



OCSC

O'CONNOR · SUTTON · CRONIN
MULTIDISCIPLINARY CONSULTING ENGINEERS

E451: GLENAMUCK NORTH –NORTHERN SITE

SITE LIGHTING REPORT

For
Durkan Carrickmines Developments Limited
21 January 2026

NOTICE

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DOCUMENT CONTROL & HISTORY

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1 INTRODUCTION

This report outlines the design criteria and considerations considered regarding the lighting scheme within the proposed Development on lands within the townland of Glenamuck North in Kilternan, Dublin 18.

It has been prepared in conjunction with a planning application to Dun Laoghaire-Rathdown County Council. The report considers the preliminary lighting design as developed by O'Connor Sutton Cronin (OCSC) and should be read in conjunction with OCSC drawing no. E451-OCSC-XX-XX-RP-E-0001- S4-P01.

The external lighting within the proposed development area will primarily be taken in charge. The drawings and calculations submitted are to demonstrate the lux level averages across the development are meeting the standard set out by DLRCC for public lighting.

All proposed lighting has been designed and specified to comply fully with the Council's standard specification document.

Details of the luminaires proposed, on which the detailed design has been based, are contained in the appendices to this document.

The predicted performance of the external lighting installations has been assessed in detail using Lighting Simulation software. The Lighting Simulation software used was LIGHTING REALITY.

Standards and guidelines in relation to the lighting design are:

- BS 5489-1-2013 Design of road lighting of roads and public amenity areas. Code of practice (Published on : 31st May 2020 by BSI Standards Limited 2020)
- I.S. EN 13201-2-2015 Road lighting - Performance requirements (Published on: 31st Jan 2016 by BSI Standards Limited 2016)
- Dun Laoghaire-Rathdown County Council Public Lighting Specification

The electrical services for the external lighting installation will be designed in accordance with NSAI National Rules for Electrical Installations.

2 PROPOSED DEVELOPMENT

The subject site relates to lands within the townland of Glenamuck North in Kilternan, Dublin 18. The site is generally bounded by: the Glenamuck District Distributor Road to the south, which is recently constructed (to be known as the Kilternan Road); *agricultural land to the west; De La Salle Palmerstown Football Club and the future Jamestown Park to the north; and Bective Rangers Football Club to the east.*

Road works are proposed to the approved Glenamuck District Roads Scheme (ACP Ref. HA06D.303945) to provide access to the development from the Kilternan Road which will include any necessary tie-ins to the existing footpath and cycle track.

The development will principally consist of the construction of a creche (c. 571 sq m) and 219 No. residential units comprising 69 No. houses (51 No. 3-bed units and 18 No. 4-bed units), 108 No. apartments (38 No. 1-bed units, 31 No. 2-bed units and 39 No. 3-bed units) and 42 No. duplexes (11 No. 1-bed units, 9 No. 2-bed units, and 22 No. 3-bed units). The proposed development will range in height from 2 No. to 4 No. storeys.

The development also provides: car, bicycle and motorcycle parking; bin storage; ancillary storage; private balconies, terraces and gardens; hard and soft landscaping; boundary treatments; lighting; substations; and all other associated site works above and below ground.



Figure 1 – Proposed Site Location (main site area outlined only)



Figure 2 – Proposed Site Layout

3 THE DESIGN

EXTERNAL LIGHTING:

The external lighting has been designed in the best possible way for visual comfort, biodiversity, and suitability, and shall be specified in accordance with the appropriate maintained illuminance levels recommended by the following documents:

- EN13201-2-2015 Lighting Classes for external lighting. (Published on: 31st Jan 2016 by BSI Standards Limited 2016)
- BS EN 12464-2 Outdoor workplaces (Published on: 31st Jan 2014 by BSI Standards Limited 2014)
- BS 5489-1-2020 Design of road lighting of roads and public amenity areas. Code of practice (Published on: 31st May 2020 by BSI Standards Limited 2020)
- BS EN 13201-2 Lighting Classes for external lighting. (Published on: 31st Jan 2016 by BSI Standards Limited 2016)
- CIBSE Lighting Guide 6 - The Outdoor environment (Published on: Jan 2016 by CIBSE publications)
- Institute of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light. (Published on: Jan 2020 by Institution of Lighting Professionals publications)
- Dun Laoghaire-Rathdown County Council Public Lighting Specification
- GUIDE ON THE LIMITATION OF THE EFFECTS OF OBTRUSIVE LIGHT FROM OUTDOOR LIGHTING INSTALLATIONS, 2ND EDITION
- DLR County Development Plan

Lighting design shall ensure that:

- all night-time lighting is concentrated in the appropriate areas.
- upward lighting is minimised.
- light pollution is minimised.
- energy consumption is minimised.
- To enhance security

BIODIVERSITY STRATEGY

Please refer to the ecological detail submitted with this application for detail. It is widely recognised that artificial lighting can have detrimental effects on nocturnal animals, therefore, the development lighting strategy has considered the following: -

- **Do not over light** - Where relevant guidance gives a range of illumination levels the lowest one which is appropriate shall be utilised. No lighting is proposed along the riparian corridor to protect bats and preserve dark corridors.
- **Luminance distribution** - The spread of light shall be kept near to or below the horizontal where possible.
- **Minimise UV light** - Selected luminaires shall emit minimal UV light. This can be achieved by selecting LED luminaires.
- **Lighting controls** – Consideration shall be made to when lighting is operational to reduce detrimental impacts on nocturnal animals.

DETAILED STRATEGY

The lighting design has been designed to complement each individual space. Figure 3 below is the proposed typology lighting strategy plan for the proposed site.



Figure 3 – Proposed Typology Lighting Plan for proposed site

Zone 1 – Residential Roads

The lighting strategy for the residential roads is to design to P4 classification to reduce the impact of the lighting on the residential buildings but to focus on the roads for safe driving within the development.

The streetlights in these areas will be placed on lighting column at a height of 6m.

The lighting strategy shall endeavour to reduce the light intrusion into the windows in accordance with the ILP Guidance Notes for the Reduction of **Obtrusive** Light.

Zone 2– Pedestrian Walkway

The lighting strategy for the pedestrian walkway is to design to P4 classification to provide sufficient lighting for safety, whilst also ensuring an attractive night-time environment to allow users to navigate the main routes safely. External lighting columns will be situated along the

main pedestrian areas to focus on the safe navigation across the main footpaths, whilst not over lighting the surrounding area.

The relevant lighting classes have been determined by using CEN/TR 13201-1:2015 The following table outlines the allocated classes based on the development typology plans outlined within section.

Zone 3– Site Entrance

The lighting strategy for the residential entrance is to allow for a safe transition from the P3 class lighting levels of the main road to the residential road's classification of P4 and to allow for sufficient light on the roadway for drivers to focus on the roads for safe driving within the vicinity of the residential houses/duplexes.

Zone Type (Based on development typology plans)	Allocated Class (Based on CEN/TR 13201-1:2015)
Zone 1 (Residential Roads)	P4
Zone 2 (Pedestrian Walkway)	P4
Zone 3 (Residential Entrance)	P3

Figure 4 – Proposed Typology Lighting for the projec

LUMINAIRES

For a list of luminaires used please refer to appendix B of this report.

The desired lighting design may also be achieved by other luminaires, and the final lighting installation may use other luminaires, with modified positioning and aiming to achieve the same result. Manufacturers stated performance characteristics are subject to change. Other changes may be agreed with DLRCC Road Lighting Department as the works progress on site.

LIGHT SPILL INTO RESIDENTIAL UNITS

In the residential area fittings close to the residential units are to have appropriately low levels of light spill into the units. It was concluded that the levels were appropriately low. As an E3 zone a lux average level below 2 lux would be considered appropriate. Refer to Figure 6, results are shown that below 2 lux average has been achieved.

Table 2: Environmental zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

TABLE – CIE 150 Zone Categorization (2017)

Table 3 (CIE 150 table 2); Maximum values of vertical illuminance on properties.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post curfew	n/a	<0.1 lx ^{max}	1 lx	2 lx	5 lx

TABLE – CIE 150 Intrusive light (2017)

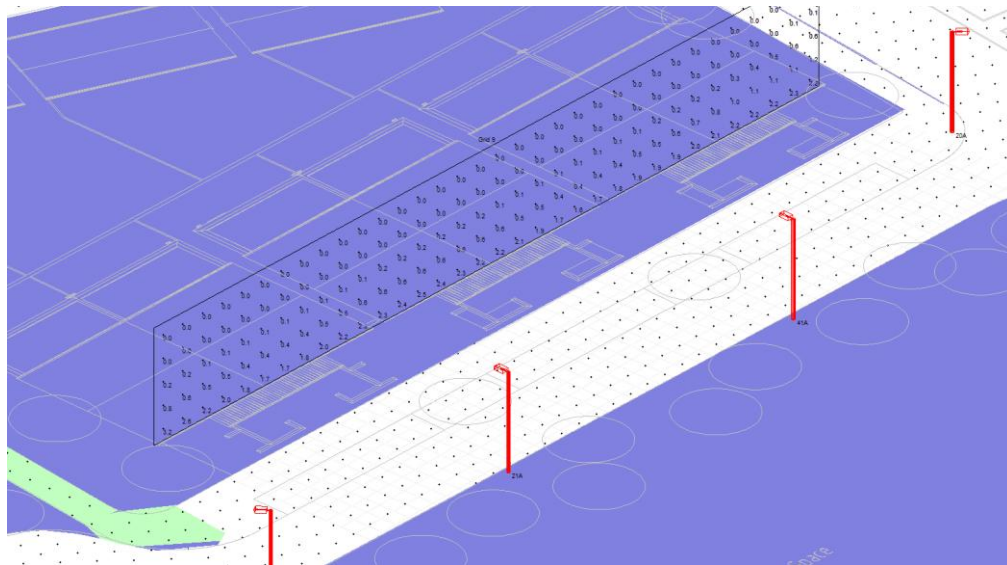


Figure 5 – Example vertical grid for obtrusive lighting

Eav	0.15
Emin	0.00
E _{max}	2.20

Figure 6 – Results for the obtrusive I

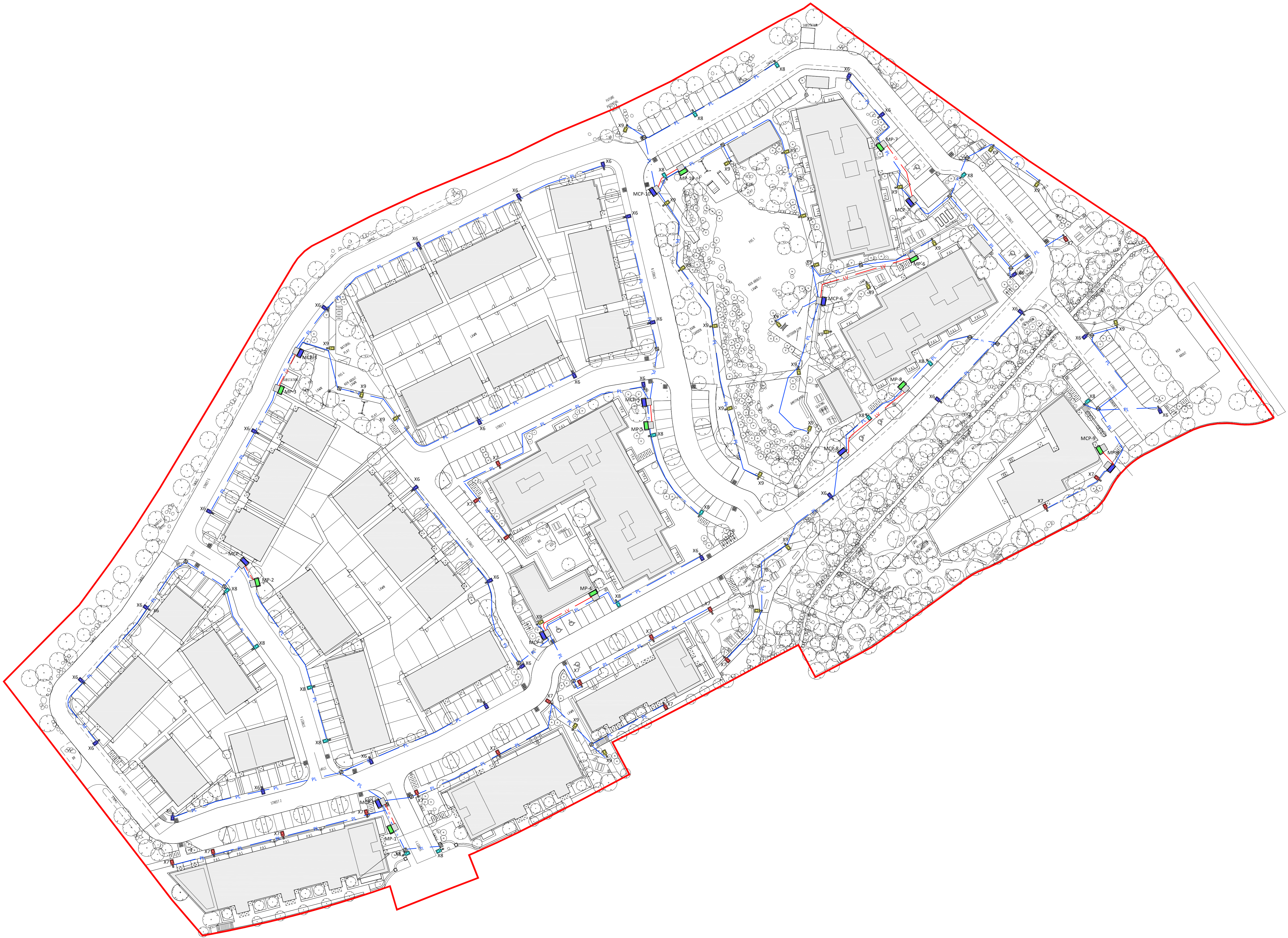
4 SUMMARY

As part of the development application, this external lighting strategy report outlines the preferred lighting options for the proposed site including the proposed secondary streets and shared surfaces, pedestrian and cycle links and public open spaces.

This document also described the control measures considered to ensure compliance with the following documents: -

- EN13201-2-2015 Lighting Classes for external lighting. (Published on: 31st Jan 2016 by BSI Standards Limited 2016)
- BS EN 12464-2 Outdoor workplaces (Published on: 31st Jan 2014 by BSI Standards Limited 2014)
- BS 5489-1-2020 Design of road lighting of roads and public amenity areas. Code of practice (Published on: 31st May 2020 by BSI Standards Limited 2020)
- BS EN 13201-2 Lighting Classes for external lighting. (Published on: 31st Jan 2016 by BSI Standards Limited 2016)
- CIBSE Lighting Guide 6 - The Outdoor environment (Published on: Jan 2016 by CIBSE publications)
- Institute of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light. (Published on: Jan 2020 by Institution of Lighting Professionals publications)
- Dun Laoghaire-Rathdown County Council Public Lighting Specification

5 APPENDIX A – SITE DRAWING



DRAWING NOTES:

1. DUCTING SHALL COMPLY WITH BS EN 50086-1:2003 & LATEST EDITION & SHALL BE SINGLE WALL, COLOURED RED & MANUFACTURED FROM HIGH DENSITY POLYETHYLENE. THE NOMINAL EXTERNAL DIAMETER OF THE DUCT SHALL BE 107mm WITH A MINIMAL WALL THICKNESS OF 5mm. EACH LENGTH OF DUCT SHALL BE STAMPED WITH THE WORDS "PUBLIC LIGHTING", OR ALTERNATIVELY "STREET LIGHTING", IN 30mm BLACK LETTERING AT 0 DEGREES, AT ONE METRE INTERVALS. DUCT SHALL BE LAID WITH THIS LEGEND FACING UPWARDS. DUCT SHALL BE LAID IN A CONTINUOUS DRAW WIRE OF 8KN STRENGTH.
2. A MINIMUM DEPTH OF 450mm COVER IS REQUIRED IN URBAN PATHWAYS & A MINIMUM OF 600mm COVER IS REQUIRED FOR GRASS MARGINS, PEDESTRIAN WAYS, LANEWAYS & GATEWAY ENTRANCES & A MINIMUM DEPTH OF 750mm IS REQUIRED AT ROAD CROSSINGS OR IN CARRIAGEWAYS.
3. ALL EQUIPMENT TO BE SUITABLY IP RATED FOR THE ENVIRONMENT THEY ARE BEING INSTALLED.
4. FOR SCHEDULES OF EQUIPMENT SEE SPECIFICATION.
5. THE COMPLETE INSTALLATION TO BE CO-ORDINATED WITH ALL OTHER SERVICES.

LEGEND OF SYMBOLS

- X6 6M COLUMN LIGHT C. U PHOSCO 15W E950-P4A
- X7 6M COLUMN LIGHT C. U PHOSCO BW E950-A1A
- X8 6M COLUMN LIGHT C. U PHOSCO 15W E950-F2A
- X9 6M COLUMN LIGHT C. U PHOSCO 7W E950-A1A
- MP ESB MINI PILLAR C/W DRAWPIT CHAMBER
- MCP PUBLIC LIGHTING MACROPILLAR C/W DRAWPIT CHAMBER
- PL 110mmØ PUBLIC LIGHTING DUCTING
- LV 125mmØ RED PVC ESB LV CABLE DUCTING TO PUBLIC LIGHTING MINIPILLAR

REF: 'X6' LUMINAIRE
6M COLUMN LIGHT C. U PHOSCO 15W E950-P4A



REFER TO LUMINAIRE SCHEDULE

REF: 'X7' LUMINAIRE
6M COLUMN LIGHT C. U PHOSCO BW E950-A1A



REFER TO LUMINAIRE SCHEDULE

REF: 'X8' LUMINAIRE
6M COLUMN LIGHT C. U PHOSCO 15W E950-F2A



REFER TO LUMINAIRE SCHEDULE

REF: 'X9' LUMINAIRE
6M COLUMN LIGHT C. U PHOSCO 7W E950-A1A



REFER TO LUMINAIRE SCHEDULE

- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DESIGN TEAM DRAWINGS AND SPECIFICATIONS.
- FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS. DO NOT SCALE THIS DRAWING. USE FIGURED DIMENSIONS ONLY.
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Rev No.	Date	Revision Note	Drn by	Chkd by
P01	23.01.26	SUITABLE FOR PLANNING.	B.M.	Y.D.

Rev No.	Date	Revision Note	Drn by	Chkd by



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Client: DURKAN CARRICKMINES DEVELOPMENTS LIMITED
Project: KILTERNAN NORTH
Title: ELECTRICAL
SITE LIGHTING LAYOUT
Code | Originator | Zone | Level | Type | Role | Number | Status | Revision
E451 · OCSC · XX · XX · SK · E · 0002 · S4 · P01
Date: 22.01.26 Scale @ A0 1:500 Drn by: B.M. Chkd by: S.B. Aprvd by: Y.D.

6 APPENDIX B –SITE CALCULATION REPORT WITH LUMINAIRE DATASHEETS-

DATE: 20 January 2026
DESIGNER: Samaneh Baranbooei
PROJECT No: E451
PROJECT NAME: Glenamuck North (Northern site)

**LIGHTING
REALITY**

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	Grid 1	720372.15	723104.55	452.08	257.83	1.81	1.50
2	Grid 2	720570.29	723202.98	191.72	209.70	1.50	1.50
3	Grid 3	720391.64	723128.86	193.80	211.53	1.49	1.49
4	SITE ENTRANCE	720475.12	723172.72	10.03	15.38	1.43	1.40
5	Intrusive Light	720487.82	723261.56	41.17	5.00	1.65	0.20

Luminaires

Luminaire A Data



Supplier	C U Phosco
Type	E950-28-P4A-727-C600-15W
Lamp(s)	727N
Lamp Flux (klm)	2.19
File Name	E950-28-P4A-727-C0600-15W.ies
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	659.3, 183.1, 0.3
No. in Project	30

Luminaire B Data



Supplier	C U Phosco
Type	E950-28-A1A-727-C0300-8W
Lamp(s)	727N
Lamp Flux (klm)	1.19
File Name	E950-28-A1A-727-C0300-8W.ies
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	363.5, 252.5, 0.0
No. in Project	18

Luminaire C Data



Supplier	C U Phosco
Type	E950-28-F2A-727-C600-15W
Lamp(s)	727N
Lamp Flux (klm)	2.23
File Name	E950-28-F2A-727-C0600-15W.ies
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	623.6, 113.9, 0.3
No. in Project	16

Luminaire E Data



Supplier	C U Phosco
Type	E950-28-A1A-727-C0250-7W
Lamp(s)	727N
Lamp Flux (klm)	0.99
File Name	E950-28-A1A-727-C0250-7W.ies
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	363.5, 252.6, 0.0
No. in Project	28

Luminaire H Data



Supplier	Urbis Schreder
Type	AXIA 3.3 5294 Integrated lenses 64 OSLO N SQUARE GIANT@600mA
Lamp(s)	64 OSLO N SQUARE GIANT@600mA NW 740 230V
LampFlux(klm)/Colour	16.54 NW 4000K/70
File Name	AXIA 3.3 5294 64 OSLO N SQUARE GIANT 600mA NW 740 113W 441012 Integrated I...
Maintenance Factor	0.88
Imax70,80,90(cd/klm)	613.3, 21.0, 0.0
No. in Project	3

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	720377.45	723232.60	6.00	141.00	0.00	0.00	0.00			
2	A	720395.92	723253.77	6.00	141.00	0.00	0.00	0.00			
3	A	720382.92	723214.19	6.00	221.00	0.00	0.00	0.00			
4	A	720402.92	723194.19	6.00	241.00	0.00	0.00	0.00			
5	B	720460.23	723193.85	6.00	115.00	0.00	0.00	0.00			
6	B	720403.92	723179.10	6.00	107.00	0.00	0.00	0.00			
7	A	720429.37	723201.92	6.00	290.00	0.00	0.00	0.00			
8	C	720449.66	723216.16	6.00	200.00	0.00	0.00	0.00			
9	A	720460.91	723210.80	6.00	297.00	0.00	0.00	0.00			
10	A	720494.43	723226.77	6.00	304.00	0.00	0.00	0.00			
11	C	720418.22	723258.49	6.00	58.00	0.00	0.00	0.00			
12	C	720426.86	723242.60	6.00	28.00	0.00	0.00	0.00			
13	A	720414.79	723282.30	6.00	146.00	0.00	0.00	0.00			
14	A	720431.30	723311.75	6.00	150.00	0.00	0.00	0.00			
15	A	720448.21	723341.00	6.00	144.00	0.00	0.00	0.00			
16	A	720475.69	723359.53	6.00	121.00	0.00	0.00	0.00			
17	A	720504.58	723373.64	6.00	114.00	0.00	0.00	0.00			
18	A	720473.47	723288.95	6.00	42.00	0.00	0.00	0.00			
19	A	720492.49	723310.01	6.00	287.00	0.00	0.00	0.00			
20	A	720520.03	723323.36	6.00	302.00	0.00	0.00	0.00			
21	B	720435.72	723187.63	6.00	106.00	0.00	0.00	0.00			
22	C	720471.14	723182.09	6.00	19.00	0.00	0.00	0.00			
23	C	720482.54	723183.83	6.00	204.00	0.00	0.00	0.00			
24	B	720474.80	723199.64	6.00	104.00	0.00	0.00	0.00			
25	B	720498.52	723211.29	6.00	114.00	0.00	0.00	0.00			
26	B	720513.76	723226.75	6.00	159.00	0.00	0.00	0.00			
27	E	720530.21	723211.34	6.00	126.00	0.00	0.00	0.00			
28	B	720546.64	723226.71	6.00	292.00	0.00	0.00	0.00			
29	B	720522.69	723233.49	6.00	114.00	0.00	0.00	0.00			
30	B	720547.22	723246.83	6.00	116.00	0.00	0.00	0.00			
31	B	720560.68	723252.93	6.00	109.00	0.00	0.00	0.00			
32	B	720564.34	723240.05	6.00	321.00	0.00	0.00	0.00			
33	A	720556.54	723269.91	6.00	306.00	0.00	0.00	0.00			
34	C	720532.44	723256.69	6.00	295.00	0.00	0.00	0.00			
35	A	720504.85	723235.47	6.00	38.00	0.00	0.00	0.00			
36	A	720494.97	723260.64	6.00	28.00	0.00	0.00	0.00			

Layout Continued

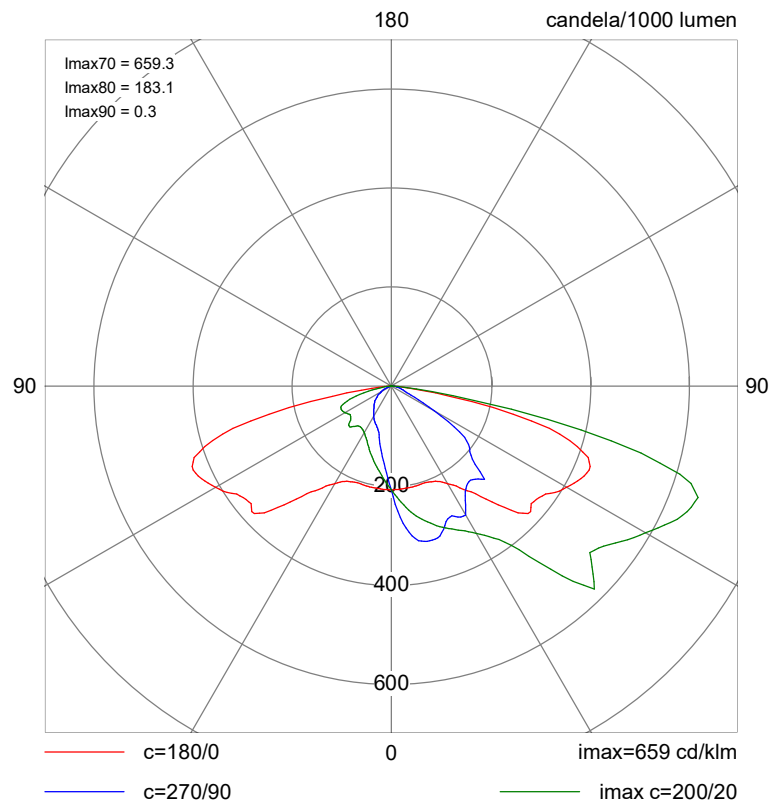
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out- reach	Target X	Target Y	Target Z
37	B	720493.26	723286.39	6.00	213.00	0.00	0.00	0.00			
38	B	720499.03	723295.92	6.00	94.00	0.00	0.00	0.00			
39	A	720540.66	723318.07	6.00	69.00	0.00	0.00	0.00			
40	A	720542.25	723337.58	6.00	8.00	0.00	0.00	0.00			
41	E	720466.38	723309.59	6.00	39.00	0.00	0.00	0.00			
42	E	720459.69	723317.76	6.00	256.00	0.00	0.00	0.00			
43	E	720448.65	723330.06	6.00	349.00	0.00	0.00	0.00			
44	E	720520.42	723219.10	6.00	45.00	0.00	0.00	0.00			
45	E	720510.24	723249.26	6.00	25.00	0.00	0.00	0.00			
46	C	720556.62	723281.42	6.00	41.00	0.00	0.00	0.00			
47	C	720542.40	723304.44	6.00	9.00	0.00	0.00	0.00			
48	A	720535.36	723368.55	6.00	20.00	0.00	0.00	0.00			
49	A	720528.66	723383.07	6.00	91.00	0.00	0.00	0.00			
50	E	720535.96	723395.25	6.00	246.00	0.00	0.00	0.00			
51	C	720547.01	723378.83	6.00	114.00	0.00	0.00	0.00			
52	E	720546.16	723372.17	6.00	38.00	0.00	0.00	0.00			
53	E	720550.71	723353.07	6.00	35.00	0.00	0.00	0.00			
54	E	720560.37	723336.69	6.00	9.00	0.00	0.00	0.00			
55	E	720564.81	723311.90	6.00	19.00	0.00	0.00	0.00			
56	E	720579.04	723290.14	6.00	76.00	0.00	0.00	0.00			
58	C	720606.09	723310.99	6.00	314.00	0.00	0.00	0.00			
59	E	720587.95	723306.39	6.00	54.00	0.00	0.00	0.00			
60	E	720585.62	723324.47	6.00	290.00	0.00	0.00	0.00			
61	E	720580.62	723339.42	6.00	325.00	0.00	0.00	0.00			
62	E	720596.31	723335.38	6.00	283.00	0.00	0.00	0.00			
63	E	720605.75	723349.77	6.00	311.00	0.00	0.00	0.00			
64	C	720623.49	723327.00	6.00	324.00	0.00	0.00	0.00			
65	A	720652.36	723340.86	6.00	126.00	0.00	0.00	0.00			
66	C	720669.00	723313.91	6.00	34.00	0.00	0.00	0.00			
67	A	720690.65	723312.89	6.00	293.00	0.00	0.00	0.00			
68	A	720670.41	723334.49	6.00	232.00	0.00	0.00	0.00			
69	E	720679.21	723336.68	6.00	97.00	0.00	0.00	0.00			
70	B	720674.51	723292.45	6.00	132.00	0.00	0.00	0.00			
71	B	720658.98	723283.17	6.00	101.00	0.00	0.00	0.00			
72	A	720647.45	723351.15	6.00	44.00	0.00	0.00	0.00			
74	B	720664.76	723360.61	6.00	105.00	0.00	0.00	0.00			

Layout Continued

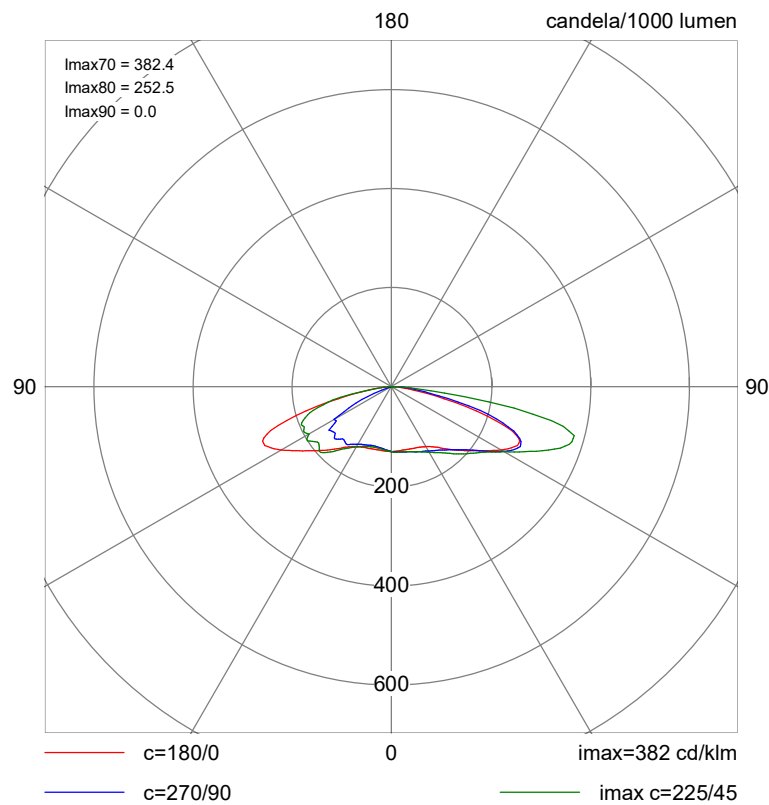
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
75	E	720656.56	723378.93	6.00	251.00	0.00	0.00	0.00			
76	C	720634.04	723379.38	6.00	41.00	0.00	0.00	0.00			
77	E	720624.44	723362.65	6.00	300.00	0.00	0.00	0.00			
78	E	720589.95	723354.85	6.00	0.00	0.00	0.00	0.00			
79	E	720614.46	723377.49	6.00	17.00	0.00	0.00	0.00			
81	E	720575.20	723253.79	6.00	173.00	0.00	0.00	0.00			
82	A	720609.67	723397.23	6.00	41.00	0.00	0.00	0.00			
83	C	720578.53	723414.01	6.00	303.00	0.00	0.00	0.00			
84	E	720642.96	723389.53	6.00	234.00	0.00	0.00	0.00			
85	E	720586.43	723368.74	6.00	7.00	0.00	0.00	0.00			
86	E	720566.53	723384.23	6.00	213.00	0.00	0.00	0.00			
87	E	720581.32	723387.25	6.00	35.00	0.00	0.00	0.00			
88	C	720555.44	723399.73	6.00	297.00	0.00	0.00	0.00			
89	E	720582.95	723273.85	6.00	313.00	0.00	0.00	0.00			
90	A	720627.20	723314.29	6.00	126.00	0.00	0.00	0.00			
91	A	720596.04	723286.18	6.00	126.00	0.00	0.00	0.00			
92	A	720600.30	723408.62	6.00	81.00	0.00	0.00	0.00			
93	B	720504.19	723273.73	6.00	230.00	0.00	0.00	0.00			
94	H	720605.49	723225.53	10.00	122.00	0.00	0.00	0.00			
95	H	720549.79	723196.08	10.00	122.00	0.00	0.00	0.00			
96	H	720499.72	723171.25	10.00	122.00	0.00	0.00	0.00			
97	B	720415.94	723182.31	6.00	106.00	0.00	0.00	0.00			
98	C	720444.68	723231.67	6.00	200.00	0.00	0.00	0.00			

Polar Diagrams

Luminaire A E950-28-P4A-727-C600-15W

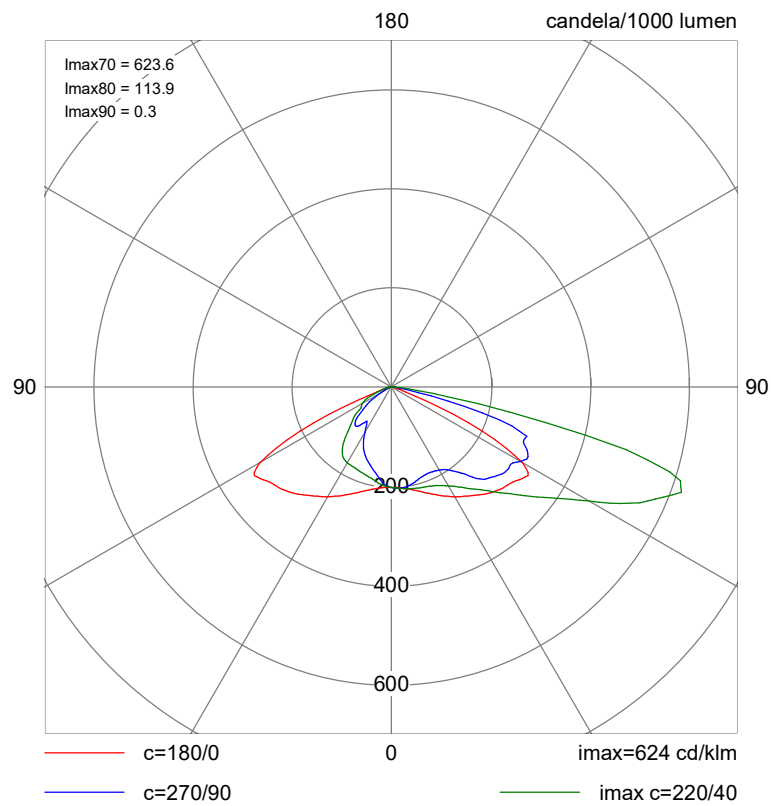


Luminaire B E950-28-A1A-727-C0300-8W

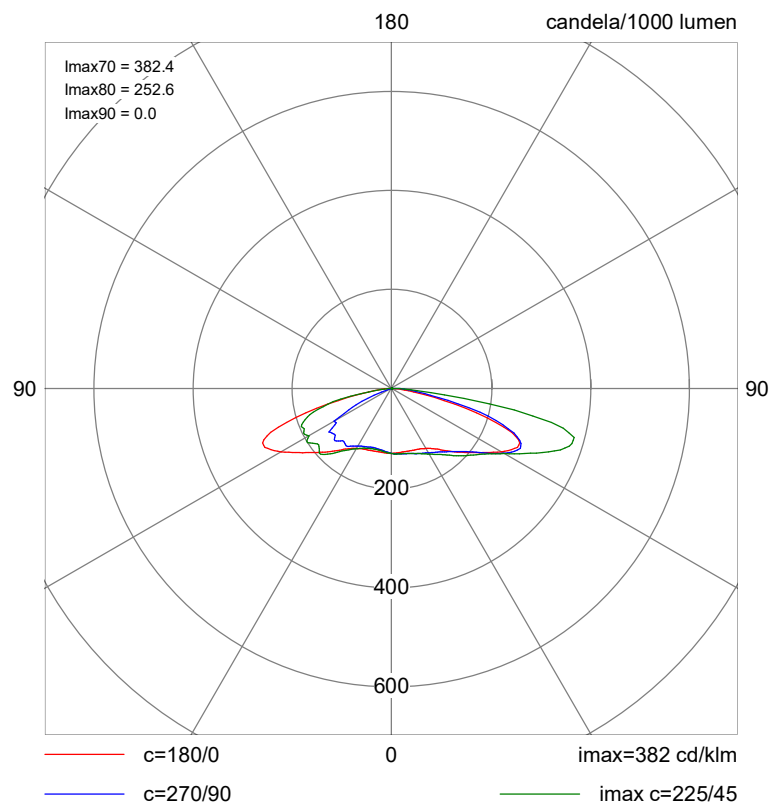


Polar Diagrams Continued

Luminaire C E950-28-F2A-727-C600-15W

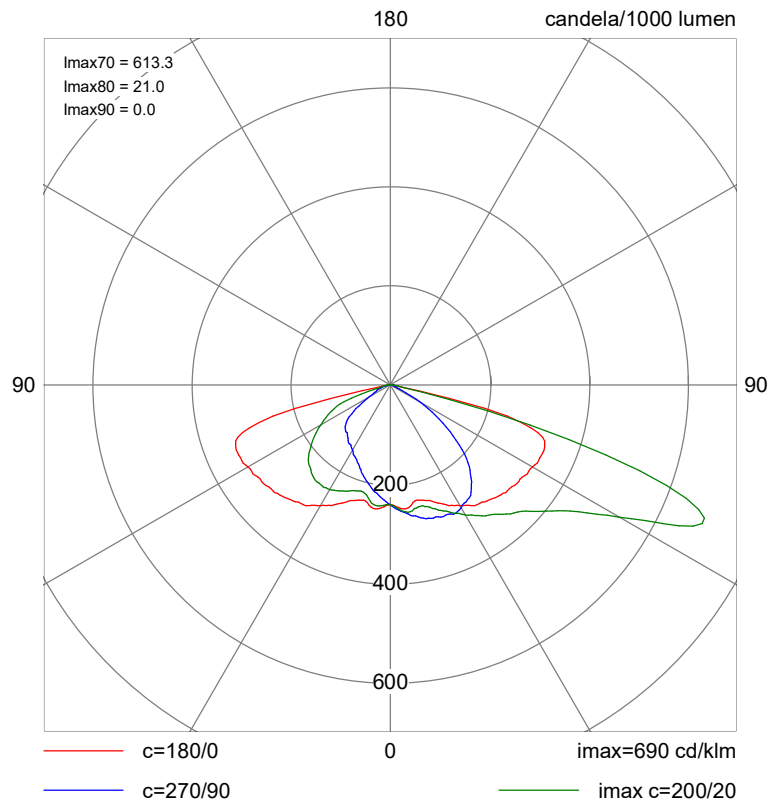


Luminaire E E950-28-A1A-727-C0250-7W



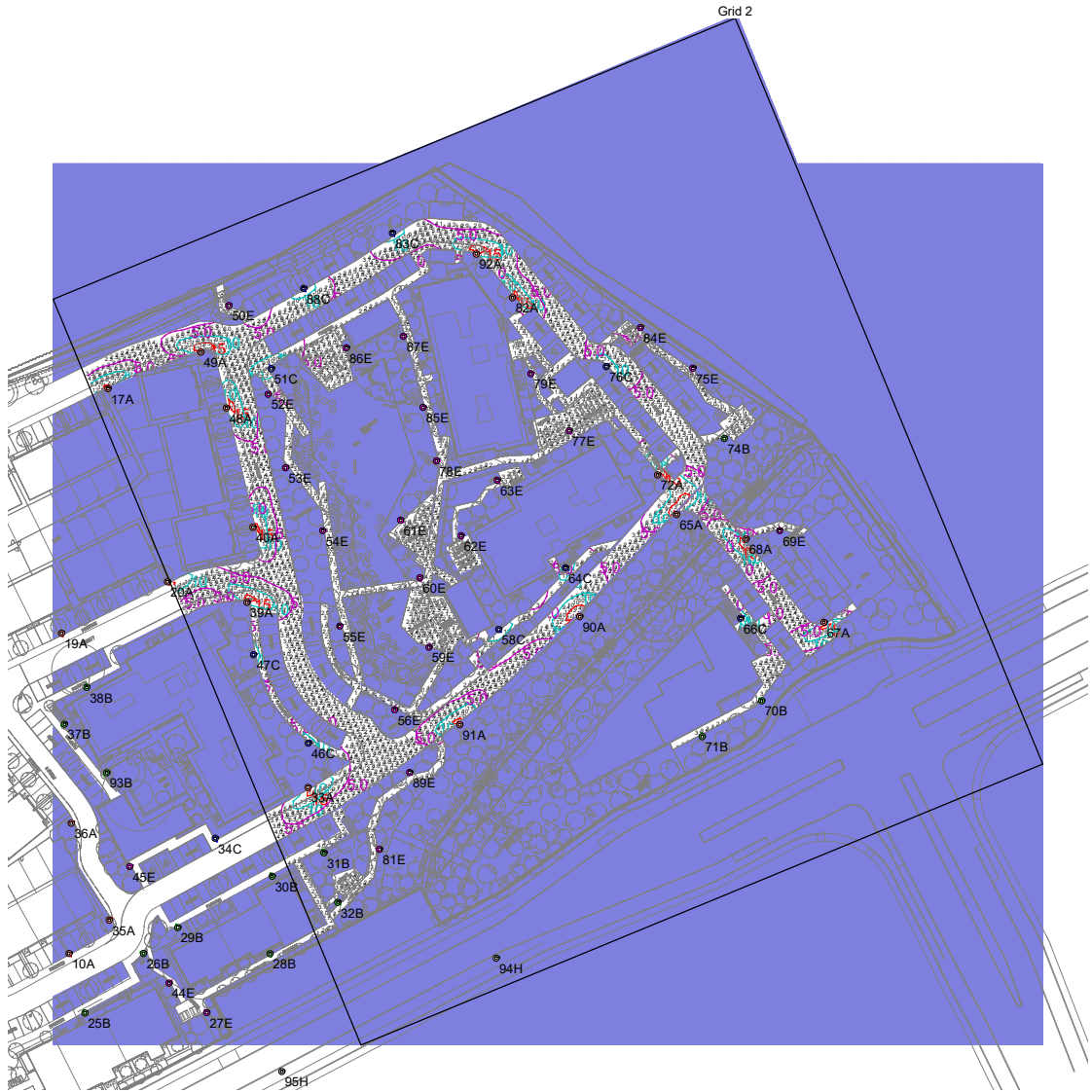
Polar Diagrams Continued

Luminaire H AXIA 3.3 5294 Integrated lenses 64 OSLO SQUARE GIANT@600mA



Horizontal Illuminance (lux)

Grid 2

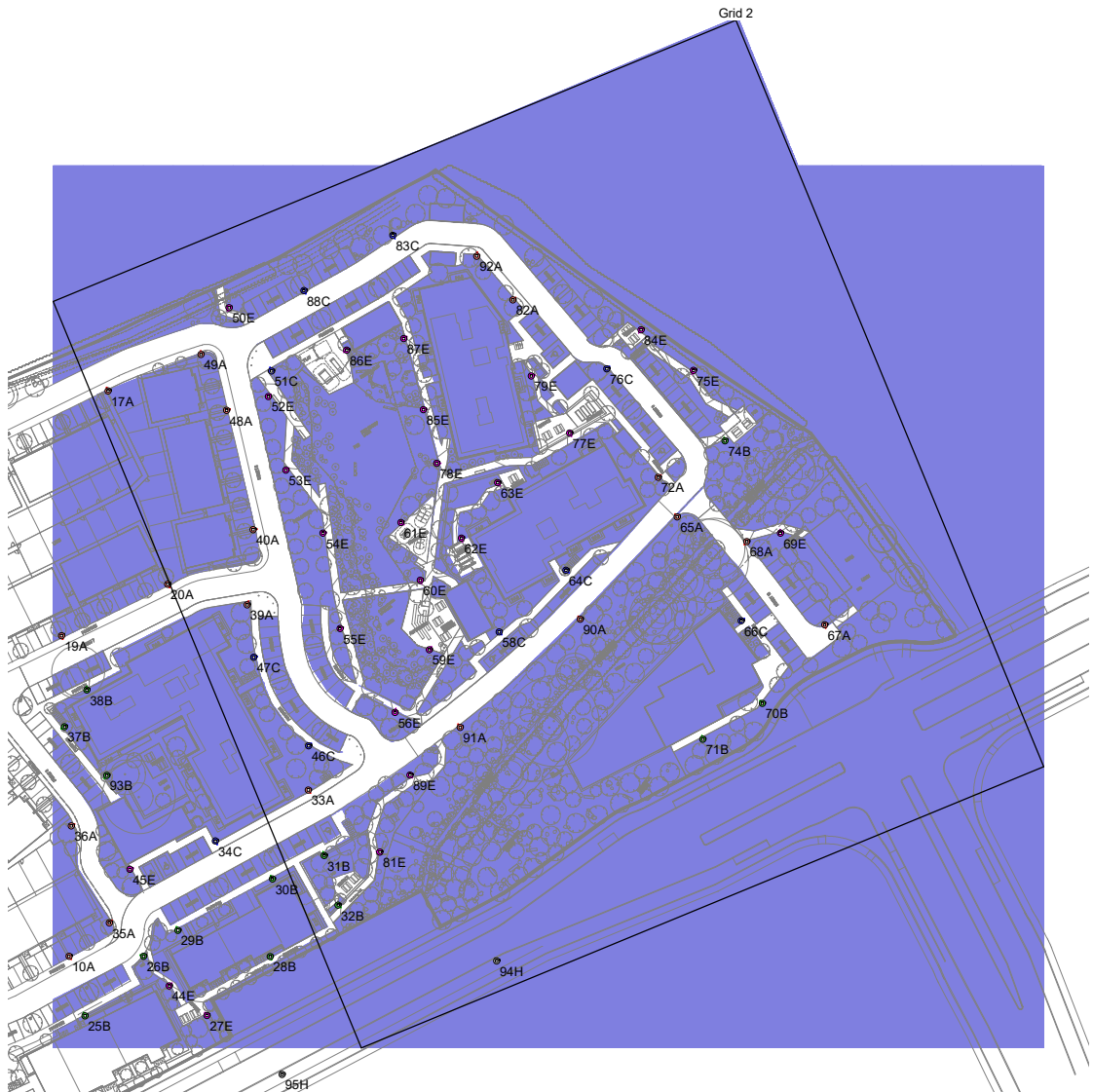


Results

Eav	5.05
Emin	1.26
Emax	18.51
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

Grid 2

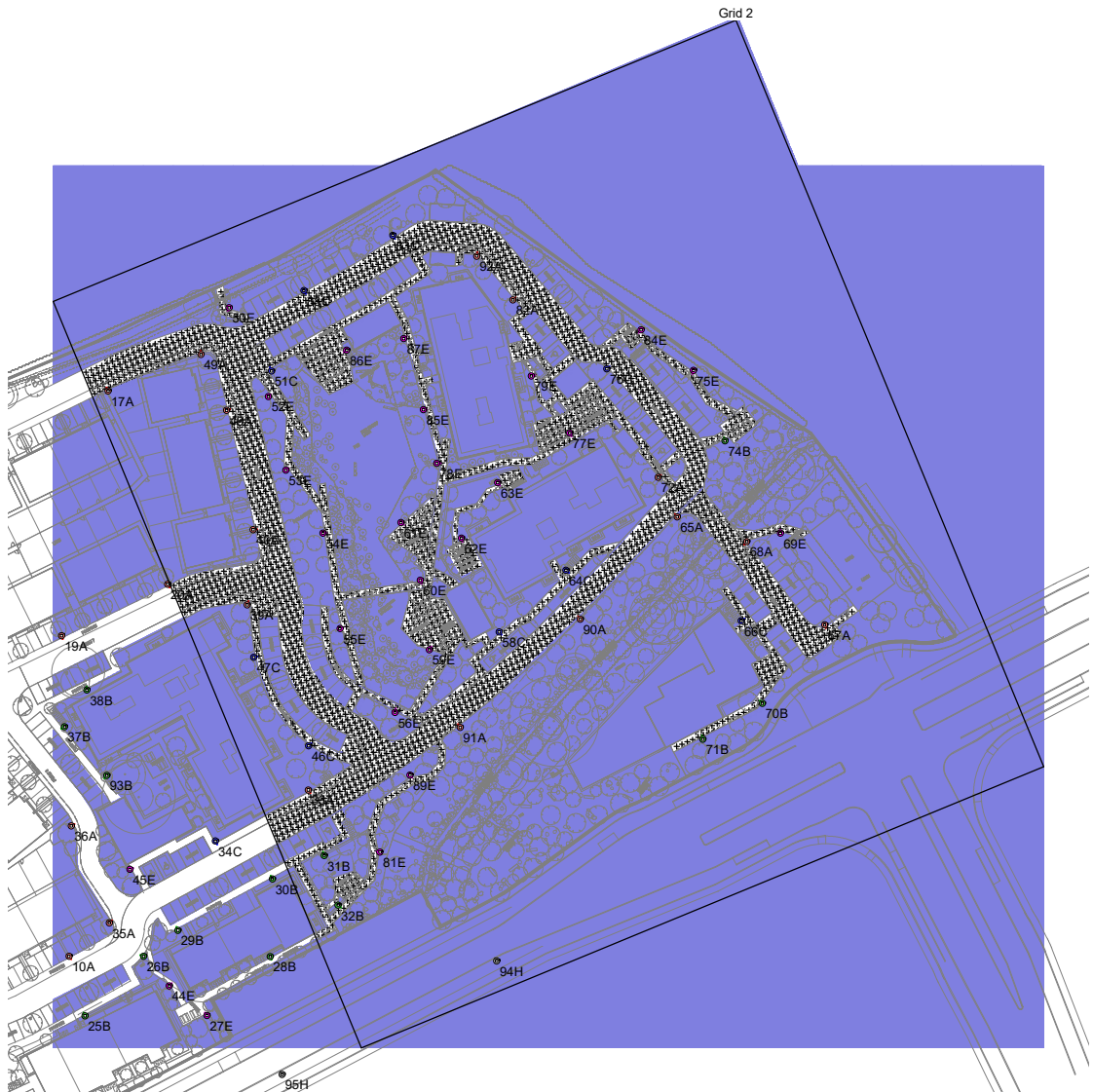


Results

Eav	5.05
Emin	1.26
Emax	18.51
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

Grid 2

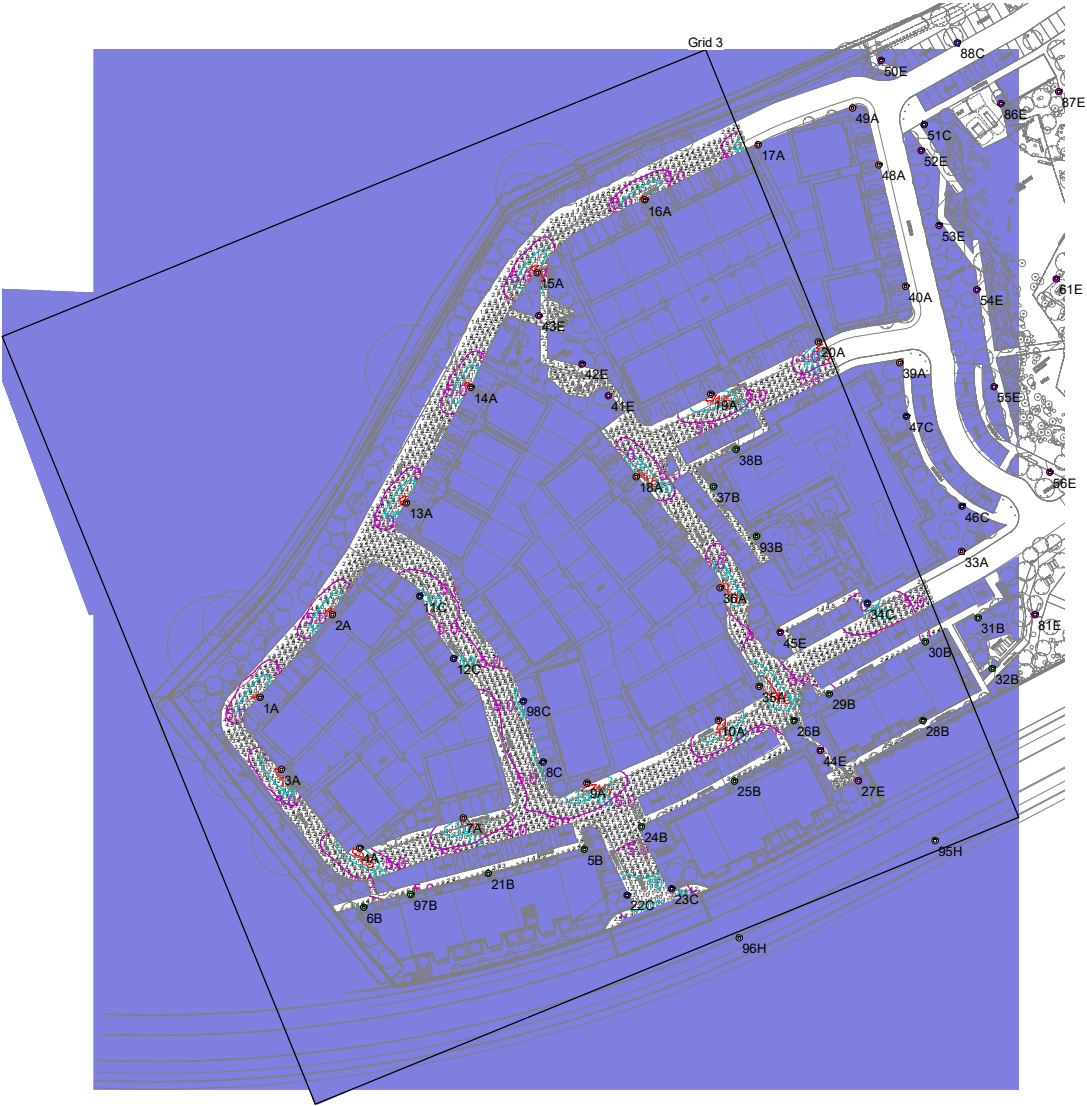


Results

Eav	5.05
Emin	1.26
Emax	18.51
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

Grid 3



Results

Eav	5.46
Emin	1.35
Emax	18.18
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

Grid 3



Results

Eav	5.46
Emin	1.35
Emax	18.18
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

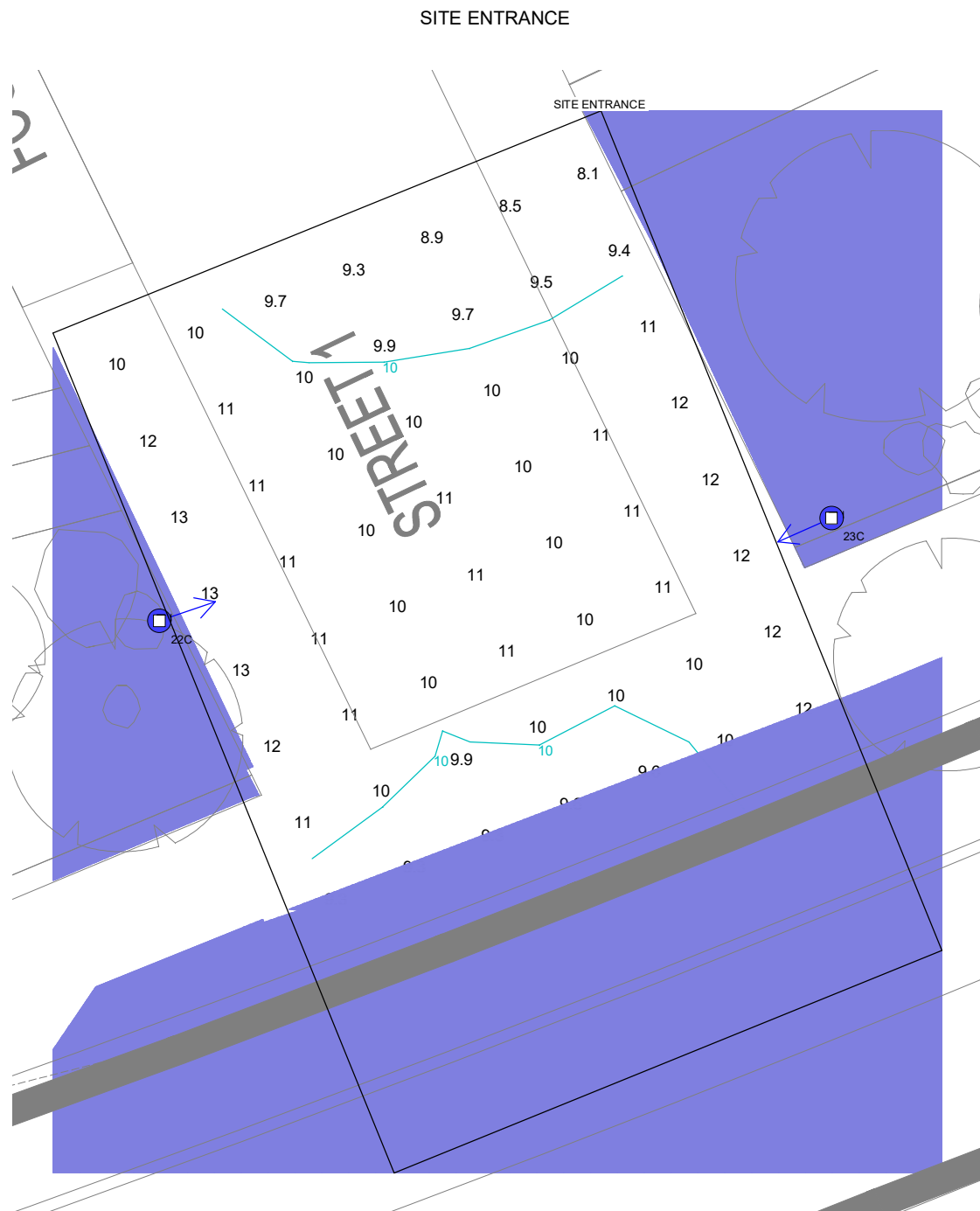
Grid 3



Results

Eav	5.46
Emin	1.35
Emax	18.18
Emin/Emax	0.07
Emin/Eav	0.25

Horizontal Illuminance (lux)

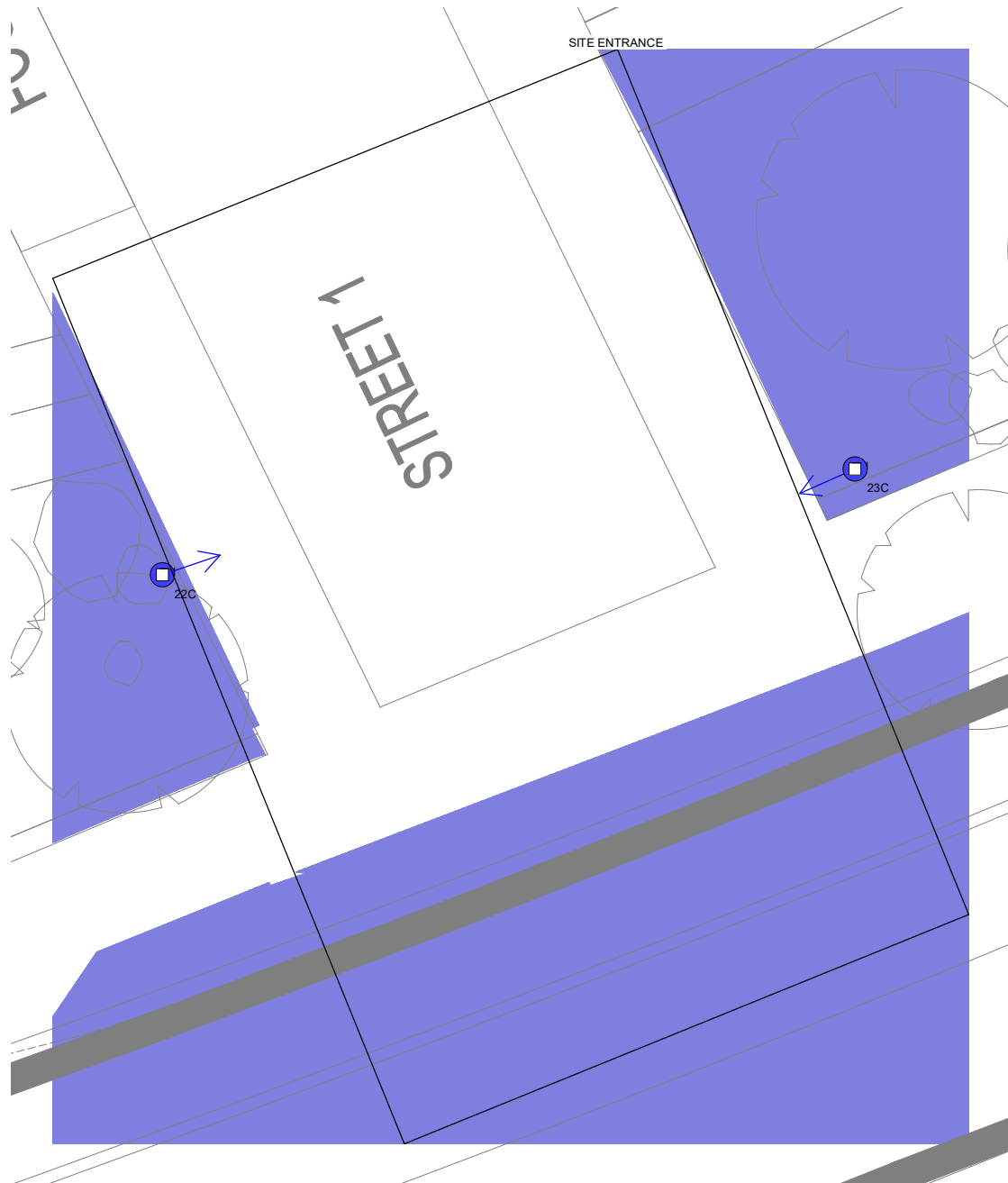


Results

Eav	10.51
Emin	8.05
Emax	13.00
Emin/Emax	0.62
Emin/Eav	0.77

Horizontal Illuminance (lux)

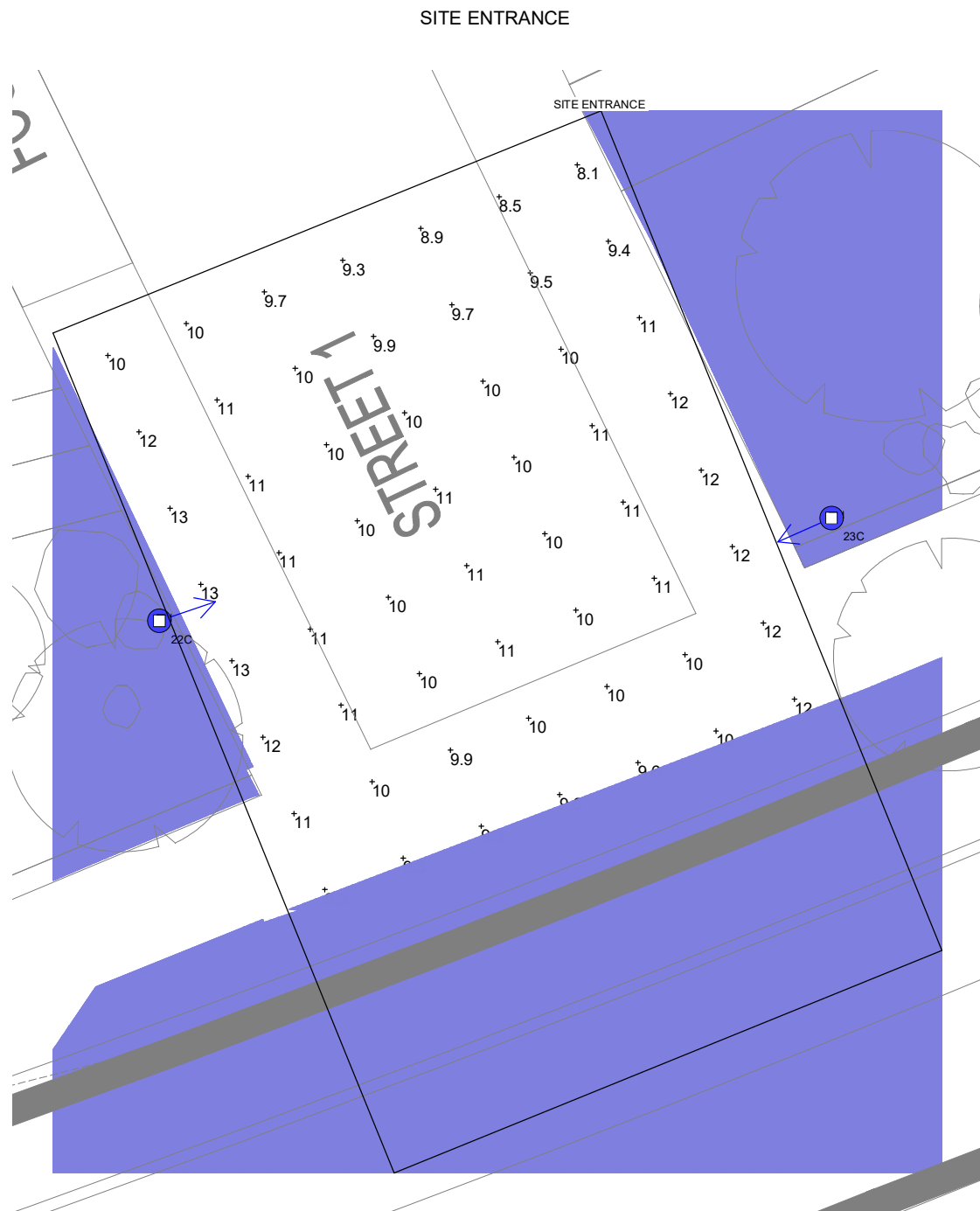
SITE ENTRANCE



Results

Eav	10.51
Emin	8.05
E _{max}	13.00
Emin/E _{max}	0.62
Emin/Eav	0.77

Horizontal Illuminance (lux)

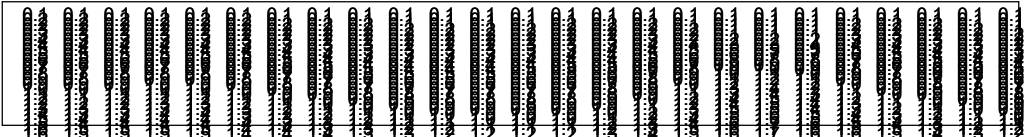


Results

Eav	10.51
Emin	8.05
Emax	13.00
Emin/Emax	0.62
Emin/Eav	0.77

Illuminance (lux)

Intrusive Light



Results

Eav	0.72
Emin	0.05
Emax	1.70
Emin/Emax	0.03
Emin/Eav	0.07

Illuminance (lux)

Intrusive Light

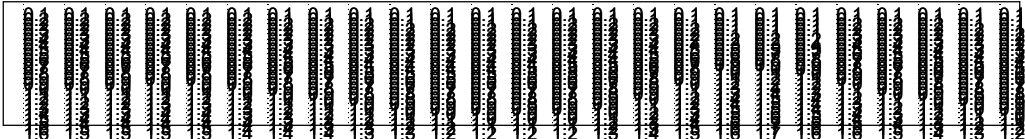


Results

Eav	0.72
Emin	0.05
E _{max}	1.70
Emin/E _{max}	0.03
Emin/Eav	0.07

Illuminance (lux)

Intrusive Light



Results

Eav	0.72
Emin	0.05
Emax	1.70
Emin/Emax	0.03
Emin/Eav	0.07



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