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External Lighting Report

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1.0 Introduction

This report has been prepared in support of the discharge of planning condition C18 (External Lighting) in relation to planning approval reference DM/23/2961, for the proposed development of a 64-bed care home at Barchester Healthcare, Turners Hill Road, Copthorne, West Sussex, RH10 3EP.

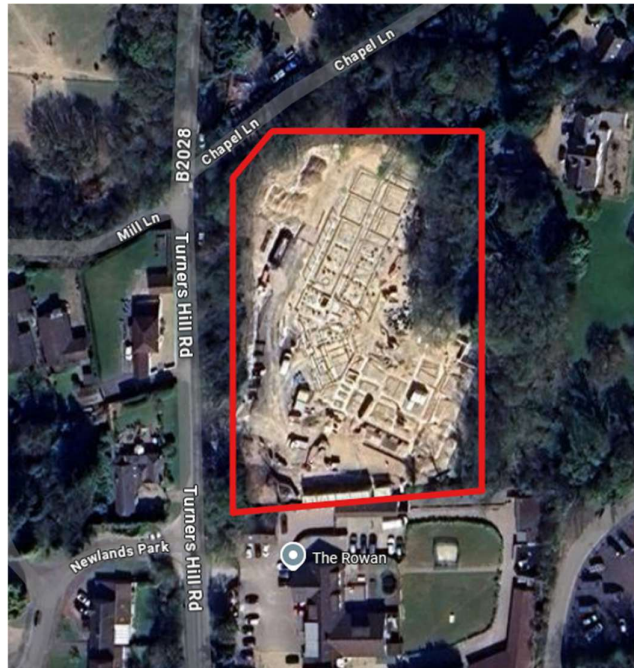


Figure 1: Location of the Site, RH10 3EP

The purpose of this document is to provide the Local Planning Authority with sufficient information to assess the external lighting design in accordance with Condition C18, which requires submission of:

- Details of light intensity, spread, shielding, and times of use
- An assessment of the potential effect on nearby residential properties
- Demonstration of compliance with the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (GN01/21)

2.0 Lighting Design

The external lighting scheme has been developed to provide safe and functional illumination across the development site, including vehicle access routes, parking areas, pedestrian footpaths, and building entrances. The selection and placement of luminaires have been carefully considered to ensure compliance with relevant guidance, including CIBSE LG6 (The Exterior Environment), BS 5489-1:2020, and the ILP GN01/21 for the reduction of obtrusive light.

The scheme incorporates the following fittings:

1.1.1 Kingfisher Viva City Pro (VCYP-AY70-4.8-40D):

Used for general car park and vehicular route lighting. Mounted on 4m columns to provide even coverage while minimising glare and upward light.

1.1.2 Kingfisher LED Bollards (DEC15):

Installed along pedestrian pathways and around landscaped areas. Mounted at approx. 1m height to provide localised, low-level guidance lighting without overspill.

1.1.3 Ansell Wolf Mini (AWOLF/MINI/BLK):

Used for perimeter lighting around the building. Mounted at approx. 2.3m to ensure safe movement and passive surveillance, with downward orientation to control glare and spillage.

1.1.4 Ansell Sleek (ASLE/1/PC):

Applied to the bin store area, providing task lighting with integral photocell control to ensure light is only used when needed.

1.1.5 Ansell Galaxy Downlights (AGALED):

Installed in the canopy soffits, providing dedicated and compliant vertical illumination.

1.2 Design Performance and Layout

The lighting layout and lux levels are shown in detail on drawing 2537-HCL-ZZ-XX-DR-E-6000 and calculations in 2537-HCL-ZZ-XX-DR-E-0003, which includes isoline plots for horizontal illuminance.

The car park has been designed to meet a minimum of 10–20 lux average (in line with BS 5489-1:2020 for medium-usage areas).

Footpaths and general pedestrian areas meet 5–10 lux average, ensuring safe wayfinding and trip hazard avoidance.

Lighting levels around the building perimeter provide a balance of functional and security lighting without causing nuisance or glare.

Upward Light Ratio (ULR) is 0%, ensuring no direct upward light is emitted from any of the fittings, thereby minimising sky glow and aligning with ILP requirements for obtrusive light.

3.0 Lighting Levels and Obtrusive Light Assessment

The external lighting scheme has been assessed in accordance with the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (GN01/21). The aim of the assessment is to ensure the design minimises any adverse effects on the surrounding residential environment, particularly in relation to light spill, glare, sky glow, and operational control.

1.1 Environmental Zone Classification

Based on the site's context and surrounding land use, the area is considered to fall within Environmental Zone E2 or E3, as defined by ILP GN01:

- E2 – Low district brightness (rural/suburban)
- E3 – Medium district brightness (suburban/urban residential mix)

The lighting design has therefore been evaluated against the stricter of the two zones where appropriate, ensuring a conservative and robust approach.

1.2 Horizontal and Vertical Lux Levels at Boundaries

Photometric calculations demonstrate that horizontal lux levels at the site boundary are controlled and do not exceed the thresholds for either zone.

In terms of vertical illuminance on the façades of neighbouring residential properties (where relevant), the lighting remains well within the ILP-recommended maximum of 5 lux (E2) and 10 lux (E3). Where boundaries adjoin residential gardens or rear windows, fittings are either angled away or shielded to prevent intrusive lighting.

1.3 Upward Light Ratio (ULR)

All luminaires used in the external lighting design are selected and positioned to achieve a 0% Upward Light Ratio (ULR). This is in full compliance with ILP GN01, which limits ULR to:

- E2: 2.5%
- E3: 5%

A 0% ULR significantly reduces sky glow and prevents unnecessary upward emission of light, making the scheme highly efficient and environmentally conscious.

1.4 Light Spill at Nearby Residential Windows

Although full façade modelling was not required due to the controlled layout and distance of luminaires from residential receptors, the isoline plots in drawing 2537-HCL-ZZ-XX-DR-E-6000 and the calculations in document 2537-HCL-ZZ-XX-CA-E-0003 confirm that light spill does not exceed ILP GN01 limits at any off-site boundary, both pre and post-curfew. The lighting design has been deliberately shaped to contain illumination within the site perimeter wherever possible.

In addition, building-mounted and column-mounted fittings near the site edges are fitted with optic controls, cowls, or limited beam angles to prevent backward light spillage. The below extracts from the External Lighting Calculations (2537-HCL-ZZ-XX-CA-E-0003) show the average illuminance at the closest nearby premises):

General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux	60395 lm
Total power	495 W
Total power per area (8519.93 m ²)	0.06 W/m ²

Illuminance

Average illuminance	E_m	0.52 lx
Minimum illuminance	E_{min}	0.5 lx
Maximum illuminance	E_{max}	0.56 lx
Uniformity U_0	E_{min}/E_m	1:1.03 (0.97)
Diversity U_d	E_{min}/E_{max}	1:1.11 (0.9)

Figure 2: Illuminance in the vertical plane at the nearest premises (Pre-curfew).

General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux	31142 lm
Total power	251 W
Total power per area (8519.93 m ²)	0.03 W/m ²

Illuminance

Average illuminance	E_m	0.28 lx
Minimum illuminance	E_{min}	0.26 lx
Maximum illuminance	E_{max}	0.31 lx
Uniformity U_0	E_{min}/E_m	1:1.05 (0.95)
Diversity U_d	E_{min}/E_{max}	1:1.2 (0.83)

Figure 3: Illuminance in the vertical plane at the nearest premises (Post-curfew).

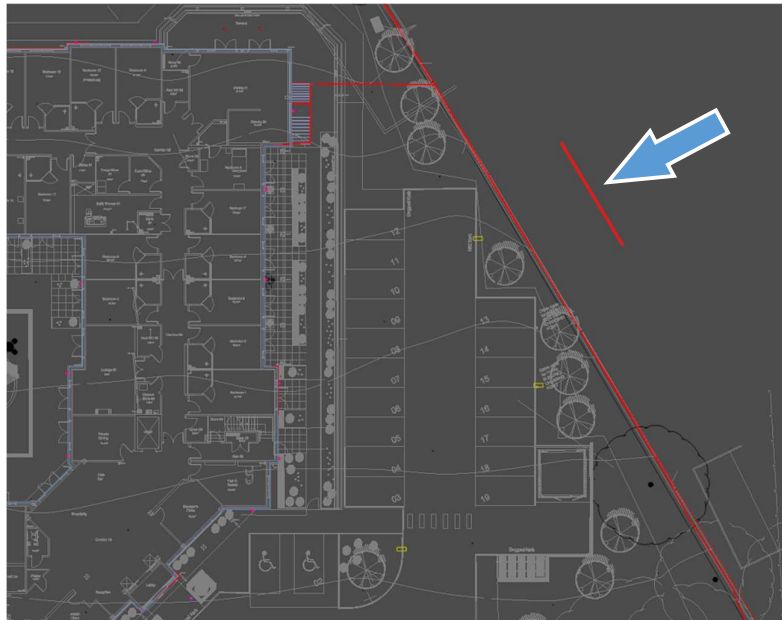


Figure 4: Location of the vertical measuring plane.

4.0 Control Measures

The lighting design has been developed with a strong emphasis on minimising obtrusive light and protecting nearby residential amenity. A range of physical, directional, and operational controls have been integrated into the scheme to meet the standards outlined in ILP GN01/21 and support planning policy.

1.1 Directional Lighting Design

All luminaires have been selected and positioned to direct light only where it is needed, avoiding overspill beyond the site boundary. Measures include:

- Downward-facing fittings with cut-off optics (e.g. bollards, wall lights, and downlights).
- Angled column heads focused into internal areas of the site (e.g. car park), avoiding direct alignment with residential boundaries.
- Façade-mounted lights positioned at moderate heights (2.3m) and oriented perpendicular to dwellings, reducing backlight and glare.

1.2 Landscaping and Visual Screening

The site benefits from existing perimeter vegetation and additional proposed planting, including trees and hedgerows. These natural features act as a soft buffer to filter and obscure any residual light spill at the site's boundaries, particularly along residential interfaces. The design respects existing tree lines and uses them as part of the overall mitigation strategy.

1.3 Operational Controls and Timings

To further minimise unnecessary illumination and energy consumption, the following control strategies are implemented:

- Photocell and Timeclock controls on all general-purpose lighting to ensure fittings only operate during hours of darkness.
- PIR sensors on bin store lights, providing responsive lighting only when presence is detected.
- Timeclocks shall be 'Off' between the hours of 23:00 and 07:00 daily.

5.0 Impact on Residential Properties

An initial assessment has been made of the potential impact of the external lighting scheme on neighbouring residential properties. The design prioritises minimising light pollution and nuisance, in accordance with the ILP GN01/21 recommendations and planning condition C18.

1.1 Proximity to Residential Properties

The nearest residential dwellings are located approximately 25 metres from the site boundary. No luminaires are positioned directly adjacent to these properties, and the site layout ensures that the majority of fittings are directed inward, away from sensitive receptors.

1.2 Mitigation Measures Implemented

To protect residential amenity and reduce potential obtrusive light:

- All luminaires are downward-facing or have full cut-off optics, eliminating any upward light and controlling forward throw.
- Directional control ensures that fittings near the boundary are angled away from dwellings.
- Existing and proposed perimeter vegetation (hedging, trees, and shrubbery) acts as a natural buffer, further screening light sources from view.
- Lighting near sensitive boundaries has been carefully limited in output and controlled via PIR sensors and photocells to avoid unnecessary operation.

1.3 Compliance with ILP GN01/21 Thresholds

The lighting calculations (see document 2537-HCL-ZZ-XX-CA-E-0003) demonstrate that:

- Vertical light spill at the site boundary remains well below the ILP thresholds for Environmental Zone E2 or E3, with lux levels at residential façades calculated at or below 5 lux (E2 pre-curfew) and 1 lux (E2 – post-curfew).
- Upward Light Ratio (ULR) across the site is confirmed at 0%, meaning no direct upward light is emitted by any fitting.
- Glare levels (based on luminous intensity at the boundary) are negligible, with calculated values comfortably within the ILP limits for surrounding receptors.

6.0 Conclusion

The proposed external lighting design is fully compliant with Condition C18 of the approved planning permission and meets the requirements of the ILP Guidance Notes for the Reduction of Obtrusive Light (GN01/21). The scheme has been developed with careful consideration of lighting levels, direction, controls, and environmental context to minimise any potential impact on nearby residential properties.

To ensure continued compliance with the approved lighting strategy and ILP guidance, all external luminaires must be maintained in good working order throughout their operational life. This includes regular cleaning of lenses and optics to maintain light distribution performance, inspection of mounting and alignment, and prompt replacement of failed components such as lamps, drivers, and photocells. Any damaged or misaligned fittings must be rectified without delay to avoid unintended light spill or reduction in safety lighting. Maintenance should be carried out in accordance with the manufacturers' recommendations and recorded as part of the site's planned preventative maintenance (PPM) schedule.

The lighting will be implemented and maintained in accordance with the details outlined in this report, and no external lighting will be installed on site other than in compliance with these approved details.