lighting force

Andrew Day
Cowfold Lodge Cottage
Henfield Road
Cowfold
RH13 8DU

3 July 2024

Dear Andrew,

External Lighting - Cowfold Lodge Cottage

The attached lighting report, along with this covering letter, should form part of your planning submission for Cowfold Lodge Cottage, to demonstrate mitigation of environmental impact on bats, as may be a planning requirement.

In preparing this report, we have referred extensively to the advice offered by the Institution of Lighting Professionals in conjunction with the Bat Conservation Trust, in *Guidance Note GN08/23 – Bats and Artificial Lighting at Night*.

Prior to any conducting any 3D modelling or calculations, luminaires were carefully pre-selected for their low colour temperature (2700K), moderate light output and zero/negligible upward light output, in addition to their overall build quality.

In preparing the calculations, the following passage from GN08/23 was given key consideration.

> *"4.54* ***NB -*** *It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site, despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero.* ***Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is at or below 0.2 lux on the horizontal plane, and at or below 0.4 lux on the vertical plane.*** *These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light averse behaviour."*

We have therefore taken 0.4 lux to be the maximum acceptable level of obtrusive light on the vertical measurement surfaces that we set around and beyond the borders of the property, and by the tree adjacent to the entrance driveway.

I should point out that we have often found when carrying out these calculations that we see occasional anomalous results in small areas where there cannot be light. These anomalies are a result of the limitations of the Dialux lighting calculation software, which treats naturally uneven surfaces (such as grass and gravel) as being completely flat ones, which do not diffuse reflected light as much as they would in reality.

Looking at the vertical plots in this report we see a few of these anomalies and I draw them to your attention as, without above context, they appear to demonstrate non-compliance. We have also run this calculation without reflected light and these anomalies disappear, confirming that they are caused by the way that the Dialux software deals with reflected light. We can send you a report on this calculation if you want to see it for comparison.

We are happy that, as long as surface finishes are as shown in this model, this design is in compliance with GN08/23 and should therefore satisfy the requirements stipulated the Planning Officer.

Yours sincerely,

Ellie Howard