

1659-TN01 – External Lighting Spill

This technical note is intended to demonstrate the light spill at the northern boundary closest to the Beveree Wildlife Site emanating from the proposed care home development for Cinnamon Care Collection in Hampton. The calculations undertaken are to determine that the internal lighting scheme will not adversely affect the adjacent wildlife site by identifying the maximum light spill levels at the boundary.

The calculations undertaken as part of this study have been developed using Relux software with a 3D building model.

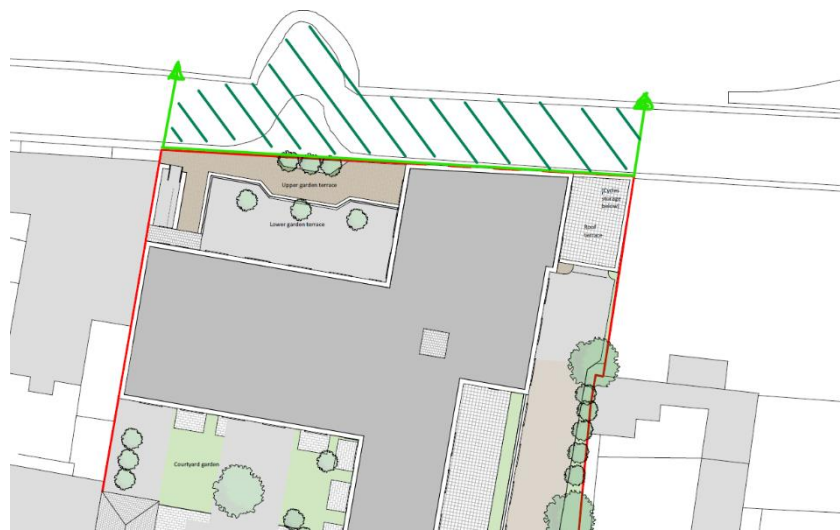


Illustration 1. Boundary and area for light spill concern

In order to run the calculation, a 3D model of the northern elevation has been generated & internal lighting designed in accordance with Cinnamon Care Collection standard specification. The light spill on the northern boundary cannot be more than 0.5 lux.

Each bedroom has been calculated with standard Cinnamon specification downlights, pendants and stairs have been calculated with surface mounted fittings typical to a standard Cinnamon lighting installation. No controls have been incorporated; all light fittings are switched on allowing no diversity and absence control which will be included as part of the final installation. The lounge/dining spaces have been calculated with downlights, again all switched on.

Due to software limitations, the calculation itself cannot account for the following:

- Glass – Reflection will have a positive effect on the calculation, the calculation is therefore a “worse case” and so a lower lux level will result in reality.
- G-Values – Subject to further design development, in order to reduce solar gain higher G-value glass may be added to restrict solar gain, this again will reduce light spill from the home.
- Curtains - Curtains cannot be calculated but will also reduce light spill from the internal spaces, as when open the actual area of opening is reduced & when closed minimal light will spill externally.

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- Internal furniture – Furniture can be added to spaces but for a more accurate result we have not modelled, internal shadows therefore are not calculated.

Furthermore, any walls, fences or any other form of boundary treatments have not been included in the calculation, any low level light that is emitted from the building will be blocked by this.

Overall, with the above points in mind, the calculation is providing a detailed calculation of light spill while avoiding any variables that will reduce this further, providing a result that will be further improved when in a practical scenario.

For the screenshots extracts from the calculations included below, the following lux scale is to be observed. In simple terms, anything that is red is over 0.5 lux, blue is therefore 0.5 lux and below.

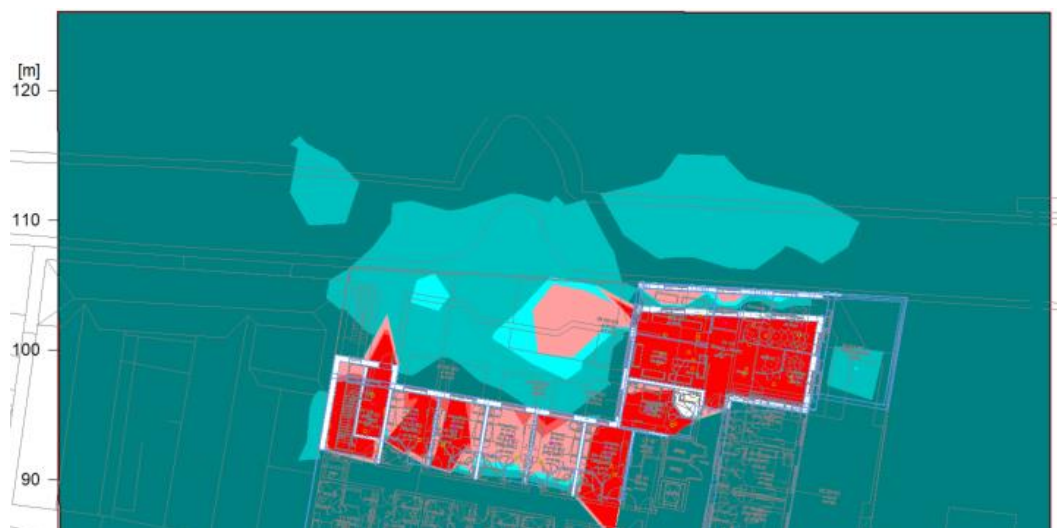
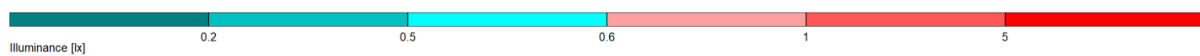


Illustration 2.

Light spill shown in colour, demonstrating light spill on the northern boundary not exceeding 0.5 lux.

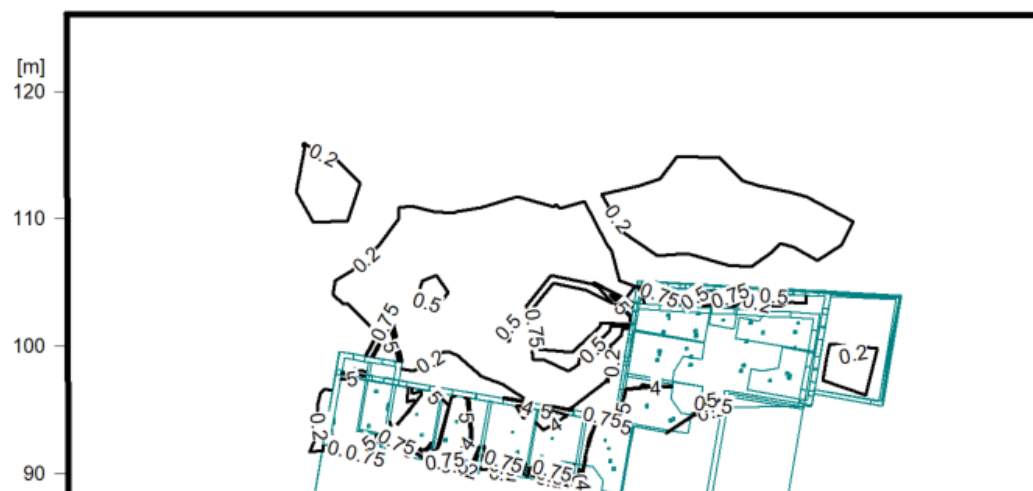


Illustration 2.

Same view as above but depicting spill in numerical form.

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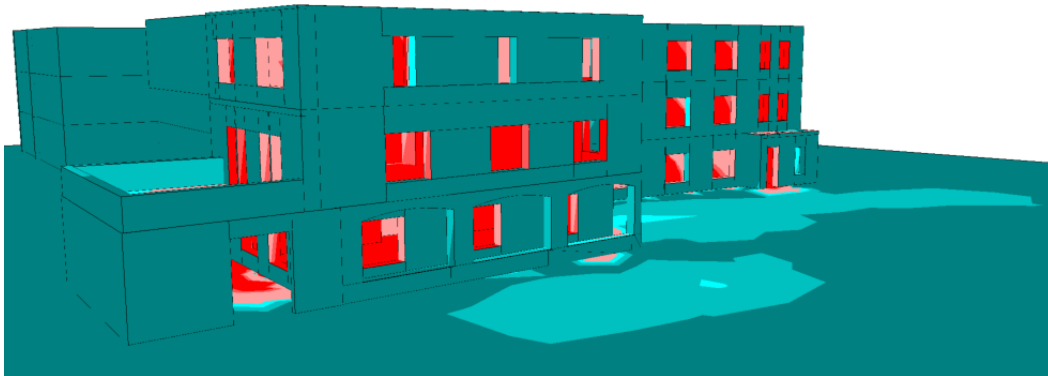


Illustration 3.
3D view looking south west.

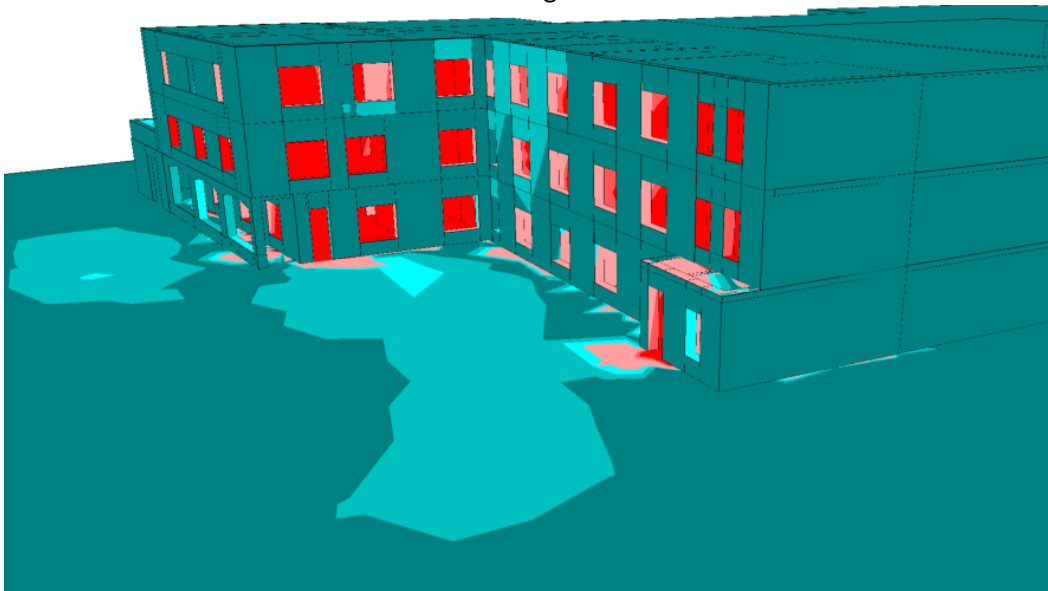


Illustration 4.
3D view looking south east, note the spill of 0.5-5 lux falls within the site boundary.

In conclusion, the calculation shows that there is no light spill from the building exceeding 0.5 lux at the boundary, avoiding obtrusive light to the adjacent wildlife site, thus conforming to the Ecology officers' requirements.

End of technical note.