



Proposed Padel Court Lighting

Westlode Street, Spalding
V2 : 1026

Overview.

This report pertains to a new proposed development of 4no. Padel Courts situated off Westlode Road, Spalding. The location of this development is on the east side of an existing car park area situated at the boundary line adjacent to the site of an existing Police Station. The car park in which the proposed development is to be situated appears to already set a precedent with an existing column and floodlight system. This also appears to be replicated on the adjacent Police Station site which is partitioned by a hedgerow between where the courts will be situated and the Police Station site. Note that any calculations included within this report do not include any form of existing lighting within or near to the proposed development. Please see google extract below:



The purpose of this report is twofold; firstly, to ensure that the proposed Padel Courts achieve sufficient illumination and secondly to demonstrate the effect of the proposed lighting in the form of light spillage onto neighbouring sites. This is recorded as perpendicular illuminance at ground level and on the vertical face of any neighbouring building which face towards the proposed development.

Court Lighting.

The proposed development consists of 4 new courts, 2 which are classed as double courts and 2 which are classed as single courts. Taking recommendations from the LTA (Lawn Tennis Association), for Club level and recreational usage, we need to achieve an average illumination level of 300 lux on each court along with uniformity of no less than 0.5 (50%). The most efficient way to illuminate such areas is via a 4x column system with suitable asymmetric floodlights. The clearance from the playing Area to the floodlights should be no less than 6.0m. Please refer to the LTA extract as below. Ideally the floodlights should be angled upwards to an absolute minimum to avoid upward light pollution and to reduce light spillage beyond the area they are tasked to illuminate. In this case, the proposed floodlights have an aiming angle of 0-degrees. Further within this document, you will see that on each court, illumination levels of over 300 lux are achieved with the required 0.5 uniformity being exceeded. To achieve this balance across the different size courts, we have used 150W floodlights to the single courts and 240W floodlights to the double courts. The recorded levels are achieved with the floodlights to all 4 courts being switched on.

FLOODLIGHTING

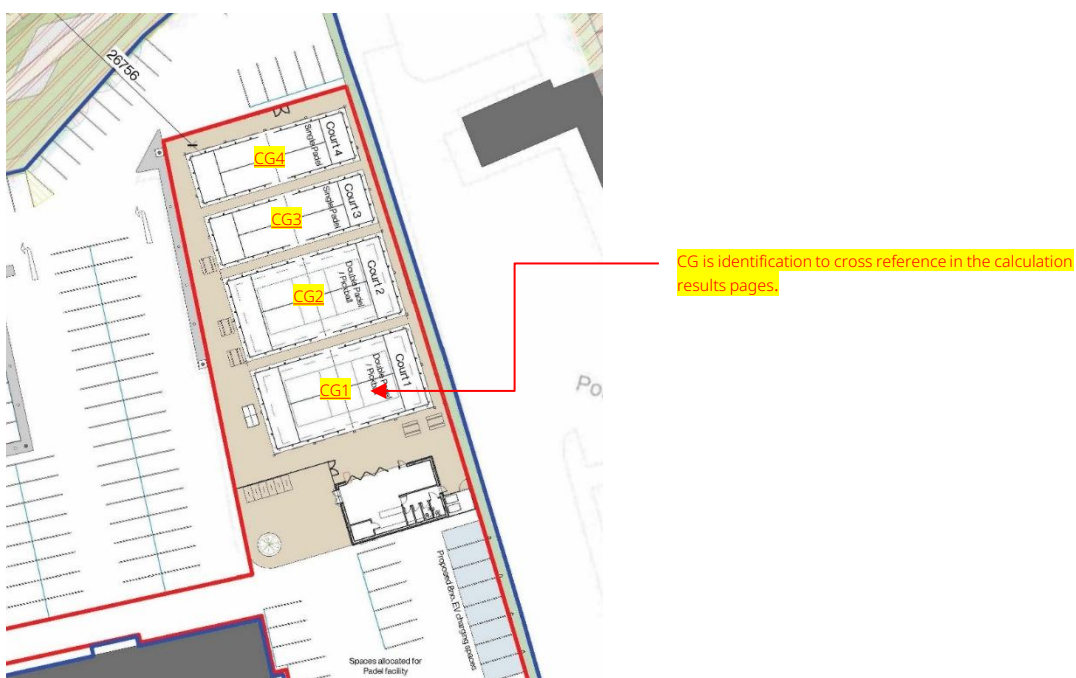
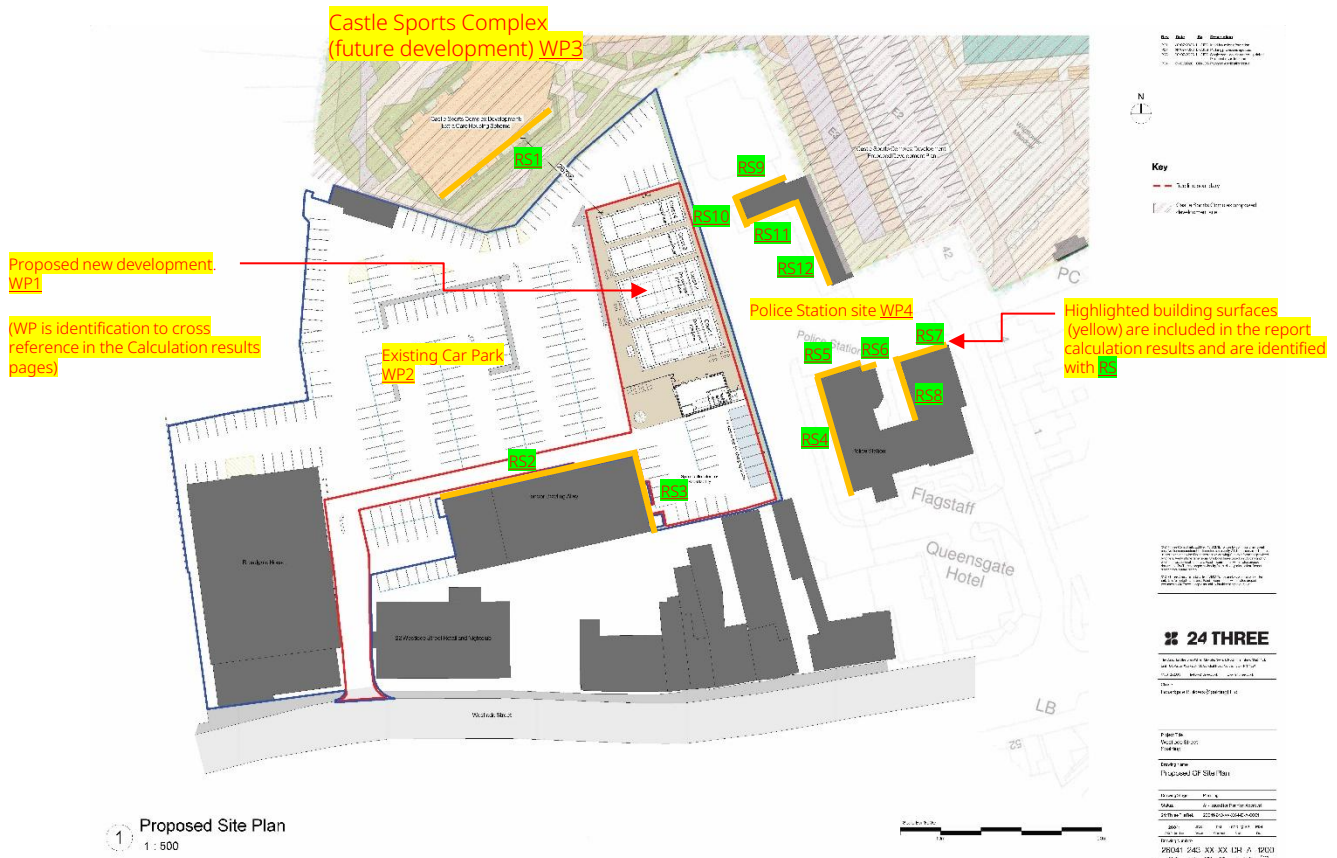
Padel courts can either be lit by the use of integrated or extended fence posts as part of the surrounding fence enclosure inset by 4.0m from the back of the court; or by the use of standalone floodlight columns outside of the padel court enclosure. All light fittings shall be installed to create a minimum 6.0m high clear space above the padel court playing area. The minimum lighting performance standards for padel courts are defined as follows:-

Venue Type	Minimum illumination at ground level (Z=0)
National/International Competition	500 lux (E av) with 0.7 uniformity
Regional competition and recreational use	300 lux (E av) with 0.5 uniformity

Lighting designs shall use a calculation grid spacing of 1.0m x 1.0m (or lesser) dimension over the playing area centred on the net line. Lighting designs provided by designers and manufacturers should fully reveal the tilt angles of the fittings in order to provide information concerning potential glare issues to adjacent property owners.

Light Spillage.

To demonstrate the effects of light spillage onto neighbouring sites, we have broken the site down into a number of calculation planes as below:



Light Spillage (continued).

As mentioned earlier in the document, we have demonstrated the effects of the court lighting onto relevant surface Of the adjacent sites and buildings. The floodlights proposed are designed to offer optimum light control and will therefore minimise light spillage and light pollution (Dark Skys). As a reminder, the calculation results do not take into consideration any other lighting external to this proposal and any contributing factors from retained existing lighting can not be quantified.

The results pages further in this document are detailed, which are summarised as below:

Ground Level results:

WP1 : New Development site.

0.52lx min

465lx max

218lx average

*To be expected as this accommodates the Court lighting.

WP2 : Adjacent Car Park.

0.00lx min

80lx max (at the border of the New Development)

0.94lx average

*Does not include any retained existing lighting.

WP3 : Castle Sports Complex (future development)

0.00lx min

0.089lx max

0.009lx average

WP4 : Police Station Grounds

0.00lx min

48.80lx max (at the border of the New Development)

1.33lx average

Building Facia results:

RS1 : Castle Sports Complex (future development)

Lowest on Facia 0.20lx

Maximum on Fascia 0.47lx

RS2 – RS3 : Indoor Bowling Alley

Lowest on any fascia 0.016lx

Maximum on any fascia 0.94lx

RS4 to RS8 : Police Station

Lowest on any fascia 0.00lx

Maximum on any fascia 0.78lx

RS9 to RS12 : Building Adjacent to Police Station

Lowest on any fascia 0.014lx

Maximum on any fascia 23.1lx*

*This is achieved on the side of what appear to be vehicle garaging as shown in the image below:



Other notes:

Ecological Impact and light pollution.

As the new development site is within an existing commercial premises within close proximity to the town of Spalding, we would expect there to be little to no ecological requirements. The floodlights specified have a colour temperature of 4000K which is the standard requirement for such areas. There is a compromise option available in a warmer colour temperature of 3000K, but this should only be considered to reduce any ecological impact or to match the colour temperature of any other nearby existing floodlights or street lanterns.

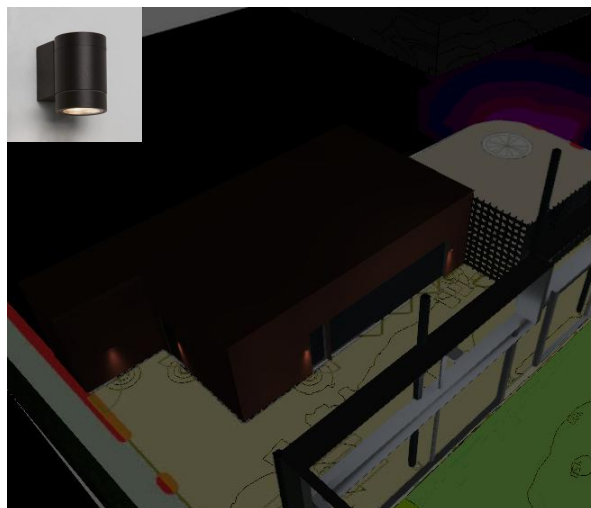
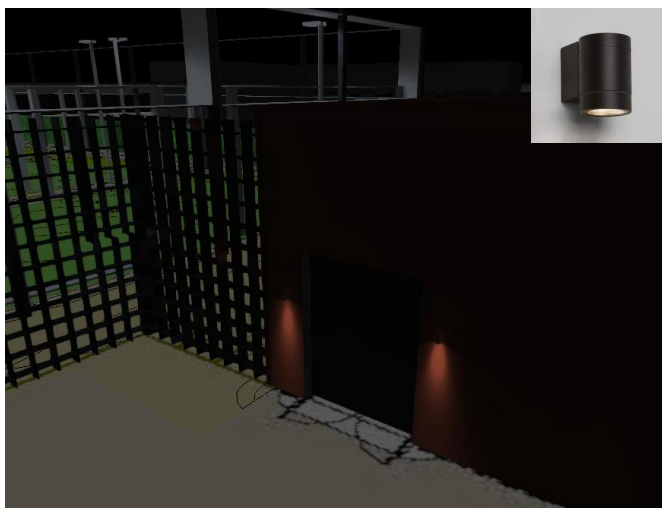
The floodlights proposed have asymmetric distribution and are aimed at 0 degrees above the horizontal plane so there will be no direct upward light therefore satisfying Dark Sky requirements.

Light Controls.

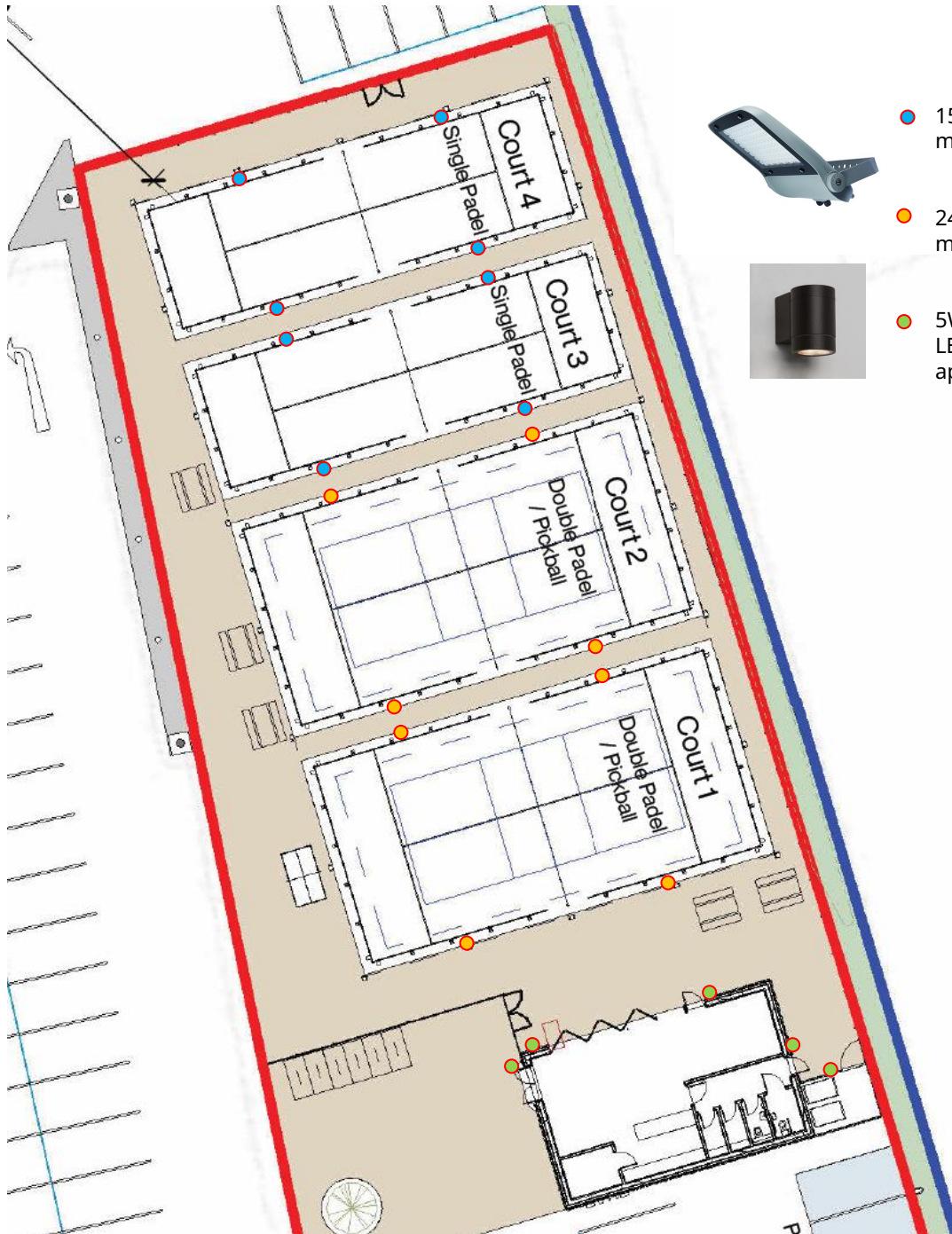
To reduce energy consumption and ensure that floodlights are not left on after evening play has finished, we would suggest that time controls are adopted, pre-set to a suitable switch off time to suit the requirements of the club and the local authorities. This should also apply to Pavilion lighting as outlined below.

External Lighting to the Pavilion:

To highlight doorways around the pavilion, we have proposed suitably IP rated exterior wall mounted LED downlighters to one side of single doors and both sides of double doors and bi-fold doors. These will create a pool of light local to the proposed positions. Being purely downlight, this will ensure there is no upward light pollution contribution from these particular luminaires. As with the court lighting, we suggest that these are also operated via time switches.



Proposed Lighting Plan:



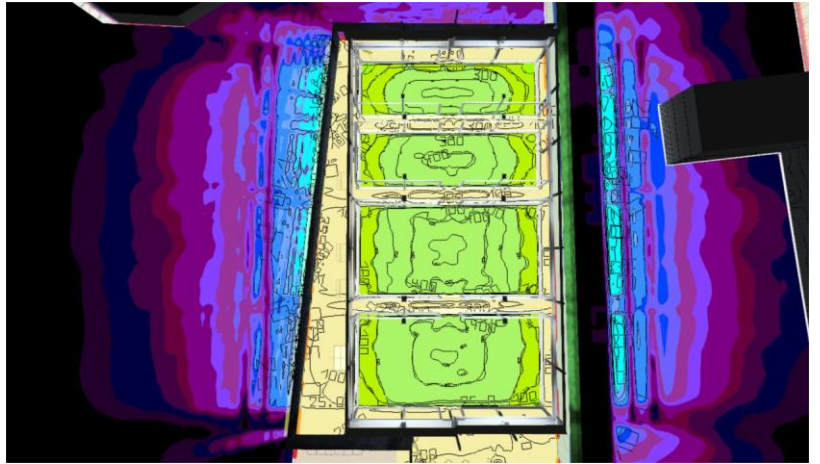
- 150W asymmetric floodlight mounted on 6.0m column.



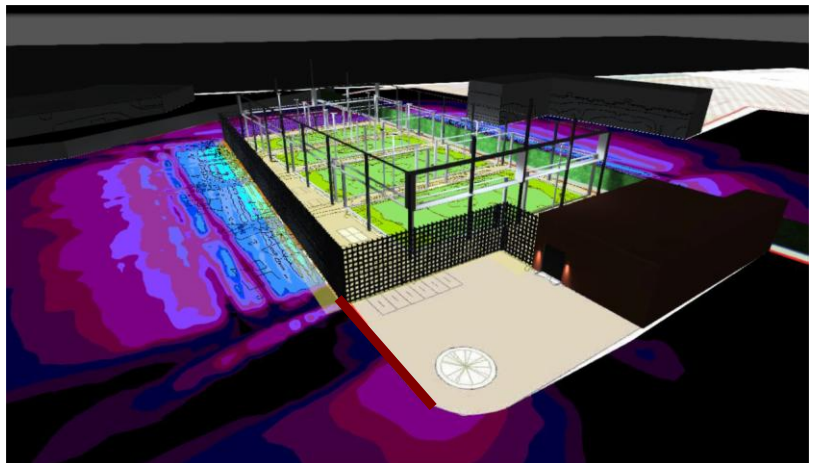
- 240W asymmetric floodlight mounted on 6.0m column.
- 5W exterior wall mounted LED downlighter mounted at approximately 1.60m AFFL..

Images

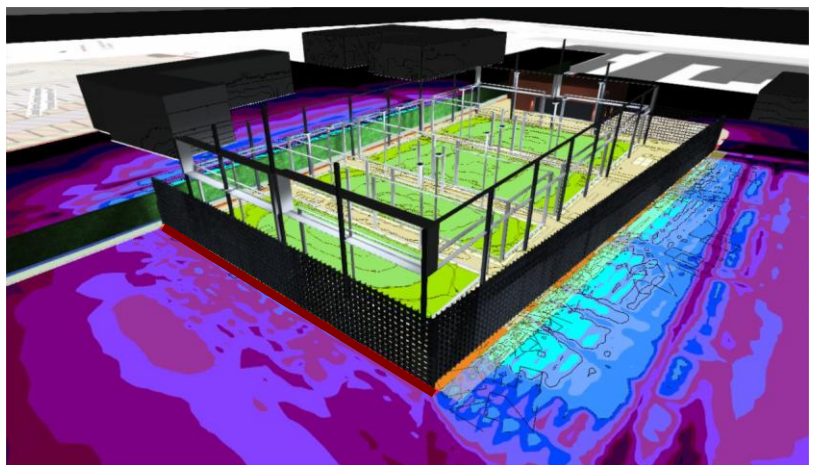
View 1



View 2

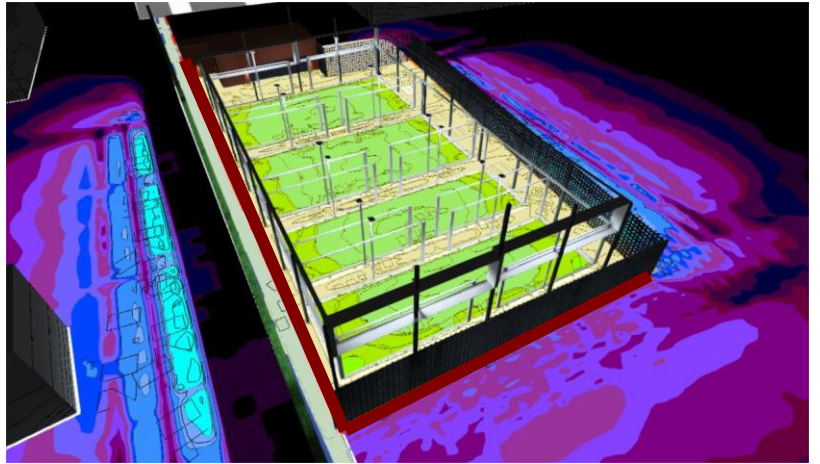


View 3



Images

View 4



View 5



Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
445032 lm	3125.4 W	142.4 lm/W

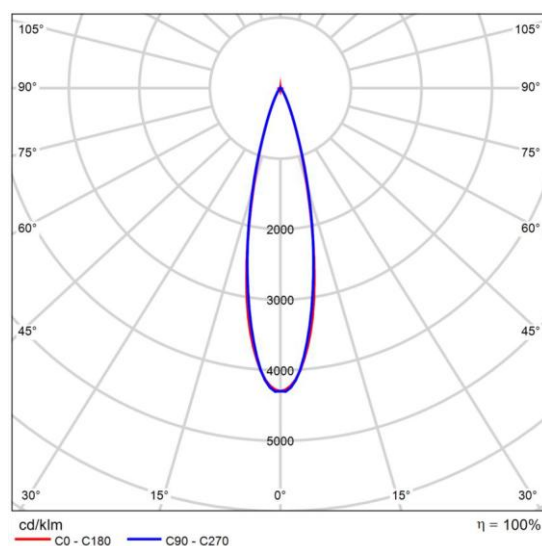
pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy	Index
6	Astro Lighting Ltd	1372003	Dartmouth Single LED Black	4.5 W	236 lm	52.2 lm/W	WDL
8	LEDSCAPE		URB-FL-M240-T3A-80(5050 40K RA70 T3A)	238.4 W	34597 lm	145.1 lm/W	FLD2
8	LEDSCAPE		URB-FL-S150-T3A-48(5050 40K RA70 T3A)	148.9 W	20855 lm	140.1 lm/W	FLD1

Product data sheet

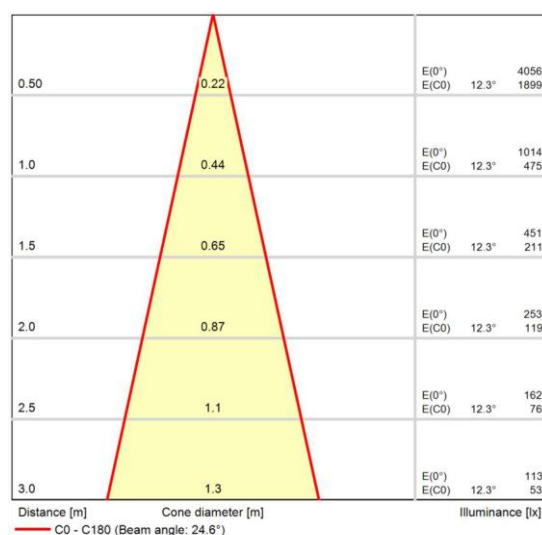
Astro Lighting Ltd - Dartmouth Single LED Black



Article No.	1372003
P	4.5 W
Φ_{Lamp}	236 lm
$\Phi_{\text{Luminaire}}$	236 lm
η	100.00 %
Luminous efficacy	52.2 lm/W
CCT	3036 K
CRI	82
Index	WDL



Polar LDC



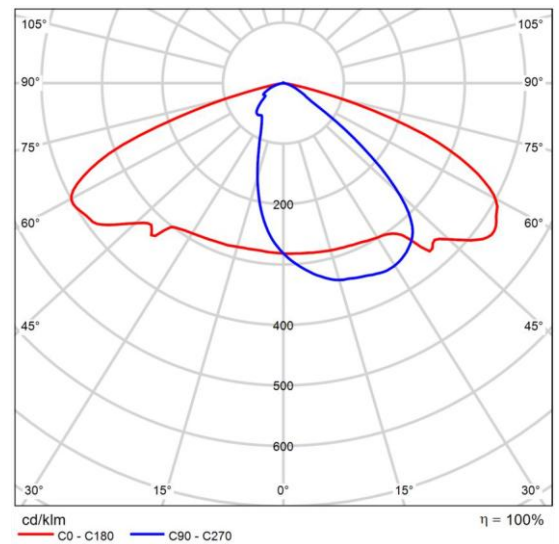
Cone diagram

Product data sheet

LEDSCAPE - URB-FL-M240-T3A-80(5050 40K RA70 T3A)



P	238.4 W
Φ_{Lamp}	34608 lm
$\Phi_{\text{Luminaire}}$	34597 lm
η	99.97 %
Luminous efficacy	145.1 lm/W
CCT	4000 K
CRI	70
Index	FLD2



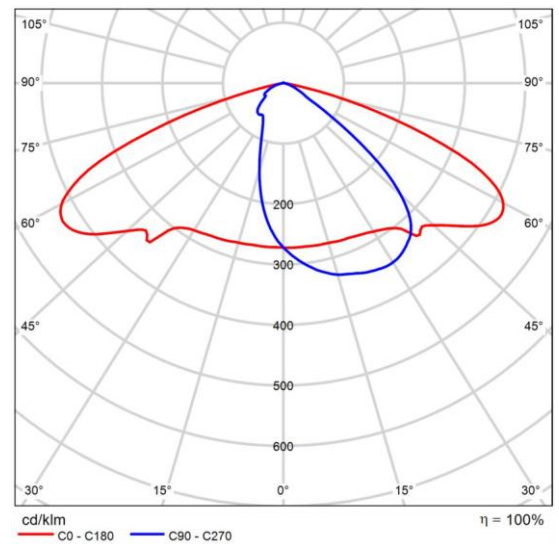
Polar LDC

Product data sheet

LEDSCAPE - URB-FL-S150-T3A-48(5050 40K RA70 T3A)



P	148.9 W
Φ_{Lamp}	20870 lm
$\Phi_{\text{Luminaire}}$	20855 lm
η	99.93 %
Luminous efficacy	140.1 lm/W
CCT	4000 K
CRI	70
Index	FLD1



Polar LDC

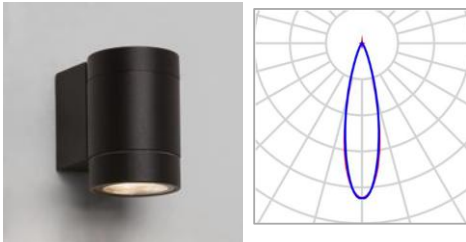
Site 1

Luminaire layout plan



Site 1

Luminaire layout plan



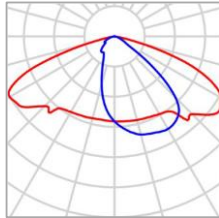
Manufacturer	Astro Lighting Ltd	P	4.5 W
Article No.	1372003	$\Phi_{\text{Luminaire}}$	236 lm
Article name	Dartmouth Single LED Black		
Fitting	1x		
Index	WDL		

Individual luminaires

X	Y	Mounting height	Luminaire
170.594 m	124.424 m	1.600 m	17
162.522 m	122.110 m	1.600 m	18
174.758 m	121.731 m	1.600 m	19
161.367 m	121.167 m	1.600 m	20
177.027 m	120.872 m	1.600 m	21
162.036 m	118.983 m	1.600 m	22

Site 1

Luminaire layout plan



Manufacturer	LEDSCAPE	P	238.4 W
Article name	URB-FL-M240-T3A-80 (5050 40K RA70 T3A)	$\Phi_{\text{Luminaire}}$	34597 lm
Fitting	1x 5050 40K RA70 T3A		
Index	FLD2		

2 x LEDSCAPE URB-FL-M240-T3A-80(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	158.950 m / 127.432 m / 6.000 m	158.950 m	127.432 m	6.000 m	15
X-direction	2 pcs., Centre - centre, 10.000 m	168.528 m	130.306 m	6.000 m	16

2 x LEDSCAPE URB-FL-M240-T3A-80(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	155.459 m / 139.124 m / 6.000 m	155.459 m	139.124 m	6.000 m	11
X-direction	2 pcs., Centre - centre, 10.000 m	165.037 m	141.998 m	6.000 m	12

2 x LEDSCAPE URB-FL-M240-T3A-80(5050 40K RA70 T3A)

Site 1

Luminaire layout plan

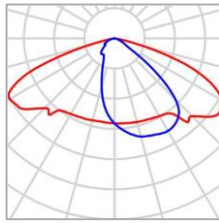
Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	162.164 m / 151.576 m / 6.000 m	162.164 m	151.576 m	6.000 m	9
X-direction	2 pcs., Centre - centre, 10.000 m	152.586 m	148.703 m	6.000 m	10

2 x LEDSCAPE URB-FL-M240-T3A-80(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	165.654 m / 139.884 m / 6.000 m	165.654 m	139.884 m	6.000 m	13
X-direction	2 pcs., Centre - centre, 10.000 m	156.076 m	137.010 m	6.000 m	14

Site 1

Luminaire layout plan



Manufacturer	LEDSCAPE	P	148.9 W
Article name	URB-FL-S150-T3A-48 (5050 40K RA70 T3A)	$\Phi_{\text{Luminaire}}$	20855 lm
Fitting	1x 5050 40K RA70 T3A		
Index	FLD1		

2 x LEDSCAPE URB-FL-S150-T3A-48(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	151.978 m / 150.871 m / 6.000 m	151.978 m	150.871 m	6.000 m	7
X-direction	2 pcs., Centre - centre, 10.050 m	161.604 m	153.758 m	6.000 m	8

2 x LEDSCAPE URB-FL-S150-T3A-48(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	149.456 m / 158.686 m / 6.000 m	149.456 m	158.686 m	6.000 m	3
X-direction	2 pcs., Centre - centre, 10.318 m	159.338 m	161.651 m	6.000 m	4

2 x LEDSCAPE URB-FL-S150-T3A-48(5050 40K RA70 T3A)

Site 1

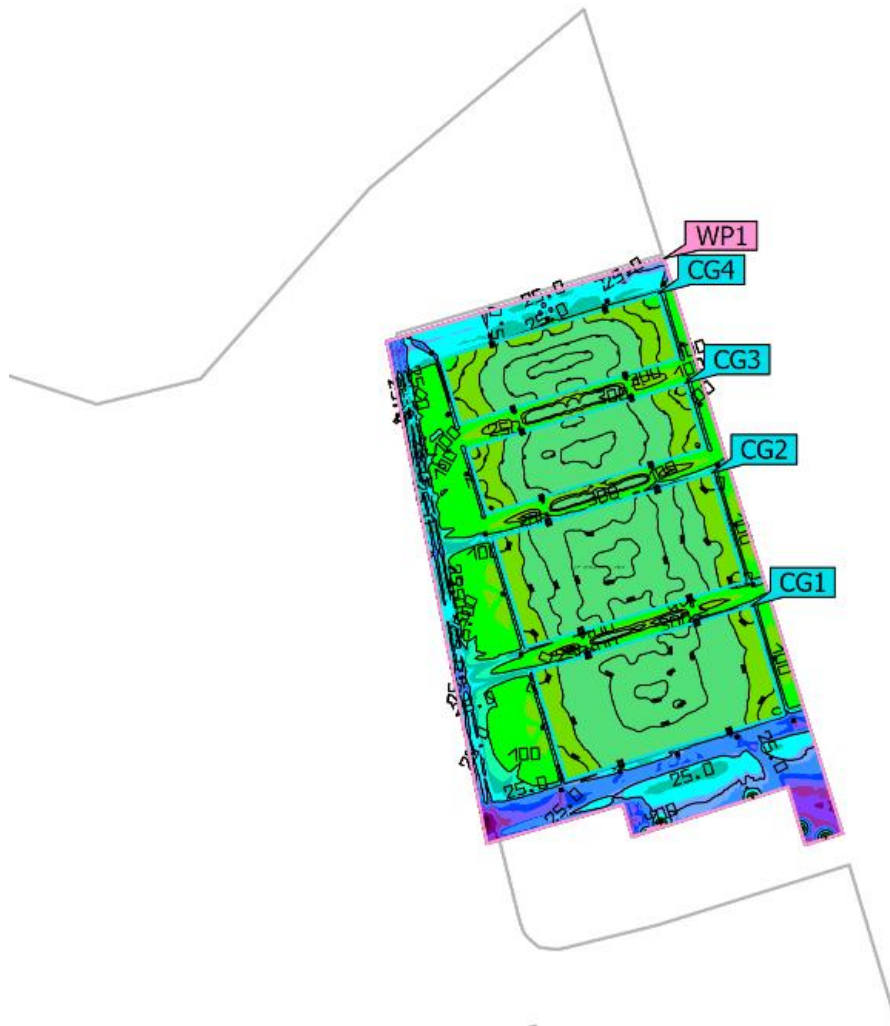
Luminaire layout plan

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	157.584 m / 167.380 m / 6.000 m	157.584 m	167.380 m	6.000 m	1
X-direction	2 pcs., Centre - centre, 10.400 m	147.630 m	164.368 m	6.000 m	2

2 x LEDSCAPE URB-FL-S150-T3A-48(5050 40K RA70 T3A)

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	159.893 m / 159.592 m / 6.000 m	159.893 m	159.592 m	6.000 m	5
X-direction	2 pcs., Centre - centre, 10.075 m	150.258 m	156.646 m	6.000 m	6

New Development Ground (Light scene 1)
Calculation objects



New Development Ground (Light scene 1)

Calculation objects

Working planes

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Working plane (New Development Ground) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	218 lx	0.52 lx	465 lx	0.002	0.001	WP1

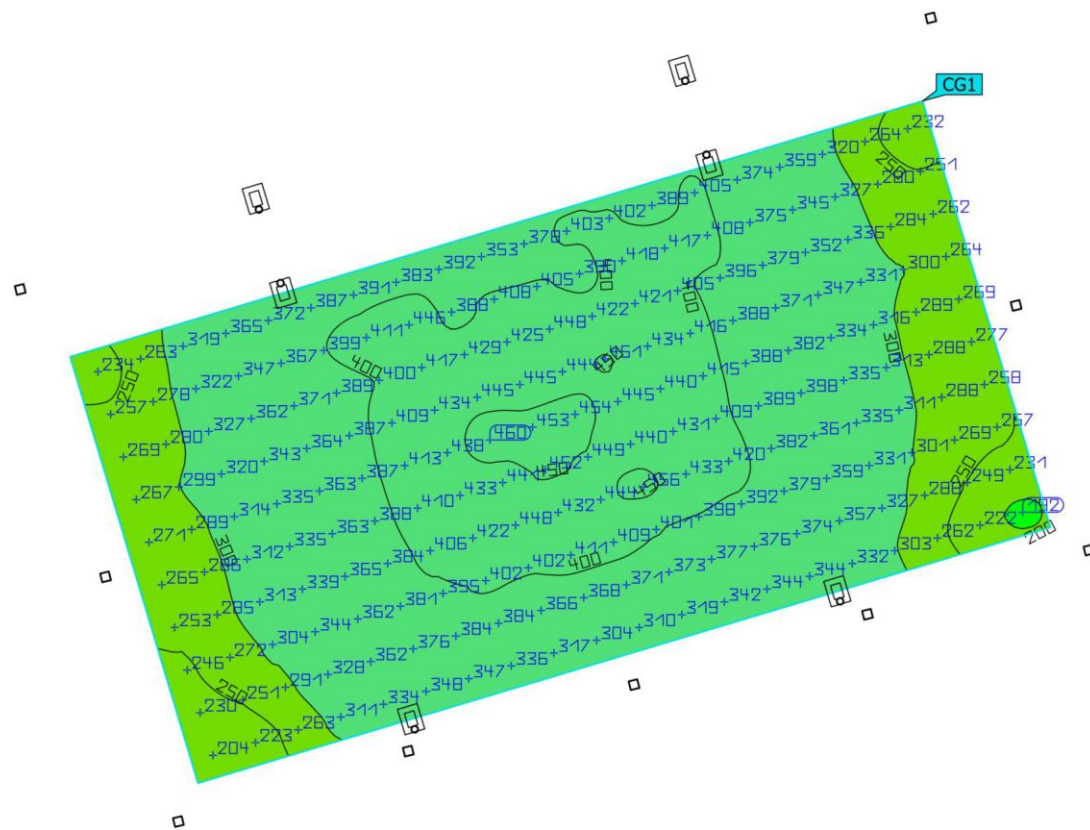
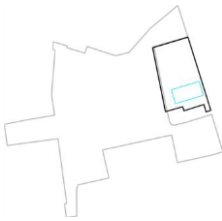
Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Court 1 Horizontal illuminance Height: 0.000 m	354 lx	192 lx	460 lx	0.54	0.42	CG1
Court 2 Horizontal illuminance Height: 0.000 m	365 lx	228 lx	463 lx	0.62	0.49	CG2
Court 3 Horizontal illuminance Height: 0.000 m	336 lx	215 lx	422 lx	0.64	0.51	CG3
Court 4 Horizontal illuminance Height: 0.000 m	311 lx	177 lx	382 lx	0.57	0.46	CG4

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

New Development Ground (Light scene 1)

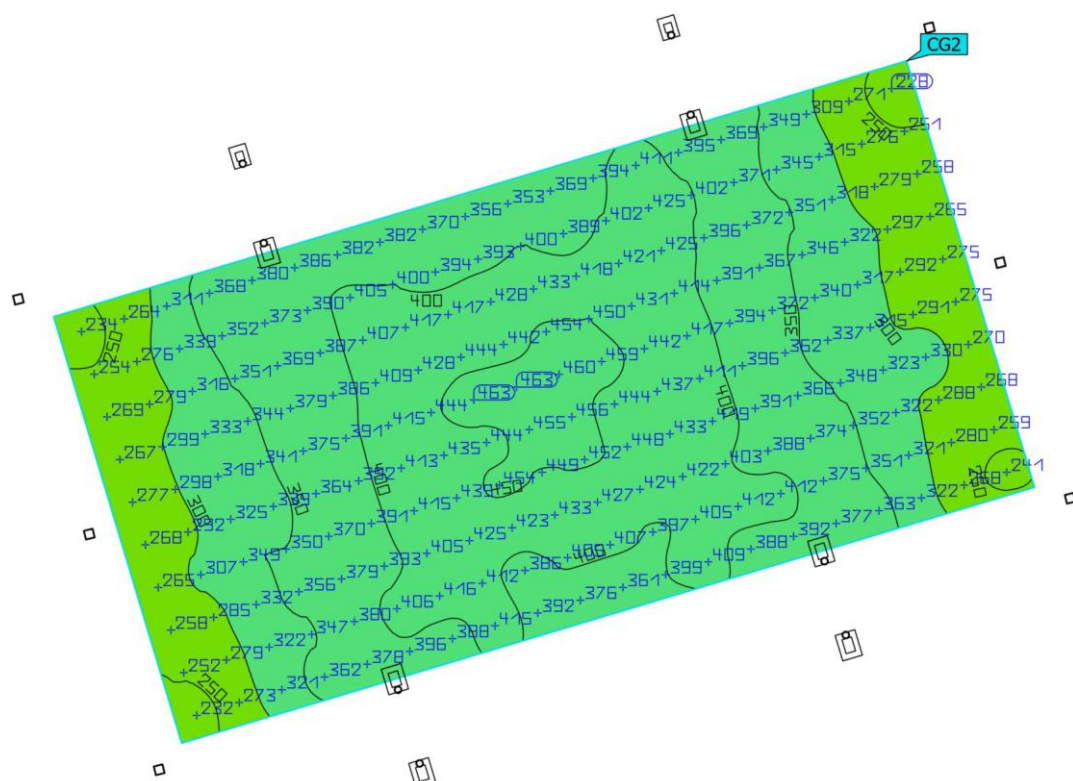
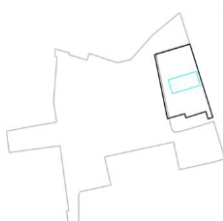
Court 1



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Court 1	354 lx	192 lx	460 lx	0.54	0.42	CG1
Horizontal illuminance						
Height: 0.000 m						

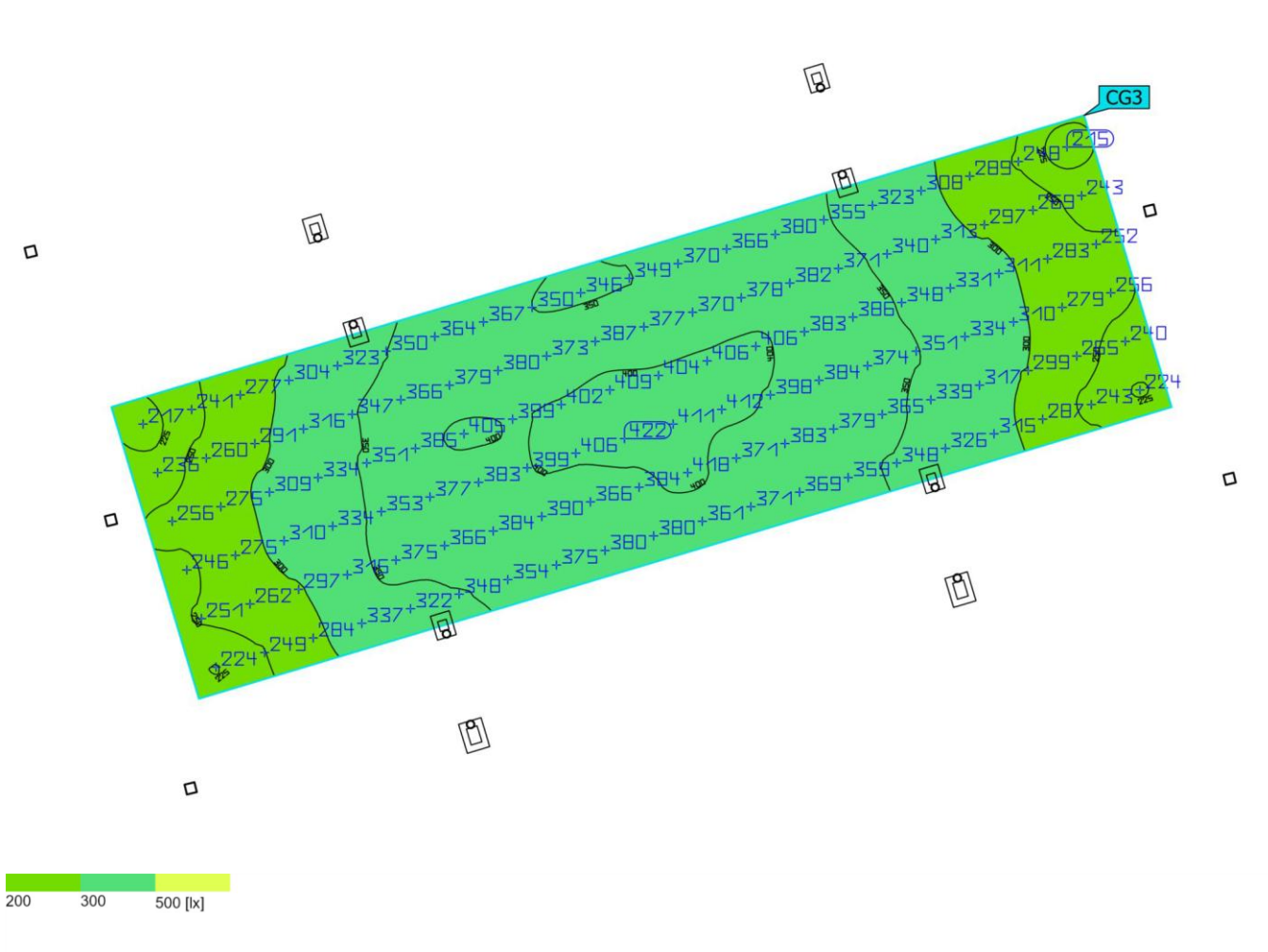
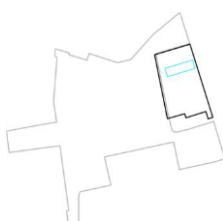
Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Court 2



Properties	$\bar{E}$	$E_{\min}$	$E_{\max}$	$U_o (g_1)$	g_2	Index
Court 2 Horizontal illuminance Height: 0.000 m	365 lx	228 lx	463 lx	0.62	0.49	CG2

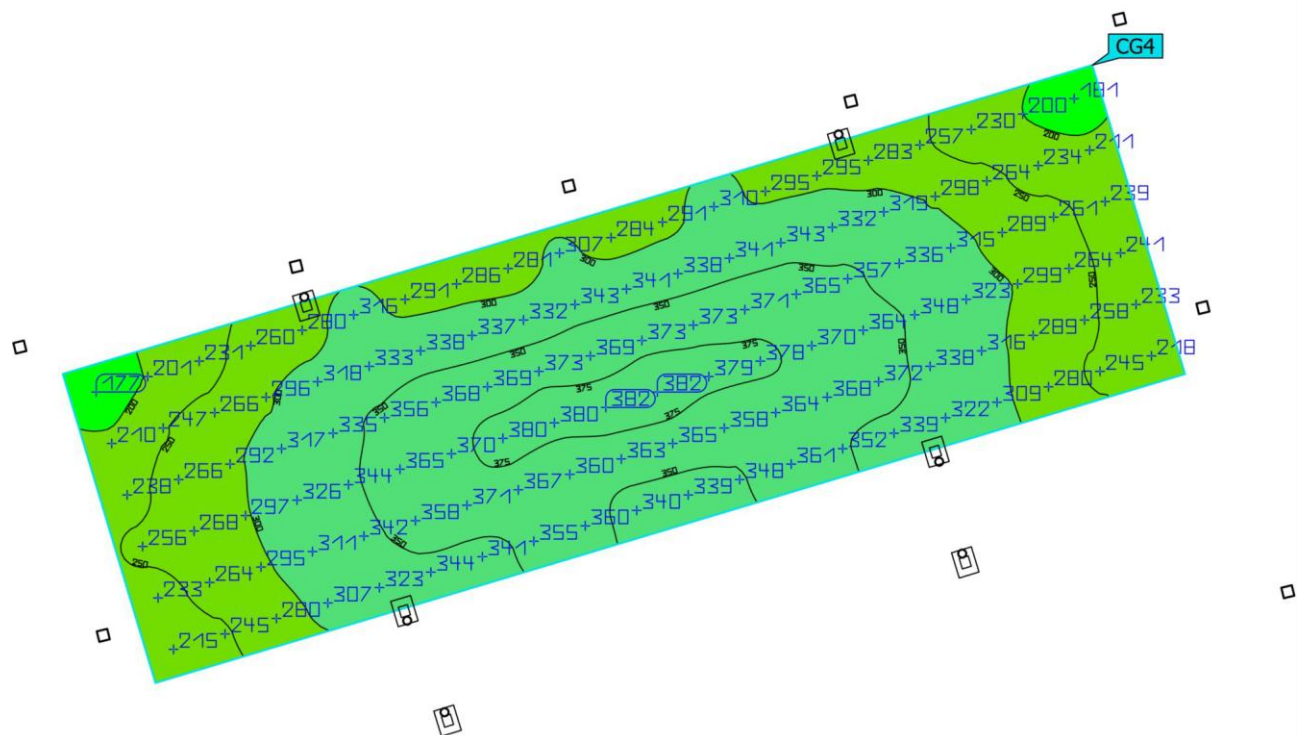
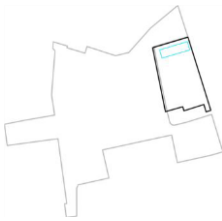
Court 3



Properties	$\bar{E}$	$E_{\min}$	$E_{\max}$	$U_o (g_1)$	g_2	Index
Court 3 Horizontal illuminance Height: 0.000 m	336 lx	215 lx	422 lx	0.64	0.51	CG3

New Development Ground (Light scene 1)

Court 4

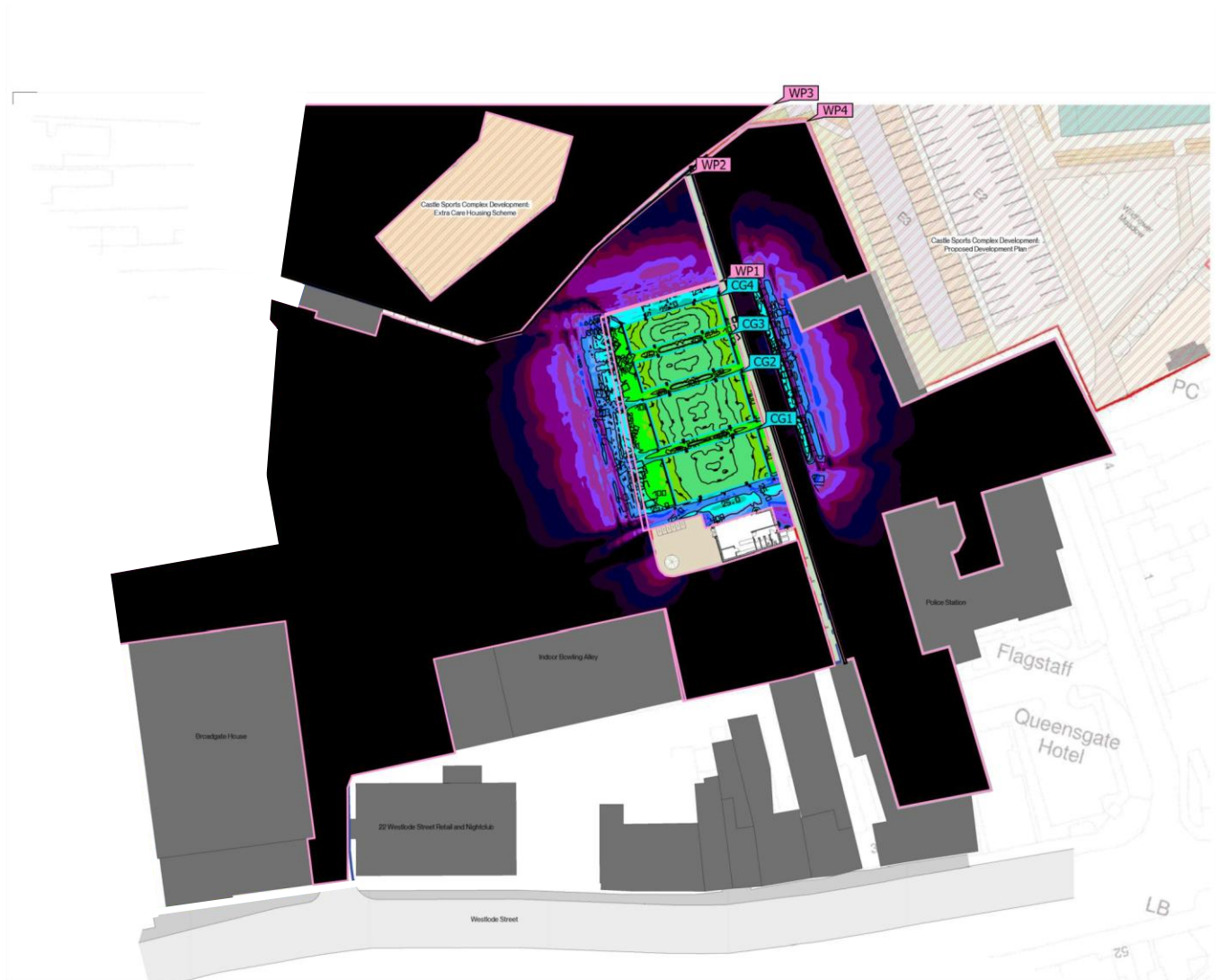


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Court 4	311 lx	177 lx	382 lx	0.57	0.46	CG4
Horizontal illuminance						
Height: 0.000 m						

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Site 1 (Light scene 1)

Calculation objects



Site 1 (Light scene 1)

Calculation objects

Working planes

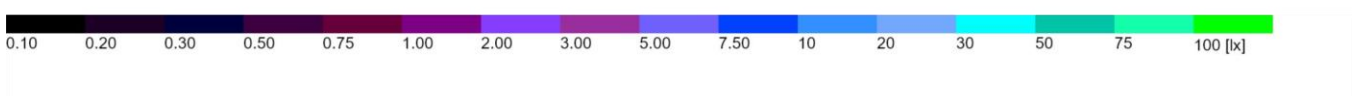
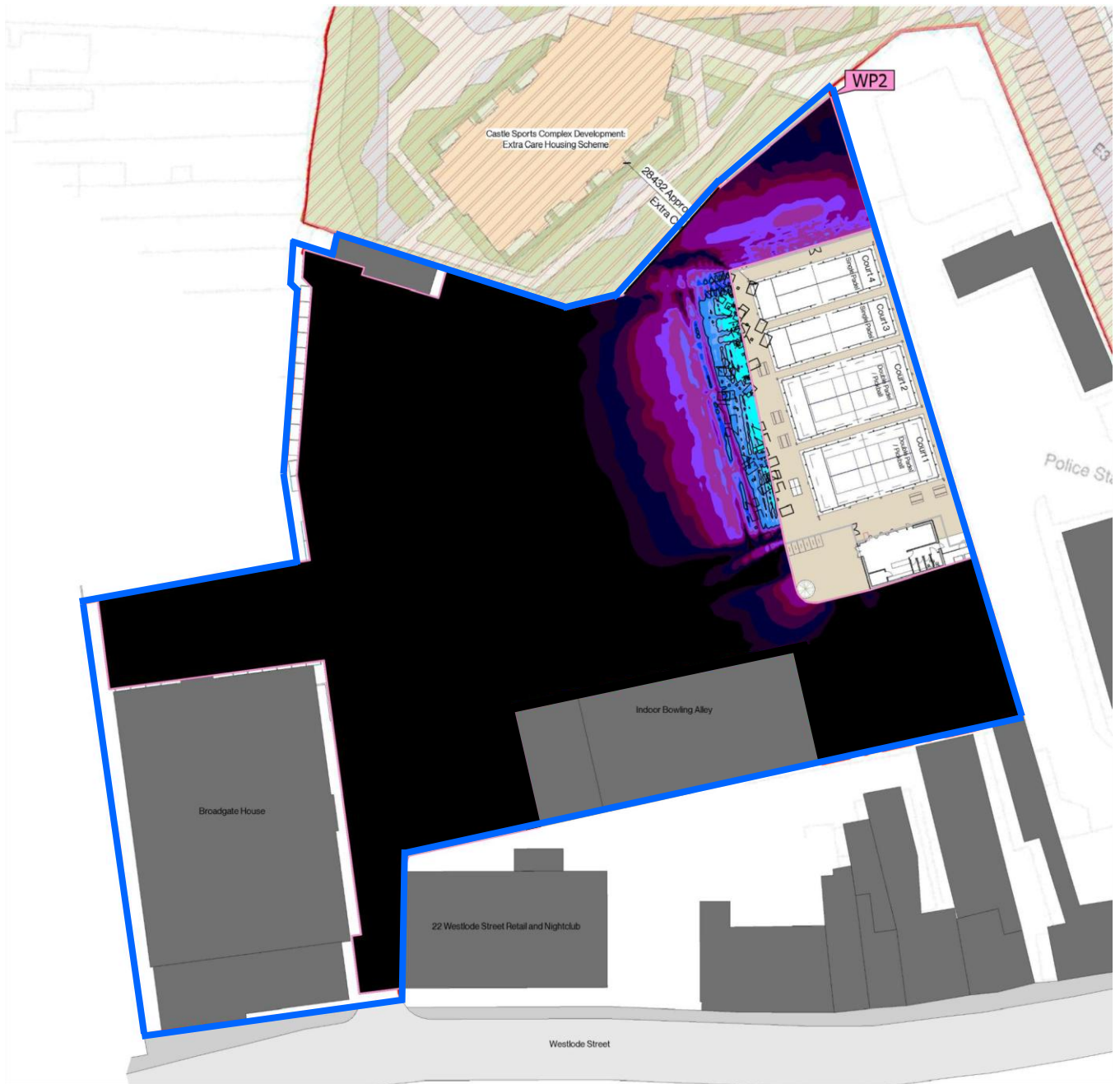
Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Working plane (Adjacent Car Park) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.94 lx	0.00 lx	80.4 lx	0.00	0.00	WP2
Working plane (Castle Sports Complex Development Grounds) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.009 lx	0.00 lx	0.089 lx	-	0.00	WP3
Working plane (New Development Ground) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	218 lx	0.52 lx	465 lx	0.002	0.001	WP1
Working plane (Police Station Grounds) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.200 m	1.33 lx	0.000 lx	48.8 lx	0.00	0.00	WP4

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Court 1 Horizontal illuminance Height: 0.000 m	354 lx	192 lx	460 lx	0.54	0.42	CG1
Court 2 Horizontal illuminance Height: 0.000 m	365 lx	228 lx	463 lx	0.62	0.49	CG2
Court 3 Horizontal illuminance Height: 0.000 m	336 lx	215 lx	422 lx	0.64	0.51	CG3
Court 4 Horizontal illuminance Height: 0.000 m	311 lx	177 lx	382 lx	0.57	0.46	CG4

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Adjacent Car Park (Light scene 1) Calculation objects



Adjacent Car Park (Light scene 1)

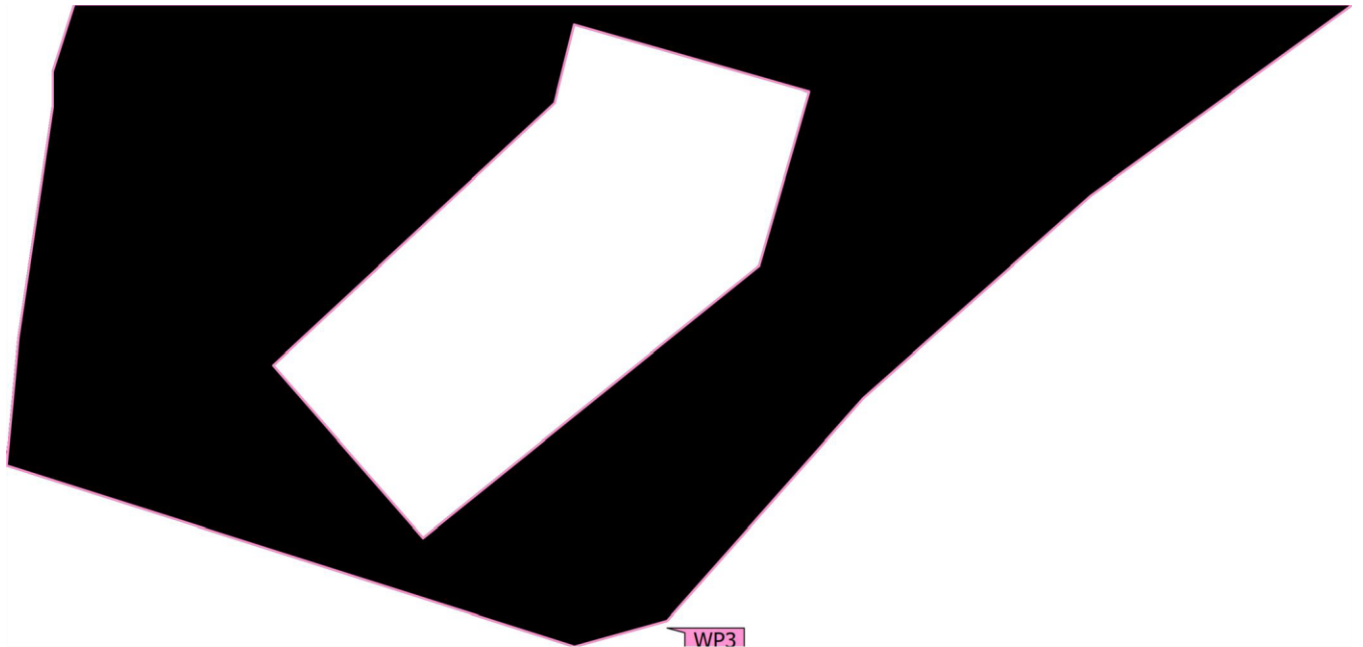
Calculation objects

Working planes

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Working plane (Adjacent Car Park) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.94 lx	0.00 lx	80.4 lx	0.00	0.00	WP2

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Castle Sports Complex Development Grounds (Light scene 1)
Calculation objects



Castle Sports Complex Development Grounds (Light scene 1)

Calculation objects

Working planes

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Working plane (Castle Sports Complex Development Grounds) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.000 m	0.009 lx	0.00 lx	0.089 lx	-	0.00	WP3

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Police Station Grounds (Light scene 1) Calculation objects



Police Station Grounds (Light scene 1)

Calculation objects

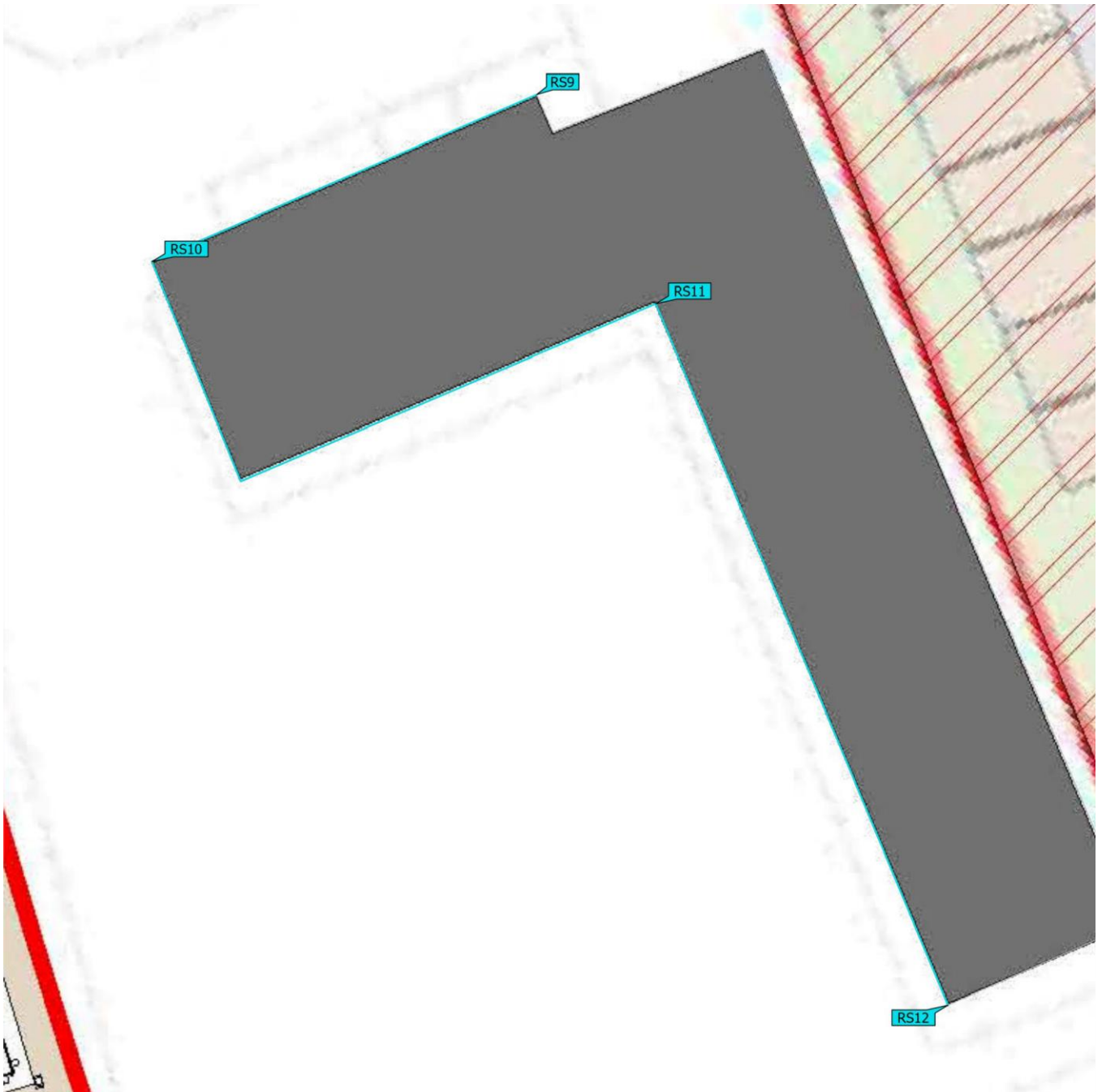
Working planes

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Working plane (Police Station Grounds) Perpendicular illuminance (adaptive) Height: 0.000 m, Wall zone: 0.200 m	1.33 lx	0.000 lx	48.8 lx	0.00	0.00	WP4

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Building Adjacent to Police Station · Storey 1 (Light scene 1)

Calculation objects



Building Adjacent to Police Station · Storey 1 (Light scene 1)

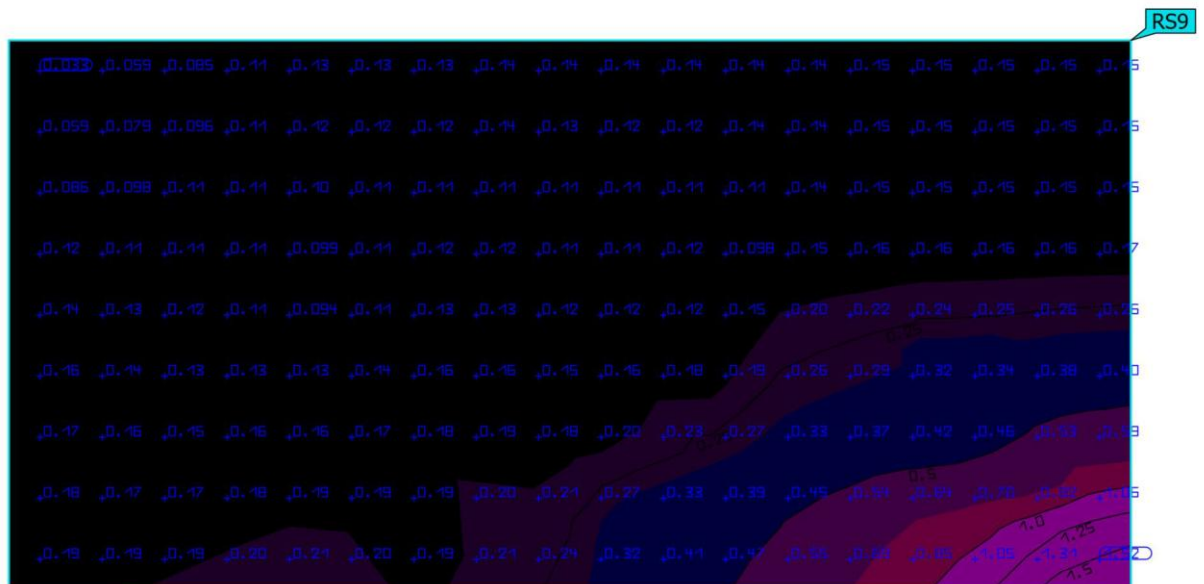
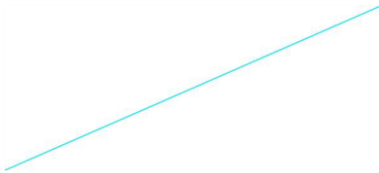
Calculation objects

Surface result objects

Properties	Ø	min	max	U _o (g ₁)	g ₂	Index
Surface result object 11 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.22 lx	0.014 lx	1.70 lx	0.064	0.008	RS9
Surface result object 11 (Wall) Luminance Height: 3.000 m	0.036 cd/m ²	0.002 cd/m ²	0.27 cd/m ²	0.056	0.007	RS9
Surface result object 12 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	6.78 lx	2.26 lx	23.1 lx	0.33	0.098	RS10
Surface result object 12 (Wall) Luminance Height: 3.000 m	1.08 cd/m ²	0.36 cd/m ²	3.67 cd/m ²	0.33	0.098	RS10
Surface result object 13 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.49 lx	0.19 lx	1.40 lx	0.39	0.14	RS11
Surface result object 13 (Wall) Luminance Height: 3.000 m	0.078 cd/m ²	0.031 cd/m ²	0.22 cd/m ²	0.40	0.14	RS11
Surface result object 14 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	1.00 lx	0.70 lx	1.65 lx	0.70	0.42	RS12
Surface result object 14 (Wall) Luminance Height: 3.000 m	0.16 cd/m ²	0.11 cd/m ²	0.26 cd/m ²	0.69	0.42	RS12

Building Adjacent to Police Station · Storey 1 (Light scene 1)

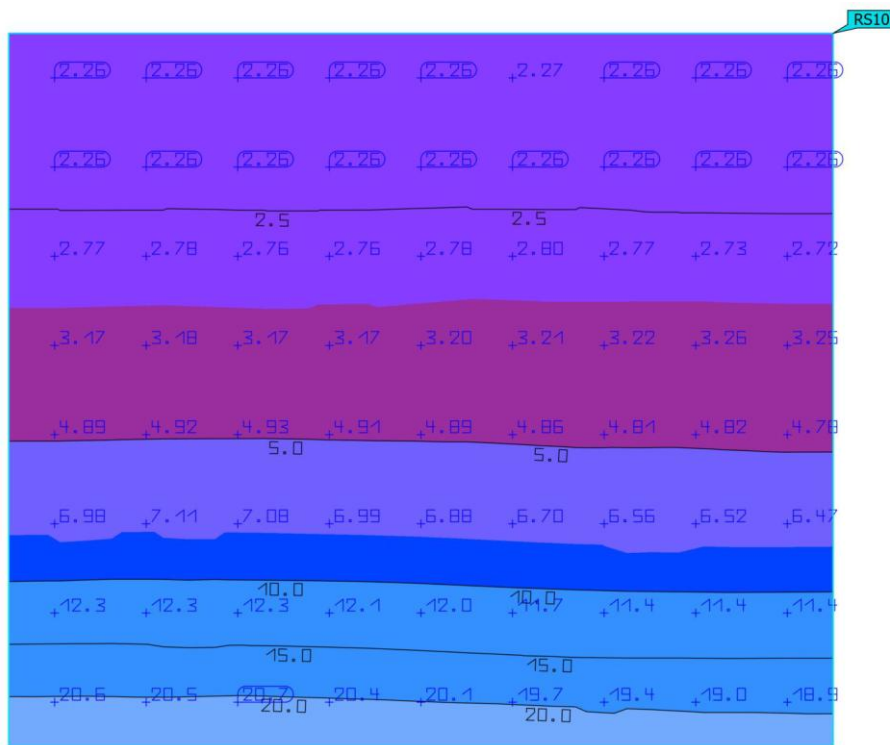
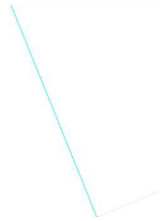
Surface result object 11 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 11 (Wall)	0.22 lx	0.014 lx	1.70 lx	0.064	0.008	RS9
Perpendicular illuminance (adaptive)						
Height: 3.000 m						

Building Adjacent to Police Station · Storey 1 (Light scene 1)

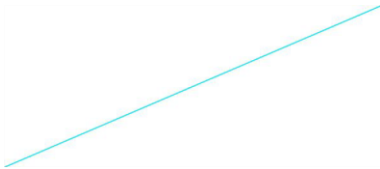
Surface result object 12 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 12 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	6.78 lx	2.26 lx	23.1 lx	0.33	0.098	RS10

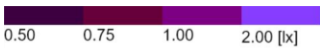
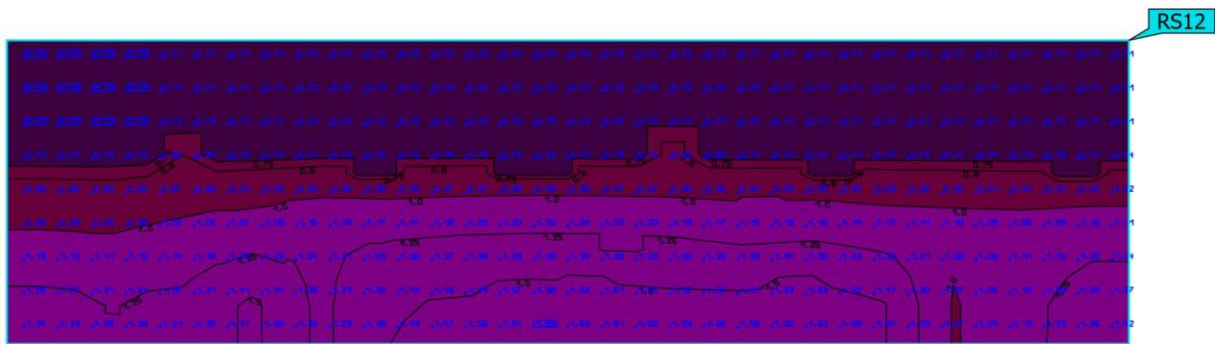
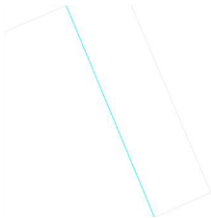
Building Adjacent to Police Station · Storey 1 (Light scene 1)

Surface result object 13 (Wall)



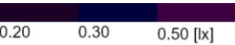
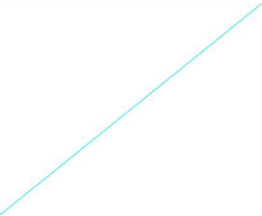
Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 13 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.49 lx	0.19 lx	1.40 lx	0.39	0.14	RS11

Building Adjacent to Police Station · Storey 1 (Light scene 1)
Surface result object 14 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 14 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	1.00 lx	0.70 lx	1.65 lx	0.70	0.42	RS12

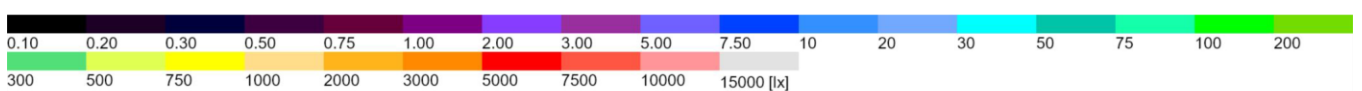
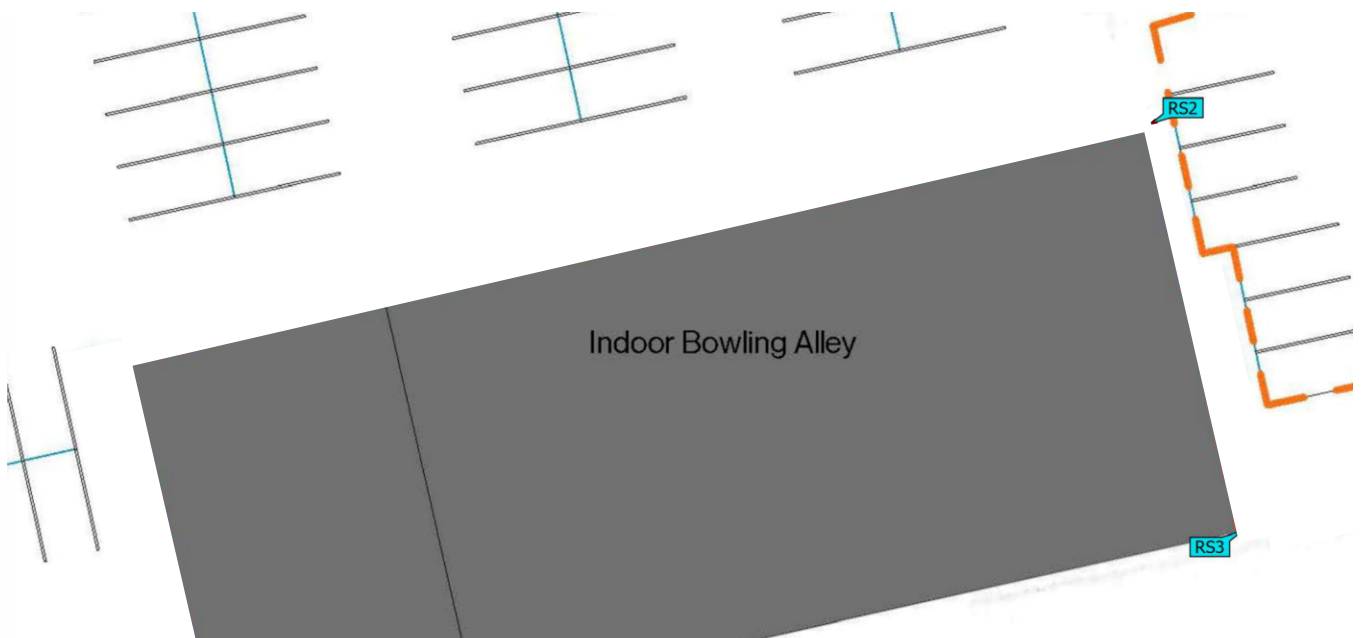
Castle Sports Complex · Storey 1 (Light scene 1)
Surface result object 1 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 1 (Wall) Perpendicular illuminance (adaptive) Height: 1.400 m	0.34 lx	0.20 lx	0.47 lx	0.59	0.43	RS1

Indoor Bowling Alley · Storey 1 (Light scene 1)

Calculation objects



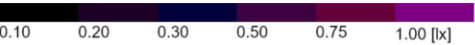
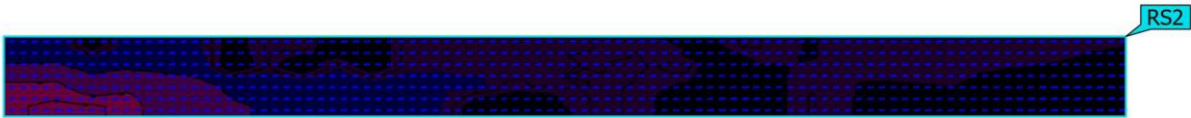
Indoor Bowling Alley · Storey 1 (Light scene 1)

Calculation objects

Surface result objects

Properties	Ø	min	max	U _o (g ₁)	g ₂	Index
Surface result object 4 (Wall) Perpendicular illuminance (adaptive) Height: 1.750 m	0.29 lx	0.016 lx	0.94 lx	0.055	0.017	RS2
Surface result object 4 (Wall) Luminance Height: 1.750 m	0.046 cd/m ²	0.002 cd/m ²	0.15 cd/m ²	0.043	0.013	RS2
Surface result object 5 (Wall) Perpendicular illuminance (adaptive) Height: 1.750 m	0.16 lx	0.035 lx	0.51 lx	0.22	0.069	RS3
Surface result object 5 (Wall) Luminance Height: 1.750 m	0.025 cd/m ²	0.006 cd/m ²	0.081 cd/m ²	0.24	0.074	RS3

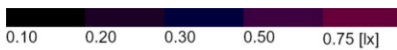
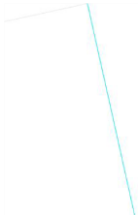
Indoor Bowling Alley · Storey 1 (Light scene 1)
Surface result object 4 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 4 (Wall) Perpendicular illuminance (adaptive) Height: 1.750 m	0.29 lx	0.016 lx	0.94 lx	0.055	0.017	RS2

Indoor Bowling Alley · Storey 1 (Light scene 1)

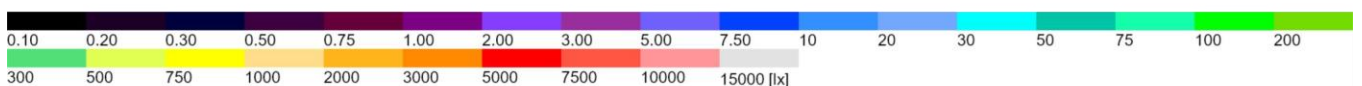
Surface result object 5 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 5 (Wall) Perpendicular illuminance (adaptive) Height: 1.750 m	0.16 lx	0.035 lx	0.51 lx	0.22	0.069	RS3

Police Station · Storey 1 (Light scene 1)

Calculation objects



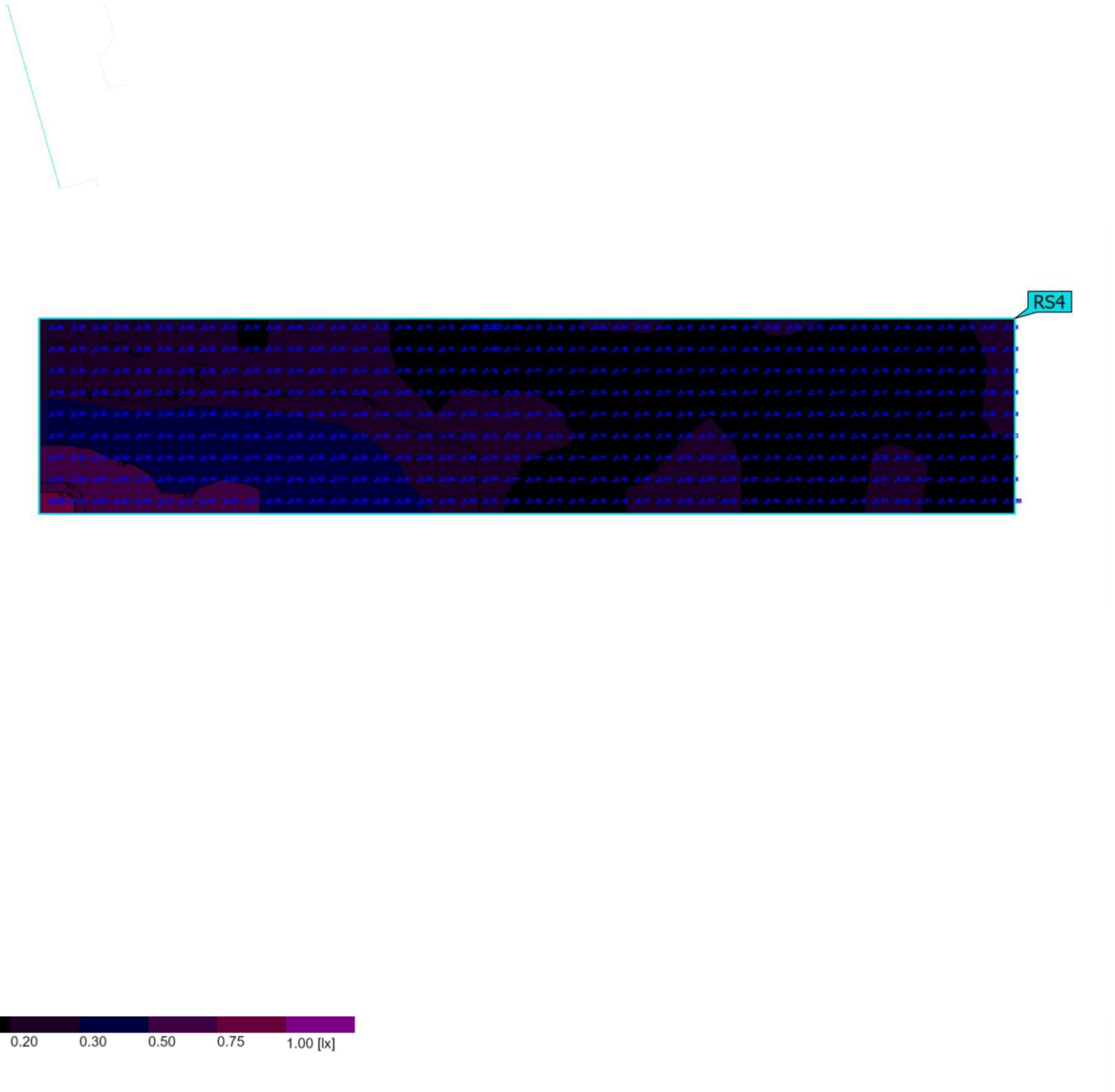
Police Station · Storey 1 (Light scene 1)

Calculation objects

Surface result objects

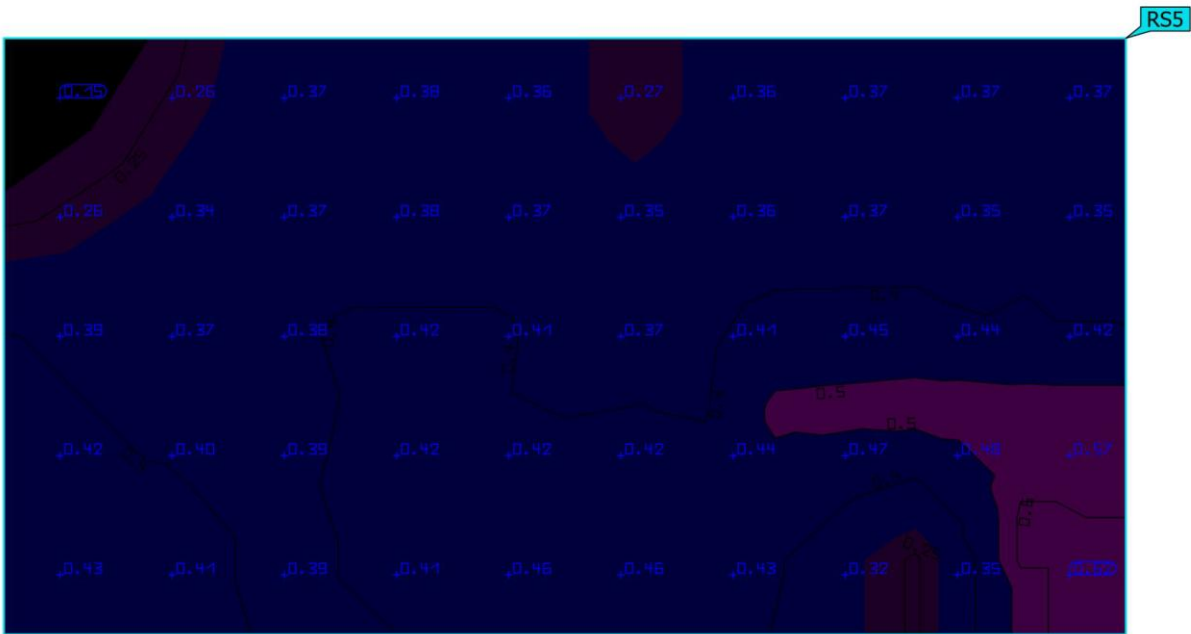
Properties	Ø	min	max	U _o (g ₁)	g ₂	Index
Surface result object 10 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.036 lx	0.000 lx	0.12 lx	0.00	0.00	RS8
Surface result object 10 (Wall) Luminance Height: 3.000 m	0.006 cd/m ²	0.00 cd/m ²	0.019 cd/m ²	-	0.00	RS8
Surface result object 6 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.25 lx	0.029 lx	0.78 lx	0.12	0.037	RS4
Surface result object 6 (Wall) Luminance Height: 3.000 m	0.039 cd/m ²	0.005 cd/m ²	0.12 cd/m ²	0.13	0.042	RS4
Surface result object 7 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.39 lx	0.028 lx	0.61 lx	0.072	0.046	RS5
Surface result object 7 (Wall) Luminance Height: 3.000 m	0.062 cd/m ²	0.004 cd/m ²	0.098 cd/m ²	0.065	0.041	RS5
Surface result object 8 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.056 lx	0.039 lx	0.073 lx	0.70	0.53	RS6
Surface result object 8 (Wall) Luminance Height: 3.000 m	0.009 cd/m ²	0.006 cd/m ²	0.012 cd/m ²	-	0.50	RS6
Surface result object 9 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.12 lx	0.082 lx	0.15 lx	0.68	0.55	RS7
Surface result object 9 (Wall) Luminance Height: 3.000 m	0.019 cd/m ²	0.013 cd/m ²	0.025 cd/m ²	0.68	0.52	RS7

Police Station · Storey 1 (Light scene 1)
 Surface result object 6 (Wall)



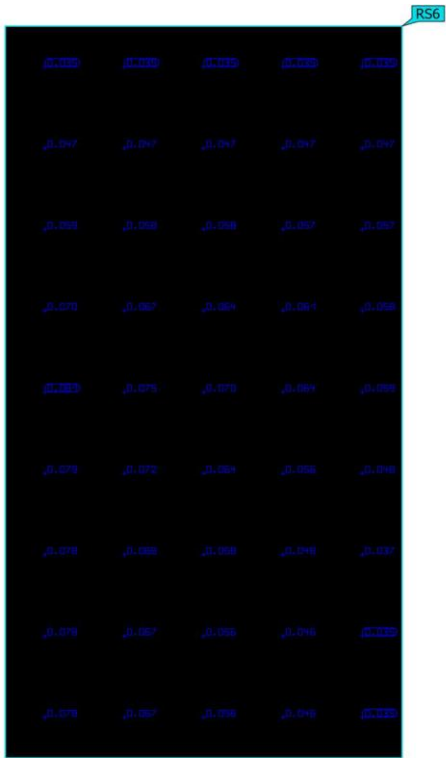
Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 6 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.25 lx	0.029 lx	0.78 lx	0.12	0.037	RS4

Police Station · Storey 1 (Light scene 1)
Surface result object 7 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 7 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.39 lx	0.028 lx	0.61 lx	0.072	0.046	RS5

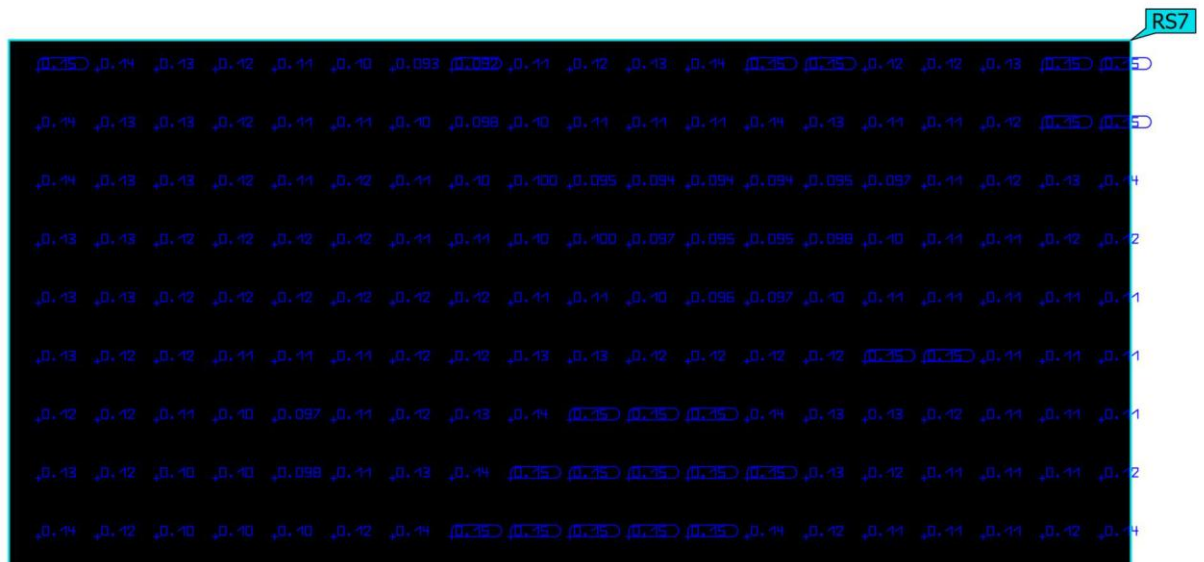
Police Station · Storey 1 (Light scene 1)
Surface result object 8 (Wall)



0.10 [lx]

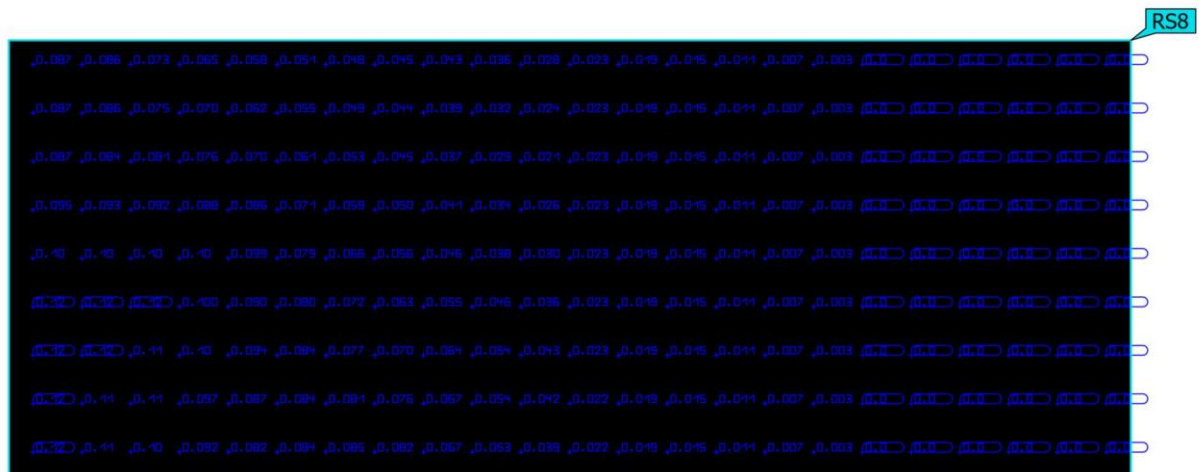
Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 8 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.056 lx	0.039 lx	0.073 lx	0.70	0.53	RS6

Police Station · Storey 1 (Light scene 1)
 Surface result object 9 (Wall)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 9 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.12 lx	0.082 lx	0.15 lx	0.68	0.55	RS7

Police Station · Storey 1 (Light scene 1)
 Surface result object 10 (Wall)



0.10 0.20 [lx]

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Surface result object 10 (Wall) Perpendicular illuminance (adaptive) Height: 3.000 m	0.036 lx	0.000 lx	0.12 lx	0.00	0.00	RS8

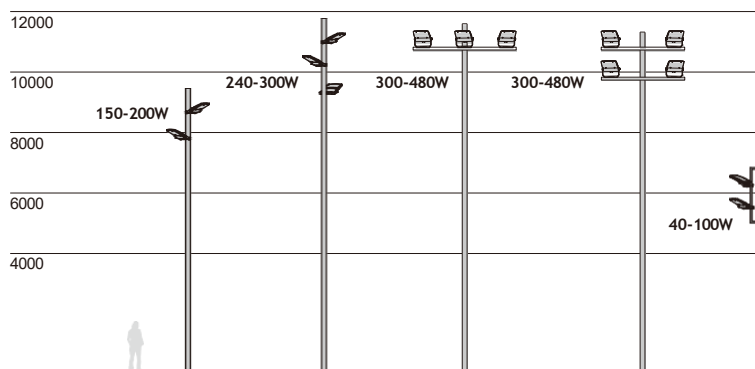
A high quality and stylish yet practical range of floodlights to match the URBA street lighting range. Four body sizes and outputs from 40W to 480W allow use for almost any application.

- Die-cast aluminium construction with a tempered glass diffuser.
- Optical lenses offer visual comfort and uniform light with multiple distribution options.
- The control gear housing is rated to IP66 and offers automatic isolation on opening.
- UV protected pure polyester powder coated housing offering high corrosion resistance.
- Suitable for use with a range of controls and remote management systems.
- All external screws are 304 stainless steel.
- RAL9007, other RAL colours available on request.



URBA Range

Page 22



CODE	POWER	LED PCS	CCT	LUMEN OUTPUT	CRI	BEAM ANGLE	IP	IK	WARRANTY
URB-FL-XS40-T3A	40W	24	3000/4000	5130/5500	>70	T3A	IP66	IK08	5 year
URB-FL-XS40-T90				5320/5720		T90			
URB-FL-XS60-T3A	60W	24	3000/4000	7560/8100	>70	T3A	IP66	IK08	5 year
URB-FL-XS60-T90				8040/8420		T90			
URB-FL-XS100-T3A	100W	36	3000/4000	12800/13890	>70	T3A	IP66	IK08	5 year
URB-FL-XS100-T90				13660/14730		T90			
URB-FL-S150-T3A	150W	48	3000/4000	19850/21540	>70	T3A	IP66	IK08	5 year
URB-FL-S150-T4A				19950/21430		T4A			
URB-FL-S150-T90				20520/22240		T90			
URB-FL-S200-T3D	200W	72	3000/4000	25890/28120	>70	T3D	IP66	IK08	5 year
URB-FL-S200-T4D				26180/28240		T4D			
URB-FL-S200-T90D				28630/30920		T90D			
URB-FL-M240-T3A	240W	80	3000/4000	31960/34220	>70	T3A	IP66	IK08	5 year
URB-FL-M240-T4A				31400/33910		T4A			
URB-FL-M240-T90				33620/36070		T90			
URB-FL-M300-T3A	300W	96	3000/4000	39780/42450	>70	T3A	IP66	IK08	5 year
URB-FL-M300-T4A				39480/42390		T4A			
URB-FL-M300-T90				42570/45690		T90			
URB-FL-L400-T3A	400W	144	3000/4000	52080/56080	>70	T3A	IP66	IK08	5 year
URB-FL-L400-T4A				51680/55200		T4A			
URB-FL-L400-T90				56800/60120		T90			
URB-FL-L480-T3A	480W	168	3000/4000	62680/67340	>70	T3A	IP66	IK08	5 year
URB-FL-L480-T4A				62640/67310		T4A			
URB-FL-L480-T90				65070/69740		T90			



URB-FL-XS40



URB-FL-L400



URB-FL-S150



URB-FL-M240





Safety rope available to prevent unexpected falling of the luminaire in the event of significant impact or extreme weather conditions.

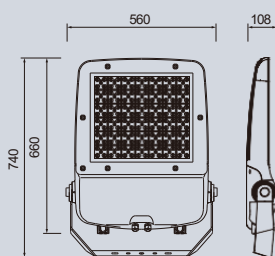


IK08 tempered glass lens with anti-tamper screws. Zhaga standard PCB boards and modular lenses allows for different optics to meet the requirements of the application.

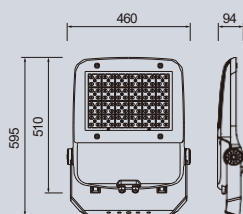


IP66 control gear housing with automatic disconnection of power supply for additional safety.

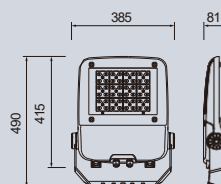




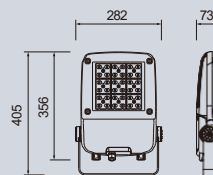
URB-FL-L



URB-FL-M



URB-FL-S



URB-FL-XS



A specially designed heat sink allows good heat dissipation while preventing a build up of dirt and grime.



Large body has a stainless steel angle adjustment plate to ensure optimum direction of the light source.



Other body sizes have the angle adjustment moulded into the die-cast bracket.

General

Location:	Exterior
Class:	CE (Class I)
Ip Rating:	IP54
Bathroom Zone:	Zone 2, 3
Driver Required:	No
Installation Orientation:	Wall Mount - Vertical
Main Material:	Metal - Aluminium
Dimensions (mm):	H: 98 W: 65 D: 96
Cut Out Hole :	-
Recess Depth (mm):	-
Fire Rating:	-
Cable Length (mm):	-
Gross Weight (kg):	0.47

Lamp

Light Source:	LED GU10
Wattage:	6W MAX
Lamp Included:	No
Maximum Lamp Length (mm):	58
Luminous Flux (lm):	-
Colour Temp (K):	-
CRI (Ra):	-
Macadam Ellipse:	-
Tilt Adjustable Angle (°):	-
Rotation Adjustable Angle (°):	-
Lifetime (hrs):	Lamp Dependent
Beam Angle (°):	Lamp Dependent

Electrical

Switched:	No
Dimmable:	Yes
Dimming Method:	Lamp Dependent
Supply Frequency (Hz):	-
Driver/Ballast Voltage (V):	-
Driver Lifetime (hrs):	-
Efficacy (lm/W):	-

Additional Information:

Shade Included:	-
Shade/Diffuser Material:	Clear
Shade/Diffuser Finish:	Glass
F Mark:	Suitable for mounting on flammable materials



Code: 1372010
Finish: Textured Grey



Code: 1372011
Finish: Textured Black

This product is not suitable for installation within five miles of the coast. For these environments, please filter products on the astro website by 'coastal'.

Ce produit n'est pas adapté à une installation à 8 km environ des côtes. Pour ces environnements, veuillez rechercher des produits adaptés sur le site web d'Astro en sélectionnant la gamme "Coastal".

Dieses Produkt ist nicht für die Installation innerhalb von fünf Meilen (acht Kilometern) von einer Küste entfernt geeignet. Für solche Umgebungen filtern Sie bitte die Produkte auf der Astro-Website nach „Coastal“.

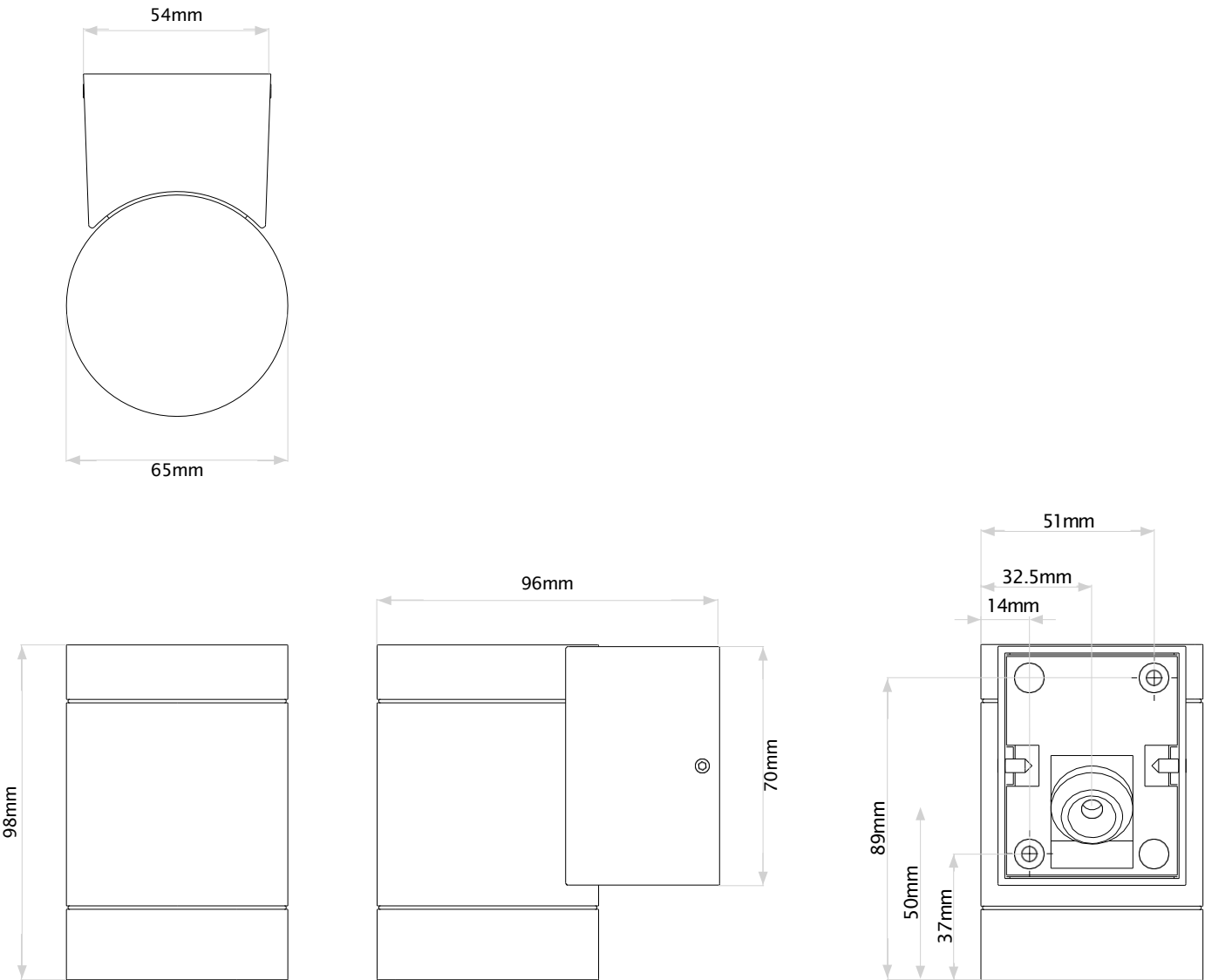
Questo prodotto non è adatto per l'installazione entro 8 chilometri dalla costa. Per questi ambienti, filtrare i prodotti sul sito web Astro con il termine "Coastal".

To maintain this product to its best condition, please view our care and cleaning guide on the support section of the Astro website.

Pour entretenir au mieux ce produit, veuillez consulter notre guide d'entretien et de nettoyage, dans la rubrique d'aide sur le site Web d'Astro.

Um dieses Produkt im besten Zustand zu erhalten, beachten Sie bitte unseren Leitfaden zu Pflege und Reinigung im Abschnitt „Support“ auf der Astro-Website.

Per mantenere questo prodotto nelle sue migliori condizioni, consultare la nostra guida per la manutenzione e la pulizia nella sezione dedicata all'assistenza del sito Web Astro.



Please note that some dimensions may vary slightly due to manufacturing tolerances, this includes cable entry and fixing holes

Veuillez noter que certaines dimensions peuvent varier légèrement en raison des tolérances de fabrication, y compris l'entrée de câble et les trous de fixation.

Bitte beachten Sie, dass die Maße Fertigungstoleranzen unterliegen und daher in geringem Umfang von der angegebenen Größe abweichen können. Dies gilt auch für Kabeleingänge und Befestigungsbohrer.

Si prega notare che possono esserci piccole variazioni in alcune dimensioni dovute alle tolleranze di produzione, queste includono l'ingresso del cavo e i fori di fissaggio.

Issue 2 / 18-11-2025

Glossary

A

A	Formula symbol for a surface in the geometry
---	--

B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.
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C

CCT	(Engl. correlated colour temperature) Body temperature of a thermal radiator which serves to describe its light colour. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The colour temperature of gas-discharge lamps and semi-conductors are termed "correlated colour temperature" in contrast to the colour temperature of thermal radiators. Allocation of the light colours to the colour temperature ranges acc. to EN 12464-1: Light colour - colour temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
-----	--

Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
------------------	---

Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
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CRI	(Engl. colour rendering index) Designation for the colour rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general colour rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colours (see DIN 6169 or CIE 1974) to a reference light source.
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Glossary

D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
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Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %
------------------------	--

Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.
---	---

E

Energy evaluation	Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx.
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The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight.

The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.

Environmental zones	The assessment of intrusive light and light immission depends on the environment of the lighting installation. Depending on the standard, 4-6 different zones are defined, ranging from highly protected areas in natural settings to urban areas, commercial zones, and industrial zones.
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Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %
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Glossary

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

I

Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface ($lm/m^2 = lx$). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter E_h .
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.
Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v .

K

k_s	The glare effect of a light source can be described by the glare metric k_s . It relates the solid angle of the glaring light source as seen from the point of immission, the ambient luminance, and the maximum allowable luminance.
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Glossary

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: kWh/(m² * a)
LLMF	(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).
LMF	(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
LSF	(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).
Luminance	Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive. Unit: Candela per square metre Abbreviation: cd/m² Formula symbol: L
Luminous efficacy	Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W. This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).
Luminous flux	Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux. Unit: Lumen Abbreviation: lm Formula symbol: Φ

Glossary

Luminous intensity	Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit. Unit: Candela Abbreviation: cd Formula symbol: I
M	
Maintenance factor	See MF
MF	(Engl. maintenance factor)/acc. to CIE 97: 2005 Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources. The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula $RMF \times LMF \times LLMF \times LSF$.
O	
Obtrusive light/Light immission	To protect the nocturnal environment and minimize problems for humans, flora, and fauna, it is necessary to limit obtrusive light (also known as light pollution), which can cause serious physiological and ecological issues for individuals and the environment. Light immission refers to the disturbing influence of emitted light from artificial light sources.
Operating times	The assessment of obtrusive light and light immission depends on the operating times of the lighting installation. Depending on the standard, 1-3 different operating times are specified. In the absence of specific details, an operating time between 06:00 and 22:00 can be assumed.
P	
P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W

Glossary

R

$R_{(UG) \max}$	Measure of the psychological glare in indoor spaces. In addition to the luminance of luminaires, the level of the $R_{(UG)}$ value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible $R_{(UG)}$- values $R_{(UGL)}$ for various indoor workplaces.
R_{DLO}	The ratio of the luminous flux emitted below the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
R_G	The glare directly caused by luminaires of an outdoor lighting installation is determined using the CIE Glare Rating (RG) method. To calculate this, the equivalent veiling luminance of the surroundings is needed. There are four options for determining this: • An exact calculation according to CIE 112, based on the scene area. • A simplified method according to EN 12464-2, based on the scene area. • Using a custom calculation area to determine the equivalent veiling luminance. • Specifying a fixed value for easy comparability.
R_{UF}	upward flux ratio The ratio of the luminous flux emitted directly or reflected above the horizontal plane to the luminous flux that cannot be avoided under ideal conditions to achieve the illuminance level on a deliberately illuminated area.
R_{UL}	upward light ratio The ratio of the luminous flux emitted above the horizontal plane to the luminous flux of a luminaire or lighting installation in its operational position. The luminaire efficiency is considered in this calculation.
R_{ULO}	upward light output ratio The ratio of the luminous flux emitted above the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the colour of the surface.
RMF	(Engl. room maintenance factor)/acc. to CIE 97: 2005 Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
RUG (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the RUG value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible RUG values for various indoor workplaces.

Glossary

RUG observer	Calculation point in the room, for the DIALux the RUG value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).
S	
Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.
V	
Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464-1. The height corresponds with the height at which the visual task is executed.
W	
Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Working plane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.