DATE: **3 September 2026**

DESIGNER: **Alex Naper**

PROJECT No: **SES 08322 Rev i**

PROJECT NAME: **Royal Canal Urban Greenway - DBFL**

Cycle track designed in accordance with EN13201-2:2015 Category P4.
Bridge section meets recommendations of EN13201-2:2015 Category P2.

Old Navan road crosssing calculated to acheive recommendations of EN13201-2:2015 Category C2.
Crossing at R149 achieves EN13201-2:2015 Category P4 with Solar PV LED luminaires.
Milestown Rd crossing achieves EN13201-2:2015 Category C4.

Rev A: Path section CH3350 - CH3650 updated.
Rev B: CH 3270 - CH 4110 to 5m mounting height to reduce light spill onto canal.
Rev C: Existing LED luminaires changed to match proposed.
Rev E: Luminaires to 8 LED.
Rev F: Lighting updated to match realigned Greenway sections.
Rev G: Crossing sections added.
Rev H: Crossing added to Milestown Rd.
Rev i: Crossing point updated.

All proposed luminaires to be be fitted with intelligent PIR control and management system.

MF derived from: 0.92 x 0.90 (LMF (Low pollution environment & 72 month cleaning cycle) x LLMF) LLMF value @ 100,000 hours & 25 degrees C Ta.

Outdoor Lighting Report

PREPARED BY:

Sabre Electrical Services Ltd.
Unit 11,
Bellview Industrial Estate,
Tolka Valley Road,
Dublin 11
D11 VN59
Phone Number: 01 8110875
Contact: Alex Naper or Robbie Wilson
eMail: design@sabrelighting.ie or robbie@sabrelighting.ie

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

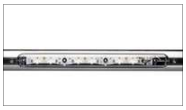
ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1	708426.21	738005.06	369.87	159.00	1.50	1.50
2	Grid 2	707708.47	737860.12	363.65	121.19	1.50	1.50
3	Grid 3	708057.85	737956.93	369.87	78.00	1.50	1.50
4	Grid 4	707368.32	737702.40	369.87	166.00	1.50	1.50
5	Grid 5	707035.29	737524.80	369.87	166.00	1.50	1.50
6	Grid 6	706657.41	737507.56	369.87	166.00	1.50	1.50
7	Grid 7	706292.86	737578.90	369.87	232.00	1.50	1.50
8	Grid 8	705927.52	737670.62	369.87	232.00	1.50	1.50
9	Grid 9	705562.19	737782.73	369.87	232.00	1.50	1.50
10	Grid 10	705209.03	737947.16	369.87	169.00	1.50	1.50
11	Grid 11	704865.40	738087.00	369.87	169.00	1.50	1.50
12	Grid 12	704512.08	738198.15	369.87	169.00	1.50	1.50
13	Grid 13	704155.25	738297.59	369.87	169.00	1.50	1.50
14	Grid 14	703798.43	738398.20	369.87	169.00	1.50	1.50
15	Grid 15	707818.26	737927.60	33.00	21.00	1.50	1.50
16	Grid 16	708713.75	738169.46	10.45	3.64	1.49	1.21
17	Grid 17 For Iso only	702654.61	736772.56	74.79	92.88	1.50	1.50
18	Grid 18	702672.02	736823.03	9.82	3.67	0.98	0.73
19	Grid 19	703763.15	738122.54	108.00	177.00	1.50	1.50
20	Grid 20	703751.38	738228.56	4.51	9.55	1.50	1.36

Luminaires



Luminaire A Data

Supplier	Urbis Schreder
Type	AXIA 2.1 5165 Integrated lenses Front-Rear louvres 8 OSLON SQ
Lamp(s)	8 OSLON SQUARE GIANT@700mA WW 7 27 230V 00-36-648
LampFlux(klm)/Colour	2.38 WW 2700K/70
File Name	AXIA 2.1 5165 8 OSLON SQUARE GIANT 7 00mA WW 727 19.7W 434272 Integrated l...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	846.0, 82.7, 1.7
No. in Project	127



Luminaire B Data

Supplier	Urbis Schreder
Type	ALINEA Handrail 5117 - 3 LED 350mA WW Profiled Poly Clear, Sm
Lamp(s)	3 LEDs WW
Lamp Flux (klm)	0.26
File Name	ALINEA Handrail 5117 3 LED 350mA WW Profiled Poly Clear Smooth Shield WO7313...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	984.7, 72.4, 4.8
No. in Project	7



Luminaire C Data

Supplier	Urbis Schreder
Type	AXIA 2.1 5166 Integrated lenses Rear louvers 24 OSLON SQUARE
Lamp(s)	24 OSLON SQUARE GIANT@300mA WW 727 230V 00-36-646
LampFlux(klm)/Colour	3.40 WW 2700K/70
File Name	AXIA 2.1 5166 24 OSLON SQUARE GIANT 300mA WW 727 22.4W 434302 Integrated ...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	854.2, 129.6, 2.0
No. in Project	3



Luminaire D Data

Supplier	Urbis Schreder
Type	AXIA 2.1 5165 Integrated lenses Front-Rear louvres 8 OSLON SQ
Lamp(s)	8 OSLON SQUARE GIANT@700mA WW 7 27 230V 00-36-648
LampFlux(klm)/Colour	2.38 WW 2700K/70
File Name	AXIA 2.1 5165 8 OSLON SQUARE GIANT 7 00mA WW 727 19.7W 434272 Integrated l...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	846.0, 82.7, 1.7
No. in Project	13

Luminaires



Luminaire E Data

Supplier	Urbis Schreder
Type	AXIA 2.1 5165 Integrated lenses Rear louvers 8 OSLON SQUARE G
Lamp(s)	8 OSLON SQUARE GIANT@700mA WW 727 230V 00-36-648
LampFlux(klm)/Colour	2.38 WW 2700K/70
File Name	AXIA 2.1 5165 8 OSLON SQUARE GIANT 700mA WW 727 19.7W 434262 Integrated l...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	1250.5, 121.8, 2.3
No. in Project	19



Luminaire F Data

Supplier	Urbis Schreder
Type	AXIA 2.1 5165 Integrated lenses Rear louvers 8 OSLON SQUARE G
Lamp(s)	8 OSLON SQUARE GIANT@700mA WW 727 230V 00-36-648
LampFlux(klm)/Colour	2.38 WW 2700K/70
File Name	AXIA 2.1 5165 8 OSLON SQUARE GIANT 700mA WW 727 19.7W 434262 Integrated l...
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	1250.5, 121.8, 2.3
No. in Project	7

Luminaire G Data

Supplier	Thorn
Type	CIVITEQ S - 36 x Neutral White 4000K LED 700mA - NR Optic
Lamp(s)	LED_4000K
LampFlux(klm)/Colour	10.71 4000/70
File Name	CQS36L70NR740G35_DC.LDT
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	602.6, 98.0, 0.0
No. in Project	3

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Dimmed to	Target X	Target Y	Target Z
1	A	708706.34	738152.20	6.00	103.00	0.00	0.00	0.40	100%			
2	A	708672.51	738145.84	6.00	101.00	0.00	0.00	0.40	100%			
3	A	708638.23	738136.86	6.00	109.00	0.00	0.00	0.40	100%			
4	A	708604.67	738127.27	6.00	102.00	0.00	0.00	0.40	100%			
5	A	708572.00	738117.74	6.00	104.00	0.00	0.00	0.40	100%			
6	A	708536.72	738109.74	6.00	105.00	0.00	0.00	0.40	100%			
7	A	708502.78	738102.09	6.00	106.00	0.00	0.00	0.40	100%			
8	A	708468.69	738093.31	6.00	103.00	0.00	0.00	0.40	100%			
9	A	708440.06	738084.98	6.00	106.00	0.00	0.00	0.40	100%			
10	F	708406.29	738074.89	6.00	112.00	0.00	0.00	0.40	100%			
11	A	708408.90	738086.25	6.00	295.00	0.00	0.00	0.40	100%			
12	F	708362.99	738065.99	6.00	94.00	0.00	0.00	0.40	100%			
13	F	708331.68	738061.45	6.00	97.00	0.00	0.00	0.40	100%			
14	A	708297.86	738055.10	6.00	103.00	0.00	0.00	0.40	100%			
15	A	708263.77	738047.27	6.00	107.00	0.00	0.00	0.40	100%			
16	A	708229.60	738039.54	6.00	103.00	0.00	0.00	0.40	100%			
17	A	708195.45	738031.70	6.00	103.00	0.00	0.00	0.40	100%			
18	A	708161.85	738024.39	6.00	103.00	0.00	0.00	0.40	100%			
19	A	708127.20	738016.30	6.00	103.00	0.00	0.00	0.40	100%			
20	A	708093.18	738008.37	6.00	103.00	0.00	0.00	0.40	100%			
21	A	708058.54	737999.96	6.00	100.00	0.00	0.00	0.40	100%			
22	A	708026.96	737992.14	6.00	103.00	0.00	0.00	0.40	100%			
23	F	708379.30	738075.58	6.00	280.00	0.00	0.00	0.40	100%			
24	A	707993.21	737983.10	6.00	108.00	0.00	0.00	0.40	100%			
25	A	707960.49	737970.70	6.00	109.00	0.00	0.00	0.40	100%			
26	A	707929.26	737959.44	6.00	112.00	0.00	0.00	0.40	100%			
27	A	707898.70	737946.93	6.00	114.00	0.00	0.00	0.40	100%			
28	A	707866.38	737935.27	6.00	107.00	0.00	0.00	0.40	100%			
29	A	707810.03	737945.19	6.00	270.00	0.00	0.00	0.40	100%			
30	A	707783.83	737934.12	6.00	97.00	0.00	0.00	0.40	100%			
31	A	707755.72	737941.14	6.00	264.00	0.00	0.00	0.40	100%			
32	A	707737.40	737954.87	6.00	186.00	0.00	0.00	0.40	100%			
33	A	707726.68	737936.63	6.00	293.00	0.00	0.00	0.40	100%			
34	A	707673.98	737913.41	6.00	302.00	0.00	0.00	0.40	100%			
35	A	707697.01	737924.15	6.00	295.00	0.00	0.00	0.40	100%			
36	A	707645.07	737898.82	6.00	295.00	0.00	0.00	0.40	100%			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Dimmed to	Target X	Target Y	Target Z
37	A	707614.21	737885.83	6.00	295.00	0.00	0.00	0.40	100%			
38	A	707594.49	737885.91	6.00	26.00	0.00	0.00	0.40	100%			
39	A	707586.72	737865.74	6.00	310.00	0.00	0.00	0.40	100%			
40	A	707554.04	737848.20	6.00	295.00	0.00	0.00	0.40	100%			
41	A	707521.39	737833.95	6.00	291.00	0.00	0.00	0.40	100%			
42	A	707490.39	737819.49	6.00	300.00	0.00	0.00	0.40	100%			
43	A	707460.31	737802.32	6.00	294.00	0.00	0.00	0.40	100%			
44	A	707428.36	737788.63	6.00	288.00	0.00	0.00	0.40	100%			
45	A	707394.89	737775.99	6.00	295.00	0.00	0.00	0.40	100%			
46	A	707363.77	737760.23	6.00	297.00	0.00	0.00	0.40	100%			
47	A	707336.17	737757.68	6.00	200.00	0.00	0.00	0.40	100%			
48	A	707330.31	737742.90	6.00	297.00	0.00	0.00	0.40	100%			
49	A	707301.46	737727.69	6.00	297.00	0.00	0.00	0.40	100%			
50	A	707269.82	737712.54	6.00	294.00	0.00	0.00	0.40	100%			
51	A	707236.40	737701.59	6.00	288.00	0.00	0.00	0.40	100%			
52	A	707202.34	737692.07	6.00	289.00	0.00	0.00	0.40	100%			
53	A	707169.53	737679.39	6.00	294.00	0.00	0.00	0.40	100%			
54	A	707136.82	737666.94	6.00	288.00	0.00	0.00	0.40	100%			
55	A	707104.15	737654.80	6.00	290.00	0.00	0.00	0.40	100%			
56	A	707071.02	737642.75	6.00	288.00	0.00	0.00	0.40	100%			
57	A	707036.34	737635.21	6.00	283.00	0.00	0.00	0.40	100%			
58	A	707006.81	737622.68	6.00	290.00	0.00	0.00	0.40	100%			
59	A	706979.93	737620.00	6.00	266.00	0.00	0.00	0.40	100%			
60	A	706952.29	737621.87	6.00	90.00	0.00	0.00	0.40	100%			
61	A	706919.32	737620.52	6.00	97.00	0.00	0.00	0.40	100%			
62	A	706882.16	737616.70	6.00	92.00	0.00	0.00	0.40	100%			
63	A	706846.99	737617.71	6.00	87.00	0.00	0.00	0.40	100%			
64	A	706811.91	737619.35	6.00	86.00	0.00	0.00	0.40	100%			
65	A	706776.96	737624.43	6.00	87.00	0.00	0.00	0.40	100%			
66	A	706741.63	737625.77	6.00	87.00	0.00	0.00	0.40	100%			
67	A	706707.21	737632.12	6.00	74.00	0.00	0.00	0.40	100%			
68	A	706682.25	737638.64	6.00	78.00	0.00	0.00	0.40	100%			
69	A	706655.81	737646.92	6.00	69.00	0.00	0.00	0.40	100%			
70	A	706623.47	737657.24	6.00	70.00	0.00	0.00	0.40	100%			
71	A	706591.66	737669.99	6.00	67.00	0.00	0.00	0.40	100%			
72	A	706559.30	737684.99	6.00	65.00	0.00	0.00	0.40	100%			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Dimmed to	Target X	Target Y	Target Z
73	A	706527.64	737699.80	6.00	71.00	0.00	0.00	0.40	100%			
74	A	706494.10	737710.65	6.00	73.00	0.00	0.00	0.40	100%			
75	A	706460.13	737719.93	6.00	75.00	0.00	0.00	0.40	100%			
76	A	706426.12	737728.46	6.00	72.00	0.00	0.00	0.40	100%			
77	A	706393.77	737741.92	6.00	69.00	0.00	0.00	0.40	100%			
78	A	706360.88	737749.60	6.00	90.00	0.00	0.00	0.40	100%			
79	A	706336.52	737761.17	6.00	252.00	0.00	0.00	0.40	100%			
80	A	706310.80	737756.41	6.00	289.00	0.00	0.00	0.40	100%			
81	A	706278.67	737760.89	6.00	265.00	0.00	0.00	0.40	100%			
82	A	706244.61	737758.57	6.00	80.00	0.00	0.00	0.40	100%			
83	A	706218.57	737771.01	6.00	55.00	0.00	0.00	0.40	100%			
84	A	706194.98	737790.75	6.00	247.00	0.00	0.00	0.40	100%			
85	A	706164.96	737806.57	6.00	245.00	0.00	0.00	0.40	100%			
86	A	706130.69	737819.36	6.00	250.00	0.00	0.00	0.40	100%			
87	A	706101.58	737826.38	6.00	271.00	0.00	0.00	0.40	100%			
88	A	706068.97	737828.67	6.00	256.00	0.00	0.00	0.40	100%			
89	A	706040.91	737827.62	6.00	275.00	0.00	0.00	0.40	100%			
90	A	706007.88	737832.56	6.00	255.00	0.00	0.00	0.40	100%			
91	A	705974.95	737841.19	6.00	255.00	0.00	0.00	0.40	100%			
92	A	705938.96	737850.22	6.00	255.00	0.00	0.00	0.40	100%			
93	A	705901.85	737859.94	6.00	257.00	0.00	0.00	0.40	100%			
94	A	705867.59	737868.00	6.00	255.00	0.00	0.00	0.40	100%			
95	A	705834.15	737878.05	6.00	255.00	0.00	0.00	0.40	100%			
96	A	705799.72	737886.61	6.00	255.00	0.00	0.00	0.40	100%			
97	A	705765.63	737893.43	6.00	255.00	0.00	0.00	0.40	100%			
98	A	705731.54	737901.71	6.00	255.00	0.00	0.00	0.40	100%			
99	A	705697.73	737910.54	6.00	255.00	0.00	0.00	0.40	100%			
100	A	705662.64	737919.48	6.00	255.00	0.00	0.00	0.40	100%			
101	A	705626.63	737928.36	6.00	255.00	0.00	0.00	0.40	100%			
102	A	705592.05	737935.36	6.00	255.00	0.00	0.00	0.40	100%			
103	A	705556.61	737943.18	6.00	255.00	0.00	0.00	0.40	100%			
104	A	705523.27	737952.35	6.00	255.00	0.00	0.00	0.40	100%			
105	A	705489.13	737960.90	6.00	255.00	0.00	0.00	0.40	100%			
106	A	705454.98	737968.28	6.00	255.00	0.00	0.00	0.40	100%			
107	A	705421.11	737977.22	6.00	255.00	0.00	0.00	0.40	100%			
108	A	705387.61	737986.81	6.00	255.00	0.00	0.00	0.40	100%			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Dimmed to	Target X	Target Y	Target Z
109	A	705363.37	737989.77	6.00	276.00	0.00	0.00	0.40	100%			
110	A	705331.22	737992.40	6.00	254.00	0.00	0.00	0.40	100%			
111	A	705298.03	738002.74	6.00	255.00	0.00	0.00	0.40	100%			
112	A	705263.73	738014.55	6.00	250.00	0.00	0.00	0.40	100%			
113	A	705233.44	738028.59	6.00	241.00	0.00	0.00	0.40	100%			
114	A	705204.40	738041.41	6.00	247.00	0.00	0.00	0.40	100%			
115	A	705175.35	738053.39	6.00	249.00	0.00	0.00	0.40	100%			
116	A	705143.04	738066.86	6.00	248.00	0.00	0.00	0.40	100%			
117	A	705108.60	738081.60	6.00	248.00	0.00	0.00	0.40	100%			
118	A	705076.25	738094.92	6.00	248.00	0.00	0.00	0.40	100%			
119	A	705044.55	738108.40	6.00	246.00	0.00	0.00	0.40	100%			
120	A	705011.79	738122.15	6.00	251.00	0.00	0.00	0.40	100%			
121	A	704977.41	738135.88	6.00	247.00	0.00	0.00	0.40	100%			
122	A	704945.22	738145.95	6.00	252.00	0.00	0.00	0.40	100%			
123	A	704920.33	738157.00	6.00	239.00	0.00	0.00	0.40	100%			
124	D	704894.65	738172.67	5.00	243.00	0.00	0.00	0.40	70%			
125	D	704869.36	738184.30	5.00	243.00	0.00	0.00	0.40	70%			
126	D	704818.32	738203.73	5.00	255.00	0.00	0.00	0.40	70%			
127	D	704798.19	738210.09	5.00	255.00	0.00	0.00	0.40	70%			
128	D	704772.13	738217.33	5.00	252.00	0.00	0.00	0.40	70%			
129	D	704742.02	738226.21	5.00	254.00	0.00	0.00	0.40	70%			
130	D	704707.61	738236.32	5.00	251.00	0.00	0.00	0.40	70%			
131	D	704681.22	738243.89	5.00	253.00	0.00	0.00	0.40	70%			
132	D	704624.76	738259.38	5.00	253.00	0.00	0.00	0.40	70%			
133	D	704597.34	738267.61	5.00	249.00	0.00	0.00	0.40	70%			
134	D	704575.21	738281.63	6.00	241.00	0.00	0.00	0.40	70%			
135	A	704549.09	738288.36	6.00	254.00	0.00	0.00	0.40	100%			
136	A	704519.71	738297.51	6.00	257.00	0.00	0.00	0.40	100%			
137	A	704483.88	738336.07	6.00	204.00	0.00	0.00	0.40	100%			
138	A	704493.11	738315.69	6.00	210.00	0.00	0.00	0.40	100%			
147	A	704169.08	738423.71	6.00	271.00	0.00	0.00	0.40	100%			
148	A	704142.22	738418.72	6.00	276.00	0.00	0.00	0.40	100%			
149	A	704103.87	738418.62	6.00	259.00	0.00	0.00	0.40	100%			
150	A	704071.21	738423.51	6.00	260.00	0.00	0.00	0.40	100%			
151	F	704043.54	738419.33	6.00	333.00	0.00	0.00	0.40	100%			
152	B	707848.46	737932.08	1.00	94.00	0.00	0.00	0.10	100%			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Dimmed to	Target X	Target Y	Target Z
153	B	707839.88	737933.22	1.00	67.00	0.00	0.00	0.10	100%			
154	B	707832.21	737936.25	1.00	63.00	0.00	0.00	0.10	100%			
155	B	707824.77	737939.77	1.00	66.00	0.00	0.00	0.10	100%			
156	B	707830.55	737941.30	1.00	249.00	0.00	0.00	0.10	100%			
157	B	707837.42	737938.04	1.00	251.00	0.00	0.00	0.10	100%			
158	B	707845.01	737935.84	1.00	260.00	0.00	0.00	0.10	100%			
159	E	704186.93	738421.75	5.00	262.00	0.00	0.00	0.40	50%			
160	E	704215.08	738417.54	5.00	262.00	0.00	0.00	0.40	50%			
161	E	704233.47	738411.75	5.00	253.00	0.00	0.00	0.40	50%			
162	E	704256.41	738403.48	5.00	258.00	0.00	0.00	0.40	50%			
163	E	704281.92	738397.14	5.00	253.00	0.00	0.00	0.40	50%			
164	E	704301.71	738388.82	5.00	253.00	0.00	0.00	0.40	50%			
165	E	704325.99	738382.80	5.00	256.00	0.00	0.00	0.40	50%			
166	E	704345.73	738377.15	5.00	253.00	0.00	0.00	0.40	50%			
167	E	704368.50	738370.95	5.00	253.00	0.00	0.00	0.40	50%			
168	E	704391.35	738364.91	5.00	253.00	0.00	0.00	0.40	50%			
170	E	704451.22	738349.79	5.00	260.00	0.00	0.00	0.40	50%			
171	E	704534.41	738334.42	5.00	227.00	0.00	0.00	0.40	50%			
172	E	704484.20	738348.14	5.00	271.00	0.00	0.00	0.40	50%			
173	E	704520.94	738347.39	5.00	264.00	0.00	0.00	0.40	50%			
166	D	704842.67	738194.65	5.00	249.00	0.00	0.00	0.40	70%			
167	D	704653.65	738251.78	5.00	252.00	0.00	0.00	0.40	70%			
168	E	704566.73	738321.08	5.00	251.00	0.00	0.00	0.40	50%			
169	E	704281.48	738386.47	5.00	74.00	0.00	0.00	0.40	50%			
170	E	704420.83	738357.45	5.00	261.00	0.00	0.00	0.40	50%			
170	E	704551.41	738326.10	5.00	251.00	0.00	0.00	0.40	50%			
171	E	704504.63	738345.72	5.00	264.00	0.00	0.00	0.40	50%			
172	G	708713.96	738166.65	9.00	15.00	0.00	0.00	0.40	100%			
173	G	708710.72	738197.24	9.00	208.00	0.00	0.00	0.40	100%			
174	G	708735.41	738148.95	9.00	208.00	0.00	0.00	0.40	100%			
175	F	702678.38	736831.61	9.00	193.00	0.00	0.00	0.40	100%			
176	F	702673.57	736821.15	9.00	15.00	0.00	0.00	0.40	100%			
177	C	703761.40	738232.44	6.00	234.00	0.00	0.00	0.40	100%			
178	C	703787.39	738203.37	6.00	213.00	0.00	0.00	0.40	100%			
179	C	703743.06	738242.13	6.00	239.00	0.00	0.00	0.40	100%			

Horizontal Illuminance (lux)

Grid 1



Results

Eav	5.97
Emin	1.22
Emax	21.95
Emin/Emax	0.06
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 2



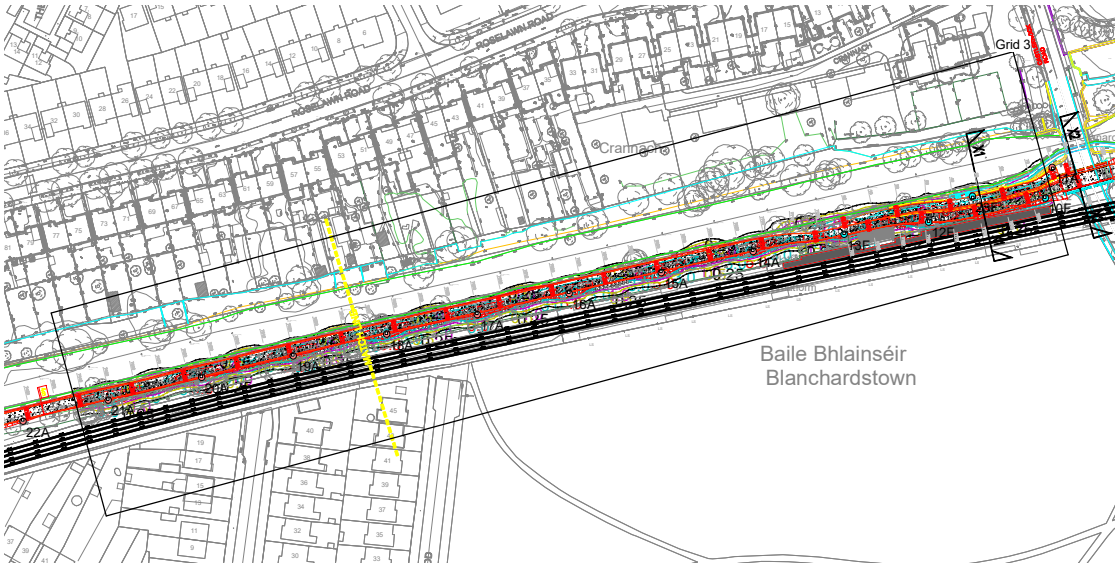
Results

Eav	5.82
Emin	1.16
Emax	14.32
Emin/Emax	0.08
Emin/Eav	0.20

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Horizontal Illuminance (lux)

Grid 3

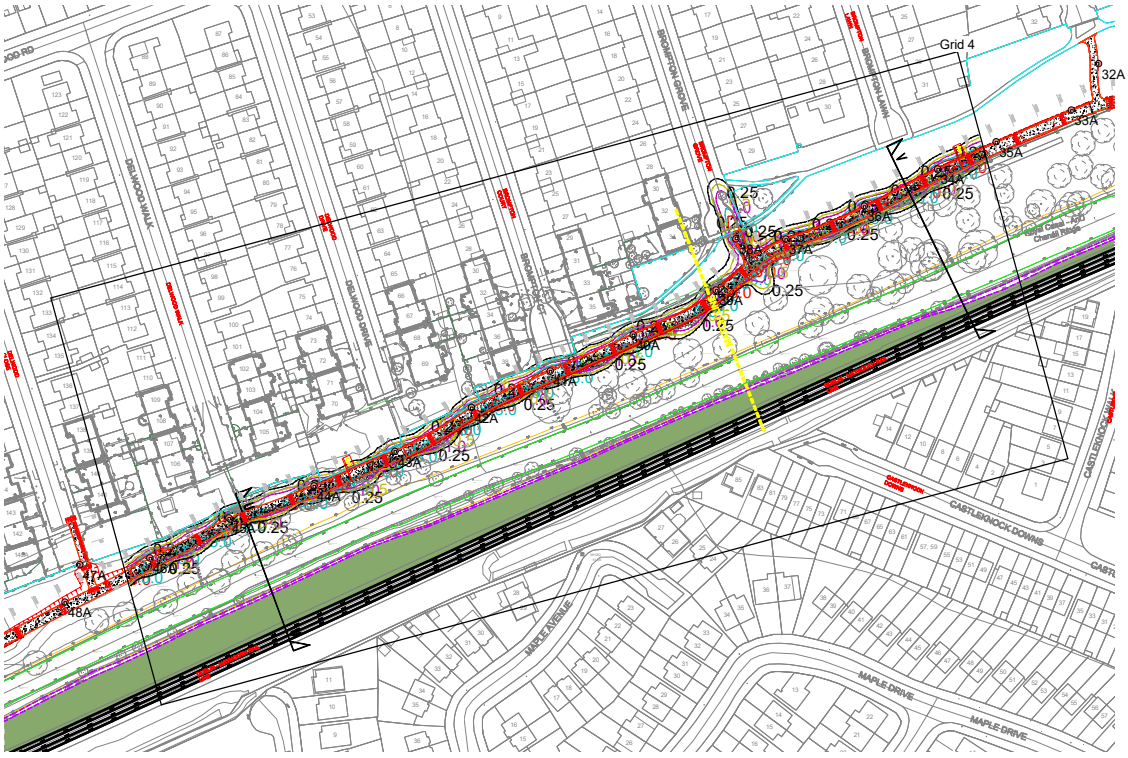


Results

Eav	5.79
Emin	1.13
Emax	15.99
Emin/Emax	0.07
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 4



Results

Eav	5.60
Emin	1.10
Emax	14.06
Emin/Emax	0.08
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 5



Results

Eav	5.46
Emin	1.08
Emax	14.13
Emin/Emax	0.08
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 6

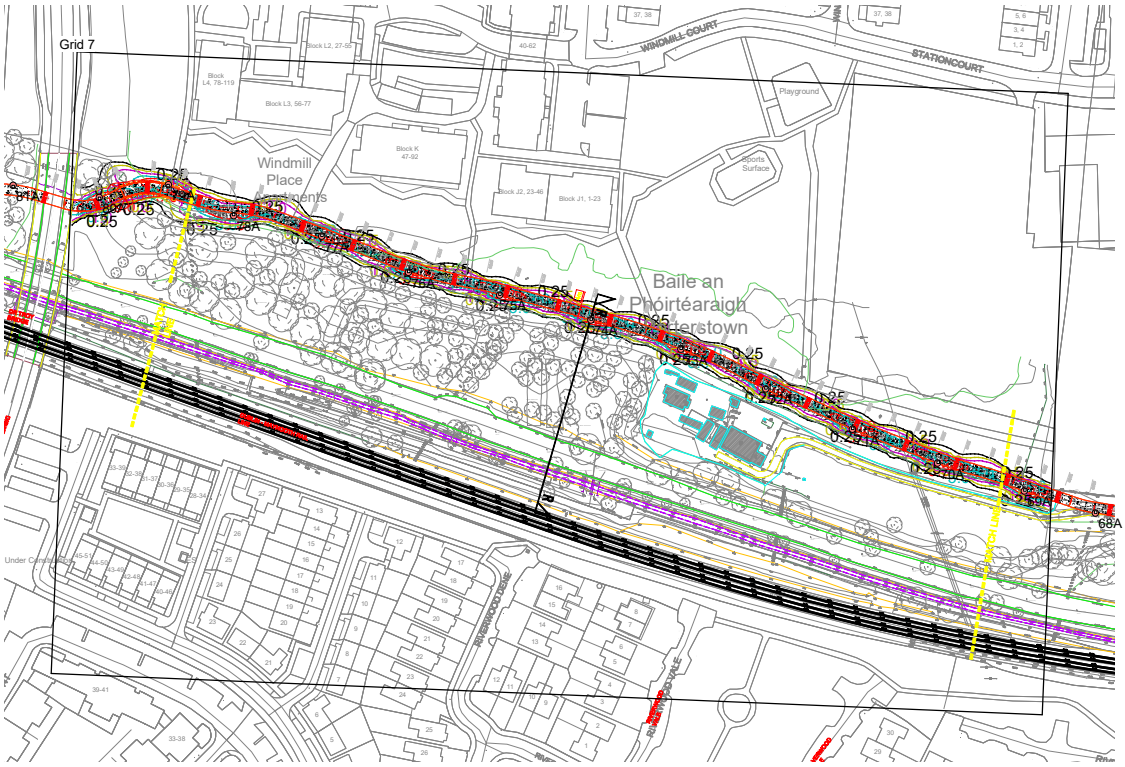


Results

Eav	5.64
Emin	1.10
Emax	14.23
Emin/Emax	0.08
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 7



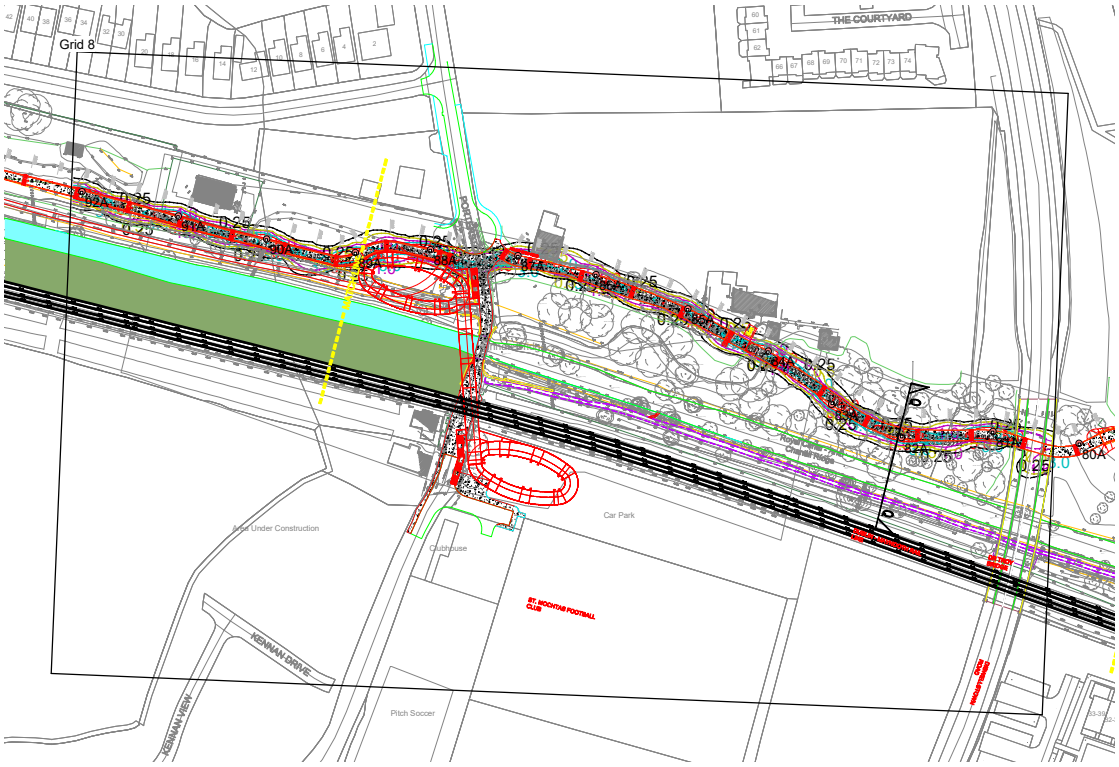
Results

Eav	5.64
Emin	1.13
Emax	14.37
Emin/Emax	0.08
Emin/Eav	0.20

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Horizontal Illuminance (lux)

Grid 8

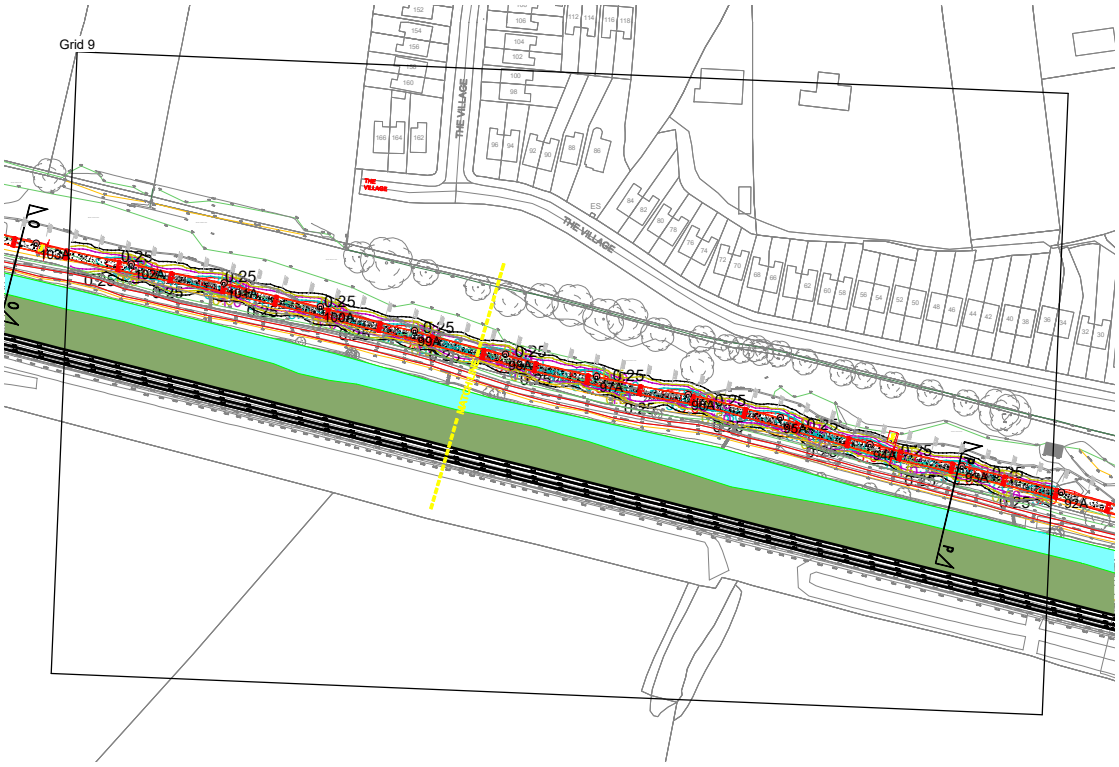


Results

Eav	5.89
Emin	1.16
Emax	14.27
Emin/Emax	0.08
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 9

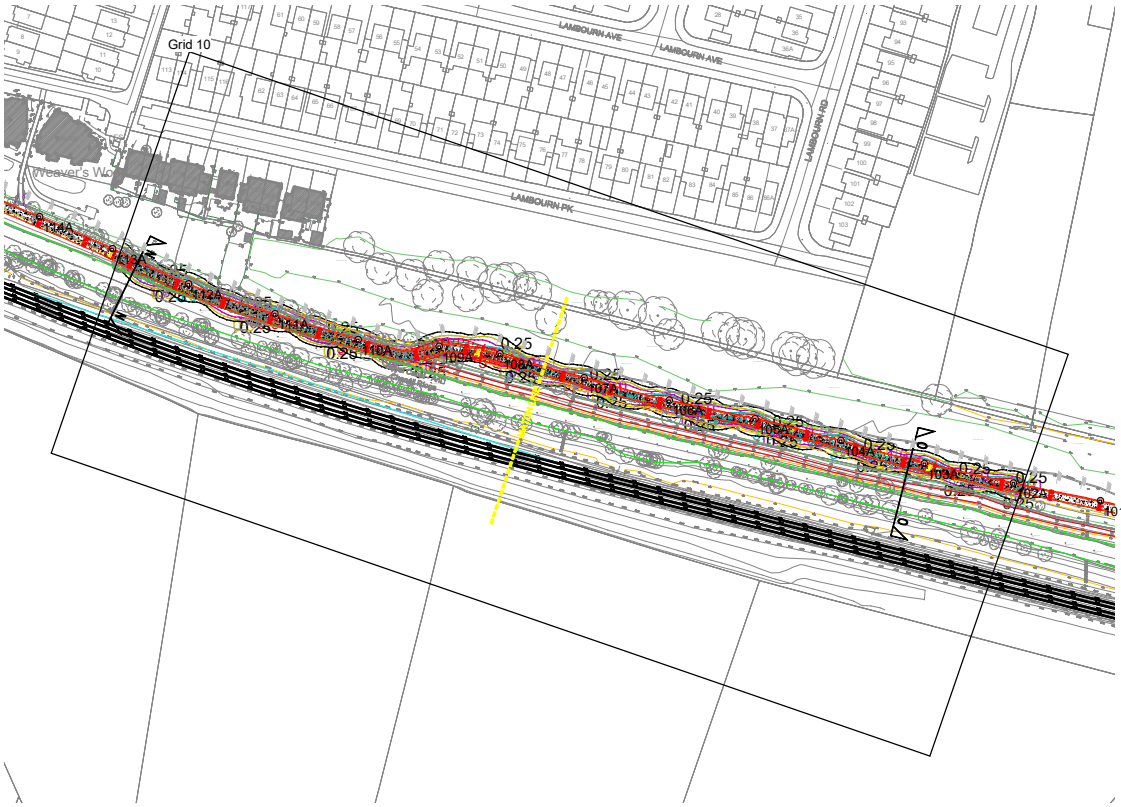


Results

Eav	5.79
Emin	1.70
Emax	14.18
Emin/Emax	0.12
Emin/Eav	0.29

Horizontal Illuminance (lux)

Grid 10



Results

Eav	6.00
Emin	1.27
Emax	14.12
Emin/Emax	0.09
Emin/Eav	0.21

Horizontal Illuminance (lux)

Grid 11

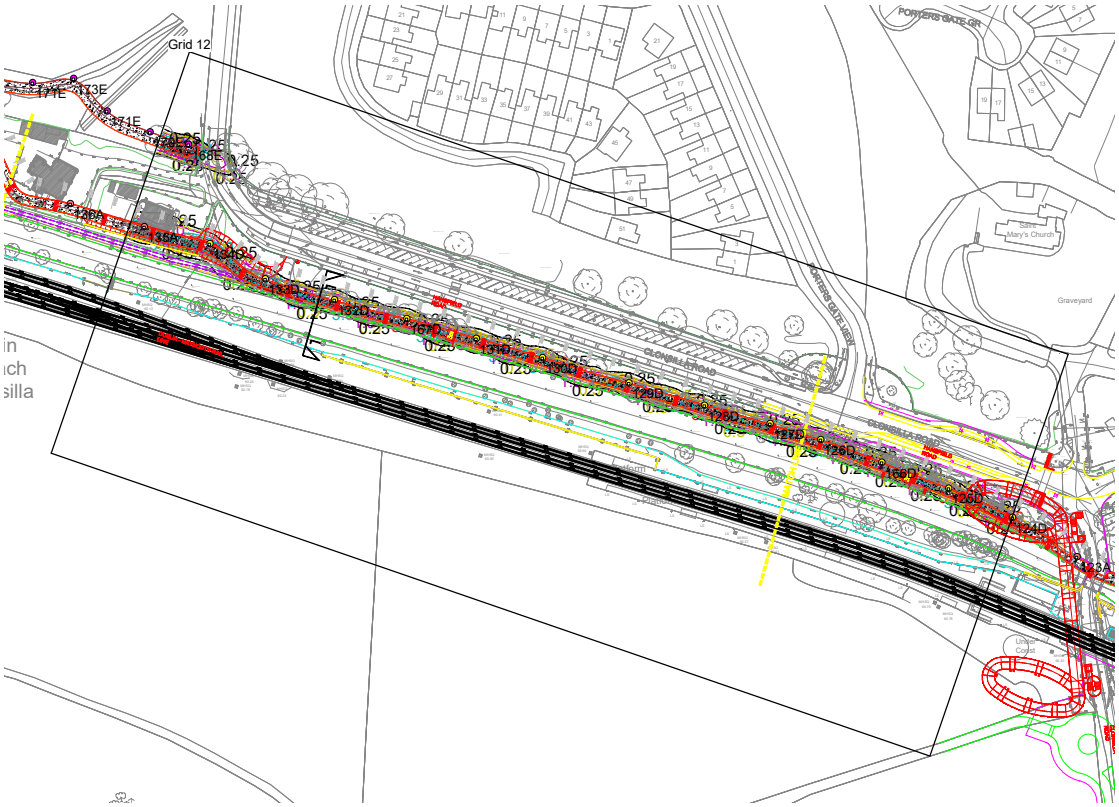


Results

Eav	5.60
Emin	1.13
Emax	14.13
Emin/Emax	0.08
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 12

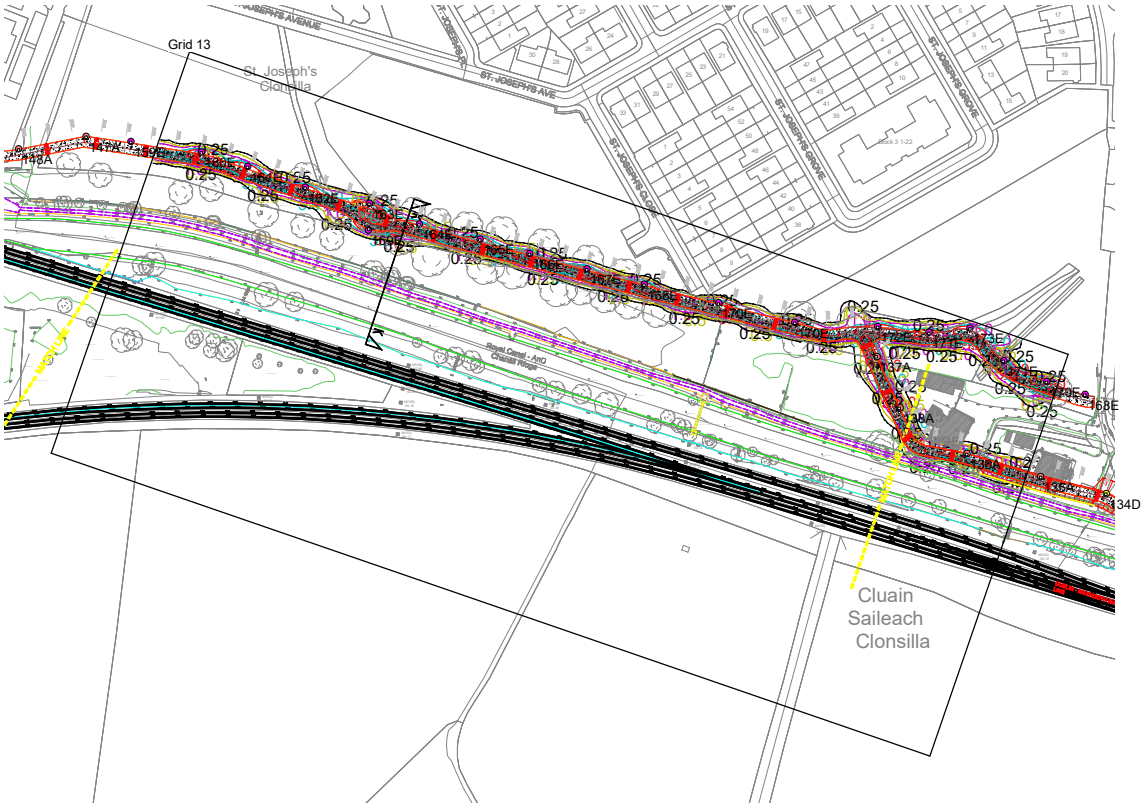


Results

Eav	5.37
Emin	1.06
Emax	14.38
Emin/Emax	0.07
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 13



Results

Eav	4.96
Emin	0.97
Emax	14.67
Emin/Emax	0.07
Emin/Eav	0.20

Horizontal Illuminance (lux)

Grid 14

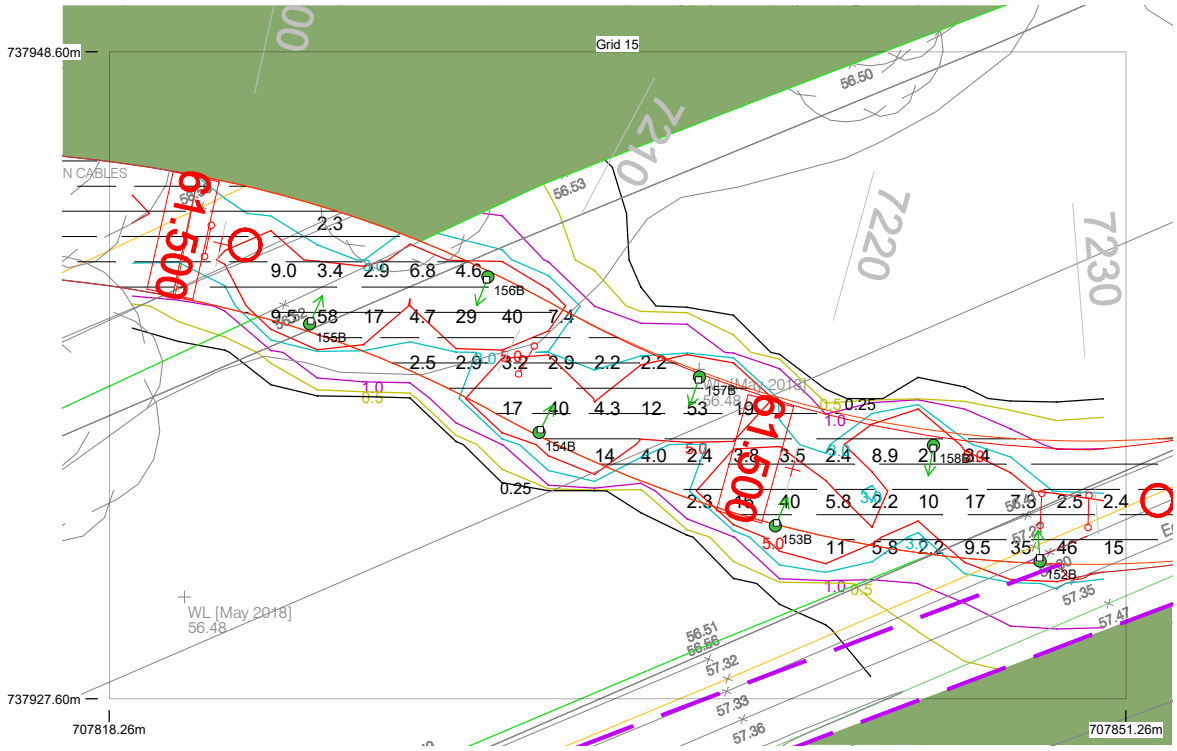


Results

Eav	5.58
Emin	1.20
Emax	14.27
Emin/Emax	0.08
Emin/Eav	0.21

Horizontal Illuminance (lux)

Grid 15

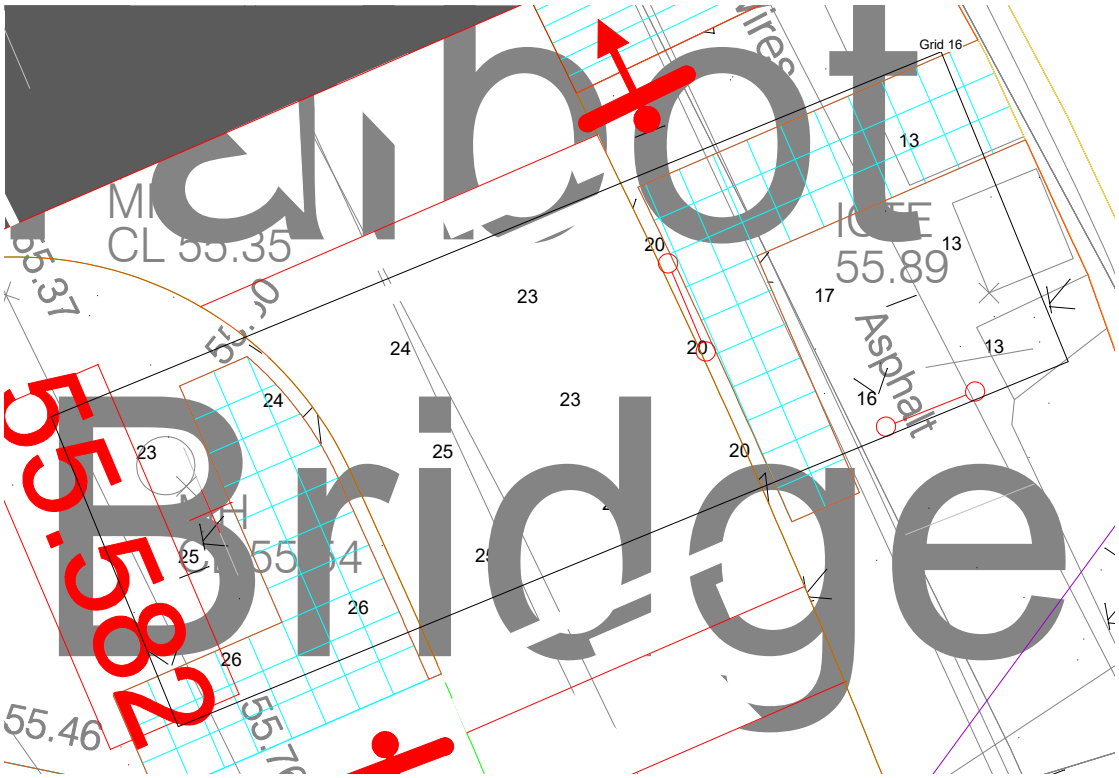


Results

Eav	12.74
Emin	2.19
Emax	58.49
Emin/Emax	0.04
Emin/Eav	0.17

Horizontal Illuminance (lux)

Grid 16

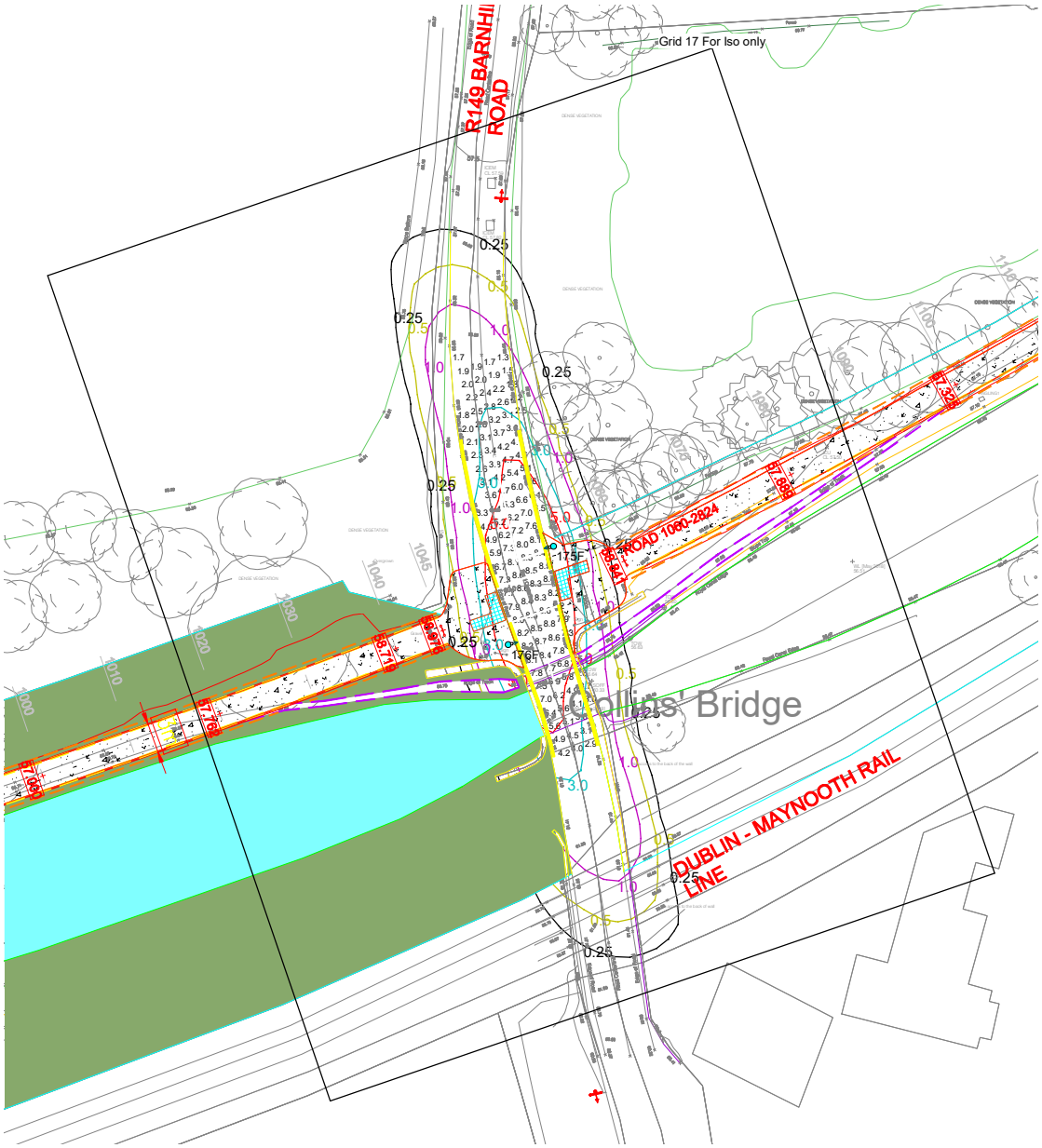


Results

Eav	21.12
Emin	13.06
Emax	26.49
Emin/Emax	0.49
Emin/Eav	0.62

Horizontal Illuminance (lux)

Grid 17 For Iso only

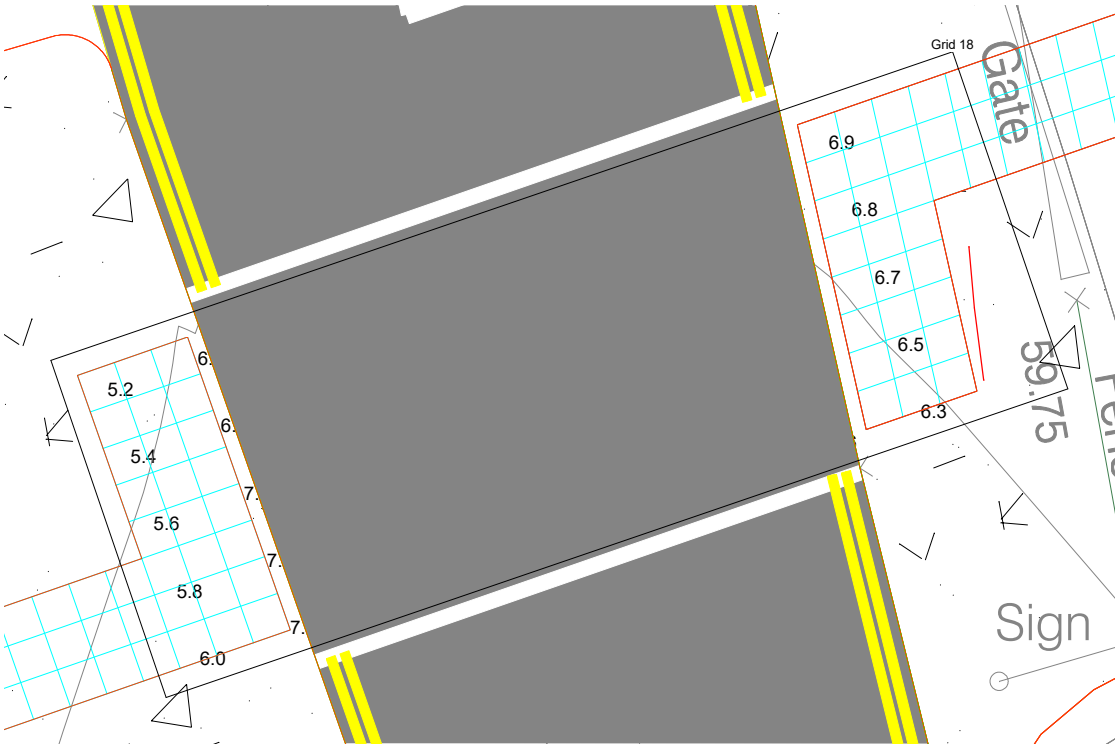


Results

Eav	5.36
Emin	1.32
Emax	8.83
Emin/Emax	0.15
Emin/Eav	0.25

Horizontal Illuminance (lux)

Grid 18

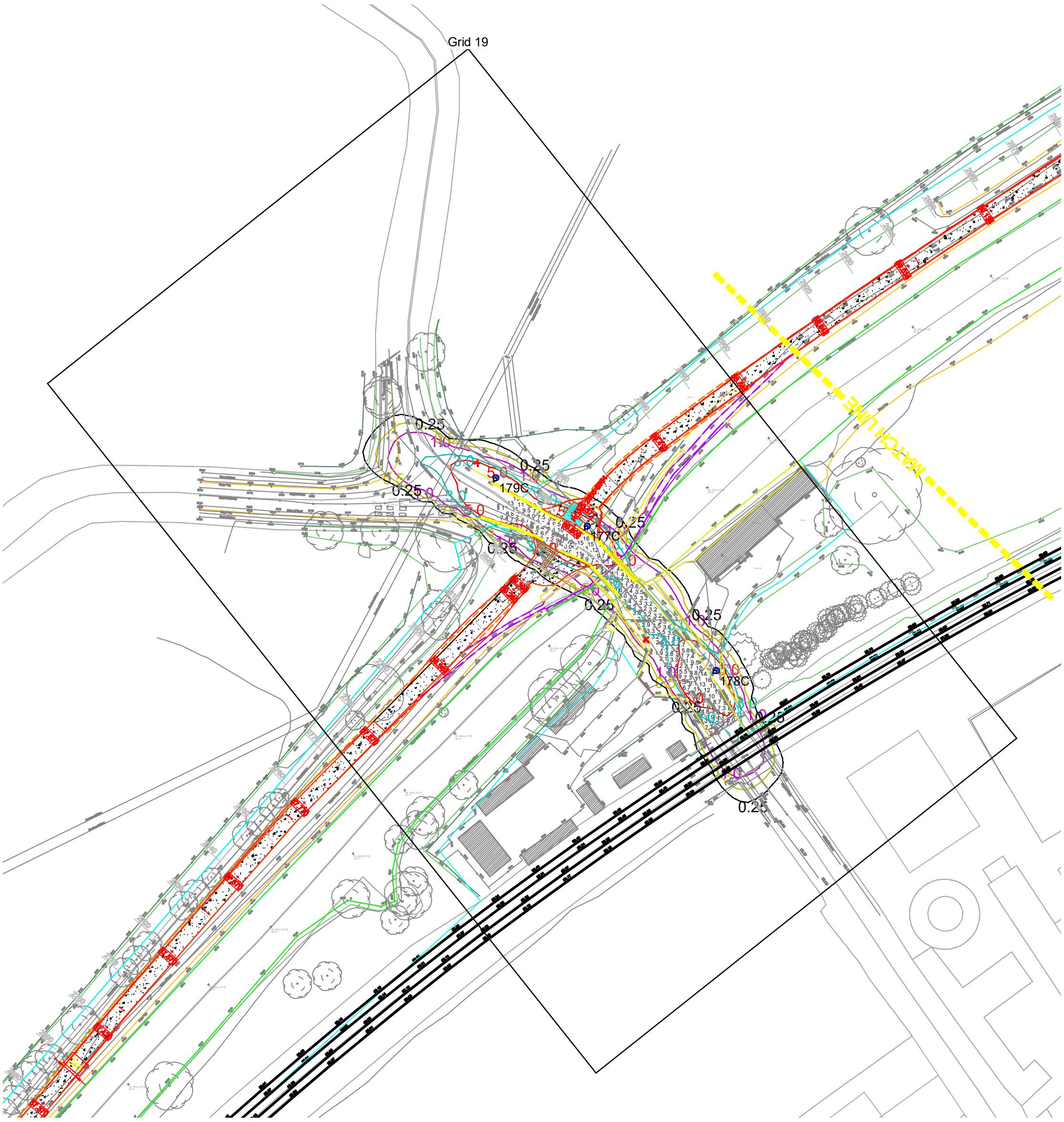


Results

Eav	7.64
Emin	5.21
Emax	8.64
Emin/Emax	0.60
Emin/Eav	0.68

Horizontal Illuminance (lux)

Grid 19



Results

Eav	6.86
Emin	1.93
Emax	16.13
Emin/Emax	0.12
Emin/Eav	0.28

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Horizontal Illuminance (lux)

Grid 20



Results

Eav	10.09
Emin	4.66
Emax	15.47
Emin/Emax	0.30
Emin/Eav	0.46

DATE: **11 August 2026**

DESIGNER: **Alex Naper**

PROJECT No: **SES 08322-01**

PROJECT NAME: **Royal Canal Urban Greenway**

Underbridge at CH7820.

Ceiling height at 2.7m.

Illuminance levels as per EN13201-2:2015 Category P1 achieved.

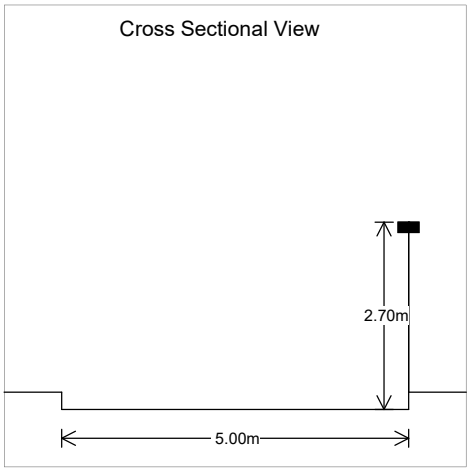
Roadway Lighting Report

PREPARED BY:

Sabre Electrical Services Ltd.
Unit 11,
Bellview Industrial Estate,
Tolka Valley Road,
Dublin 11
D11 VN59
Phone Number: 01 8110875
Contact: Alex Naper or Robbie Wilson
eMail: design@sabrelighting.ie or robbie@sabrelighting.ie

Roadway Report Summary

Layout



Road Data

Calculation Grid	2015:EN13201 Illuminance
Width (m)	5.00
No. of Lanes	2
Road Surface	C2
Q0	0.07
Left Footpath(m)	0.00
Right Footpath(m)	0.00

Main Lighting

Column Data

Configuration	Single Sided Right
Spacing (m)	10.00
Height (m)	2.70
Tilt (deg)	45.00
Setback (m)	0.00
Outreach (m)	0.00
Overhang (m)	0.00

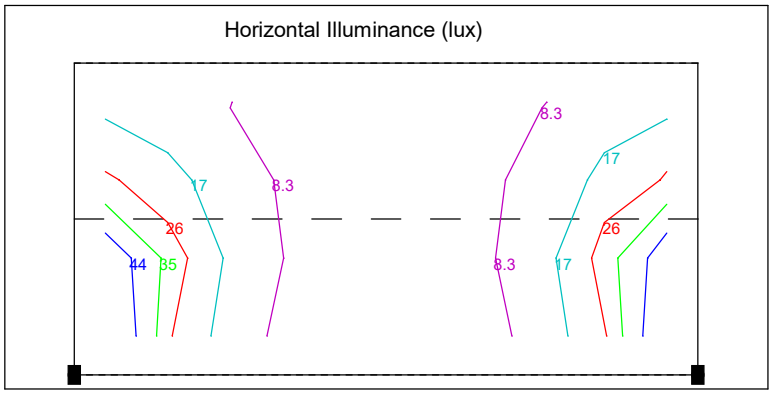
Luminaire Data

Supplier	Design Plan
Type	Tuscan
Lamp(s)	LED
LampFlux(klm)/Colour	1.85 3000/80
File Name	TUA-2-1800W-X_GTUA-2-1800W-X.ldt
Maintenance Factor	0.75
Lum. Int. Class	None

Results

Main

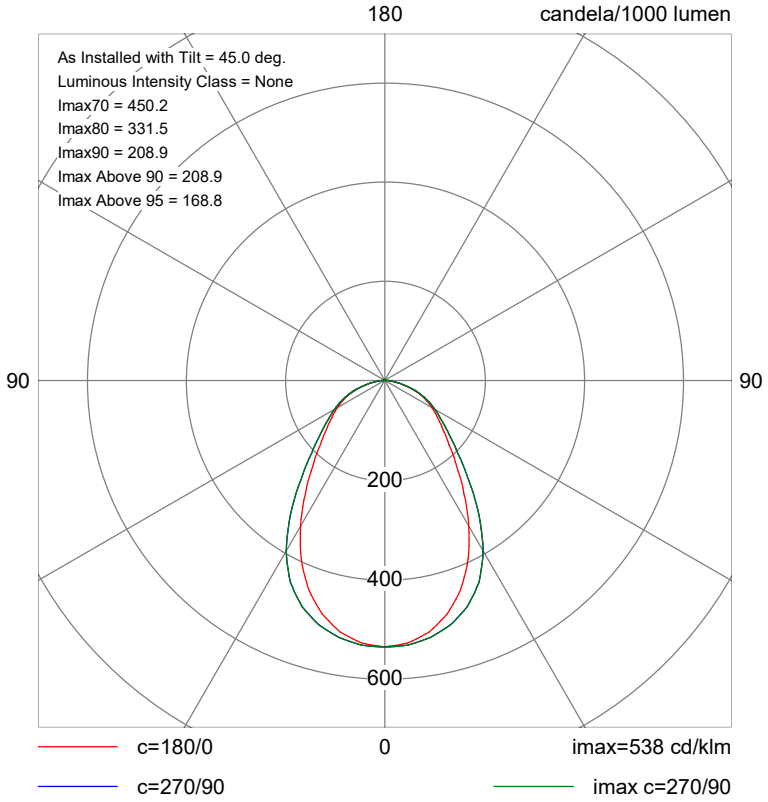
Eav	16.41
Emin	3.77
Emax	57.93
Emin/Emax	0.07
Emin/Eav	0.23



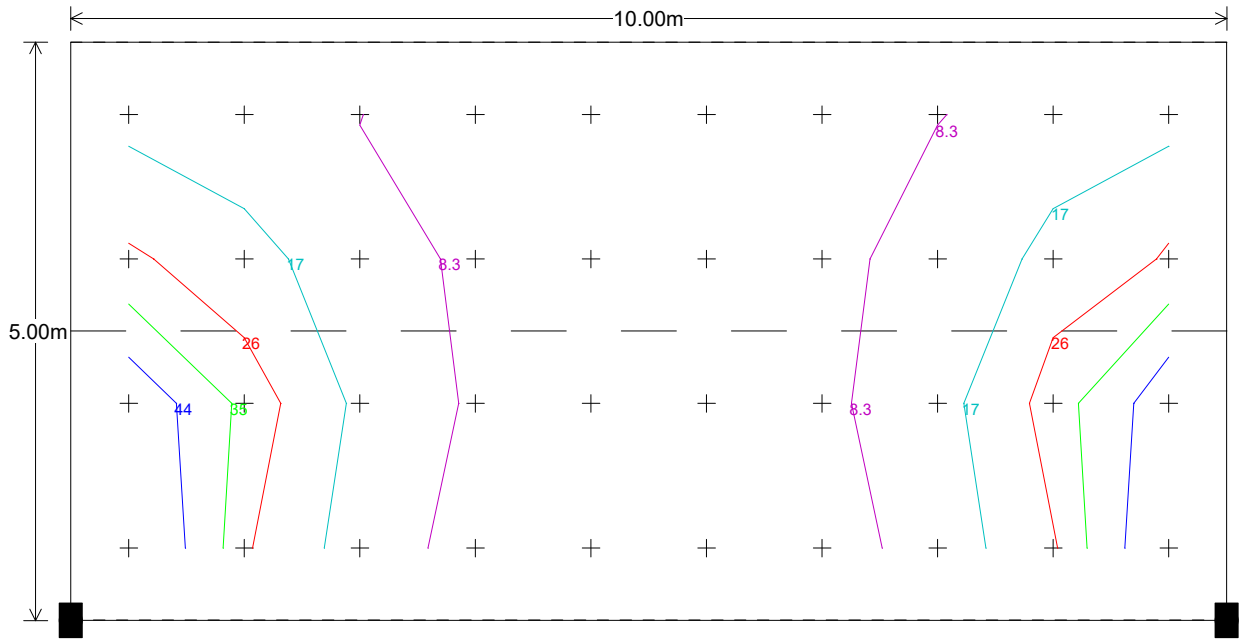
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Polar Diagram

Main Luminaire Tuscan



Horizontal Illuminance (lux)

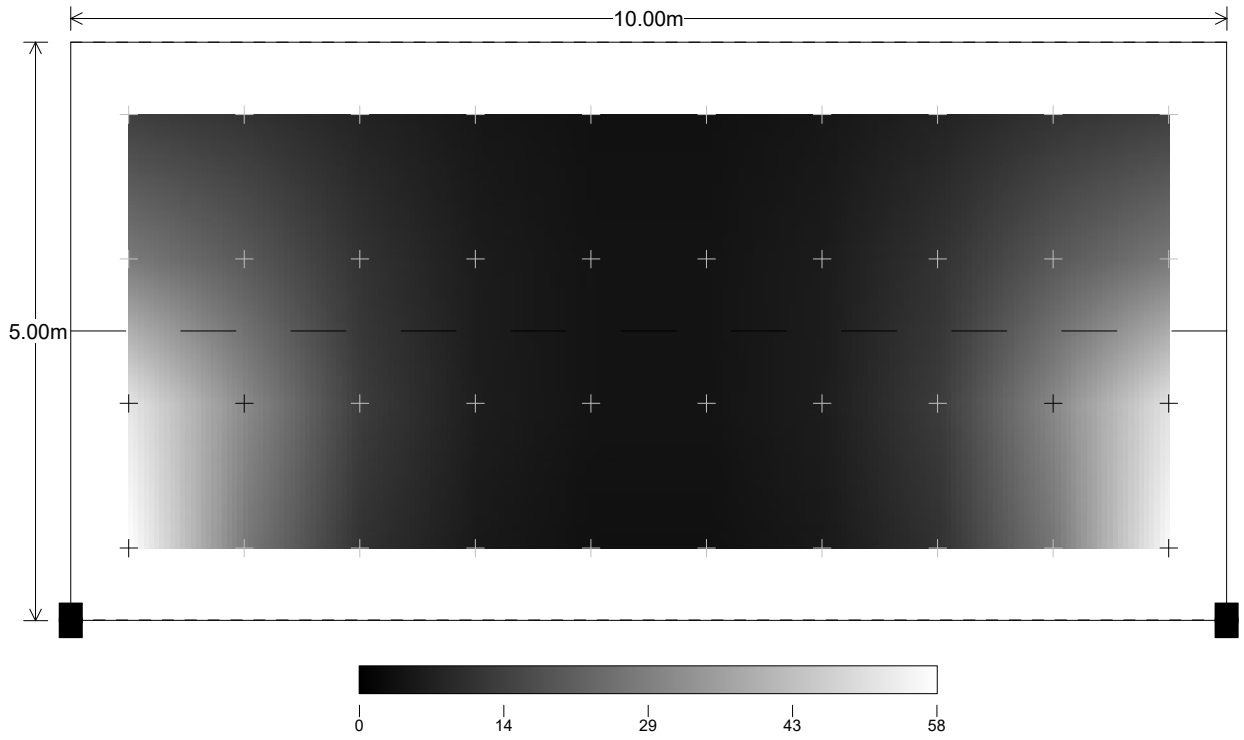


Main Results

Eav	16.41
Emin	3.77
Emax	57.93
Emin/Emax	0.07
Emin/Eav	0.23

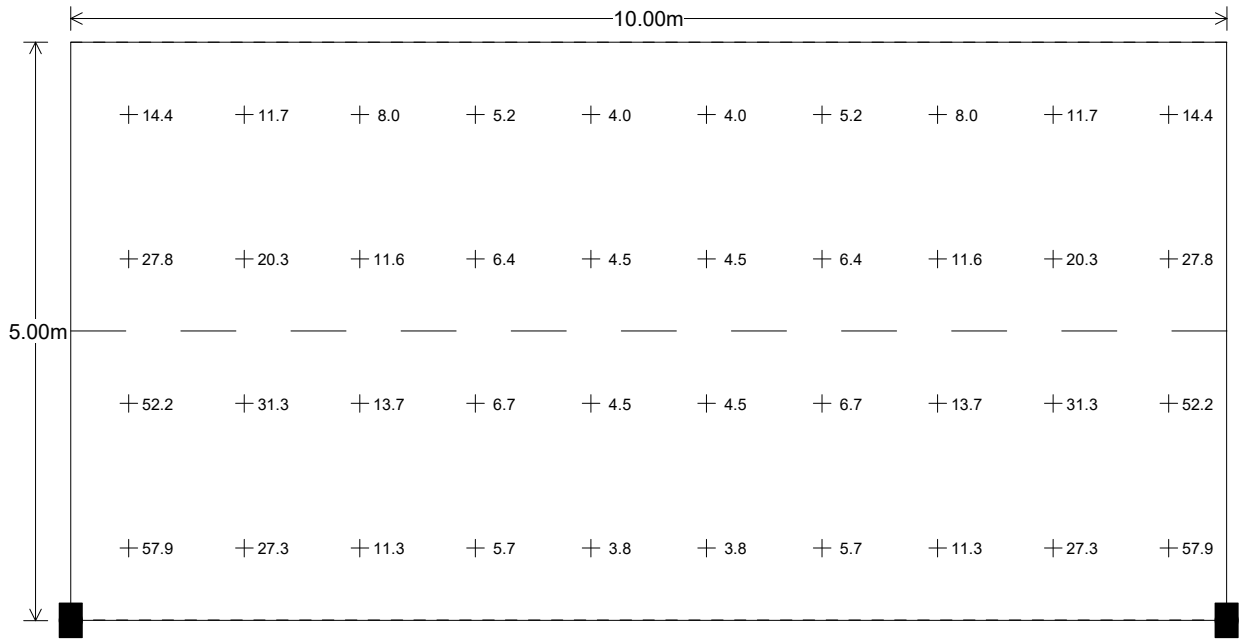
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Horizontal Illuminance (lux)



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Horizontal Illuminance (lux)



975068482B

ELECTRICAL SERVICES LTD
Specialist Contractors
PUBLIC LIGHTING – FLOODLIGHTING – SPORTS LIGHTING – DUCT PROVING

UNIT 11 BELLEVUE INDUSTRIAL ESTATE, FINGLAS DUBLIN 11. PH: 01 8110875 graham@sabrelighting.ie

Royal Canal Urban Greenway Lighting Design Process and Considerations

Project Brief:

Brief: Provide a Public Lighting layout along the section of the Royal Canal greenway (Hansfield to the Old Navan Road (Talbot Bridge)) meeting Fingal County Councils' Public lighting specification whilst minimising negative ecological impact to the areas immediately adjacent.

No lighting is proposed along the Hansfield Railway Bridge to Kildare/Fingal County Boundary section.

Design methodology:

The Greenway was designated as being ecologically sensitive largely due to the presents of bats using the canal as a feeding ground or a commuting route. From an ecological point the preferred option was for no lighting however this conflicted with the requirement for the provision of a safer environment and the encouragement of use of the greenway. A compromise between all interested parties was reached; this was a warm white colour temperature selected, the addition of louvres fitted to the luminaires to minimise light spill onto the canal and the addition of an intelligent motion detection and control system ensuring only occupied sections of the greenway to be achieving full designed to lux levels.

Due to the potential low foot fall and the more rural nature of the Hansfield Railway Bridge to Kildare/Fingal County Boundary section of the greenway public lighting was not justified and as such not proposed.

The lighting class was selected as pre the methodology of EN13201-1:2014 and in conjunction with Fingal County Councils' Public lighting specification.

EN13201-2:2015 Category P4 was selected for the greenway when occupied. . When the sections of the Greenway are unoccupied the lighting to automatically dim to achieve EN13201-2:2015 Category P6

Bollard lighting was considered however was subsequently ruled out due to identified safety concerns including the potential for trip hazards and electrical safety resulting from vandalism. In addition, concerns were raised regarding the increased risk of vandalism and the additional ongoing maintenance associated with bollards. On this basis, Fingal County Council did not support the inclusion of bollard lighting in the proposed scheme.

2700K LEDs were selected as these are the warmest colour temperature LEDs acceptable to Fingal County Council at time of design. Cooler LEDs were considered, however it was determined the increased energy efficiency benefit did not outweigh the potential additional negative ecological impact. It is accepted that warmer colour temperature LEDs have less negative ecological impact due to lower amounts of light in the blue spectrum emitted by them.

All proposed luminaires were selected on their optical and energy performance as well at their robustness.

To achieve the required lux levels on the greenway the lighting configuration was carefully designed to achieve recommended illuminance levels whilst minimising light spill. This was achieved by a combination of optimised column height, luminaire Wattage, optical setting and column location. All luminaires proposed have high performance optics designed to get the light onto the target area thus minimising spill light. The Upward Light Ratio (ULR) is 0%. The colour

temperature of the LEDs are 2700K. Additionally louvres are fitted as required to further minimise the amount spill light. The lighting calculation takes into account the effect of any louvres proposed.

The layout was reviewed and adjustments made as required until a satisfactory solution was achieved for all interested parties.

Section between CH 3750 – CH4160 was advised as being most critical for good light control due to the proximity of the greenway to the canal. To minimise light spill onto this section of the canal column height was reduced.

At CH7200 the greenway crosses the canal, to achieve compliant lux levels on the bridge without light spill onto the canal the bridge was lit via a LED module that fits into the handrail of the bridge. Due to the low mounting height and the bridge acting as a barrier minimal light spill expected onto the canal. The LED modules are to be electrical class III (Extra low voltage).

Lighting Layout:
Proposed Luminaire:

- Greenway section – Urbis Axia 2.1 fitted with 2700K colour temperature LEDs. Front, rear or front & rear louvres available as retrofittable option. Impact resistance rating of IK10 and Ingress Protection rating of IP66.
- Compatible with an intelligent motion control management system.
- Canal bridge crossing Urbis Alinea lighting module to be mounted in to the bridge handrail. Impact resistance rating of IK10 and Ingress Protection rating of IP66.
- All luminaires have a design life of 25 years (100,000h LED & driver burn life).

Intelligent motion control and management system.
When the sections of the Greenway are unoccupied the lighting to automatically dim to achieve EN13201-2:2015 Category P6, when the sections of the Greenway are occupied EN13201-2:2015 P4 to be achieved. This to be controlled via an integrated intelligent motion control management system. The fade up and down times, length of time at full power and lighting levels are all programmable and can be controlled/changed remotely if required.

Lighting levels and light Spill:
The target design lighting categories were achieved for all sections. Column positions, luminaire mounting height and full technical details of the luminaires is detailed on the lighting layouts and lighting calculation report.
The extents of light spill with EN13201-2:2015 category P4 achieved are demonstrated on our lighting layout, 0.25, 0.5, 1.0, 3.0 & 5.0 lux lines are detailed.

Figure 1 below details the calculated light spill for a sample section of the proposed greenway way.

Figure 2 details the louvres that in conjunction with specified optics enable the control of light minimising light spill. The 40 degree front cutoff generated by the louvres limits the any light directly forward from the luminaire by 1.15 times the luminaire mounting height, for a 6m column this is approximately 6.9m and 5.75m for a 5m column.

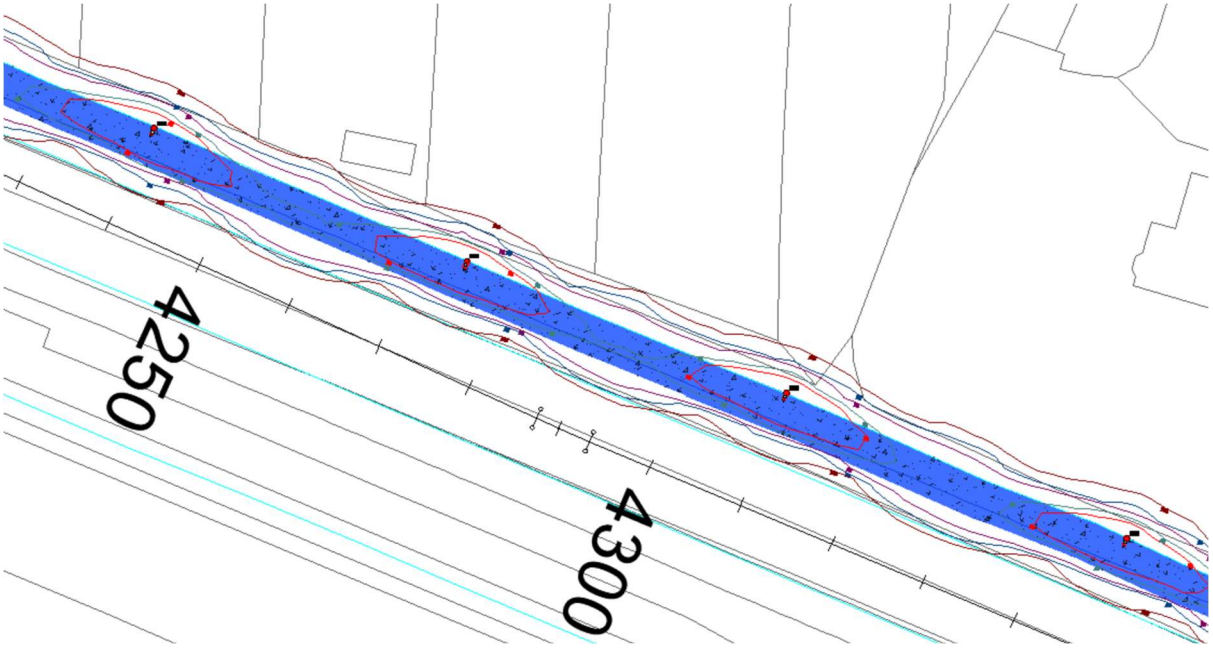


Figure 1: Calculated horizontal light spill demonstrated, 0.25, 0.5, 1.0, 3.0 & 5.0 lux lines detailed.

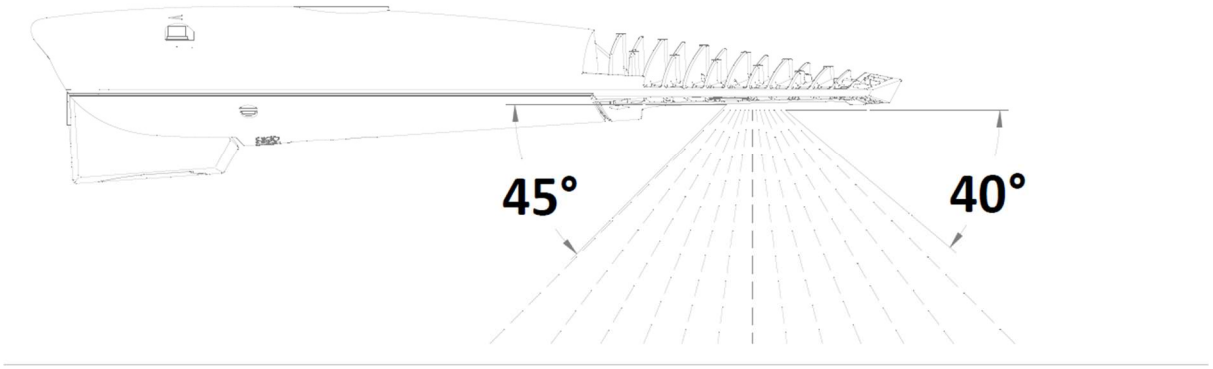


Figure 2: Details of the louvres and cut off angles.