in use in residential street lighting. It produces a white light; variants are available with minimal UV output. It can be used at a low wattage and therefore on a low output to achieve low levels of illuminance (measured in lux).

3. Luminaire Selection and Shielding

The following lighting fixtures were selected. They have been compared against the lighting standards and applicable guidance notes.

Table 3: Luminaire Specification and shielding examples				
Luminaire	Proposed Locations	Characteristics		Image
Lutec Focus 6046	Either side of the front Gate.	Upward Light:	0%	
		Wattage:	9 W (2no. 4.5W)	
		Colour temperature:	2700K (warm white)	
		Type of Bulb:	GX53 4.5 Watt LED	
Mousehole ip65 path light in aged brass	Alongside the driveway.	Upward Light:	0%	
		Wattage:	1 W	
		Colour temperature:	2700K (warm white)	
		Type of Bulb:	Built-in LED	
Napoli Wall Light Black/Rust Clear Glass E27	The proposed House and Garage are mounted 2m above ground level for the house and 1.9m above ground level for the Garage.	Upward Light:	0%	
		Wattage:	9 W	
		Colour temperature:	2700K (warm white)	
		Type of Bulb:	E27 Screw bulb, 9W ES LED bulbs	

Energy efficiency – the design has considered appropriate optic settings for the development layout ensuring (as practicable as possible) light is only provided where required.

Light pollution (vertically and horizontally) has been minimized as much as possible through careful luminaire selection. The design follows the principles set out in the ILP GUIDANCE Notes for the Reduction of Obtrusive Light GN01:2020 and conforms with the below:

Table 4 (Table 3 GN01/20): Maximum values of vertical illuminance on premises						
Light technical parameter	Application conditions	Environmental zones				
		E0	E1	E2	E3	E4
Illuminance on the vertical plane (Ev)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx	1 lx	2 lx	5 lx

The proposed site is considered under Environmental Zone E2 (low district brightness)

Upward Light Ratios

Table 5 (Table 6 GN01/20): Maximum values of upward light ratio (ULR) of luminaires					
Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward Light Ratio (ULR %)	0	0	2.5	5	15

Where:

E0 = Protected surroundings, dark landscapes – UNESCO starlight reserves, IDA Dark Sky Parks.

E1 = Natural surroundings, intrinsically dark landscapes – National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.

E2 = Rural surrounding, low district brightness areas – Village or relatively dark outer suburban locations.

E3 = Suburban, Medium district brightness – Small town centres or suburban locations.

E4 = Urban, High district brightness – Town/city centres with high levels of night-time activity.

The ULR = Upward Light Ratio of the installation is the maximum permitted percentage of luminaire flux that goes directly into the sky.

Ev = Vertical Illuminance in Lux – measured flat on the glazing at the centre of the window.

I = Light Intensity in Candelas (cd)

L = Luminance in Candelas per Square Metre (cd/m²)

Curfew = the time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by the local planning authority. If not otherwise stated – 23.00 hrs is suggested.

**= Permitted only from public road lighting installations.*

ECOLOGY:

The preliminary ecological appraisal and bat survey report (Corylus Ecology,2022) details that the dwelling (B1) and outbuilding (B2) were assessed as supporting features of moderate suitability for roosting bats. Two dusk emergence surveys of the dwelling and outbuilding confirmed a day roost of common pipistrelle within the dwelling; there was no evidence of roosting bats within the outbuilding.

A built-in bat brick box will be installed within the brickwork on the southern elevation of the new property, and three tree-mounted bat boxes will be installed on trees in the southern hedgerow at the time of demolition.

The site has been lit considering the impact on bats and the surrounding ecology.

The following section reviews the PEA and Bat Survey Report (ILP and BCT Guidance Note 08/18 Bats and artificial lighting in the UK) recommendations for appropriate luminaire specification.

Recommendation 1: Do not provide excessive external lighting; use only the minimum amount of light needed for safety.

Lighting Proposal: The proposed lighting layout has been planned to provide an adequate amount of light needed for safety.

Recommendation 2: Minimise light spill. Eliminate any bare bulbs and any upward-pointing light. The spread of light should be kept near to or below the horizontal; flat cut-off lanterns are best. Do not create light spill onto the nearby ponds to the south and southeast.

Lighting Proposal: All proposed light fittings (luminaire) have a 0% Upward Light Ratio (ULR) and are set at the horizontal (0-degree tilt) to minimise light spill. Bare bulbs and upward-pointing lights have been avoided. The spread of light will be below the horizontal. The proposed lighting scheme doesn't create any light spill onto the nearby ponds and trees.

Recommendation 3: Use narrow-spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultraviolet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects.

Lighting Proposal: All proposed light source is specified as LED that emits minimal ultraviolet light and are warmer colour temperatures (2700K) avoiding the white and blue wavelengths of light that attracts lots of insects, thus causing less impact on bats.

Recommendation 4: Light should peak higher than 550nm or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species.

Lighting Proposal: All proposed light source feature peak wavelengths higher than 550nm, avoiding the light most disturbing to bats.

Recommendation 5: Limit the times that lights are on to provide some dark periods, and install movement sensors to limit the duration of lit periods. Any external security lighting should be set on motion sensors and short (1-minute) timers.

Lighting Proposal: The proposed lighting plan considers the requirement to provide dark periods and has provided motion sensors on short 1-minute timers to all the light fittings in the driveway, front of house & carport and south side of the house.

Recommendation 6: *Avoid using reflective surfaces under lights.*

Lighting Proposal: The surfaces are either paving block, pea shingle, tarmac, concrete and grass, all of them are non-reflective.

Design: These recommendations have been followed and incorporated in the design of the external lighting scheme that can be seen in the attached document AL(0)160 'Indicative Exterior Lighting Plan for Bats' (Appendix A).

ENVIRONMENTAL RESIDUAL EFFECTS:

The proposed lighting will have a residual effect on the environment, and these will occur at different phases during the project. The residual effects have been assessed below and consider the permanent and temporary effects.

Operational – Landscape and Visual (permanent impact)

- There is a permanent impact on the visual scene. With the use of design practice, the impact can be minimised through good design – reducing the number of luminaires required and their height. With the use of modern lanterns and shielding light is well controlled.
- Recommendation: Design prepared by the competent designer in accordance with ILP Guidance on the Reduction of Obtrusive Light and BCT Guidance on Bats and Artificial Lighting.

Operational – Community (permanent impact)

- A well-designed lighting installation will have a positive impact on the local community, providing:
 - A reduction in the fear of crime
 - Encourage the use of more sustainable modes of transport, such as walking, cycling.
- Recommendation: None

Construction and Demolition – Noise (temporary impact)

- Noise during construction
- Recommendation: Employment of a competent contractor with the use of appropriate tools to minimize noise.

Construction and Demolition – Dust (temporary impact)

- Dust during construction
- Recommendation: Employment of a competent contractor with use of appropriate tools to minimize dust.

Construction and Demolition – Ground Contamination (temporary impact)

- None anticipated.
- Recommendation: None

Construction and Demolition – Storage of Materials (temporary impact)

- Storage of materials is anticipated.
- Recommendation: Hazardous materials are to be handled, stored and transported in accordance with COSHH regulations and manufacturer guidelines.

Construction and Demolition – Waste

- Waste is anticipated.
- Recommendation: Lamps and lanterns to be disposed of in accordance with WEEE regulations.

APPENDIX A: AL(0)160 Indicative Exterior Lighting Plan for Bats