

**DATE:** 17 August 2022  
**DESIGNER:** James Molloy MILP  
**PROJECT No:** PL2189  
**PROJECT NAME:** Circular Road I4

**LIGHTING  
REALITY**

Design to BS EN 5489: 2020

Grid 1: Lighting Class P4  
Eav>5 Lux, Emin>1 Lux, UO>0.2

Grid 2: Lighting Class M4  
Eav>10 Lux, Emin>4 Lux, UO>0.4

Following consultation with Bat Ecologist latest revision specifies 2200K version of light types C and D mounted on reduced height 5M columns. This will help mitigate light spill into hedging at boundaries of estate.

## 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	275126.30	129983.15	297.75	355.37	1.50	1.50
2	Grid 2	275386.71	129834.14	240.74	391.65	1.42	1.57
3	Grid 3	275264.28	130310.63	302.03	400.22	1.50	1.60

### Luminaires

#### Luminaire A Data



Supplier	Philips
Type	BGP703 DW50
Lamp(s)	LED-HB 5.2S 730
Lamp Flux (klm)	10.50
File Name	Luma Gen2 Mini_BGP703_DW50_10500_40LED_5.2S_CLO_L90_730.ies
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	595.5, 51.0, 0.0
No. in Project	21

#### Luminaire B Data



Supplier	Philips
Type	BGP701 DW10
Lamp(s)	LED-HB 5.2S 730
Lamp Flux (klm)	2.80
File Name	Luma Gen2 Nano_BGP701_DW10_2800_20LED_5.2S_CLO_L90_730.ies
Maintenance Factor	0.76
Imax70,80,90(cd/klm)	438.8, 62.1, 0.0
No. in Project	86

#### Luminaire C Data



Supplier	Philips
Type	BGP701 DW10
Lamp(s)	LED-HB 5.2S 730
Lamp Flux (klm)	2.00
File Name	Luma Gen2 Nano_BGP701_DW10_2000_10LED_5.2S_CLO_L90_730.ies
Maintenance Factor	0.76
Imax70,80,90(cd/klm)	438.8, 62.1, 0.0
No. in Project	52

#### Luminaire D Data



Supplier	Philips
Type	BGP701 DM10
Lamp(s)	LED-HB 5.2S 730
Lamp Flux (klm)	2.40
File Name	Luma Gen2 Nano_BGP701_DM10_2400_10LED_5.2S_CLO_L90_730.ies
Maintenance Factor	0.84
Imax70,80,90(cd/klm)	523.4, 90.0, 0.0
No. in Project	4

### Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	275431.10	129870.80	10.00	131.00	0.00	0.00	1.00			
2	A	275431.08	129870.85	10.00	305.00	0.00	0.00	1.00			
3	A	275429.83	129903.17	10.00	339.00	0.00	0.00	0.30			
4	A	275442.57	129936.49	10.00	338.00	0.00	0.00	0.30			
5	A	275453.35	129963.29	10.00	332.00	0.00	0.00	0.30			
6	A	275472.86	129988.63	10.00	160.00	0.00	0.00	0.30			
8	A	275476.89	130028.42	10.00	338.00	0.00	0.00	0.30			
8	B	275453.27	129991.18	6.00	69.00	0.00	0.00	0.30			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
9	B	275425.69	130002.25	6.00	68.00	0.00	0.00	0.30			
10	B	275413.79	130024.82	6.00	205.00	0.00	0.00	0.30			
11	B	275397.31	130032.70	6.00	21.00	0.00	0.00	0.30			
12	B	275383.51	130052.26	6.00	288.00	0.00	0.00	0.30			
13	B	275371.07	130045.05	6.00	342.00	0.00	0.00	0.30			
14	B	275362.54	130023.57	6.00	342.00	0.00	0.00	0.30			
15	B	275378.21	130063.75	6.00	341.00	0.00	0.00	0.30			
16	B	275393.67	130067.27	6.00	180.00	0.00	0.00	0.30			
17	B	275354.02	130001.37	6.00	334.00	0.00	0.00	0.30			
18	B	275343.81	129976.74	6.00	316.00	0.00	0.00	0.30			
19	B	275340.58	129946.67	6.00	44.00	0.00	0.00	0.30			
20	B	275321.84	129963.43	6.00	40.00	0.00	0.00	0.30			
21	B	275360.20	129930.82	6.00	57.00	0.00	0.00	0.30			
22	B	275379.23	129932.35	6.00	144.00	0.00	0.00	0.30			
23	C	275347.93	129909.46	5.00	124.00	0.00	0.00	0.30			
25	B	275311.25	129991.29	6.00	224.00	0.00	0.00	0.30			
26	B	275290.58	129999.25	6.00	49.00	0.00	0.00	0.30			
27	B	275269.16	130028.35	6.00	38.00	0.00	0.00	0.30			
28	B	275254.14	130045.46	6.00	43.00	0.00	0.00	0.30			
29	B	275238.28	130054.78	6.00	36.00	0.00	0.00	0.30			
30	B	275294.75	130023.93	6.00	135.00	0.00	0.00	0.30			
31	B	275299.37	130045.73	6.00	337.00	0.00	0.00	0.30			
32	B	275312.77	130073.37	6.00	206.00	0.00	0.00	0.30			
33	B	275304.94	130087.12	6.00	209.00	0.00	0.00	0.30			
34	B	275280.04	130103.08	6.00	247.00	0.00	0.00	0.30			
35	B	275262.39	130112.22	6.00	152.00	0.00	0.00	0.30			
36	B	275270.14	130139.15	6.00	157.00	0.00	0.00	0.30			
37	B	275279.05	130162.07	6.00	161.00	0.00	0.00	0.30			
38	B	275298.96	130160.16	6.00	71.00	0.00	0.00	0.30			
39	B	275321.13	130151.56	6.00	69.00	0.00	0.00	0.30			
40	B	275348.44	130146.05	6.00	215.00	0.00	0.00	0.30			
41	B	275352.79	130122.61	6.00	27.00	0.00	0.00	0.30			
42	B	275366.95	130097.55	6.00	32.00	0.00	0.00	0.30			
43	B	275378.75	130076.49	6.00	30.00	0.00	0.00	0.30			
44	B	275432.59	130025.26	6.00	152.00	0.00	0.00	0.30			
45	B	275424.40	130042.36	6.00	255.00	0.00	0.00	0.30			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
46	B	275409.36	130056.81	6.00	333.00	0.00	0.00	0.30			
47	B	275420.90	130078.22	6.00	307.00	0.00	0.00	0.30			
48	B	275435.84	130090.63	6.00	156.00	0.00	0.00	0.30			
49	B	275444.97	130117.55	6.00	160.00	0.00	0.00	0.30			
50	B	275452.77	130160.01	6.00	338.00	0.00	0.00	0.30			
51	B	275452.67	130176.96	6.00	11.00	0.00	0.00	0.30			
52	B	275458.69	130205.79	6.00	149.00	0.00	0.00	0.30			
53	B	275434.31	130201.24	6.00	94.00	0.00	0.00	0.30			
54	B	275404.72	130198.95	6.00	96.00	0.00	0.00	0.30			
55	B	275380.64	130181.57	6.00	1.00	0.00	0.00	0.30			
56	B	275378.80	130165.86	6.00	336.00	0.00	0.00	0.30			
57	B	275368.13	130131.92	6.00	342.00	0.00	0.00	0.30			
58	B	275363.14	130196.20	6.00	99.00	0.00	0.00	0.30			
59	B	275343.82	130194.51	6.00	97.00	0.00	0.00	0.30			
60	B	275319.15	130199.48	6.00	68.00	0.00	0.00	0.30			
61	B	275297.48	130220.93	6.00	249.00	0.00	0.00	0.30			
62	B	275387.06	130211.93	6.00	181.00	0.00	0.00	0.30			
63	B	275385.10	130234.22	6.00	181.00	0.00	0.00	0.30			
64	B	275383.07	130256.52	6.00	180.00	0.00	0.00	0.30			
65	B	275348.68	130269.72	6.00	277.00	0.00	0.00	0.30			
66	B	275373.31	130270.81	6.00	275.00	0.00	0.00	0.30			
67	B	275321.86	130268.71	6.00	72.00	0.00	0.00	0.30			
68	B	275324.12	130296.13	6.00	155.00	0.00	0.00	0.30			
69	B	275395.52	130272.67	6.00	273.00	0.00	0.00	0.30			
70	B	275415.35	130274.38	6.00	279.00	0.00	0.00	0.30			
71	B	275452.34	130228.51	6.00	3.00	0.00	0.00	0.30			
72	B	275450.56	130251.12	6.00	0.00	0.00	0.00	0.30			
73	B	275456.16	130299.13	6.00	199.00	0.00	0.00	0.30			
74	D	275436.90	130323.45	5.00	21.00	0.00	0.00	0.30			
75	B	275420.28	130349.09	6.00	275.00	0.00	0.00	0.30			
76	B	275417.38	130330.44	6.00	95.00	0.00	0.00	0.30			
77	B	275386.96	130327.93	6.00	92.00	0.00	0.00	0.30			
78	B	275385.41	130346.02	6.00	276.00	0.00	0.00	0.30			
79	B	275358.41	130347.91	6.00	249.00	0.00	0.00	0.30			
80	B	275351.84	130330.97	6.00	60.00	0.00	0.00	0.30			
81	B	275334.36	130323.58	6.00	151.00	0.00	0.00	0.30			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
82	B	275345.90	130361.71	6.00	338.00	0.00	0.00	0.30			
83	B	275350.43	130387.32	6.00	2.00	0.00	0.00	0.30			
84	B	275369.52	130409.72	6.00	149.00	0.00	0.00	0.30			
85	B	275387.87	130424.55	6.00	90.00	0.00	0.00	0.30			
86	B	275412.38	130424.20	6.00	93.00	0.00	0.00	0.30			
87	D	275424.42	130415.48	5.00	0.00	0.00	0.00	0.30			
88	D	275424.12	130394.27	5.00	0.00	0.00	0.00	0.30			
89	D	275423.76	130369.49	5.00	353.00	0.00	0.00	0.30			
90	B	275382.81	130445.40	6.00	147.00	0.00	0.00	0.30			
91	B	275395.83	130464.55	6.00	149.00	0.00	0.00	0.30			
92	B	275403.78	130488.78	6.00	142.00	0.00	0.00	0.30			
93	B	275424.62	130499.39	6.00	133.00	0.00	0.00	0.30			
94	B	275427.78	130525.27	6.00	340.00	0.00	0.00	0.30			
95	B	275449.21	130270.53	6.00	99.00	0.00	0.00	0.30			
96	C	275217.07	130019.93	5.00	169.00	0.00	0.00	0.30			
97	C	275225.20	130047.39	5.00	169.00	0.00	0.00	0.30			
98	C	275231.49	130078.76	5.00	333.00	0.00	0.00	0.30			
99	C	275240.66	130104.09	5.00	356.00	0.00	0.00	0.30			
100	C	275248.55	130133.45	5.00	339.00	0.00	0.00	0.30			
101	C	275256.03	130162.02	5.00	331.00	0.00	0.00	0.30			
102	C	275269.37	130189.04	5.00	310.00	0.00	0.00	0.30			
103	C	275279.43	130212.67	5.00	332.00	0.00	0.00	0.30			
104	C	275286.74	130237.43	5.00	336.00	0.00	0.00	0.30			
105	C	275293.27	130256.84	5.00	334.00	0.00	0.00	0.30			
106	C	275303.54	130282.34	5.00	337.00	0.00	0.00	0.30			
107	C	275427.92	130058.54	5.00	152.00	0.00	0.00	0.30			
108	C	275392.79	130096.35	5.00	213.00	0.00	0.00	0.30			
109	C	275380.80	130117.36	5.00	204.00	0.00	0.00	0.30			
110	C	275371.06	130168.78	5.00	214.00	0.00	0.00	0.30			
111	C	275345.88	130177.05	5.00	228.00	0.00	0.00	0.30			
112	C	275323.82	130190.60	5.00	250.00	0.00	0.00	0.30			
113	C	275296.86	130198.25	5.00	253.00	0.00	0.00	0.30			
114	C	275312.38	130312.54	5.00	346.00	0.00	0.00	0.30			
115	C	275305.29	130329.91	5.00	315.00	0.00	0.00	0.30			
116	C	275322.07	130351.96	5.00	312.00	0.00	0.00	0.30			
117	C	275342.27	130376.68	5.00	168.00	0.00	0.00	0.30			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
118	C	275343.75	130396.08	5.00	321.00	0.00	0.00	0.30			
119	C	275358.20	130420.27	5.00	324.00	0.00	0.00	0.30			
120	C	275366.61	130443.08	5.00	340.00	0.00	0.00	0.30			
121	C	275379.23	130469.26	5.00	326.00	0.00	0.00	0.30			
122	C	275393.98	130499.91	5.00	337.00	0.00	0.00	0.30			
123	C	275406.04	130525.48	5.00	337.00	0.00	0.00	0.30			
124	C	275416.05	130550.84	5.00	339.00	0.00	0.00	0.30			
125	C	275425.04	130577.52	5.00	340.00	0.00	0.00	0.30			
126	C	275409.37	130575.80	5.00	324.00	0.00	0.00	0.30			
127	C	275422.53	130601.55	5.00	330.00	0.00	0.00	0.30			
128	C	275448.93	130598.35	5.00	147.00	0.00	0.00	0.30			
129	C	275445.37	130620.53	5.00	29.00	0.00	0.00	0.30			
130	C	275438.05	130637.71	5.00	214.00	0.00	0.00	0.30			
131	C	275376.36	130371.41	5.00	267.00	0.00	0.00	0.30			
132	C	275403.11	130371.11	5.00	273.00	0.00	0.00	0.30			
133	C	275372.69	130356.31	5.00	339.00	0.00	0.00	0.30			
134	C	275407.30	130354.92	5.00	184.00	0.00	0.00	0.30			
135	B	275371.48	129917.87	6.00	146.00	0.00	0.00	0.30			
136	B	275279.43	130057.04	6.00	312.00	0.00	0.00	0.30			
137	C	275289.84	130040.41	5.00	305.00	0.00	0.00	0.30			
138	C	275292.37	130069.54	5.00	24.00	0.00	0.00	0.30			
139	C	275280.20	130082.15	5.00	61.00	0.00	0.00	0.30			
140	C	275265.83	130091.83	5.00	66.00	0.00	0.00	0.30			
141	C	275254.92	130065.97	5.00	74.00	0.00	0.00	0.30			
142	C	275272.52	130072.15	5.00	117.00	0.00	0.00	0.30			
143	C	275290.84	130175.03	5.00	217.00	0.00	0.00	0.30			
144	C	275330.42	130161.99	5.00	268.00	0.00	0.00	0.30			
145	C	275354.17	130164.42	5.00	264.00	0.00	0.00	0.30			
146	C	275361.00	130149.38	5.00	227.00	0.00	0.00	0.30			
147	C	275362.00	130180.52	5.00	343.00	0.00	0.00	0.30			
148	B	275291.55	130206.01	6.00	67.00	0.00	0.00	0.30			
149	B	275444.35	130135.20	6.00	342.00	0.00	0.00	0.30			
150	C	275402.75	130078.77	5.00	210.00	0.00	0.00	0.30			
151	A	275397.51	129847.55	10.00	301.00	0.00	0.00	0.30			
152	A	275470.40	129888.65	7.00	295.00	0.00	0.00	1.00			
153	A	275524.15	129939.77	7.00	320.00	0.00	0.00	1.00			

**Layout Continued**

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
154	A	275547.91	129913.20	9.00	48.00	0.00	0.00	1.00			
155	A	275571.35	129890.47	7.00	47.00	0.00	0.00	1.00			
156	A	275596.25	129868.21	7.00	46.00	0.00	0.00	1.00			
157	A	275631.32	129842.88	7.00	62.00	0.00	0.00	1.00			
158	A	275498.81	129914.58	7.00	321.00	0.00	0.00	1.00			
159	A	275539.56	130181.81	10.00	330.00	0.00	0.00	0.30			
160	A	275520.78	130144.43	10.00	341.00	0.00	0.00	0.30			
161	A	275506.74	130108.55	10.00	341.00	0.00	0.00	0.30			
162	A	275490.04	130062.81	10.00	335.00	0.00	0.00	1.00			
163	A	275456.31	129866.24	8.00	108.00	0.00	0.00	0.30			
164	A	275376.26	129834.87	9.00	312.00	0.00	0.00	1.00			

## Horizontal Illuminance (lux)

Grid 1



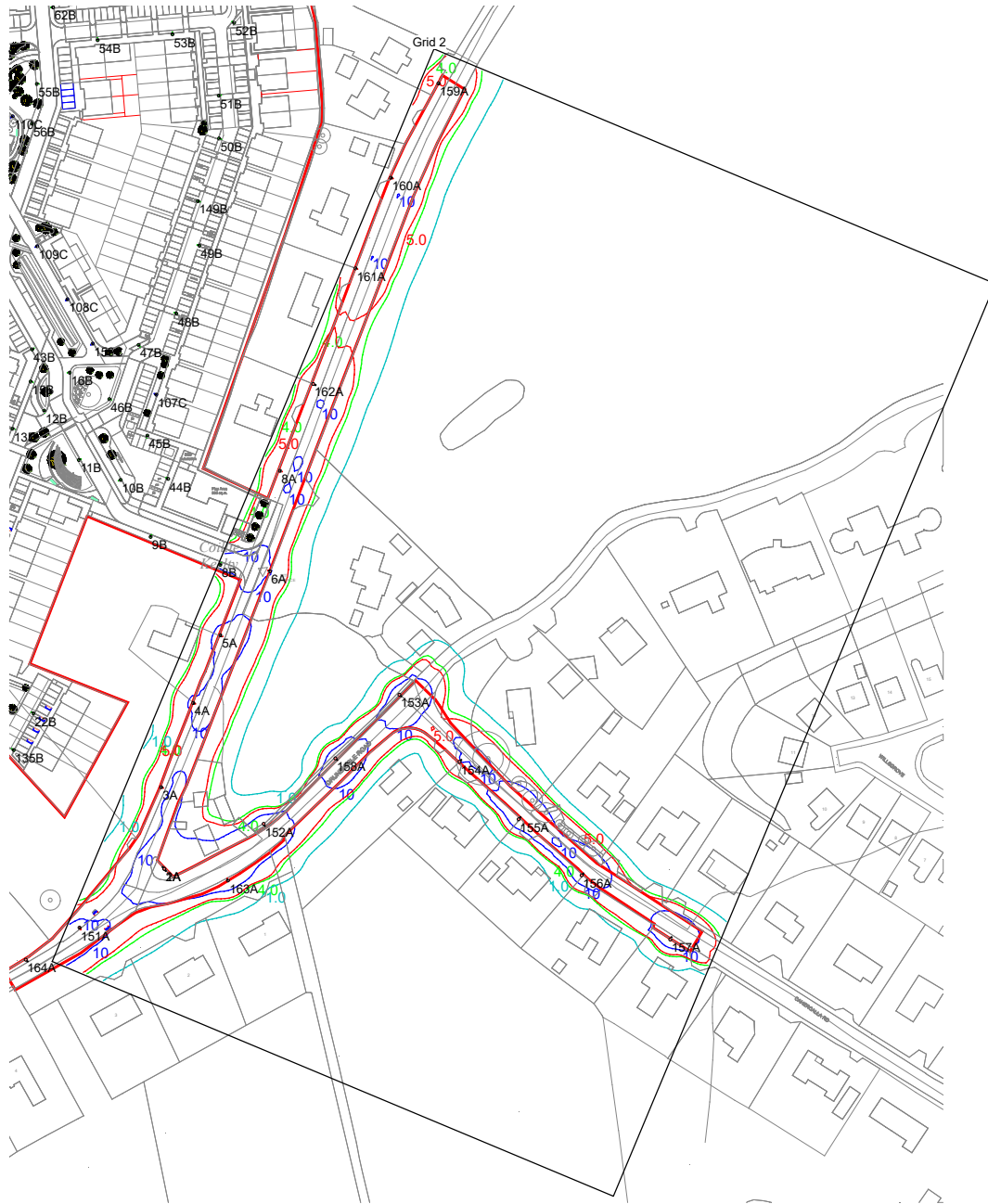
### Results

Eav	5.99
Emin	1.17
Emax	14.86
Emin/Emax	0.08
Emin/Eav	0.20



## Horizontal Illuminance (lux)

Grid 2



### Results

Eav	10.36
Emin	4.42
E <sub>max</sub>	21.79
E <sub>min</sub> /E <sub>max</sub>	0.20
E <sub>min</sub> /E <sub>av</sub>	0.43

## Horizontal Illuminance (lux)

Grid 3



### Results

Eav	5.66
Emin	1.16
E <sub>max</sub>	19.15
E <sub>min</sub> /E <sub>max</sub>	0.06
E <sub>min</sub> /E <sub>av</sub>	0.21