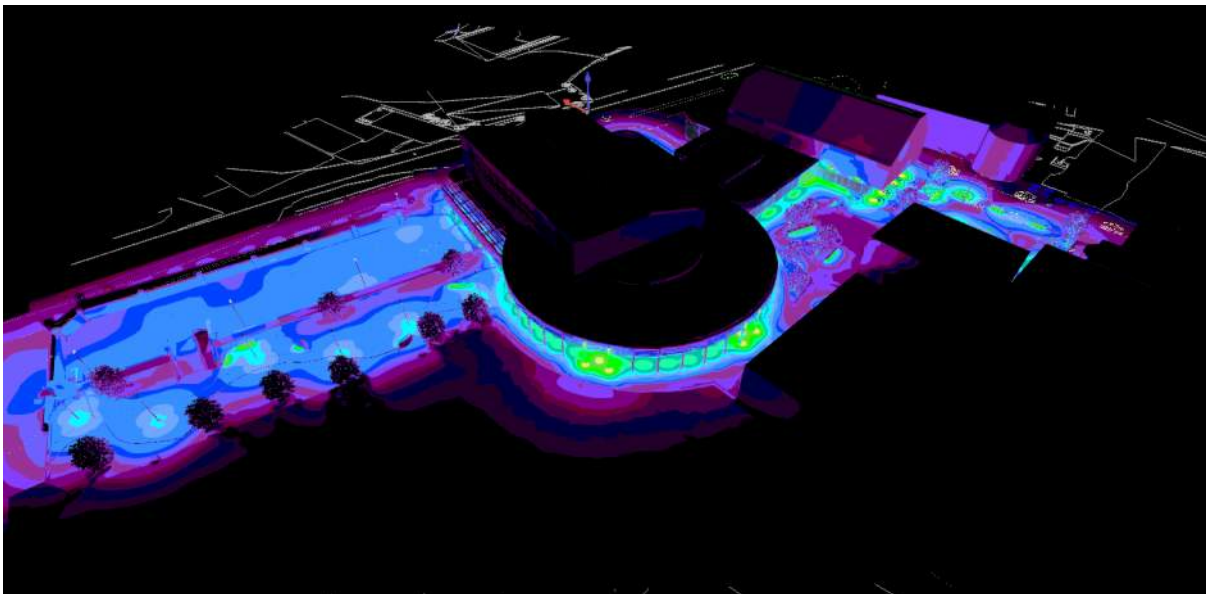
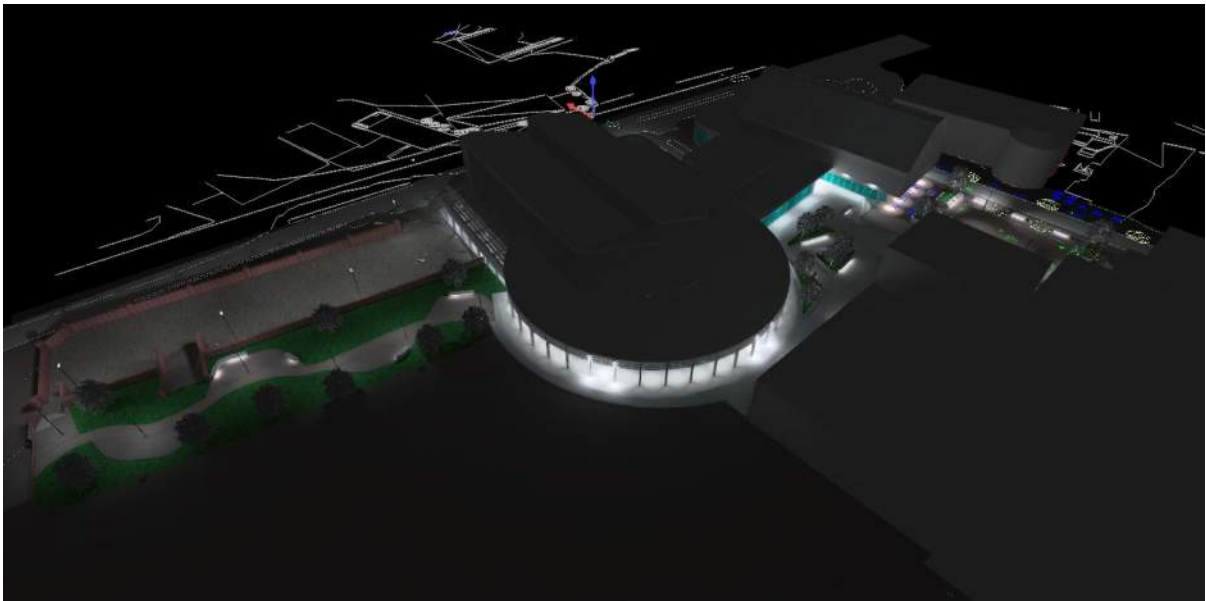




Building Services Design Ltd

Battery Park Development.



ALH Building Services Design Ltd. Green Ridge, Littlefields, Dereham NR19 1BQ.

Contents.

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Project Brief.

To provide a lighting proposal showing illumination of on-site circulatory routes. This proposal will show CIBSE Guidance to lighting levels in accordance with BS5489 and BS12464.

Guidance to luminaire selection is given for optical performance.

Although not a wildlife protected area, guidance to conform with current standards is given should this situation change.

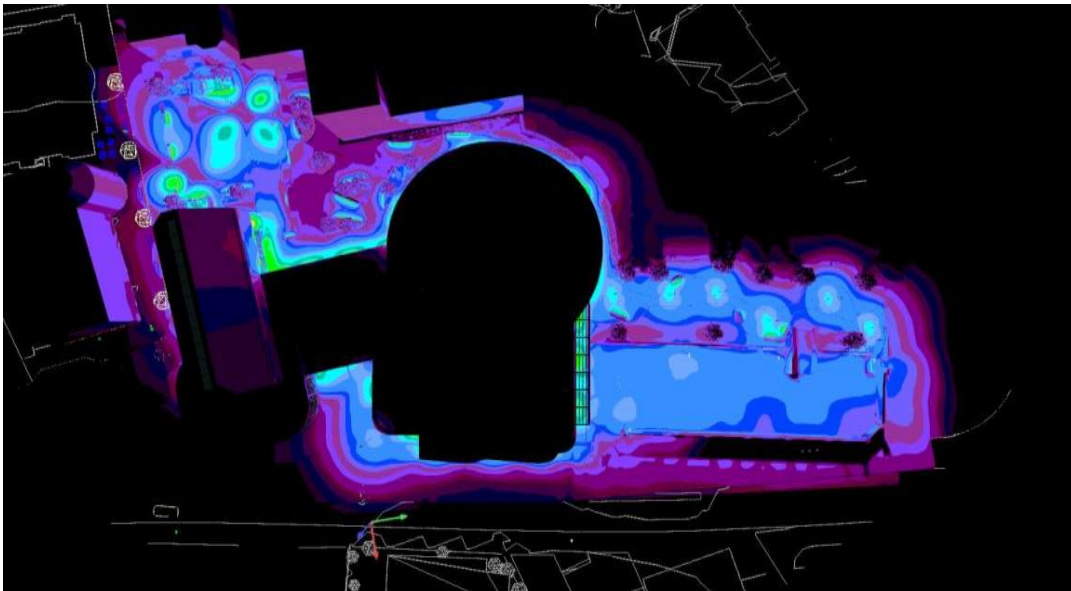
Basic information about light intrusion and overspill is included.

All calculations are set with standard maintenance factors of 0.8 and reflective values of 20% for floor materials.

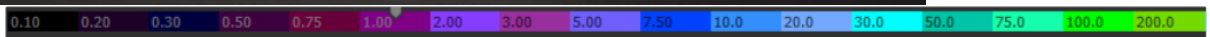
Notes Concerning Luminaire Selection.

Several manufacturers products have been selected based upon the properties of the luminaires and the aesthetic qualities. The luminaires are not exclusive in their performance, as such alternative manufacturers products have been shown as an insert to the illustrations.

Details of the manufacturers within this project can be found within Appendix 1.



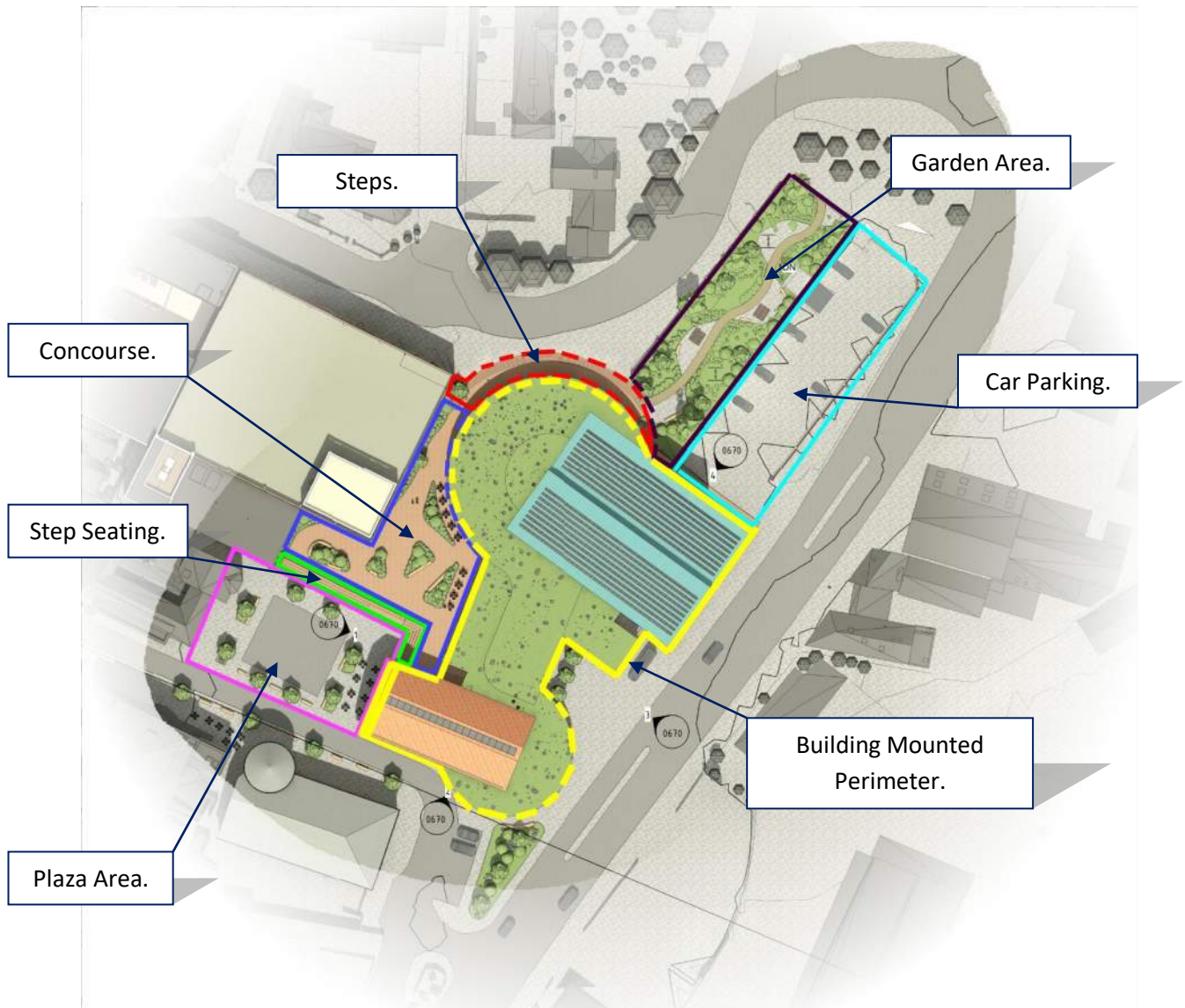
(Fig showing lighting levels across site)



(Fig showing lighting effects across the site)

Areas within the Development.

The development comprises several distinct areas, whilst the areas all interact in lighting terms in order to illuminance levels and compliance the project is broken down into the following:-



Plaza Area.

Luminaires.

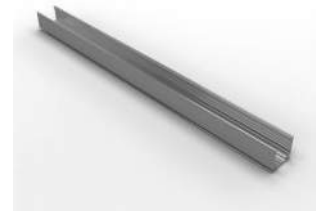
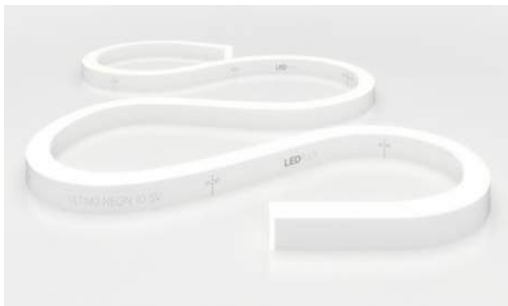
Single Column - Multi Spot Projection System



Multi spot projector systems offer good coverage of light with little clutter to the area being illuminated, within this project the Iguzzini 140mm (OD), Colour 3000K, 27w TCD, RA>80, Circa 2610 lumen output, 28° flood.

Other manufacturers to consider, Performance in Lighting : Tyk+, Arluce : Pixol and DW Windsor : Turn.

LED Neon Linear Strip System



Linear LED strip systems offer edge and facade highlighting from a minimal surface area. The scope of this design uses a LEDFLEX Neon 10 system, the LED's set within a solid construct of flexible transparent silicone composite material giving IP67+, IK 08 at 200lumens per meter within a range of rigid or flexible aluminium frames for mounting.

Other manufacturers to consider, LED Neon, Iguzzini Underscore, DW Windsor Vaio



Lighting Levels.

Ref. no.	Type of area, task or activity	\bar{E}_m lx	U_o –	GR_L –	R_a –
5.1.1	Walkways exclusively for pedestrians	5	0,25	50	20
5.1.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0,40	50	20
5.1.3	Regular vehicle traffic (max. 40 km/h)	20	0,40	45	20

BS12464-2 – Table 5.1 horizontal lighting levels.

In addition to movement task areas should be taken into account for specific areas, such as the central plaza where lighting maybe required for performances, shows, markets and exhibitors.

Shopping precincts and pedestrian areas

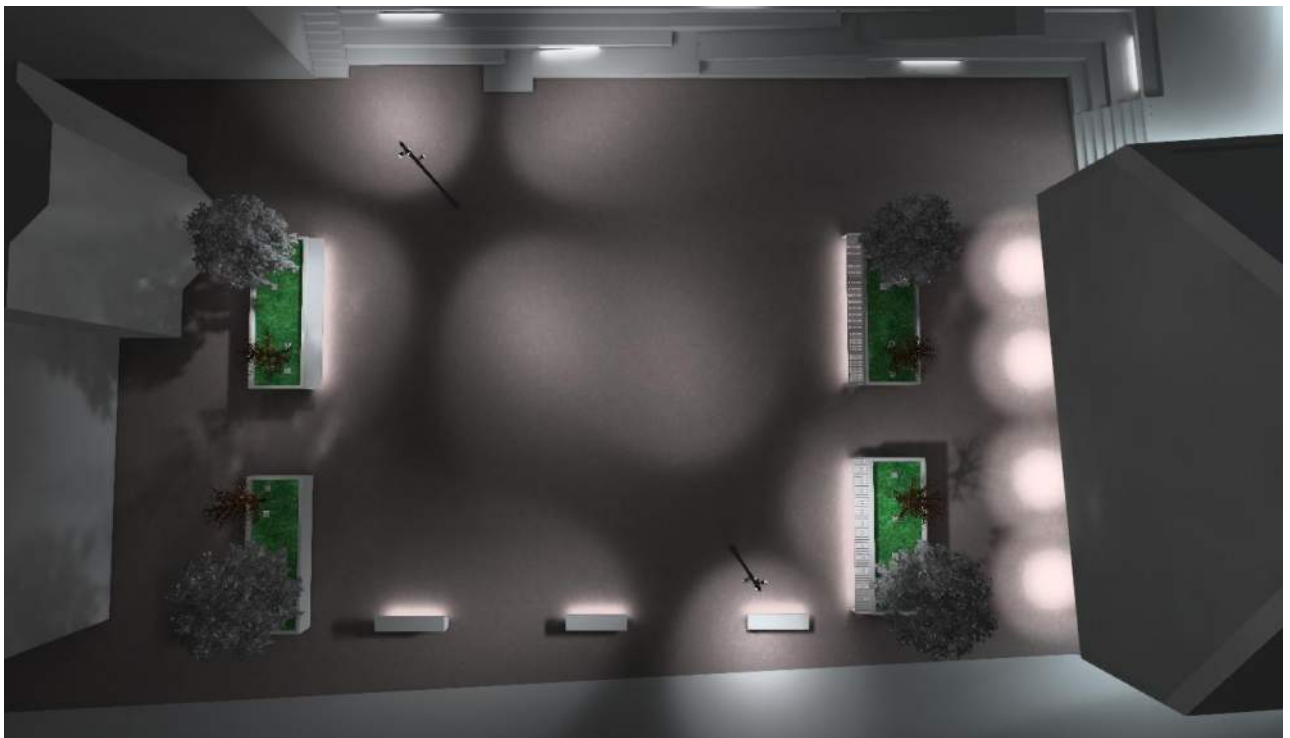
Area, location, or task	Maintained illuminance (lux)	Notes
Open pavement	20	1.5 m above ground (min/ave >0.3). Vertical illuminance 15 lux.
Covered pavements, overhangs and steps	75	Vertical 1.5 m above ground.

The table of illuminances recommends both vertical and horizontal illuminances at 1.5 m to ensure that facial expressions are easily recognised so that pedestrians feel secure.

LG06 – Up to 75lux (0.25u/o) to task areas within open plaza area.

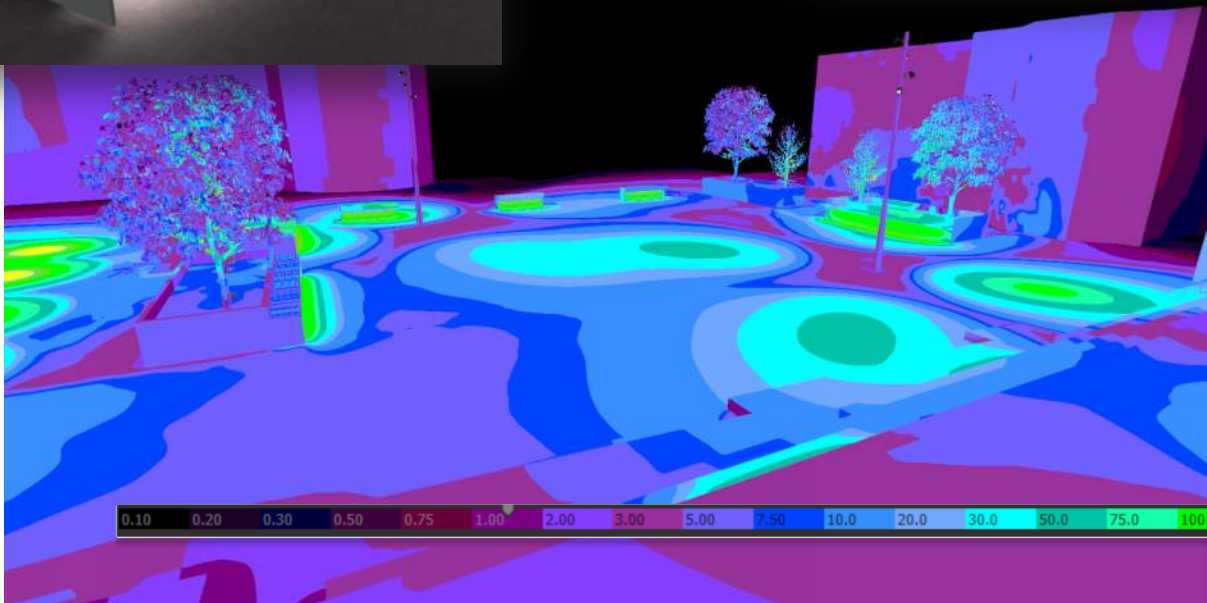
Controls.

In addition to timeclock / photocell switching all the luminaires shown can have DALI controls applied, a DALI scene selector would allow for increases in illumination to the columns giving a full output for when lighting to special events is required.



(Fig showing overhead view of Plaza Area.)

Plaza Lighting Levels and Effects (specific details can be found with Dialux EVO report.)



(Fig showing overall lighting levels)

Seating Area.

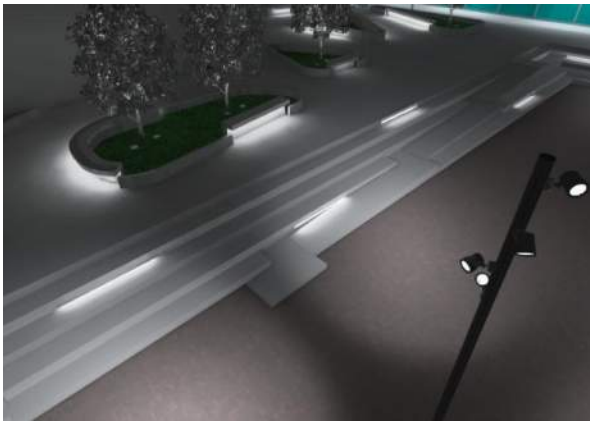
Lighting Levels.

The seating area also contains a cycle transit path and stairs from the lower to upper levels.

Stair area recommend a higher lighting level of 20lux uniformity 0.25 where obstructions occur such as planters recommend a minimum lighting level of 2lux for users of the area with less visual acuity.

Disabled Access Ramp / Cycle Transit Ramp recommend a lighting level of 20lux uniformity 0.4

Area Lighting.

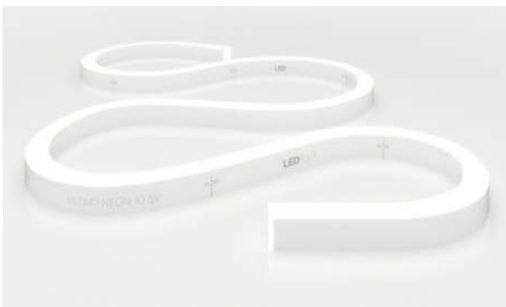


General area lighting is provided from the column multi spot system within the Plaza, this system is adjustable and may require further alignment onsite to achieve the required lighting levels.

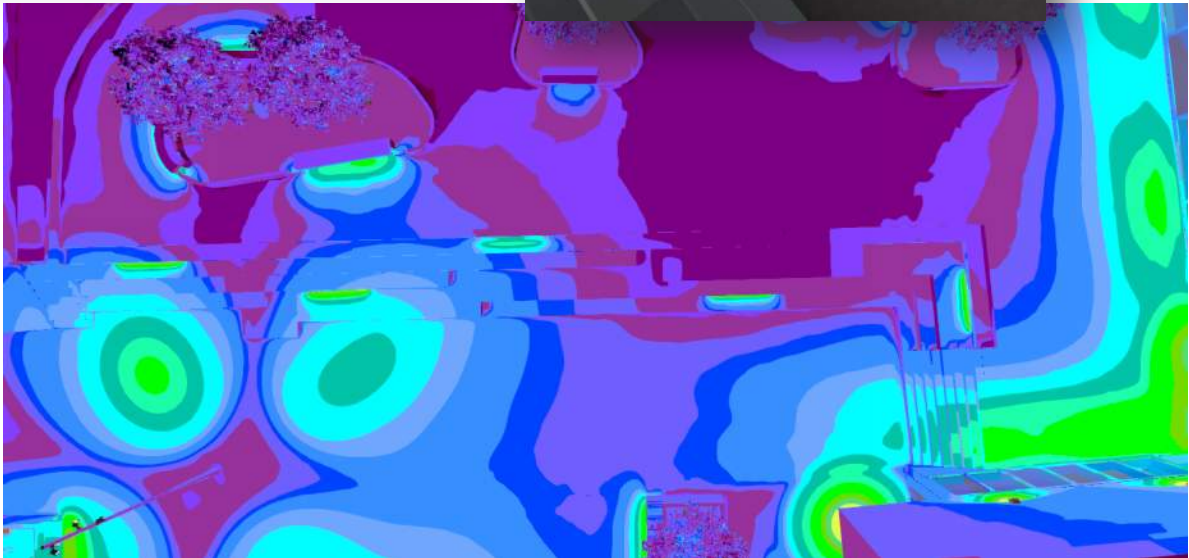
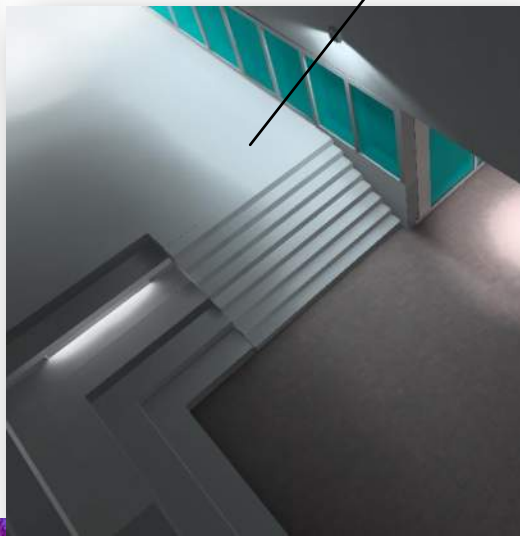
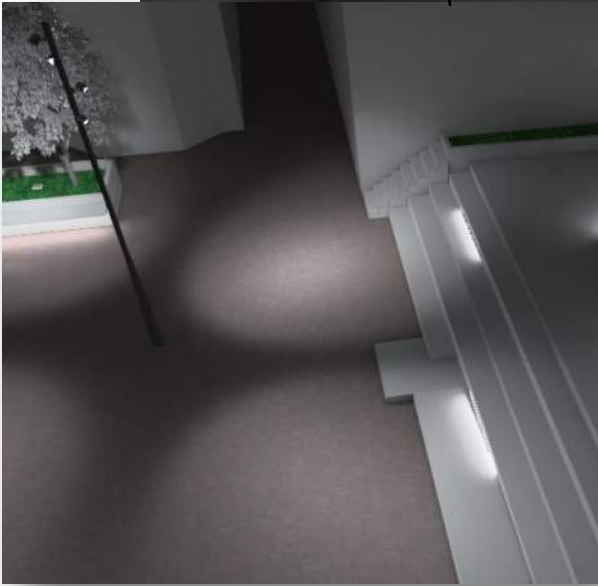
Details such as the ramp and stairwells are also illuminated from the same positions.

Luminaires.

LED Neon Linear Strip System (Within Seating Plinths.)



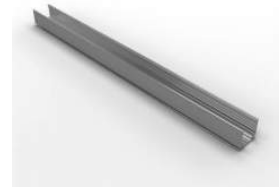
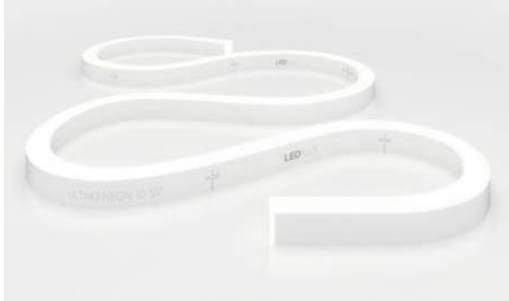
Linear LED strip systems offer edge and facade highlighting from a minimal surface area. The scope of this design uses a LEDFLEX Neon 10 system, the LED's set within a solid construct of flexible transparent silicone composite material giving IP67+, IK 08 at 200lumens per meter within a range of rigid or flexible aluminium frames for mounting.



Concourse.

Luminaires.

LED Neon Linear Strip System (Within Bench and Planters.)



Performance iN Lighting Mimik 20 (From Building Perimeter.)



The Mimik offers a minimalistic contemporary luminaire. A very low profile of 56mm (including emergency options) with high optical performance this luminaire blends into the facade whilst offering a uniform performance.

200x200x56mm Colour 3000K, 21w TCD, RA>80, Circa 2150 lumen output, perimeter pathway optics (CPT2).

Other manufacturers to consider
Thorn : Piazza 2, DW Windsor : Sephora



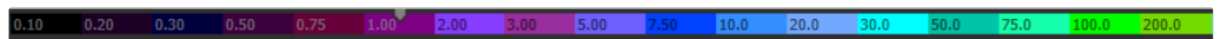
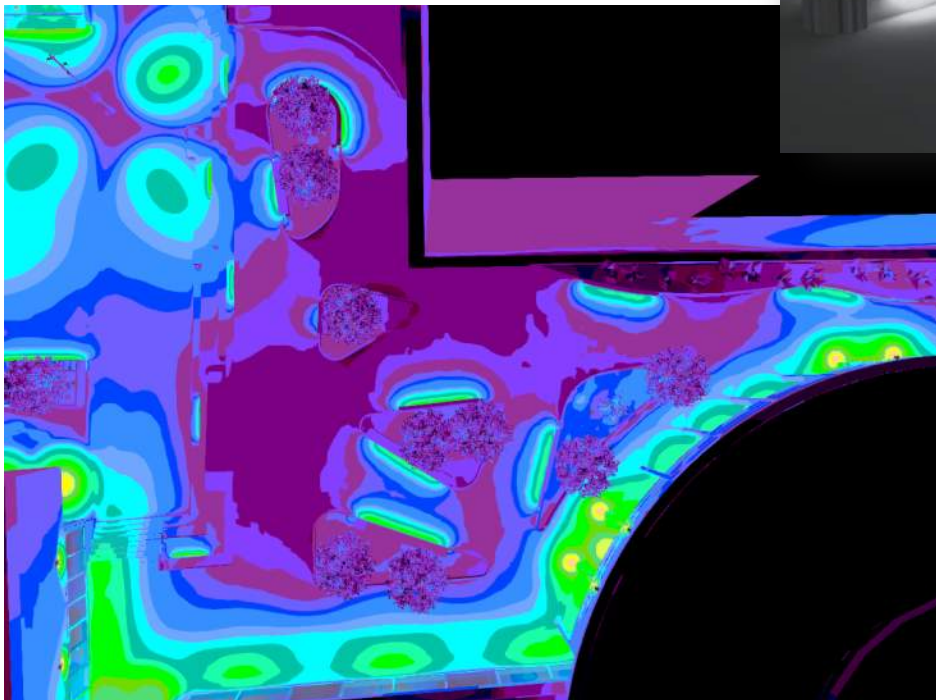
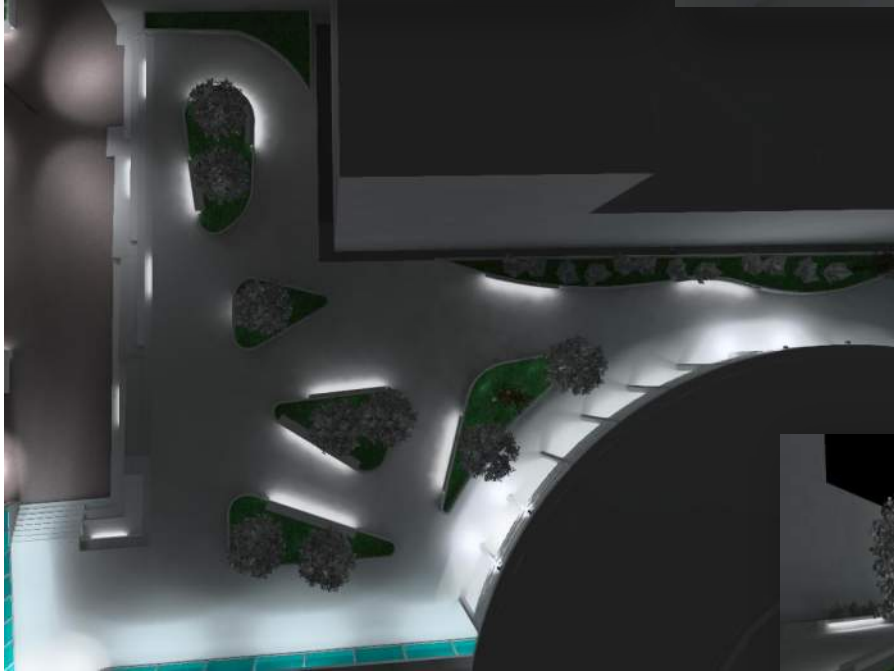
Arcluce Pixol Series (From Building Canopy.)



The Pixol series offer several frame sizes with increasing lumen and optical packages.

Details of product specifics are shown in Perimeter Lighting Section.

Concourse Area Levels and Effects (specific details can be found with Dialux EVO report.)



Step Area.

Luminaires.

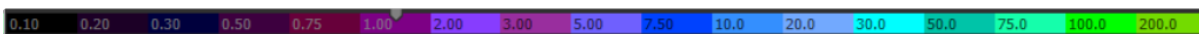
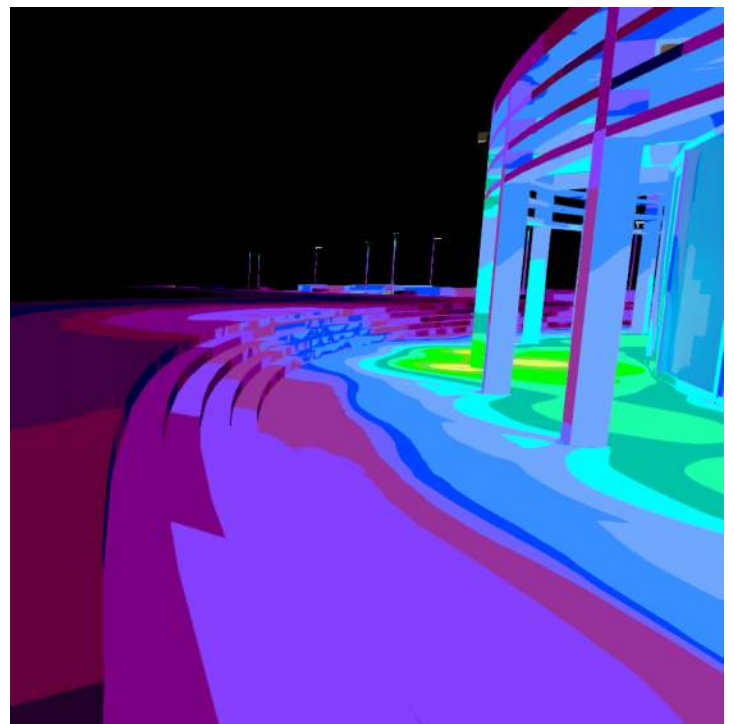
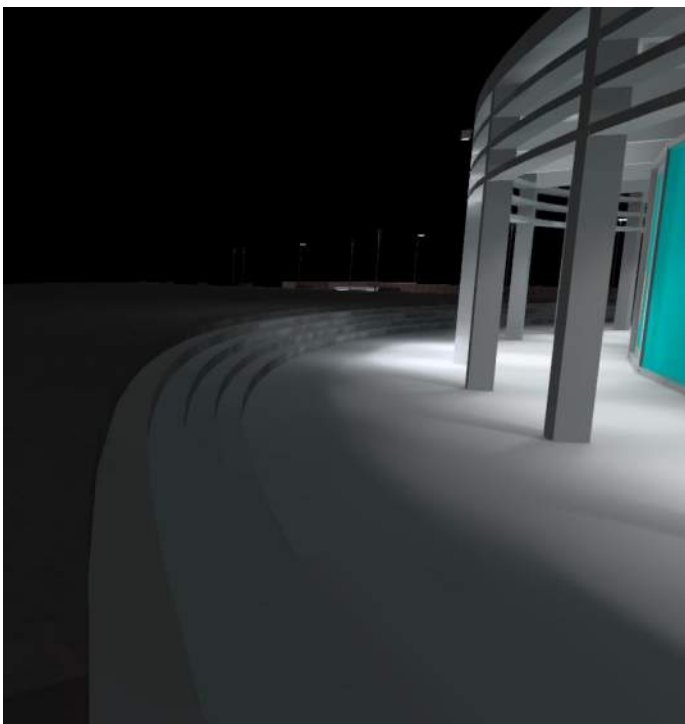
Arcluce Pixol Series (From Building Canopy.)



The Pixol series offer several frame sizes with increasing lumen and optical packages.

Details of product specifics are shown in Perimeter Lighting Section.

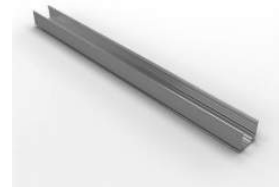
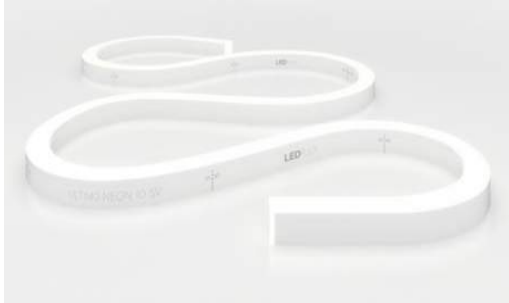
Step Area Levels and Effects (specific details can be found with Dialux EVO report.)



Garden Area.

Luminaires.

LED Neon Linear Strip System (Within Bench and Planters.)



Performance iN Lighting Hedo mounted at 4.0m (columns)



Many LED Lantern type fittings are now available within the UK, offering quality radial and pathway optics. For calculation and aesthetic qualities the PIL Hedo has been used.

Colour 3000K, 23w TCD, RA>80, Circa 2100 lumen output, radial optics.

Other manufacturers to consider



Arcluce : Victory



DW Windsor : Milano



Iguzzini : Fiama

Garden and Planter Lighting.

This final design will incorporate uplighting to trees and other plantings within the development. Although added to the Dialux Design it is not considered a measurable effect but will increase vertical illumination and positively affect the lighting quality.

Lighting positions and beam angles shall be coordinated with the landscape architects. A mixture of colour 3000k and 4000k should be considered depending on foliage choices.

Any inground luminaires must be IP68, Stainless Steel Bezel, IK10 and be fitted with an anti-slip cover or anti slip should be considered as parts of the construction design. LED's have negated the requirement for heat barriers incase of contact with users of the building.

Any inground systems must be installed as per manufacturers guidance.

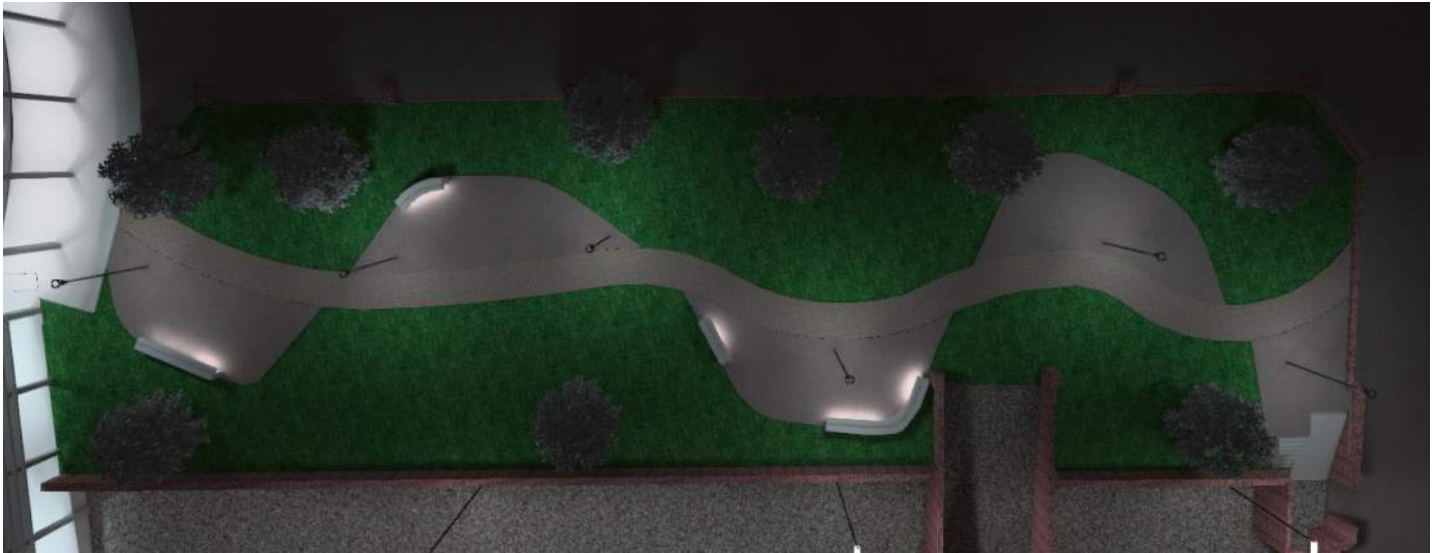


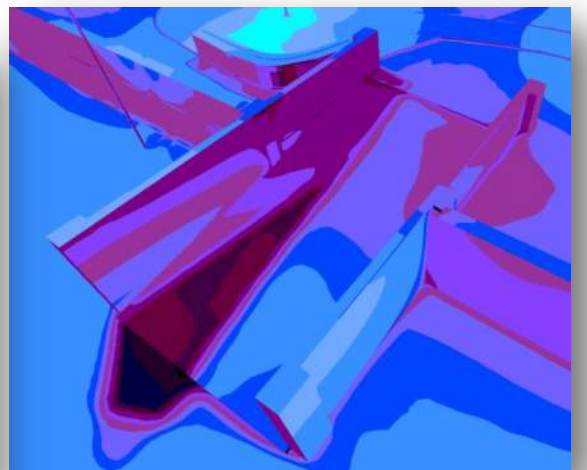
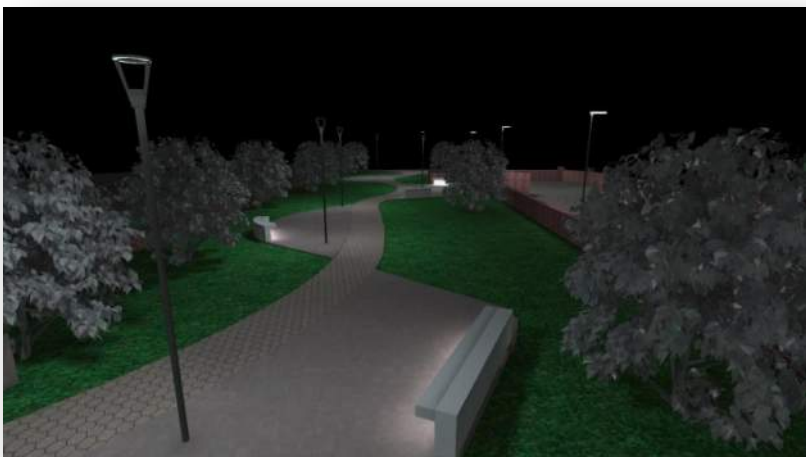
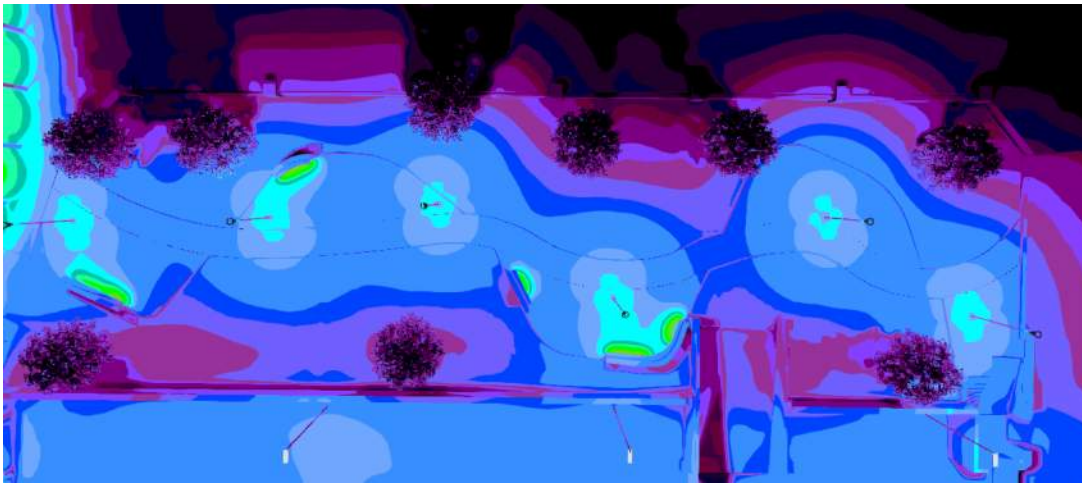
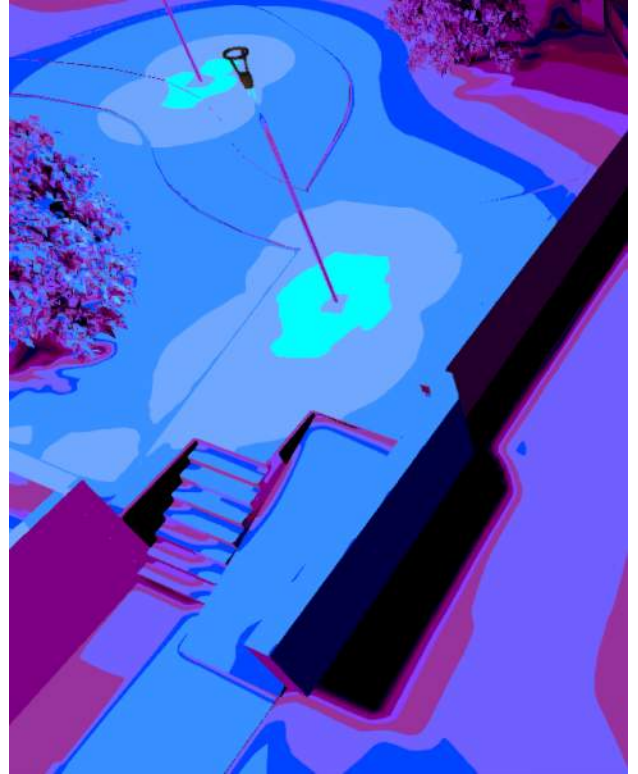
Arcluce Inground 180 System, available in colour 3000k and 4000k, TCD 8.5w, RA>80, circa 750lumen output. Integrated driver system within housing.



DW Windsor Kios System, available in colour 3000k and 4000k, TCD 6.5, RA>80, circa 650lumen output. Driver system is separate.

Garden Area Levels and Effects (specific details can be found with Dialux EVO report.)





Car Park Area.

Luminaires.

DW Windsor Kirium 1 mounted to 6.0m (columns)



Car Park lighting is provided by standard municipal luminaires, providing best coverage and uniformity. The DW Windsor Kirium is proven solution and is highways approved if adoptable.

Colour 3000K, RA>80, 37w TCD, Circa 5000 lumen output, forward asymmetrical optics.

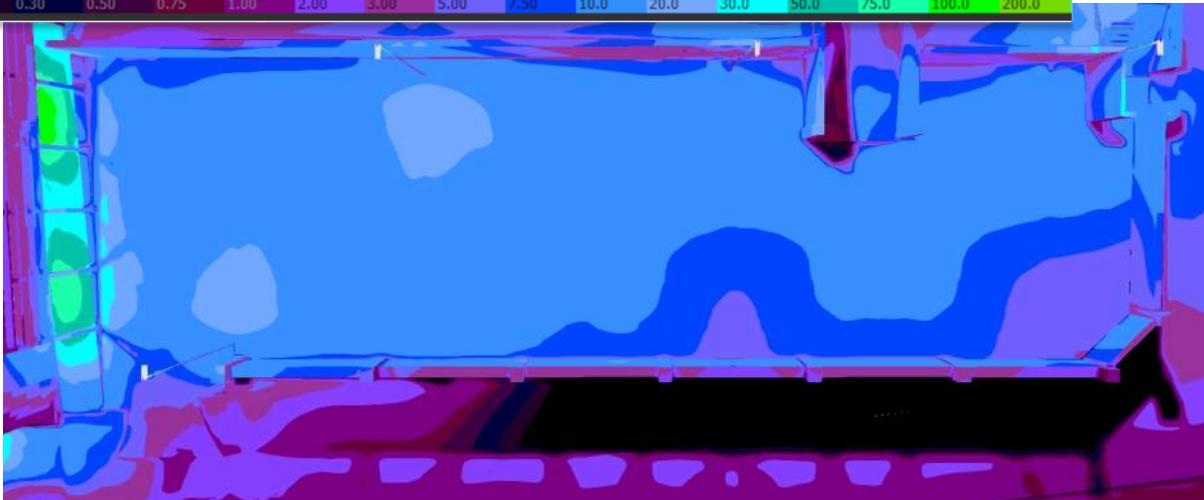
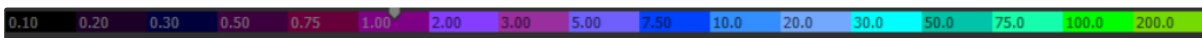
Other manufacturers
to consider



Iguzzini : Wow



PIL : Kreos



Building Perimeter and Other Areas.

Luminaires.

Arcluce Pixel Series (From Building Canopy.)



Pixel 150 Flood, 28° beam angle, 14w, Max output 1300lumen, in this design set to 800lumen output. Colour 3000K, RA>80, DALI control. Used under main ring canopy in all areas except by entrance areas.

Pixel 150 Flood, 28° beam angle, 31w, Max output 3100 lumen, in this design set to max output. Colour 3000K, RA>80, DALI control. Used under main ring canopy in all areas except by entrance areas.

Other luminaires to consider from manufacturers.



Iguzzini : iPro



Performance : Quasar 10

Performance iN Lighting Mimik 20 (From Building Perimeter.)



CPT2 : Walkway or perimeter optics used as building mounted luminaire.

A60W : Forward throw asymmetrical optics used within the “yard / loading” area to the building frontage.

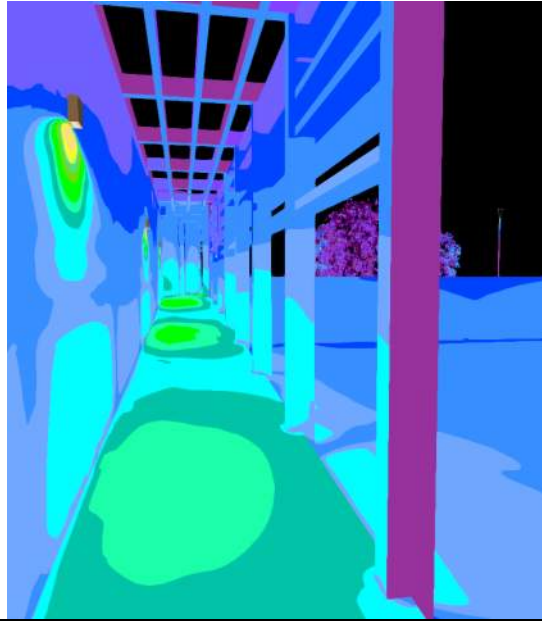
Iguzzini iPro Series (Highlighting Support Pillars.)



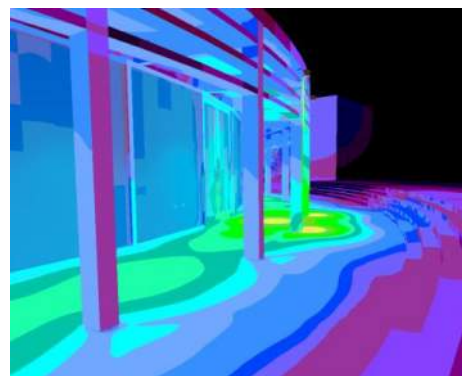
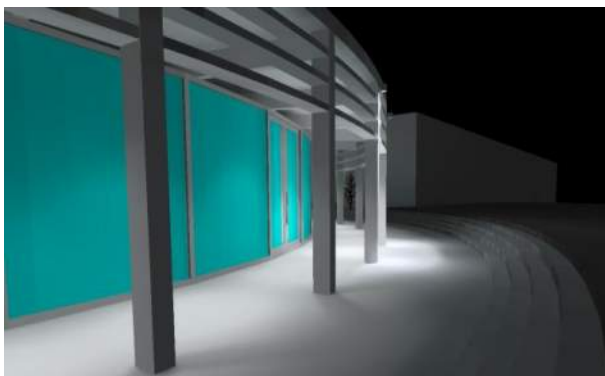
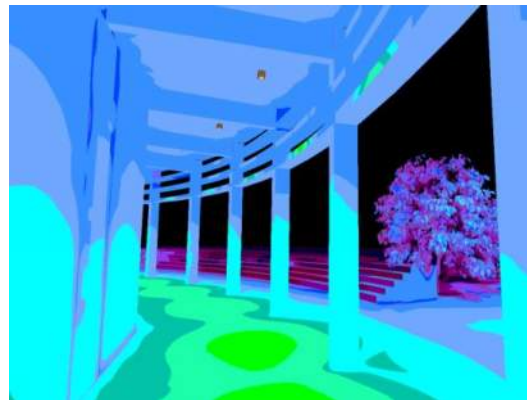
Entrances to the main building from the circular canopy are highlighted using the Iguzzini IPro 132. Used to highlight columns from an exterior view.

Iguzzini iPro 10° beam angle, 16w,1320 lumen output. Colour 3000K, RA>80, Static control.

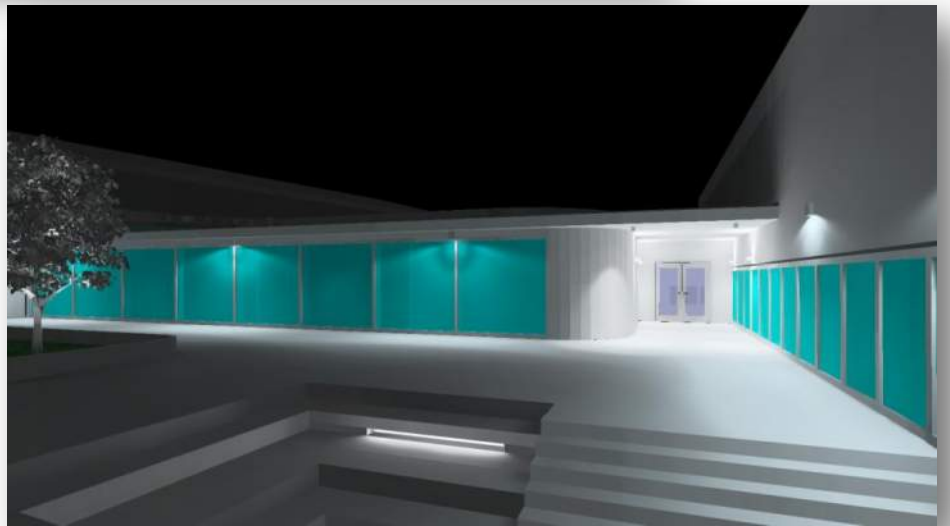
Entrance Canopy from Main Road.



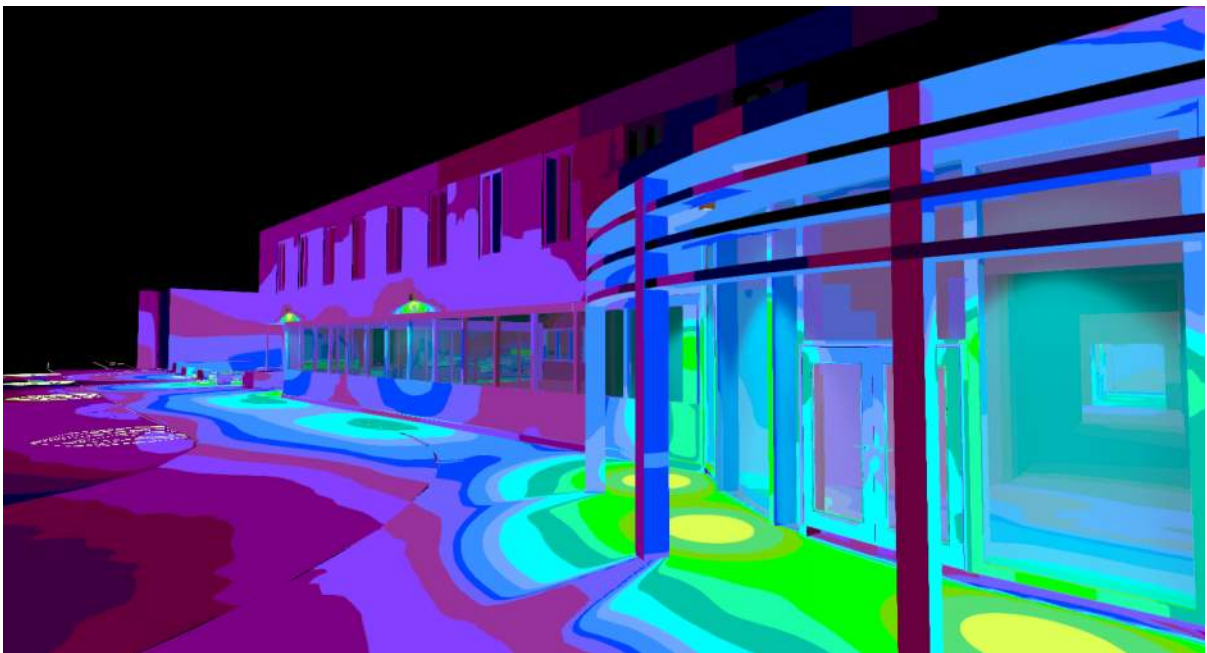
Perimeter and Entrance Ways.



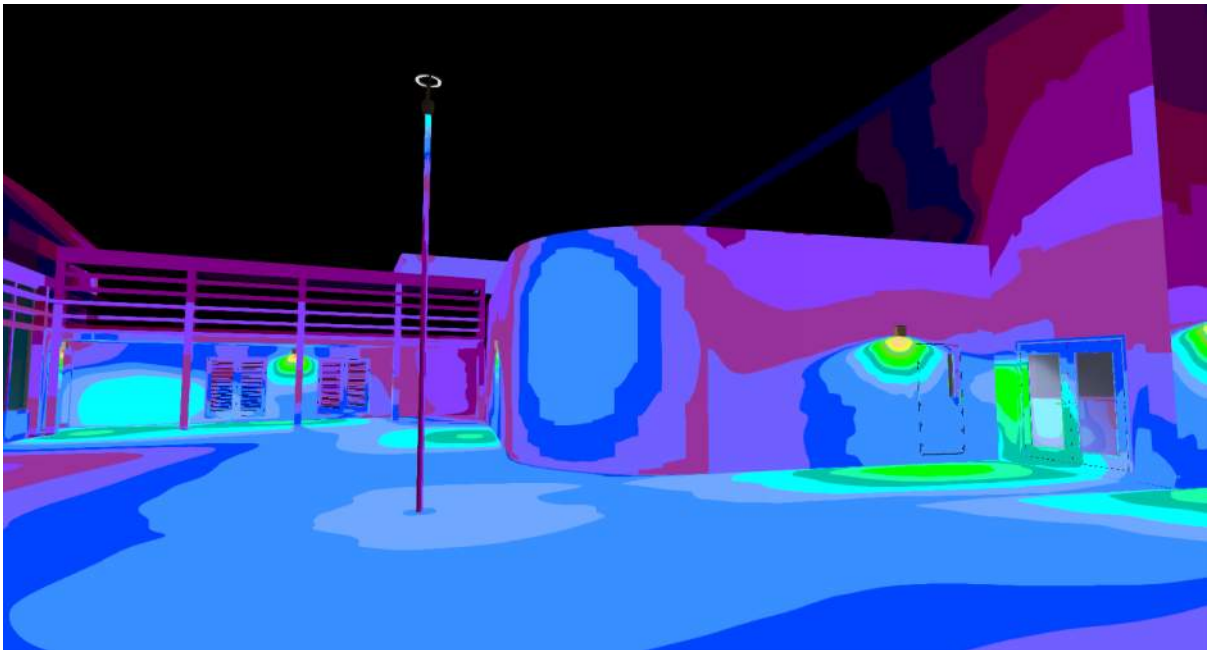
Perimeter and Entrance Ways Continued.



Entrance to Studios.



Building Yard Area.



Light Pollution.

Light Sources and Controls.

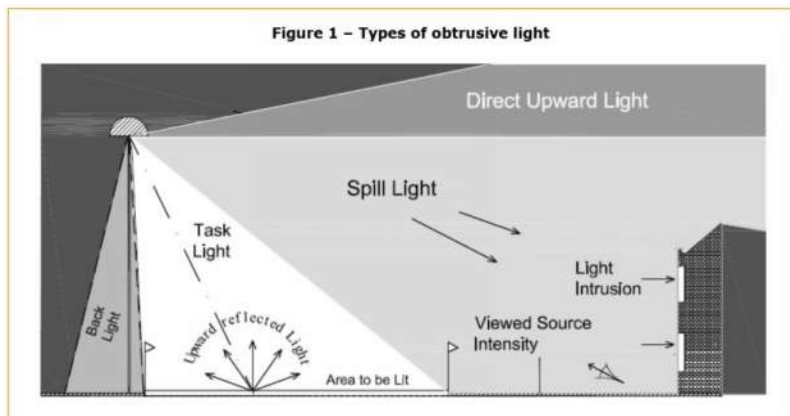
Peak spectral distribution is a term used broadly to describe the light output colour of the light source. Manufacturers will be able to provide specific details if required, however for this installation all lamps should be <3000K. Luminaires should be Time Clock or Photocell controlled and a chipset de-rating in curfew periods should be considered.

Light Overspill.

This is an urban development and will fall within category E4

Table 2: Environmental zones			
Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Light Pollution.



The above diagram shows the various types of light pollution. All luminaires specified are 100% downlight* – in the case of column tops no tilt over 10degrees from facing the ground. Luminaires used should have an even light distribution to the task, high intensity outputs will create reflected upwards lighting.

* The exception being the Multi Spot Columns to the Plaza area, careful consideration should be made to not exceed the maximum tilt dependant on beam angle, specified is a 28° spot, allowing a maximum horizontal tilt of 60°

Light Trespass into Housing.

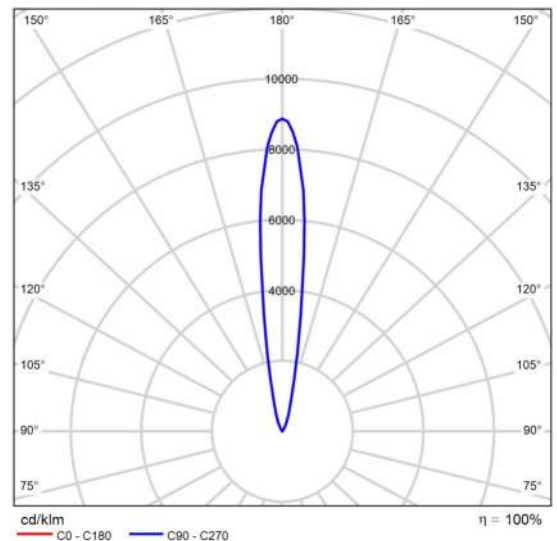
There is no evidence of housing within the scope of this project.

Product data sheet

ARCLUCE S.p.A. - INGR180 8W OR. NB INOX TONDA PC



Article No.	0777006P-830-30
P	8.0 W
Φ_{Lamp}	850 lm
$\Phi_{Luminaire}$	848 lm
η	99.79 %
Luminous efficacy	106.0 lm/W
CCT	3000 K
CRI	80



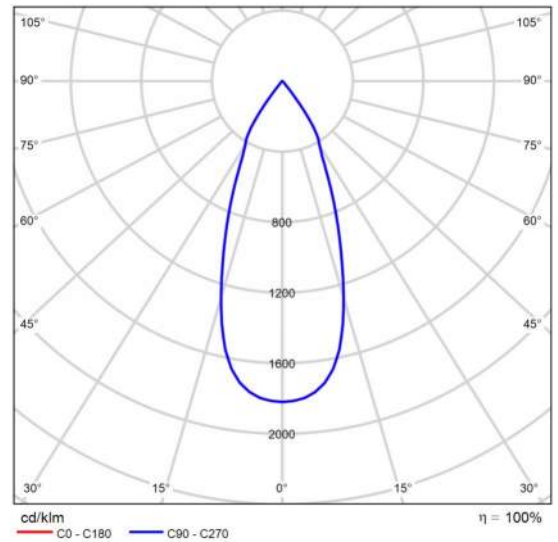
Polar LDC

Product data sheet

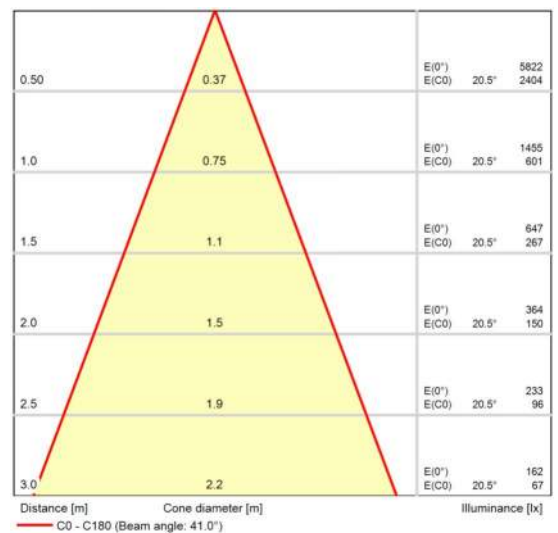
ARCLUCE S.p.A. - PIXOL110 PLAFONE RIFL 14W WB ON/OFF



Article No.	0254013A-830-21
P	14.0 W
Φ_{Lamp}	800 lm
$\Phi_{Luminaire}$	799 lm
η	99.84 %
Luminous efficacy	57.1 lm/W
CCT	3000 K
CRI	80
Index	C



Polar LDC



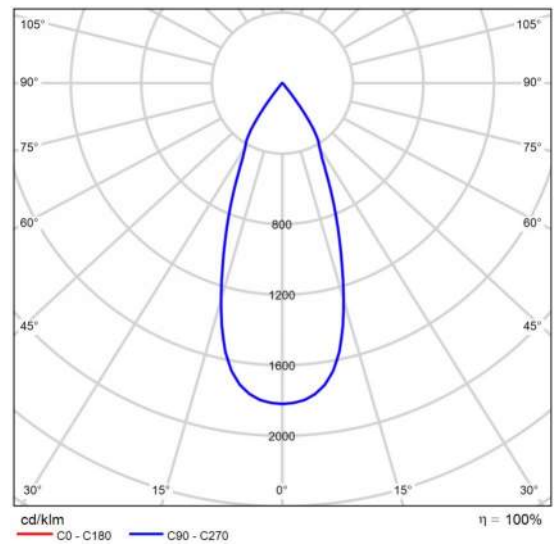
Cone diagram

Product data sheet

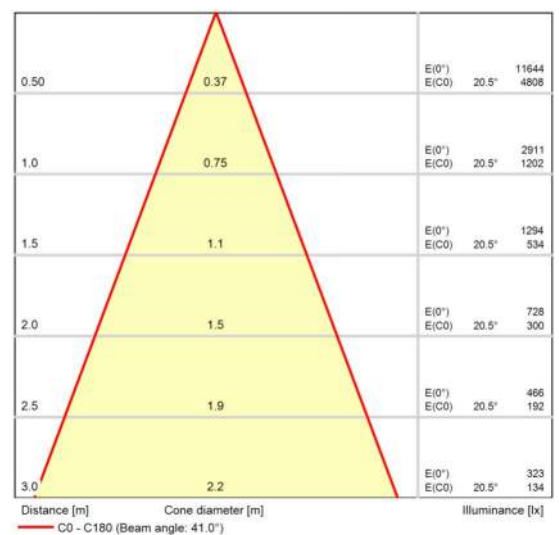
ARCLUCE S.p.A. - PIXOL110 PLAFONE RIFL 14W WB ON/OFF



Article No.	0254013A-830-21
P	14.0 W
Φ_{Lamp}	1600 lm
$\Phi_{Luminaire}$	1597 lm
η	99.84 %
Luminous efficacy	114.1 lm/W
CCT	3000 K
CRI	80
Index	C



Polar LDC



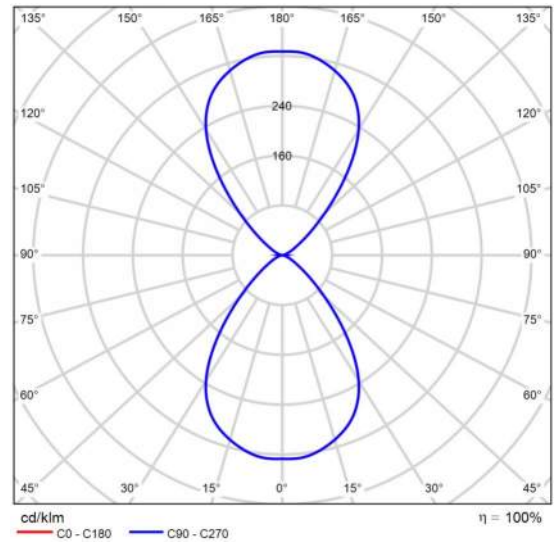
Cone diagram

Product data sheet

ARCLUCE S.p.A. - PIXOL150 PAR 31W UB/UB BIDIR. DALI



Article No.	0455104B-830-16
P	31.0 W
Φ_{Lamp}	3000 lm
$\Phi_{Luminaire}$	3000 lm
η	99.99 %
Luminous efficacy	96.8 lm/W
CCT	3000 K
CRI	80
Index	D



Polar LDC

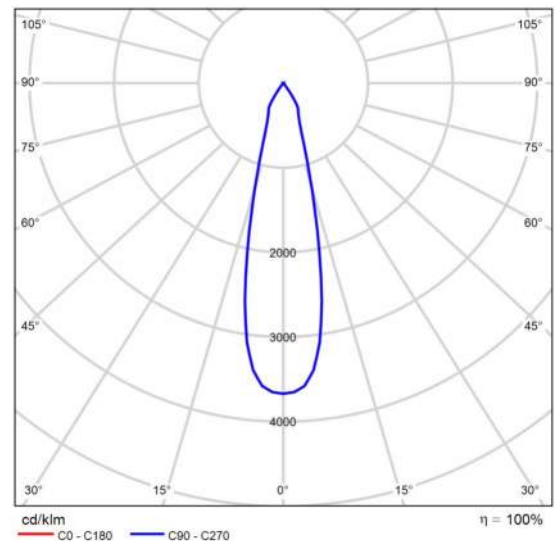


Product data sheet

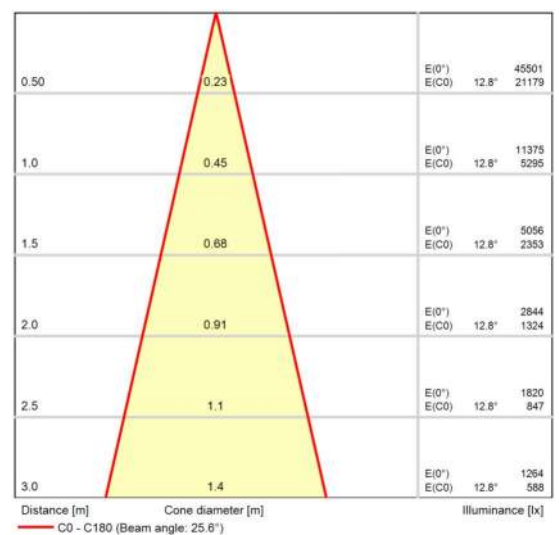
ARCLUCE S.p.A. - PIXOL150 PLAFONE RIFL 31W FB DALI



Article No.	0255012B-830-21
P	31.0 W
Φ_{Lamp}	3100 lm
$\Phi_{Luminaire}$	3090 lm
η	99.66 %
Luminous efficacy	99.7 lm/W
CCT	3000 K
CRI	80
Index	B



Polar LDC



Cone diagram

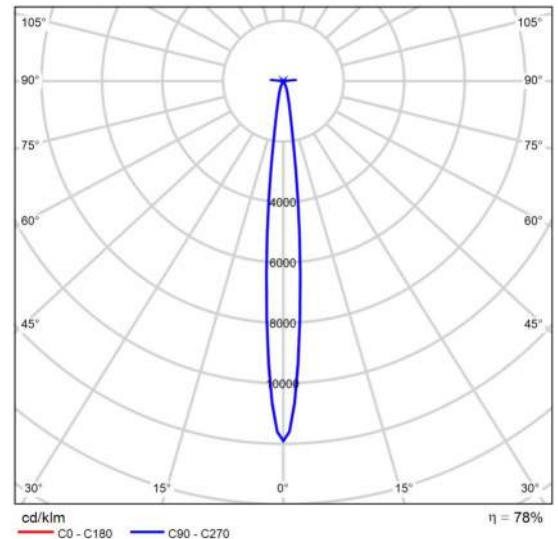
Product data sheet

iGuzzini - iPro - 132mm - BD35.01 - Outdoor floodlight - Warm white LED - integrated electronic power supply - Spot optic - 17.8W 1638lm - 3000K - White

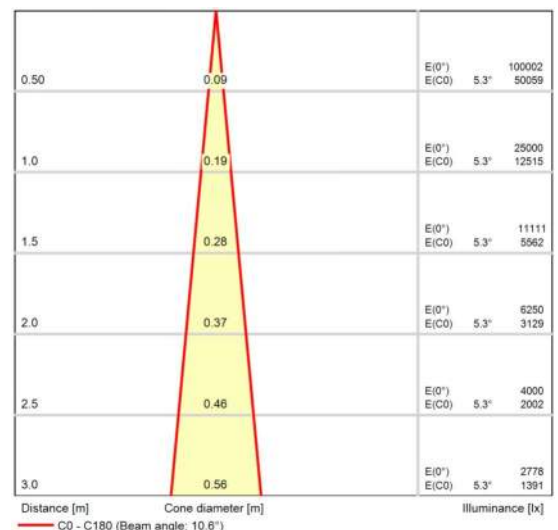


Article No.	BD35
P	17.8 W
Φ_{Lamp}	2100 lm
$\Phi_{Luminaire}$	1632 lm
η	77.72 %
Luminous efficacy	91.7 lm/W
CCT	3068 K
CRI	80
Index	F

BD35 :
Floodlight designed to use Warm White (3.100 °K) LED lamps and lenses for spot distribution. The luminaire consists of an optical assembly/component-holding box and hidden fixing bracket. The optical assembly and front frame are made of die-cast aluminium alloy coated with liquid acrylic paint (colour: RAL 9007 grey) or textured liquid paint (colour: RAL 9016 white) with a high level of resistance to atmospheric agents and UV rays. The 5 mm thick transparent, tempered sodium – calcium safety glass is joined to the frame with silicone. The frame is fastened to the optical assembly by two M5 AISI 304 stainless steel captive screws and a galvanised steel safety cable. The optical assembly contains the circuit complete with 9 LEDs and relative plastic lenses. The component-holding box, in the rear of the luminaire, is set up to hold the control gear, which is fixed with captive screws on a galvanised steel pull-out plate. The control gear can be accessed through the rear door made of painted aluminium alloy, fixed to the product body with four M5 AISI 304 stainless steel captive screws and a safety cable. The luminaire is set up for pass-through wiring using two PG11 nickel-plated brass cable clamps, suitable



Polar LDC



Cone diagram

Product data sheet

iGuzzini - iPro - 132mm - BD35.01 - Outdoor floodlight - Warm white LED - integrated electronic power supply - Spot optic - 17.8W 1638lm - 3000K - White

for the entry of cables with diameter between 6.5 and 11 mm. The connection between the mains and the control gear is made using a 3-pole terminal board with quick-coupling system. iPro can be angled relative to the horizontal plane (+95°/ -5°) using an extruded aluminium bracket on which the graduated scale (15° steps) is marked with serigraphy. The internal silicone seals guarantee watertightness IP66. Various accessories are available: visor, directional flaps, glass refractors, glass prismatic diffusers and coloured filters which can be applied in pairs. All external screws used are made of A2 stainless steel.

BD35.01 - Outdoor floodlight - Warm white LED - integrated electronic power supply - Spot optic - 17.8W 1638lm - 3000K - White
C33B - Lamp LED Warm White CRI>80

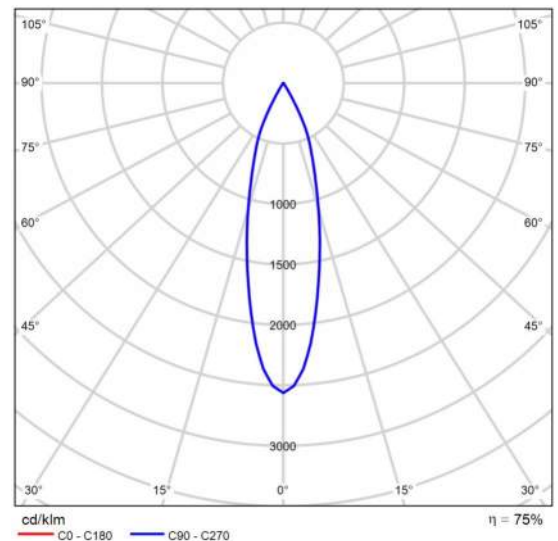
Product data sheet

iGuzzini - Woody - \varnothing 140mm - BU85.04 - Spotlight with base - Warm White COB LED - Integrated electronic control gear - Flood optic - 19.1W 1954.4lm - 3000K - Black

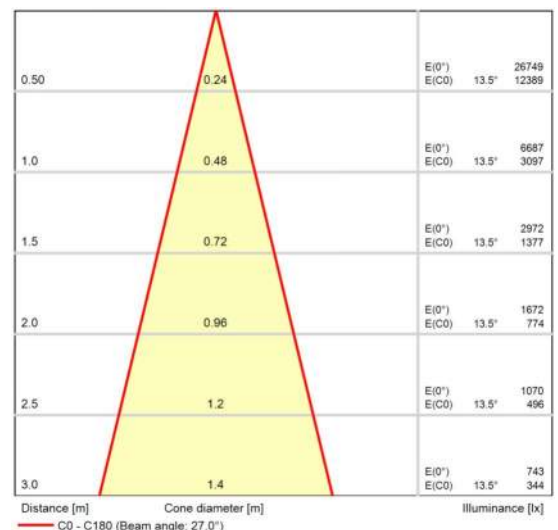


Article No.	BU85
P	19.1 W
Φ_{Lamp}	2610 lm
$\Phi_{Luminaire}$	1953 lm
η	74.82 %
Luminous efficacy	102.2 lm/W
CCT	3049 K
CRI	80
Index	A

BU85 :
Spotlight designed to use LED lamps and a flood optic. Consists of an optical assembly and a base. The optical assembly, arm, base and frame holder are made of EN1706AC 46100LF aluminium alloy and subjected to a multi-step, pre-treatment process, in which the main phases are degreasing, fluorozirconation (a protective surface film) and sealing (with a nano-structured silane layer). The next painting stage consists of a primer and a liquid acrylic paint, cured at 150°C, with a high level of weather and UV ray resistance. The 4 mm thick, tempered, sodium-calcium, closing glass is colourless, transparent and secured with captive screws. The 50/60 Shore A silicone seal has been subject to post-cooling treatment, in an oven, for 4-6 hours at 200 °C. The optical assembly allows vertical and horizontal adjustments, with the possibility of locking the adjustment for aiming, and it has slots in the frame for rainwater drainage. The optic has a 99.93% super-pure aluminium OPTIBEAM reflector with a polished surface treatment. Complete with Warm White colour monochrome LED circuit. The cable gland for connecting the wiring assembly to the lamp assembly is made of M11x1 stainless steel. For the power supply, the device is fitted



Polar LDC



Cone diagram

Product data sheet

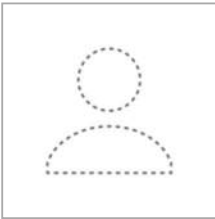
iGuzzini - Woody - ø140mm - BU85.04 - Spotlight with base - Warm White COB LED - Integrated electronic control gear - Flood optic - 19.1W 1954.4lm - 3000K - Black

with a black polyamide PG11 cable gland, suitable for 6.5 to 11.5 mm cables. All external screws used are made of A2 stainless steel. The luminaire technical characteristics conform to EN60598-1 standards and particular requirements.

BU85.04 - Spotlight with base - Warm White COB LED - Integrated electronic control gear - Flood optic - 19.1W 1954.4lm - 3000K - Black
LW70 - Lamp LED Warm

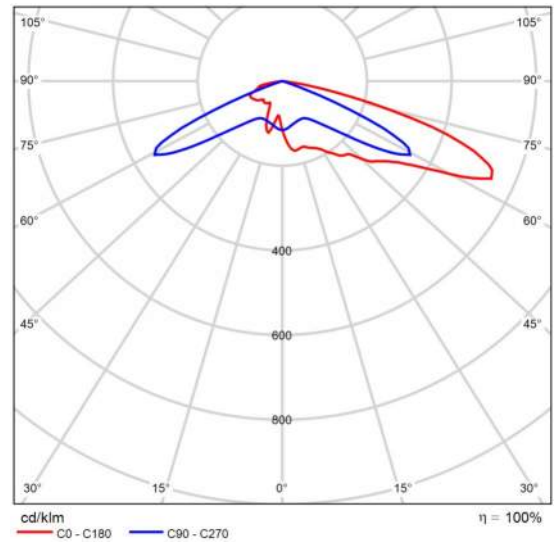
Product data sheet

Not yet a DIALux member - Kirium One 12LED 3K



Article No. Kirium One 12LED 3K
Asymmetrical Area
1050mA UMSUG 42
0037 0000 100

P	37.0 W
Φ_{Lamp}	4945 lm
$\Phi_{Luminaire}$	4945 lm
η	100.00 %
Luminous efficacy	133.6 lm/W
CCT	3000 K
CRI	100
Index	K

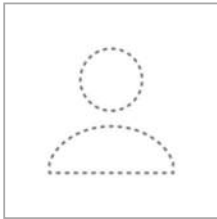


Polar LDC



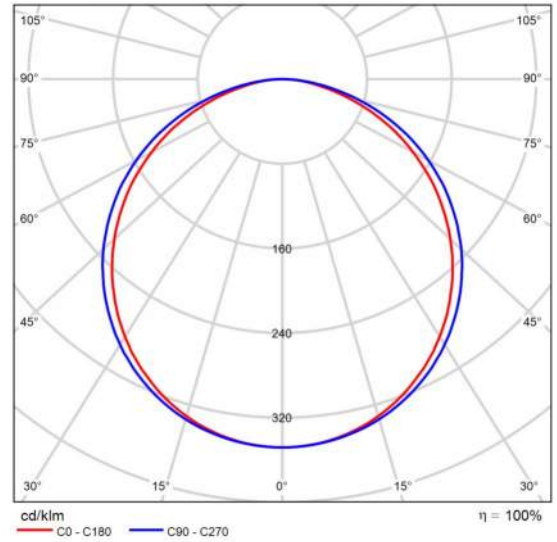
Product data sheet

Not yet a DIALux member - LEDFLEX Neon 10

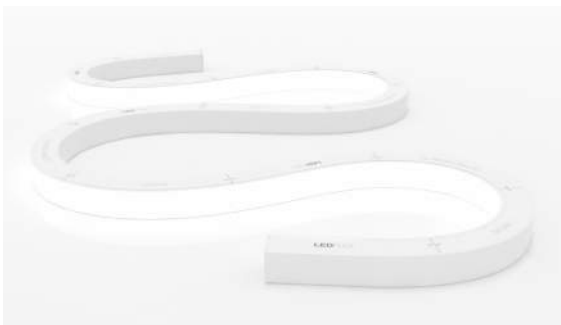


LEDFLEX

Article No.	012-2113-SL 10
P	9.0 W
Φ_{Lamp}	210 lm
$\Phi_{Luminaire}$	210 lm
η	100.00 %
Luminous efficacy	23.3 lm/W
CCT	3000 K
CRI	90
Index	L



Polar LDC



Glare evaluation according to UGR												
μ Ceiling	70	70	50	50	30	70	70	50	50	30	70	30
μ Walls	50	30	50	30	30	50	30	50	30	30	50	30
μ Floor	20	20	20	20	20	20	20	20	20	20	20	20
Room size X Y	Viewing direction at right angles to lamp axis						Viewing direction parallel to lamp axis					
2H	2H	16.8	19.2	17.1	18.4	18.6	17.3	18.6	17.6	18.9	19.1	19.1
	3H	18.3	19.5	18.6	19.8	20.0	18.9	20.2	19.3	20.4	20.7	20.7
	4H	18.8	20.0	19.2	20.3	20.6	19.6	20.8	19.9	21.1	21.3	21.3
	6H	19.2	20.3	19.6	20.6	20.9	20.1	21.2	20.4	21.5	21.8	21.8
	8H	19.3	20.4	19.7	20.7	21.0	20.2	21.3	20.6	21.6	21.9	21.9
	12H	19.4	20.4	19.8	20.7	21.1	20.3	21.4	20.7	21.7	22.0	22.0
4H	2H	17.5	18.7	17.9	19.0	19.3	17.9	19.1	18.2	19.3	19.6	19.6
	3H	19.2	20.2	19.6	20.5	20.8	19.7	20.7	20.1	21.1	21.4	21.4
	4H	19.9	20.8	20.3	21.1	21.5	20.5	21.4	20.9	21.8	22.1	22.1
	6H	20.3	21.1	20.8	21.5	21.9	21.1	21.9	21.6	22.3	22.7	22.7
	8H	20.5	21.2	20.9	21.6	22.1	21.3	22.1	21.8	22.5	22.9	22.9
	12H	20.6	21.3	21.1	21.7	22.2	21.5	22.2	21.9	22.6	23.0	23.0
8H	4H	20.2	20.9	20.6	21.3	21.7	20.8	21.5	21.2	21.9	22.3	22.3
	6H	20.8	21.4	21.3	21.8	22.3	21.5	22.1	22.0	22.6	23.0	23.0
	8H	21.1	21.6	21.5	22.0	22.5	21.8	22.3	22.3	22.8	23.3	23.3
	12H	21.3	21.7	21.7	22.2	22.7	22.0	22.5	22.5	23.0	23.5	23.5
12H	4H	20.2	20.9	20.7	21.3	21.7	20.8	21.5	21.2	21.9	22.3	22.3
	6H	20.9	21.4	21.4	21.9	22.3	21.6	22.1	22.0	22.5	23.0	23.0
	8H	21.2	21.6	21.7	22.1	22.6	21.9	22.3	22.4	22.8	23.3	23.3
Variation of the observer position for the luminaire distances S												
S = 1.0H		+0.1 / -0.1					+0.1 / -0.1					
S = 1.5H		+0.2 / -0.4					+0.2 / -0.3					
S = 2.0H		+0.4 / -0.7					+0.4 / -0.6					
Standard table		BK05					BK06					
Correction summand		3.5					4.7					
Corrected glare indices referring to 210lm Total luminous flux												

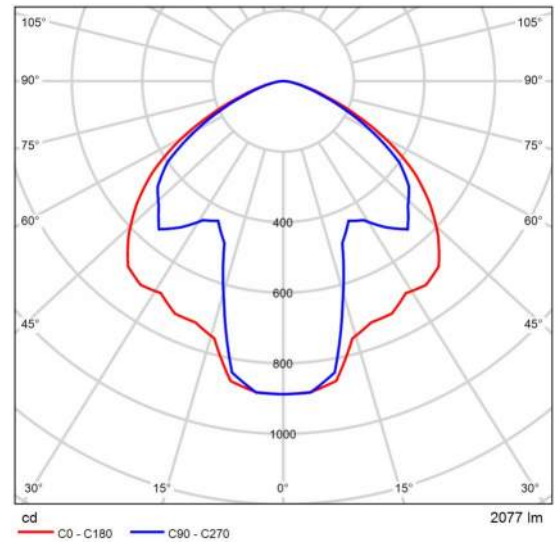
UGR diagram (SHR: 0.25)

Product data sheet

Performance in Lighting - HEDO+ C/EW 23W 830 AN-96



Article No.	3104683
P	23.0 W
$\Phi_{\text{Luminaire}}$	2077 lm
Luminous efficacy	90.3 lm/W
CCT	3259 K
CRI	80
Index	J



Polar LDC

Part number: 3104683. Series: HEDO+.

Pole-top mounted outdoor luminaire, comprising: Die-cast aluminium housing, polyester powder coat finish ISO 9227/12944. ISO 9223 (C5) . Coated die-cast aluminium pole-top adaptor for pole \varnothing 60 / 76 mm. Microprismatic, flat glass diffuser, silk-screened on the inside. Anti-ageing custom moulded silicone sealing gasket(s) with resilient elastic return capacity. The IP66-rated socket-plug fast connector for mains connection without opening the luminaire. Made in PA66 with silver-plated brass contacts for cables \varnothing 9. \varnothing 12 mm. UNI 10819 light pollution standards compliant (0% ULOR rating) . Stainless steel locking hardware. Integral surge protection device (SPD) against mains overvoltages up to 10 kV (CM/DM) . Other colour temperatures (CCT) and colour rendering index (CRI) options available. Consult factory.

Mounting type: Area lighting. Colour/Finish: AN-96 / Anthracite gray / Textured. Shape: Round. Net weight: 3.900 kg. International protection marking: IP65. IK09 17J xx7. Ta MIN luminaire: -20° C. Ta MAX luminaire: 50° C. Optic: Circular Extra-Wide - C/EW. Lamps: 1. Lampholder: LED. Light Source: LED. ILCOS: DSR. Lightsource lumen output: 3150 lm. Luminaire lumen output: 2080 lm. Efficiency: 90 lm/W. Kelvin: 3000. CRI 80. MacAdam: 5. L80B10 @ 100000h. Insulation class: I. Supply voltage: 50/60. Wattage: 23 W. Power factor / COS Φ : 0.9. Quick installation. CE certified. Mountable on normally flammable surfaces. RCM certified

Glare evaluation according to UGR											
		70	70	50	50	30	70	70	50	50	30
p Ceiling		50	30	50	30	30	50	30	50	30	30
p Walls		20	20	20	20	20	20	20	20	20	20
p Floor		20	20	20	20	20	20	20	20	20	20
Room size X Y		Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	22.6	23.9	22.9	24.2	24.4	21.7	23.0	22.0	23.3	23.5
	3H	23.3	24.5	23.7	24.8	25.1	22.4	23.6	22.7	23.8	24.1
	4H	23.5	24.6	23.8	24.9	25.2	22.5	23.6	22.9	23.9	24.2
	6H	23.6	24.6	23.9	24.9	25.2	22.6	23.6	22.9	23.9	24.2
	8H	23.6	24.6	23.9	24.9	25.2	22.6	23.6	22.9	23.9	24.2
4H	2H	23.0	24.1	23.4	24.4	24.7	22.3	23.4	22.6	23.7	24.0
	3H	23.9	24.8	24.3	25.1	25.5	23.0	24.0	23.4	24.3	24.6
	4H	24.1	24.9	24.5	25.3	25.7	23.2	24.1	23.6	24.4	24.8
	6H	24.2	25.0	24.7	25.3	25.7	23.3	24.1	23.7	24.4	24.8
	8H	24.3	24.9	24.7	25.3	25.7	23.3	24.0	23.8	24.4	24.8
8H	2H	24.3	24.9	24.7	25.3	25.7	23.4	24.0	23.8	24.4	24.8
	4H	24.1	24.8	24.6	25.2	25.6	23.3	24.0	23.7	24.4	24.8
	6H	24.3	24.9	24.8	25.3	25.8	23.5	24.0	23.9	24.4	24.9
	8H	24.4	24.9	24.9	25.3	25.8	23.5	24.0	24.0	24.4	24.9
	12H	24.4	24.8	24.9	25.3	25.8	23.5	24.0	24.0	24.4	24.9
12H	4H	24.1	24.7	24.6	25.1	25.6	23.3	23.9	23.7	24.3	24.8
	6H	24.3	24.8	24.8	25.3	25.7	23.5	24.0	23.9	24.4	24.9
	8H	24.4	24.8	24.9	25.3	25.8	23.5	23.9	24.0	24.4	24.9
Variation of the observer position for the luminaire distances S											
S = 1.0H		+0.2 / -0.2					+0.2 / -0.2				
S = 1.5H		+0.6 / -0.8					+0.7 / -0.9				
S = 2.0H		+1.2 / -1.8					+1.1 / -2.1				
Standard table		BK03					BK03				
Correction summand		6.9					6.0				
Corrected glare indices referring to 2077lm Total luminous flux											

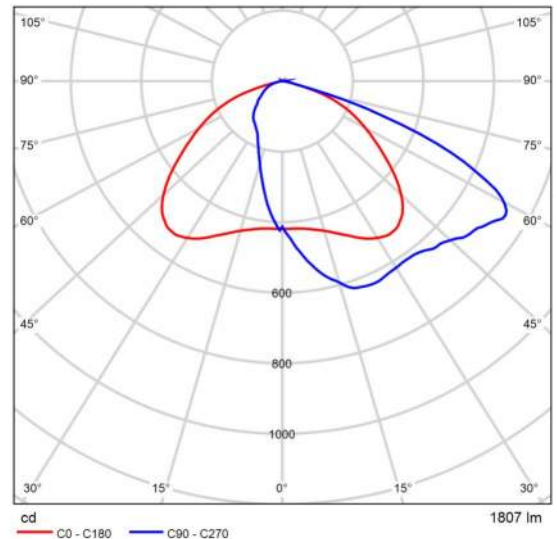
UGR diagram (SHR: 0.25)

Product data sheet

Performance in Lighting - MIMIK 20 A60/W 21W 730 AN-96



Article No.	304429
P	21.0 W
$\Phi_{\text{Luminaire}}$	1807 lm
Luminous efficacy	86.0 lm/W
CCT	3259 K
CRI	70
Index	H



Polar LDC

Part number: 304429. Series: MIMIK.
 Wall-mounted LED luminaire, comprising: Die-cast aluminium housing, polyester powder coat finish ISO 9227/12944. ISO 9223 (C5). Anti-ageing custom moulded silicone sealing gasket(s). Microprismatic, toughened, flat glass diffuser, silk-screened on the inside (MIMIK FLAT versions). Single (M) and dual (B) emission versions available. Extra-clear, toughened, flat glass diffuser, silk-screened on the inside (MIMIK models). MIMIK models are equipped with high-transmittance polycarbonate optics with different light distributions to meet a large variety of lighting schemes. Optimised asymmetric distribution for wide spacing and lighting-class levels matching (CP options). Built-in driver. Stainless steel locking hardware. EM/3P version is designed for multipurpose 3 hours sustained emergency lighting. Ni-Cd 3,6 V, 4 Ah batteries, 24 hours recharge time. Openable and maintainable luminaire (future-proof). Colour/Finish: AN-96 / Anthracite gray / Textured. Shape: Rectangular. Net weight: 2.000 kg. International protection marking: IP65. IK06 1J xx3. Ta MIN luminaire: -20° C. Ta MAX luminaire: 35° C. Optic: Asymmetric Wide - A60/W. Lamps: 1. Lampholder: LED. Light Source: LED. ILCOS: DSL. Lightsource lumen output: 2278 lm. Luminaire lumen output: 1807 lm. Efficiency: 86 lm/W. Kelvin: 3000. CRI 70. MacAdam: 3. L80B10 @ 60000h. Insulation class: I. Supply voltage: 50/60. Wattage: 21 W.

Product data sheet

Performance in Lighting - MIMIK 20 A60/W 21W 730 AN-96

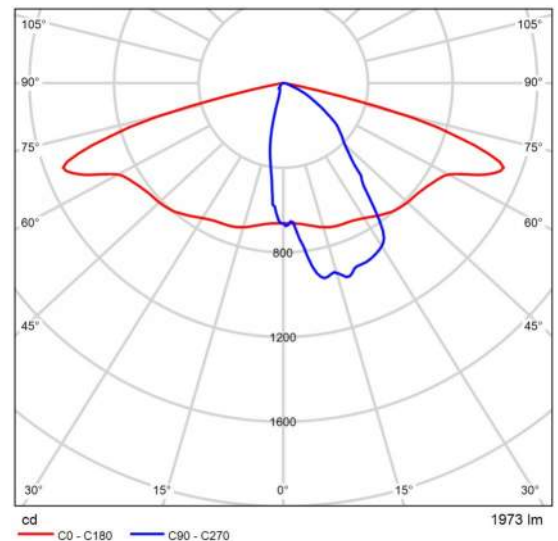
Power factor / COS Φ : 0.9. CE certified. ENEC certified. Mountable on normally flammable surfaces. EAC certified. RCM certified

Product data sheet

Performance in Lighting - MIMIK 20 CP/T2 21W 730 AN-96



Article No.	304417
P	21.0 W
$\Phi_{\text{Luminaire}}$	1973 lm
Luminous efficacy	93.9 lm/W
CCT	3259 K
CRI	70
Index	G



Polar LDC

Part number: 304417. Series: MIMIK.
 Wall-mounted LED luminaire, comprising: Die-cast aluminium housing, polyester powder coat finish ISO 9227/12944. ISO 9223 (C5). Anti-ageing custom moulded silicone sealing gasket(s). Microprismatic, toughened, flat glass diffuser, silk-screened on the inside (MIMIK FLAT versions). Single (M) and dual (B) emission versions available. Extra-clear, toughened, flat glass diffuser, silk-screened on the inside (MIMIK models). MIMIK models are equipped with high-transmittance polycarbonate optics with different light distributions to meet a large variety of lighting schemes. Optimised asymmetric distribution for wide spacing and lighting-class levels matching (CP options). Built-in driver. Stainless steel locking hardware. EM/3P version is designed for multipurpose 3 hours sustained emergency lighting. Ni-Cd 3,6 V, 4 Ah batteries, 24 hours recharge time. Openable and maintainable luminaire (future-proof). Colour/Finish: AN-96 / Anthracite gray / Textured. Shape: Rectangular. Net weight: 2.000 kg. International protection marking: IP65. IK06 1J xx3. Ta MIN luminaire: -20° C. Ta MAX luminaire: 35° C. Optic: Cycle/Pedestrian Type II - CP/T2. Lamps: 1. Lampholder: LED. Light Source: LED. ILCOS: DSL. Lightsource lumen output: 2278 lm. Luminaire lumen output: 1973 lm. Efficiency: 93 lm/W. Kelvin: 3000. CRI 70. MacAdam: 3. L80B10 @ 60000h. Insulation class: I. Supply voltage: 50/60. Wattage: 21 W.

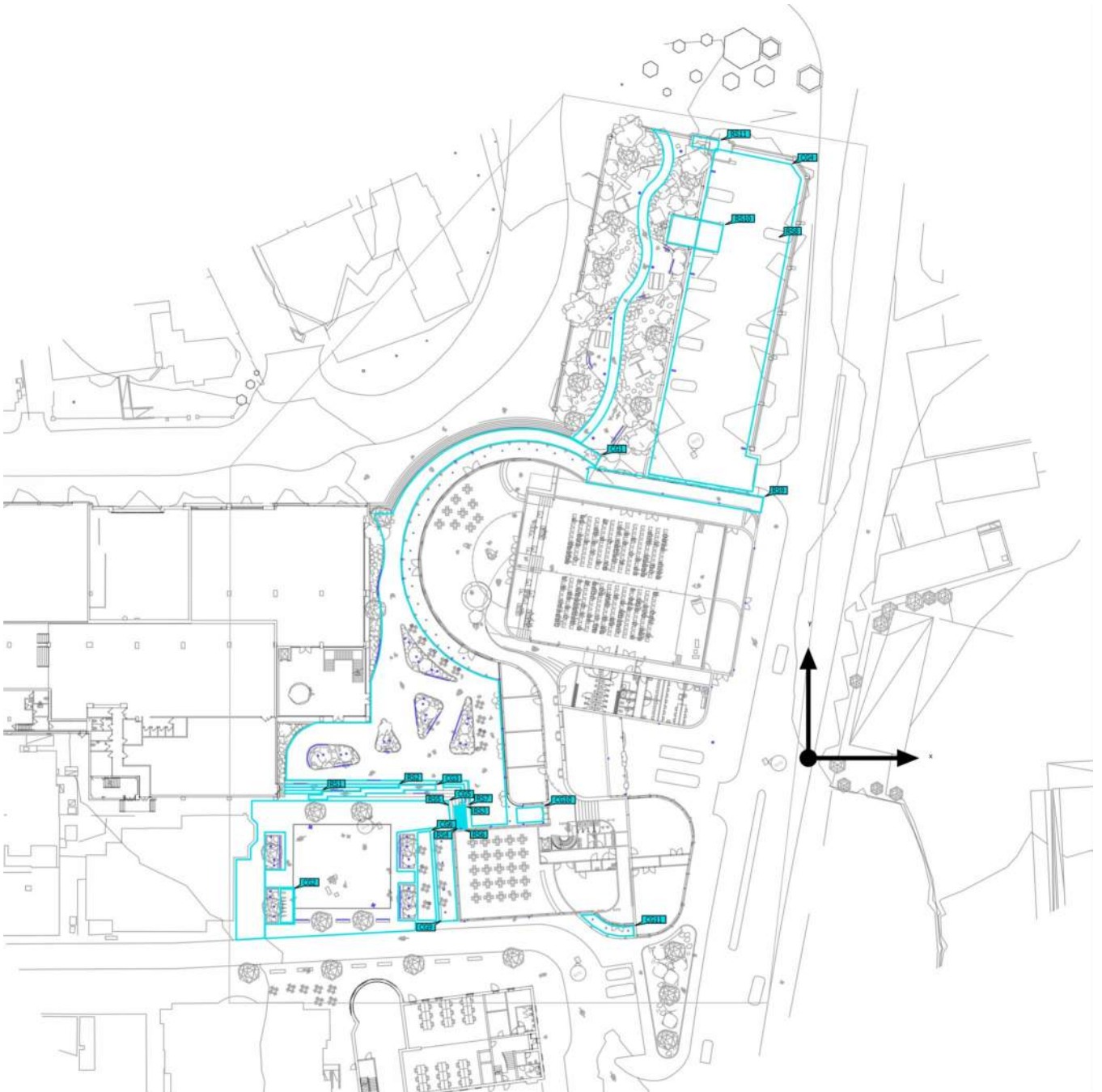
Product data sheet

Performance in Lighting - MIMIK 20 CP/T2 21W 730 AN-96

Power factor / COS Φ : 0.9. CE certified. ENEC certified. Mountable on normally flammable surfaces. EAC certified. RCM certified

Default (Light scene 1)

Calculation objects



Default (Light scene 1)

Calculation objects

Surface result objects

Properties	Ø	min	max	U _o (g ₁)	g ₂	Index
STEP / SEAT #1 Perpendicular illuminance (adaptive) Height: 0.250 m	24.4 lx	5.36 lx	43.0 lx	0.22	0.12	RS1
STEP / SEAT #1 Luminance Height: 0.250 m	5.43 cd/m ²	1.20 cd/m ²	9.58 cd/m ²	0.22	0.13	RS1
STEP / SEAT #2 Perpendicular illuminance (adaptive) Height: 0.750 m	20.6 lx	2.97 lx	452 lx	0.14	0.007	RS2
STEP / SEAT #2 Luminance Height: 0.750 m	4.58 cd/m ²	0.66 cd/m ²	101 cd/m ²	0.14	0.007	RS2
STEP / SEAT #4 Perpendicular illuminance (adaptive) Height: 0.750 m	29.9 lx	3.62 lx	382 lx	0.12	0.009	RS3
STEP / SEAT #4 Luminance Height: 0.750 m	6.67 cd/m ²	0.81 cd/m ²	85.0 cd/m ²	0.12	0.010	RS3
STEP A - #7 Perpendicular illuminance (adaptive) Height: 0.313 m	35.8 lx	11.9 lx	59.9 lx	0.33	0.20	RS4
STEP A - #7 Luminance Height: 0.313 m	7.97 cd/m ²	2.65 cd/m ²	13.3 cd/m ²	0.33	0.20	RS4
STEP A - #5 Perpendicular illuminance (adaptive) Height: 0.626 m	45.8 lx	14.3 lx	73.2 lx	0.31	0.20	RS5
STEP A - #5 Luminance Height: 0.626 m	10.2 cd/m ²	3.18 cd/m ²	16.3 cd/m ²	0.31	0.20	RS5
STEP A - #3 Perpendicular illuminance (adaptive) Height: 0.939 m	51.6 lx	13.3 lx	89.4 lx	0.26	0.15	RS6

Default (Light scene 1)

Calculation objects

STEP A - #3 Luminance Height: 0.939 m	11.5 cd/m ²	2.97 cd/m ²	19.9 cd/m ²	0.26	0.15	RS6
STEP A - #1 Perpendicular illuminance (adaptive) Height: 1.252 m	68.0 lx	13.7 lx	124 lx	0.20	0.11	RS7
STEP A - #1 Luminance Height: 1.252 m	15.2 cd/m ²	3.05 cd/m ²	27.6 cd/m ²	0.20	0.11	RS7
GARDEN AREA PATHWAY Perpendicular illuminance (adaptive) Height: 1.212 m	18.8 lx	6.07 lx	33.3 lx	0.32	0.18	RS8
GARDEN AREA PATHWAY Luminance Height: 1.212 m	1.67 cd/m ²	0.54 cd/m ²	2.96 cd/m ²	0.32	0.18	RS8
SIDE ENTRANCE RAMP Perpendicular illuminance (adaptive) Height: 0.635 m	56.3 lx	0.45 lx	165 lx	0.008	0.003	RS9
SIDE ENTRANCE RAMP Luminance Height: 0.635 m	12.5 cd/m ²	0.10 cd/m ²	36.7 cd/m ²	0.008	0.003	RS9
CARPARK - GARDEN RAMP Perpendicular illuminance (adaptive) Height: 0.675 m	4.60 lx	0.41 lx	11.1 lx	0.089	0.037	RS10
CARPARK - GARDEN RAMP Luminance Height: 0.675 m	0.41 cd/m ²	0.036 cd/m ²	0.98 cd/m ²	0.088	0.037	RS10
GARDEN AREA - DISABLED ACCES RAMP Perpendicular illuminance (adaptive) Height: 0.653 m	9.61 lx	0.62 lx	16.1 lx	0.065	0.039	RS11
GARDEN AREA - DISABLED ACCES RAMP Luminance Height: 0.653 m	2.14 cd/m ²	0.14 cd/m ²	3.58 cd/m ²	0.065	0.039	RS11

Default (Light scene 1)

Calculation objects

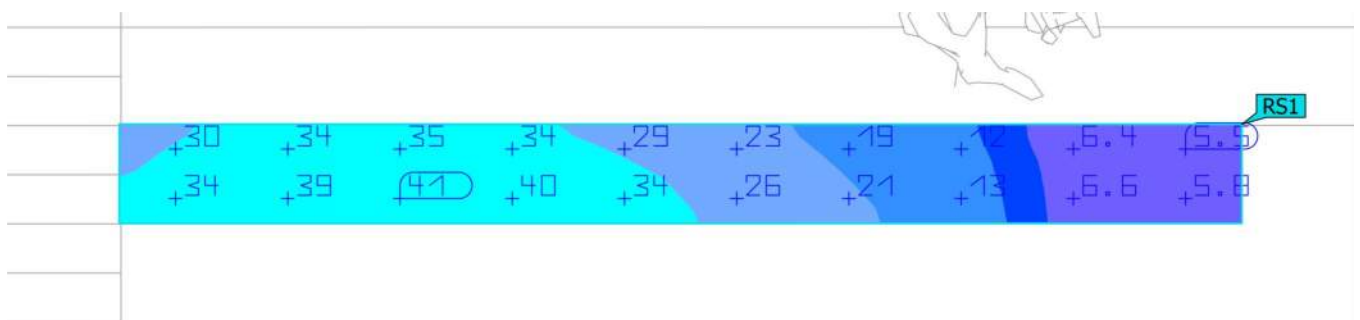
Calculation surfaces

Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CONCOURSE AREA Perpendicular illuminance Height: 1.260 m	20.4 lx	0.00 lx	697 lx	0.00	0.00	CG1
CYCLE PARK Perpendicular illuminance Height: 0.020 m	7.34 lx	1.67 lx	19.6 lx	0.23	0.085	CG2
CYCLE PATH Perpendicular illuminance Height: 0.504 m	12.8 lx	1.48 lx	37.7 lx	0.12	0.039	CG3
CAR PARKING Perpendicular illuminance Height: 0.040 m	13.5 lx	0.008 lx	28.3 lx	0.001	0.000	CG4
PLAZA AREA Perpendicular illuminance Height: 0.020 m	17.6 lx	1.40 lx	92.1 lx	0.080	0.015	CG5
PLAZA OUTSIDE SEATING AREA Perpendicular illuminance Height: 0.020 m	19.0 lx	3.93 lx	81.8 lx	0.21	0.048	CG6
RESTAURANT UNDER CANOPY Perpendicular illuminance Height: 0.020 m	232 lx	10.5 lx	990 lx	0.045	0.011	CG9
ENTRANCE - UNDER CANOPY Perpendicular illuminance Height: 1.250 m	269 lx	209 lx	330 lx	0.78	0.63	CG10
ENTRANCE FOYET Perpendicular illuminance Height: 0.020 m	141 lx	59.6 lx	180 lx	0.42	0.33	CG11

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

Default (Light scene 1)

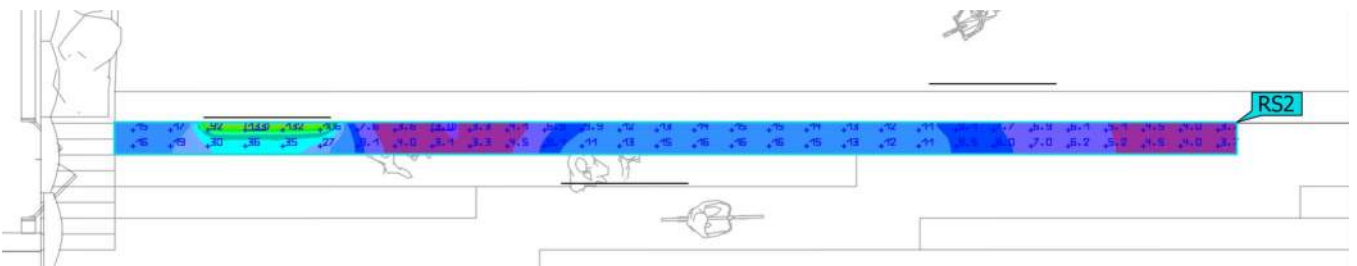
STEP / SEAT #1



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
STEP / SEAT #1 Perpendicular illuminance (adaptive) Height: 0.250 m	24.4 lx	5.36 lx	43.0 lx	0.22	0.12	RS1

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

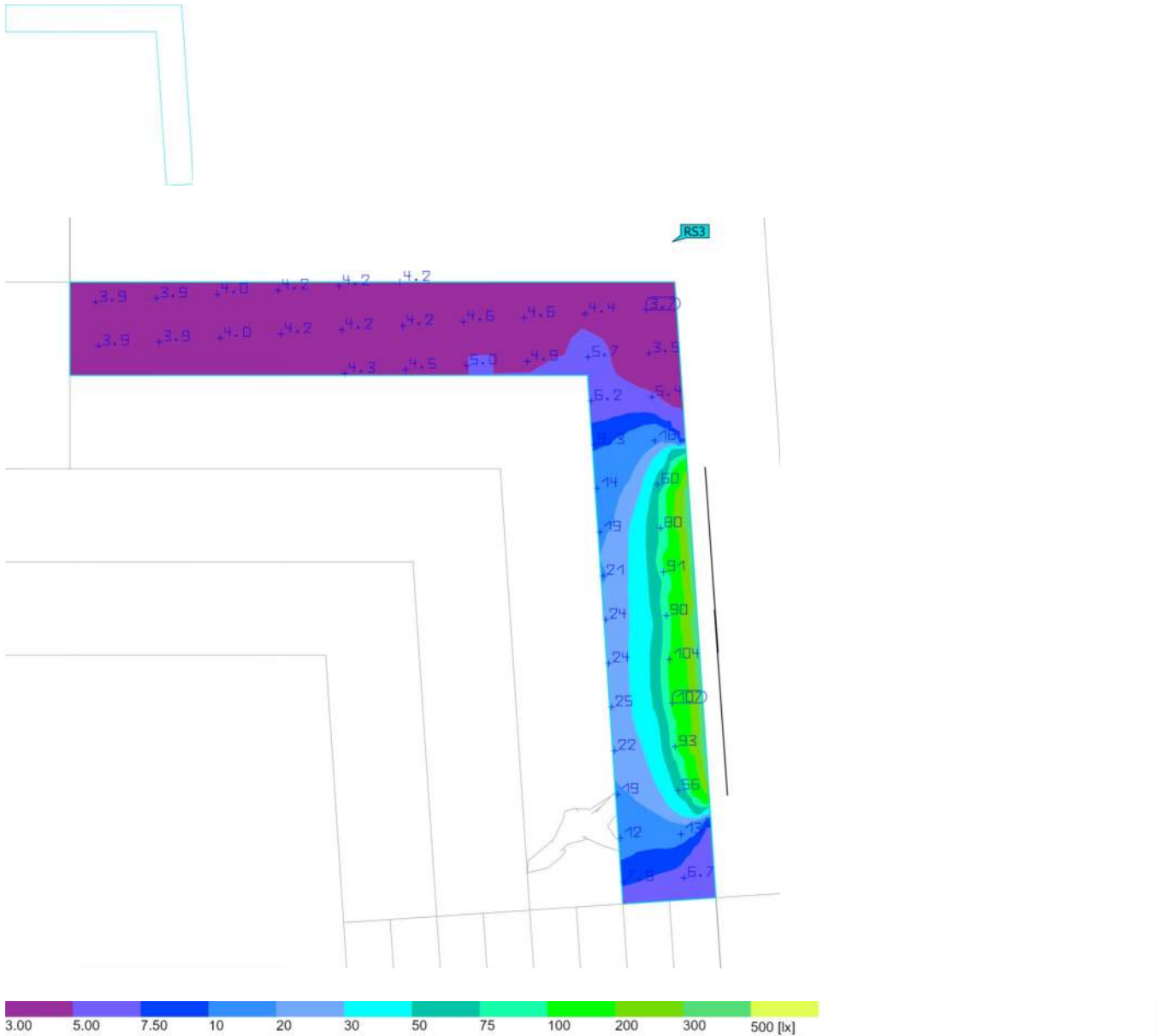
Default (Light scene 1)
STEP / SEAT #2



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
STEP / SEAT #2 Perpendicular illuminance (adaptive) Height: 0.750 m	20.6 lx	2.97 lx	452 lx	0.14	0.007	RS2

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

Default (Light scene 1)
STEP / SEAT #4

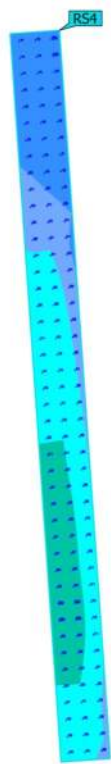


Properties	\bar{E}	E_{min}	E_{max}	$U_0 (g_1)$	g_2	Index
STEP / SEAT #4 Perpendicular illuminance (adaptive) Height: 0.750 m	29.9 lx	3.62 lx	382 lx	0.12	0.009	RS3

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

Default (Light scene 1)

STEP A - #7

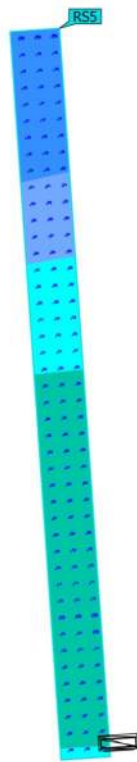


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
STEP A - #7 Perpendicular illuminance (adaptive) Height: 0.313 m	35.8 lx	11.9 lx	59.9 lx	0.33	0.20	RS4

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

Default (Light scene 1)

STEP A - #5

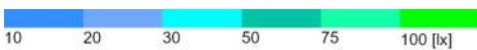
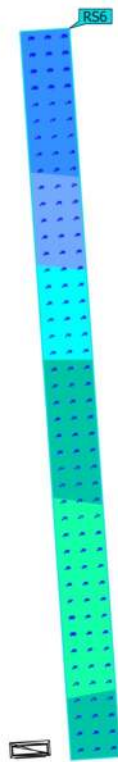


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
STEP A - #5 Perpendicular illuminance (adaptive) Height: 0.626 m	45.8 lx	14.3 lx	73.2 lx	0.31	0.20	RS5

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

Default (Light scene 1)

STEP A - #3

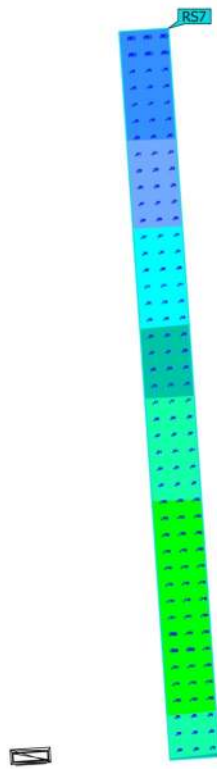


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
STEP A - #3 Perpendicular illuminance (adaptive) Height: 0.939 m	51.6 lx	13.3 lx	89.4 lx	0.26	0.15	RS6

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

Default (Light scene 1)

STEP A - #1

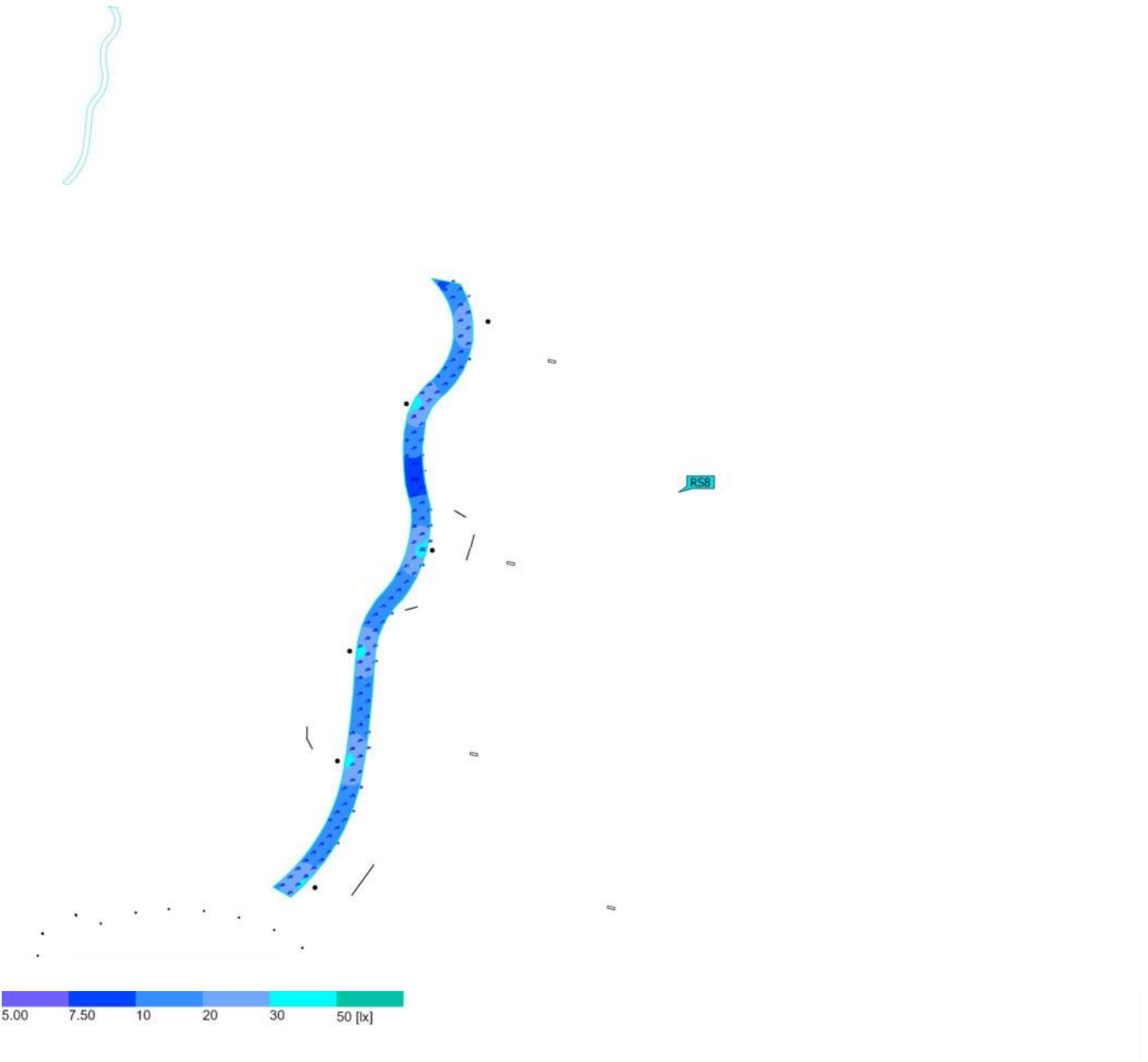


Properties	\bar{E}	E_{\min}	E_{\max}	$U_o (g_1)$	g_2	Index
STEP A - #1 Perpendicular illuminance (adaptive) Height: 1.252 m	68.0 lx	13.7 lx	124 lx	0.20	0.11	RS7

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

Default (Light scene 1)

GARDEN AREA PATHWAY

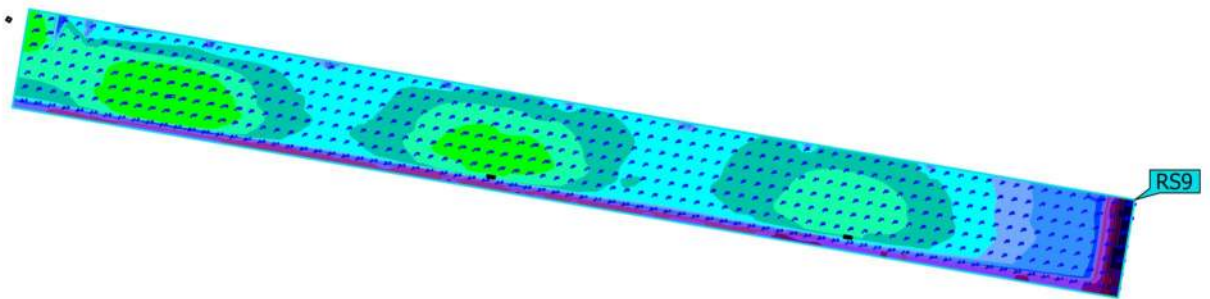
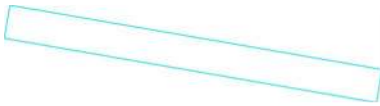


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
GARDEN AREA PATHWAY Perpendicular illuminance (adaptive) Height: 1.212 m	18.8 lx	6.07 lx	33.3 lx	0.32	0.18	RS8

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

Default (Light scene 1)

SIDE ENTRANCE RAMP

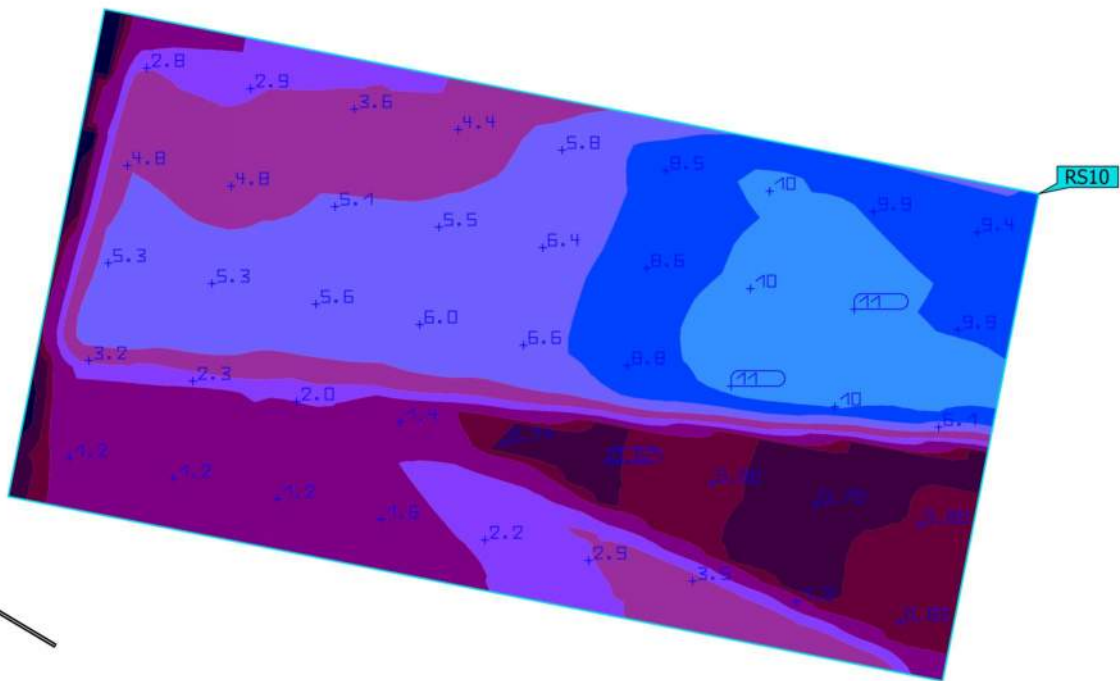
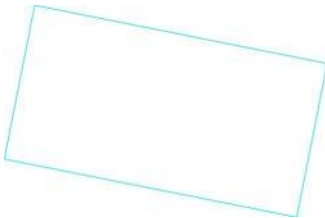


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
SIDE ENTRANCE RAMP Perpendicular illuminance (adaptive) Height: 0.635 m	56.3 lx	0.45 lx	165 lx	0.008	0.003	RS9

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

Default (Light scene 1)

CARPARK - GARDEN RAMP

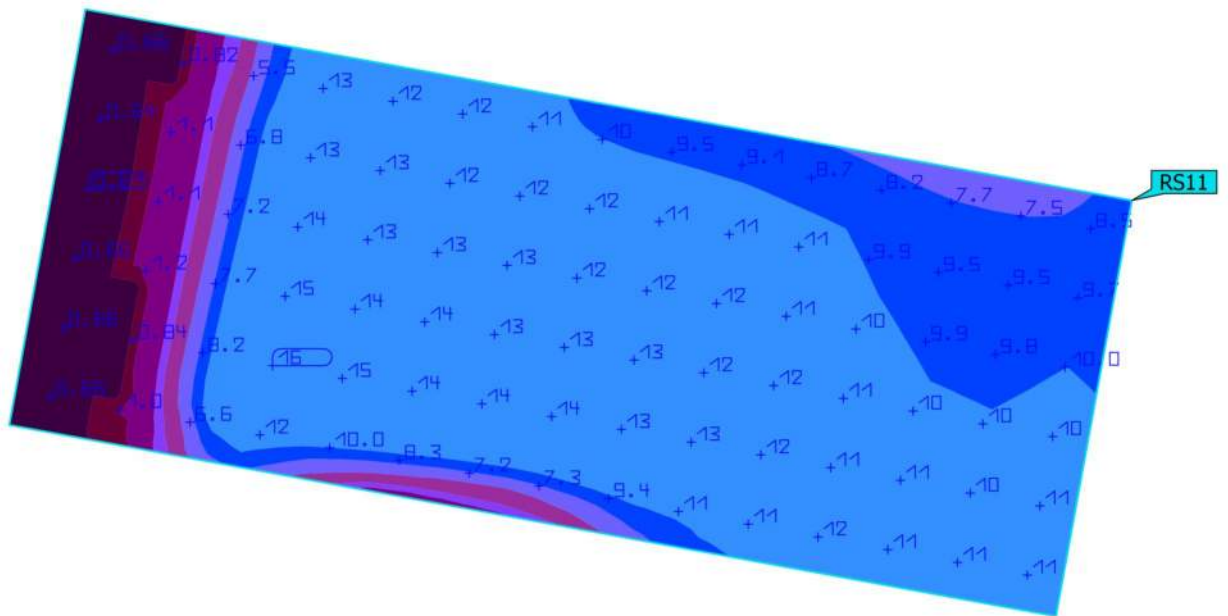
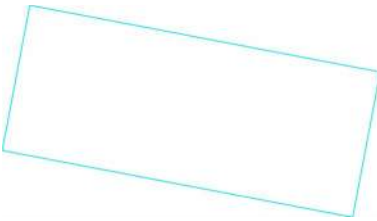


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CARPARK - GARDEN RAMP Perpendicular illuminance (adaptive) Height: 0.675 m	4.60 lx	0.41 lx	11.1 lx	0.089	0.037	RS10

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

Default (Light scene 1)

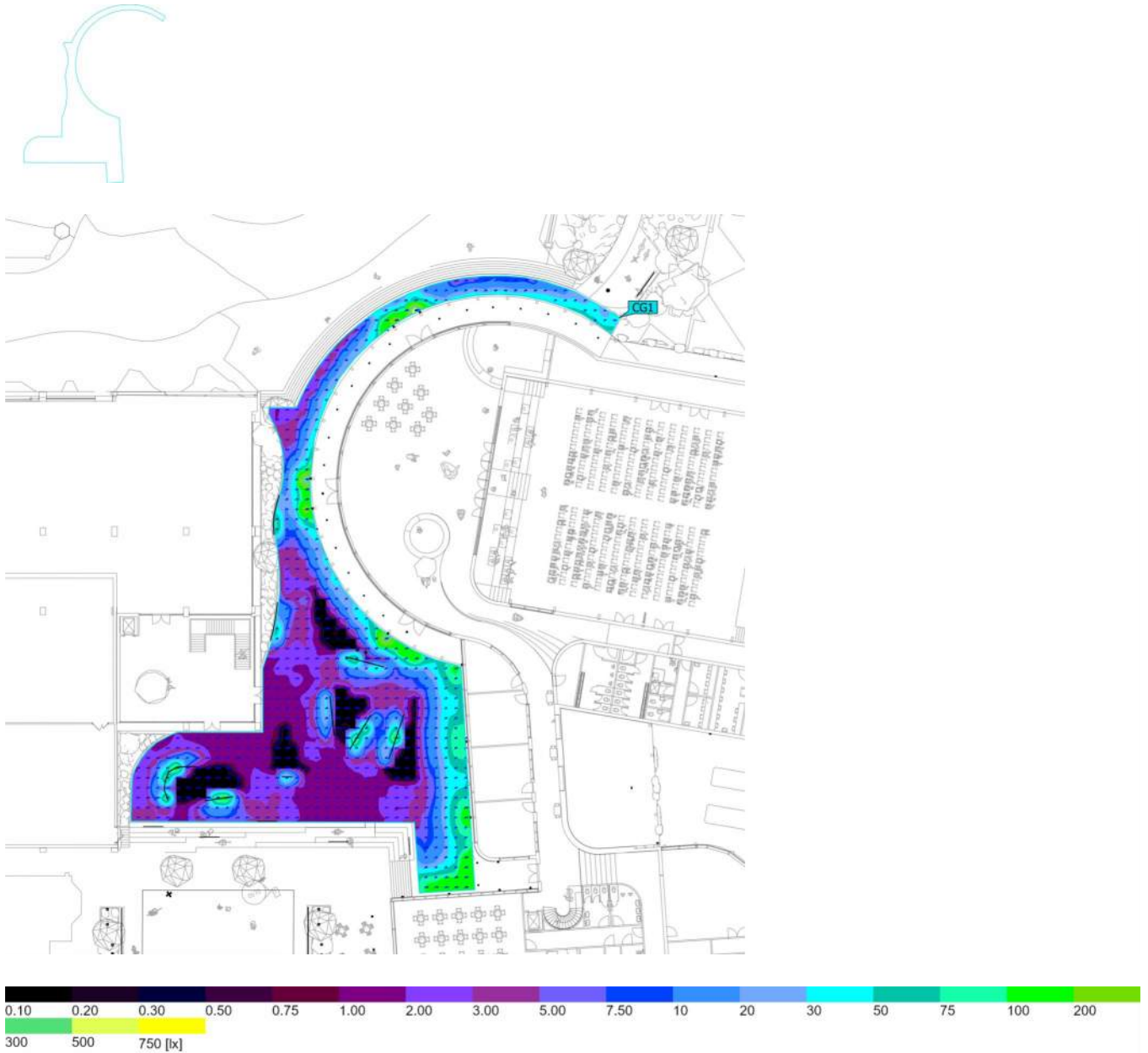
GARDEN AREA - DISABLED ACCES RAMP



Properties	\bar{E}	E_{min}	E_{max}	$U_0 (g_1)$	g_2	Index
GARDEN AREA - DISABLED ACCES RAMP Perpendicular illuminance (adaptive) Height: 0.653 m	9.61 lx	0.62 lx	16.1 lx	0.065	0.039	RS11

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

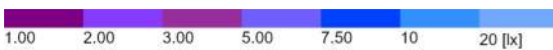
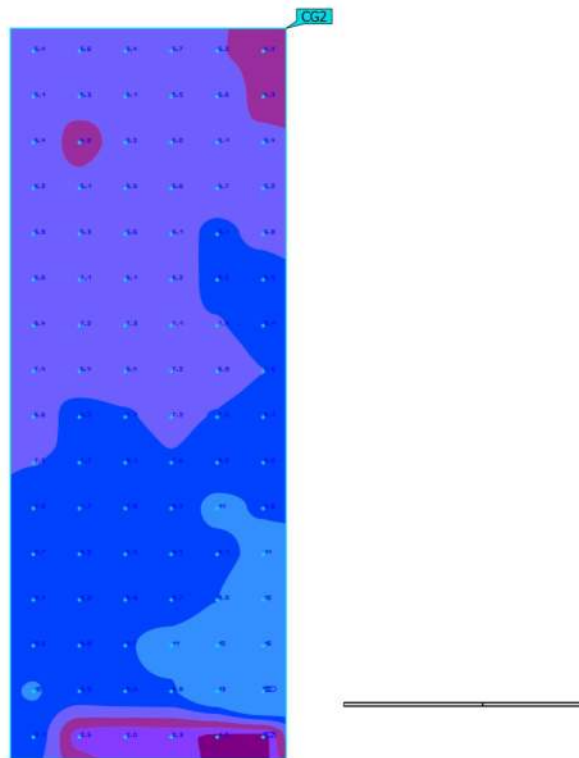
Default (Light scene 1)
CONCOURSE AREA



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CONCOURSE AREA Perpendicular illuminance Height: 1.260 m	20.4 lx	0.00 lx	697 lx	0.00	0.00	CG1

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

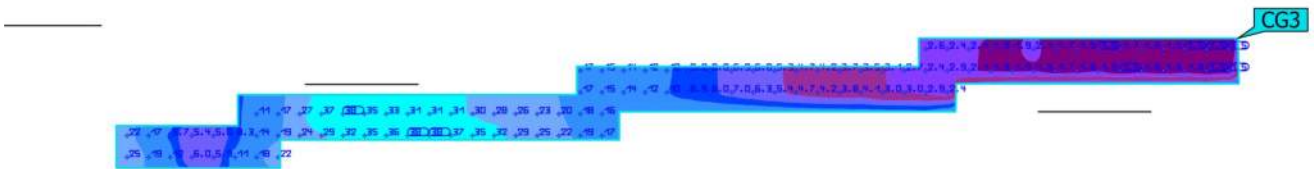
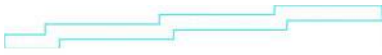
Default (Light scene 1)
CYCLE PARK



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CYCLE PARK Perpendicular illuminance Height: 0.020 m	7.34 lx	1.67 lx	19.6 lx	0.23	0.085	CG2

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

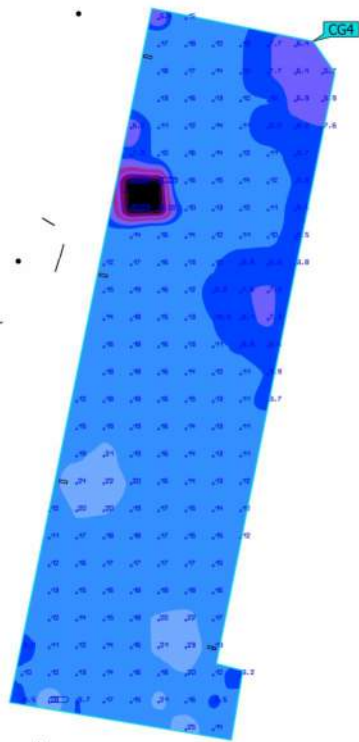
Default (Light scene 1)
CYCLE PATH



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CYCLE PATH Perpendicular illuminance Height: 0.504 m	12.8 lx	1.48 lx	37.7 lx	0.12	0.039	CG3

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

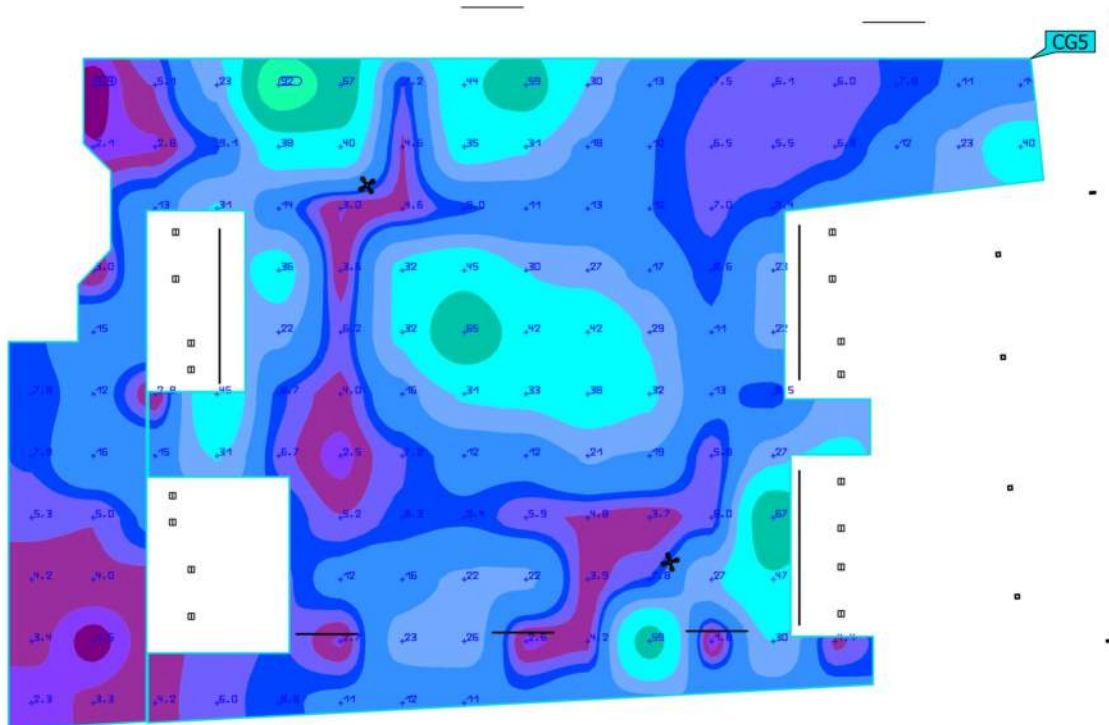
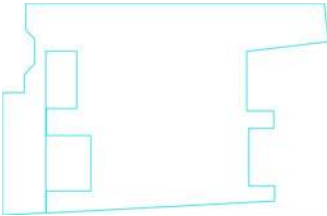
Default (Light scene 1)
CAR PARKING



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
CAR PARKING Perpendicular illuminance Height: 0.040 m	13.5 lx	0.008 lx	28.3 lx	0.001	0.000	CG4

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

Default (Light scene 1)
PLAZA AREA

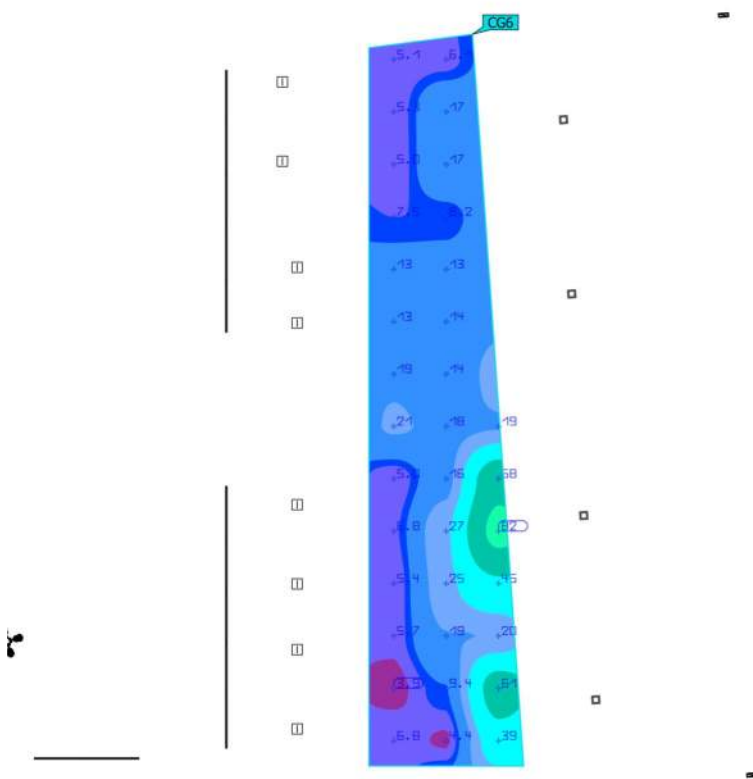


Properties	\bar{E}	E_{min}	E_{max}	$U_0 (g_1)$	g_2	Index
PLAZA AREA Perpendicular illuminance Height: 0.020 m	17.6 lx	1.40 lx	92.1 lx	0.080	0.015	CG5

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

Default (Light scene 1)

PLAZA OUTSIDE SEATING AREA

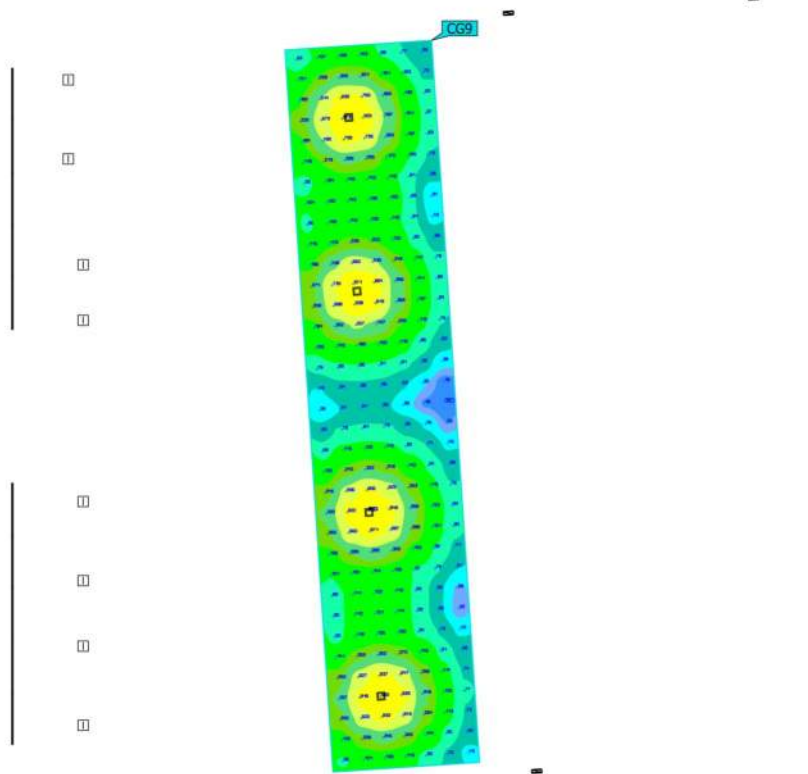


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
PLAZA OUTSIDE SEATING AREA Perpendicular illuminance Height: 0.020 m	19.0 lx	3.93 lx	81.8 lx	0.21	0.048	CG6

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

Default (Light scene 1)

RESTAURANT UNDER CANOPY

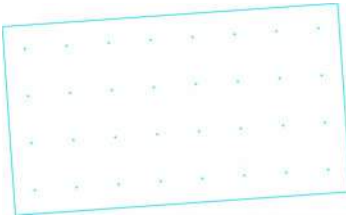


Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
RESTAURANT UNDER CANOPY Perpendicular illuminance Height: 0.020 m	232 lx	10.5 lx	990 lx	0.045	0.011	CG9

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

Default (Light scene 1)

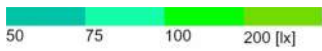
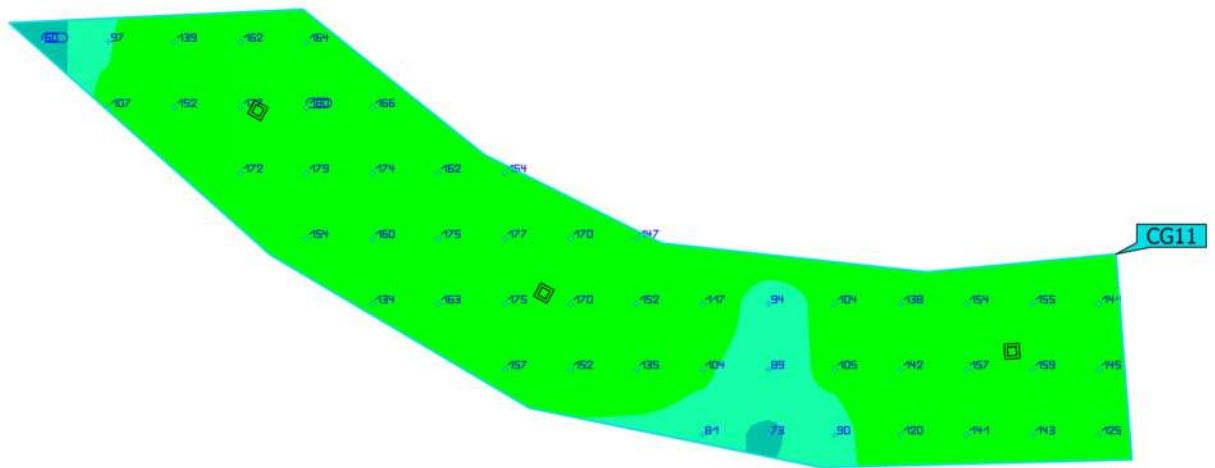
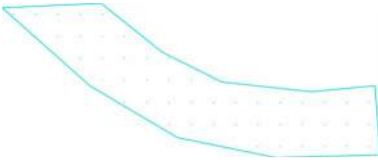
ENTRANCE - UNDER CANOPY



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
ENTRANCE - UNDER CANOPY Perpendicular illuminance Height: 1.250 m	269 lx	209 lx	330 lx	0.78	0.63	CG10

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

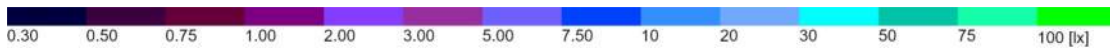
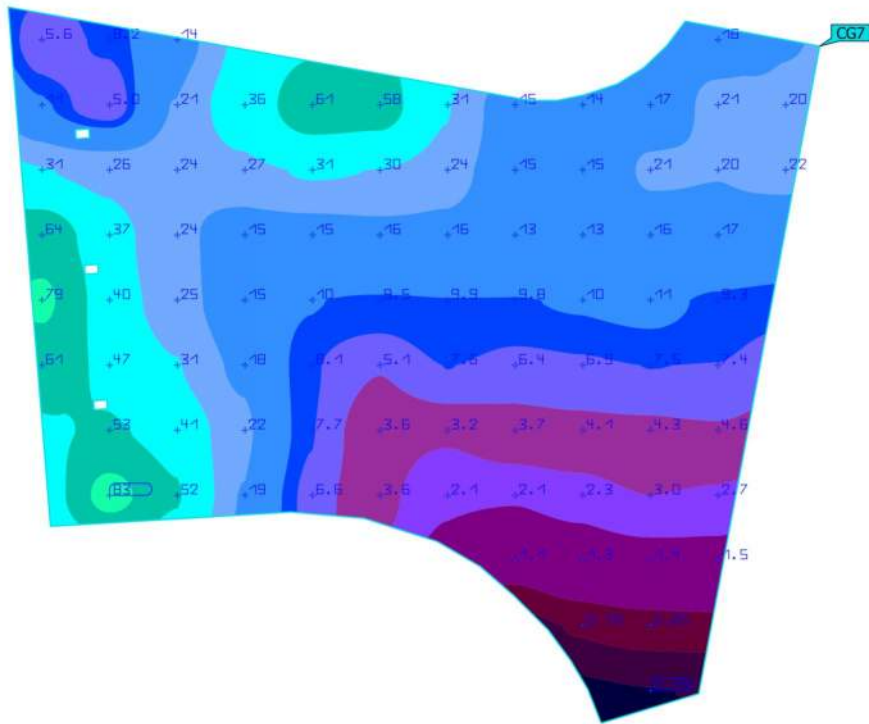
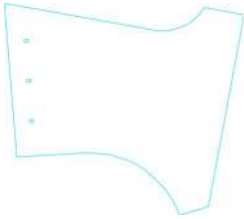
Default (Light scene 1)
ENTRANCE FOYET



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
ENTRANCE FOYET Perpendicular illuminance Height: 0.020 m	141 lx	59.6 lx	180 lx	0.42	0.33	CG11

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

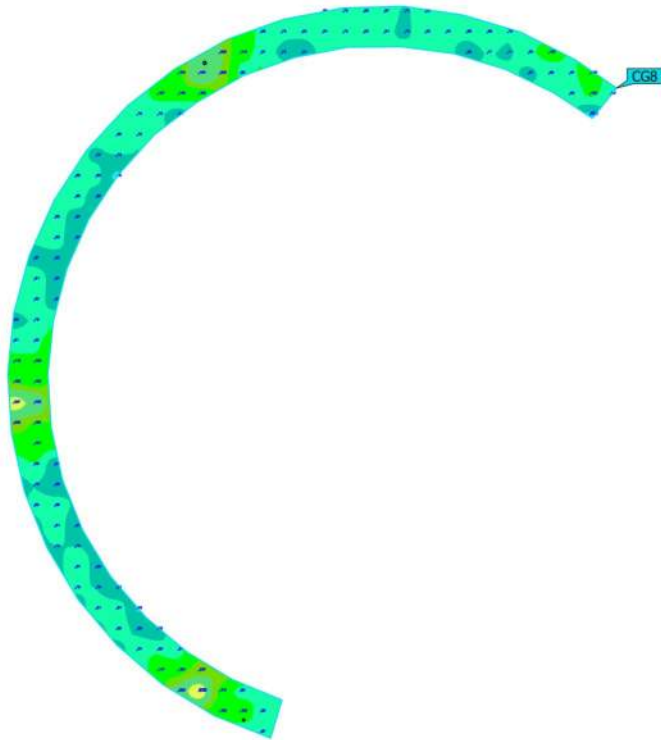
Building 1 · Eaves (Light scene 1)
BACK ENTRANCE



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
BACK ENTRANCE Perpendicular illuminance Height: -8.222 m	18.8 lx	0.49 lx	83.4 lx	0.026	0.006	CG7

Building 1 · Eaves (Light scene 1)

UNDER CANOPY MAIN RING



Properties	\bar{E}	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
UNDER CANOPY MAIN RING Perpendicular illuminance Height: -7.000 m	113 lx	43.8 lx	616 lx	0.39	0.071	CG8