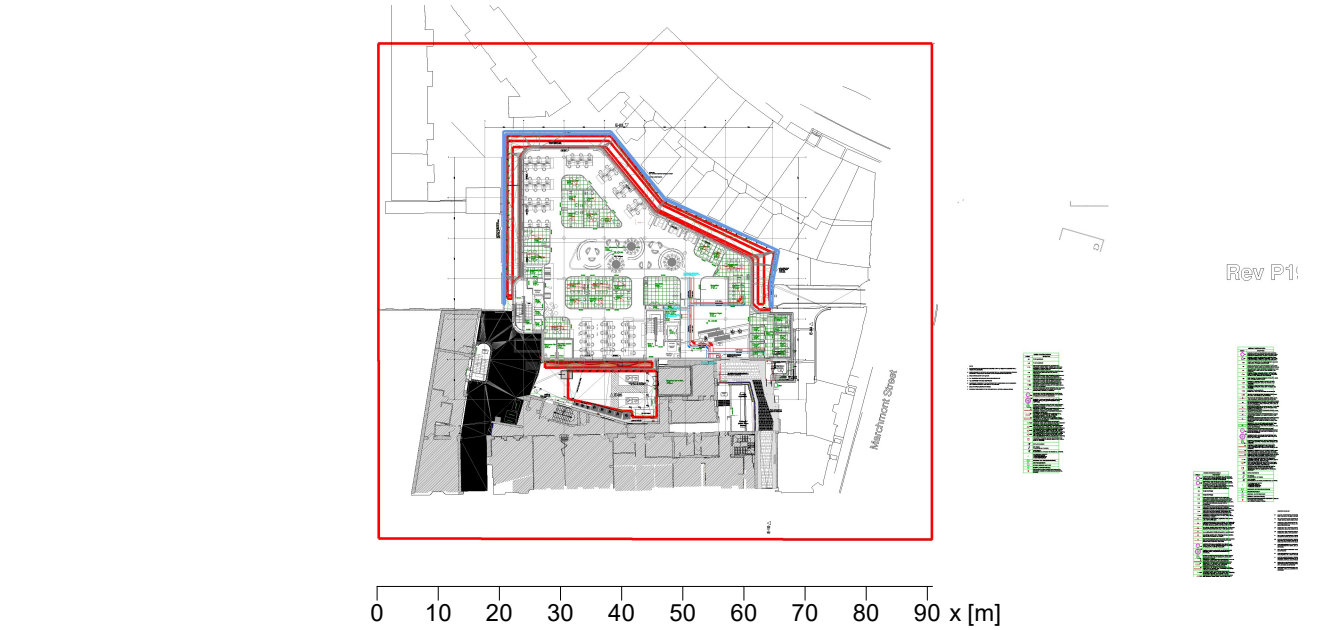
2.2 Summary, Exterior 1

2.2.2 Result overview, Ramp



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot.centre) [m]:	3.30 m
Maintenance factor	0.80
Total luminous flux of all lamps	20160 lm
Total power	280 W
Total power per area (7318.86 m²)	0.04 W/m²

Illuminance

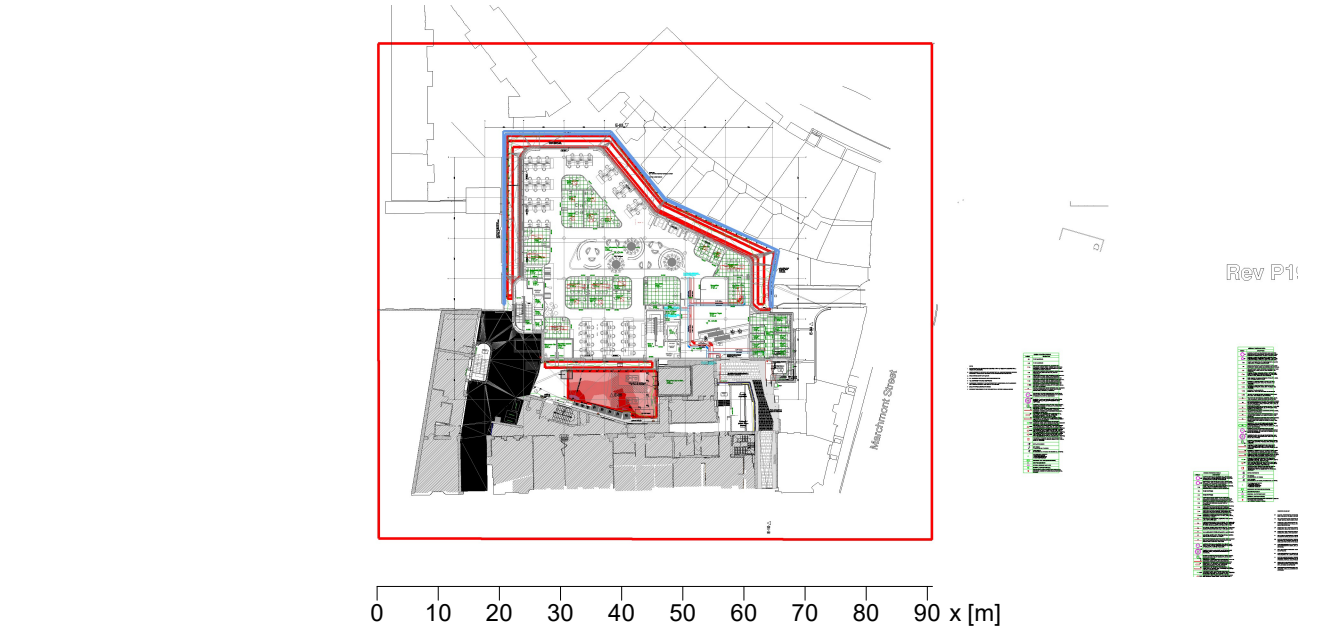
Average illuminance	Em	21.5 lx
Minimum illuminance	Emin	7.6 lx
Maximum illuminance	Emax	44.5 lx
Uniformity Uo	Emin/Em	1:2.82 (0.35)
Diversity Ud	Emin/Emax	1:5.85 (0.17)

Type No.\Make

		Whitecroft Lighting
1	20	Order No. : K6H44KHB
		Luminaire name : KOLO IP65 HOOD
		Equipment : 1 x LED 14 W / 1008 lm

2.2 Summary, Exterior 1

2.2.3 Result overview, Parking Zone



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot.centre) [m]:	3.30 m
Maintenance factor	0.80
Total luminous flux of all lamps	20160 lm
Total power	280 W
Total power per area (7318.86 m²)	0.04 W/m²

Illuminance

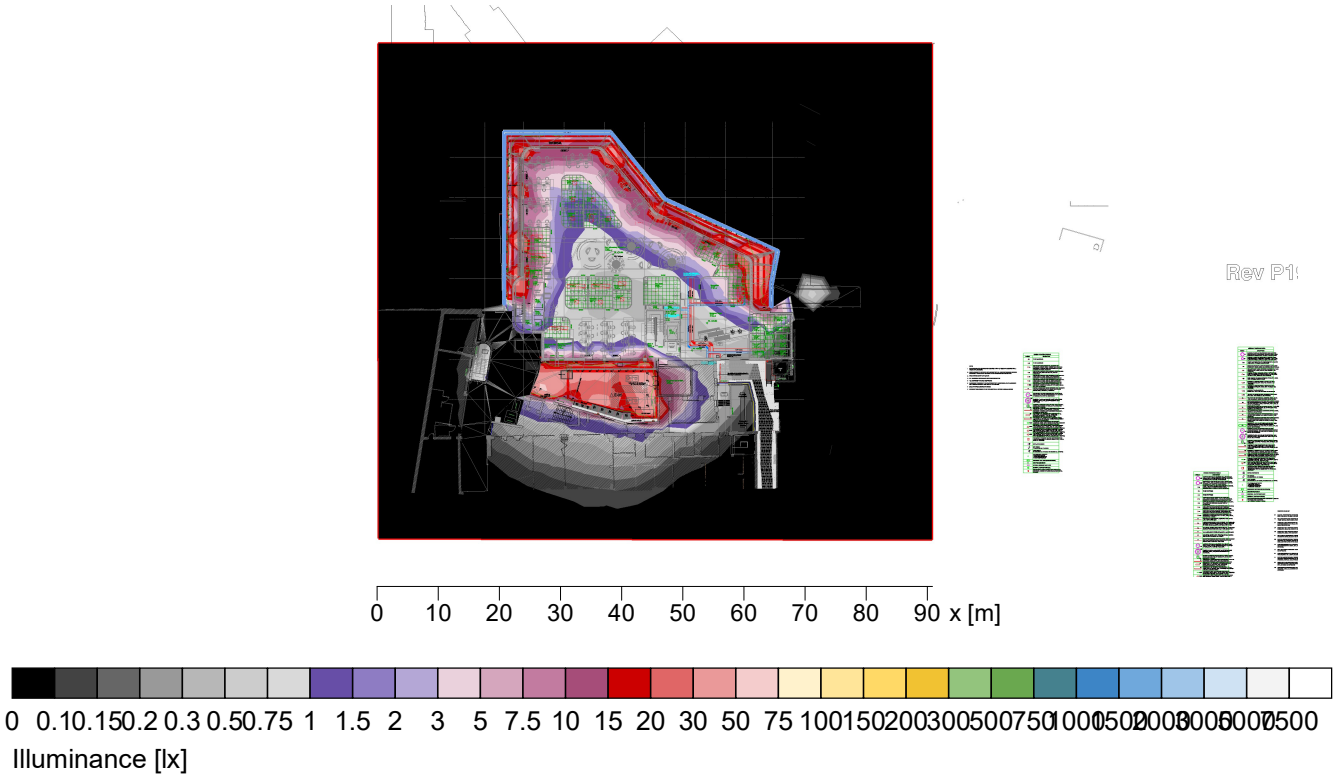
Average illuminance	Em	29.9 lx
Minimum illuminance	Emin	10.4 lx
Maximum illuminance	Emax	56.3 lx
Uniformity Uo	Emin/Em	1:2.88 (0.35)
Diversity Ud	Emin/Emax	1:5.41 (0.19)

Type No.\Make

		Whitecroft Lighting
1	20	Order No. : K6H44KHB
		Luminaire name : KOLO IP65 HOOD
		Equipment : 1 x LED 14 W / 1008 lm

2.2 Summary, Exterior 1

2.2.4 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height (phot.centre)	3.30 m
Maintenance factor	0.80
Total luminous flux of all lamps	20160.00 lm
Total power	280.0 W
Total power per area (7318.85 m²)	0.04 W/m² (2.24 W/m²/100lx)

Evaluation area 1	**Reference plane 1.1**
	Horizontal
Em	1.7 lx
Emin	0 lx
Emin/Em (Uo)	---
Emin/Emax (Ud)	---
Position	0.00 m

Type No.\Make

		Whitecroft Lighting
1	20	Order No. : K6H44KHB
		Luminaire name : KOLO IP65 HOOD
		Equipment : 1 x LED 14 W / 1008 lm

2 Exterior 1

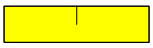
2.3 Summary, Exterior 1

2.3.1 Result overview (emergency lighting)

Type No.\Make

Whitecroft Lighting

1 20



Order No. : K6H44KHB
Luminaire name : KOLO IP65 HOOD
Equipment : 1 x LED 14 W / 220 lm

Result evaluation area

Calculation algorithm used: Direct component
Maintenance factor: 0.8

Emergency area:

No.	Default[lx]	Emin[lx]	Surface Emax[lx]	Diversity	Height
Ramp					
4	1.0	1.5	10.4	1: 7.16	0.00
Parking Zone					
5	1.0	2.1	12.1	1: 5.64	0.00

Escape routes:

No.	Default[lx]	Central axis Emin[lx]	Central axis Emax[lx]	Central axis Diversity	Surface Emin[lx]	Surface Emax[lx]	Surface Diversity	Height
Escape route 1								
1	1.0	1.4	10.8	1: 7.82	0.7	11.0	1: 15.49	0.00

External Lighting – BREEAM & ILP Report

BREEAM and Light Pollution Compliance Summary

Project Reference	C4C14842
Project Name	London School of Hygiene
Date	23/08/2021
Report By	Elias Egag
WLL Drawing Numbers	n/a
Comments	Assumed Pre-curfew operation, TBC
	We have assumed an E4 environmental zone

BREEAM Pol 4 - Reduction of Night Time Light Pollution Non-Domestic Buildings

One BREEAM credit is available where the lighting design is in compliance with the criteria below

Demonstrate compliance with ILP Guidance Notes for the Reduction of Obtrusive Light (2011)

Select Environmental Zone from table below:

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 - Obtrusive Light Limitations for Exterior Lighting Installations - General Observers

Environmental Zone	Sky Glow ULR (Max %)	Light Intrusion (into windows) Ev (lux)		Luminaire Intensity I (candelas)		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L (cd/m²)
E0	0	0	0	0	0	0
E1	0	2	0	2500	0	0
E2	2.5	5	1	7500	500	5
E3	5.0	10	2	10000	1000	10
E4	15	25	5	25000	2500	25

General notes relating to the ILP Guidance

1 - Values for Light Trespass into windows can only be demonstrated with full detailed drawings showing adjacent properties. Please see Lighting Calculation for further details

2 - No building is lit directly as a night time feature so Building Luminance requirements are not exceeded

3 - This applies to each luminaire in the **potentially obtrusive direction**, outside of the area being lit. The figures given are for general guidance only and for some applications with limited mounting heights, may be difficult to achieve.

4 - External lighting (except for safety and security) should be automatically switched off between 11pm and 7am (Post curfew) **to gain the BREEAM credit**

5 - Safety and security lighting between 11pm and 7am should meet the 'Post curfew' targets in Table 2

6 - Night-time switching control is recommended to achieve compliance post curfew

7 - Lumen outputs reduced by 50% where 'Dual Power' feature is used

Upward Light (ULR)	
Target	**15.0%**
Project	**7.0%**
PASS/FAIL	**PASS**

Source Intensity (kcd)		
	Pre Curfew	**Post Curfew**
Target	**25.0**	**2.5**
Project	**0.8**	
PASS/FAIL	**PASS**	

E4	**Project Environmental Zone**

Input project equipment details into white boxes below

Reference	Part Number	Product Type	Time of Operation	Lamps	Lumen	Qty	Light Outpt Ratio % (LOR)	Upward Light Ratio % (ULR)	Total upward lumens	Total available lumens	Max. source Intensity cd/1000 lm	Max. source Intensity kcd Pre Curfew	Max. source Intensity kcd Post Curfew	Circuit Watts	Total Watts
Kolo IP65	K6H44KHB	KOLO IP65 HOOD	Pre Curfew	LED	1008	20	100.00%	7.00%	1411.2	20160.0	802	0.808		14.0	280.0
									1411	20160					280.0

BREEAM Ene 03 External Lighting, BREEAM New Construction (Non-Domestic Buildings)

Total LL/CW	72.0

Select BREEAM version in box below:

2018

If 2014 or 2018, status is shown to the right.
If 2011, use separate table

BREEAM 2018	
Luminaire lumens per circuit watt LL/CW	
Target	**70.0**
Project	**72.0**
PASS/FAIL	**PASS**

One BREEAM credit is available where luminaires meet the criteria below and are controlled through time or daylight to prevent operation during daytime hours.

Minimum target indicates the minimum average for external luminaires in all areas and with any colour rendition