

Prestwich Travel Hub

Upward Light - Design Note

Upward Light Ratio – Compliance Confirmation

In accordance with the Institute of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light (GN01/21), installations within Environmental Zone E3 are required to limit the amount of light emitted upward into the night sky. As set out in Table 6 of the ILP GN01 guidance 'Maximum values of upward light ratio (ULR) of luminaires', the maximum permitted Upward Light Ratio for Environmental Zone E3 is 5%.

Limitation of skyglow

Table 6 (CIE 150 table 5): 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

Institute of Lighting Professionals – The Reduction of Obtrusive Light – Guidance Note 01/21 (GN01/21)
Table 6 – Maximum values of upward light ratio (ULR) of luminaires

The Relux lighting model for the Prestwich Travel Hub external and rooftop lighting scheme has been used to calculate the Upward Light Ratio for the installation. The calculated ULR is 0%, confirming that no measurable upward light is emitted by the installation. This represents full compliance with the ILP GN01 Table 6 E3 limit of 5%, and directly satisfies the planning authority's specific request for confirmation that no upward light is emitted. The calculation results are included on the next page for information.

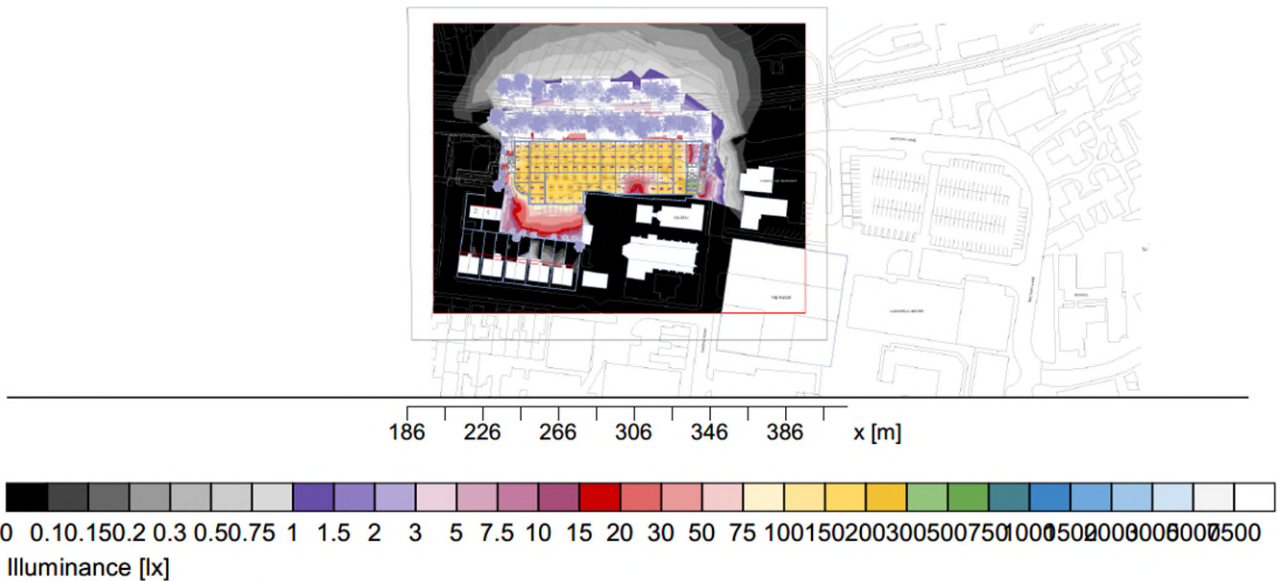
This result is achieved through the selection of luminaires with inherently controlled photometric distributions. The Whitecroft Mistral Midi (area optic) column-mounted luminaires used on the rooftop car park are designed to emit zero light above the horizontal which is confirmed by the manufacturer's photometric data. The optical design of the fitting ensures all light output is directed downward onto the car park surface and therefore delivers the required outcome with respect to sky glow and upward light control, well in excess of what the ILP GN01 E3 guidance requires.

Upward Light Ratio – Calculation Results

1 Exterior 1

1.1 Summary, Exterior 1

1.1.1 Result overview, Horizontal Lux Plot



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	1712.5 klm
Total power	11.4 kW
Total power per area (38669.66 m ²)	0.30 W/m ²
Upward light ratio (RUL)	0 %

Illuminance

Average illuminance	E_m	23 lx
Minimum illuminance	E_{min}	0.00 lx
Maximum illuminance	E_{max}	190 lx
Uniformity U_o	E_{min}/E_m	1:--- (---)
Diversity U_d	E_{min}/E_{max}	1:--- (---)

The ULR value has been calculated without obstruction by other objects.

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