Carpark

Installation : LiDL Mapplewell

Project number :
Customer : LiDL
Processed by : HSR / AGG
Date : 12.03.2018

Project description:

Maintenance Factor 0.77

No obstructions are considered in these lighting calculations.

Lighting levels take into account approximated spill light from the stores sales area.

Lighting levels 15 Lux Ave with 25% uniformity.

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

Lighting Proposal. See attached Appendix A.

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

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1 Carpark

1.1 Description, Carpark

1.1.1 Luminaire data/Room elements

Product data:

Type No.\Make

	Philips Lighting	
1 25	Order No.	: !Luminaire Ref: LL-E
	Luminaire name	: WT460C L1300 1xLED23S/840 WB
	Equipment	: 1 x LED23S/840/- 22 W / 2600 lm
2 12	Order No.	: !
	Luminaire name	: TMS122 1xTL5-35W HFP
	Equipment	: 1 x TL5-35W/840 39 W / 1000 lm
3 16	Order No.	: !Luminaire Ref: LL-CANOPY
	Luminaire name	: BBS490 1xDLED-4000 PG
	Equipment	: 1 x DLED-4000 33.5 W / 2260 lm
4 2	Order No.	: !910770202405
	Luminaire name	: LumiStreet BGP213 LED49-4S/740 I DX10 7024 D9 48/60 6m Col umn
	Equipment	: 1 x LED-HB 940-11500 lm-4S/740 1 W / 4900 lm
5 13	Order No.	: !910770202407
	Luminaire name	: LumiStreet BGP213 LED75-4S/740 I DX10 7024 D9 48/60 8m Col umn
	Equipment	: 1 x LED-HB 940-11500 lm-4S/740 1 W / 7500 lm

1 Carpark

1.1 Description, Carpark

1.1.1 Luminaire data/Room elements

	Centre point			Rotation angle			Target coordinates		
No.	X [m]	Y [m]	Z [m]	Z [°]	C0 [°]	C90 [°]	Xa [m]	Ya [m]	Za [m]
Philips Lighting WT460C L1300 1xLED23S/840 WB !Luminaire Ref: LL-E									
1.1	124.92	71.27	3.06	291.20	0.00	-25.00	125.43	69.94	0.00
1.2	119.46	69.15	3.06	291.20	0.00	-25.00	119.98	67.83	0.00
1.3	114.01	67.04	3.06	291.20	0.00	-25.00	114.52	65.71	0.00
1.4	108.55	64.92	3.06	291.20	0.00	-25.00	109.07	63.60	0.00
1.5	103.10	62.81	3.06	291.20	0.00	-25.00	103.61	61.48	0.00
1.6	97.64	60.69	3.06	291.20	0.00	-25.00	98.16	59.36	0.00
1.7	92.19	58.58	3.06	291.20	0.00	-25.00	92.71	57.25	0.00
1.8	86.74	56.46	3.06	291.20	0.00	-25.00	87.25	55.13	0.00
1.9	81.28	54.35	3.06	291.20	0.00	-25.00	81.80	53.02	0.00
4.1	121.28	92.80	3.06	21.20	0.00	-25.00	122.61	93.31	0.00
4.2	124.89	83.47	3.06	21.20	0.00	-25.00	126.22	83.99	0.00
4.3	128.51	74.15	3.06	21.20	0.00	-25.00	129.84	74.66	0.00
5.1	51.29	75.98	3.05	111.20	0.00	-5.00	51.19	76.23	0.00
5.2	58.65	78.84	3.05	111.20	0.00	-5.00	58.56	79.09	0.00
5.3	66.02	81.69	3.05	111.20	0.00	-5.00	65.92	81.94	0.00
5.4	73.39	84.55	3.05	111.20	0.00	-5.00	73.29	84.80	0.00
5.5	80.75	87.41	3.05	111.20	0.00	-5.00	80.65	87.66	0.00
5.6	88.12	90.27	3.05	111.20	0.00	-5.00	88.02	90.51	0.00
5.7	95.48	93.12	3.05	111.20	0.00	-5.00	95.39	93.37	0.00
5.8	102.85	95.98	3.05	111.20	0.00	-5.00	102.75	96.23	0.00
5.9	110.21	98.84	3.05	111.20	0.00	-5.00	110.12	99.08	0.00
5.10	117.58	101.69	3.05	111.20	0.00	-5.00	117.48	101.94	0.00
9.1	123.10	103.10	3.05	21.20	0.00	-5.00	123.35	103.20	0.00
9.2	124.18	100.30	3.05	21.20	0.00	-5.00	124.43	100.40	0.00
9.3	125.27	97.51	3.05	21.20	0.00	-5.00	125.52	97.60	0.00
Philips Lighting TMS122 1xTL5-35W HFP !									
2.1	57.31	73.80	2.96	20.26	0.00	0.00	57.31	73.80	0.00
2.2	58.07	71.74	2.96	20.26	0.00	0.00	58.07	71.74	0.00
2.3	58.83	69.67	2.96	20.26	0.00	0.00	58.83	69.67	0.00
2.4	59.59	67.61	2.96	20.26	0.00	0.00	59.59	67.61	0.00
2.5	60.36	65.54	2.96	20.26	0.00	0.00	60.35	65.54	0.00
2.6	61.12	63.48	2.96	20.26	0.00	0.00	61.12	63.48	0.00
2.7	61.88	61.42	2.96	20.26	0.00	0.00	61.88	61.42	0.00
2.8	62.64	59.35	2.96	20.26	0.00	0.00	62.64	59.35	0.00
2.9	63.40	57.29	2.96	20.26	0.00	0.00	63.40	57.29	0.00
2.10	64.16	55.22	2.96	20.26	0.00	0.00	64.16	55.22	0.00
2.11	64.93	53.16	2.96	20.26	0.00	0.00	64.93	53.16	0.00
2.12	65.69	51.10	2.96	20.26	0.00	0.00	65.69	51.10	0.00
Philips Lighting BBS490 1xDLED-4000 PG !Luminaire Ref: LL-CANOPY									
6.1	63.29	44.59	3.00	0.15	0.00	0.00	63.29	44.58	0.00
6.2	65.99	45.63	3.00	0.15	0.00	0.00	65.99	45.63	0.00
6.3	68.70	46.68	3.00	0.15	0.00	0.00	68.70	46.68	0.00
6.4	71.40	47.73	3.00	0.15	0.00	0.00	71.40	47.73	0.00
6.5	74.11	48.78	3.00	0.15	0.00	0.00	74.11	48.78	0.00
6.6	76.81	49.83	3.00	0.15	0.00	0.00	76.81	49.83	0.00
6.7	79.51	50.88	3.00	0.15	0.00	0.00	79.51	50.88	0.00
8.1	62.17	47.48	3.00	90.15	0.00	0.00	62.17	47.48	0.00
8.2	61.05	50.37	3.00	90.15	0.00	0.00	61.05	50.37	0.00
8.3	59.93	53.26	3.00	90.15	0.00	0.00	59.93	53.26	0.00

1 Carpark

1.1 Description, Carpark

1.1.1 Luminaire data/Room elements

8.4	58.81	56.15	3.00	90.15	0.00	0.00	58.81	56.15	0.00
8.5	57.69	59.04	3.00	90.15	0.00	0.00	57.69	59.04	0.00
8.6	56.56	61.93	3.00	90.15	0.00	0.00	56.56	61.93	0.00
8.7	55.44	64.82	3.00	90.15	0.00	0.00	55.44	64.82	0.00
8.8	54.32	67.71	3.00	90.15	0.00	0.00	54.32	67.71	0.00
8.9	53.20	70.60	3.00	90.15	0.00	0.00	53.20	70.60	0.00
Philips Lighting LumiStreet BGP213 LED49-4S/740 I DX10 7024 D9 48/60 6m Column !910770202405									
21	20.70	36.10	6.00	25.00	5.00	0.00	14.42	49.56	0.00
47	133.91	86.31	6.00	111.00	5.00	0.00	125.04	82.90	2.16
Philips Lighting LumiStreet BGP213 LED75-4S/740 I DX10 7024 D9 48/60 8m Column !910770202407									
46	48.93	16.15	8.00	21.00	5.00	0.00	41.83	34.64	0.00
8	42.88	38.47	8.00	291.00	5.00	0.00	61.36	45.56	0.00
14	32.13	69.33	8.00	201.00	5.00	0.00	39.22	50.85	0.00
15	28.23	25.29	8.00	291.00	5.00	0.00	46.72	32.38	0.00
45	146.17	67.54	8.00	111.00	5.00	0.00	127.69	60.44	0.00
33	15.83	52.22	8.00	291.00	10.00	0.00	40.26	61.60	0.00
7	40.97	37.73	8.00	111.00	5.00	0.00	22.49	30.64	0.00
36	73.48	16.65	8.00	21.00	10.00	0.00	64.10	41.08	0.00
38	90.96	23.55	8.00	21.00	10.00	0.00	81.58	47.98	0.00
40	108.65	30.46	8.00	21.00	10.00	0.00	99.27	54.89	0.00
42	126.39	37.22	8.00	21.00	10.00	0.00	117.01	61.65	0.00
44	143.95	44.15	8.00	21.00	5.00	0.00	136.86	62.64	0.00
48	60.60	20.49	8.00	291.00	5.00	0.00	79.09	27.59	0.00

Structural elements

Measuring surface

No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle L axis	Q axis
Carpark								
M 6	28.60	38.73	0.00	147.47	107.78	291.18	0.00	0.00
Lorry Bay								
M 2	129.96	75.00	0.00	12.21	20.80	291.19	0.00	0.00
RoH Footpath								
M 3	49.53	75.45	0.00	73.31	30.13	291.23	0.00	0.00
Footpath								
M 4	134.81	77.02	0.00	9.07	19.77	21.19	0.00	0.00

Others

No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle L axis	Q axis	rho[%]
LiDL Store									
A 1	63.95	47.66	0.00	85.98	61.50	291.19	0.00	0.00	50
Canopy									
A 2	81.88	49.65	3.00	30.94	37.13	291.19	0.00	0.00	50
Tr 1	38.28	0.34	0.00	58.28	30.61	21.18	0.00	0.00	50
Tr 2	110.90	28.55	0.00	59.78	53.45	21.18	0.00	0.00	50

1 Carpark

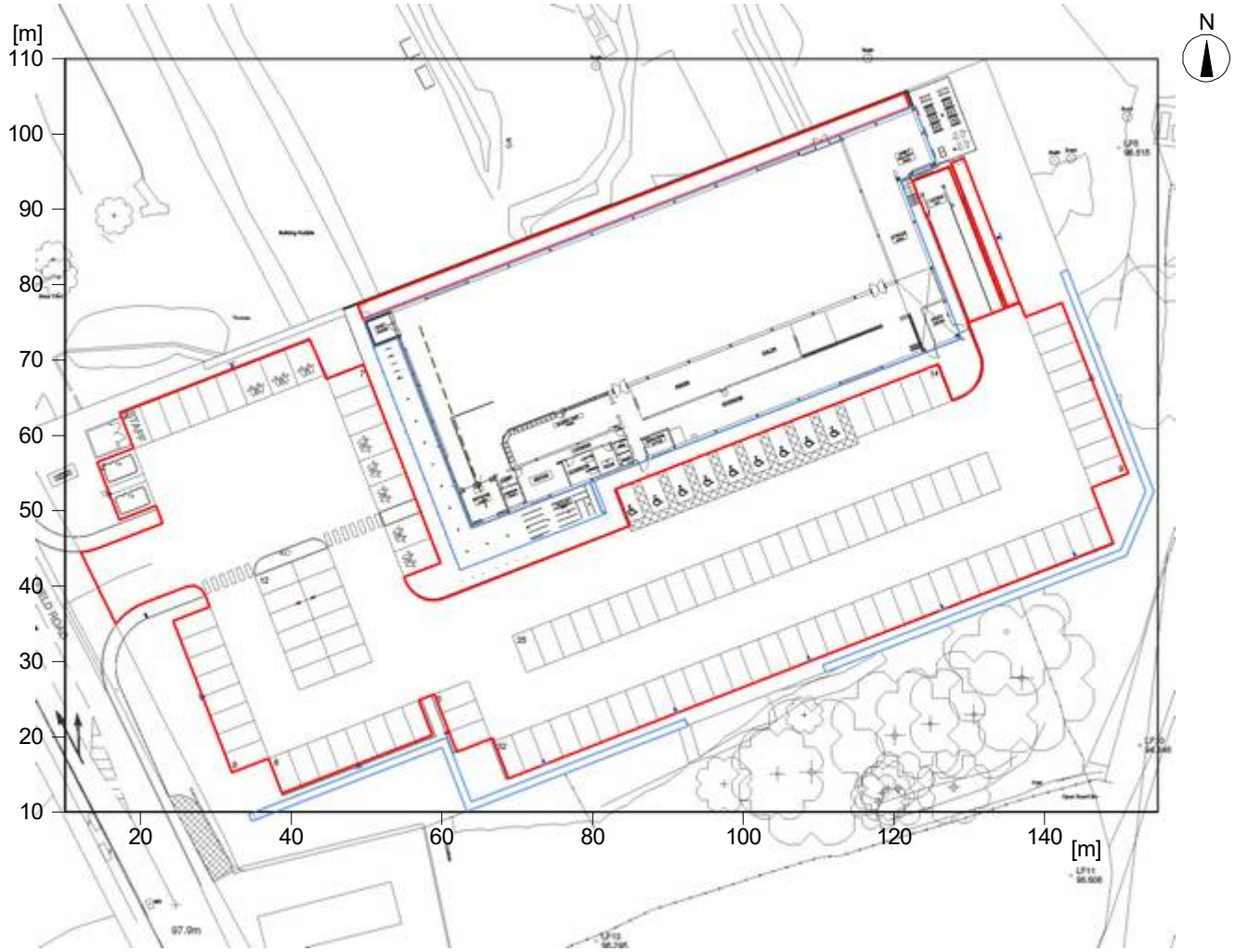
1.1 Description, Carpark

1.1.1 Luminaire data/Room elements

Tr 3	73.14	16.22	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 4	90.65	23.09	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 5	108.32	30.00	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 6	126.04	36.75	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 7	143.64	43.72	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 8	146.57	67.22	7.55	0.36	0.89	111.00	0.00	0.00	0
Tr 9	134.33	86.00	5.55	0.36	0.89	111.00	0.00	0.00	0
Tr 10	48.59	15.70	7.55	0.89	0.36	21.00	0.00	0.00	0
Tr 11	28.06	24.74	7.55	0.36	0.89	111.00	0.00	0.00	0
Tr 12	15.71	51.69	7.55	0.36	0.89	111.00	0.00	0.00	0
Tr 13	31.60	69.43	7.55	0.89	0.36	21.00	0.00	0.00	0

1.1 Description, Carpark

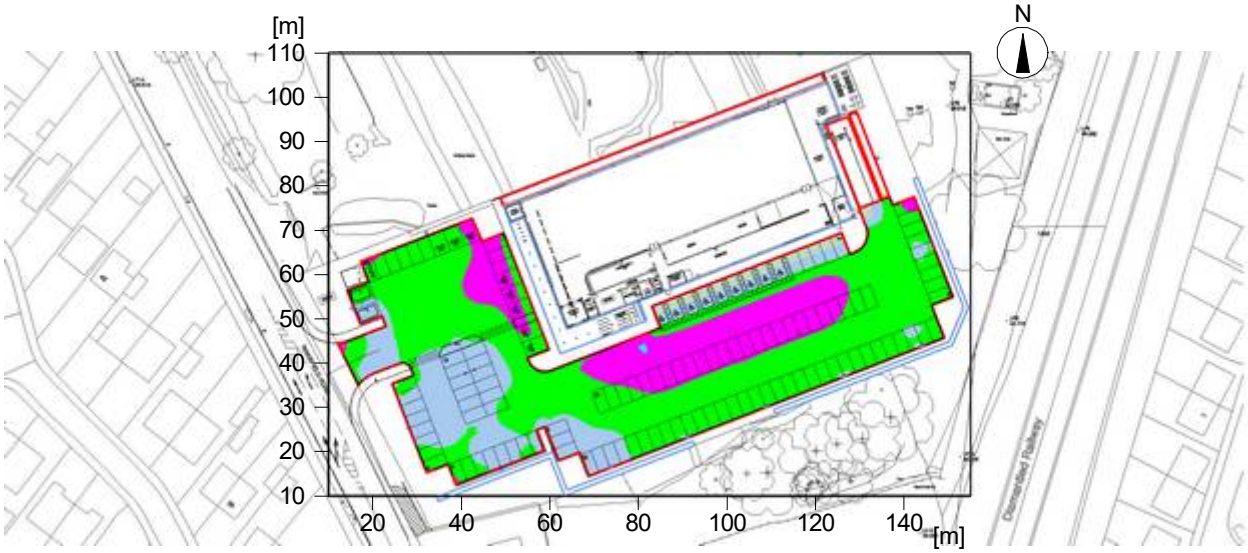
1.1.2 Floor plan



1 Carpark

1.2 Summary, Carpark

1.2.1 Result overview, Carpark





Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.77
Total luminous flux of all lamps	220460 lm
Total power	1569 W
Total power per area (14500.00 m²)	0.11 W/m²
Upward light ratio (ULR)	0.01

Illuminance

Average illuminance	Eav	11.9 lx
Minimum illuminance	Emin	4.6 lx
Maximum illuminance	Emax	47.1 lx
Uniformity Uo	Emin/Em	1:2.61 (0.38)
Diversity Ud	Emin/Emax	1:10.3 (0.1)

Type No.\Make

		Philips Lighting	
1	25	Order No.	: !Luminaire Ref: LL-E
		Luminaire name	: WT460C L1300 1xLED23S/840 WB
		Equipment	: 1 x LED23S/840/- 22 W / 2600 lm
2	12	Order No.	: !
		Luminaire name	: TMS122 1xTL5-35W HFP
		Equipment	: 1 x TL5-35W/840 39 W / 1000 lm

The ULR value has been calculated without obstruction by other objects.

1 Carpark

1.2 Summary, Carpark

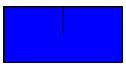
1.2.1 Result overview, Carpark

3 16



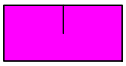
Order No. : !Luminaire Ref: LL-CANOPY
Luminaire name : BBS490 1xDLED-4000 PG
Equipment : 1 x DLED-4000 33.5 W / 2260 lm

4 2



Order No. : !910770202405
Luminaire name : LumiStreet BGP213 LED49-4S/740 I DX10 7024 D9 48/60 6m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 4900 lm

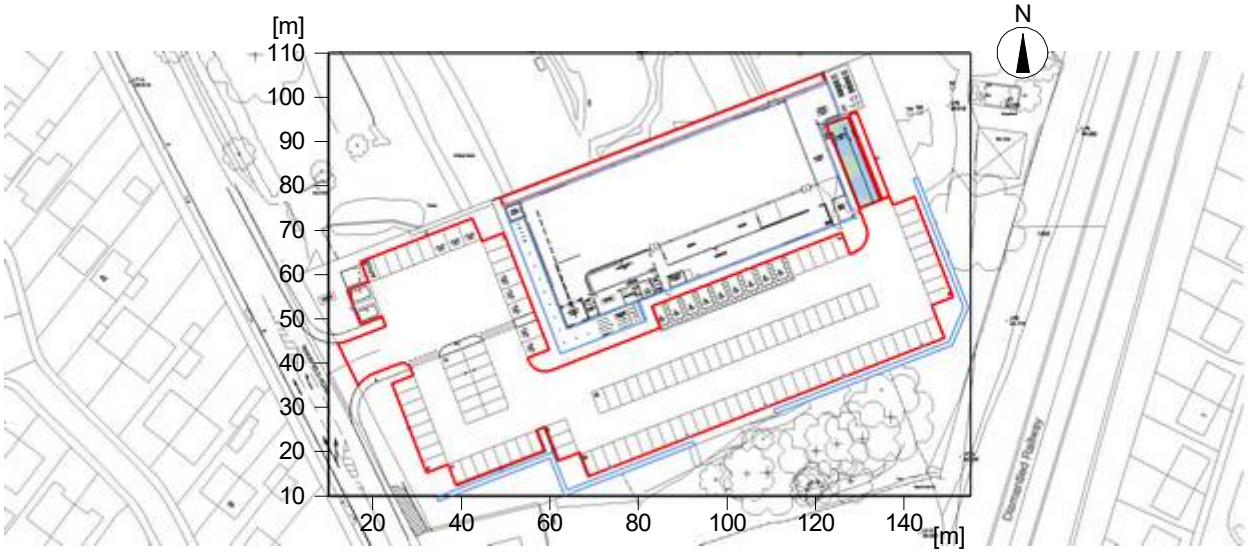
5 13



Order No. : !910770202407
Luminaire name : LumiStreet BGP213 LED75-4S/740 I DX10 7024 D9 48/60 8m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 7500 lm

1.2 Summary, Carpark

1.2.2 Result overview, Lorry Bay





Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.77
Total luminous flux of all lamps	220460 lm
Total power	1569 W
Total power per area (14500.00 m²)	0.11 W/m²
Upward light ratio (ULR)	0.01

Illuminance

Average illuminance	Eav	26.8 lx
Minimum illuminance	Emin	15.3 lx
Maximum illuminance	Emax	53.6 lx
Uniformity Uo	Emin/Em	1:1.75 (0.57)
Diversity Ud	Emin/Emax	1:3.5 (0.29)

Type No.\Make

		Philips Lighting	
1	25	Order No.	: !Luminaire Ref: LL-E
		Luminaire name	: WT460C L1300 1xLED23S/840 WB
		Equipment	: 1 x LED23S/840/- 22 W / 2600 lm
2	12	Order No.	: !
		Luminaire name	: TMS122 1xTL5-35W HFP
		Equipment	: 1 x TL5-35W/840 39 W / 1000 lm

The ULR value has been calculated without obstruction by other objects.

1.2 Summary, Carpark

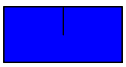
1.2.2 Result overview, Lorry Bay

3 16



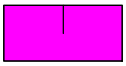
Order No. : !Luminaire Ref: LL-CANOPY
Luminaire name : BBS490 1xDLED-4000 PG
Equipment : 1 x DLED-4000 33.5 W / 2260 lm

4 2



Order No. : !910770202405
Luminaire name : LumiStreet BGP213 LED49-4S/740 I DX10 7024 D9 48/60 6m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 4900 lm

5 13

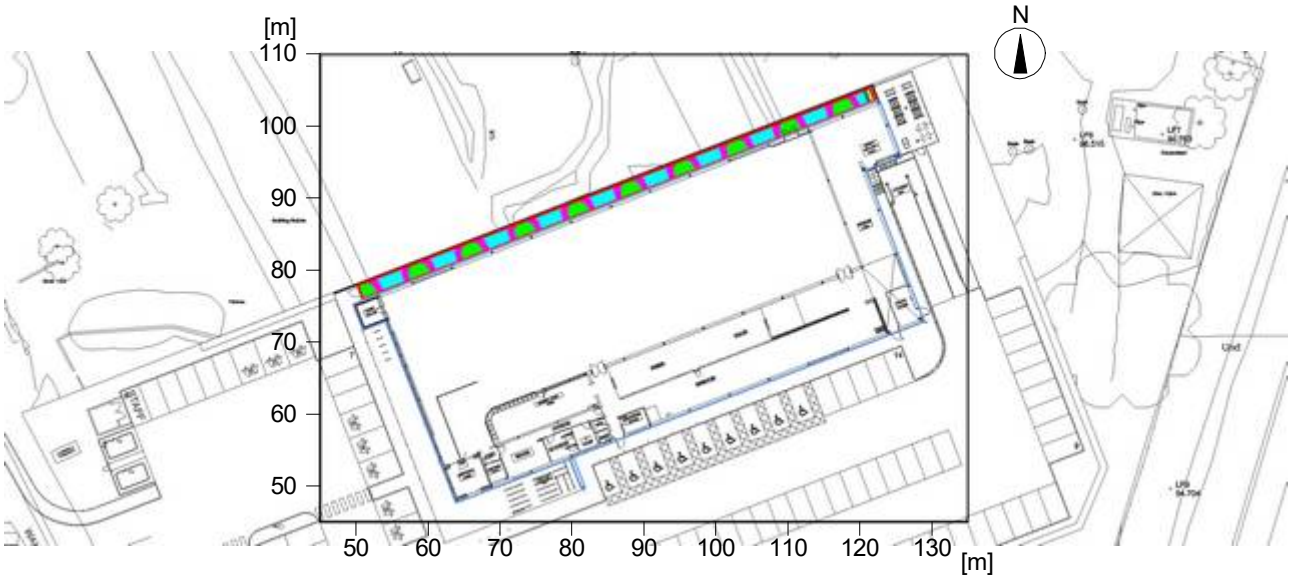


Order No. : !910770202407
Luminaire name : LumiStreet BGP213 LED75-4S/740 I DX10 7024 D9 48/60 8m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 7500 lm

2 RoH Footpath Eme Ltg

2.1 Summary, RoH Footpath Eme Ltg

2.1.1 Result overview, RoH Footpath





Illuminance [lx]

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot.centre) [m]:	3.05 m
Maintenance factor	0.77
Total luminous flux of all lamps	4320 lm
Total power	36 W
Total power per area (5850.00 m²)	0.01 W/m²
Upward light ratio (ULR)	0.00

Illuminance

Average illuminance	Eav	5.7 lx
Minimum illuminance	Emin	0.9 lx
Maximum illuminance	Emax	11.1 lx
Uniformity Uo	Emin/Em	1:6.42 (0.16)
Diversity Ud	Emin/Emax	1:12.4 (0.08)

Type No.\Make



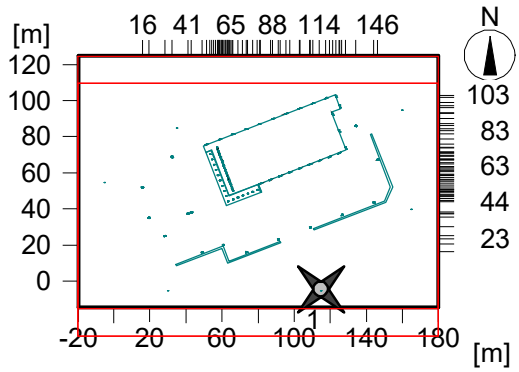
Philips Lighting
Order No. :
Luminaire name : WT460C EL3 L1300 EM 1xLED23S/840 WB
Equipment : 1 x LED23S/840/- 3 W / 360 lm

The ULR value has been calculated without obstruction by other objects.

3 Carpark Spill Light

3.1 Calculation results, Carpark Spill Light

3.1.1 Luminous intensity - I(p) 1



Measuring point for luminous intensity: I(p) 1
Position : x = 115.00 m, y = -5.00 m, z = 1.50 m

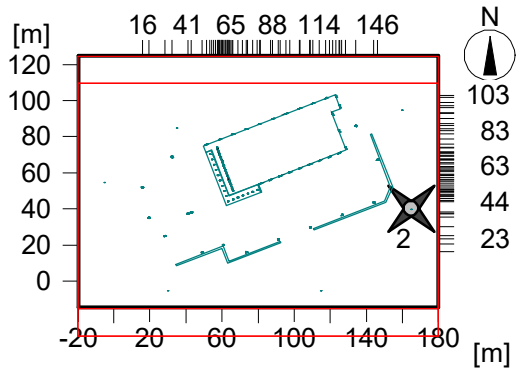
Output criteria:

2. Only the first 10 luminaires will be listed.

No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	I[kcd]
1	LumiStreet BGP213 LED49-4S/740 I DX10 7024..., !910770202405	33.91	86.31	6.00	0.020
2	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	79.51	50.88	3.00	0.003
3	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	76.81	49.83	3.00	0.003
4	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	74.11	48.78	3.00	0.003
5	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	71.40	47.73	3.00	0.003
6	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	68.70	46.68	3.00	0.002
7	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	65.99	45.63	3.00	0.002
8	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	63.29	44.59	3.00	0.002
9	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	62.17	47.48	3.00	0.002
10	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	61.05	50.37	3.00	0.002

3.1 Calculation results, Carpark Spill Light

3.1.2 Luminous intensity - I(p) 2



Measuring point for luminous intensity: I(p) 2
Position : x = 165.00 m, y = 40.00 m, z = 1.50 m

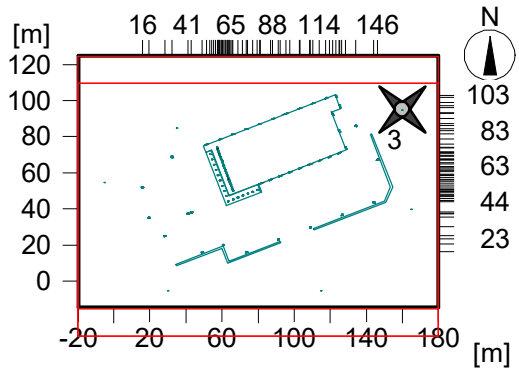
Output criteria:

2. Only the first 10 luminaires will be listed.

No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	I[kcd]
1	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	42.88	38.47	8.00	0.081
2	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	28.23	25.29	8.00	0.077
3	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	46.17	67.54	8.00	0.055
4	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	08.76	30.23	8.00	0.004
5	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	125.27	97.15	3.05	0.003
6	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	123.10	102.74	3.05	0.002
7	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	91.09	23.42	8.00	0.002
8	LumiStreet BGP213 LED49-4S/740 I DX10 7024..., !91077020240	33.91	86.31	6.00	0.002
9	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	73.48	16.48	8.00	0.002
10	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	48.93	16.15	8.00	0.002

3.1 Calculation results, Carpark Spill Light

3.1.3 Luminous intensity - I(p) 3



Measuring point for luminous intensity: I(p) 3
Position : x = 160.00 m, y = 95.00 m, z = 1.50 m

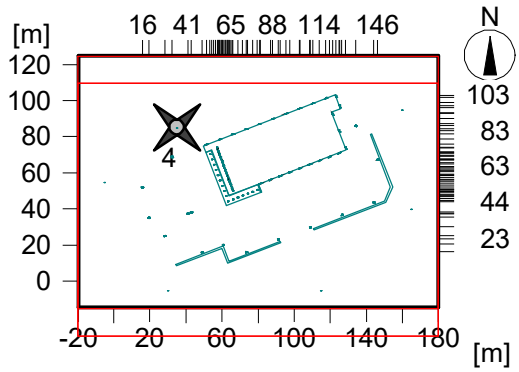
Output criteria:

2. Only the first 10 luminaires will be listed.

No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	I[kcd]
1	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !9107702024072	6.43	37.09	8.00	0.814
2	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !9107702024070	8.76	30.23	8.00	0.484
3	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !9107702024074	4.03	43.92	8.00	0.185
4	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !9107702024079	1.09	23.42	8.00	0.073
5	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	121.28	92.80	3.06	0.060
6	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	128.51	74.15	3.06	0.058
7	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	124.89	83.47	3.06	0.057
8	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !9107702024073	3.48	16.48	8.00	0.026
9	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	125.27	97.15	3.05	0.019
10	WT460C L1300 1xLED23S/840 WB, !Luminaire Ref: LL-E	123.10	102.74	3.05	0.018

3.1 Calculation results, Carpark Spill Light

3.1.4 Luminous intensity - I(p) 4



Measuring point for luminous intensity: I(p) 4
Position : x = 35.00 m, y = 85.00 m, z = 1.50 m

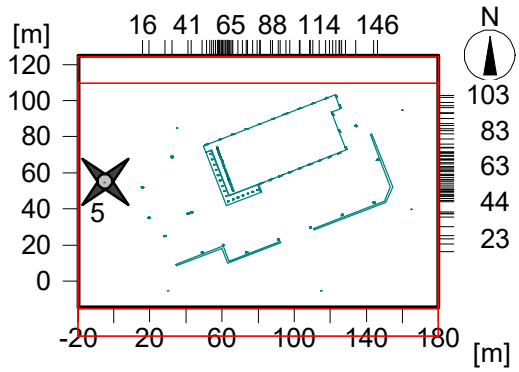
Output criteria:

2. Only the first 10 luminaires will be listed.

No.	Luminaire	Position x[m]	y[m]	z[m]	Lumin. intensity I[kcd]
1	LumiStreet BGP213 LED49-4S/740 I DX10 7024..., !91077020240519	37.33	35.33	6.00	0.072
2	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	54.32	67.71	3.00	0.004
3	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	55.44	64.82	3.00	0.004
4	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	56.56	61.93	3.00	0.004
5	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	57.69	59.04	3.00	0.004
6	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	58.81	56.15	3.00	0.004
7	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	59.93	53.26	3.00	0.004
8	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	61.05	50.37	3.00	0.004
9	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	62.17	47.48	3.00	0.003
10	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	63.29	44.59	3.00	0.003

3.1 Calculation results, Carpark Spill Light

3.1.5 Luminous intensity - I(p) 5



Measuring point for luminous intensity: I(p) 5
Position : x = -5.00 m, y = 55.00 m, z = 1.50 m

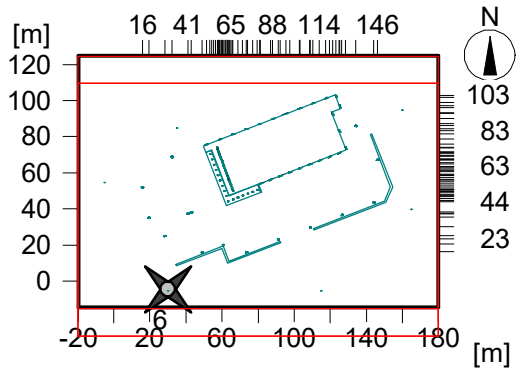
Output criteria:

2. Only the first 10 luminaires will be listed.

No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	I[kcd]
1	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	55.44	64.82	3.00	0.003
2	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	56.56	61.93	3.00	0.003
3	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	57.69	59.04	3.00	0.003
4	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	58.81	56.15	3.00	0.003
5	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	59.93	53.26	3.00	0.003
6	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	61.05	50.37	3.00	0.003
7	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	62.17	47.48	3.00	0.003
8	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	63.29	44.59	3.00	0.002
9	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	65.99	45.63	3.00	0.002
10	BBS490 1xDLED-4000 PG, !Luminaire Ref: LL-CANOPY	68.70	46.68	3.00	0.002

3.1 Calculation results, Carpark Spill Light

3.1.6 Luminous intensity - I(p) 6



Measuring point for luminous intensity: I(p) 6
Position : x = 30.00 m, y = -5.00 m, z = 1.50 m

Output criteria:

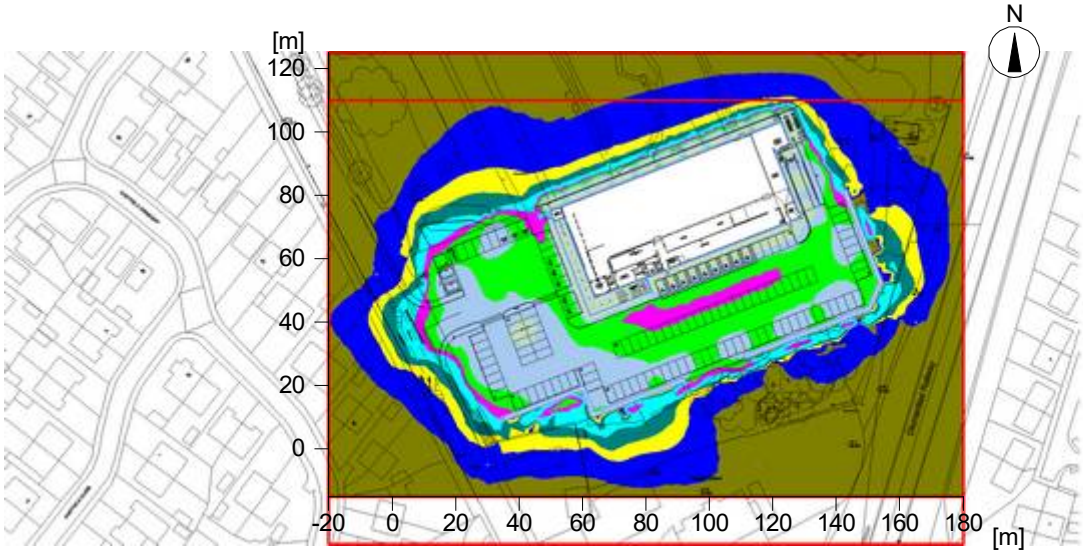
2. Only the first 10 luminaires will be listed.

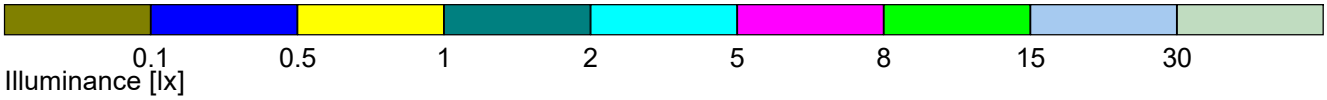
No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	I[kcd]
1	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	40.97	37.73	8.00	0.936
2	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	32.24	69.12	8.00	0.116
3	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	46.17	67.54	8.00	0.074
4	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	48.93	16.15	8.00	0.073
5	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	28.23	25.29	8.00	0.070
6	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	73.48	16.48	8.00	0.011
7	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	42.88	38.47	8.00	0.005
8	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	15.83	52.16	8.00	0.004
9	LumiStreet BGP213 LED75-4S/740 I DX10 7024..., !91077020240	91.09	23.42	8.00	0.004
10	LumiStreet BGP213 LED49-4S/740 I DX10 7024..., !91077020240	19.37	35.33	6.00	0.001

3 Carpark Spill Light

3.2 Summary, Carpark Spill Light

3.2.1 Result overview, Horizontal Spill Light 0M





General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	1.00
Total luminous flux of all lamps	217860 lm
Total power	1547 W
Total power per area (28000.00 m²)	0.06 W/m² (0.94 W/m²/100lx)
Upward light ratio (ULR)	0.01

Illuminance

Average illuminance	Eav	6 lx
Minimum illuminance	Emin	0 lx
Maximum illuminance	Emax	178 lx
Uniformity Uo	Emin/Em	1:--- (---)
Diversity Ud	Emin/Emax	1:--- (---)

Type No.\Make

		Philips Lighting	
1	24	Order No.	: !Luminaire Ref: LL-E
		Luminaire name	: WT460C L1300 1xLED23S/840 WB
		Equipment	: 1 x LED23S/840/- 22 W / 2600 lm
2	12	Order No.	: !
		Luminaire name	: TMS122 1xTL5-35W HFP
		Equipment	: 1 x TL5-35W/840 39 W / 1000 lm

The ULR value has been calculated without obstruction by other objects.

3 Carpark Spill Light

3.2 Summary, Carpark Spill Light

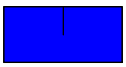
3.2.1 Result overview, Horizontal Spill Light 0M

3 16



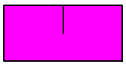
Order No. : !Luminaire Ref: LL-CANOPY
Luminaire name : BBS490 1xDLED-4000 PG
Equipment : 1 x DLED-4000 33.5 W / 2260 lm

4 2



Order No. : !910770202405
Luminaire name : LumiStreet BGP213 LED49-4S/740 I DX10 7024 D9 48/60 6m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 4900 lm

5 13

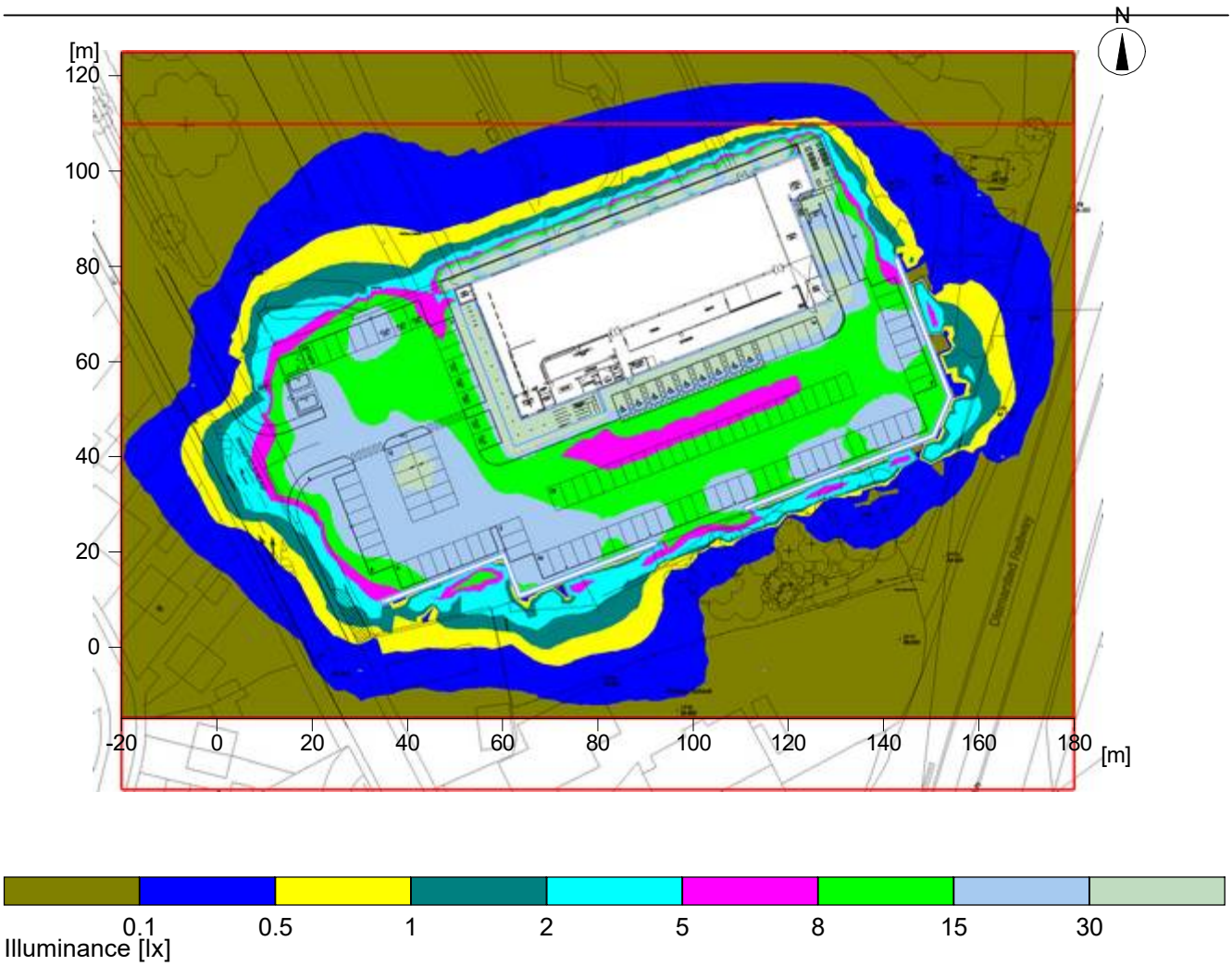


Order No. : !910770202407
Luminaire name : LumiStreet BGP213 LED75-4S/740 I DX10 7024 D9 48/60 8m Column
Equipment : 1 x LED-HB 940-11500 lm-4S/740 1 W / 7500 lm

3 Carpark Spill Light

3.3 Calculation results, Carpark Spill Light

3.3.1 Pseudo colours, Horizontal Spill Light 0M (E)

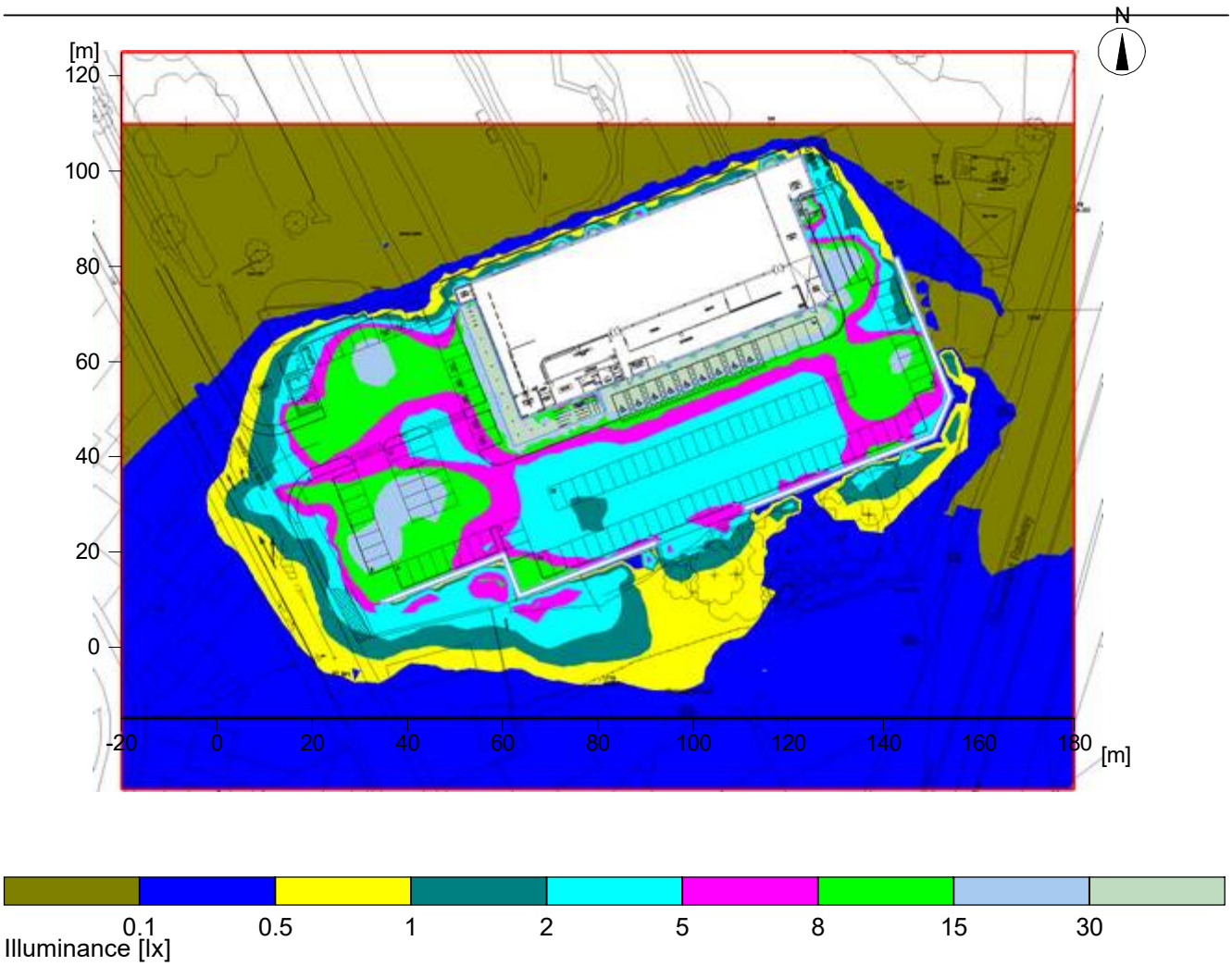


Height of the reference plane : 0.00 m

Average illuminance	Eav	: 6 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 178 lx
Uniformity Uo	Emin/Eav	: ---
Diversity Ud	Emin/Emax	: ---

3.3 Calculation results, Carpark Spill Light

3.3.2 Pseudo colours, Vertical Spill Light @ 1.5M North Facing Receptors (Ev, North (0°))

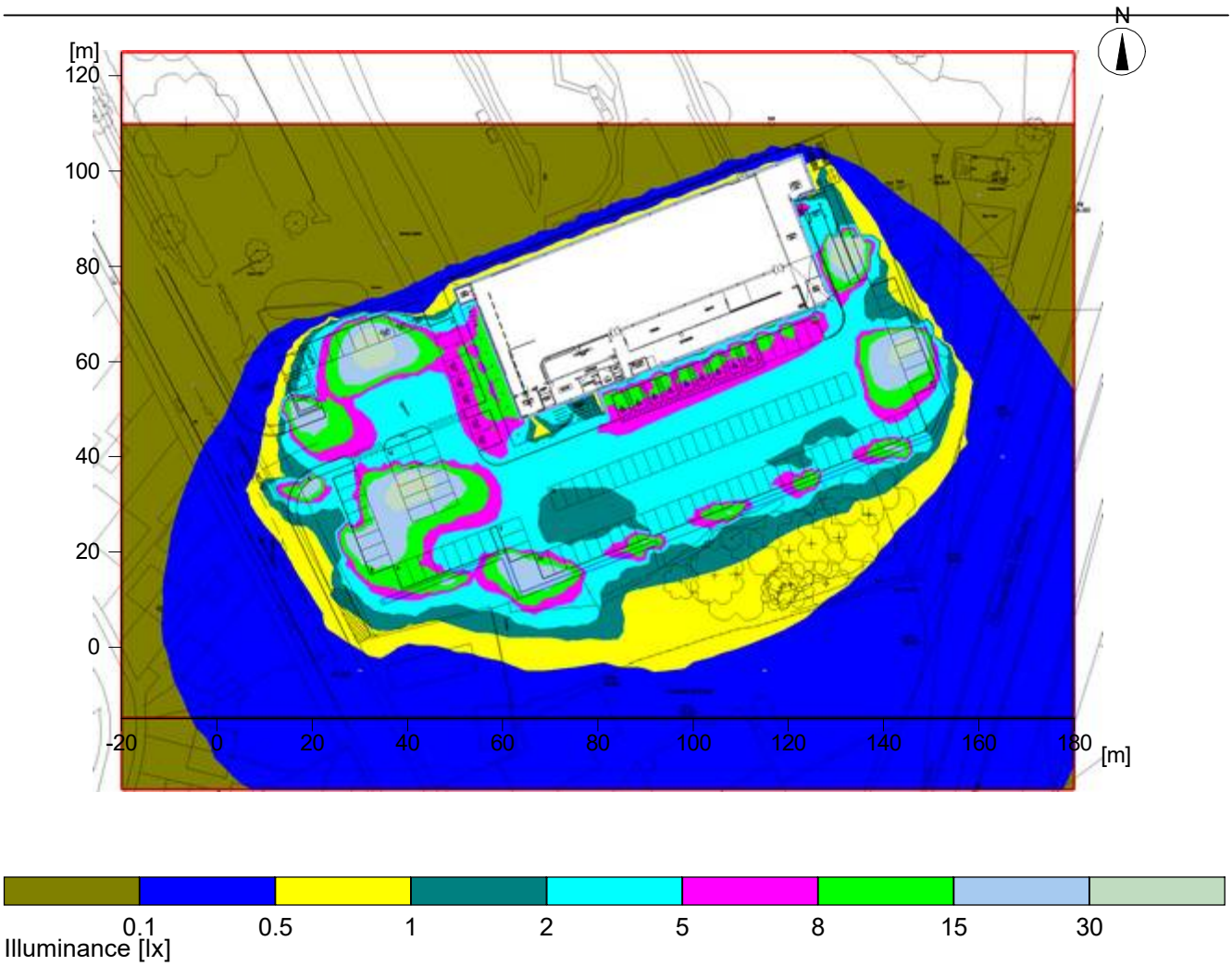


Vertical illuminance
Height of the reference plane : 1.50 m
from direction : North (0°)

Average illuminance	Eav	: 3 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 144 lx
Uniformity Uo	Emin/Eav	: ---
Diversity Ud	Emin/Emax	: ---

3.3 Calculation results, Carpark Spill Light

3.3.3 Pseudo colours, Vertical Spill Light @ 4M North Facing Receptors (Ev, North (0°))

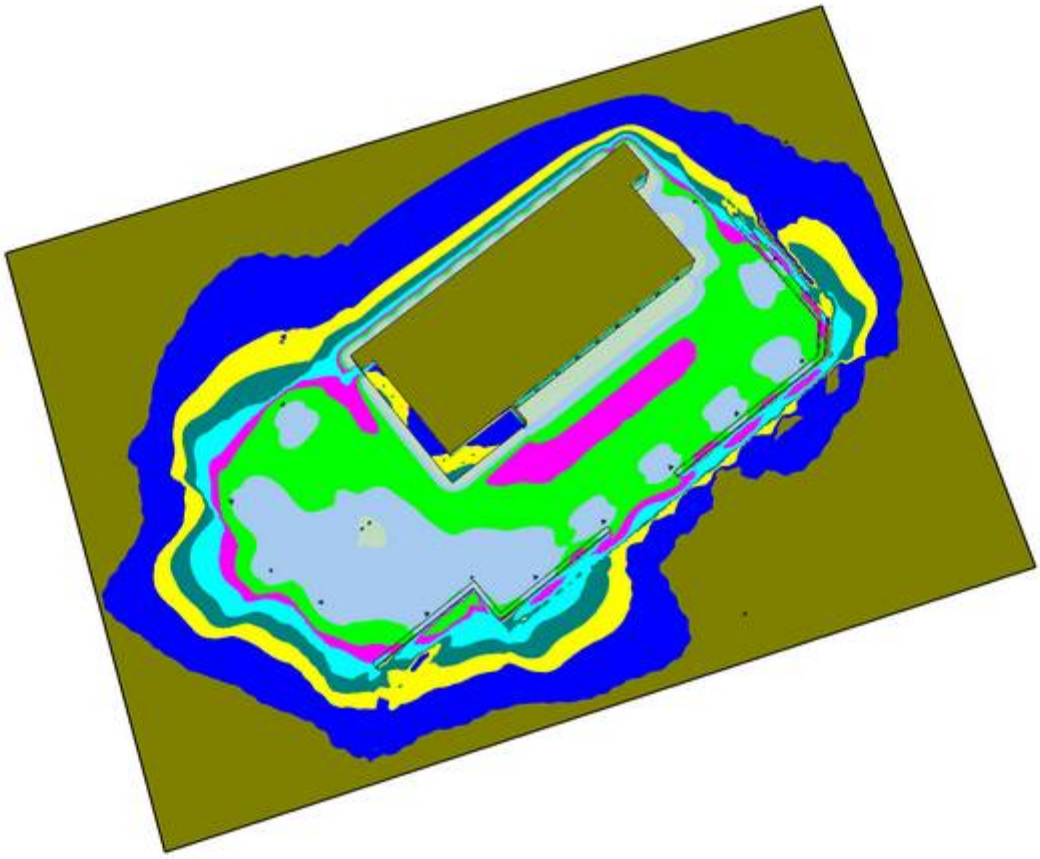


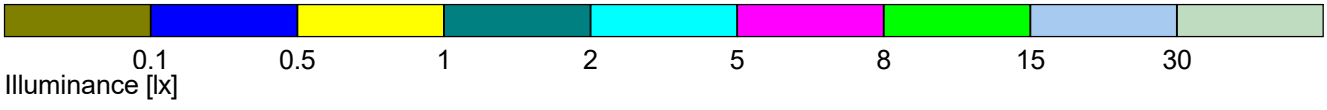
Vertical illuminance
Height of the reference plane : 4.00 m
from direction : North (0°)

Average illuminance	Eav	: 2 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 75.7 lx
Uniformity Uo	Emin/Eav	: ---
Diversity Ud	Emin/Emax	: ---

3.3 Calculation results, Carpark Spill Light

3.3.4 3D pseudo colours, View 1 (E)





Appendix A

PHILIPS

Philips Lighting

Philips Centre, Guildford Business Park, Guildford, Surrey GU2 8XH Tel: +44 (0) 845 6011283

Lighting Proposal Terms and Conditions of Use

These terms and conditions apply to any proposal(s) supplied by Philips Electronics UK Limited ("**Philips**") to which this document has been attached or accompanies, whether or not this is specifically acknowledged or referenced within the proposal.

For the purposes of these terms and conditions a proposal ("**proposal**") is understood to mean a CAD drawing, lighting calculation, written document, verbal conversation, or in fact any medium used to demonstrate or communicate a proposed lighting arrangement using Philips lighting products. A customer ("**customer**") is the person or organisation for whom the proposal is intended, whilst a design ("**design**") or designer ("**designer**") should have the meaning set out in the Construction, Design and Management Regulations 2007.

General Statement

The proposal has been provided in order to demonstrate how Philips lighting products could be arranged in order to facilitate the requirements particular to the relevant project, and is therefore only a suggested lighting design.

This information is provided subject to the following limitations:

- Philips has not undertaken any risk assessment for this design. Philips will not be held liable for any risk associated with the implementation of the design.
- Philips may not have had physical access to the site of the project to verify the information which has been provided and the proposal is therefore based solely on information provided by the customer to Philips. The customer is therefore responsible for ensuring that the proposal can be safely implemented in compliance with any laws and regulations.

Accordingly, the information contained in the proposal does not constitute a design for the purposes of the Construction, Design and Management Regulations 2007 and Philips does not accept or assume the role of designer.

The nominal values described in the proposal are likely to have been as a result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination which is usually considered to be a flat surface with no solid obstructions. In practice the values may vary due to a number of tolerances including; positions of lamps, luminaires, gear/drivers, ambient temperature, electrical supply behaviours, road camber, surface reflections, obstructions, and the precise positioning and angle of the luminaires for example.

The proposal should be considered as guidance only and must not be used in place of the final principal or construction drawings. Philips recommends that in the event that this proposal is taken forward as the preferred solution, that the calculations and arrangements are first scrutinised, verified and approved by a suitably qualified designer before being transposed onto the relevant working drawings as appropriate.

PHILIPS

Installation and Maintenance Notes

1) The proposal must be read in conjunction with all other relevant project drawings and specifications.
2) Do not scale from the proposal. If in doubt please request further information.
3) The proposal may show lighting layout information, but should not be used for installation purposes or construction drawings. Please refer to the official contractor's working drawings which should also include additional information such as electrical connections, other illuminated equipment, and site specific hazards and other safety considerations.
4) All relevant laws and regulations must be fully complied with including the undertaking of any required site risk assessments before installation commences.
5) The proposal is based upon customer supplied information and it should be assumed that no survey on site has been carried out by Philips. Utility information such as underground and over ground cables and gas pipes etc. will need to be checked on site by the appropriate person/organisation before any excavation works or installation of lighting equipment.
6) The proposal may contain symbols which indicate the proposed locations of the lighting equipment. For further information please refer to the luminaire schedules and details.
7) Locations and orientation of all equipment must be confirmed with the client prior to installation. Exact orientation of luminaires may need to be finalised during final focusing. Please refer to the Philips lighting solutions drawings and specifications for details of electrical engineering associated with lighting works.
8) The customer shall ensure that all proposed lighting equipment is suitable for the particular environmental conditions prevalent at the proposed location.
9) All lighting equipment must be supplied with adequate means for protection during transport to site and any subsequent storage prior to installation.
10) For lighting on structures such as bridges, tunnels, buildings, canopies, furniture or water features for example, please refer to the relevant drawings and details.
11) For details of all luminaires please refer to the Philips lighting solutions luminaire schedule.
12) For cable routes, driver locations and any electrical works associated with the lighting installation please refer to the contractor's installation drawings and documentation.
13) The lighting installation requires a variety of luminaire types to achieve the desired effects. Information has been provided on the proposal as general guidance and outline of good practice. For more specific recommendations please refer to manufacturer's details for application, operation, handling cleaning and disposal instructions.
14) Installation and maintenance of lighting equipment installed at any height above ground requires specific precautions to be taken. Access arrangements should be in strict accordance with the projects access report, method statement and health and safety guidelines.
15) All fixtures must be electrically isolated prior to any testing or maintenance.
16) Luminaries may need to be powered up for focusing during the hours of darkness, and in which case they must be specified as being fully enclosed and earthed, or operated at extra low voltage.
17) Certain lighting fixtures need to be protected from thermal damage caused by over heating by means of thermal cut-out or similar device. Please refer to the relevant documentation.