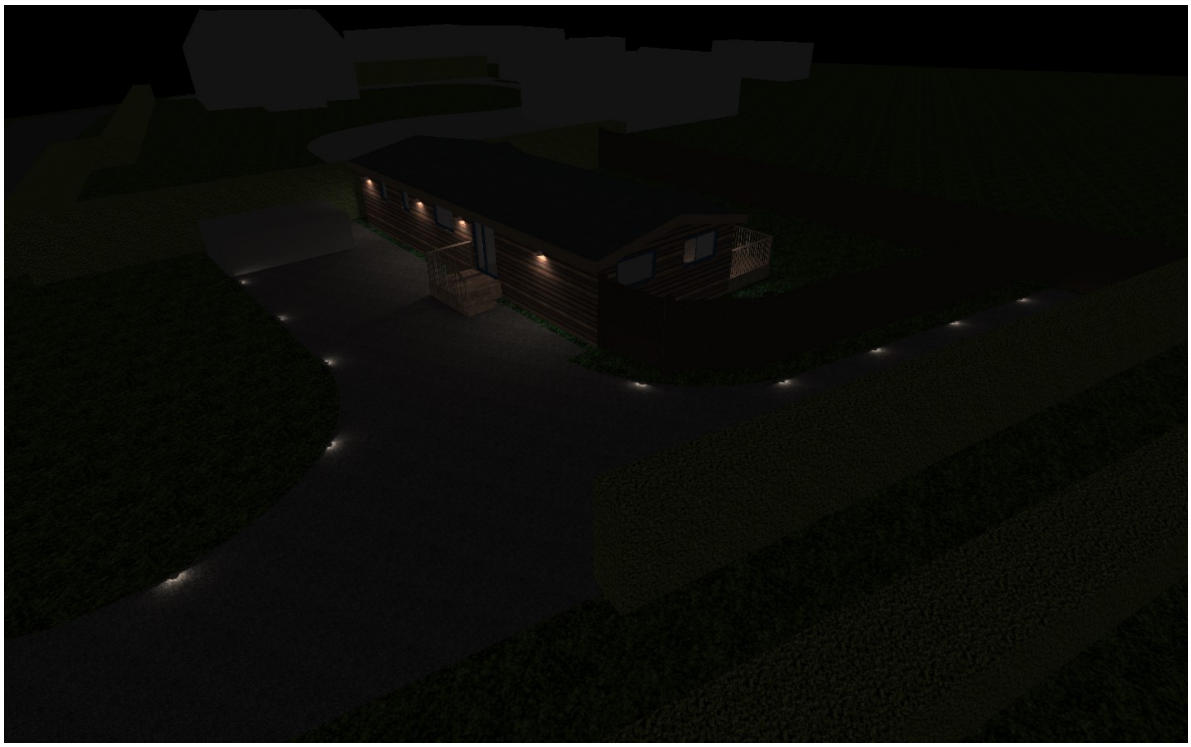

Cowfold

Exterior lighting calculations for bats

Excerpt from 'Guidance Note GN08/23 Bats and Artificial lighting At Night' by the Institute of Lighting Professionals in conjunction with the Bat conservation Trust...

"4.54 NB - It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site, despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where 'complete darkness' on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is at or below 0.2 lux on the horizontal plane, and at or below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light averse behaviour."

Created with DIALux

Preface

The following calculation report shows the predicted results for Illuminance (lux) levels with all lights running at full intensity and no dimming controls applied. These results include components for both direct and refleted light, and show that the Illuminance on some parts of the vertical measurement surfaces is higher than the desired maximum of 0.4 lux.

However, they are also partly due to the limitations of the Dialux lighting calculation software, which treats naturally uneven surfaces (such as grass and gravel) as being completely flat ones, which do not diffuse the reflected light as much as they would in reality, therefore contributing to the calculated magnitude of these anomalies.

Consideration should therefore be given to reducing the reflectance (brightness) and specularity (shininess) of all surface finishes, in addition to applying lighting controls, when seeking to further mitigate such anomalies. The proposed luminaires have already been selected for their low colour temperature and moderate light output, in addition to their quality and reliability.

The results are for "Day 1", with no Maintenance Factor applied to account for the gradual, long-term degradation of light sources over the following years. Please note this calculation does not take into consideration any spill light from sources within the building(s), or existing light sources located near the site.

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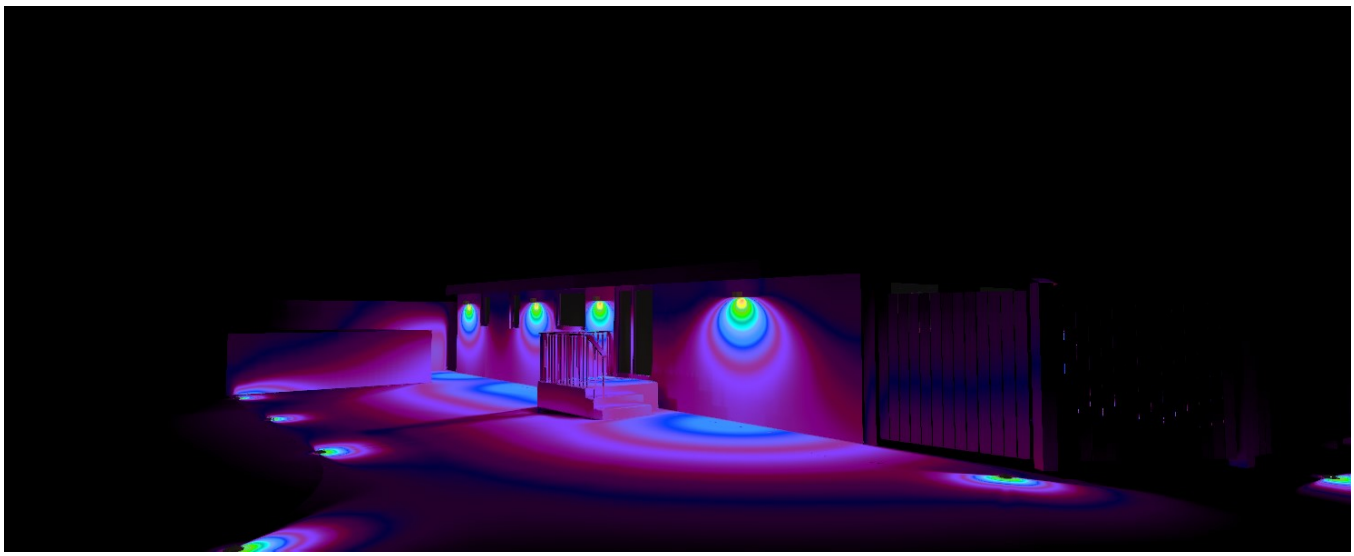
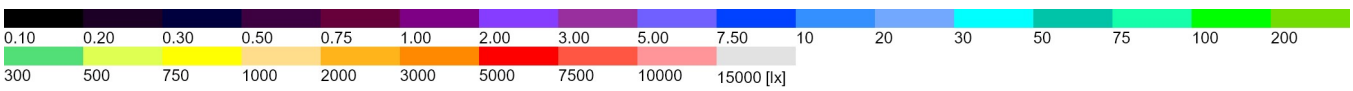
Images



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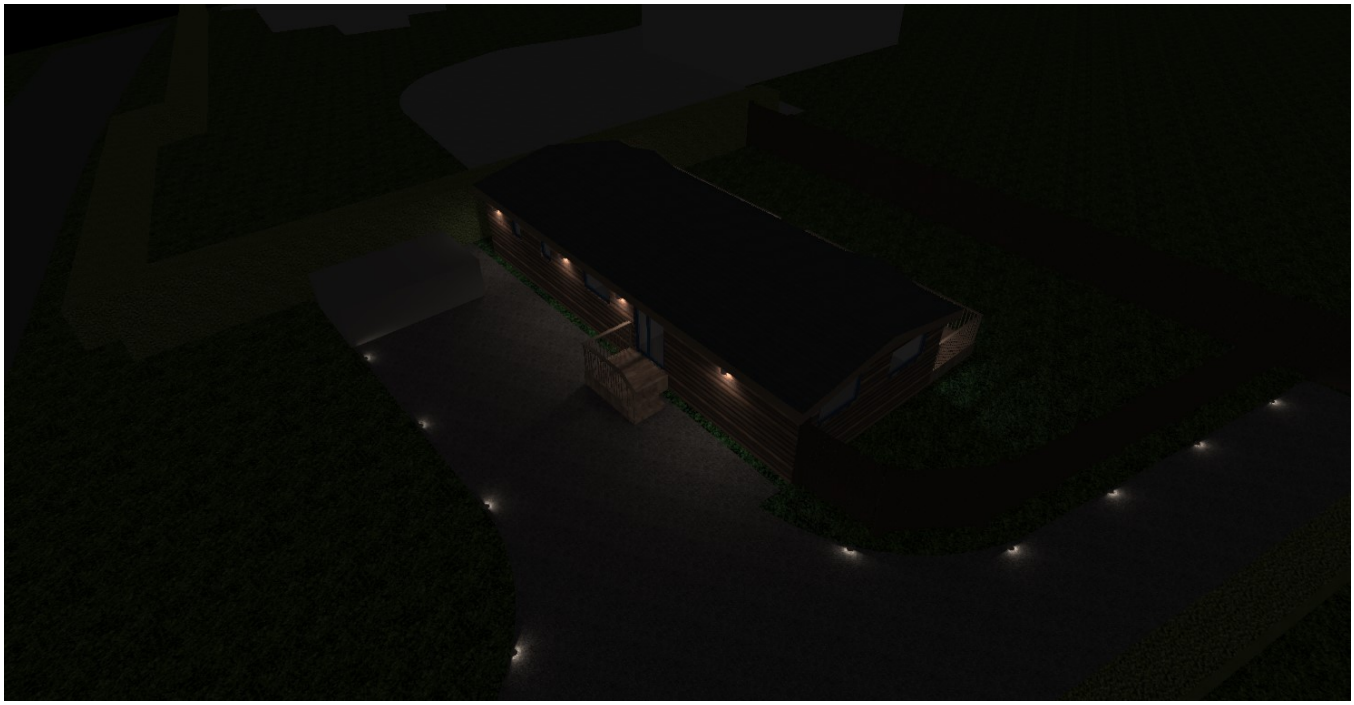
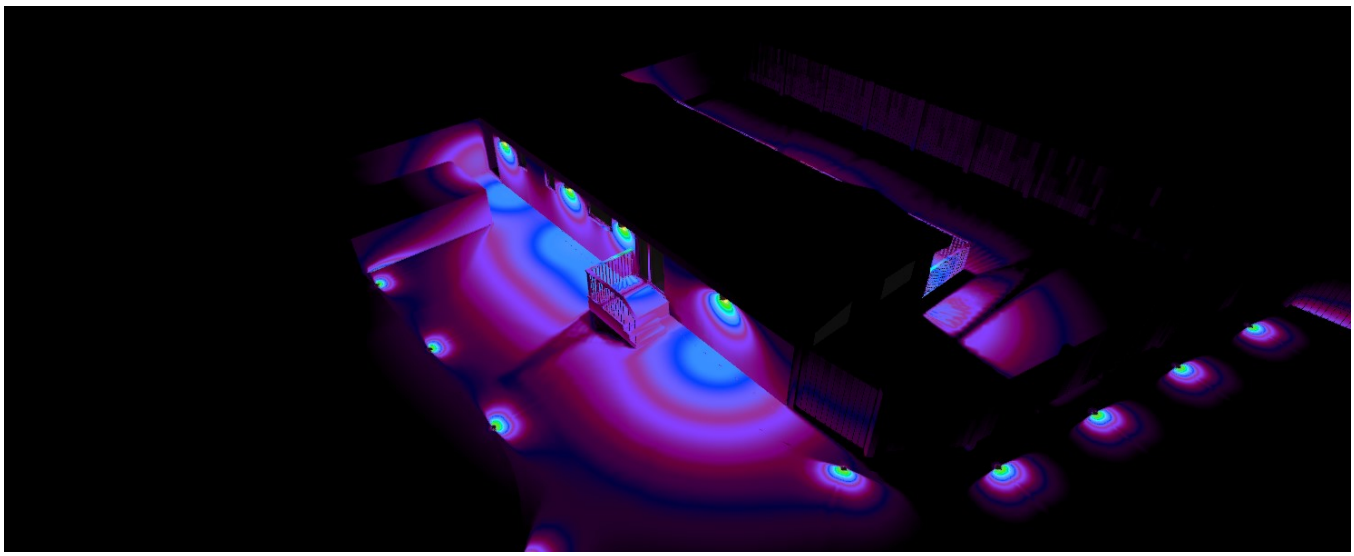
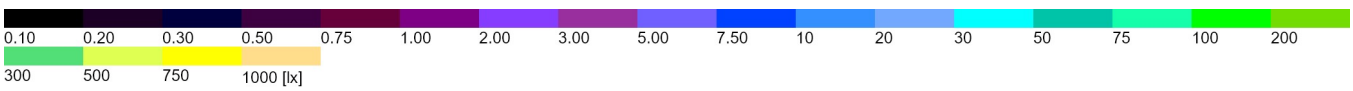
Images



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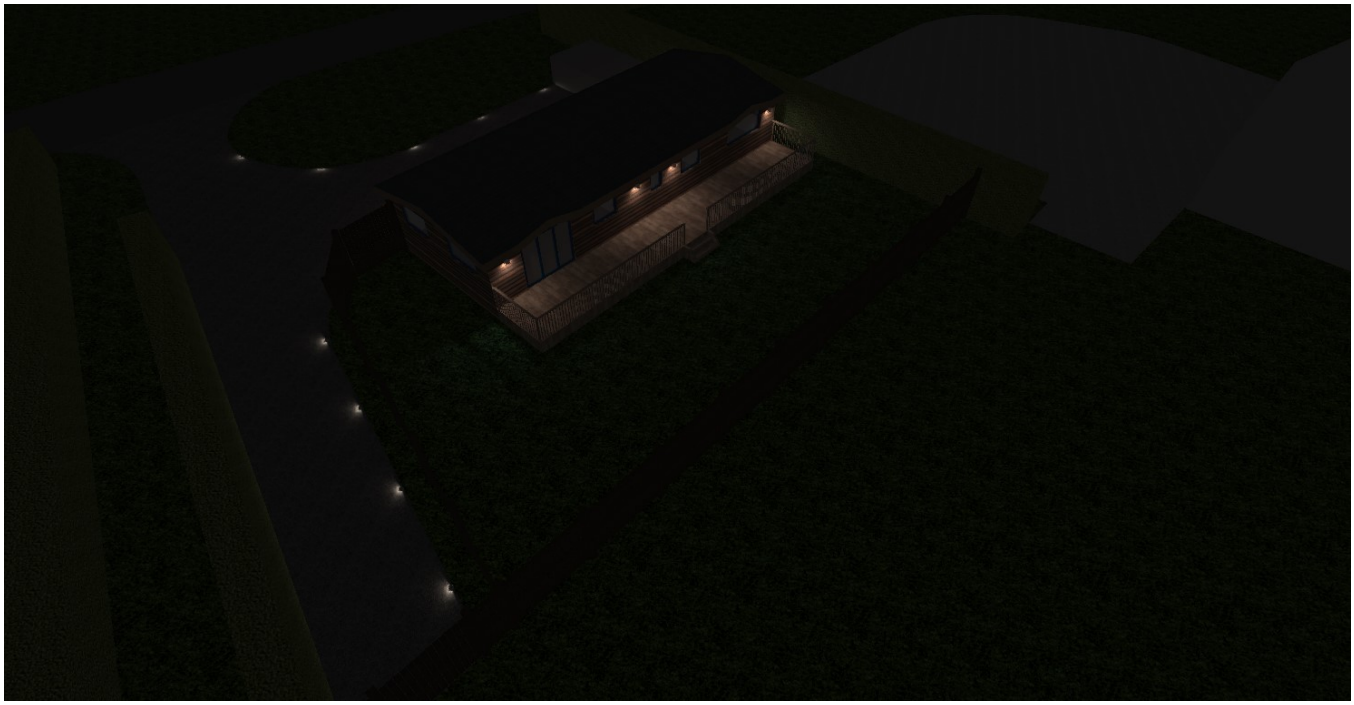
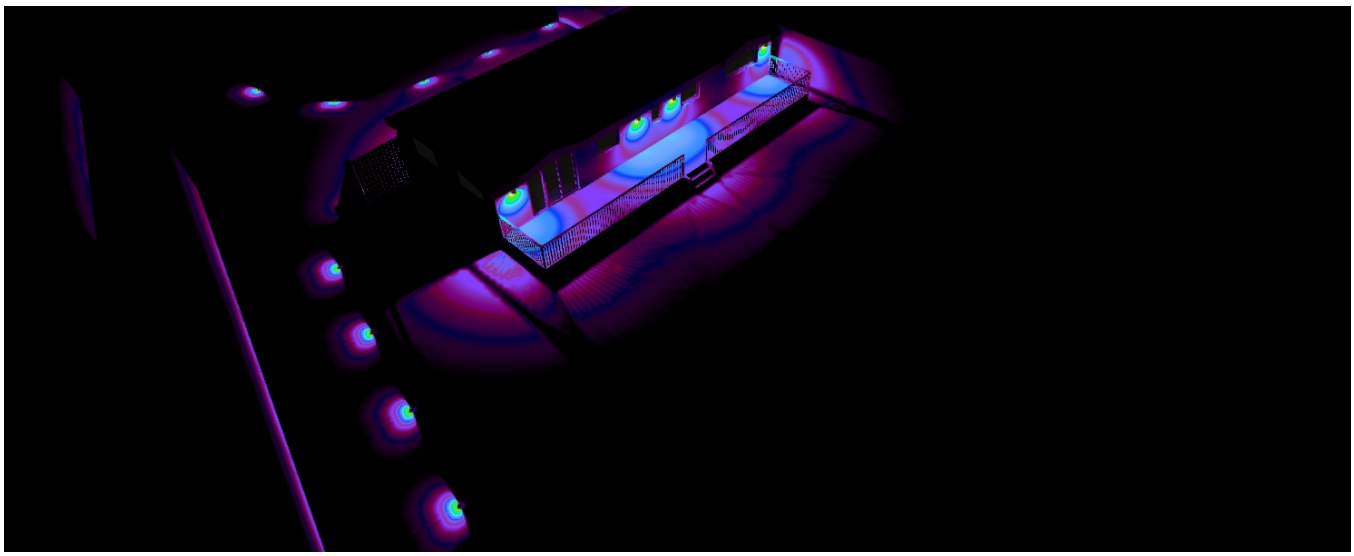
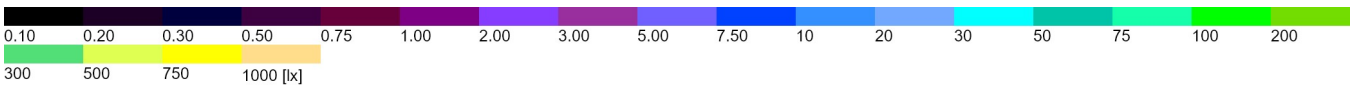
Images



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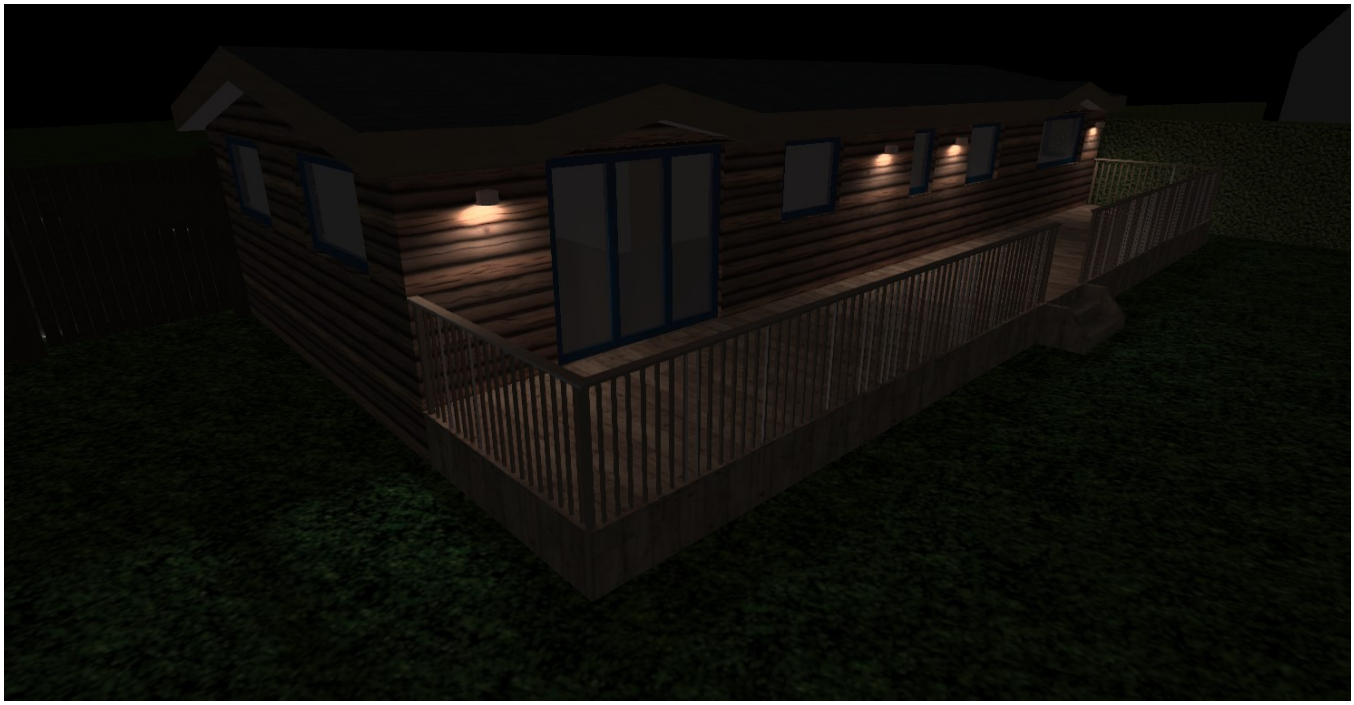
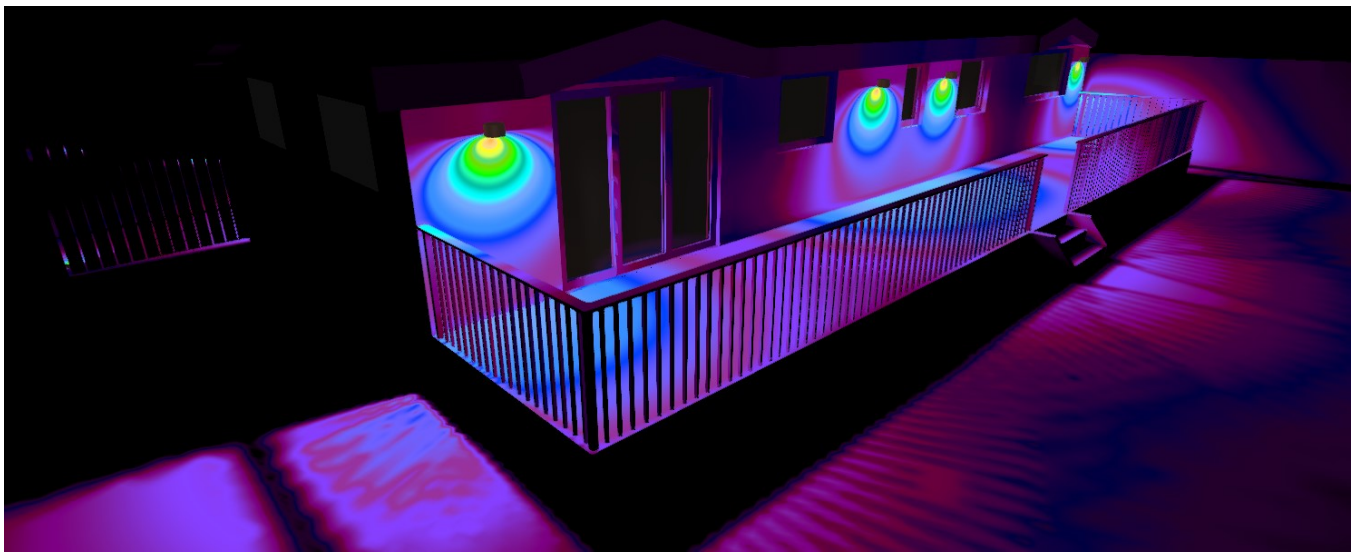
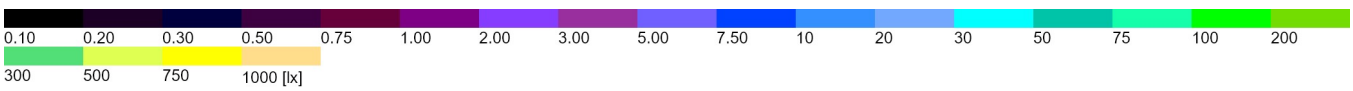
Images



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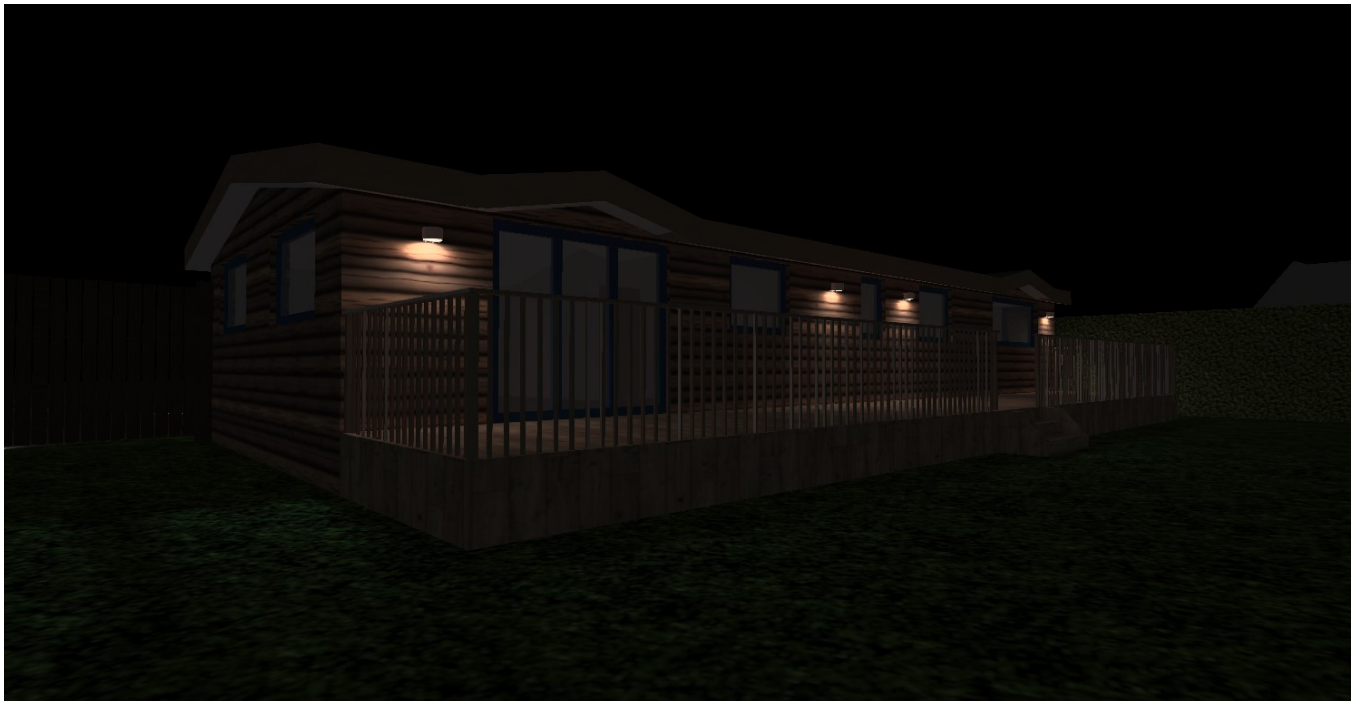
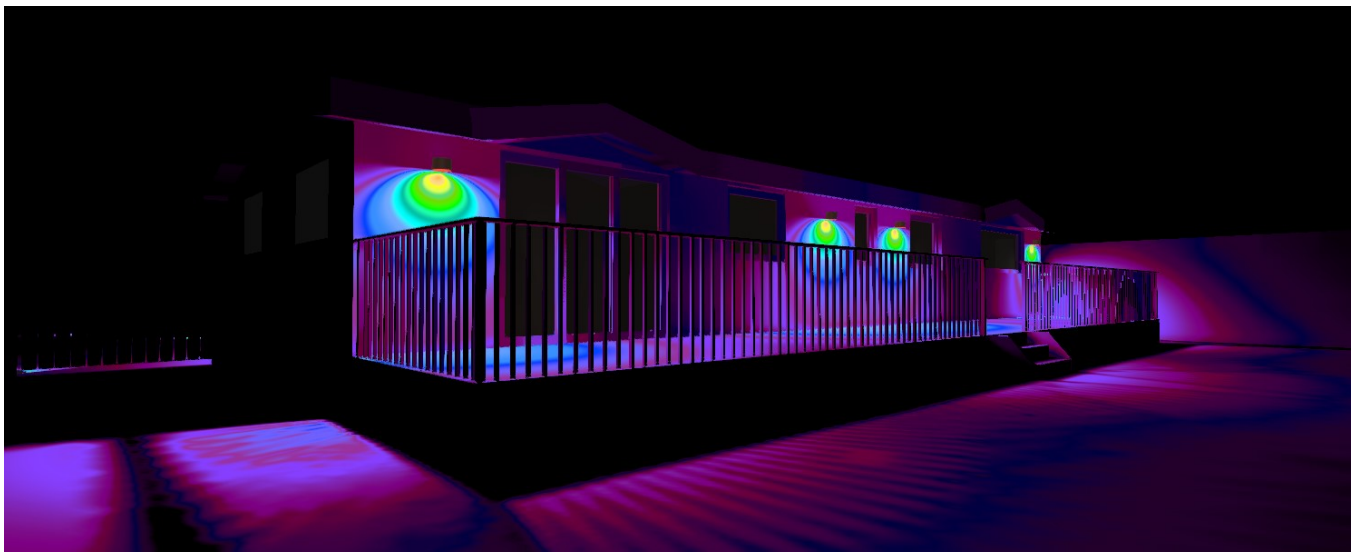
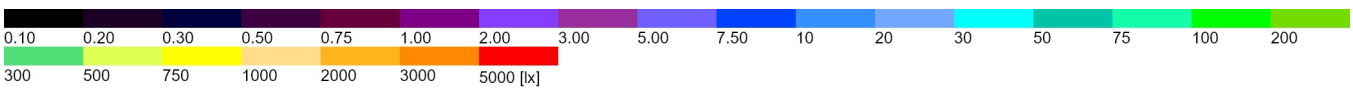
Images



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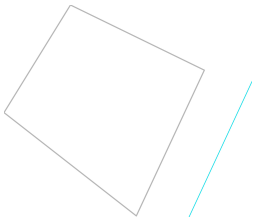
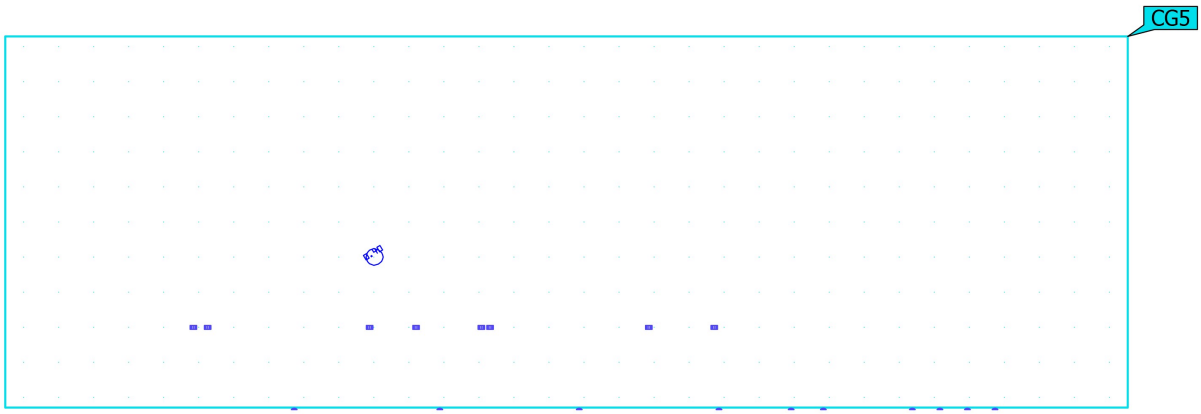
Cowfold (Light Scene 2 : Full intensity, direct light only)

East Field- vertical measuring plane



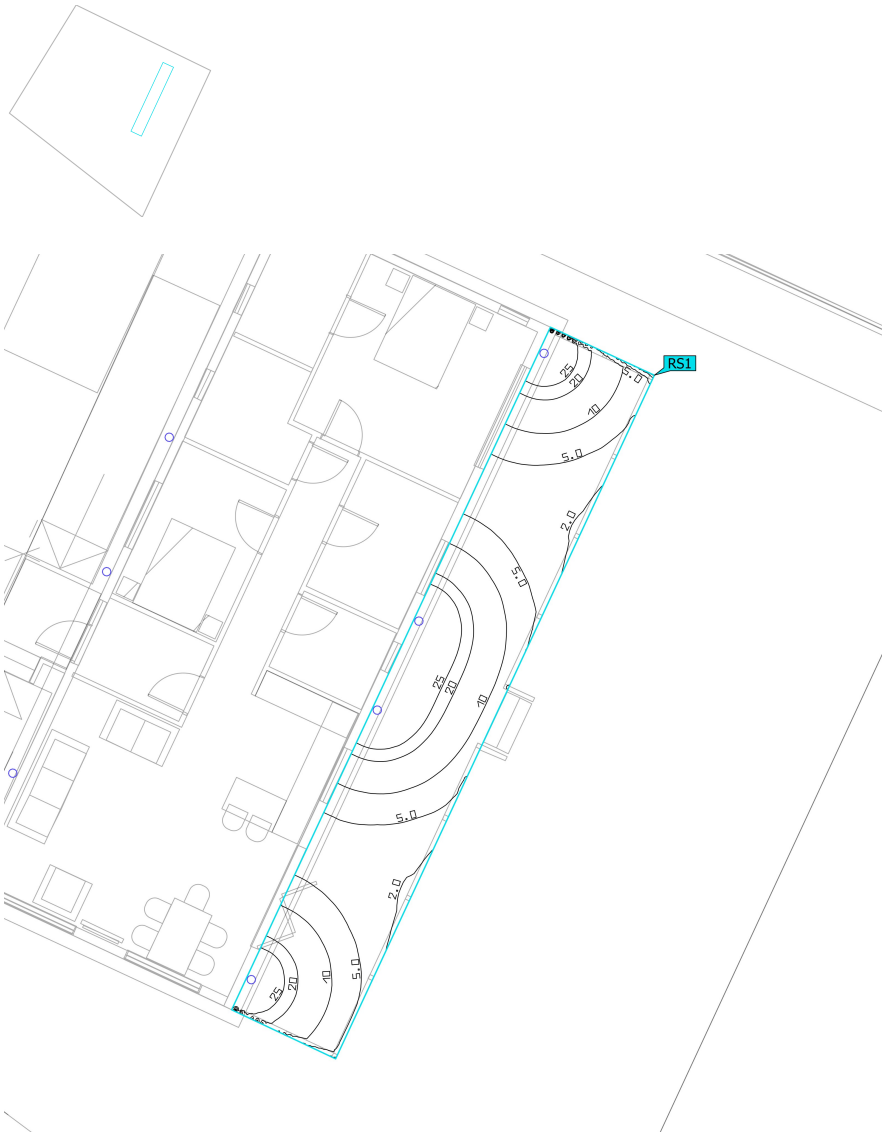


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
East Field- vertical measuring plane Vertical illuminance Rotation: 156.2°, Height: 5.350 m	0.037 lx	0.000 lx	0.46 lx	0.00	0.00	CG5

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

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

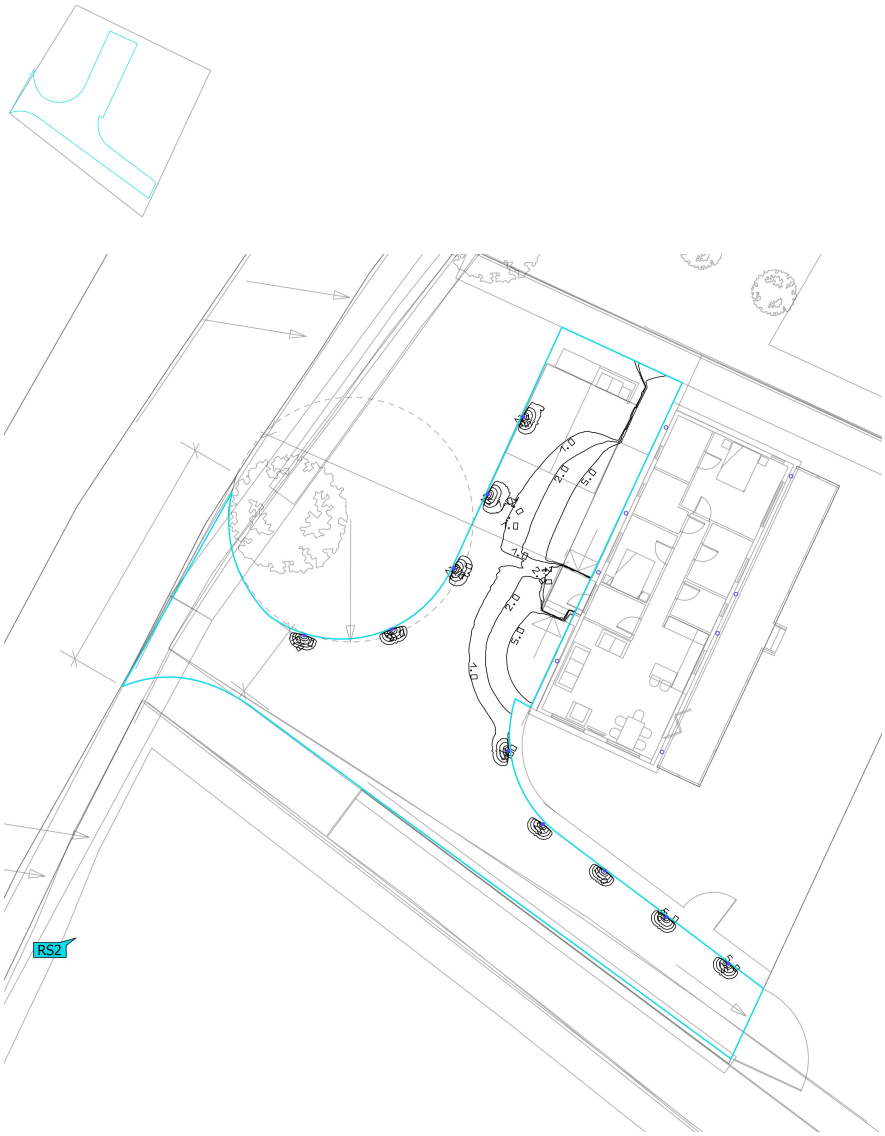
Rear Decking Surface



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Rear Decking Surface Perpendicular illuminance (adaptive) Height: 0.542 m	12.2 lx	0.96 lx	39.2 lx	0.079	0.024	RS1

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

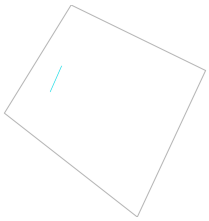
Drive & Pathways

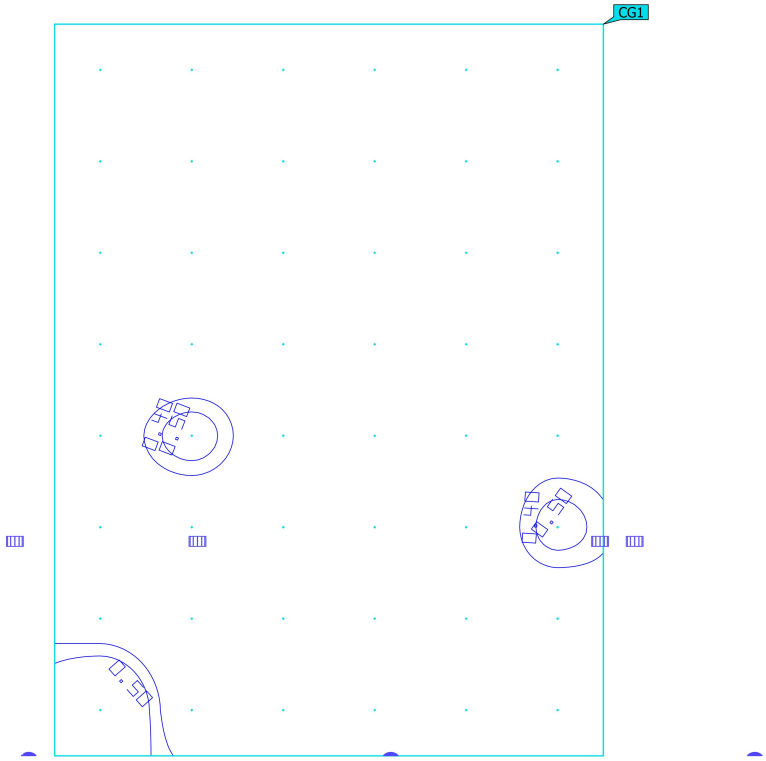


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Drive & Pathways Perpendicular illuminance (adaptive) Height: 0.001 m	1.97 lx	0.007 lx	381 lx	0.004	0.000	RS2

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

Tree A - vertical measuring plane



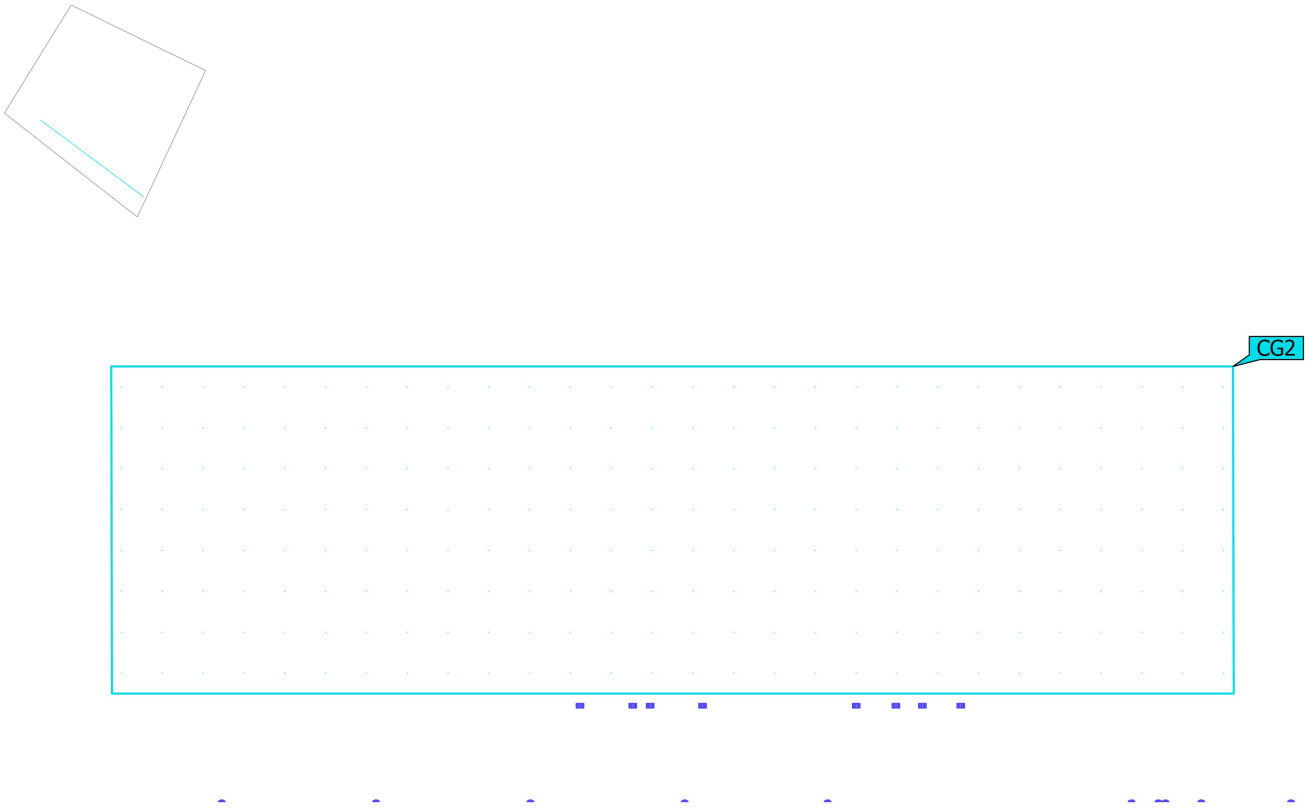


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
Tree A - vertical measuring plane Vertical illuminance Rotation: 337.8°, Height: 4.000 m	0.18 lx	0.057 lx	0.82 lx	0.32	0.070	CG1

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

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

South Boundary - vertical measuring plane

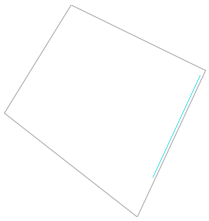


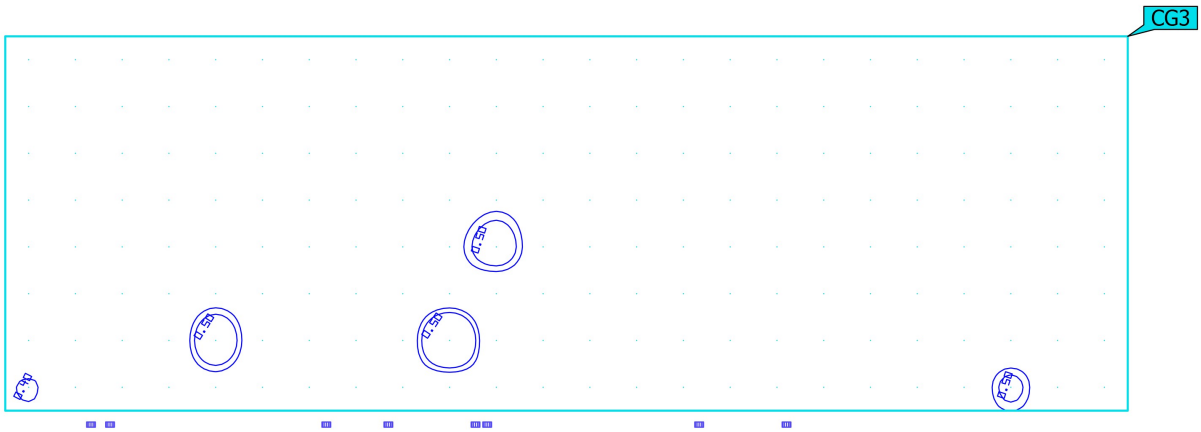
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
South Boundary - vertical measuring plane Vertical illuminance Rotation: 50.7°, Height: 6.642 m	0.054 lx	0.012 lx	0.20 lx	0.22	0.060	CG2

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

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

East Boundary - vertical measuring plane



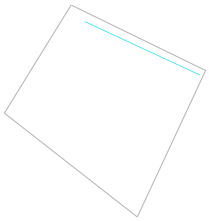


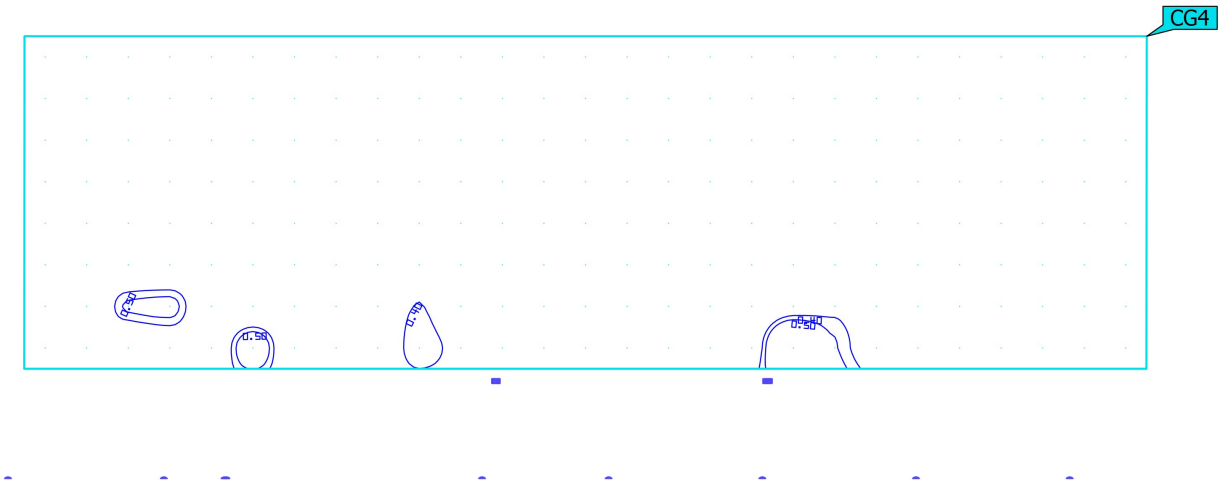
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
East Boundary - vertical measuring plane Vertical illuminance Rotation: 156.2°, Height: 6.642 m	0.16 lx	0.027 lx	1.00 lx	0.17	0.027	CG3

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

Site Boundary (Day 1) (Light Scene 2 : Full intensity, direct light only)

North Boundary - vertical measuring plane





Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
North Boundary - vertical measuring plane Vertical illuminance Rotation: 248.9°, Height: 6.642 m	0.11 lx	0.010 lx	1.12 lx	0.091	0.009	CG4

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