

UCL Main Quad Pop-Up Building-Teaching Facility

External Lighting. Lights Spill and Glare Calculations.
High Level Wall Washers and low level linear lighting (between timber battens)

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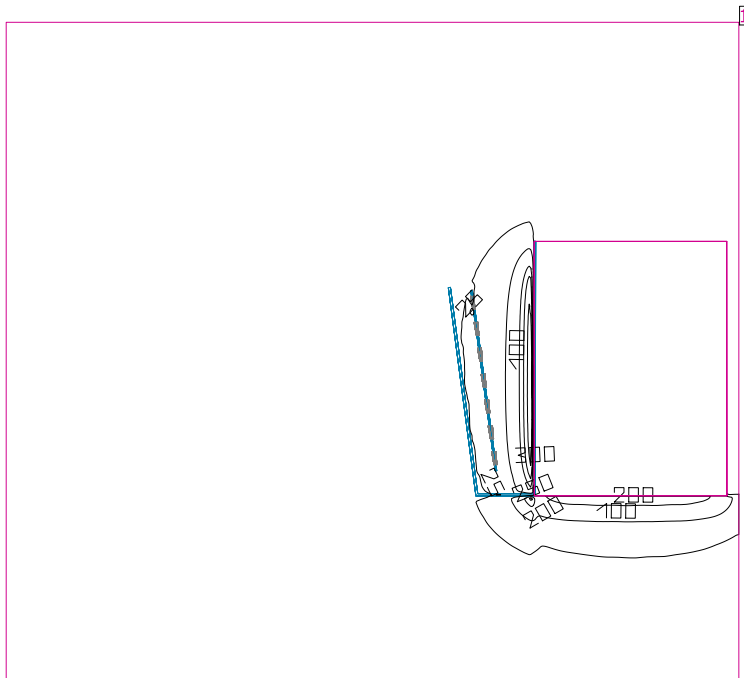
Vertical light spill calc. plane 20m from building / Perpendicular illuminance.....26

Main Quad Courtyard

Quantity	Luminaire (Luminous emittance)		
6	JPR Lighting Ltd - EGLS02 A02(3FT-RGB3IN1) white LED Wall Washer RGB31N1 -lit white Luminous emittance 1 Fitting: 1x Light output ratio: 100% Lamp luminous flux: 1 lm Luminaire luminous flux: 1 lm Power: 0.0 W Luminous efficacy: 99.9 lm/W Colourimetric data 1x: CCT 3000 K, CRI 100	See our luminaire catalog for an image of the luminaire.	
23	JPR Lighting Ltd - EGLS02 A02(3FT-RGB3IN1) white LED Wall Washer RGB31N1 -lit white Luminous emittance 1 Fitting: 1x Light output ratio: 99.95% Lamp luminous flux: 2522 lm Luminaire luminous flux: 2520 lm Power: 73.3 W Luminous efficacy: 34.4 lm/W Colourimetric data 1x: CCT 3000 K, CRI 100	See our luminaire catalog for an image of the luminaire.	
13	XAL - 856-114151LO MINO 20 IP54 i LED 830 H 314mm Luminous emittance 1 Fitting: 1xi LED 830 5FIF Light output ratio: 46.52% Lamp luminous flux: 289 lm Luminaire luminous flux: 134 lm Power: 3.0 W Luminous efficacy: 44.8 lm/W Colourimetric data 1x: CCT 3000 K, CRI 80	See our luminaire catalog for an image of the luminaire.	
14	XAL - 856-114361LO MINO 20 IP54 i LED 840 H 918mm Luminous emittance 1 Fitting: 1xi LED 840 5FIG Light output ratio: 46.52% Lamp luminous flux: 867 lm Luminaire luminous flux: 403 lm Power: 8.0 W Luminous efficacy: 50.4 lm/W Colourimetric data 1x: CCT 4000 K, CRI 80	See our luminaire catalog for an image of the luminaire.	
3	XAL - 856-114461LO MINO 20 IP54 i LED 840 H 1220mm Luminous emittance 1 Fitting: 1xi LED 840 5FIG Light output ratio: 46.52% Lamp luminous flux: 1156 lm Luminaire luminous flux: 538 lm Power: 10.0 W Luminous efficacy: 53.8 lm/W Colourimetric data 1x: CCT 4000 K, CRI 80	See our luminaire catalog for an image of the luminaire.	

Total lamp luminous flux: 77375 lm, Total luminaire luminous flux: 66964 lm, Total Load: 1866.9 W, Luminous efficacy: 35.9 lm/W

Assessment zone-North & West Elevation-typical



Reflection factors: Ceiling 30.0%, Walls 42.3%, Floor 0.0%, Maintenance factor: 0.80

Workplane

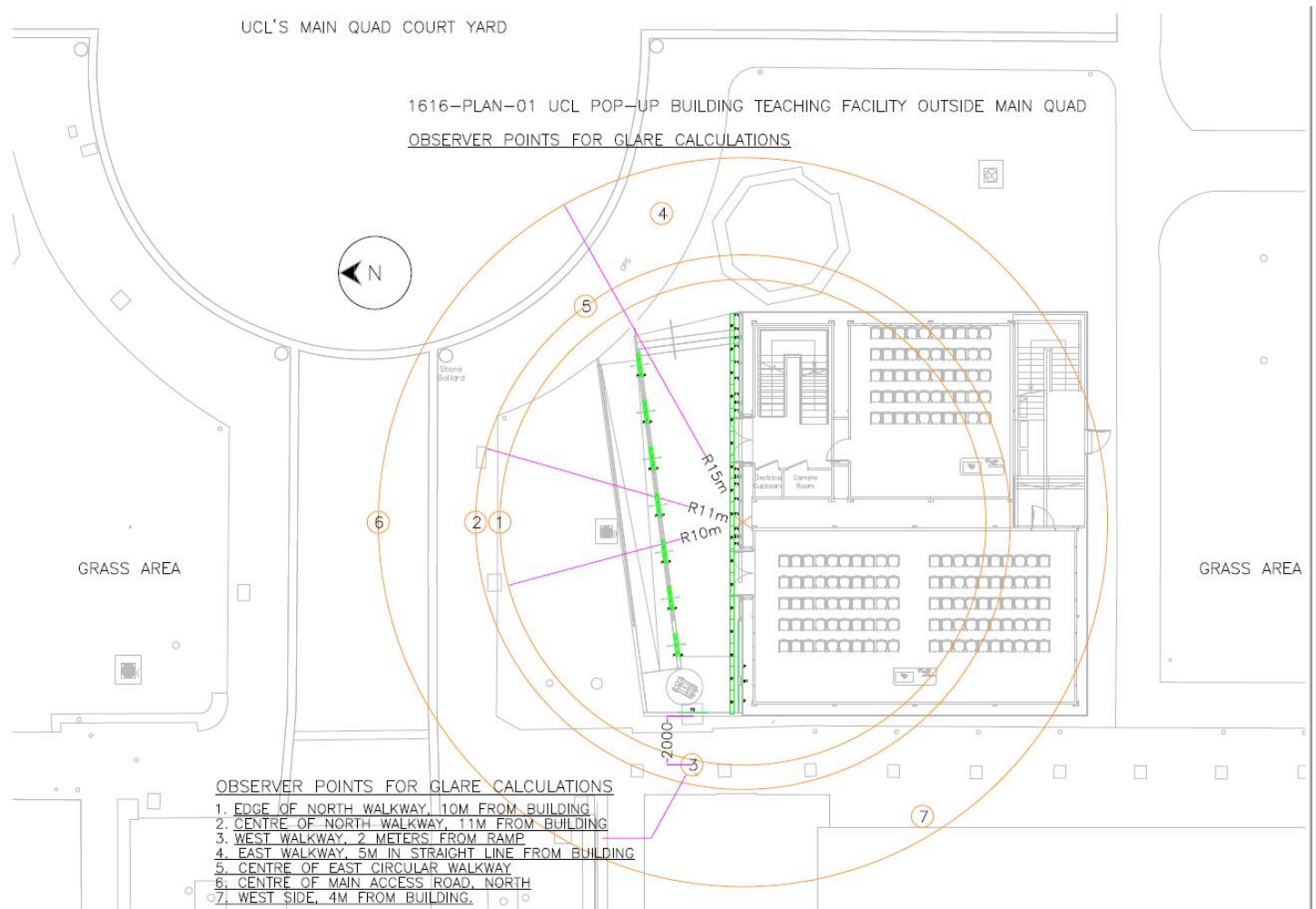
Surface	Result	Average (Target)	Min	Max	Min/average	Min/max
1 Workplane 2	Perpendicular illuminance (adaptive) [lx] Height: 0.800 m, Wall zone: 0.000 m	9.00 (≥ 500)	0.00	345	0.00	0.00

#	Luminaire	Φ(Luminaire) [lm]	Power [W]	Luminous efficacy [lm/W]
16	JPR Lighting Ltd - EGLS02 A02(3FT-RGB3IN1) white LED Wall Washer RGB31N1 -lit white	2520	73.3	34.4
13	XAL - 856-114151LO MINO 20 IP54 i LED 830 H 314mm	134	3.0	44.8
14	XAL - 856-114361LO MINO 20 IP54 i LED 840 H 918mm	403	8.0	50.4
3	XAL - 856-114461LO MINO 20 IP54 i LED 840 H 1220mm	538	10.0	53.8
Total via all luminaires		49318	1353.8	36.4

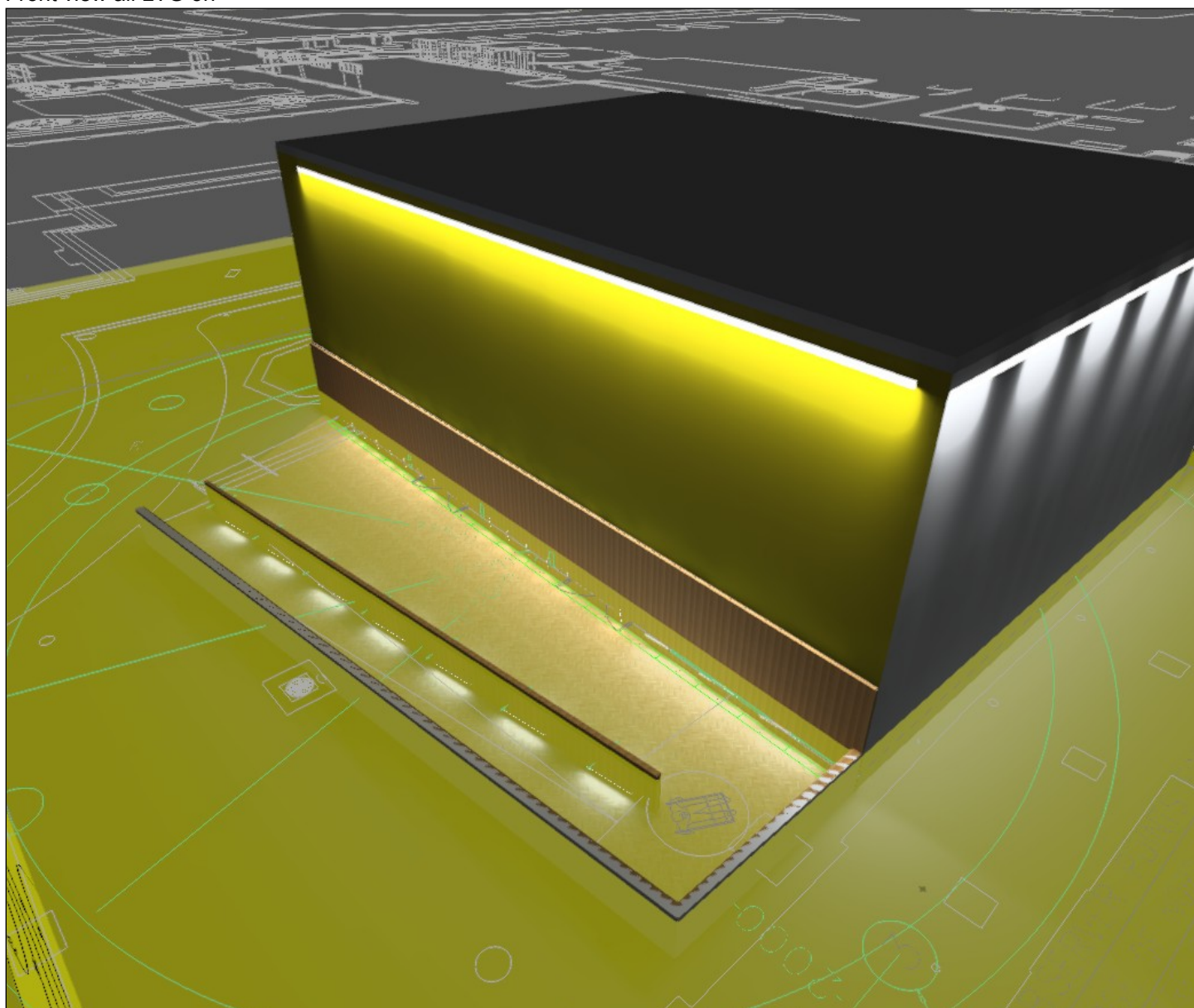
Lighting power density: $0.58 \text{ W/m}^2 = 6.49 \text{ W/m}^2/100 \text{ lx}$ (Floor area of room 2317.54 m²)

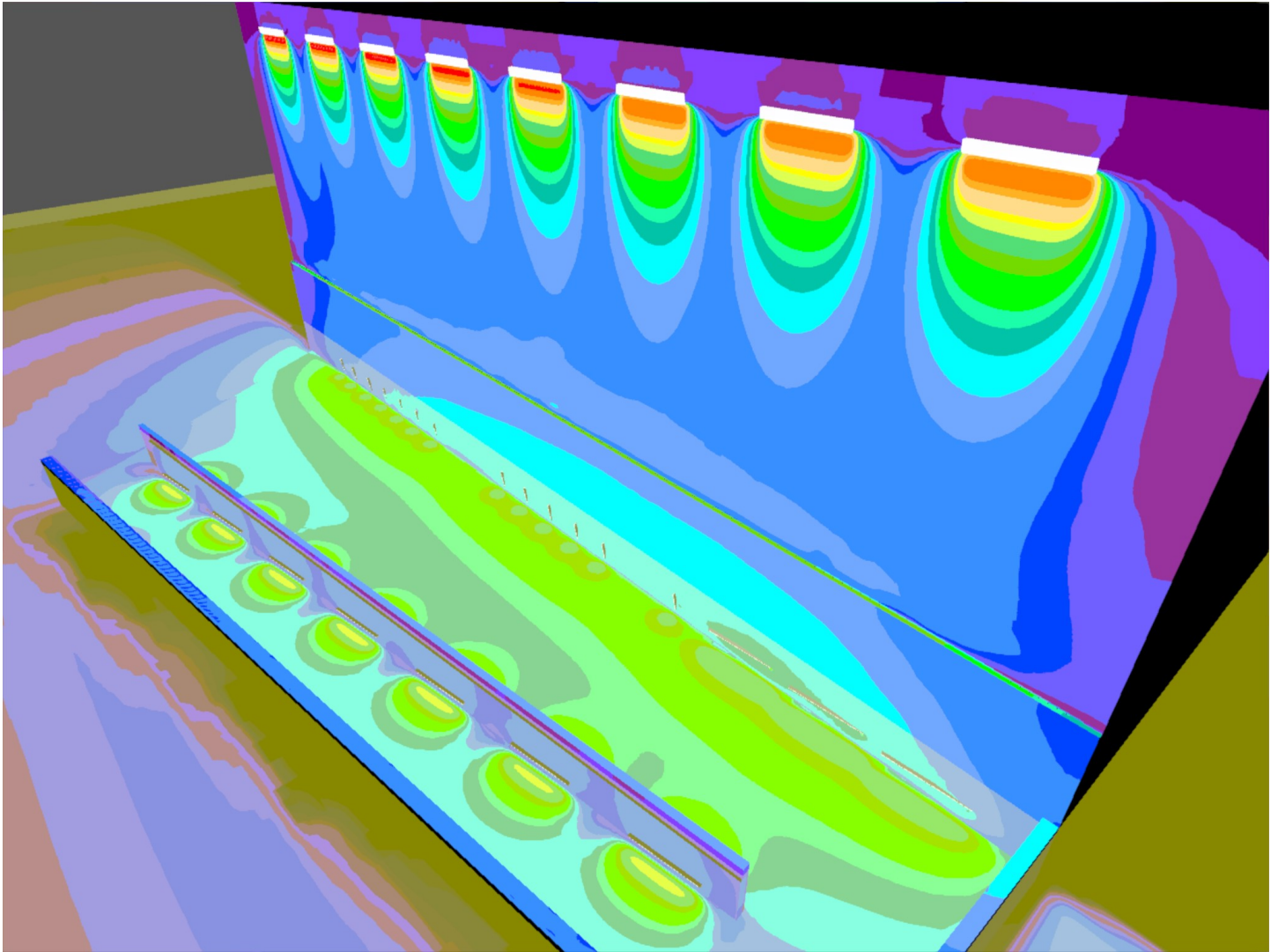
The energy consumption quantities refer to the lights planned for the room without taking into account light scenes and their dimming levels.
Consumption: 3700 kWh/a of maximum 81150 kWh/a

Assessment zone-North & West Elevation-typical

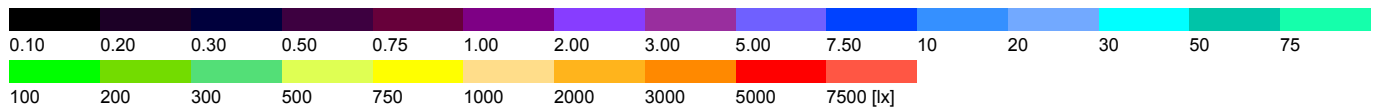
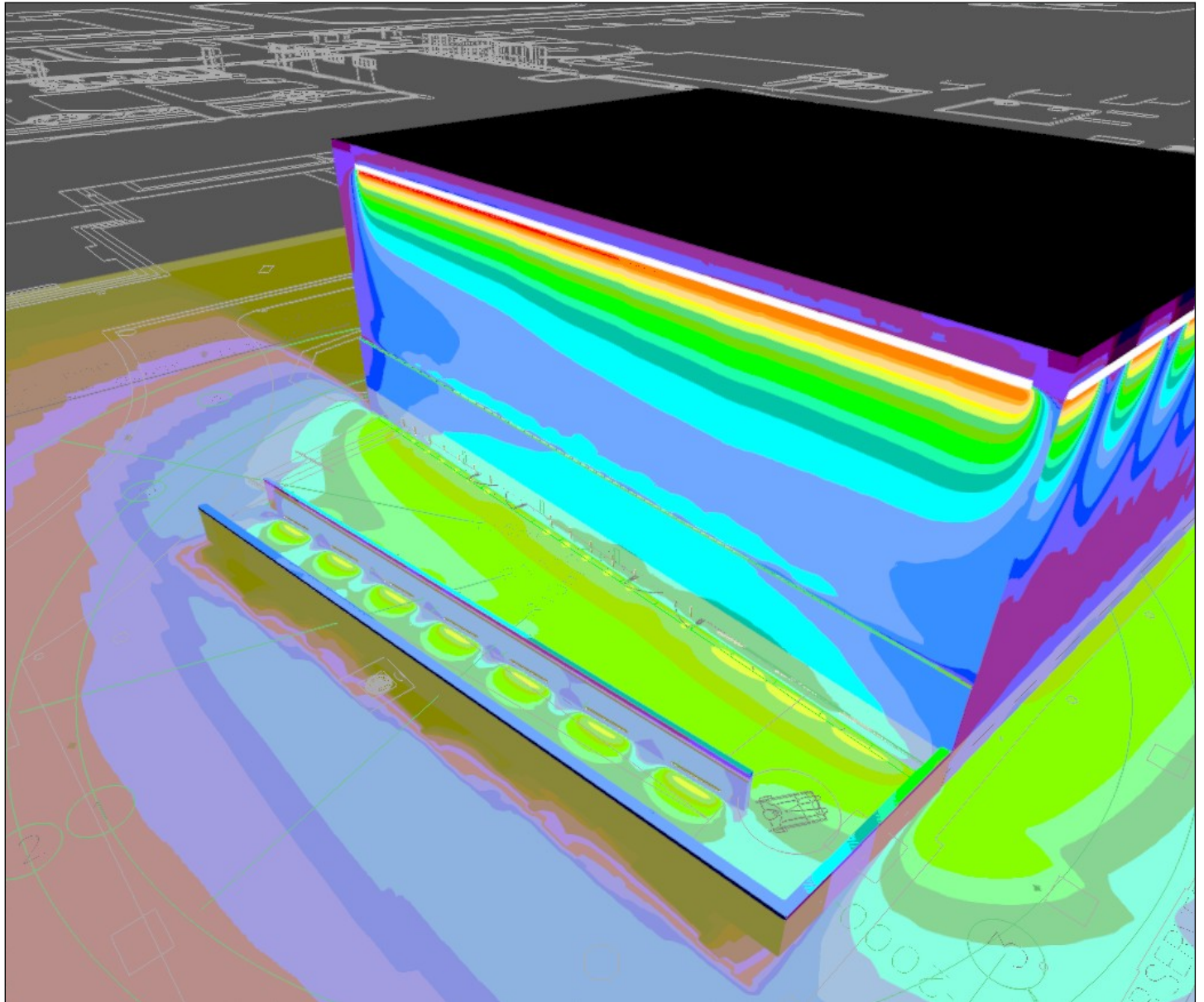


Front view all LTG on

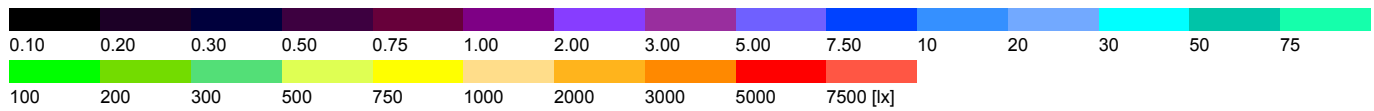
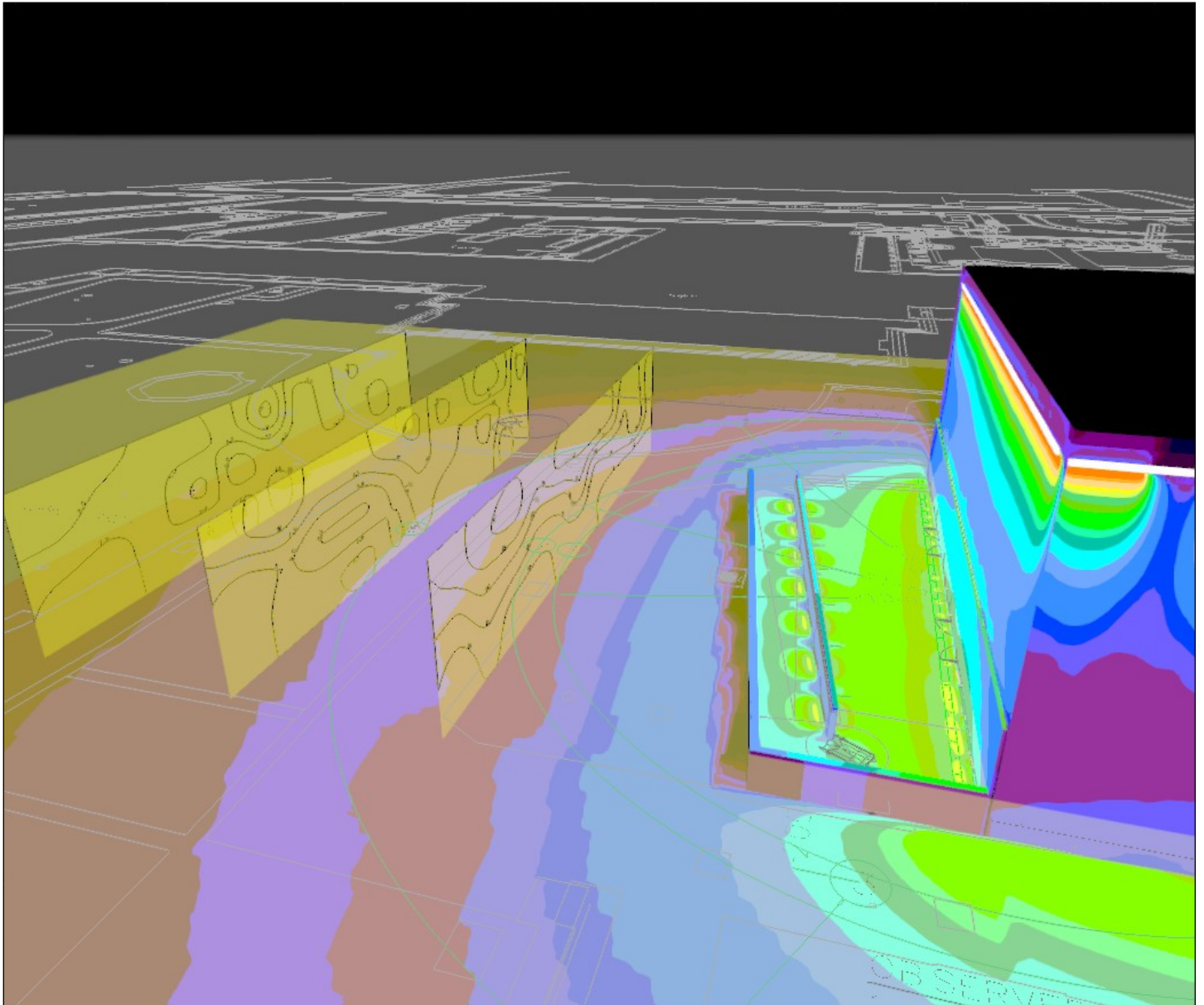




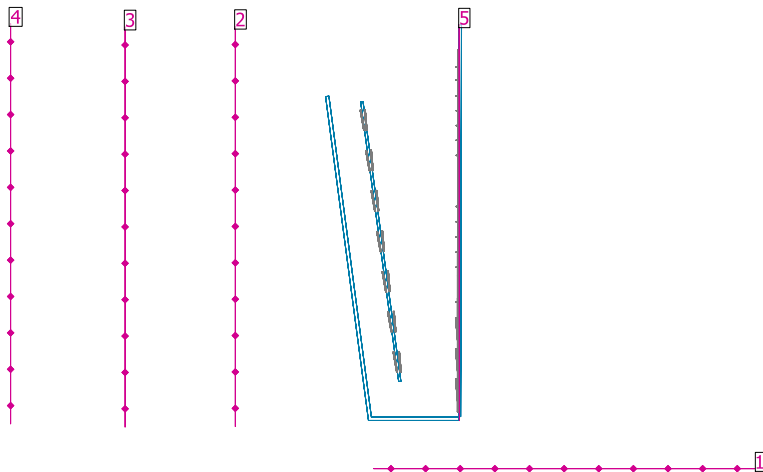
Front view with Isolines, Illuminance values in [lx]



Front view 6,10,15,20m away, Illuminance values in [lx]



Assessment zone-North & West Elevation-typical



Reflection factors: Ceiling 30.0%, Walls 42.3%, Floor 0.0%, Maintenance factor: 0.80

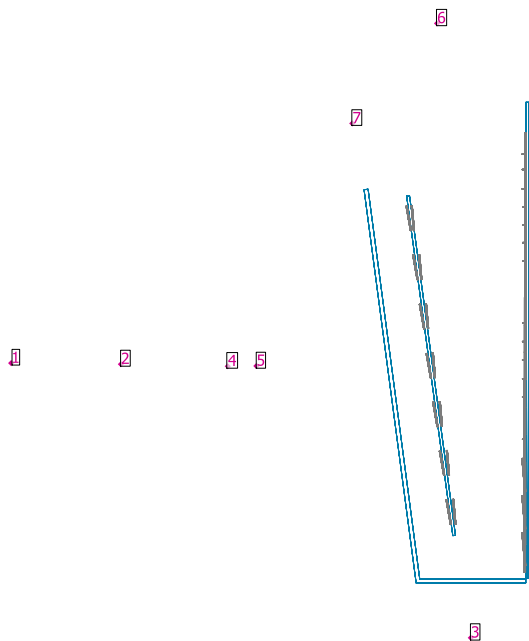
General

	Surface	Result	Average (Target)	Min	Max	Min/average	Min/max
1	Vertical light spill calc. plane 2m from building (west walkway)	Perpendicular illuminance [lx] Height: 3.750 m	28.6	13.9	54.4	0.49	0.26
2	Vertical light spill calc. plane 10m from building (edge of north walkway)	Perpendicular illuminance [lx] Height: 4.000 m	17.5	5.84	33.7	0.33	0.17
3	Vertical light spill calc. plane 15m from building	Perpendicular illuminance [lx] Height: 3.000 m	7.54	2.17	14.6	0.29	0.15
4	Vertical light spill calc. plane 20m from building	Perpendicular illuminance [lx] Height: 3.000 m	4.21	0.95	13.0	0.23	0.07

Surface result objects

5	Surface result object 1 (Wall)	Perpendicular illuminance (adaptive) [lx]	187	0.00	8770	0.00	0.00
		Luminance [cd/m²]	13.6	0.00	637	0.00	0.00

Assessment zone-North & West Elevation-typical

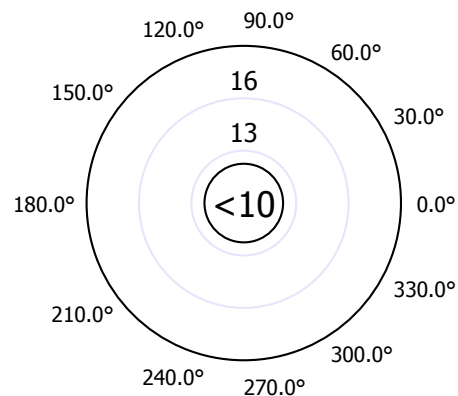


Glare valuation

Points	
1	Glare Calc. Point 19m from building GR Strongest glare at: 0.0° Max: <10 Threshold value: ≤-1 Viewing sector: 0.0° - 360.0° Step width: 15.0° Angle of inclination: -2.0° Exact calculation according to CIE 112 Height: 1.750 m

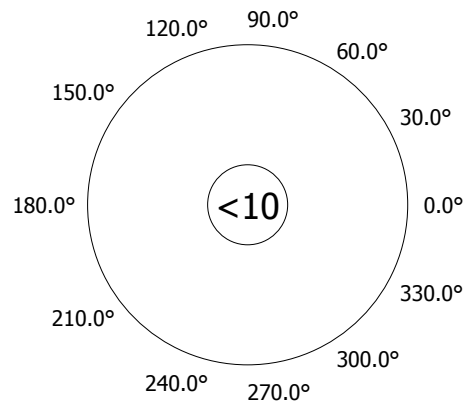
Glare Calc. Point 19m from building

UGR
Strongest glare at: 0.0°
Max: <10
Threshold value: ≤19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



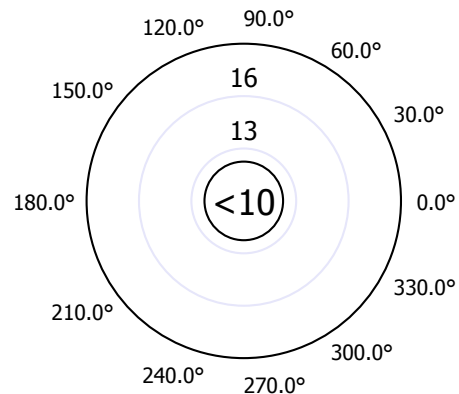
2 Glare Calc. Point (6) 15m from building

GR
Strongest glare at: 30.0°
Max: <10
Threshold value: ≤-1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m



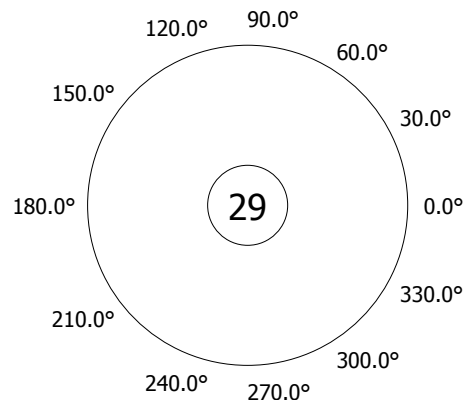
Glare Calc. Point (6) 15m from building

UGR
Strongest glare at: 0.0°
Max: <10
Threshold value: ≤19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



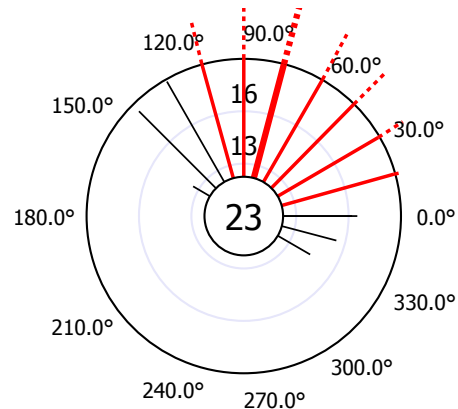
3 Glare Calc. Point (3) 2m from building, west walkway

GR
Strongest glare at: 75.0°
Max: >-1
Threshold value: ≤-1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m



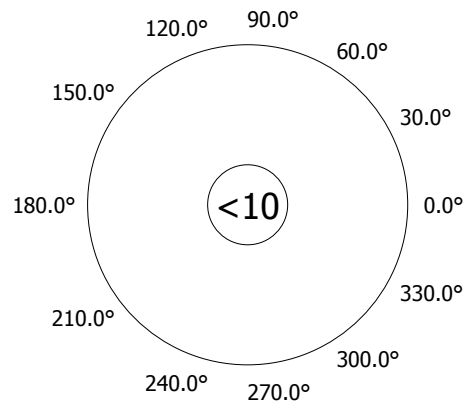
Glare Calc. Point (3) 2m from building, west walkway

UGR
Strongest glare at: 75.0°
Max: >19.0
Threshold value: ≤19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



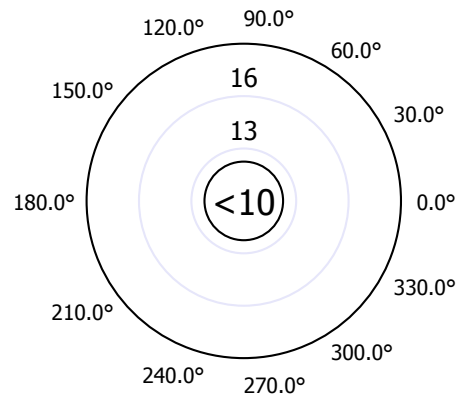
4 Glare Calc. Point (2) 11m from building, on walkway

GR
Strongest glare at: 45.0°
Max: <10
Threshold value: ≤-1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m



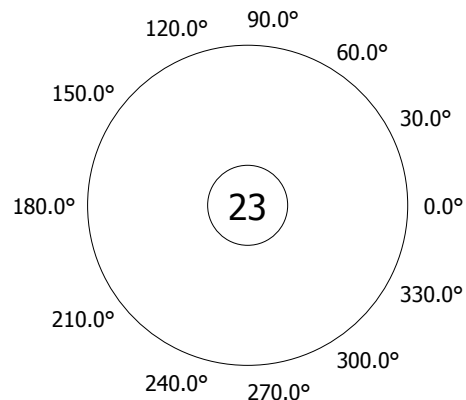
Glare Calc. Point (2) 11m from building, on walkway

UGR
Strongest glare at: 60.0°
Max: <10
Threshold value: ≤19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



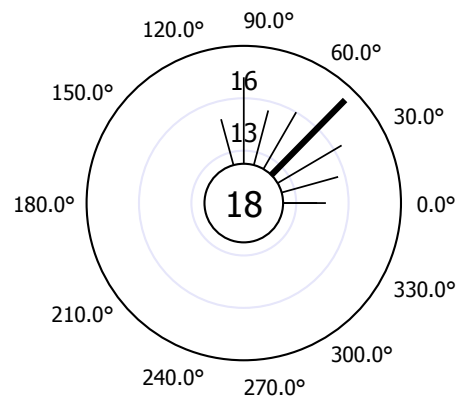
5 Glare Calc. Point (1), edge of walkway 10m north from building

GR
Strongest glare at: 45.0°
Max: >-1
Threshold value: ≤-1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m



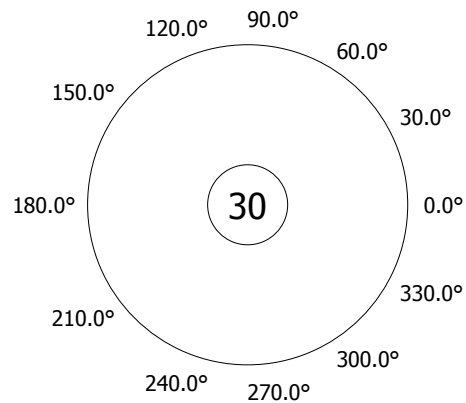
Glare Calc. Point (1), edge of walkway 10m north from building

UGR
Strongest glare at: 45.0°
Max: 18.2
Threshold value: ≤ 19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



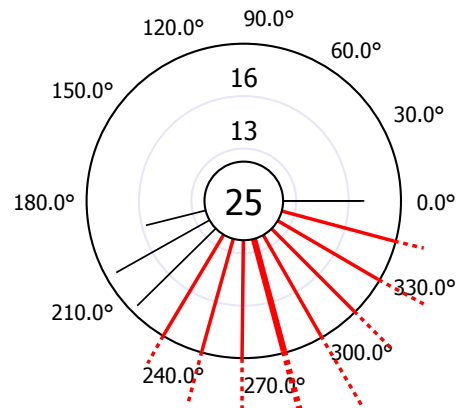
6 Glare Calc. Point (4) East Walkway, 5m in straight line from decking stairs

GR
Strongest glare at: 300.0°
Max: > -1
Threshold value: ≤ -1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m



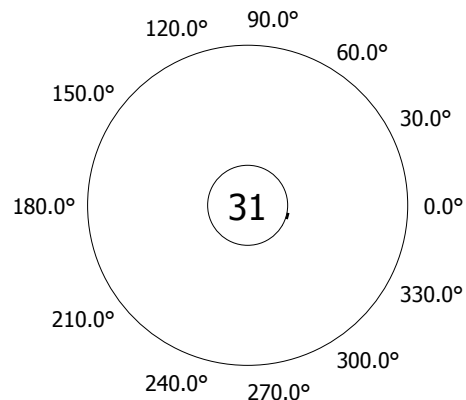
Glare Calc. Point (4) East Walkway, 5m in straight line from decking stairs

UGR
Strongest glare at: 285.0°
Max: > 19.0
Threshold value: ≤ 19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m



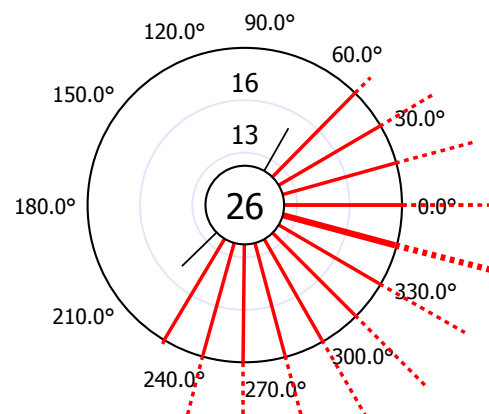
7 Glare Calc. Point (5) East circular walkway, 2m from decking

GR
Strongest glare at: 345.0°
Max: > -1
Threshold value: ≤ -1
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Angle of inclination: -2.0°
Exact calculation according to CIE 112
Height: 1.750 m

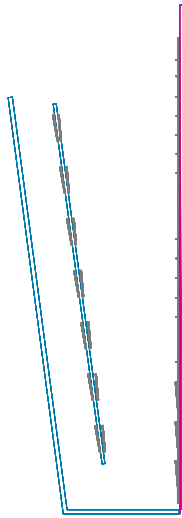


Glare Calc. Point (5) East circular walkway, 2m from decking

UGR
Strongest glare at: 345.0°
Max: >19.0
Threshold value: ≤19.0
Viewing sector: 0.0° - 360.0°
Step width: 15.0°
Height: 1.750 m

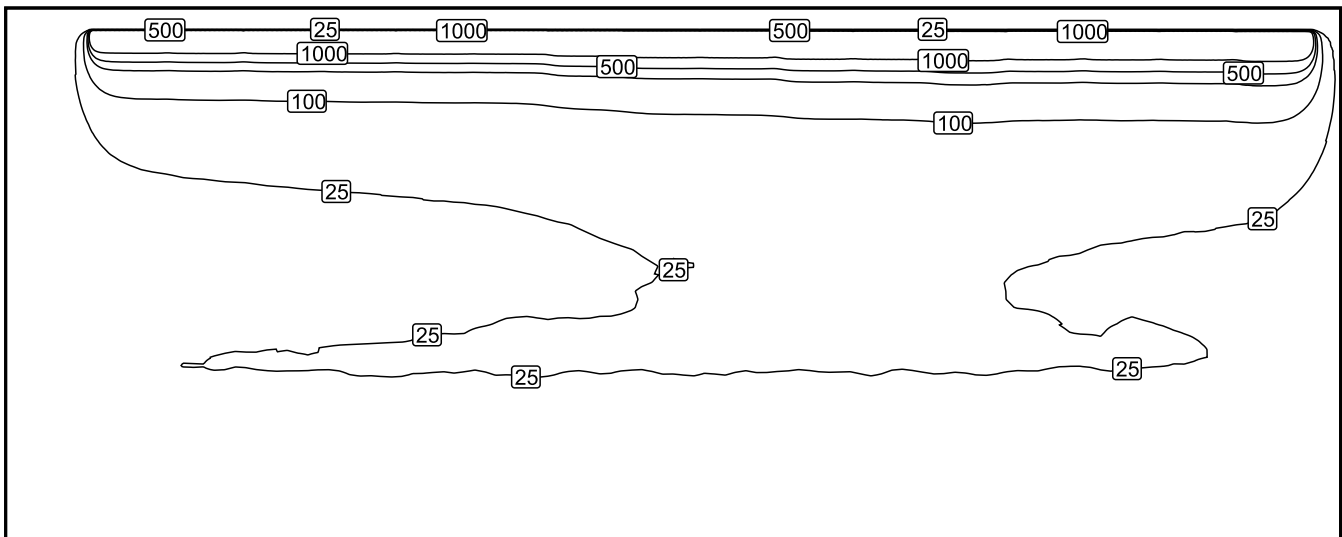


Surface result object 1 (Wall) / Perpendicular illuminance (adaptive)



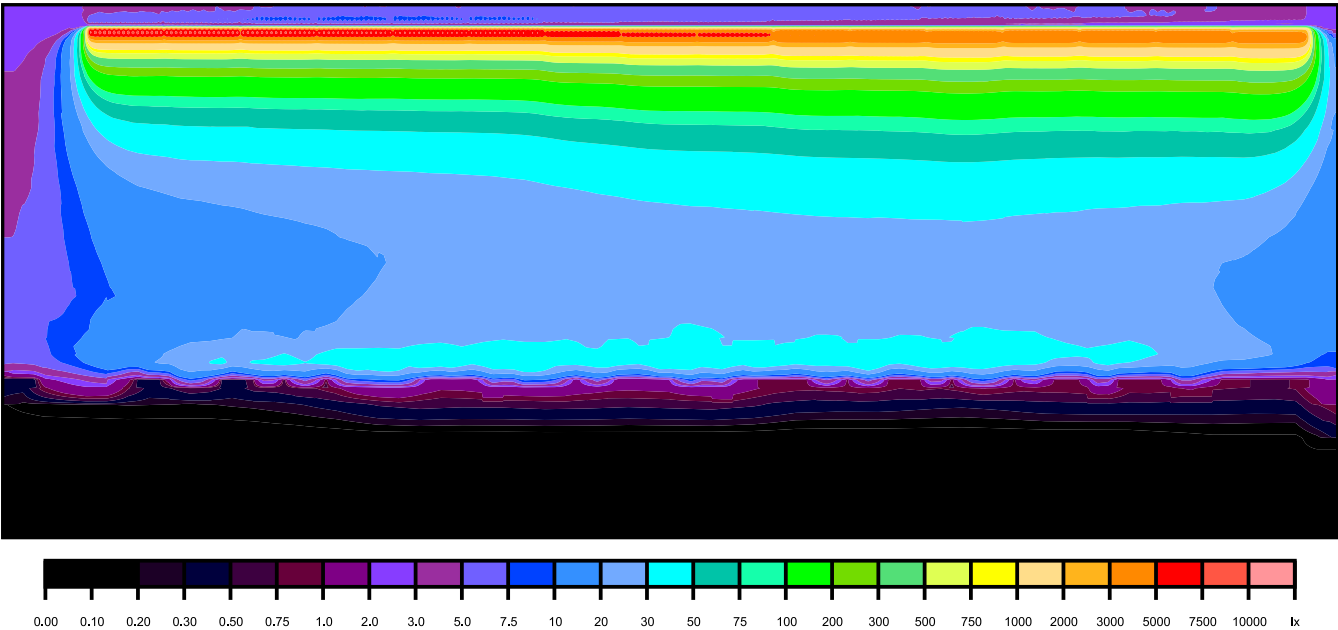
Surface result object 1 (Wall): Perpendicular illuminance (adaptive) (Surface)
Light scene: Light scene 1
Average: 187 lx, Min: 0.00 lx, Max: 8770 lx, Min/average: 0.00, Min/max: 0.00

Isolines [lx]



Scale: 1 : 100

False colours [lx]



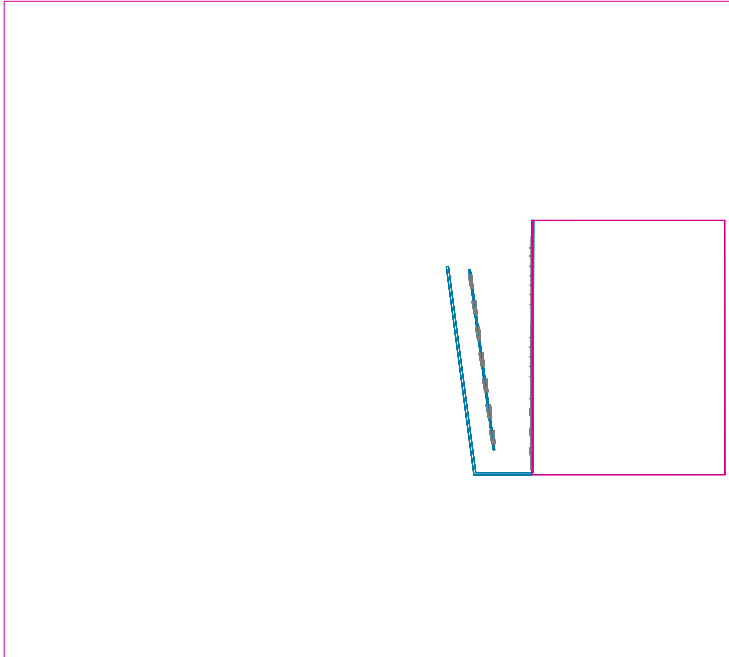
Scale: 1 : 100

Value grid [lx]

+2.3	+6477	+7333	+6872	+6968	+6591	+6884	+7086	+7174	+5853	+5867	+5498	+5403	+4809	+4539	+4566	+4080	+4439	+4138	+4539	+4330	+3809	+1603
+4.1	+60	+107	+111	+114	+114	+118	+119	+121	+134	+147	+160	+164	+172	+181	+183	+202	+185	+185	+187	+189	+202	+111
+4.9	+18	+31	+33	+35	+35	+37	+37	+38	+41	+45	+48	+50	+51	+54	+54	+57	+55	+54	+53	+53	+53	+32
+5.3	+11	+17	+19	+20	+21	+23	+23	+24	+26	+27	+29	+30	+30	+31	+31	+32	+31	+30	+29	+28	+26	+17
+5.5	+8.9	+13	+15	+17	+18	+20	+21	+22	+23	+24	+25	+26	+26	+27	+27	+26	+25	+24	+23	+21	+18	+13
+6.7	+10	+13	+17	+20	+20	+23	+25	+27	+27	+28	+30	+29	+28	+29	+29	+30	+30	+25	+27	+25	+19	+13
+0.52	+1.7	+0.42	+0.57	+0.54	+0.77	+1.4	+1.0	+1.2	+1.3	+1.0	+1.1	+1.3	+0.82	+0.81	+0.74	+0.80	+0.82	+0.85	+0.84	+0.99	+0.71	+1.1
+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.01	+0.01	+0.01	+0.01	+0.01	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.01	+0.06	+0.07	+0.09
+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.01	+0.01	+0.01	+0.01	+0.01	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.00	+0.02	+0.05	+0.07	+0.07

Scale: 1 : 100

Workplane 2 / Perpendicular illuminance (adaptive)



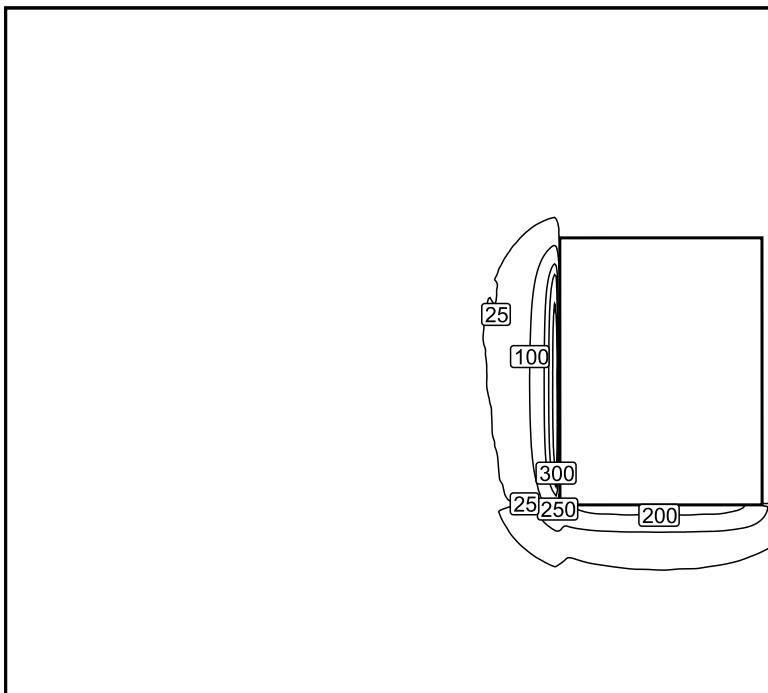
Workplane 2: Perpendicular illuminance (adaptive) (Surface)

Light scene: Light scene 1

Average: 9.00 lx (Target: ≥ 500 lx), Min: 0.00 lx, Max: 345 lx, Min/average: 0.00, Min/max: 0.00

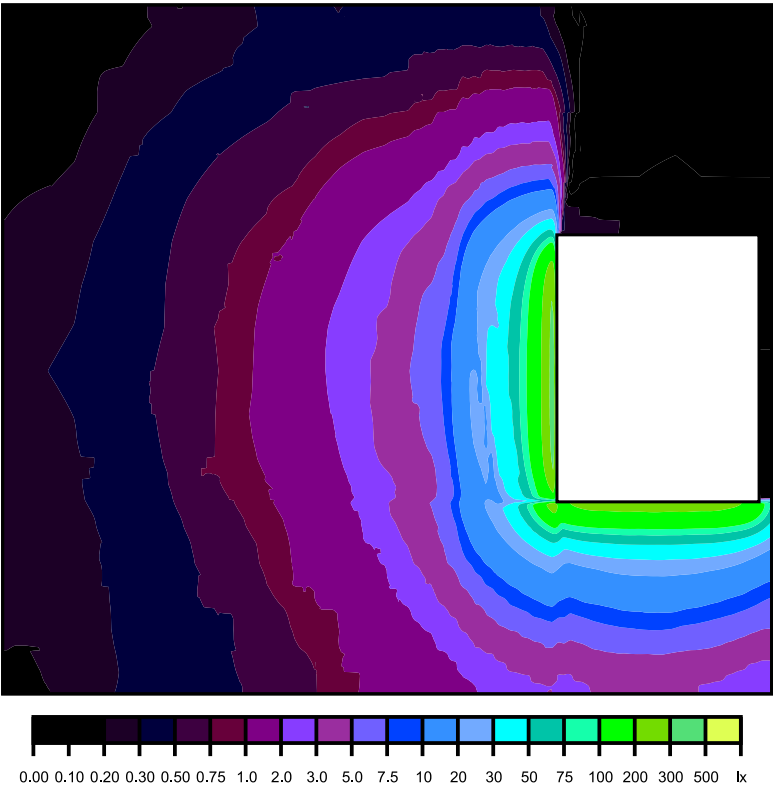
Height: 0.800 m, Wall zone: 0.000 m

Isolines [lx]



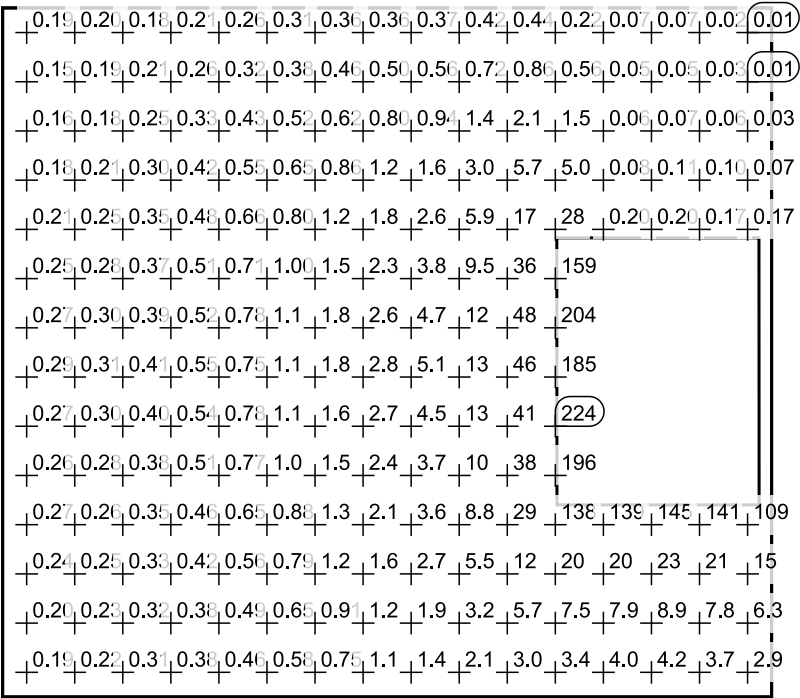
Scale: 1 : 500

False colours [lx]



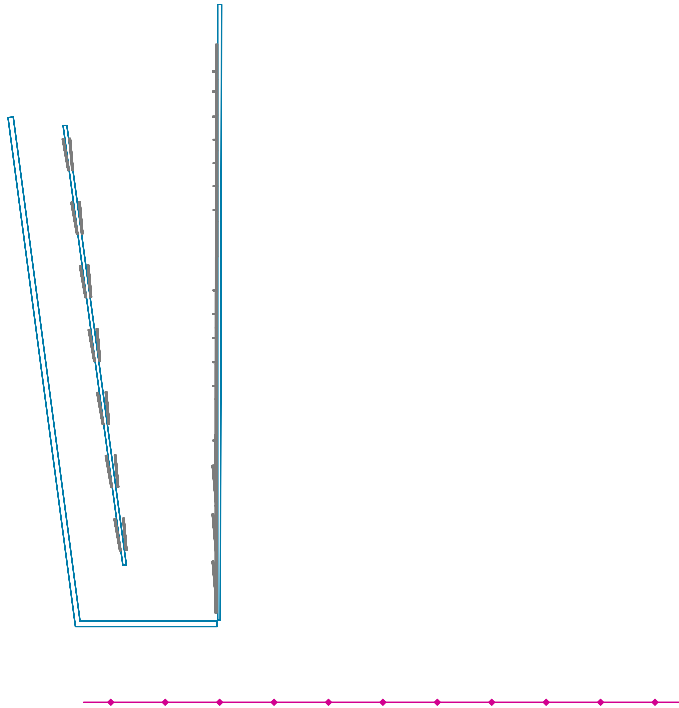
Scale: 1 : 500

Value grid [lx]



Scale: 1 : 500

Vertical light spill calc. plane 2m from building (west walkway) / Perpendicular illuminance



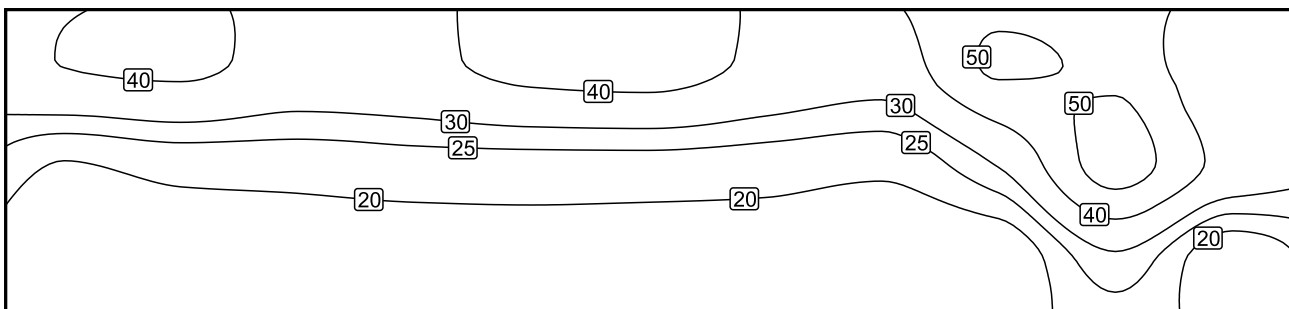
Vertical light spill calc. plane 2m from building (west walkway): Perpendicular illuminance (Grid)

Light scene: Light scene 1

Average: 28.6 lx, Min: 13.9 lx, Max: 54.4 lx, Min/average: 0.49, Min/max: 0.26

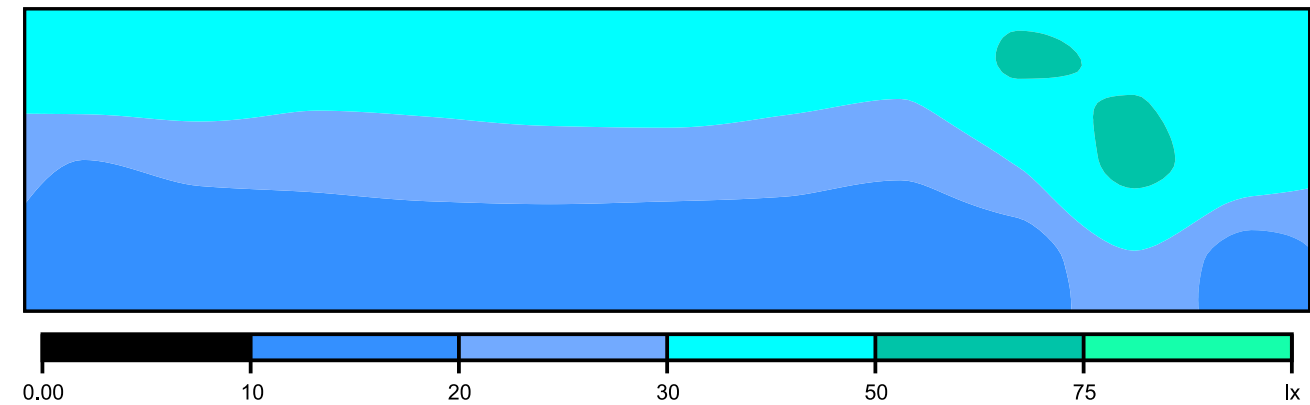
Height: 3.750 m

Isolines [lx]



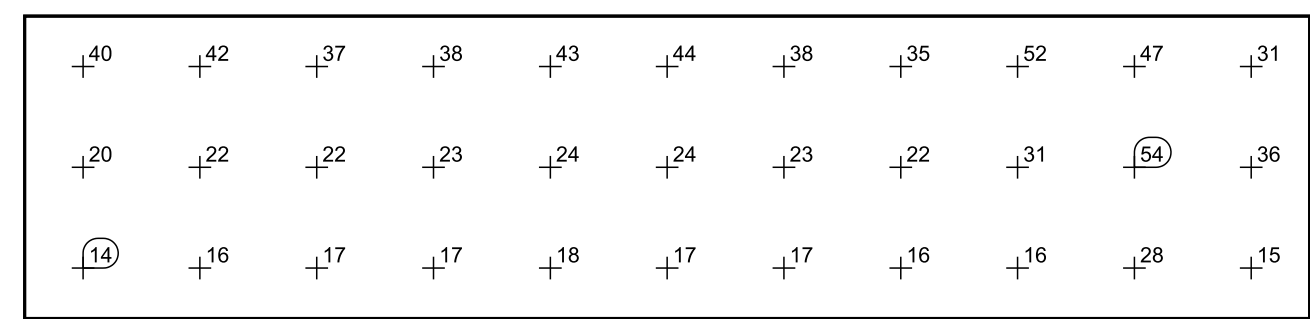
Scale: 1 : 100

False colours [lx]



Scale: 1 : 100

Value grid [lx]

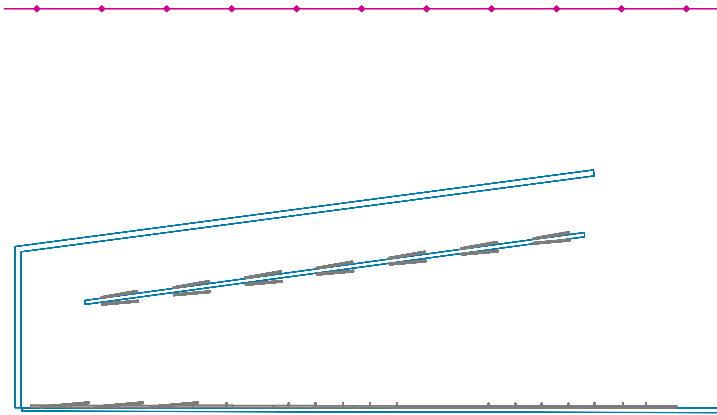


Scale: 1 : 100

Value chart [lx]

m	-1.333	0.000	1.333
7.727	31.1	36.2	15.4
6.182	47.2	54.4	28.2
4.636	51.5	31.1	15.7
3.091	35.2	21.6	16.1
1.545	38.3	22.8	17.4
0.000	44.5	23.6	17.5
-1.545	43.1	23.5	17.7
-3.091	38.2	23.3	17.5
-4.636	37.1	22.4	17.1
-6.182	42.1	22.2	16.3
-7.727	40.3	20.0	13.9

Vertical light spill calc. plane 10m from building (edge of north walkway) / Perpendicular illuminance



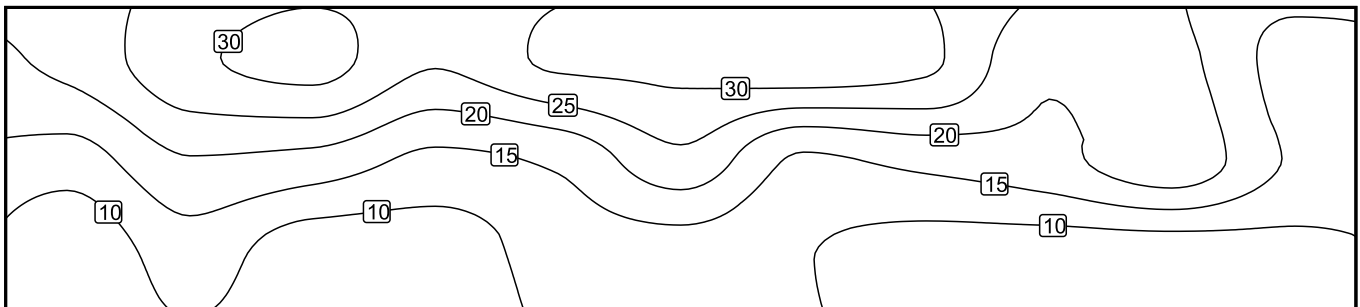
Vertical light spill calc. plane 10m from building (edge of north walkway): Perpendicular illuminance (Grid)

Light scene: Light scene 1

Average: 17.5 lx, Min: 5.84 lx, Max: 33.7 lx, Min/average: 0.33, Min/max: 0.17

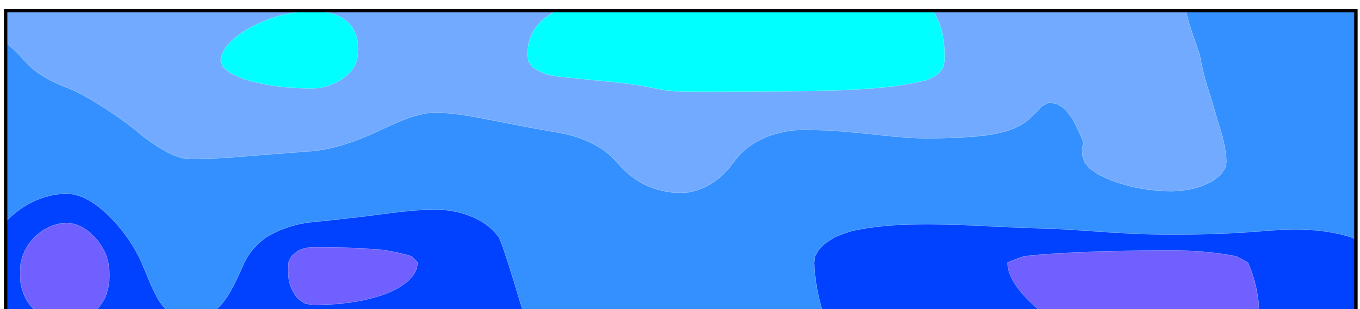
Height: 4.000 m

Isolines [lx]



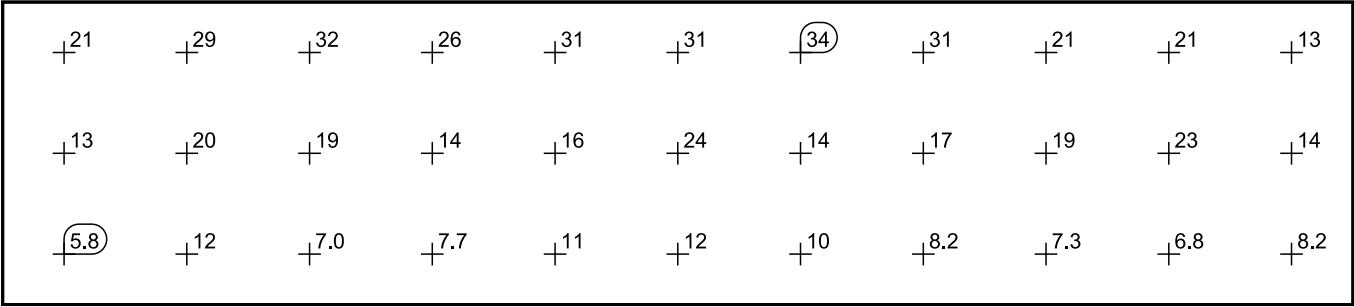
Scale: 1 : 100

False colours [lx]



Scale: 1 : 100

Value grid [lx]

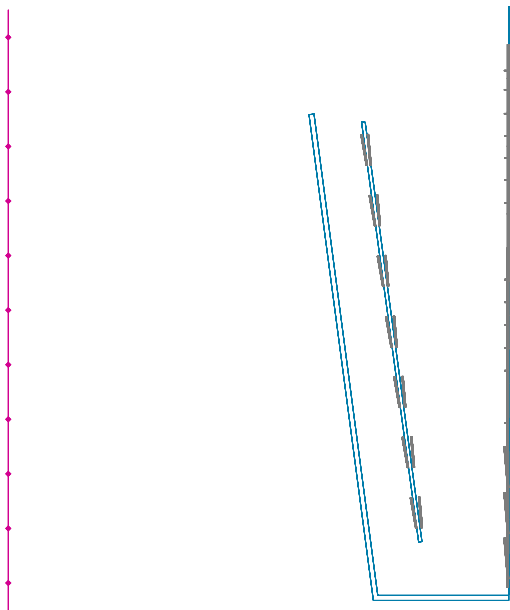


Scale: 1 : 100

Value chart [lx]

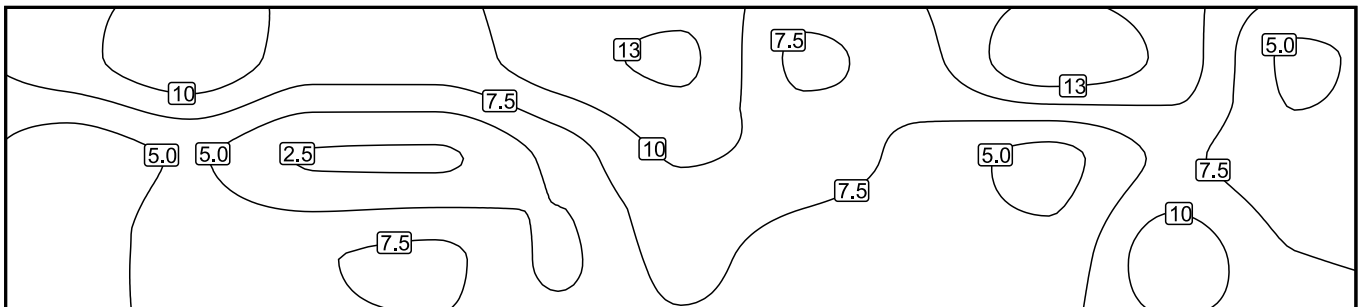
m	-1.333	0.000	1.333
8.117	13.2	14.5	8.21
6.494	21.1	23.4	6.82
4.870	20.9	18.6	7.27
3.247	31.1	16.6	8.16
1.623	33.7	14.4	10.2
0.000	31.1	23.7	12.2
-1.623	30.8	16.0	11.4
-3.247	25.8	13.9	7.66
-4.870	31.8	18.6	6.98
-6.494	29.0	19.8	12.2
-8.117	21.4	12.7	5.84

Vertical light spill calc. plane 15m from building / Perpendicular illuminance



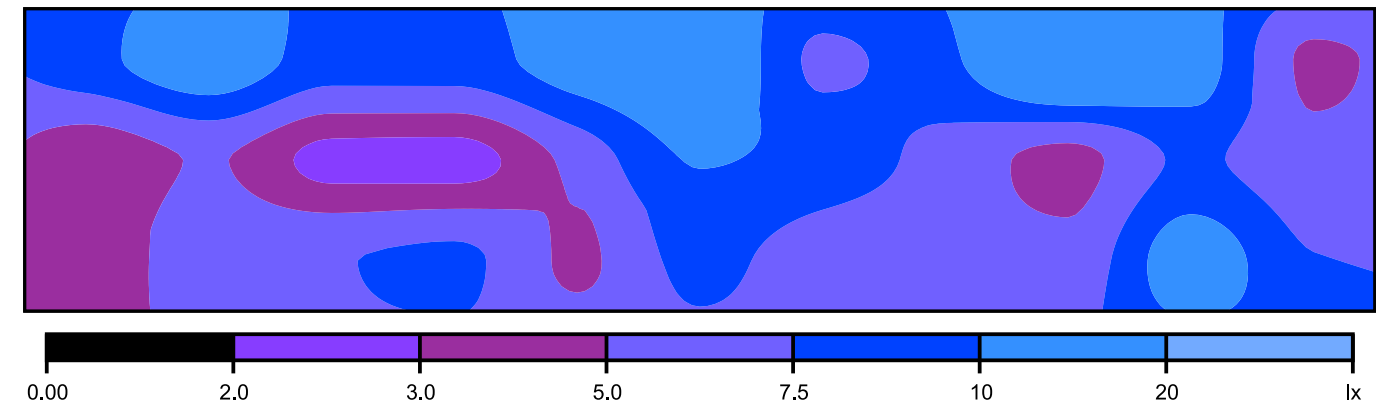
Vertical light spill calc. plane 15m from building: Perpendicular illuminance (Grid)
Light scene: Light scene 1
Average: 7.54 lx, Min: 2.17 lx, Max: 14.6 lx, Min/average: 0.29, Min/max: 0.15
Height: 3.000 m

Isolines [lx]



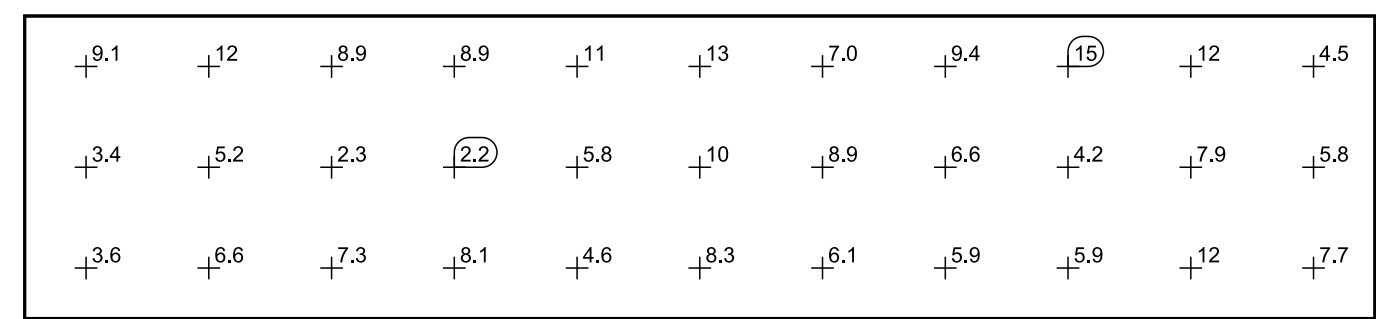
Scale: 1 : 100

False colours [lx]



Scale: 1 : 100

Value grid [lx]

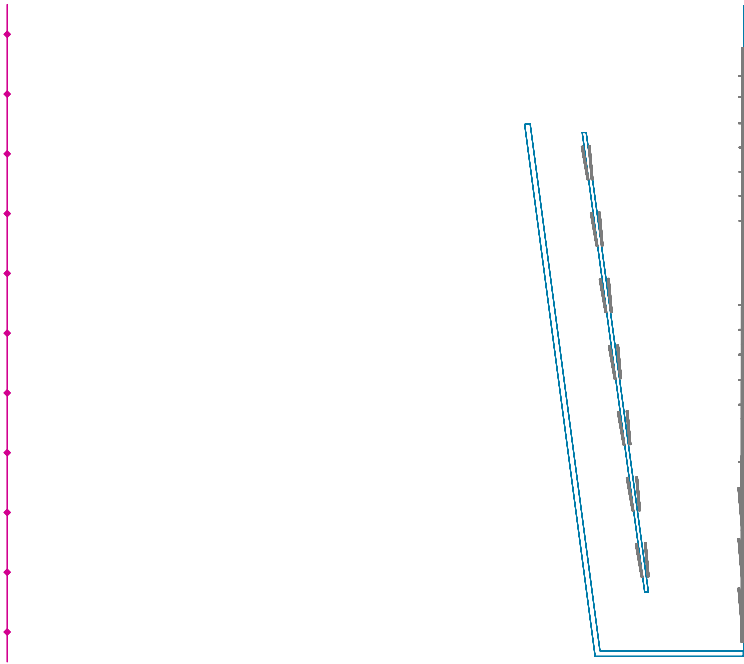


Scale: 1 : 100

Value chart [lx]

m	-1.333	0.000	1.333
8.117	4.55	5.76	7.65
6.494	11.7	7.92	11.6
4.870	14.6	4.22	5.88
3.247	9.43	6.59	5.93
1.623	7.02	8.89	6.07
0.000	12.9	10.2	8.34
-1.623	11.5	5.79	4.60
-3.247	8.92	2.17	8.09
-4.870	8.90	2.30	7.31
-6.494	12.0	5.20	6.59
-8.117	9.07	3.41	3.59

Vertical light spill calc. plane 20m from building / Perpendicular illuminance



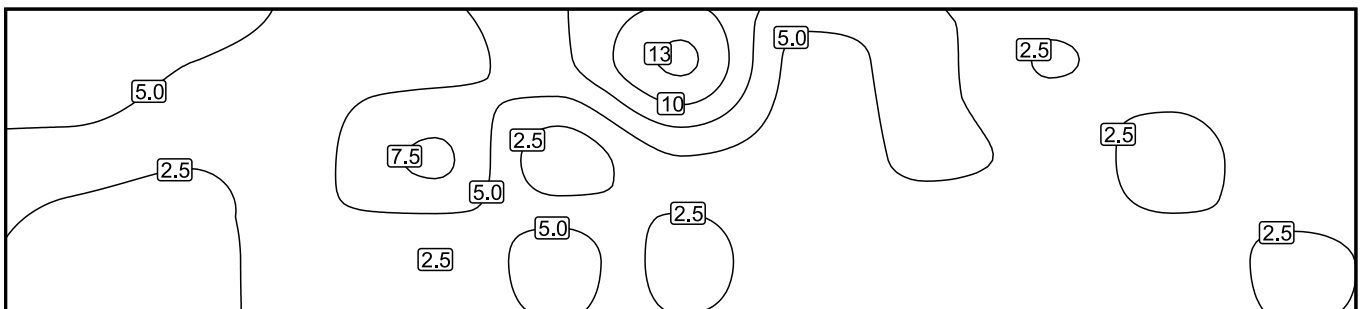
Vertical light spill calc. plane 20m from building: Perpendicular illuminance (Grid)

Light scene: Light scene 1

Average: 4.21 lx, Min: 0.95 lx, Max: 13.0 lx, Min/average: 0.23, Min/max: 0.07

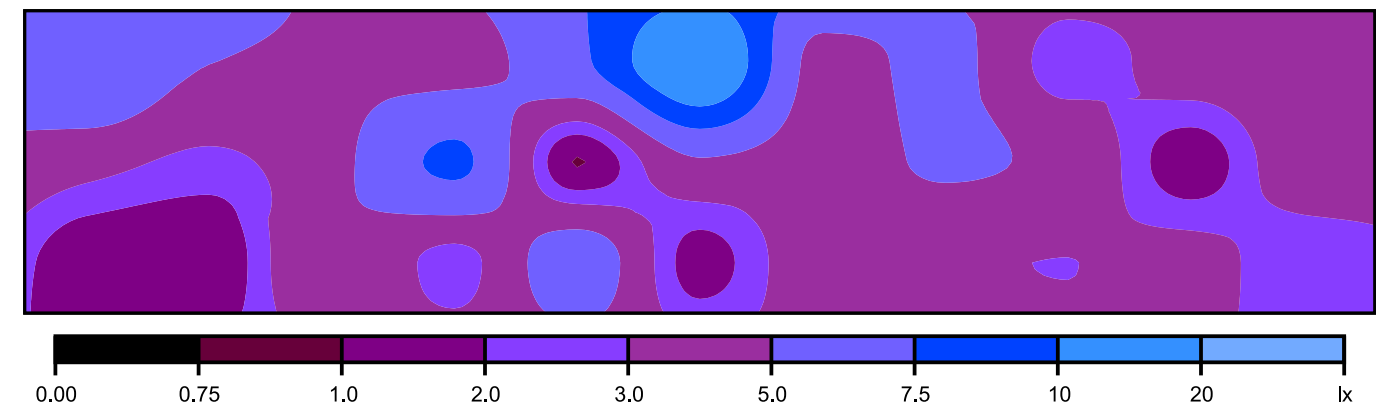
Height: 3.000 m

Isolines [lx]



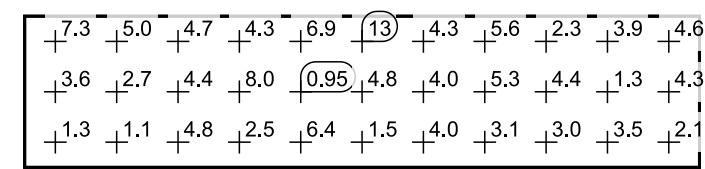
Scale: 1 : 100

False colours [lx]



Scale: 1 : 100

Value grid [lx]



Scale: 1 : 200

Value chart [lx]

m	-1.333	0.000	1.333
8.117	4.65	4.33	2.05
6.494	3.87	1.29	3.54
4.870	2.31	4.44	2.99
3.247	5.55	5.30	3.12
1.623	4.27	3.99	4.05
0.000	13.0	4.77	1.49
-1.623	6.94	0.95	6.39
-3.247	4.27	7.98	2.48
-4.870	4.67	4.37	4.84
-6.494	5.05	2.66	1.11
-8.117	7.29	3.64	1.26