



LIGHTING TECHNICAL NOTE

on behalf of

AVISON YOUNG (UK) LTD

for the site at

**ARTHUR HOUSE, 13 – 15 CHORLTON STREET,
MANCHESTER, M1 3FH**

REPORT DATE: 10TH FEBRUARY 2025

PROJECT NUMBER: 103285

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Summary

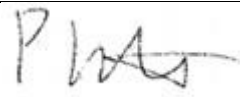
This technical note provides a lighting design and assessment of the proposed exterior lighting at Arthur House, 13 – 15 Chorlton Street, Manchester, M1 3FH. This document has been prepared to discharge planning condition 19, and provides additional information for condition 20, for planning permission 137556/FO/2023: refurbishment of Arthur House.

The lighting proposals include decorative recessed lighting at the entrance, landscape planters and on structural columns. The products comprise low power, low lumen output and include a tight 40° beam angle to reduce light overspill.

Planning condition 19 a) requires details of the exterior lighting design and product. This is provided in this document.

Planning Condition 19 b) requests a verification report and assessment of impact. The lighting design and modelling outputs outlined in this technical note provide this information. An illuminance survey would not yield sufficient data to provide a satisfactory conclusion, as the area has a significant number of existing sources and more lumen intensive light sources. The survey would also be at ground level, which would have very limited exposure to assess the tight beam uplighters. The modelling results demonstrate there are no surrounding windows near or on Arthur House that will exceed the Institution of Lighting Professionals’ limits.

The proposed exterior lighting presents no significant effects or impact. The information presented is sufficient to discharge both Parts of Condition 19.

Prepared By	Philip Walton	Reviewed By	Lesley Goodall
Signed		Signed	
Date	10th February 2025	Date	10th February 2025
Version	Date	Change	Initials
1	10th February 2025	Issued	PW

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1 Introduction

1.1 Miller Goodall Ltd has been instructed to prepare a technical note in relation to exterior lighting to support an application to discharge a planning condition relating to development at Arthur House, 13 – 15 Chorlton Street, Manchester, M1 3FH.

1.2 Manchester City Council (MCC) issued planning approval for Arthur House on 17th July 2023 (Planning ref. 137556/FO/2023). The scheme comprises:

“External alterations associated with refurbishment of existing office space comprising the installation of new roof terrace with pergola; installation of solar panels; installation of new security fencing, creation of access lobby, refurbishment of entrance plaza, new planters, creation of gym with associated changing rooms and studio, cycle store”.

1.3 Planning Condition 19 relates to exterior lighting and states:

“a) Before the use hereby approved commences, external lighting shall be designed and installed in accordance with a scheme that shall be submitted to and approved in writing by the City Council as local planning authority so as to control glare and overspill onto nearby residential properties. The development shall then proceed in accordance with the approved details.

b) Prior to occupation of the development a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved light consultant's report. The report shall also undertake post completion testing to confirm that acceptable criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the criteria.”

1.4 The lighting products to be installed are low power recessed uplighters with a tight beam. A baseline survey would not provide satisfactory results for this type of product, as the ground level survey would not fully capture the tight beam uplighter. The area is extensively lit, and the lighting from these would be the dominant source in a survey, limiting the ability to identify the recessed lighting contributions. A lighting model has been prepared instead. The Applicant and appointed mechanical and engineering consultant confirm the installation meets all safety and installation requirements.

1.5 Planning Condition 20 also applies to lighting, but is primarily an advisory and actionable for MCC to enforce, if required:

“20) If any lighting at the development hereby approved, when illuminated, causes glare or light spillage which in the opinion of the Council as local planning authority causes detriment to adjoining and nearby residential properties, within 14 days of a written request, a scheme for the elimination of such glare or light spillage shall be submitted to the Council as local planning authority and once approved shall thereafter be retained in accordance with details which have received prior written approval of the City Council as Local Planning Authority.”

- 1.6 Planning Condition 20 does not require discharge and has no actionable requirements at this stage. The installed lighting will not cause glare or adverse light spillage.

2 Lighting Proposal

2.1 Proposal

- 2.1.1 As part of the refurbishment of the building, the Applicant intends, and is in the process of, installing recessed uplighters around the perimeter of the building. The scheme includes:

- 21 uplights at the main entrance. These include luminaires in and around the decorative paving (#9), in a central tree planter (#4), and along the building signage planter (#8);
- 6 uplights in the under-croft, on the inside of each pillar on the northeast side of the building; and
- 16 uplights in the landscape planters, on the southeast side of the building.

- 2.1.2 The luminaires will be recessed and have very low power and lumen output. The intention is to provide a low-level and comfortable lighting scene to complement the architectural refurbishment.

2.2 Luminaire Product

- 2.2.1 The Applicant intends to install Onok Lighting Topo¹. The product is 1 watt and only outputs 0.05 kilolumen (klm). The luminaire has a 40-degree beam angle, ensuring light spill is contained and controlled.

- 2.2.2 The product details include ingress protection (IP) IP67, 3000 Kelvin colour temperature, opal diffuser and a CRI exceeding 80. The opal diffuser is a covering over the luminaire to reduce glare

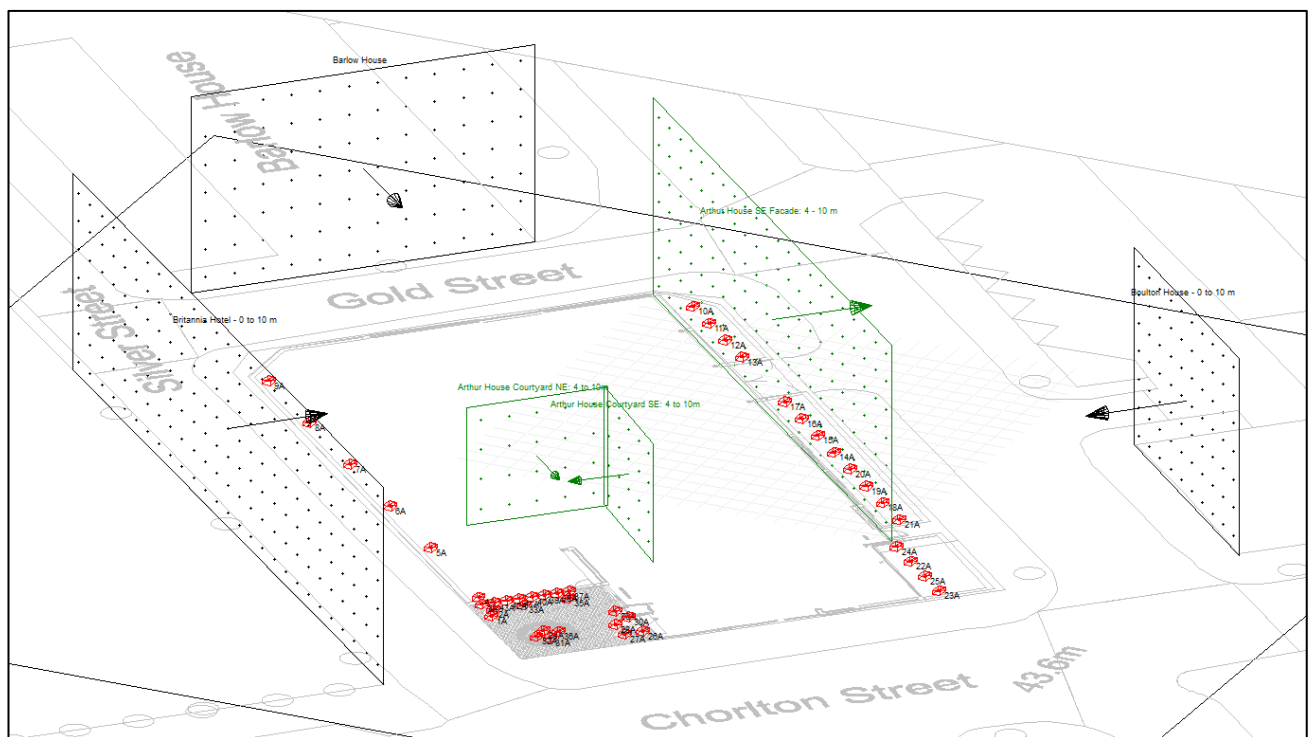
¹ Onok Lighting. Available at: https://www.onoklighting.com/en_US/product/top1a01x34oss-topo-148

effects and soften the light output. The product only requires a 120 mm hole to be sunk into. The product specification sheet is provided in **Appendix A**.

3 Methodology

- 3.1 The lighting design has been modelled using the industry-adopted and widely used lighting software Lighting Reality (version 2.3.1). The model outputs are set to maintenance factor 1.0, to ensure worst-case is met.
- 3.2 The model includes vertical grids at relevant sensitive receptors surrounding the site. It should be noted that surrounding uses are commercial i.e. office or hotel uses. The modelled vertical grid positions are shown in **Figure 1**. Arthur House is the central building, with the main entrance in the southwest corner.

Figure 1: Vertical Grid Positions Surrounding Arthur House



- 3.3 Model results have been compared to vertical intrusion limits from Institution of Lighting Professionals Guidance Note 01 The Reduction of Obtrusive Light [2]. Different environments may be more tolerant of light than others. The ILP has created a series of Environmental Zone (EZ) definitions

² Institution of Lighting Professionals, 2021. Guidance Note 01 The Reduction of Obtrusive Light.

that comprise limits for pre- and post-curfew³ periods. The site lies in the city centre, and there is a lot of existing light surrounding the site. The area is concluded to meet EZ E4: high district brightness.

3.4 The EZ and corresponding illuminance (lux) limits for intrusion into windows (such as dwellings) are provided in **Table 1**.

Table 1: Environmental Zones

Environmental Zone & Definition	Light Intrusion (into windows) Ev (lux)	
	Pre-curfew	Post-curfew
E0: Dark sky parks, UNESCO Starlight Reserves	0	0
E1: Intrinsically dark landscapes. Examples: National Parks, Areas of Outstanding Beauty	2	(1*)
E2: Low district brightness. Examples: rural, small village, relatively dark urban location	5	1
E3: Medium district brightness. Examples: small town centres or urban locations	10	2
E4: High district brightness areas. Examples: town/city centres with high night-time activity levels	25	5

Ev: Vertical illuminance in lux

*Permitted only from public road light installation

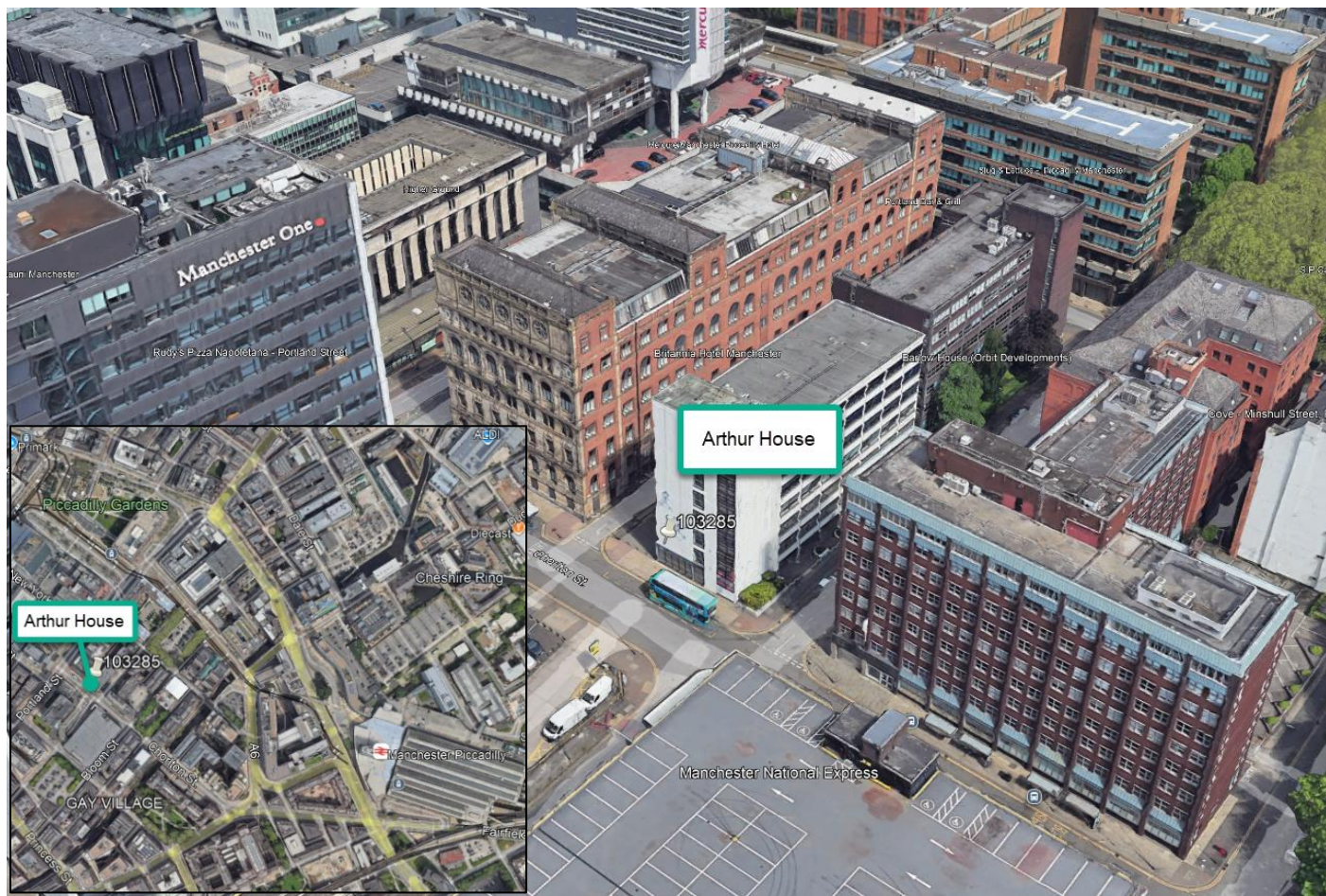
The EZ table also includes levels for sky glow, luminaire intensity (luminance) and building luminance. Sky glow, luminance and glare can be controlled through the luminaire selection and design.

Example levels of lux include: daytime (50,000), overcast sky (5,000), office & task (500), street lighting (5 to 20), full moon (0.25 to <1)

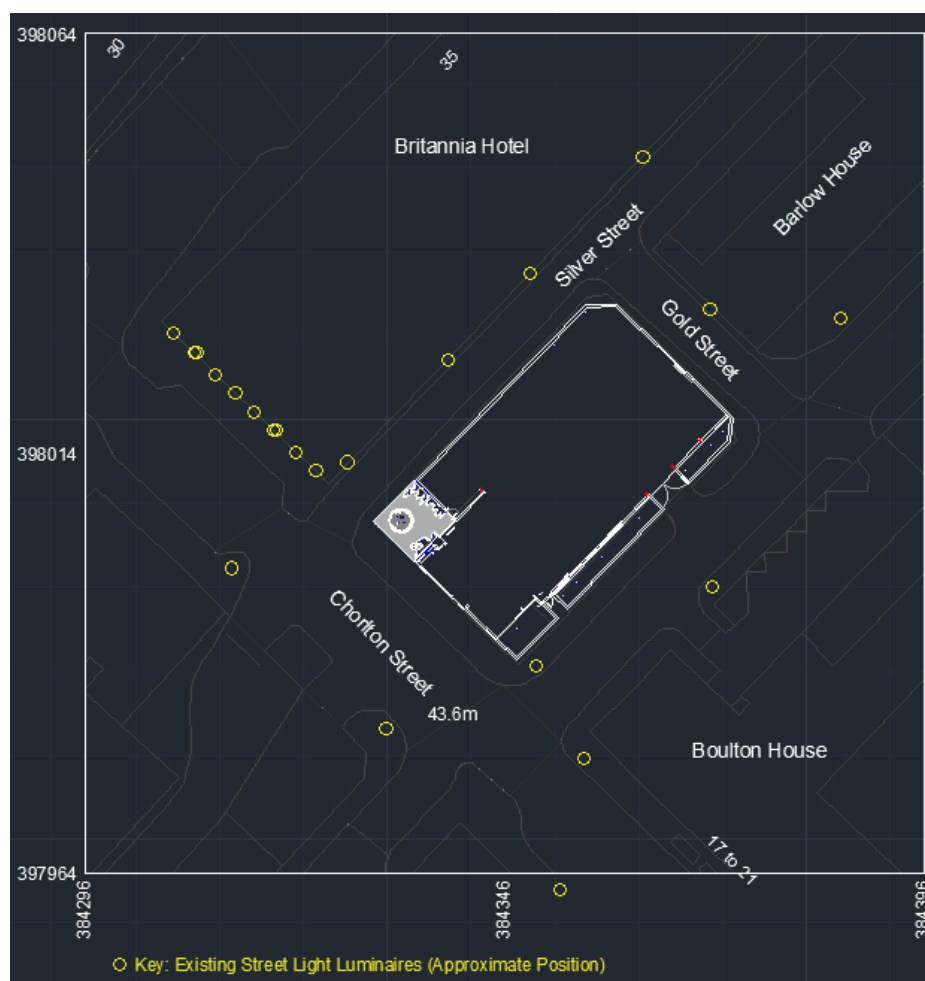
4 Baseline Environment

4.1 Arthur House and the surrounding environment is shown in **Figure 2**. Figure 2: Local Area and Surroundings

³ The guide does not define a specific curfew. 23:00 to 07:00 is often taken to be curfew, which corresponds to other planning and environmental disciplines such as acoustics, and human sleeping patterns. A stricter curfew may apply, such as dark sky.



4.2 The local area is extensively lit, comprising street lighting and architectural lighting. Existing luminaires around the site are marked in **Figure 3**. The expected illuminance (lux) emitted from these existing sources is significantly higher than the lighting outputs of these recessed uplighters, as the existing lighting will have been designed to meet British Standard lighting levels for vehicle and pedestrians. These luminaires are also installed at height to illuminate a wider area down to ground level.

Figure 3: Existing Light Sources

5 Results

- 5.1 The lighting design and modelling outputs are shown in **Appendix B**. Vertical grids extend up to 10 m above ground level, providing sufficient calculations towards the maximum reach of the luminaire before lighting levels reduce to imperceptible levels.
- 5.2 There is no exceedance of the vertical intrusion lux limits in any direction away from the site, nor is there any exceedance at the façades of Arthur House nearest to the luminaires.
- 5.3 The maximum lux value is 3.04 (recorded in the entrance area), well below the pre- and post-curfew limits, listed in **Table 1**.
- 5.4 As noted, the local area includes several streetlights on all surrounding roads around Arthur House. The levels of light emitted from these lighting sources will be significantly higher than any of the proposed recessed luminaires. The uplighters are only 1 watt and 0.05 klm each.

6 Conclusions

- 6.1 This technical note provides a lighting design and calculations to assess the potential lighting impacts of the exterior lighting proposed at Arthur House, 13 – 15 Chorlton Street, Manchester, M1 3FH. The documentation provides sufficient detail to discharge planning condition 19.
- 6.2 The lighting scheme includes the installation of 43 low-power uplighters around the perimeter of the building. These include luminaires at the main entrance (decorative paving, tree and front entrance planters), under-croft pillars, and planters along the southeast façade. These products are 1 watt and produce only 0.05 kilolumen each.
- 6.3 A lighting design has been prepared, with modelling outputs showing the potential illuminance (lux) impact to sensitive receptors surrounding the building, and at the façade of Arthur House. These are provided as proof that the installation does not cause a significant impact, as a baseline lux survey would not achieve suitable data due to the high level of existing light, ground level monitoring, and the nature of the uplighters tight beam angle.
- 6.4 There is no lux impact to the surrounding sensitive uses. Lux values are very low and do not exceed the Institution of Lighting Professionals' vertical window intrusion limits.
- 6.5 The product specifications are provided in compliance with part a) of the planning condition. Proof and verification that the scheme will not cause impact is provided, in compliance with part b) of the planning condition. The proposed exterior lighting presents no significant effects or impact. The information presented is sufficient to discharge both parts of Condition 19.

Appendices

Appendix A – Onok Lighting Topo Product Specification

Topo (Outdoor)

PRODUCT CODE
TOP1A01X34OSS



Description

Outdoor recessed LED luminaire suitable for both wall and ground. AISI 316 stainless steel with opal diffuser and excellent light distribution.

Remote LED driver NOT included.

Maximum 6 units per driver.

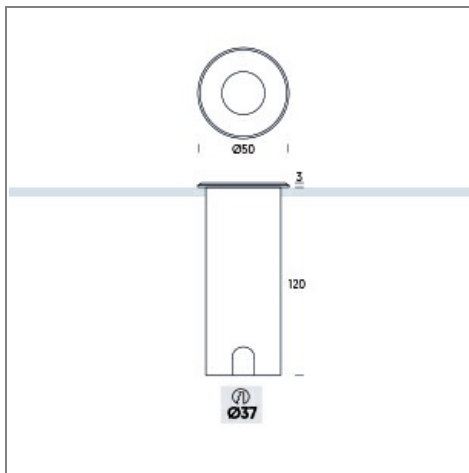


IP 67
EXT

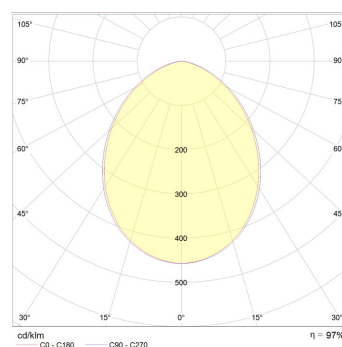
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Product features

Socket :	LED	Lumen Flux:	100 lm
Output :	≈ 1W	E. Consumption:	1W
Control :	Driver not included	Efficiency:	No data
Colour		Current:	350 mA
Temperature :	3000K	Voltage:	3V DC
Beam Angle :	40°	Life time:	No data
Complements :	Opal Diffuser	McAdam CDM:	No data
Finish :		CRI:	>80
		UGR:	N/A
		Driver:	Not Included



Photometric Data



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Onok Luz Técnica S.L. reserves its right to change technical specifications of its products. These changes will allow the continuous product improvement and will also ensure compliance with the legislation at all times.

Product manufactured in
compliance with:

EN 60598 EN 62471 EN 55015

EN 62031 EN 62493 EN 61000

Date: 10/06/2024

Appendix B – Reality Outdoor Modelling Results

DATE: 4 February 2025

DESIGNER: Philip Walton

PROJECT No: 103285

PROJECT NAME: Arthur House, 13 - 15 Chorlton Street, Manchester, M1 3FH



AutoCAD file reference: AmendedMG_223-YOU-XX-00-DR-I-5001-00
MEP

Design: Recessed uplighters and assesmsent of potential lighting
intrusion

Outdoor Lighting Report

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Britannia Hotel - 0 to 10 ...	398020.93	384371.46	40.30	10.00	1.49	1.43
2	Boulton House - 0 to 10 m	398033.87	384322.74	14.17	10.00	1.42	1.43
3	Barlow House	398031.58	384370.31	17.24	10.00	1.44	1.43
4	Arthur House SE Facade: 4 ...	398040.59	384350.68	31.60	10.00	1.44	1.43
5	Arthur House Courtyard NE:...	398003.32	384342.94	7.04	6.00	1.41	1.50
6	Arthur House Courtyard SE:...	398008.33	384338.17	7.26	6.00	1.45	1.50
7	Installation View: Horizon...	397987.63	384319.11	57.54	46.50	1.48	1.50

Luminaires

Luminaire A Data

Supplier	
Type	PILOT R 1W 3000K
Lamp(s)	LED
LampFlux(klm)/Colour	0.05 3000/85
File Name	Topo_1W_3K_9_B_SS.ltd
Maintenance Factor	1.00
Imax70,80,90(cd/klm)	61.7, 18.2, 0.1
No. in Project	43

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	398002.53	384341.30	0.01	0.00	180.00	0.00	0.00			
2	A	398003.27	384341.55	0.01	0.00	180.00	0.00	0.00			
3	A	398003.65	384342.31	0.01	0.00	180.00	0.00	0.00			
4	A	398004.33	384342.78	0.01	0.00	180.00	0.00	0.00			
5	A	398008.76	384347.31	0.01	0.00	180.00	0.00	0.00			
6	A	398012.48	384351.14	0.01	0.00	180.00	0.00	0.00			
7	A	398016.20	384354.96	0.01	0.00	180.00	0.00	0.00			
8	A	398019.93	384358.78	0.01	0.00	180.00	0.00	0.00			
9	A	398023.66	384362.61	0.01	0.00	180.00	0.00	0.00			
10	A	398040.08	384348.39	0.01	0.00	180.00	0.00	0.00			
11	A	398038.59	384346.85	0.01	0.00	180.00	0.00	0.00			
12	A	398037.09	384345.31	0.01	0.00	180.00	0.00	0.00			
13	A	398035.57	384343.77	0.01	0.00	180.00	0.00	0.00			
14	A	398027.06	384335.03	0.01	0.00	180.00	0.00	0.00			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
15	A	398028.57	384336.58	0.01	0.00	180.00	0.00	0.00			
16	A	398030.06	384338.11	0.01	0.00	180.00	0.00	0.00			
17	A	398031.57	384339.66	0.01	0.00	180.00	0.00	0.00			
18	A	398022.56	384330.42	0.01	0.00	180.00	0.00	0.00			
19	A	398024.06	384331.96	0.01	0.00	180.00	0.00	0.00			
20	A	398025.57	384333.50	0.01	0.00	180.00	0.00	0.00			
21	A	398021.06	384328.89	0.01	0.00	180.00	0.00	0.00			
22	A	398016.77	384326.27	0.01	0.00	180.00	0.00	0.00			
23	A	398014.13	384323.58	0.01	0.00	180.00	0.00	0.00			
24	A	398018.08	384327.62	0.01	0.00	180.00	0.00	0.00			
25	A	398015.44	384324.92	0.01	0.00	180.00	0.00	0.00			
26	A	398003.89	384334.10	0.01	0.00	180.00	0.00	0.00			
27	A	398003.23	384334.74	0.01	0.00	180.00	0.00	0.00			
28	A	398004.07	384335.59	0.01	0.00	180.00	0.00	0.00			
29	A	398005.52	384336.30	0.01	0.00	180.00	0.00	0.00			
30	A	398005.18	384335.43	0.01	0.00	180.00	0.00	0.00			
31	A	398001.34	384337.71	0.01	0.00	180.00	0.00	0.00			
32	A	398001.21	384338.35	0.01	0.00	180.00	0.00	0.00			
33	A	398004.38	384340.47	0.01	0.00	180.00	0.00	0.00			
34	A	398001.97	384338.36	0.01	0.00	180.00	0.00	0.00			
35	A	398005.98	384338.90	0.01	0.00	180.00	0.00	0.00			
36	A	398002.20	384337.66	0.01	0.00	180.00	0.00	0.00			
37	A	398006.75	384339.25	0.01	0.00	180.00	0.00	0.00			
38	A	398006.33	384339.67	0.01	0.00	180.00	0.00	0.00			
39	A	398005.86	384340.09	0.01	0.00	180.00	0.00	0.00			
40	A	398005.41	384340.54	0.01	0.00	180.00	0.00	0.00			
41	A	398004.96	384340.99	0.01	0.00	180.00	0.00	0.00			
42	A	398004.52	384341.42	0.01	0.00	180.00	0.00	0.00			
43	A	398004.05	384341.86	0.01	0.00	180.00	0.00	0.00			

Illuminance (lux)

Britannia Hotel - 0 to 10 m

0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.8	0.7
0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.8	0.7
0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.8	0.7	0.6	
0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.7	0.6	0.5	
0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.3
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

Illuminance (lux)

Boulton House - 0 to 10 m

0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

Illuminance (lux)

Barlow House

0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Results

Eav	0.28
Emin	0.00
E _{max}	0.94
Emin/E _{max}	0.00
Emin/Eav	0.01

Illuminance (lux)

Arthur House SE Facade: 4 - 10 m

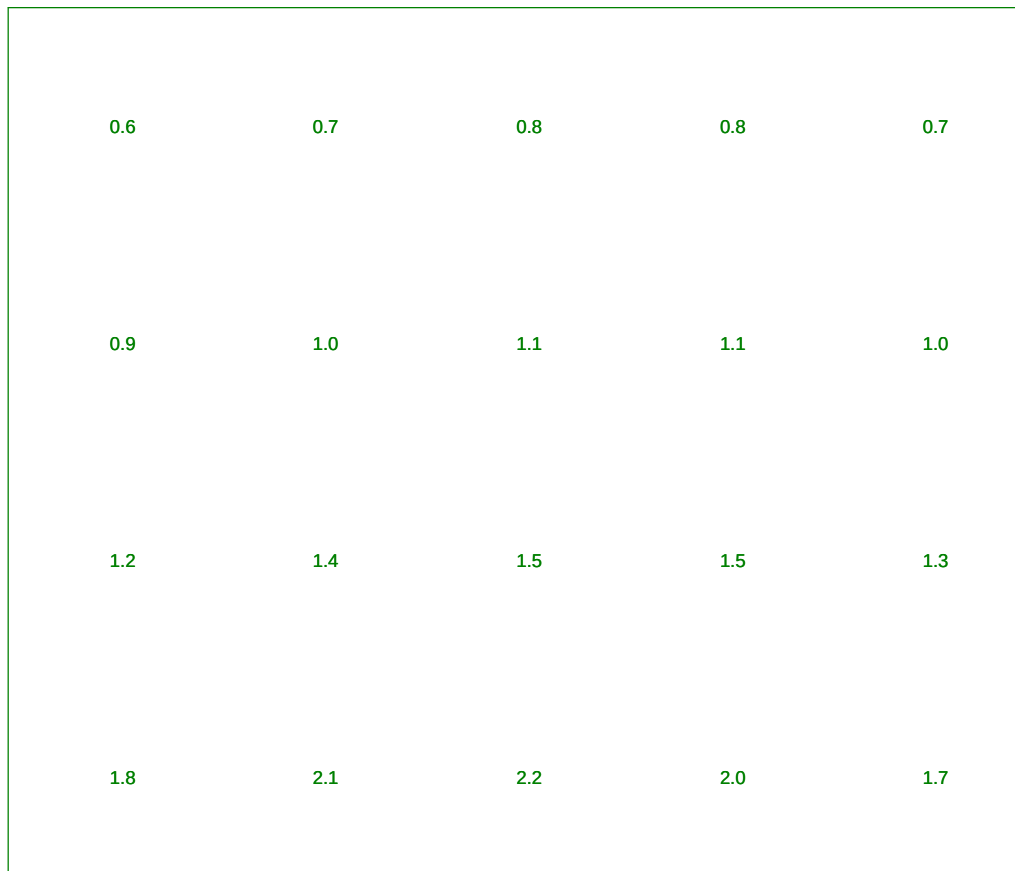
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1
0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2
0.3	0.4	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.3
0.5	0.8	1.0	1.0	1.0	0.9	0.7	0.4	0.5	0.7	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.8	0.4	0.4
0.9	1.9	2.1	2.1	2.1	1.9	1.3	0.5	0.6	1.5	2.0	2.2	2.2	2.1	2.2	2.2	2.1	2.2	2.1	2.0	1.7	0.7
0.6	2.6	2.1	1.8	2.7	2.1	1.2	0.1	0.2	1.8	1.7	2.7	2.1	1.8	2.6	2.1	1.7	2.6	2.1	1.7	2.4	0.4

Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

Illuminance (lux)

Arthur House Courtyard NE: 4 to 10m

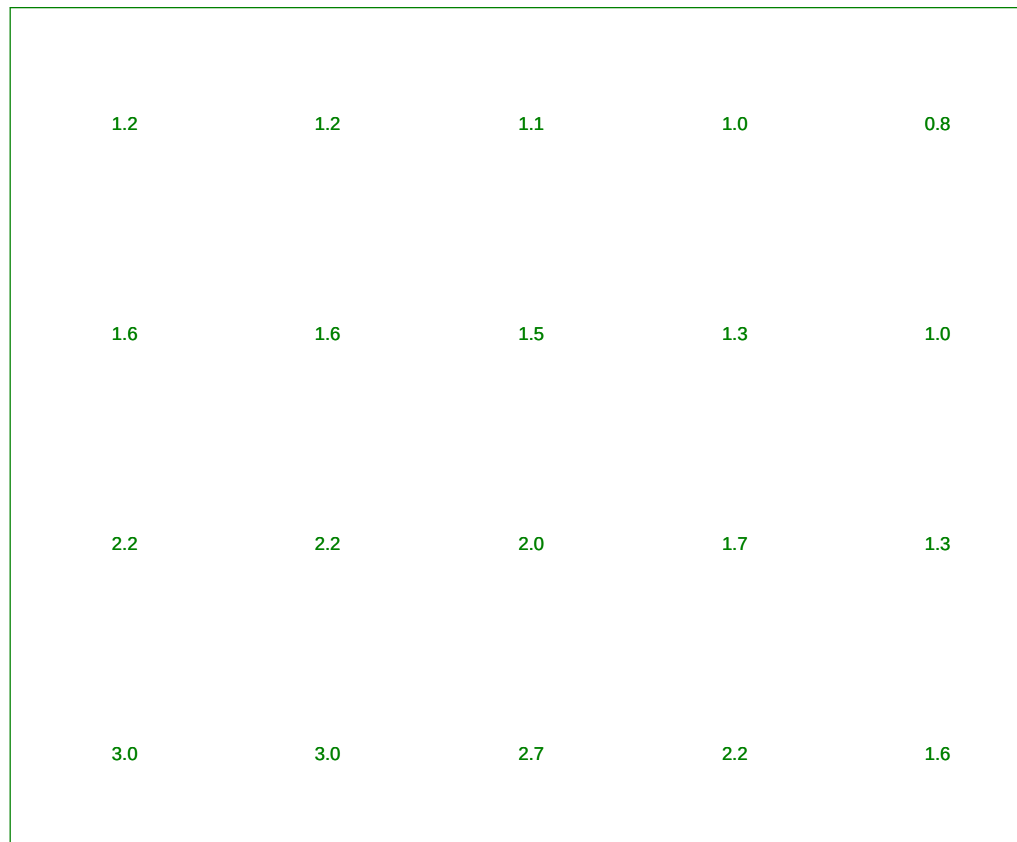


Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

Illuminance (lux)

Arthur House Courtyard SE: 4 to 10m

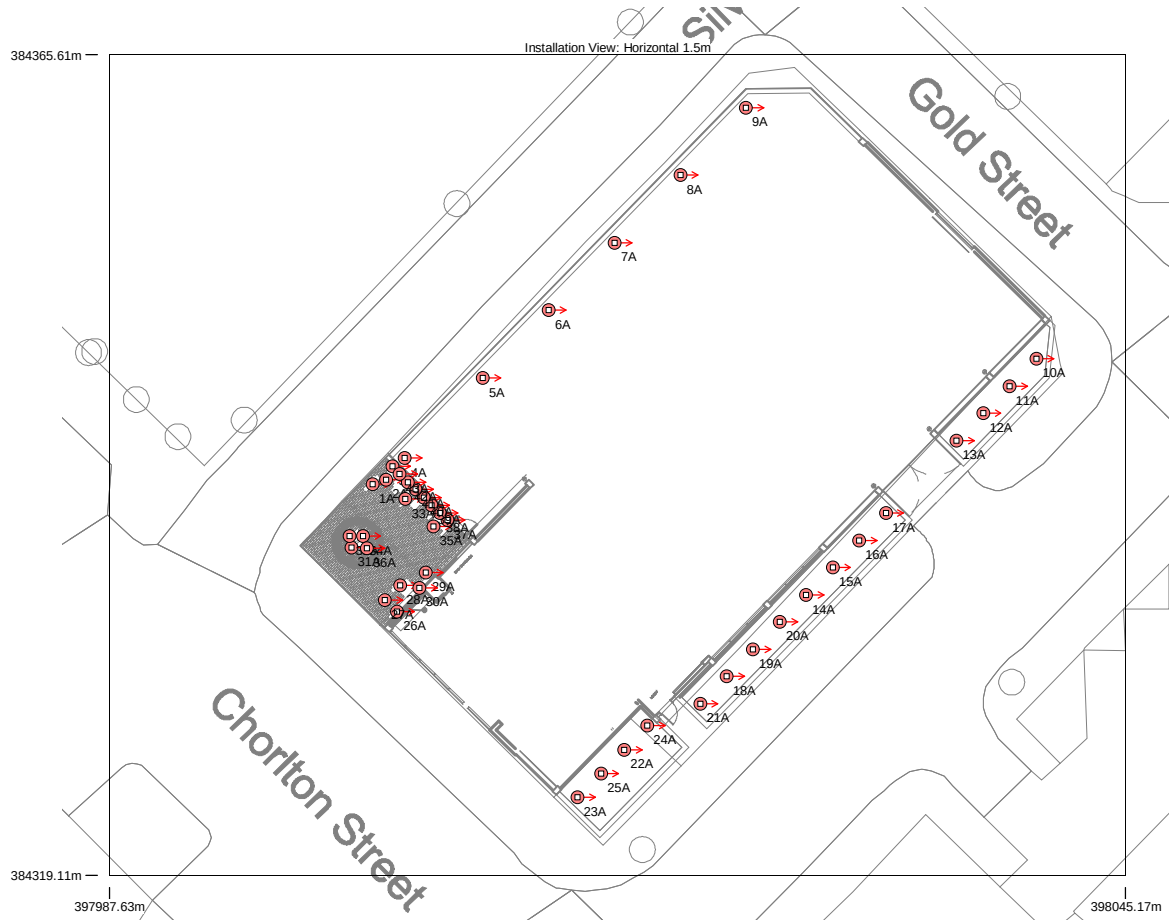


Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

Horizontal Illuminance (lux)

Installation View: Horizontal 1.5m



Results

Eav	0.28
Emin	0.00
Emax	0.94
Emin/Emax	0.00
Emin/Eav	0.01

