

# External Lighting Report

48-54 Charlotte Street, London



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## Issue and Revision Record

Rev	Date	Rev Comments	Produced by	Checked by
0	Jan 25	Review of lighting exterior	D. Sullivan	M. Frost

## 1.0 Introduction

TPS has undertaken the exterior lighting design for 48-54 Charlotte Street, focusing on the analysis of light spill and lux levels in public areas. The aim is to assess how the lighting design impacts the exterior of the building and how the light spill impacts the surrounding buildings.

### Fittings:

**Ross Marine Bulkhead Wall Light:** Wall mounted luminaire with ingress protection for the exterior stairwell lighting (Mullan Lighting)

**Spike Light:** Spike lights for terrace areas (Futures Lighting)

**LED:** LED strip light for terrace areas with spike lights (futures Lighting)

**Elis Twin LED Wall Light:** Wall mounted luminaire with ingress protection for the façade of the building (Astro Lighting)

### Design Strategy:

- Lower Ground Wall mounted luminaires set at 1.6m from floor level.
- Ground Wall mounted luminaires set at 3.6m from floor level.
- 1<sup>st</sup> floor Wall mounted luminaires set at 1.5m from floor level, 4.9m from ground.
- 2<sup>nd</sup> floor Wall mounted luminaires set at 1.5m from floor level, 8.1m from ground.
- 3<sup>rd</sup> floor Wall mounted luminaires set at 1.5m from floor level, 11.3m from ground.
- 4<sup>th</sup> floor Wall mounted luminaires set at 1.5m from floor level, 14.5m from ground.
- 5<sup>th</sup> floor Wall mounted luminaires set at 1.3m from floor level.

### Design Methodology:

•TPS conducted an in-depth review of the external lighting to ensure that the exterior lighting and fittings comply with ILP, SLL, and BS EN 12464 standards. The lighting calculations for assessing light spill and lux levels were performed using DIALux evo. The results of these calculations can be reviewed on the hereafter. Below provides and insight into the light fittings used for the exterior lighting which the calculations have been based upon.

ROSS WALL LIGHT



SPIKE LIGHT



LED



ELIS WALL LIGHT



## 2.0 Light Spill

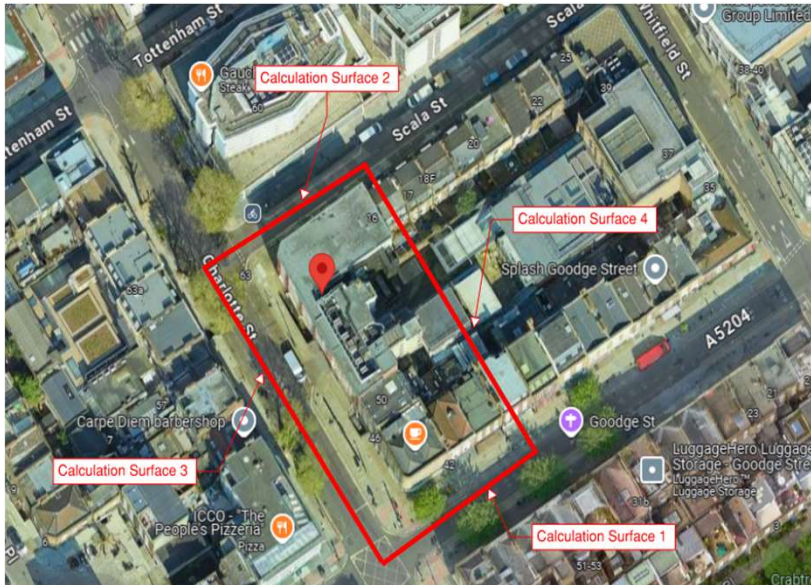
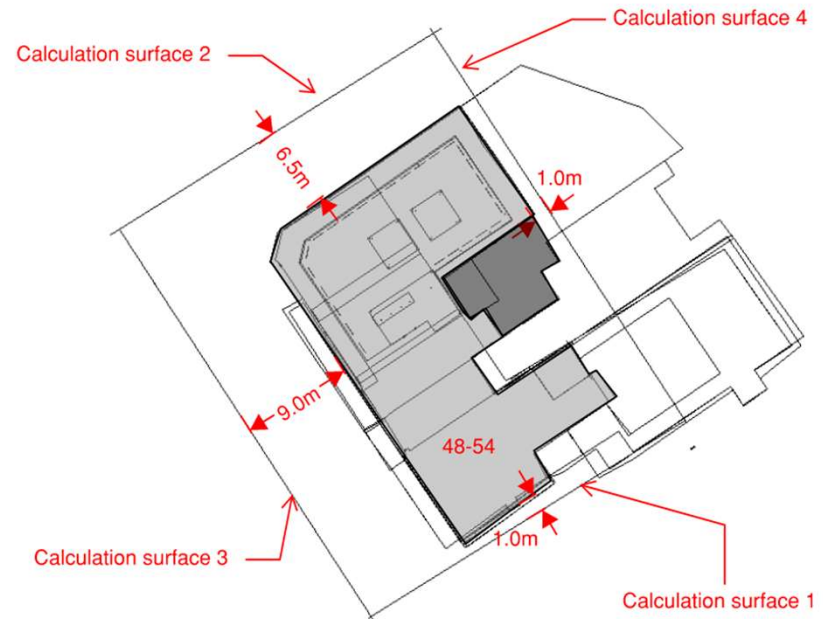


Diagram 01



### Light Spill Analysis:

The light spill assessment evaluates the potential for light overspill onto surrounding areas, based on calculated illuminance levels at key surfaces around the site. Diagram 01 identifies the designated calculation surfaces, and their respective dimensions in relation to the geographical location of 48-54 Charlotte Street.



## 2.1 Light Spill

### Lighting Calculation Results on Exterior Summary:



### Calculation Surface 1:

The light spill assessment evaluates the potential for light overspill onto surrounding buildings by calculating illuminance levels at key surfaces around the site. We used Google maps to measure the distance from 48-54 Charlotte Street to the surrounding buildings and public highways, including the heights of luminaires, and replicated their exact locations in the model. This allowed us to accurately calculate the lux light levels. The following methodology ensured that the surface planes of the surrounding buildings were not impacted by any light spill from the site.

### Calculation Results:

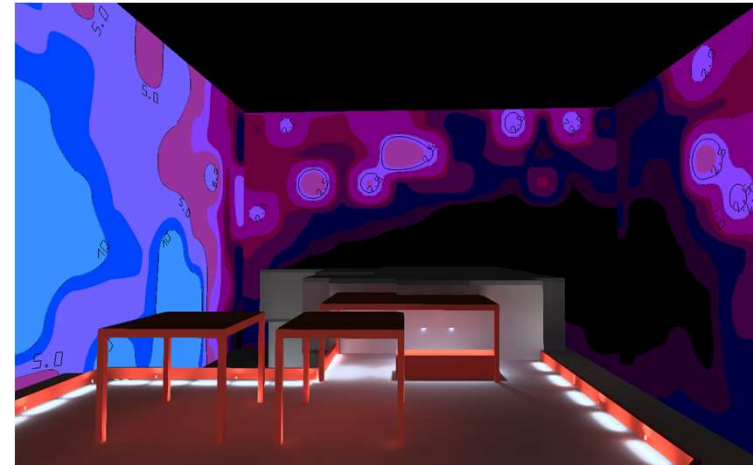
Total height of calculation surface of 17.700m from floor level.  
Average Illuminance ( $\bar{E}$ ): 0.70 lx  
Maximum Illuminance ( $E_{max}$ ): 8.06 lx

### Analysis:

The results demonstrate variability in light spill in this area, with a maximum lux level of 8.06 lx. Based on the SLL calculation method the maximum light spill in lux is 10 lux, on the basis we're achieving circa 8 lux the light spill from the site therefore is minimal and does not negatively impact the surrounding buildings.

### Conclusion:

To conclude, the lighting design achieves the design purpose of supplying adequate exterior lighting to 48-54 Charlotte Street, without impacting the surrounding buildings. The metrics show compliance with SLL guidelines, ensuring that the lighting is both effective and environmentally considerate.



Calculation surface 1  
Perpendicular illuminance 0.70 lx 0.000 lx 8.06 lx 0.00 0.00  
Height: 17.700 m

CGS

## 2.2 Light Spill

### Lighting Calculation Results on Exterior Summary:



### Calculation Surface 2:

The light spill assessment evaluates the potential for light overspill onto surrounding buildings by calculating illuminance levels at key surfaces around the site. We used maps to measure the distance from the project to surrounding buildings and public highways, including the heights of luminaires, and replicated their exact locations in the model. This allowed us to calculate the light levels in lux. This information ensures that the light spill and its impact on surrounding areas are minimal.

### Calculation Results:

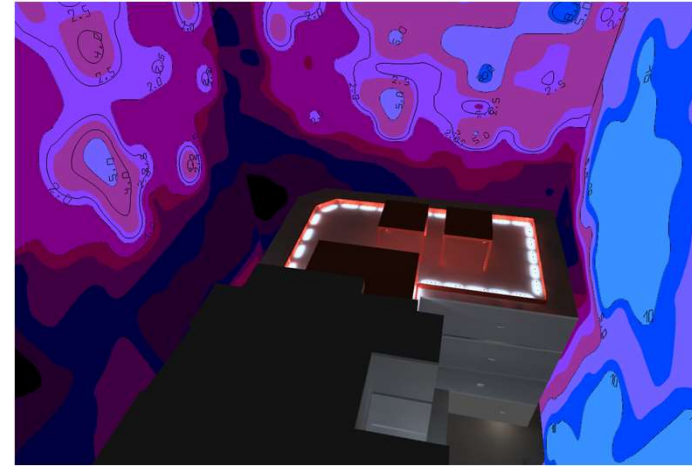
Total height of calculation surface of 17.700m from floor level.  
Average Illuminance ( $\bar{E}$ ): 1.65 lx  
Maximum Illuminance ( $E_{max}$ ): 9.09 lx

### Analysis:

The results demonstrate variability in light spill in this area, with a maximum lux level of 9.09 lx. This indicates that the light spill is minimal and that the building does not negatively impact the surrounding areas. The lighting design is sustainable and effectively minimises light pollution.

### Conclusion:

All calculations indicate that the lighting design achieves the intended objectives of minimizing light pollution while providing adequate illumination for safety and usability. The metrics show compliance with SLL guidelines, ensuring that the lighting is both effective and environmentally considerate.



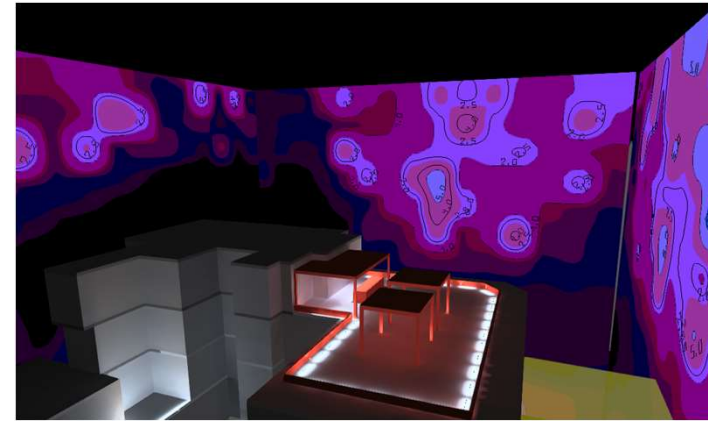
Calculation surface 2  
Perpendicular illuminance  
Height: 17.700 m

1.65 lx	0.005 lx	9.09 lx	0.003	0.001
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CG3

## 2.3 Light Spill

### Lighting Calculation Results on Exterior Summary:



Calculation surface 3  
Perpendicular illuminance 0.85 lx 0.000 lx 5.93 lx 0.00 0.00  
Height: 17.700 m

CG2

### Calculation Surface 3:

The light spill assessment evaluates the potential for light overspill onto surrounding buildings by calculating illuminance levels at key surfaces around the site. We used maps to measure the distance from the project to surrounding buildings and public highways, including the heights of luminaires, and replicated their exact locations in the model. This allowed us to calculate the light levels in lux. This information ensures that the light spill and its impact on surrounding areas are minimal.

### Calculation Results:

Total height of calculation surface of 17.700m from floor level.  
Average Illuminance ( $\bar{E}$ ): 0.85 lx  
Maximum Illuminance ( $E_{max}$ ): 5.93 lx

### Analysis:

The results demonstrate variability in light spill in this area, with a maximum lux level of 5.93 lx. This indicates that the light spill is minimal and that the building does not negatively impact the surrounding areas. The lighting design is sustainable and effectively minimises light pollution.

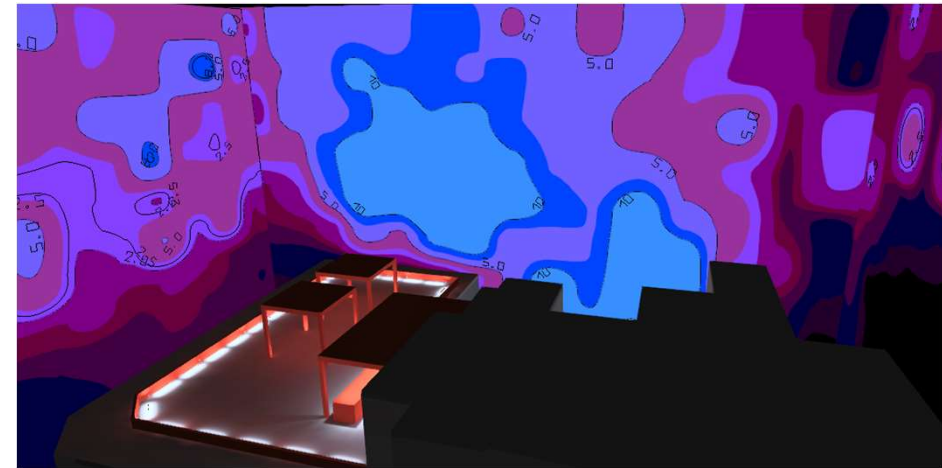
### Conclusion:

All calculations indicate that the lighting design achieves the intended objectives of minimizing light pollution while providing adequate illumination for safety and usability. The metrics show compliance with SLL guidelines, ensuring that the lighting is both effective and environmentally considerate.



## 2.4 Light Spill

### Lighting Calculation Results on Exterior Summary:



Calculation surface 4  
Perpendicular illuminance 5.37 lx 0.045 lx 32.9 lx 0.008 0.001  
Height: 17.725 m CG1

### Calculation Surface 4:

The light spill assessment evaluates the potential for light overspill onto surrounding buildings by calculating illuminance levels at key surfaces around the site. We used maps to measure the distance from the project to surrounding buildings and public highways, including the heights of luminaires, and replicated their exact locations in the model. This allowed us to calculate the light levels in lux. This information ensures that the light spill and its impact on surrounding areas are minimal.

### Calculation Results:

Total height of calculation surface of 17.700m from floor level.  
Average Illuminance ( $\bar{E}$ ): 5.37 lx  
Maximum Illuminance ( $E_{max}$ ): 32.9 lx

### Analysis:

The results demonstrate variability in light spill in this area, with a maximum lux level of 5.37 lx. This indicates that the light spill is minimal and that the building does not negatively impact the surrounding areas. The lighting design is sustainable and effectively minimises light pollution.

### Conclusion:

All calculations indicate that the lighting design achieves the intended objectives of minimizing light pollution while providing adequate illumination for safety and usability. The metrics show compliance with SLL guidelines, ensuring that the lighting is both effective and environmentally considerate.

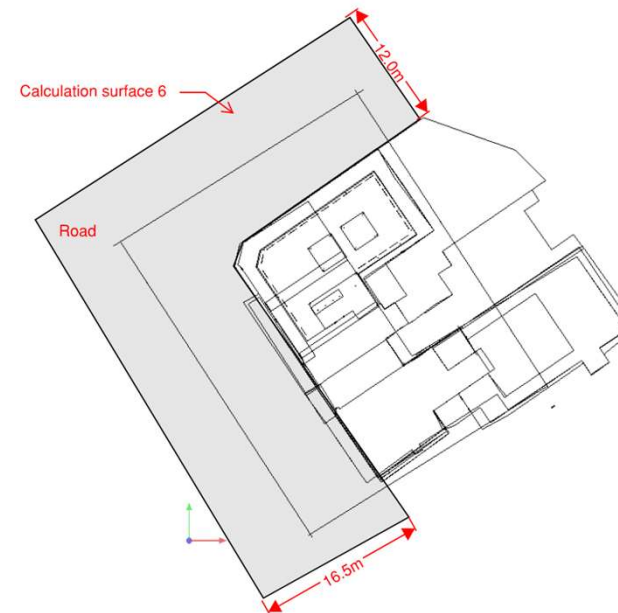


### 3.0 Lighting Exterior

#### Exterior Lighting Calculation:

The pavement lighting assessment ensures sufficient illumination for safe public use, based on calculated illuminance levels at ground-level surfaces. Calculation Surface 6, represents the pavement & road around the building.

The surface achieved an average illuminance of 0.16 lx, with a maximum of 0.97 lx. The uniformity ratio was calculated at 0.05, indicating low uniformity across the surface.



Site 1 (Light scene 1)

#### Calculation objects

#### Calculation surfaces

Properties	E	E <sub>min</sub>	E <sub>max</sub>	U <sub>o</sub> (g <sub>1</sub> )	g <sub>2</sub>	Index
Calculation surface 6 Perpendicular illuminance Height: 6.900 m	0.16 lx	0.008 lx	0.97 lx	0.050	0.008	CG1

Utilisation profile: DALux presetting (5.1.4 Standard (outdoor transportation area))

## 4.0 Conclusion

### Conclusion:

The external lighting design for the project has been thoroughly reviewed to ensure compliance with ILP, SLL, and BS EN 12464 standards. The lighting calculations, performed using DIALux evo, confirm that the design meets all necessary requirements for safety and sustainability.

The results demonstrate minimal light spill, ensuring that the surrounding areas are not negatively impacted. Additionally, the lighting effectively illuminates public spaces, enhancing visibility and safety for the community.

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