



86-87a BROAD STREET

READING

External Lighting Assessment Statement

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Edition	Date	Amendments
01	May 2021	Preliminary Issue
02	September 2021	Revised for Planning

Broad St, Reading

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1.0 INTRODUCTION

The following external lighting statement is intended to clarify how the external lighting design and associated lighting controls strategy achieves the lighting requirements, as stipulated within the Institute of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

2.0 GN01:2011 PARAMETERS

The building is located in Reading within a predominantly urban and commercial area. From Table 1 of the guidance this equates to environmental zone E4 – Urban within a high brightness district.

Table 1 – Environmental Zones			
Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Table 2 of the Guidance Notes for the Reduction of Obtrusive Light GN01:2011 stipulates the following conditions for exterior lighting installations within Zone E4:

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers						
Environmental Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Intrusion (into Windows) E _v [lux] ⁽²⁾		Luminaire Intensity I [candelas] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

The proposed development must be designed to reduce the adverse impact of any light spill and light pollution.

This statement shall be read in conjunction with the following drawings and documents:

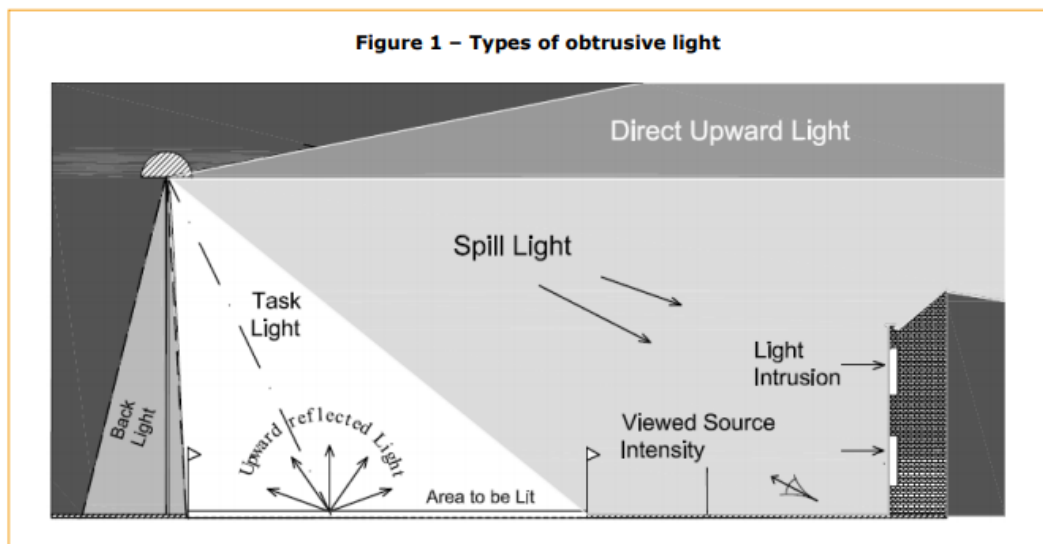
- ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2011
- CIBSE Lighting Guide6 the Outdoor Environment.

3.0 EXTERNAL PERIMETER LIGHTING SUMMARY

- 1) There are no luminaires proposed to the front elevation (Broad Street) as this is a busy high street with a suitable level of external illumination existing (see appendix 2).
- 2) Wall mounted downward facing lights shall be utilised at the rear entrance over the doors.
- 3) All Luminaires will utilise energy efficient long-life LED light sources.
- 4) It is proposed that the lux levels and uniformities will comply with CIBSE Lighting Guide 6 the Outdoor Environment.
- 5) It is proposed that in terms of obtrusive light and light pollution the design will comply with the ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2011. It is assumed that the development area is an environmental zone E4 classification.
- 6) The lighting control strategy of luminaires to the rear façade of the building will be provided as set out below:
 - i. Photocell to hold lighting off during daylight hours
 - ii. Time clock control to provide additional lighting control

4.0 UPWARD LIGHT OUTPUT RATIO (ULOR)

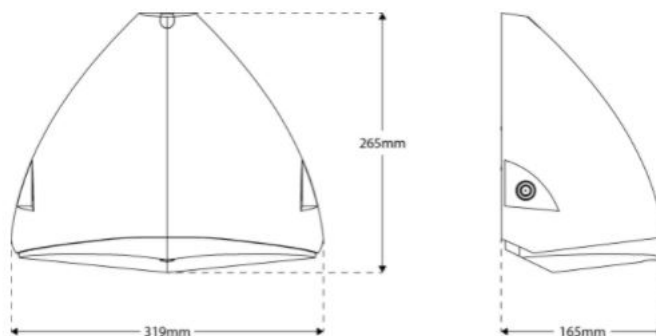
The external lighting calculations demonstrate that the upward light ratio does not exceed the maximum sky glow percentage permitted by the Guidance Notes for the Reduction of Obtrusive Light GN01:2011. For environmental zone E4 the maximum upward light ratio is 15%.



The luminaire specified for the rear façade external lighting has been selected to minimise the direct upward light. The luminaire body is designed to reduce the upward light ratio to 1.0% by directing most of the light generated downwards.



Luminaire Image



Luminaire Dimensions

5.0 LIGHT INTRUSION

Light intrusion (into windows) must not exceed the pre-curfew illumination level of 25 Lux and the post-curfew illumination level of 5 Lux.

Light intrusion onto neighbouring property boundaries is generally below the acceptable level of 5 lux (post curfew) with a very minor area at 10 lux however there are no windows at the rear of the building accordingly light intrusion shall not be a problem.

The external lighting will have additional timeclock control in order to prevent luminaires being switched on when not required by the landlord.

6.0 LUMINAIRE INTENSITY

Luminaires have been selected to meet the luminance requirements of the Guidance Notes for the Reduction of Obtrusive Light GN01:2011.

The luminaires have been selected to provide suitable illumination levels for pedestrians and residents to have safe passage.

Luminaires have been selected with a suitable cut-off shaped reflector to prevent onerous light spill to other areas.

7.0 BUILDING LUMINANCE

Building luminance shall be limited in order to prevent over lighting of the building and the surrounding areas.

The rear façade external lighting luminance has been calculated to provide an average luminance of 7.63 lux and a maximum luminance 14 lux over the bottom 1000mm in elevation.

8.0 LUMINAIRE SPECIFICATION

The efficacy values for the external luminaires installed are detailed in the table below:

Manufacturer	Type	Catalogue	Qty	Power (Watts)	Lumen	Efficacy (lm/cct W)
Orlight	Falcon	BL-3-13-SW-EM	2	13	1885	145

The calculated average initial luminous efficacy of the external light fittings for the rear lighting installation is 145lm/W.

9.0 EXTERNAL LIGHTING CONTROLS

The external lighting will be controlled via a photocell, complete with manual override. The photocell will hold lighting off during daylight hours.

10.0 ILLUMINATED SIGNAGE

It is not currently proposed to have any illuminated signage for the development.

11.0 APPENDIX 1 – LUMINAIRE DATA SHEET

orlight
FROM SOURCE TO SITE

FALCON - IP65 Exterior Wall Mounted Bulkhead

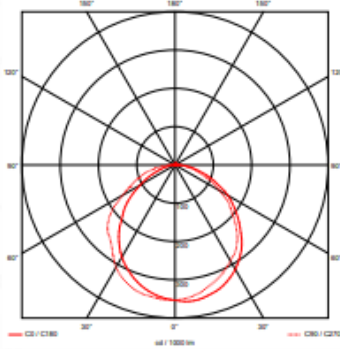


Description
Exterior wall mounted bulkhead constructed to IP65 and IK10. Finished in Black RAL9005 or Anthracite RAL7016 with a clear diffuser. CRI >80 for light quality assurance. Available in 3000K and 4000K colour temperature.

Dimensions



Polar Curve



Specifications

Light Source	2835 LED					
Dimming Options	Switched, DALI, Emergency					
Voltage	220-240V AC					
Current	350mA		500mA		725mA	
Power Consumption	13W		20W		28W	
Colour Temperature	3000K	4000K	3000K	4000K	3000K	4000K
Light Output	1885lm	1950lm	2820lm	2980lm	3780lm	3920lm
Lm Per Watt	145lm/W	150lm/W	141lm/W	149lm/W	135lm/W	140lm/W
CRI	>83	>85	>83	>85	>83	>85
Beam Angle	120°					
Chip Life	L70 >60,000 hours					
IP Rating	IP65					
IK Rating	IK10					
Finish	Black RAL9005, Anthracite RAL7016					

Finishes



BL [Black RAL9005] BL [Black RAL9005] AN [Anthracite RAL7016] AN [Anthracite RAL7016]

Product Coding Example: FALCON-BL-3K-13W-ND

CODE	FINISH	COLOUR TEMPERATURE	WATTAGE	DIMMING OPTIONS
FALCON	BL [Black RAL9005]	3K	13W	ND [Switched]
	AN [Anthracite RAL7016]	4K	20W	EM
			28W	DALI
				DALI-EM

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12.0 APPENDIX 2 – EXISTING BROAD STREET LIGHTING



13.0 APPENDIX 3 – CALCULATION RESULTS

Broad Street Reading

Partner for Contact:
Order No.:
Company:
Customer No.:

Date: 05.05.2021
Operator: Chris Kearsley



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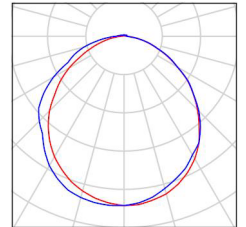


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Broad Street Reading / Luminaire parts list

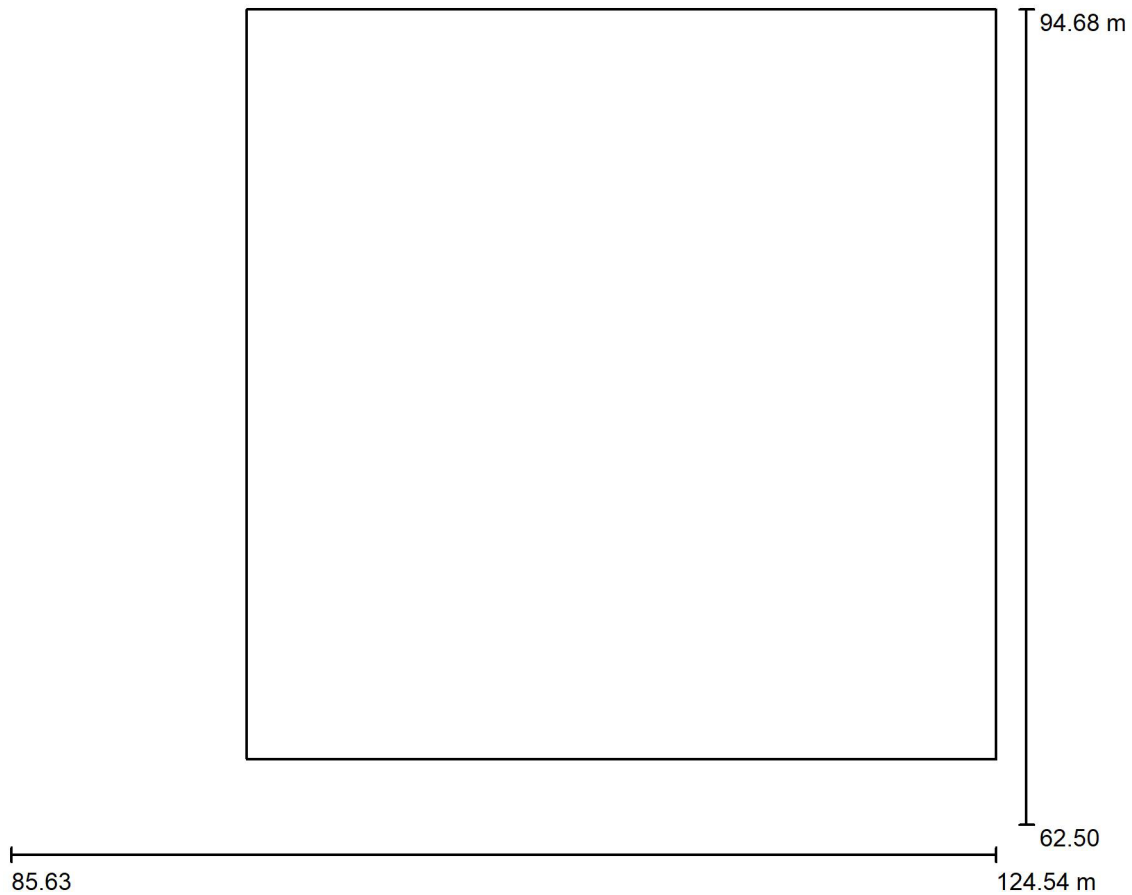
2 Pieces Orlight Ltd FALCON-BL-3K-13W FALCON-BL-3K-13W
Article No.: FALCON-BL-3K-13W
Luminous flux (Luminaire): 1883 lm
Luminous flux (Lamps): 1885 lm
Luminaire Wattage: 13.0 W
Luminaire classification according to CIE: 97
CIE flux code: 48 80 95 97 100
Fitting: 1 x User defined (Correction Factor 1.000).

See our luminaire catalog for an image of the luminaire.





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Exterior Scene 1 / Planning data

Maintenance factor: 0.80, ULR (Upward Light Ratio): 1.0%

Scale 1:299

Luminaire Parts List

No.	Pieces	Designation (Correction Factor)	Φ (Luminaire) [lm]	Φ (Lamps) [lm]	P [W]
1	2	Orlight Ltd FALCON-BL-3K-13W FALCON-BL-3K-13W (1.000)	1883	1885	13.0
Total:			3766	Total: 3770	26.0

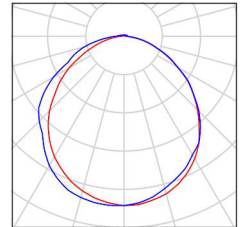


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Exterior Scene 1 / Luminaire parts list

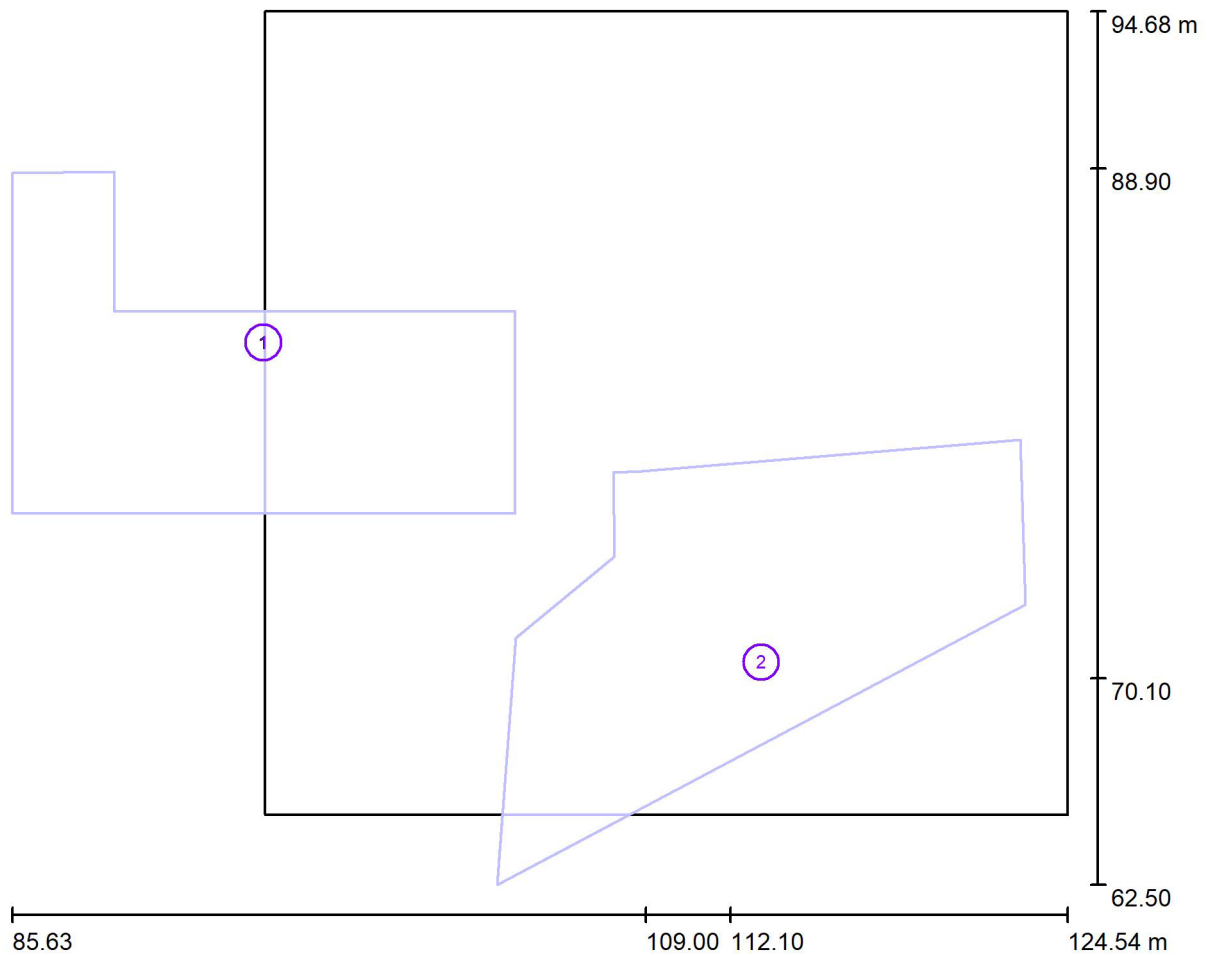
2 Pieces Orlight Ltd FALCON-BL-3K-13W FALCON-BL-3K-13W
Article No.: FALCON-BL-3K-13W
Luminous flux (Luminaire): 1883 lm
Luminous flux (Lamps): 1885 lm
Luminaire Wattage: 13.0 W
Luminaire classification according to CIE: 97
CIE flux code: 48 80 95 97 100
Fitting: 1 x User defined (Correction Factor 1.000).

See our luminaire catalog for an image of the luminaire.





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Exterior Scene 1 / Objects (layout plan)

Scale 1 : 279

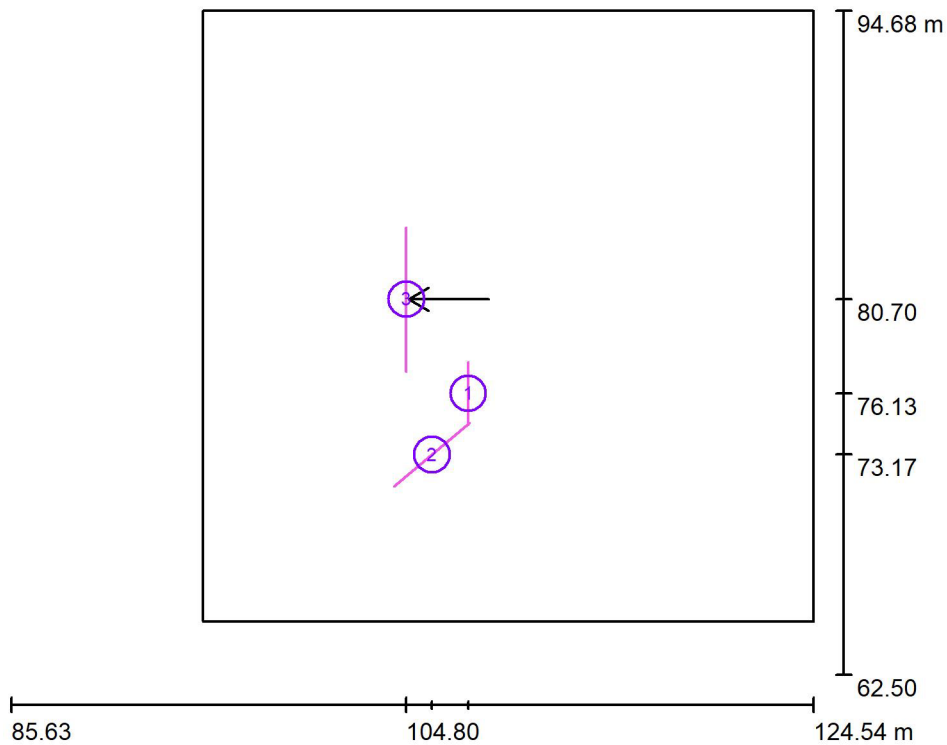
Object parts list

No.	Pieces	Designation
1	1	Our Building
2	1	Rear Building



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Exterior Scene 1 / Calculation surfaces (results overview)



Scale 1 : 367

Calculation Surface List

No.	Designation	Type	Grid	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
1	Surface 1	perpendicular	32 x 32	8.93	4.37	18	0.489	0.239
2	Surface 2	perpendicular	32 x 32	4.96	1.59	9.83	0.320	0.161
3	Surface 3	vertical, 0.0°	4 x 32	7.63	3.15	14	0.413	0.227

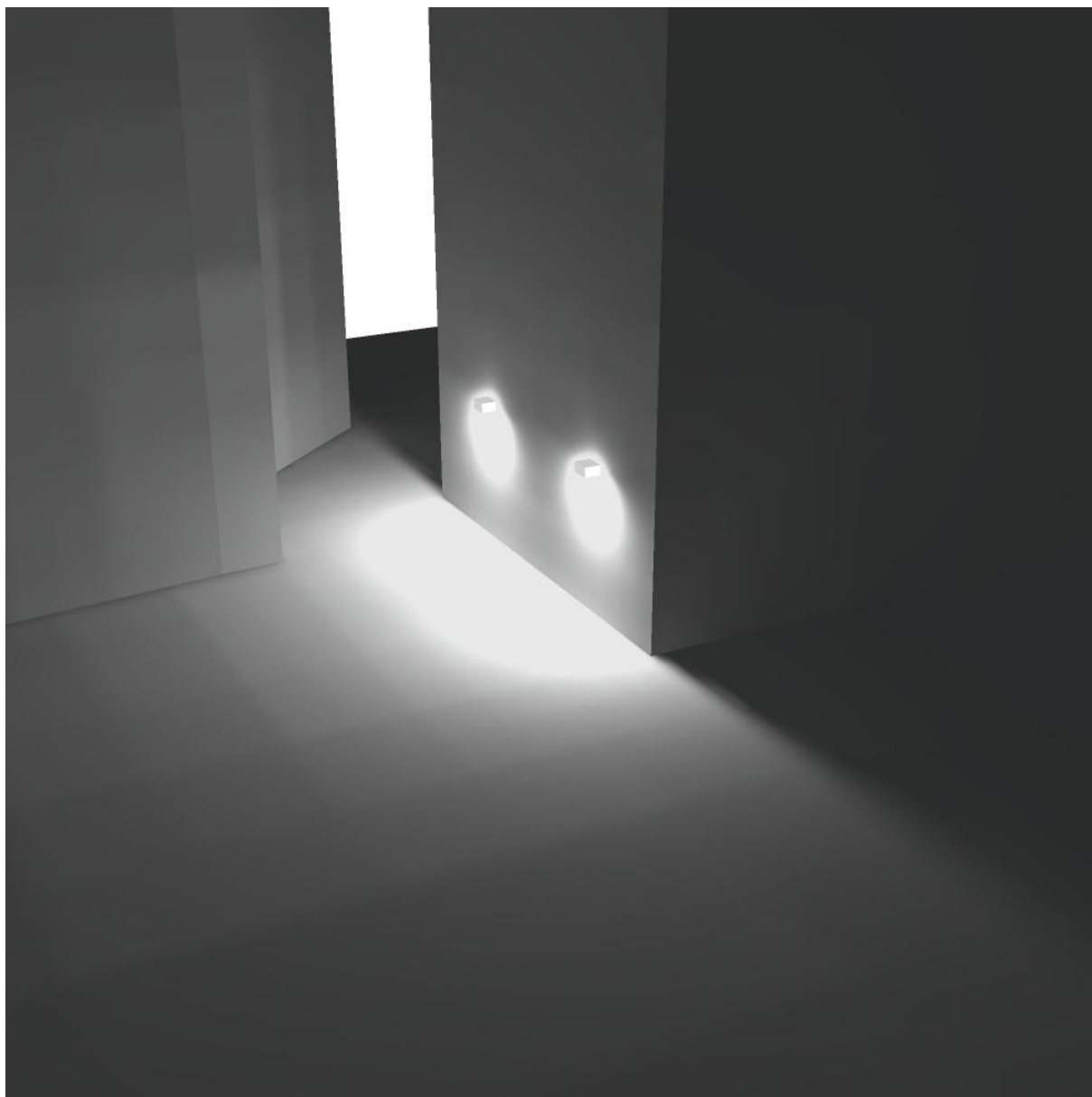
Summary of Results

Type	Quantity	Average [lx]	Min [lx]	Max [lx]	u_0	E_{min} / E_{max}
perpendicular	2	6.36	1.59	18	0.25	0.09
vertical	1	7.63	3.15	14	0.41	0.23



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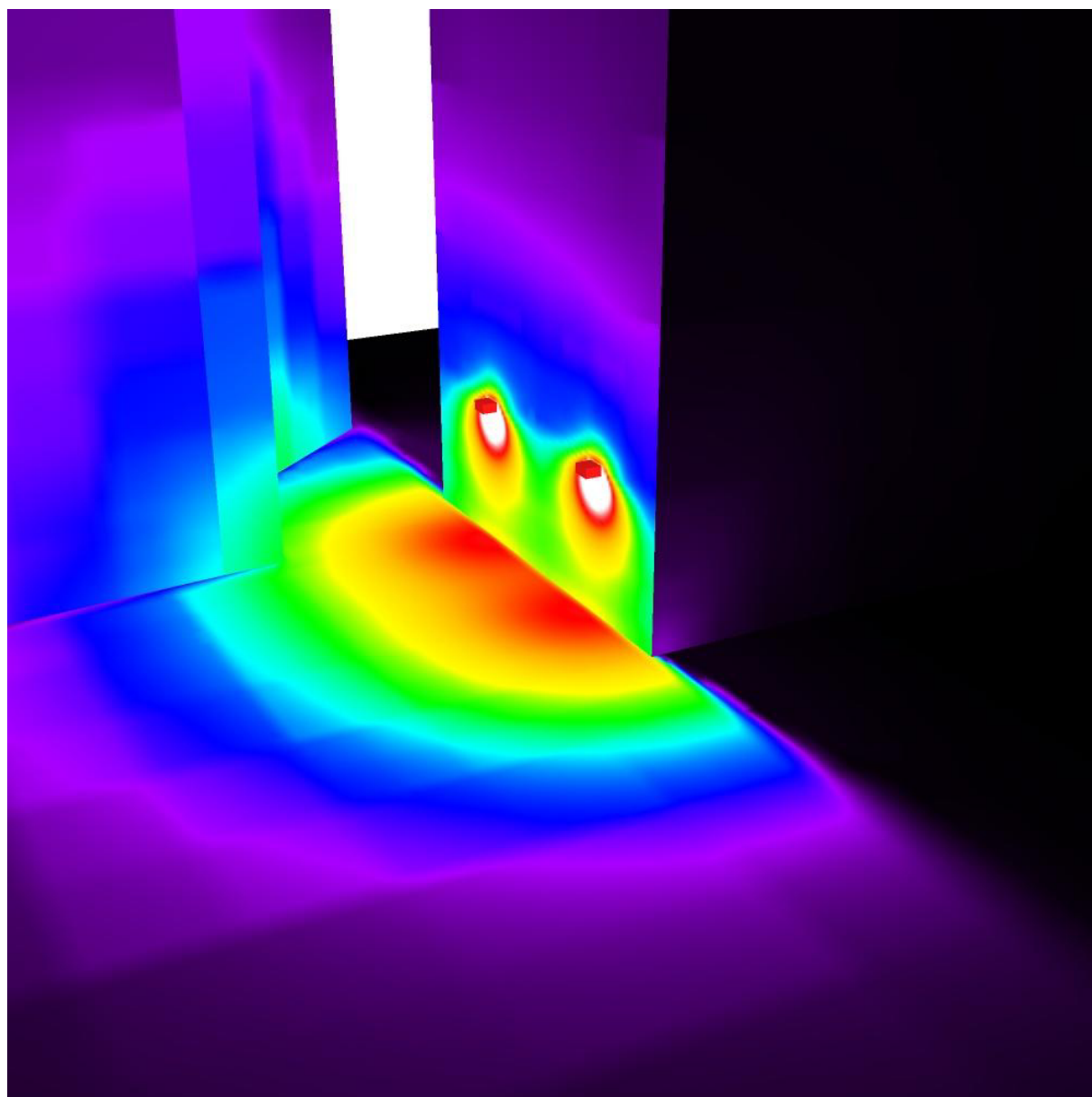
Exterior Scene 1 / 3D Rendering



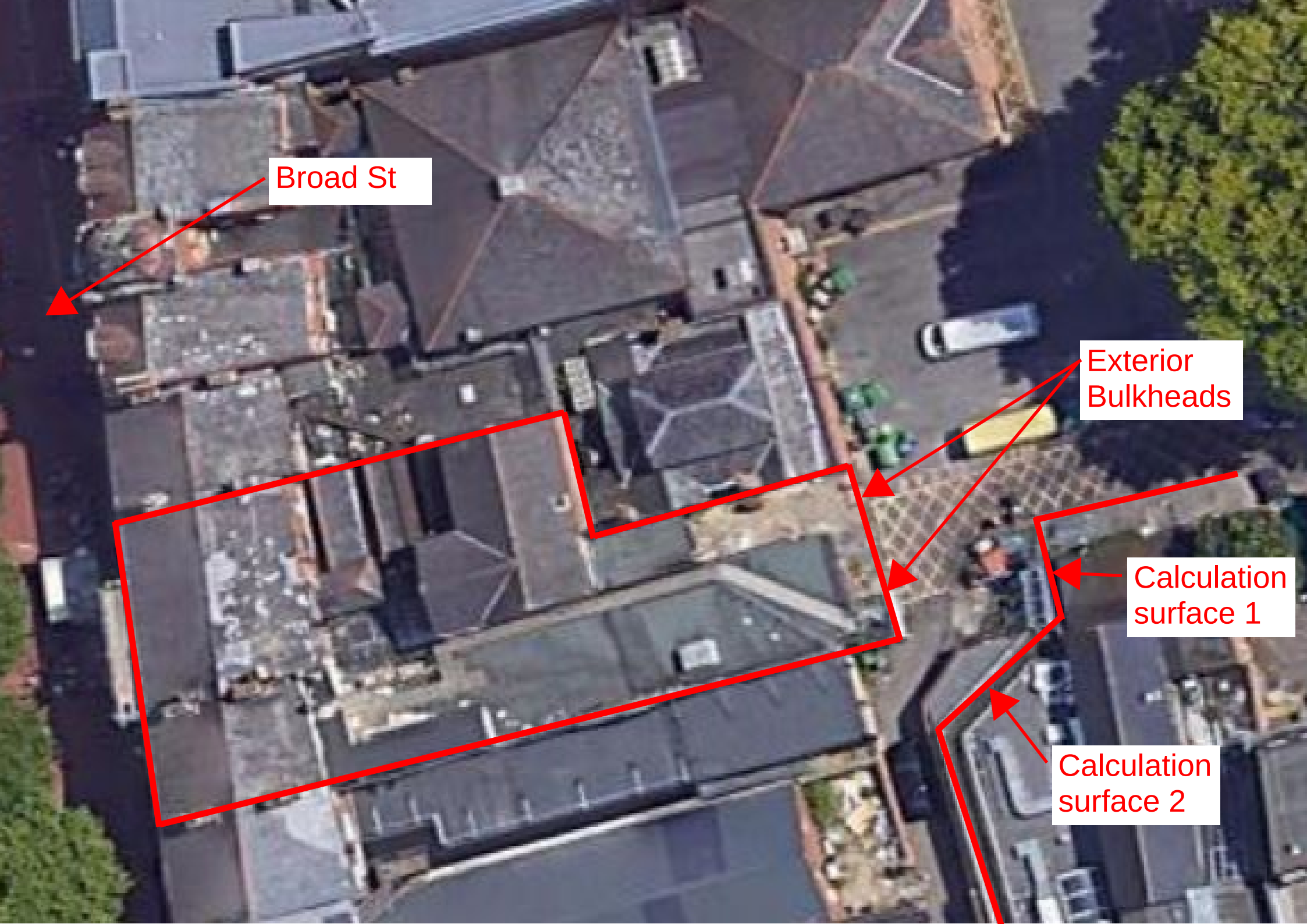


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Exterior Scene 1 / False Colour Rendering



0 1 2 5 10 20 50 100 200 lx



Broad St

Exterior Bulkheads

Calculation surface 1

Calculation surface 2

Existing rear elevation with the approximate location of new luminaires on new building.



Approximate location of external luminaires

