

**DATE:** 27 June 2022  
**DESIGNER:** Alex Naper  
**PROJECT No:** SES 09121 Rev D  
**PROJECT NAME:** Barnhill Residential Development



Client: Alanna Homes Ltd & Alcove Ireland Four Ltd

Grids 3, 6 & 12.

Residential area designed in accordance with EN13201-2:2015 Category P4.

Access roads designed in accordance with EN13201-2:2015 Category P3.

Step sections designed in accordance with I.S.EN17210-2021 with illuminance levels as per the recommendations of BS8300-1:2018 Table 5 Stairways and ramps (open) in the external environment.

Rev A: Client name updated.

Rev B: Revised site layout.

Rev C: Updated as per comments.

Rev D: Updated site layout.

## **Outdoor Lighting Report**

**PREPARED BY:** Sabre Electrical Services Ltd.  
Unit 11,  
Bellview Industrial Estate,  
Tolka Valley Road,  
Dublin 11  
Phone Number: 01 8110875  
Contact: Graham Sheehan  
eMail: graham@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	184403.83	1002576.87	235.30	298.00	117.65	149.00
2	Grid 2	184582.41	1002776.52	235.30	169.17	117.65	84.58
3	Grid 3	184478.63	1002918.51	364.38	332.64	1.50	1.50
4	Grid 4	184858.67	1002936.49	282.67	374.00	141.33	187.00
5	Grid 5	184575.81	1002705.94	309.86	298.00	154.93	149.00
6	Grid 6	184671.36	1003054.36	63.00	163.00	1.50	1.50
7	Grid 7	184867.94	1002809.80	165.00	298.00	82.50	149.00
8	Grid 8	184637.63	1002616.66	283.05	169.17	141.53	84.58
9	Grid 9	184315.18	1002755.06	131.64	190.00	65.82	95.00
10	Grid 10	184341.72	1003018.38	123.00	260.70	61.50	130.35
11	Grid 11	184181.78	1002792.73	135.00	375.26	67.50	187.63
12	Grid 12	184724.06	1003228.03	3.07	6.33	1.02	0.25

### Luminaires

#### Luminaire A Data

Supplier	C U Phosco
Type	E950-28-P4A-727-C550-14W
Lamp(s)	727N
Lamp Flux (klm)	2.03
File Name	E950-28-P4A-727-C0550-14W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	659.3, 183.1, 0.3
No. in Project	64

#### Luminaire B Data

Supplier	C U Phosco
Type	E950-28-P4A-727-C350-10W
Lamp(s)	727N
Lamp Flux (klm)	1.33
File Name	E950-28-P4A-727-C0350-10W.ies
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	659.3, 183.1, 0.3
No. in Project	5



#### Luminaire C Data

Supplier	C U Phosco
Type	P863-128-R2E-730-W3-375-49W
Lamp(s)	730SS
Lamp Flux (klm)	6.92
File Name	P863-128-R2E-730-W3-375-49W.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	463.7, 84.3, 0.0
No. in Project	4

#### Luminaire E Data

Supplier	C U Phosco
Type	E950-28-R3A-727-C350-10W
Lamp(s)	727N
Lamp Flux (klm)	1.36
File Name	E950-28-R3A-727-C0350-10W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	716.7, 30.5, 0.3
No. in Project	68

## Luminaires

### Luminaire G Data

Supplier	C U Phosco
Type	E950-28-F2A-727-C550-14W
Lamp(s)	727N
Lamp Flux (klm)	2.06
File Name	E950-28-F2A-727-C0550-14W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	623.6, 113.9, 0.3
No. in Project	1

### Luminaire H Data



Supplier	C U Phosco
Type	P863-128-P3-740-W5-350-46W
Lamp(s)	740SS
Lamp Flux (klm)	6.80
File Name	P863-128-P3-740-W5-350-46W.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	343.1, 133.7, 0.7
No. in Project	3

### Luminaire I Data

Supplier	C U Phosco
Type	E950-28-R3A-727-C350-10W
Lamp(s)	727N
Lamp Flux (klm)	1.36
File Name	E950-28-R3A-727-C0350-10W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	716.7, 30.5, 0.3
No. in Project	1

### Luminaire J Data

Supplier	C U Phosco
Type	E950-28-P4A-727-C550-14W
Lamp(s)	727N
Lamp Flux (klm)	2.03
File Name	E950-28-P4A-727-C0550-14W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	659.3, 183.1, 0.3
No. in Project	4

### Luminaire K Data

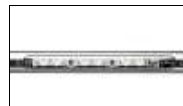


Supplier	C U Phosco
Type	P863-128-R2E-730-W3-375-49W
Lamp(s)	730SS
Lamp Flux (klm)	6.92
File Name	P863-128-R2E-730-W3-375-49W.ies
Maintenance Factor	0.87
Imax70,80,90(cd/klm)	463.7, 84.3, 0.0
No. in Project	7

### Luminaire L Data

Supplier	C U Phosco
Type	E950-28-P4A-727-C350-10W
Lamp(s)	727N
Lamp Flux (klm)	1.33
File Name	E950-28-P4A-727-C0350-10W.ies
Maintenance Factor	0.85
Imax70,80,90(cd/klm)	659.3, 183.1, 0.3
No. in Project	1

### Luminaire N Data



Supplier	Urbis Schreder
Type	ALINEA Handrail 5121 - 3 LED 350mA WW Profiled Poly Clear, Sm
Lamp(s)	3 LEDs WW
Lamp Flux (klm)	0.37
File Name	ALINEA Handrail 5121 3 LED 350mA WW Profiled Poly Clear Smooth WO7314.ltd
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	230.6, 22.2, 4.1
No. in Project	5

### Luminaire R Data

Supplier	C U Phosco
Type	E950-28-A2A-727-C350-10W
Lamp(s)	727N
Lamp Flux (klm)	1.22
File Name	E950-28-A2A-727-C0350-10W.ies
Maintenance Factor	0.83
Imax70,80,90(cd/klm)	470.3, 22.7, 0.9
No. in Project	1

**Layout**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	184654.92	1003272.65	6.00	268.00	0.00	0.00	0.40			
2	A	184717.02	1003277.00	6.00	270.00	0.00	0.00	0.40			
3	A	184684.35	1003265.59	6.00	87.00	0.00	0.00	0.40			
4	E	184450.22	1003233.38	5.00	343.00	0.00	0.00	0.40			
5	E	184463.99	1003266.16	5.00	232.00	0.00	0.00	0.40			
6	E	184445.37	1003260.14	5.00	38.00	0.00	0.00	0.40			
7	E	184458.67	1003255.13	5.00	316.00	0.00	0.00	0.40			
8	E	184515.82	1003151.52	5.00	81.00	0.00	0.00	0.40			
9	E	184639.58	1002985.17	5.00	281.00	0.00	0.00	0.40			
10	E	184603.62	1002974.28	5.00	281.00	0.00	0.00	0.40			
11	E	184667.54	1003047.00	5.00	110.00	0.00	0.00	0.40			
12	B	184686.14	1003002.01	5.00	292.00	0.00	0.00	0.40			
13	B	184713.53	1003011.87	5.00	284.00	0.00	0.00	0.40			
14	A	184658.33	1003235.02	6.00	183.00	0.00	0.00	0.40			
15	B	184533.66	1003122.41	6.00	15.00	0.00	0.00	0.40			
16	E	184626.82	1003131.32	5.00	271.00	0.00	0.00	0.40			
17	A	184637.38	1003082.16	6.00	199.00	0.00	0.00	0.40			
18	E	184715.86	1003252.05	5.00	18.00	0.00	0.00	0.40			
19	E	184726.83	1003257.95	5.00	186.00	0.00	0.00	0.40			
20	E	184739.13	1003272.24	5.00	99.00	0.00	0.00	0.40			
21	L	184489.02	1002906.43	5.00	345.00	0.00	0.00	0.40			
22	B	184490.82	1002933.41	5.00	350.00	0.00	0.00	0.40			
23	N	184723.80	1003228.85	1.00	13.00	0.00	0.00	0.10			
24	N	184723.31	1003231.32	1.00	11.00	0.00	0.00	0.10			
42	J	184510.47	1002907.92	6.00	282.00	0.00	0.00	0.40			
55	K	184547.88	1002900.61	8.00	197.00	0.00	0.00	0.40			
56	K	184524.41	1002928.81	8.00	0.00	0.00	0.00	0.40			
57	K	184548.77	1002933.94	8.00	105.00	0.00	0.00	0.40			
58	C	184564.44	1002958.50	8.00	288.00	0.00	0.00	0.40			
59	K	184598.64	1002949.55	8.00	113.00	0.00	0.00	0.40			
60	A	184585.32	1002976.64	6.00	21.00	0.00	0.00	0.40			
61	C	184627.26	1002974.37	8.00	287.00	0.00	0.00	0.40			
62	K	184654.79	1002966.90	8.00	106.00	0.00	0.00	0.40			
63	K	184687.38	1002990.98	8.00	295.00	0.00	0.00	0.40			
64	K	184728.94	1002997.36	8.00	129.00	0.00	0.00	0.40			
65	C	184733.16	1003031.68	8.00	198.00	0.00	0.00	0.40			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
66	C	184712.12	1003052.86	8.00	25.00	0.00	0.00	0.40			
67	H	184743.04	1003056.20	8.00	292.00	0.00	0.00	0.40			
68	H	184779.26	1003063.39	8.00	106.00	0.00	0.00	0.40			
69	H	184806.46	1003083.35	8.00	295.00	0.00	0.00	0.40			
71	A	184700.38	1003077.24	6.00	26.00	0.00	0.00	0.40			
91	J	184668.79	1002960.13	6.00	22.00	0.00	0.00	0.40			
94	E	184505.41	1002940.82	5.00	288.00	0.00	0.00	0.40			
95	E	184507.69	1002959.59	5.00	209.00	0.00	0.00	0.40			
96	E	184498.76	1002986.89	5.00	194.00	0.00	0.00	0.40			
97	E	184501.65	1003002.08	5.00	113.00	0.00	0.00	0.40			
98	E	184492.28	1003012.49	5.00	197.00	0.00	0.00	0.40			
99	E	184487.08	1003039.15	5.00	192.00	0.00	0.00	0.40			
100	E	184480.92	1003069.53	5.00	194.00	0.00	0.00	0.40			
101	E	184473.06	1003093.33	5.00	199.00	0.00	0.00	0.40			
102	E	184464.77	1003120.84	5.00	195.00	0.00	0.00	0.40			
103	E	184460.10	1003147.93	5.00	175.00	0.00	0.00	0.40			
104	E	184475.76	1003146.94	5.00	273.00	0.00	0.00	0.40			
105	E	184503.11	1003145.47	5.00	261.00	0.00	0.00	0.40			
106	E	184525.16	1003133.89	5.00	68.00	0.00	0.00	0.40			
107	E	184547.21	1003125.03	5.00	83.00	0.00	0.00	0.40			
108	A	184560.70	1003110.80	6.00	198.00	0.00	0.00	0.40			
109	E	184592.64	1003134.87	5.00	108.00	0.00	0.00	0.40			
110	E	184564.10	1003141.83	5.00	179.00	0.00	0.00	0.40			
111	E	184571.49	1003125.94	5.00	112.00	0.00	0.00	0.40			
112	E	184619.85	1003142.26	5.00	263.00	0.00	0.00	0.40			
113	E	184643.25	1003134.90	5.00	246.00	0.00	0.00	0.40			
114	E	184669.04	1003123.77	5.00	248.00	0.00	0.00	0.40			
115	E	184649.10	1003143.99	5.00	294.00	0.00	0.00	0.40			
116	E	184609.87	1003155.71	5.00	0.00	0.00	0.00	0.40			
118	E	184641.62	1003123.93	5.00	106.00	0.00	0.00	0.40			
120	A	184591.25	1002997.37	6.00	203.00	0.00	0.00	0.40			
121	A	184572.74	1003017.62	6.00	15.00	0.00	0.00	0.40			
122	A	184554.92	1003015.16	6.00	107.00	0.00	0.00	0.40			
123	A	184521.62	1003005.17	6.00	108.00	0.00	0.00	0.40			
124	E	184515.72	1002984.26	5.00	193.00	0.00	0.00	0.40			
125	E	184520.28	1002960.48	5.00	201.00	0.00	0.00	0.40			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
126	A	184590.19	1003026.21	6.00	105.00	0.00	0.00	0.40			
127	A	184616.21	1003034.06	6.00	105.00	0.00	0.00	0.40			
128	E	184633.31	1003045.90	5.00	288.00	0.00	0.00	0.40			
129	A	184655.25	1003042.23	6.00	199.00	0.00	0.00	0.40			
130	A	184654.32	1002994.38	6.00	20.00	0.00	0.00	0.40			
131	A	184643.71	1003024.64	6.00	19.00	0.00	0.00	0.40			
132	A	184632.70	1003057.40	6.00	23.00	0.00	0.00	0.40			
133	A	184628.97	1003108.59	6.00	202.00	0.00	0.00	0.40			
134	A	184605.44	1003099.45	6.00	110.00	0.00	0.00	0.40			
135	A	184577.73	1003090.96	6.00	109.00	0.00	0.00	0.40			
136	A	184550.70	1003082.73	6.00	109.00	0.00	0.00	0.40			
137	G	184488.18	1003070.62	6.00	22.00	0.00	0.00	0.40			
138	A	184503.02	1003084.24	6.00	283.00	0.00	0.00	0.40			
139	A	184524.96	1003074.89	6.00	113.00	0.00	0.00	0.40			
140	A	184540.32	1003102.48	6.00	17.00	0.00	0.00	0.40			
141	E	184522.88	1003110.01	5.00	108.00	0.00	0.00	0.40			
143	E	184496.02	1003121.23	5.00	16.00	0.00	0.00	0.40			
144	B	184518.99	1003122.42	5.00	341.00	0.00	0.00	0.40			
145	A	184565.98	1003039.62	6.00	21.00	0.00	0.00	0.40			
146	A	184557.38	1003068.12	6.00	16.00	0.00	0.00	0.40			
147	E	184503.06	1003026.30	5.00	202.00	0.00	0.00	0.40			
148	E	184495.21	1003051.93	5.00	195.00	0.00	0.00	0.40			
150	E	184658.55	1003061.22	5.00	293.00	0.00	0.00	0.40			
151	E	184692.61	1003055.95	5.00	111.00	0.00	0.00	0.40			
152	E	184687.25	1003072.10	5.00	293.00	0.00	0.00	0.40			
153	E	184514.60	1003162.54	5.00	338.00	0.00	0.00	0.40			
154	E	184441.25	1003205.24	5.00	351.00	0.00	0.00	0.40			
155	E	184450.07	1003171.56	5.00	17.00	0.00	0.00	0.40			
156	A	184649.68	1003168.40	6.00	106.00	0.00	0.00	0.40			
157	A	184618.33	1003166.83	6.00	83.00	0.00	0.00	0.40			
158	A	184587.30	1003164.17	6.00	108.00	0.00	0.00	0.40			
159	A	184554.09	1003156.81	6.00	92.00	0.00	0.00	0.40			
160	A	184521.98	1003165.62	6.00	66.00	0.00	0.00	0.40			
161	A	184490.55	1003171.43	6.00	86.00	0.00	0.00	0.40			
162	A	184461.75	1003176.91	6.00	77.00	0.00	0.00	0.40			
163	A	184457.79	1003201.15	6.00	177.00	0.00	0.00	0.40			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
164	A	184463.67	1003230.94	6.00	149.00	0.00	0.00	0.40			
165	A	184483.22	1003253.79	6.00	130.00	0.00	0.00	0.40			
166	A	184505.67	1003263.69	6.00	104.00	0.00	0.00	0.40			
167	A	184554.69	1003262.47	6.00	91.00	0.00	0.00	0.40			
168	A	184517.54	1003189.49	6.00	358.00	0.00	0.00	0.40			
169	A	184517.79	1003223.43	6.00	2.00	0.00	0.00	0.40			
170	A	184517.77	1003252.44	6.00	0.00	0.00	0.00	0.40			
171	A	184522.18	1003273.48	6.00	268.00	0.00	0.00	0.40			
172	A	184587.02	1003273.48	6.00	266.00	0.00	0.00	0.40			
173	A	184592.10	1003258.95	6.00	180.00	0.00	0.00	0.40			
174	A	184582.38	1003240.97	6.00	359.00	0.00	0.00	0.40			
175	A	184584.14	1003183.91	6.00	10.00	0.00	0.00	0.40			
176	A	184582.63	1003213.62	6.00	0.00	0.00	0.00	0.40			
177	A	184602.50	1003264.51	6.00	93.00	0.00	0.00	0.40			
178	A	184636.82	1003264.51	6.00	93.00	0.00	0.00	0.40			
179	A	184647.92	1003256.62	6.00	354.00	0.00	0.00	0.40			
180	A	184648.22	1003214.12	6.00	7.00	0.00	0.00	0.40			
181	A	184654.30	1003188.04	6.00	9.00	0.00	0.00	0.40			
182	A	184670.69	1003211.95	6.00	280.00	0.00	0.00	0.40			
183	A	184701.43	1003221.06	6.00	280.00	0.00	0.00	0.40			
184	A	184734.73	1003227.73	6.00	280.00	0.00	0.00	0.40			
185	J	184762.30	1003234.14	6.00	280.00	0.00	0.00	0.40			
186	E	184688.76	1003241.91	5.00	272.00	0.00	0.00	0.40			
187	E	184684.53	1003226.99	5.00	90.00	0.00	0.00	0.40			
188	E	184694.37	1003233.06	5.00	7.00	0.00	0.00	0.40			
190	E	184739.71	1003241.72	5.00	186.00	0.00	0.00	0.40			
191	E	184730.35	1003241.35	5.00	115.00	0.00	0.00	0.40			
194	A	184706.09	1003098.00	6.00	111.00	0.00	0.00	0.40			
195	A	184732.33	1003109.76	6.00	114.00	0.00	0.00	0.40			
196	A	184759.97	1003123.53	6.00	110.00	0.00	0.00	0.40			
197	J	184787.50	1003138.23	6.00	115.00	0.00	0.00	0.40			
198	E	184743.38	1003108.05	5.00	260.00	0.00	0.00	0.40			
199	E	184772.78	1003123.20	5.00	111.00	0.00	0.00	0.40			
200	I	184791.11	1003130.50	6.00	111.00	0.00	0.00	0.40			
201	E	184778.01	1003092.96	6.00	209.00	0.00	0.00	0.40			
202	E	184761.30	1003092.00	6.00	113.00	0.00	0.00	0.40			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
203	E	184718.91	1003100.29	5.00	113.00	0.00	0.00	0.40			
204	A	184741.79	1003073.21	6.00	28.00	0.00	0.00	0.40			
205	E	184504.06	1003096.69	5.00	13.00	0.00	0.00	0.40			
206	A	184662.47	1003010.15	6.00	200.00	0.00	0.00	0.40			
207	A	184684.26	1003114.94	6.00	16.00	0.00	0.00	0.40			
208	E	184704.24	1003110.29	5.00	209.00	0.00	0.00	0.40			
209	A	184674.08	1003138.77	6.00	24.00	0.00	0.00	0.40			
210	A	184663.65	1003162.83	6.00	19.00	0.00	0.00	0.40			
173	N	184722.72	1003233.49	1.00	11.00	0.00	0.00	0.10			
174	N	184725.77	1003233.59	1.00	196.00	0.00	0.00	0.10			
175	N	184726.61	1003230.09	1.00	196.00	0.00	0.00	0.10			
156	E	184749.09	1003113.16	5.00	113.00	0.00	0.00	0.40			
157	E	184761.36	1003112.98	5.00	170.00	0.00	0.00	0.40			
158	E	184748.01	1003095.06	5.00	170.00	0.00	0.00	0.40			
159	E	184764.90	1003105.16	5.00	266.00	0.00	0.00	0.40			
160	E	184715.55	1003078.77	5.00	198.00	0.00	0.00	0.40			
161	E	184680.87	1003016.19	5.00	288.00	0.00	0.00	0.40			
162	R	184686.56	1003027.02	5.00	16.00	0.00	0.00	0.40			
163	E	184676.01	1003030.22	5.00	197.00	0.00	0.00	0.40			
164	E	184679.97	1003039.17	5.00	306.00	0.00	0.00	0.40			



# Horizontal Illuminance (lux)

Grid 3

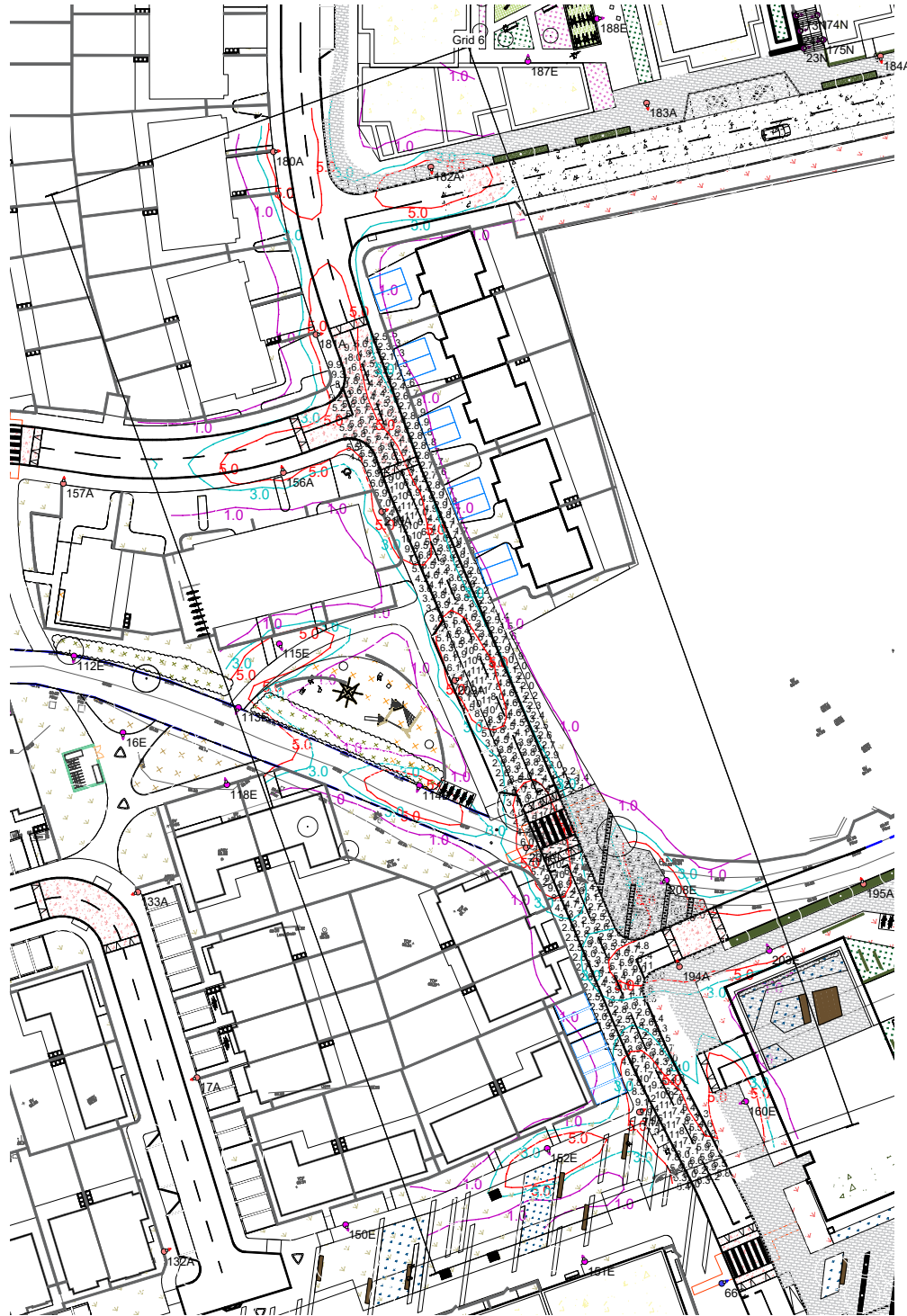


## Results

Eav	5.72
Emin	1.12
E <sub>max</sub>	21.14
E <sub>min</sub> /E <sub>max</sub>	0.05
E <sub>min</sub> /E <sub>av</sub>	0.20

## Horizontal Illuminance (lux)

Grid 6

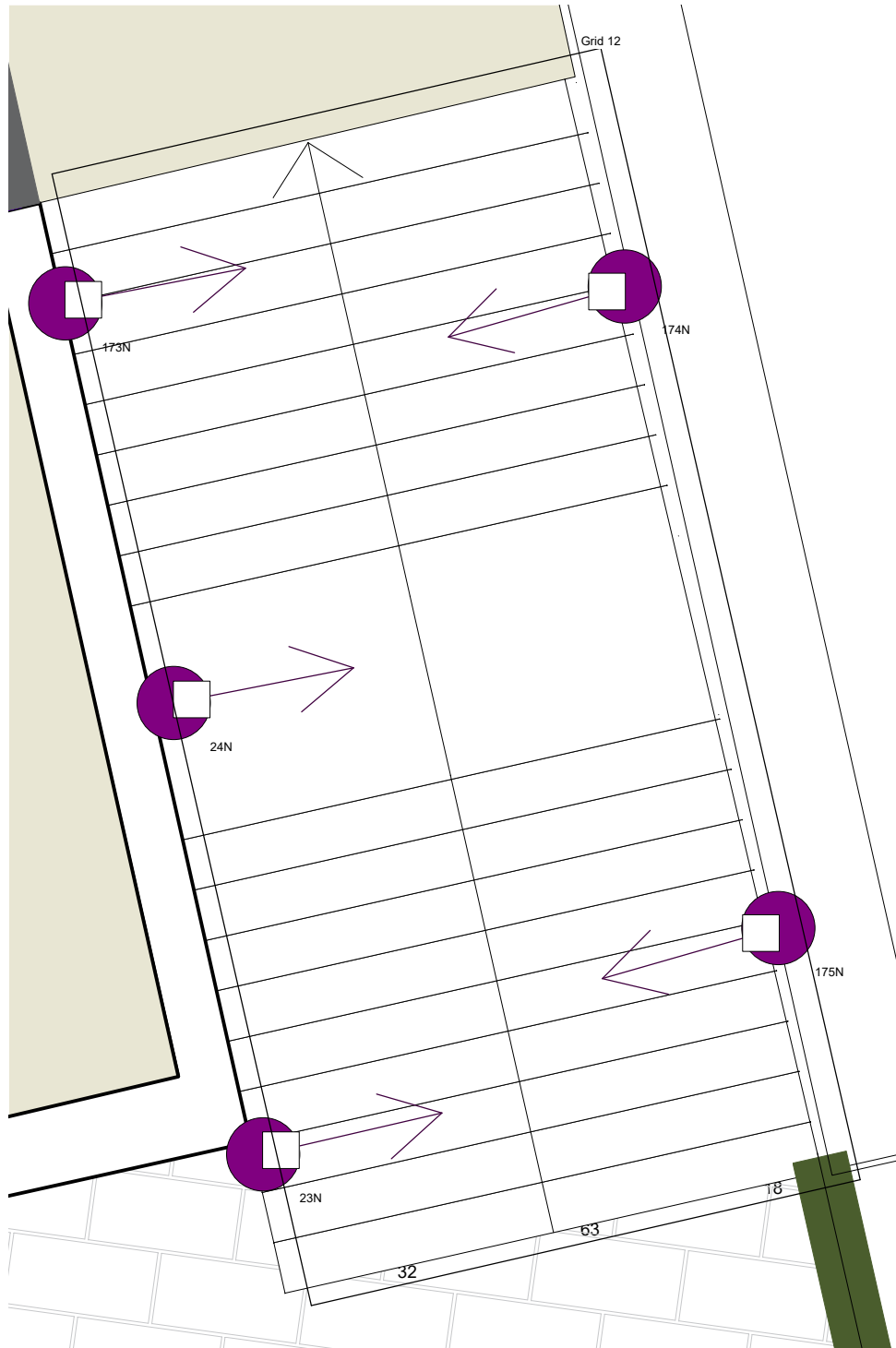


**Results**

Eav	5.25
Emin	1.26
Emax	17.88
Emin/Emax	0.07
Emin/Eav	0.24

## Horizontal Illuminance (lux)

Grid 12



### Results

Eav	52.44
Emin	15.79
E <sub>max</sub>	100.68
E <sub>min</sub> /E <sub>max</sub>	0.16
E <sub>min</sub> /E <sub>av</sub>	0.30