

Lighting Impact Assessment for Planning

Executive Summary

This report presents an external lighting impact assessment for Llangatwg Community School. The external lighting has been designed to support outdoor functionality and meet Secured by Design Gold standards. The External Sports Pitches will be afforded with an average lux level of 200 lux and a uniformity of 0.6 in line with Class II External Sports Pitch requirements as defined in BS EN 12193:2018 Light and Lighting – Sports Lighting. Summaries of the Sports Pitch Lighting results can be found in the appendices. These lighting levels will be achieved whilst adhering to the requirements of ILP GN01/21 The Reduction of Obtrusive Light.

The environmental zone for the project was determined to be E2 in line with Table 2 of ILP Guidance Note 01/21.

Compliance with the requirements of environmental zone E2 has been verified using Dialux Evo software, with calculation summaries provided within the appendices. The report also outlines alignment with BREEAM external lighting requirements.

Project:	Llangatwg Community School	Date:	04.11.2025
Job Number:	WA0347	Author:	JP
Work Stage:	Stage 4	Checked	KS
Report Purpose:	External Lighting Impact Assessment for Planning		

Lighting Calculation Information

Software used to create calculations – DIALux Evo

Information used within the model –

DWG: 26CC07-TBA-51-XX-D-E-6001 – External Services Layout (Separately issued)

Schedule of External Luminaires

EXA		Manufacturer: Thorn Luminaire: Isaro Pro (6m column – folding type - single bracket) Illuminant: LED Narrow Road Lighting Luminaire Ingress Protection: IP66 Lifetime: 100000h L95 at 25°C Total Power: 51.1W Total Lumen Output: 7165 lumens LL/CW: 140 Luminaire lumens per circuit/Watt Colour Temperature: 3000 Kelvin CRI: 80 Dimensions: 571 x 224 x 114mm Optic: Narrow Road Lighting Tilt Angle: 0° from the horizontal
EXB		Manufacturer: Thorn Luminaire: Isaro Pro (6m column – folding type - twin bracket) Illuminant: LED Narrow Road Ingress Protection: IP66 Lifetime: 100000h L95 at 25°C Total Power: 51.1W Total Lumens Output: 7165 lumens LL/CW: 140 Luminaire lumens per circuit/Watt Colour Temperature: 3000 Kelvin CRI: 80 Dimensions: 571 x 224 x 114mm Optic: Narrow Road Lighting Tilt Angle: 0° from the horizontal

EXC		Manufacturer: Thorn Luminaire: Piazza 2 LED Illuminant: Bulkhead LED Luminaire Ingress protection: IP65/ IK10 rated Lifetime: L70 60000h 25°C Total power: 15.1W Total lumens Output: 1815 lumens LL/CW: 120 Luminaire lumens per circuit/Watt Colour temperature: 3000K CRI: 80 Dimensions: 381 x 196 x 305 mm Optic: Downlight Tilt Angle: N/A (Tilt not possible)
EXD		Manufacturer: Thorn Luminaire: Plurio (4m column - single bracket) Illuminant: LED Luminaire (extra wide comfort distribution) Ingress Protection: IP66, IK08 Lifetime: 100000h L95 at 25°C Total Power: 36W Total Lumens Output: 3921 lumens LL/CW: 109 Luminaire lumens per circuit/Watt Colour Temperature: 3000 Kelvin CRI: 70 Dimensions: Ø564 x 567mm Optic: Extra wide comfort distribution Tilt Angle: N/A (Tilt not possible)
EXF		Manufacturer: Thorn Luminaire: Plurio (4m column - single bracket) Illuminant: LED Luminaire (radially symmetric distribution) Ingress Protection: IP66, IK08 Lifetime: 100000h L95 at 25°C Total Power: 36W Total Lumens Output: 4064 lumens LL/CW: 113 Luminaire lumens per circuit/Watt Colour Temperature: 3000 Kelvin

		CRI: 70 Dimensions: Ø564 x 567mm Optic: Radially symmetric distribution Tilt Angle: N/A (Tilt not possible)
EXF1		Manufacturer: Philips / Signify Luminaire: Asymmetric Opti Vision LED Flood Light Illuminant: Twin surface mounted external LED Luminaire Ingress Protection: IP66, IK07 Lifetime: 50000h L70 at 25°C Total Power: 1500W per floodlight Total lumen Output: 247000 lumens Colour Temperature: 3000 Kelvin CRI: 70-79 Dimensions: 695 x 737mm Optic: A55 optic – (Mounted at 0° from the horizontal the beam angle is 55°) Tilt Angle: Between 7° - 11° from the horizontal
EXF2		Manufacturer: Philips / Signify Luminaire: Asymmetric Opti Vision LED Flood Light Illuminant: Twin surface mounted external LED Luminaire Ingress Protection: IP66, IK07 Lifetime: 50000h L70 at 25°C Total Power: 1000W per floodlight Total lumens Output: 165000 lumens Colour Temperature: 3000 Kelvin CRI: 70-79 Dimensions: 695 x 737mm Optic: A55 optic – (Mounted at 0° from the horizontal the beam angle is 55°) Tilt Angle: Between 7° - 11° from the horizontal

EXF3		Manufacturer: Philips / Signify Luminaire: Asymmetric Opti Vision LED Flood Light Illuminant: Single surface mounted external LED Luminaire Ingress Protection: IP66, IK07 Lifetime: 50000h L70 at 25°C Total Power: 1500W per floodlight Total lumens Output: 247000 lumens Colour Temperature: 3000 Kelvin CRI: 70-79 Dimensions: 695 x 737mm Optic: A55 optic – (Mounted at 0° from the horizontal the beam angle is 55°) Tilt Angle: Between 7° - 11° from the horizontal
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BREEAM External Lighting Requirements

Requirement 1: Hea 01 Visual comfort

External lighting

1. All external lighting for the project is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night. To demonstrate this, external lighting provided is specified in accordance with BS 5489-1:2013 Lighting of roads and public amenity areas and BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.

Requirement 2: Ene 03 External lighting, BREEAM UK 2014 requirements

Assessment criteria
The following is required to demonstrate compliance:
One credit
1. The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances).
OR alternatively, where the building does have external lighting, one credit can be awarded as follows:
2. The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt.
3. All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian traffic.

Figure 1 - Extract from BREEAM UK New Construction 2014

1. External lighting is provided to the development therefore criteria 2 and 3 shall be outlined below to show compliance with ENE03.
2. The development has a higher average lumens per circuit watt of 60. The Average lumens per circuit watt will be 148 Lm/cW.
3. The proposed external lighting is to be automatically controlled via photocell and timeclock control with pre-set operation hours to prevent operation during daylight hours. The lighting will be timeclocked controlled to be off throughout curfew hours between 22:00-7:00. PIR Control has not been incorporated as there are no areas of intermediate pedestrian traffic.

Requirement 3: Pol 04 – Reduction of Night-time light pollution

Assessment criteria
The following is required to demonstrate compliance:
One credit
1. Where external lighting pollution has been eliminated through effective design that removes the need for external lighting without adversely affecting the safety and security of the site and its users.
OR alternatively, where the building does have external lighting, one credit can be awarded as follows:
2. The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011 ¹ . Buildings located in Scotland must comply with the light pollution criteria in the guidance note 'Controlling Light Pollution and Reducing Lighting Energy Consumption' ² . This can be demonstrated via completion of the checklists in Annexes B and C of the guidance note by a relevant member of the design team.
3. The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the ILP Guidance notes for the reduction of obtrusive light, 2011 ³ .
4. All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.
5. If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP's Guidance notes.
6. Illuminated advertisements, where specified, must be designed in compliance with ILP PLG 05 The Brightness of Illuminated Advertisements ⁴ .

Figure 2- Extract from BREEAM UK New Construction 2014

The environmental zone for Llangatwg Community school was determined to be **E2** in line with Table 2 of ILP Guidance Note 01/21 The Reduction of Obtrusive Light.

1. External lighting required for safety, security and to allow users to perform outdoor tasks efficiently and to comply with requirements of secure by design gold standard.
2. The external lighting has been designed in compliance with Table 2 of ILP Guidance Notes for the reduction of obtrusive light. A calculation has been carried out by TB+A to ensure the level of obtrusive light at nearby properties does not exceed 5 lux pre-curfew in line with Table 3 of ILP Guidance Notes. Calculation results can be found in appendix A. Post-curfew there will be no lighting in use see point 4 below.
3. As point 2.
4. The proposed external lighting is to be automatically controlled via photocell and timeclock control with pre-set operation hours to prevent operation during daylight hours. The lighting will be timeclock controlled to be off throughout curfew hours between 22:00-7:00.
5. As point 4.
6. No illuminated advertisements on site.

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

Figure 3- Extract from ILP, The Reduction of Obtrusive light, 2021

Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on premises

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E _v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

Figure 4 - Environmental Zones - Extract from ILP, The Reduction of Obtrusive light, 2021

Requirement 4: Limitation of Luminous Intensity of Bright Luminaires

Table 4 (CIE 150 table 3): Limits for the luminous intensity of bright luminaires⁴

Light technical parameter	Application conditions	Luminaire group (projected area A_p in m ²)					
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
Maximum luminous intensity emitted by luminaire (I in cd) ⁵	E0						
	Pre-curfew	0	0	0	0	0	0
	Post-curfew	0	0	0	0	0	0
	E1						
	Pre-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500
	Post-curfew	0	0	0	0	0	0
	E2						
	Pre-curfew	0.57 d	1.3 d	2.5 d	5.0 d	10 d	7,500
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	500
	E3						
	Pre-curfew	0.86 d	1.9 d	3.8 d	7.5 d	15 d	10,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	1,000
	E4						
	Pre-curfew	1.4 d	3.1 d	6.3 d	13 d	26 d	25,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500

Figure 5 -Limits for Luminous Intensity - Extract from ILP, The Reduction of Obtrusive light, 2021

For an E2 Zone less than 7,500cd (luminous intensity in candelas) is required for the closest properties. The closest properties for the project are 54 and 56 Underwood Road. These are also the closest properties to the sports pitches which will provide the most onerous result.

Results for the observers placed at these locations show levels being 1576-2391 cd which is below the maximum of 7500cd.

Obtrusive Light Calculations:

Switching Mode	Observer Code	Luminaire Code	Position			Aiming Angles			Maximum Intensity (cd)
			X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	
4	Aa	B	-48.00	-34.50	15.00	78.00	64.00	0.00	2391
4	Bb	B	-48.00	34.50	15.00	-78.00	64.00	-0.00	1576

Figure 6 - Luminous Intensity Calculation Results

Requirement 5: Limitation of Sky glow & ULR calculation

Limitation of skyglow

Table 6 (CIE 150 table 5): Maximum values of upward light ratio (ULR) of luminaires

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR) / %	0	0	2.5	5	15

Figure 7 - Maximum Upward Light Ratio % - Extract from ILP, The Reduction of Obtrusive light, 2021

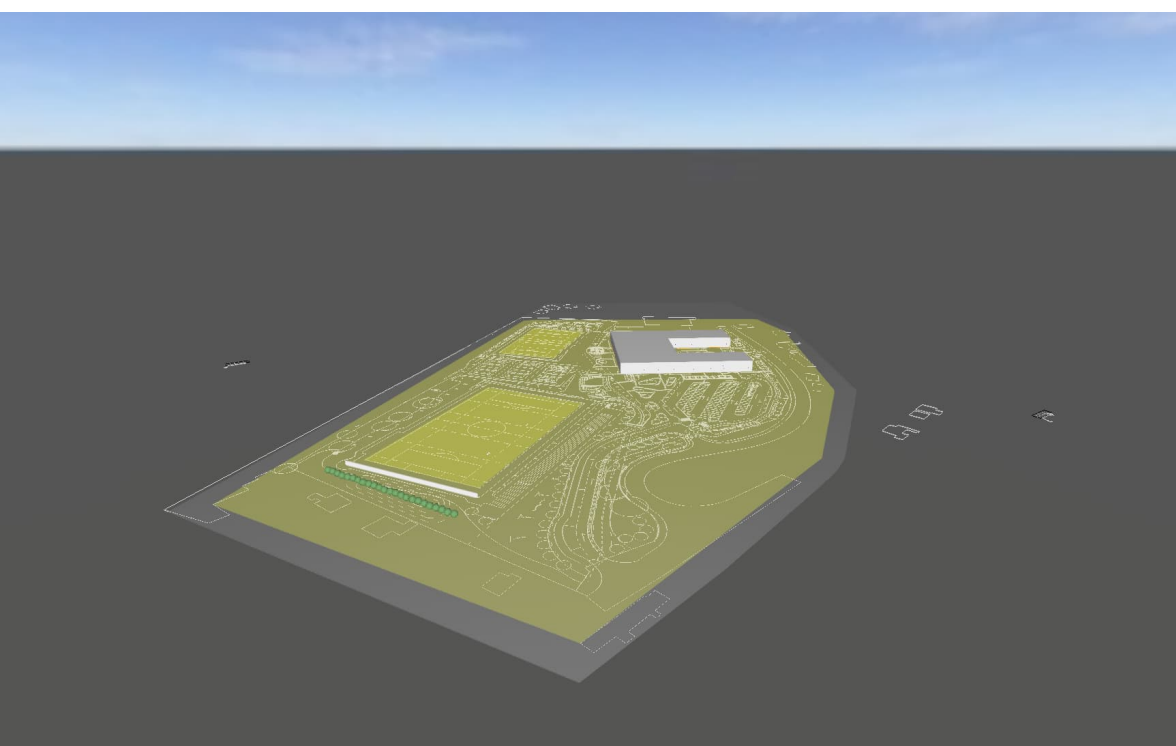
To understand the Sky Glow for Llangatwg community school for all luminaires the ULR (upward light ratio) has been calculated by TB+A. This calculation includes all external luminaires. The result of this calculation was an ULR of 0.2% which is below the required maximum of 2.5%.

The evidence of this can be found on page 4 of the calculation results attached in appendix A. For clarity the ULR is referred to within the calculation software as RUL under general Obtrusive Light Scene Results.



Figure 8 - Google maps extract, outlining surrounding buildings to Llangatwg Community School. Areas in purple represent the residential areas that have been used within obtrusive light calculation in Appendix A.

APPENDIX A



Llangatwg Community School

Lighting Impact Assessment

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Site 1 (Obtrusive light scene)

Summary



Site 1 (Obtrusive light scene)

Summary

General information on the obtrusive light calculation

Standard	EN 12464-2:2014
Zone	Environmental Zone E2
Period under review	Pre-curfew
Apply limits for	General lighting

General obtrusive light scene results

Symbol	Calculated	Threshold value	Check
R _{UL}	0.2 %	≤ 5.0 %	✓
R _{DLO}	61.2 %	–	
R _{ULO}	0.1 %	–	

Upward light ratio (ULR) calculation result referenced as RUL in Lighting Calc software.

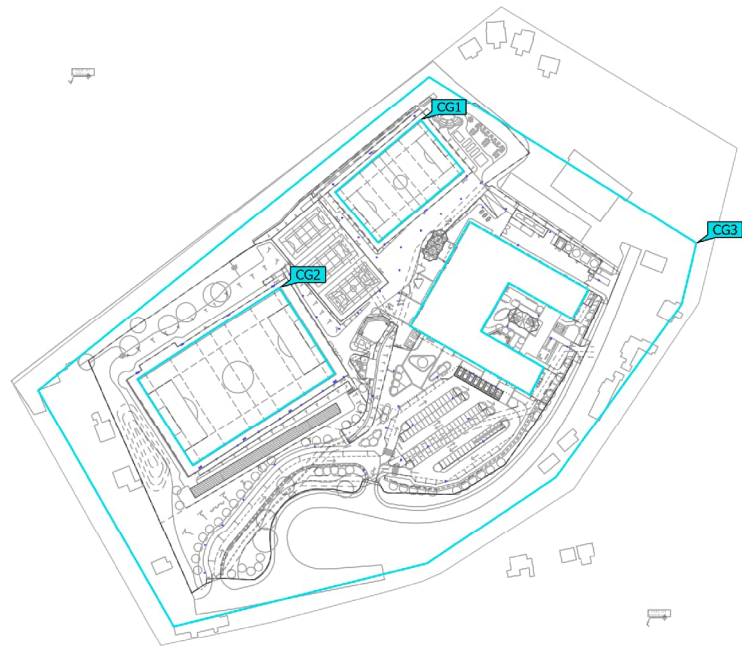
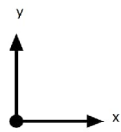
Calculation surfaces

Symbol	Calculated	Threshold value	Check	Index
E _{vmax}	4.37 lx	≤ 5.00 lx	✓	OCG4
k _{Smax}	3067	–		OCG4

Flux ratios are also calculated using only luminaires in the obtrusive lighting scene.

Site 1 (Light scene 1)

Calculation objects



Site 1 (Light scene 1)

Calculation objects

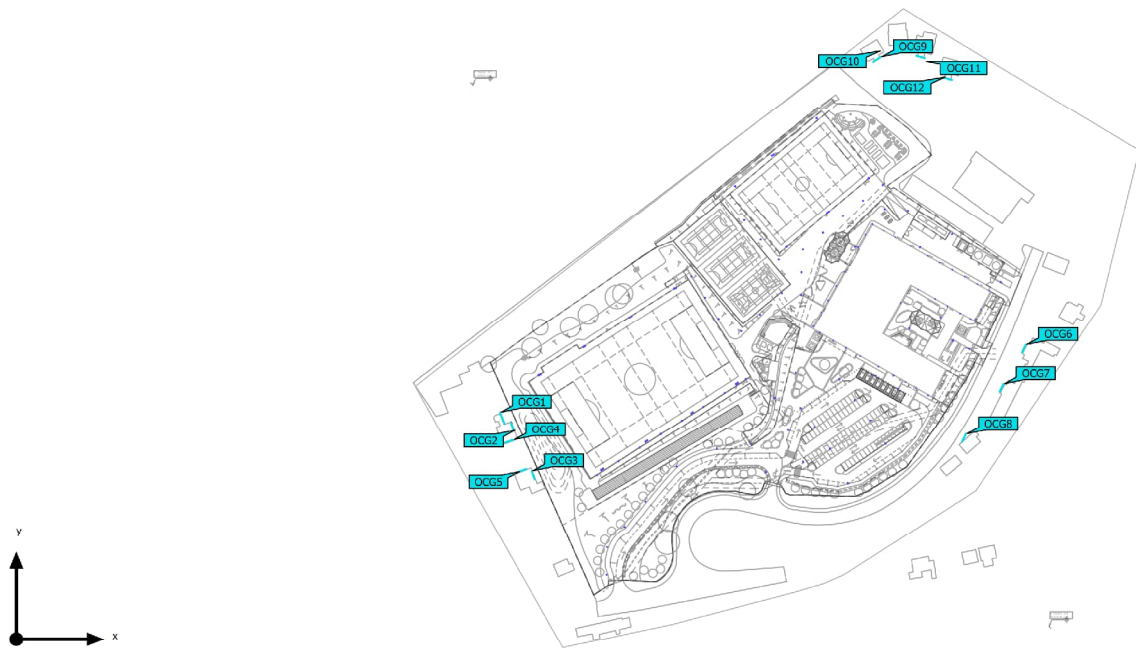
Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
9v9 Sports Pitch Perpendicular illuminance Height: 0.000 m	211 lx	150 lx	313 lx	0.71	0.48	CG1
General sitewide lux plot Perpendicular illuminance Height: 0.000 m	37.2 lx	0.001 lx	314 lx	0.000	0.000	CG3
Rugby Pitch Perpendicular illuminance Height: 0.050 m	201 lx	133 lx	328 lx	0.66	0.41	CG2

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

Site 1 (Obtrusive light scene)

Calculation objects



Site 1 (Obtrusive light scene)

Calculation objects

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max} (Target)	$U_o (g_1)$	g_2	Index
Obtrusive light calculation - 3 Nant Y Glyn Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.010 lx	0.005 lx	0.14 lx (≤ 5.00 lx) ✓	0.50	0.036	OCG12
Obtrusive light calculation - 4 Nant y Glyn Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.013 lx	0.009 lx	0.082 lx (≤ 5.00 lx) ✓	0.69	0.11	OCG11
Obtrusive light calculation - 5 Nant Y Glyn Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.021 lx	0.014 lx	0.25 lx (≤ 5.00 lx) ✓	0.67	0.056	OCG10
Obtrusive light calculation - 54 Underwood Road vertical illuminance Vertical illuminance Rotation: 0.0°, Height: 0.750 m	2.56 lx	2.12 lx	3.10 lx (≤ 5.00 lx) ✓	0.83	0.68	OCG1
Obtrusive light calculation - 54 Underwood Road vertical illuminance Vertical illuminance Rotation: 0.0°, Height: 2.000 m	3.10 lx	2.58 lx	3.76 lx (≤ 5.00 lx) ✓	0.83	0.69	OCG2
Obtrusive light calculation - 54 Underwood Road vertical illuminance Vertical illuminance Rotation: 0.0°, Height: 1.758 m	3.12 lx	2.21 lx	4.37 lx (≤ 5.00 lx) ✓	0.71	0.51	OCG4
Obtrusive light calculation - 56 Underwood Road vertical illuminance Vertical illuminance Rotation: 0.0°, Height: 1.500 m	1.38 lx	1.05 lx	1.74 lx (≤ 5.00 lx) ✓	0.76	0.60	OCG3
Obtrusive light calculation - 56 Underwood Road vertical illuminance Vertical illuminance Rotation: 0.0°, Height: 1.500 m	1.47 lx	1.10 lx	1.95 lx (≤ 5.00 lx) ✓	0.75	0.56	OCG5
Obtrusive light calculation - 6 Nant Y Glyn Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.040 lx	0.026 lx	0.36 lx (≤ 5.00 lx) ✓	0.65	0.072	OCG9
Obtrusive light calculation - Pensycnor Residence Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.002 lx	0.002 lx	0.002 lx (≤ 5.00 lx) ✓	-	-	OCG6

Site 1 (Obtrusive light scene)

Calculation objects

Obtrusive light calculation - Pensycnor Residence Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.003 lx	0.003 lx	0.004 lx (≤ 5.00 lx) ✓	-	-	OCG7
Obtrusive light calculation - Pensycnor Residence Vertical illuminance Rotation: 0.0°, Height: 2.000 m	0.014 lx	0.010 lx	0.14 lx (≤ 5.00 lx) ✓	0.71	0.071	OCG8

Calculation surfaces

Properties	Luminaire	max	Target	Index
Obtrusive light calculation - 54 Underwood Road vertical illuminance k_s Ambient luminance: 0.10 cd/m ² , Height: 0.750 m	Philips BVP518 OUT T35 A55-WB LO /730	2106		OCG1
	Philips BVP518 OUT T35 A55-WB LO /730	2086		
	Philips BVP518 OUT T35 A55-WB LO /730	2065		
	Philips BVP518 OUT T35 A55-WB LO /730	2044		
	Philips BVP518 OUT T35 A55-WB LO /730	2022		
Obtrusive light calculation - 54 Underwood Road vertical illuminance k_s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Philips BVP518 OUT T35 A55-WB LO /730	2452		OCG2
	Philips BVP518 OUT T35 A55-WB LO /730	2421		
	Philips BVP518 OUT T35 A55-WB LO /730	2389		
	Philips BVP518 OUT T35 A55-WB LO /730	2357		
	Philips BVP518 OUT T35 A55-WB LO /730	2324		

Site 1 (Obtrusive light scene)

Calculation objects

Obtrusive light calculation - 56 Underwood Road vertical illuminance k_s Ambient luminance: 0.10 cd/m ² , Height: 1.500 m	Philips BVP518 OUT T35 A55-WB LO /730	1104	OCG3
	Philips BVP518 OUT T35 A55-WB LO /730	1091	
	Philips BVP518 OUT T35 A55-WB LO /730	1059	
	Philips BVP518 OUT T35 A55-WB LO /730	1027	
	Philips BVP518 OUT T35 A55-WB LO /730	996	
Obtrusive light calculation - 54 Underwood Road vertical illuminance k_s Ambient luminance: 0.10 cd/m ² , Height: 1.758 m	Philips BVP518 OUT T35 A55-WB LO /730	3067	OCG4
	Philips BVP518 OUT T35 A55-WB LO /730	3006	
	Philips BVP518 OUT T35 A55-WB LO /730	2953	
	Philips BVP518 OUT T35 A55-WB LO /730	2906	
	Philips BVP518 OUT T35 A55-WB LO /730	2859	
Obtrusive light calculation - 56 Underwood Road vertical illuminance k_s Ambient luminance: 0.10 cd/m ² , Height: 1.500 m	Philips BVP518 OUT T35 A55-WB LO /730	950	OCG5
	Philips BVP518 OUT T35 A55-WB LO /730	901	
	Philips BVP518 OUT T35 A55-WB LO /730	854	
	Philips BVP518 OUT T35 A55-WB LO /730	813	
	Philips BVP518 OUT T35 A55-WB LO /730	808	

Site 1 (Obtrusive light scene)

Calculation objects

Obtrusive light calculation - Pensyncnor Residence k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Thorn Lighting <PIAZZA II LED 1690-840 185 HF E3TX ANT [STD]	OCG6
	Thorn Lighting <PIAZZA II LED 1690-840 180 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 176 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 171 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 168 HF E3TX ANT [STD]	
Obtrusive light calculation - Pensyncnor Residence k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Thorn Lighting <PIAZZA II LED 1690-840 337 HF E3TX ANT [STD]	OCG7
	Thorn Lighting <PIAZZA II LED 1690-840 332 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 327 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 322 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 318 HF E3TX ANT [STD]	
Obtrusive light calculation - Pensyncnor Residence k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Thorn Lighting <PIAZZA II LED 1690-840 451 HF E3TX ANT [STD]	OCG8
	Thorn Lighting <PIAZZA II LED 1690-840 447 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 444 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 440 HF E3TX ANT [STD]	
	Thorn Lighting <PIAZZA II LED 1690-840 435 HF E3TX ANT [STD]	

Site 1 (Obtrusive light scene)

Calculation objects

Obtrusive light calculation - 6 Nant Y Glyn k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Philips BVP518 OUT T35 A55-WB LO /730	187	OCG9
	Philips BVP518 OUT T35 A55-WB LO /730	187	
	Philips BVP518 OUT T35 A55-WB LO /730	186	
	Philips BVP518 OUT T35 A55-WB LO /730	185	
	Philips BVP518 OUT T35 A55-WB LO /730	185	
Obtrusive light calculation - 5 Nant Y Glyn k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Philips BVP518 OUT T35 A55-WB LO /730	160	OCG10
	Philips BVP518 OUT T35 A55-WB LO /730	160	
	Philips BVP518 OUT T35 A55-WB LO /730	160	
	Philips BVP518 OUT T35 A55-WB LO /730	159	
	Philips BVP518 OUT T35 A55-WB LO /730	159	
Obtrusive light calculation - 4 Nant y Glyn k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Philips BVP528 OUT T35 A55-NMB LO /730	207	OCG11
	Philips BVP528 OUT T35 A55-NMB LO /730	206	
	Philips BVP528 OUT T35 A55-NMB LO /730	205	
	Philips BVP528 OUT T35 A55-NMB LO /730	205	
	Philips BVP528 OUT T35 A55-NMB LO /730	205	

Site 1 (Obtrusive light scene)

Calculation objects

Obtrusive light calculation - 3 Nant Y Glyn k _s Ambient luminance: 0.10 cd/m ² , Height: 2.000 m	Philips BVP528 OUT T35 A55-NMB LO /730	258
	Philips BVP528 OUT T35 A55-NMB LO /730	258
	Philips BVP528 OUT T35 A55-NMB LO /730	257
	Philips BVP528 OUT T35 A55-NMB LO /730	256
	Philips BVP528 OUT T35 A55-NMB LO /730	255

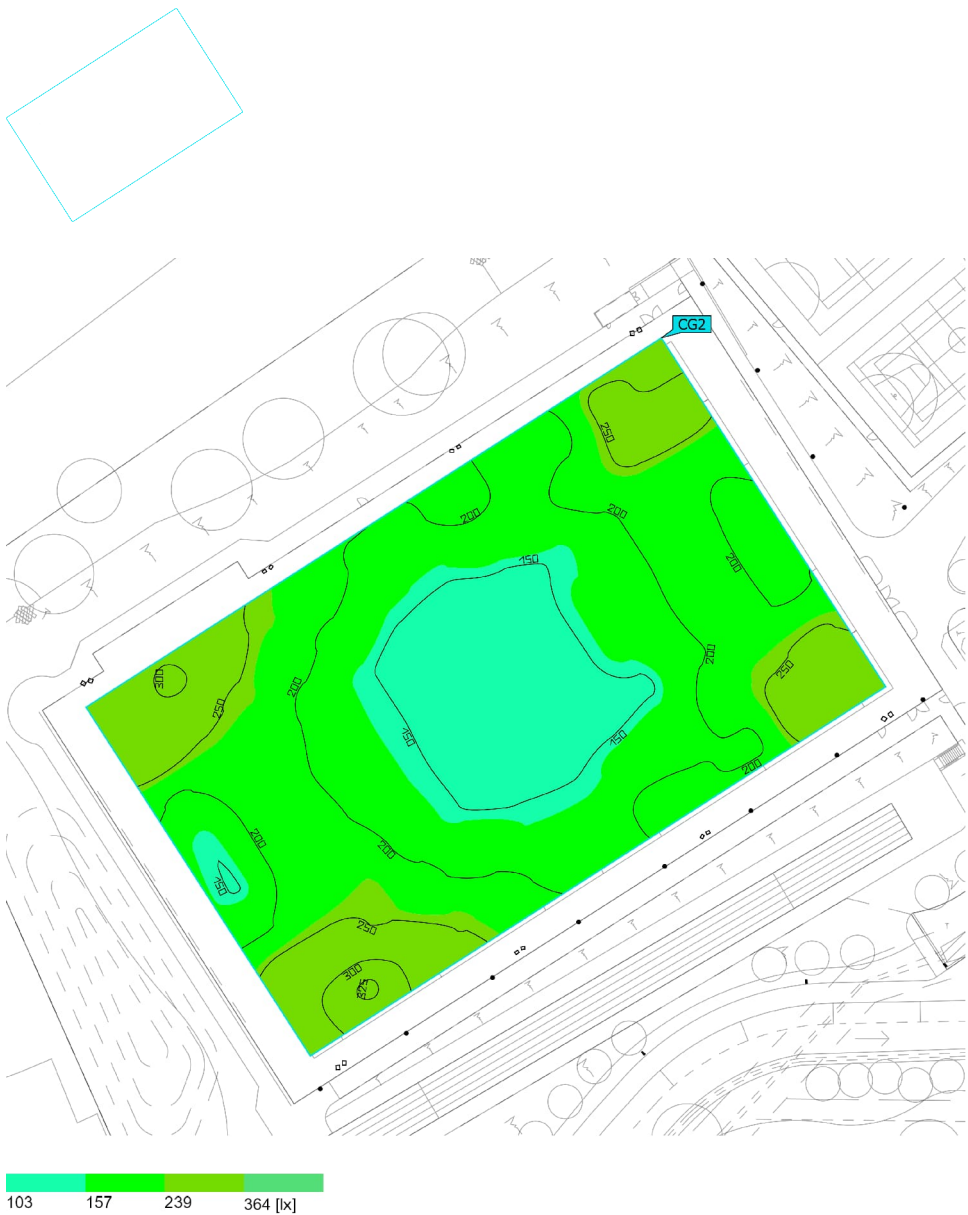
OCG12

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

Notes on planning:

All values take the initial flux (MF = 1) into account. The k_s value was calculated by limiting the spatial angle to 10e-6.

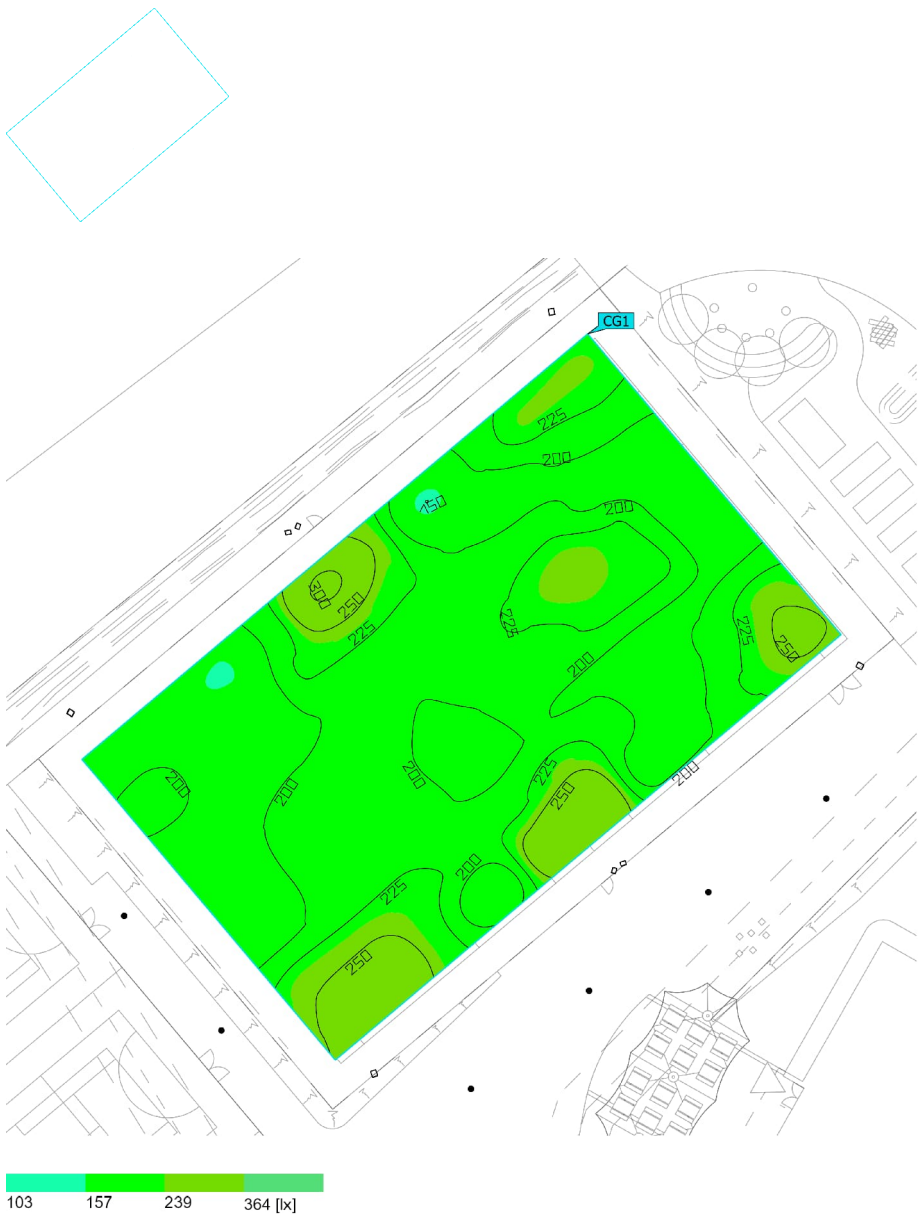
Site 1 (Light scene 1)
Rugby Pitch



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Rugby Pitch Perpendicular illuminance Height: 0.050 m	201 lx	133 lx	328 lx	0.66	0.41	CG2

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

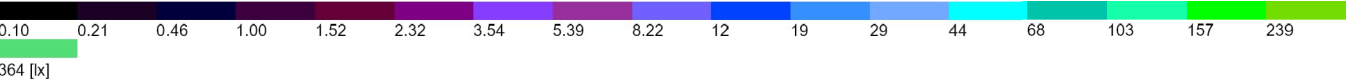
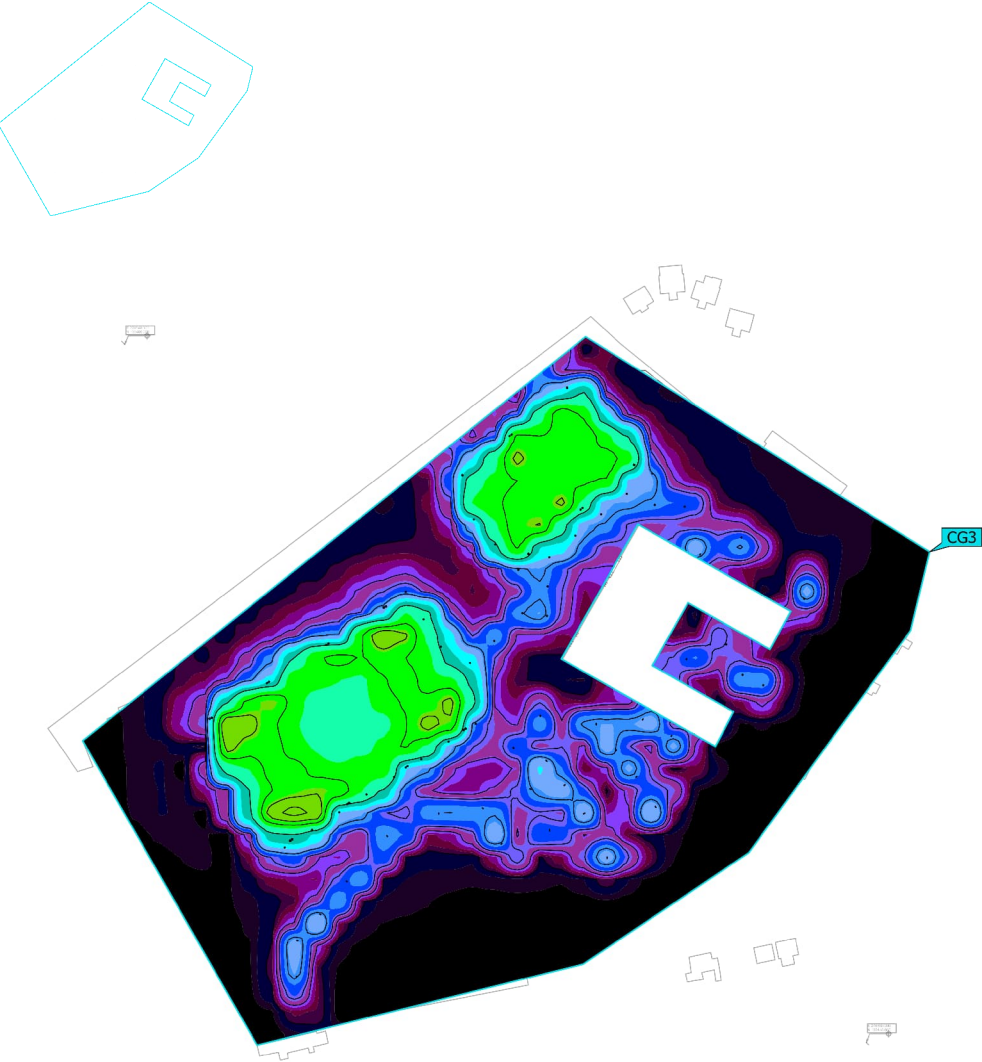
Site 1 (Light scene 1)
9v9 Sports Pitch



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
9v9 Sports Pitch Perpendicular illuminance Height: 0.000 m	211 lx	150 lx	313 lx	0.71	0.48	CG1

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

Site 1 (Light scene 1)
General sitewide lux plot



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
General sitewide lux plot Perpendicular illuminance Height: 0.000 m	37.2 lx	0.001 lx	314 lx	0.000	0.000	CG3

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