



Primary School, Sports Facilities & Allotments

at

**The Horton Heath
Primary School Development**

for

Eastleigh Borough Council

4666/DH/MC/CC
Issue 1
11 June 2026

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Date	Document Revision History	Revision	Author	Verified By
08.06.26	First Issue - Draft	Issue 1	CC	MC
11.06.26	First Issue	Issue 2	CC	MC

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1.0 Introduction

Horton Heath Primary School is a comprehensive redevelopment scheme to the west of Horton Heath which will provide new retail, employment, residential, senior living, a new primary school, and a new local centre, amongst other new uses on land which is currently undeveloped. Outline planning permission was granted on 27 October 2025 under application reference O/20/89498.

The description of development proposed in the outline planning application was as follows:

“Outline: Phased mixed-use development comprising severable and separate phases of development (as per the Phasing Plan) consisting:

- *Up to 2,500 residential units in total (across The Lower Acre, Quobleigh Breach, The Upper Acre, Round Copse, The Holme, The Homestal, Chalcroft Farm and The Folds phases and partially within Chalcroft Outfarm Works phase);*
- *A Local Centre (and supporting secondary local centres) on land up to 3.1ha comprising mixed-use residential/retail/leisure/community/employment/day nursery/food establishment uses (Local Centre Phase);*
- *Further non-residential floorspace on land up to 5ha comprising of office, commercial and industrial uses and general industrial and storage & distribution uses (Chalcroft Outfarm works and Fir Tree Farm Hub phases and partially within the Chalcroft Farm phase);*
- *A 3FE Primary School (Primary School Phase);*
- *Public open space including formal sports facilities and informal provisions (across Green Infrastructure Phases);*
- *Allotments, ecological, landscape and sustainable drainage works;*
- *Key infrastructure and utilities provision including new roads, footpaths, bridleways and cycle paths;*
- *Vehicular access from Allington Lane, Fir Tree Lane and Burnetts Lane with improvements to the existing road junction at Fir Tree Lane/Burnetts Lane; and*
- *Site preparation and demolition works All Matters Reserved Except Access.”*

A series of Reserved Matters submissions are being made to Eastleigh Borough Council for the detailed design of the development phases that were approved as part of the aforementioned outline planning permission.

This Reserved Matters submission principally comprises of the detailed design of the 3FE Primary School and the adjoining sports facilities, together with the following:

- Associated green infrastructure;
- Allotments, ecological, landscape and sustainable drainage works;
- Key infrastructure and utilities, including the provision of vehicular and pedestrian access, footpaths, and cycle paths.

The outline planning permission is subject to a total of 76 planning conditions.

In accordance with Condition No. 4 of the outline planning permission, this report provides details of the layout, scale, appearance, and landscaping of the site. In addition, this report also considers those

conditions that are relevant to the 3FE Primary School and adjoining sports facilities, which includes Conditions Nos.

“Condition No.24

Within 6 months of the commencement of development of each reserved matters phase (excluding site clearance), a final lighting design strategy for that phase for biodiversity, security and amenity shall be submitted to and approved in writing by the local planning authority. The strategy shall:

a) identify those areas/ecological features and the species they support that are particularly sensitive to artificial lighting and where artificial lighting is likely to cause disturbance in or around their breeding sites and resting places or along important routes used to access key areas of their territory, for example, for foraging; and

b) show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent the above species using their territory or having access to their breeding sites and resting places.

Unless otherwise agreed in writing by the Local Planning Authority, the lighting strategy shall broadly accord with the submitted Lighting Assessment Addendum ESSEN-09820 Rev P03 scheme, May 2021 and follow the advice and guidance of the Institute of Lighting Professional (ILP)'s publication "Guidance Notes for the Reduction of Obtrusive Light" and the Bat Conservation Trust and ILP Guidance Note 08/18 "Bats and artificial lighting in the UK. All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.

REASON:

To ensure that crepuscular and nocturnal animal species are not significantly disturbed by artificial lighting such that it adversely affects their breeding, roosting, foraging and commuting patterns and behaviour and to protect residential amenity and provide security measures and for compliance with Policy DM11 of the Eastleigh Borough Local Plan.

2.0 General

As part of this report, lighting level calculations have been included to confirm that the External lighting shall comply with the Institution of Lighting Professionals (ILP) guidance notes for the reduction of obtrusive light, 2021, Government Planning Guidelines and any site specific ecological reports.

External artificial lighting and light spill in the final design and during the construction will be designed in such a way as to avoid impacts on light-averse species through a sensitive lighting scheme that follows principles outlined in best practice guidance (Bat Conservation Trust and Institute of Lighting Engineers, 2023).

This should include minimal illumination of features bordering the site particularly at key times of year for foraging and commuting bats.

The proposed lighting design included limited uplighting to highlight the tree canopy to the front of the school as a decorative and welcoming feature lighting element, and that the uplight is minimal. Uplighting has been minimised as far as practicable and concentrated where there will be higher illumination levels due to street lighting to lessen the impact to local flora and fauna. ILP guidance does not impose an absolute prohibition where it is appropriately controlled and justified; In particular, ILP Guidance Note 01 (GN01/21 – Reduction of Obtrusive Light) states

“When lighting vertical structures such as advertising signs, direct light downwards wherever possible. If there is no alternative to up-lighting, as with much decorative lighting of buildings, then the use of luminaires with the correct optical distribution coupled where required with shields, baffles and louvres will help reduce spill light around and over the structure to a minimum.”

The proposed external luminaire types shall be in the form of lighting columns, bollards and building mounted luminaires.

Excessive light spill will be controlled by using proprietary shields and directional luminaires where possible, thereby minimising the amount of light pollution.

All luminaires and components shall be suitable for the saline coastal atmosphere.

External lighting shall be controlled via photocells and a 24/7 time switch.

A lighting calculation report is included in Appendix A.

A site wide external lighting drawing is included in Appendix B.

A luminaire schedule detailing the proposed luminaires is included in Appendix C.

3.0 Calculations

Calculations have been carried out using the Dialux Evo modelling programme. The calculation has been divided into multiple calculation zones and a whole site area which indicates the light spill outside of the calculation zones.

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

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

We have used the Guidance Notes for the Reduction of Obtrusive Light, to determine the lux level throughout the site. Considering the location of the site, we have classified it as suburban which falls under Category E3 (Medium District Brightness, well inhabited rural and urban settlements, small town centres of suburban locations).

3.1 Pedestrian Routes

For these areas a minimum average-maintained illuminance of 10 lux, with 0.25 uniformity required.

The calculation shows the following levels on each area:

- Walkway 1 (Main Building) – minimum average-maintained illuminance of 18.7 lux.
- Walkway 2 (Main Building) – minimum average-maintained illuminance of 15.5 lux.
- Walkway 3 (Main Building) – minimum average-maintained illuminance of 21.6 lux.
- Walkway 4 (Main Building) – minimum average-maintained illuminance of 20.0 lux.
- Walkway 5 (Main Building) – minimum average-maintained illuminance of 11.9 lux.
- Cycle route 1 – minimum average-maintained illuminance of 11.2 lux.
- Cycle route 2 – minimum average-maintained illuminance of 14.1 lux.
- Plaza walkway 1 – minimum average-maintained illuminance of 18.7 lux.
- Plaza walkway 2 – minimum average-maintained illuminance of 11.4 lux.
- Route to cycle / scooter store – minimum average-maintained illuminance of 13.0 lux.

3.2 External Parking Areas (Light Traffic, e.g. Parking Areas and Cycle Parks)

For these areas a minimum average-maintained illuminance of 5 lux, with 0.25 uniformity required.

The calculation shows the following levels on each area:

- Car Park (Top) – minimum average-maintained illuminance of 14.7 lux.
- Car Park (Bottom) – minimum average-maintained illuminance of 10.5 lux.
- Roundabout – minimum average-maintained illuminance of 15.1 lux.

3.3 Sport Facilities

For these areas a minimum average-maintained illuminance of 200 lux for MUGA and 180 lux for Pitch, with 0.5 uniformity required.

The calculation shows the following levels on each area:

- MUGA – average-maintained illuminance of 228 lux.
- Pitch – average-maintained illuminance of 188 lux.

3.4 Ecological Buffer, Bat Commuting Area and Overall Site Up-light

The calculation shows the following levels on each area:

- Ecological Buffer (Horizontal) – Maximum of 0.018 lux.
- Ecological Buffer (Vertical) – Maximum of 0.095 lux.
- Bat Commuting Area (Horizontal) – Maximum of 0.15 lux.
- Bat Commuting Area (Vertical) – Maximum of 0.005 lux.
- Overall Site Up-light – Maximum of 4.03 lux.

4.0 Conclusion

The calculated results indicate that a good balance was achieved between providing a well-lit environment and achieve satisfactory uniformity levels for health and safety reasons without prejudicing the amenities of residents living within the scheme ensuring that the light spill from any external lighting is minimised.

Lighting colour temperature is very important for the habitant of bats.

All public realm lighting will be specified with LED Amber light sources, with research showing that this impacts from the lighting on dark skies and ecological receptors.

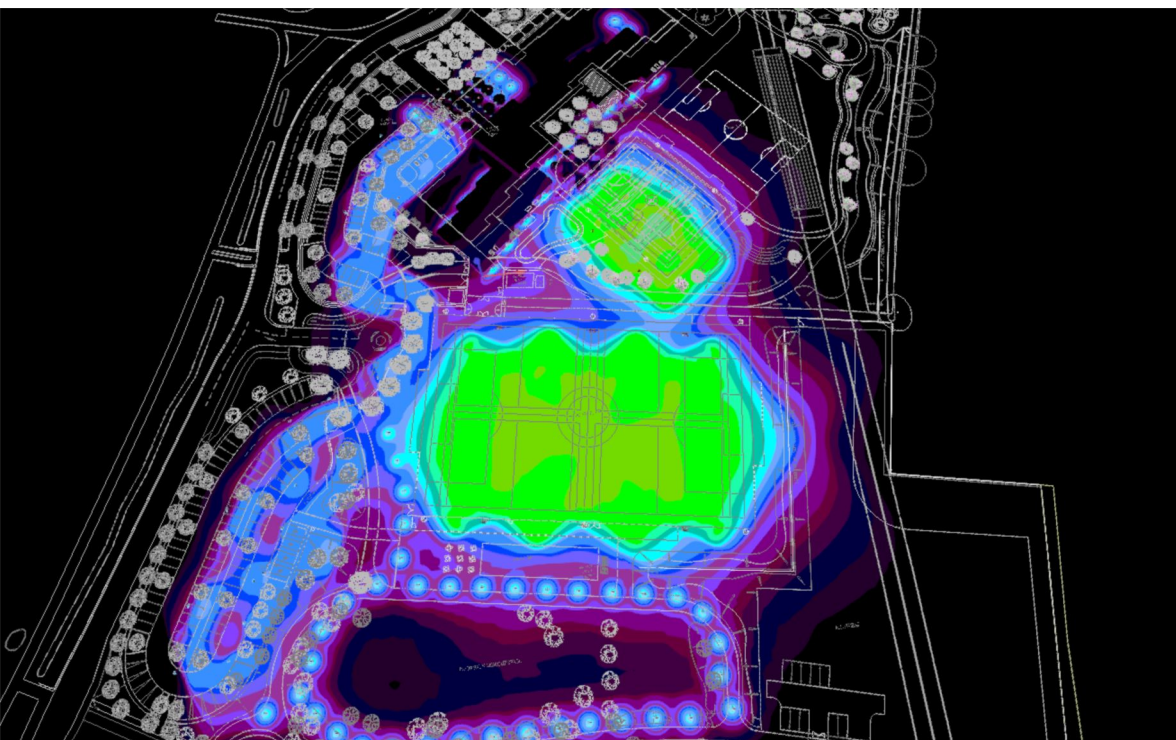
It is recommended to have warm white colour temperature (3000K or less) for building mounted lighting in commercial properties. The external lights at the main building towards the dark corridor are controlled via photocell and timeswitch combination for lights to turn off during the following time below:

Summer – 17:00hrs to switch ON and *20:00hrs to switch OFF

Winter – 15:00hrs to switch ON and *20:00hrs to switch OFF

*Note: 22:00hrs to switch OFF (community use)

Appendix A
Dialux Report



4666 - Horton Heath Primary School

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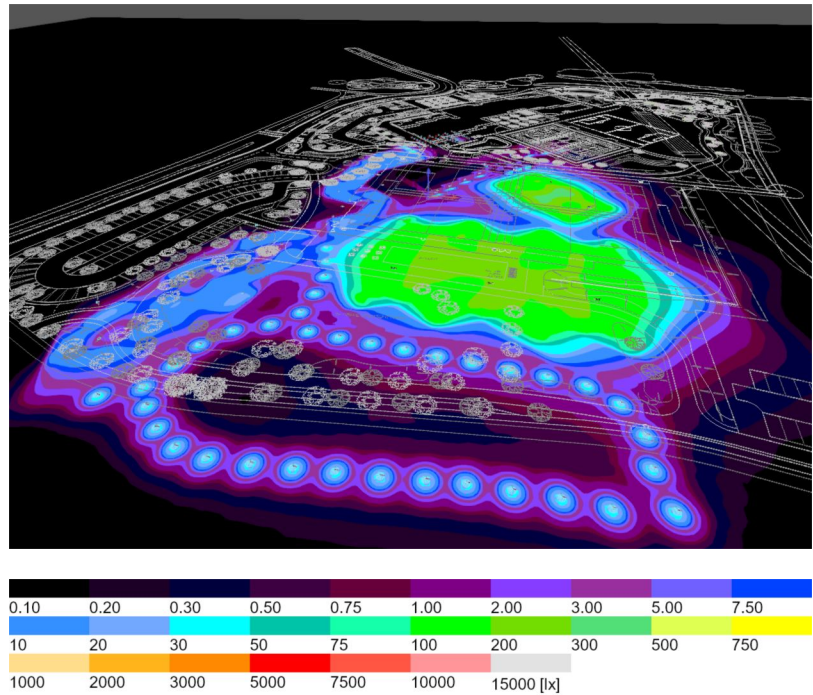
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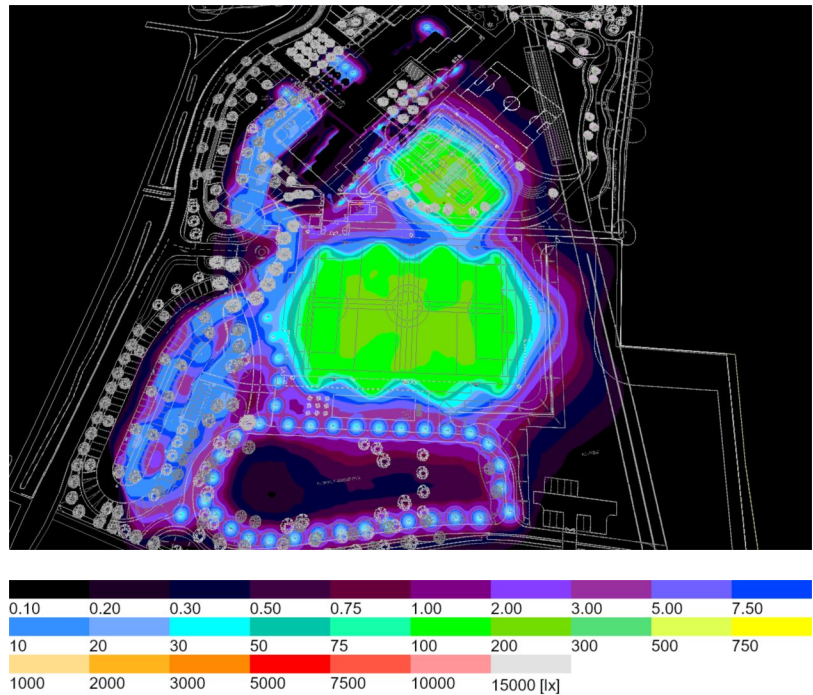
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Site Arieal View

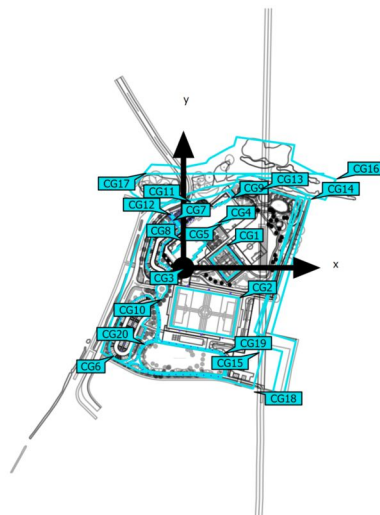


Site Top View



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
Bat Commuting Area (Horizontal) Perpendicular illuminance Height: 0.000 m	0.15 lx	0.009 lx	1.08 lx	0.060	0.008	CG14
Bat Commuting Area (Vertical) Perpendicular illuminance Height: 6.674 m	0.005 lx	0.000 lx	0.023 lx	-	0.00	CG15
Carpark (bottom) Perpendicular illuminance Height: 0.000 m	10.5 lx	2.62 lx	29.7 lx	0.25	0.088	CG6
Carpark (Top) Perpendicular illuminance Height: 0.000 m	14.7 lx	5.33 lx	42.3 lx	0.36	0.13	CG7
Cycle Route 1 Perpendicular illuminance Height: 0.000 m	11.2 lx	3.07 lx	32.7 lx	0.27	0.094	CG19
Cycle Route 2 Perpendicular illuminance Height: 0.000 m	14.1 lx	3.55 lx	31.9 lx	0.25	0.11	CG20
Cycle/ Scooter Store Perpendicular illuminance Height: 0.000 m	13.0 lx	3.40 lx	30.0 lx	0.26	0.11	CG13
Ecological Buffer (Horizontal) Perpendicular illuminance Height: 0.000 m	0.018 lx	0.001 lx	1.47 lx	0.056	0.001	CG16
Ecological Buffer (Vertical) Perpendicular illuminance Height: 0.000 m	0.095 lx	0.00 lx	0.37 lx	0.00	0.00	CG17
MUGA Perpendicular illuminance Height: 0.000 m	228 lx	118 lx	333 lx	0.52	0.35	CG1
Pitch Perpendicular illuminance Height: 0.000 m	188 lx	104 lx	272 lx	0.55	0.38	CG2

Site 1 (Light scene 1)

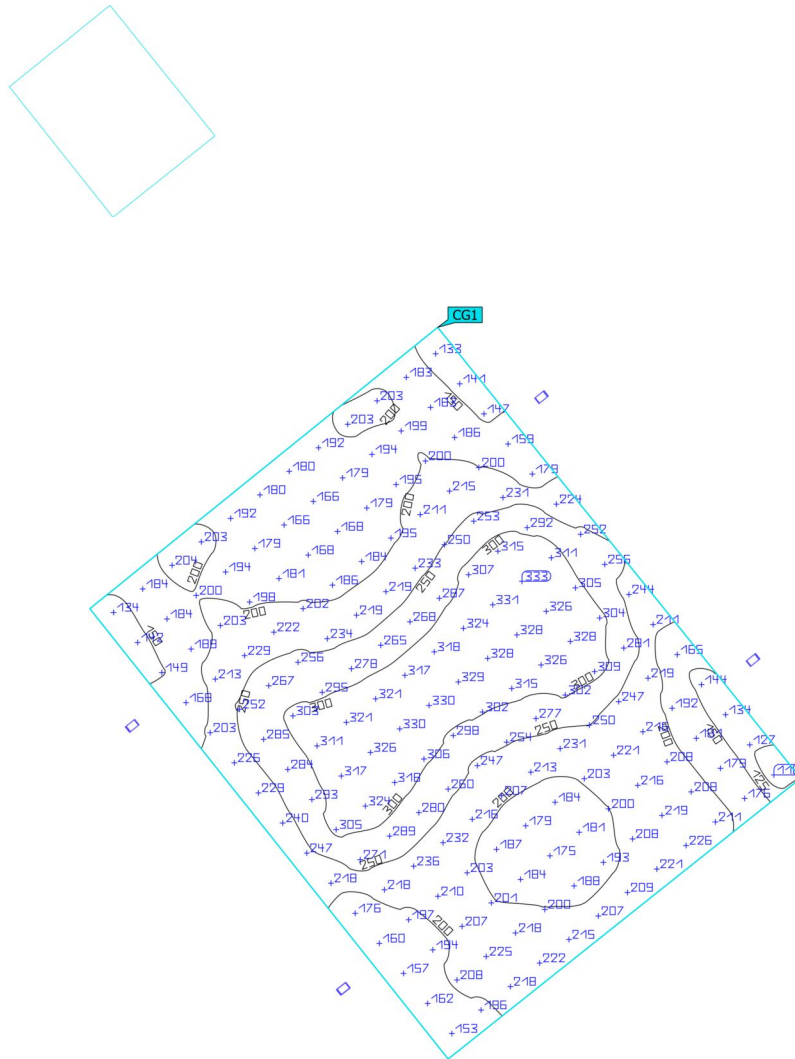
Calculation objects

Plaza and entrance walkway 2 Perpendicular illuminance Height: 0.000 m	11.4 lx	4.17 lx	37.3 lx	0.37	0.11	CG12
Plaza and entrance walkway1 Perpendicular illuminance Height: 0.000 m	18.7 lx	5.18 lx	32.5 lx	0.28	0.16	CG11
Roundabout Perpendicular illuminance Height: 0.000 m	15.1 lx	7.08 lx	23.3 lx	0.47	0.30	CG10
Site Uplight Perpendicular illuminance Height: 16.000 m	4.03 lx	0.023 lx	68.7 lx	0.006	0.000	CG18
Walkway 1 (Main Building) Perpendicular illuminance Height: 0.000 m	18.7 lx	5.55 lx	33.7 lx	0.30	0.16	CG9
Walkway 2 (Main Building) Perpendicular illuminance Height: 0.000 m	15.5 lx	4.08 lx	34.4 lx	0.26	0.12	CG5
Walkway 3 (Main Building) Perpendicular illuminance Height: 0.000 m	21.6 lx	6.47 lx	35.4 lx	0.30	0.18	CG4
Walkway 4 (Main Building) Perpendicular illuminance Height: 0.000 m	20.0 lx	5.27 lx	49.6 lx	0.26	0.11	CG3
Walkway 5 (Main Building) Perpendicular illuminance Height: 0.000 m	11.9 lx	3.08 lx	26.2 lx	0.26	0.12	CG8

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

Site 1 (Light scene 1)

MUGA

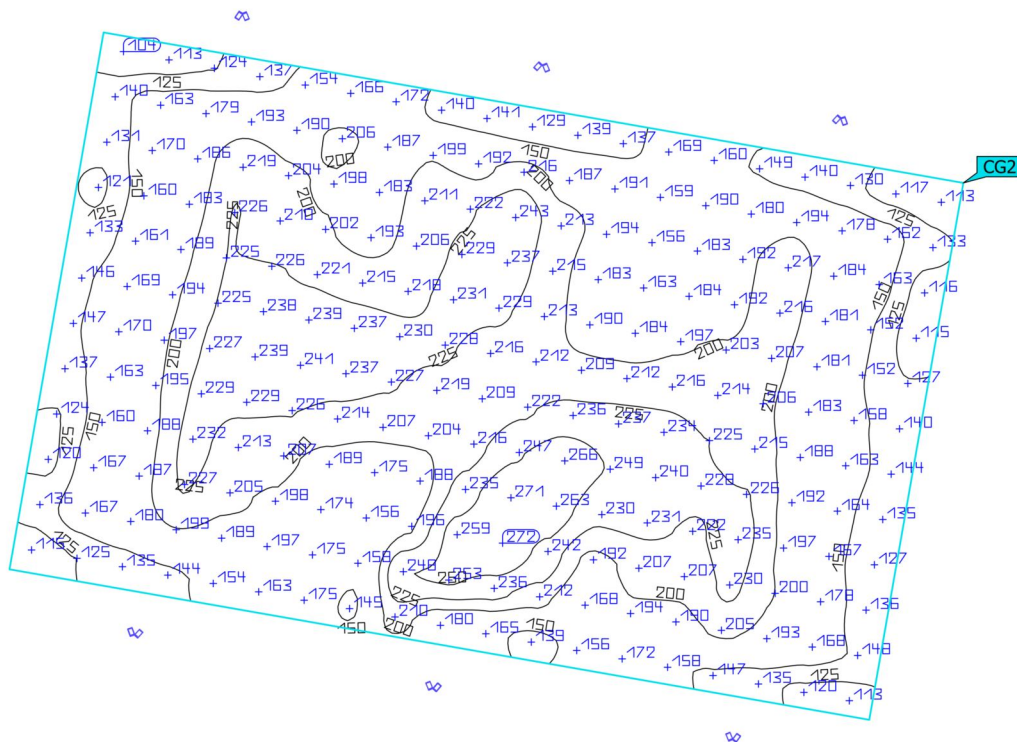
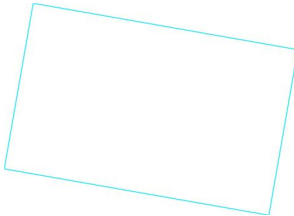


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
MUGA Perpendicular illuminance Height: 0.000 m	228 lx	118 lx	333 lx	0.52	0.35	CG1

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

Site 1 (Light scene 1)

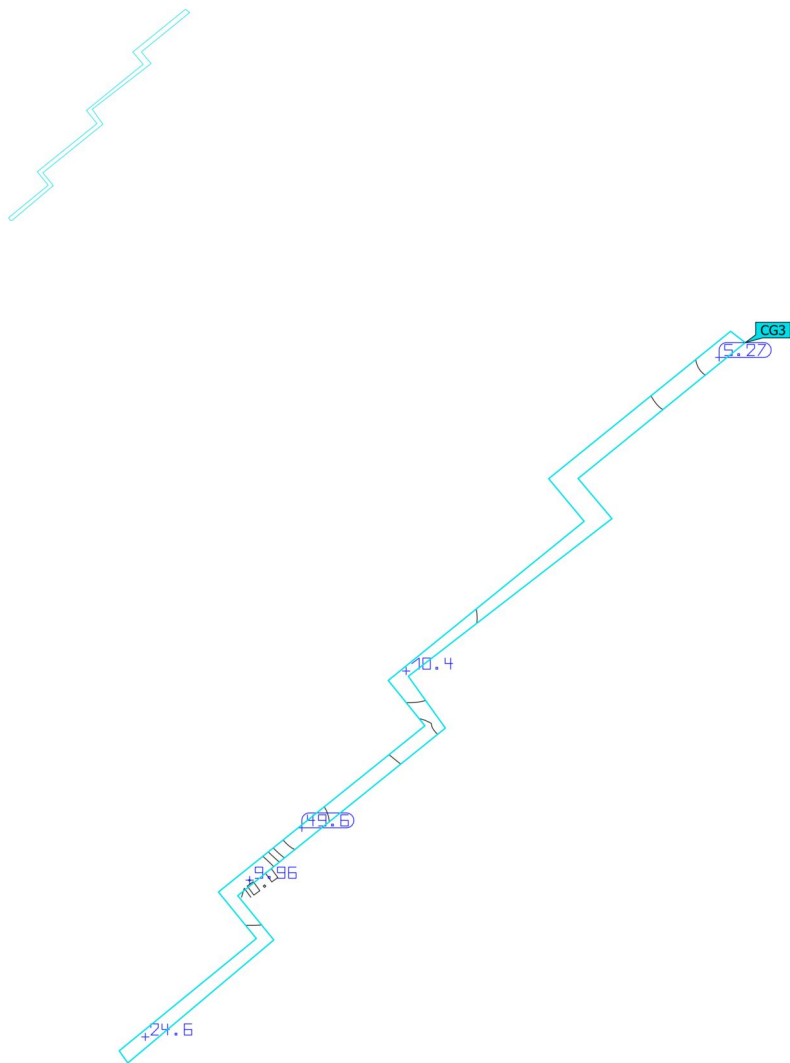
Pitch



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Pitch	188 lx	104 lx	272 lx	0.55	0.38	CG2
Perpendicular illuminance						
Height: 0.000 m						

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

Site 1 (Light scene 1)
Walkway 4 (Main Building)

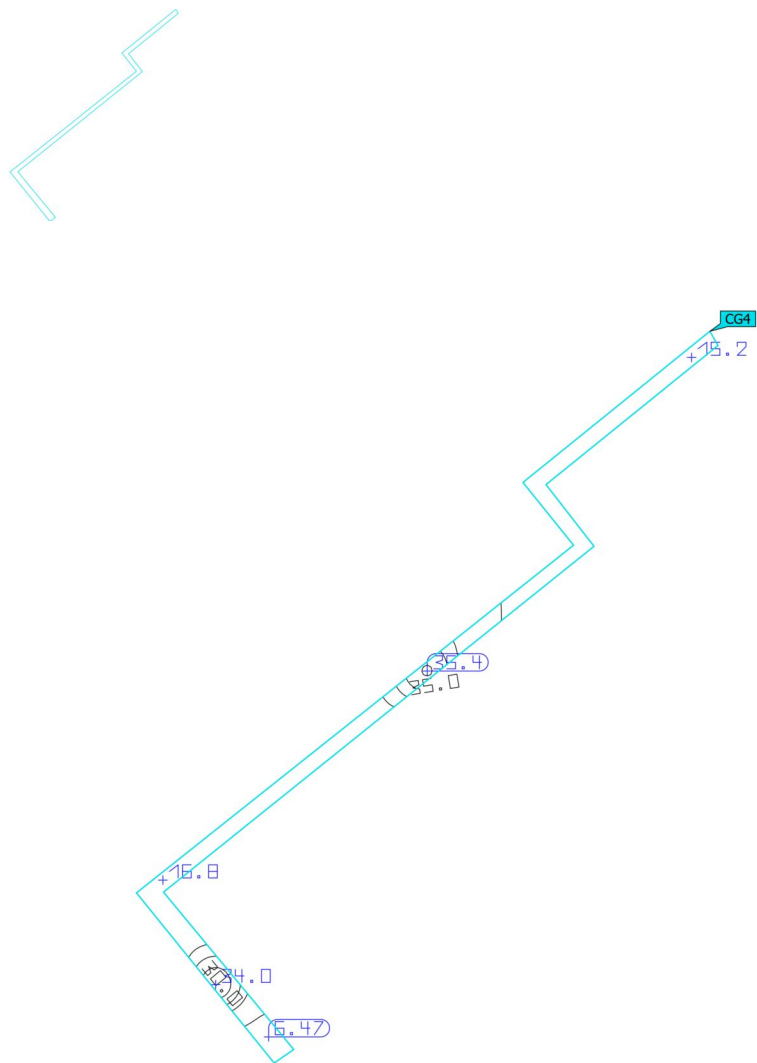


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Walkway 4 (Main Building) Perpendicular illuminance Height: 0.000 m	20.0 lx	5.27 lx	49.6 lx	0.26	0.11	CG3

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

Site 1 (Light scene 1)

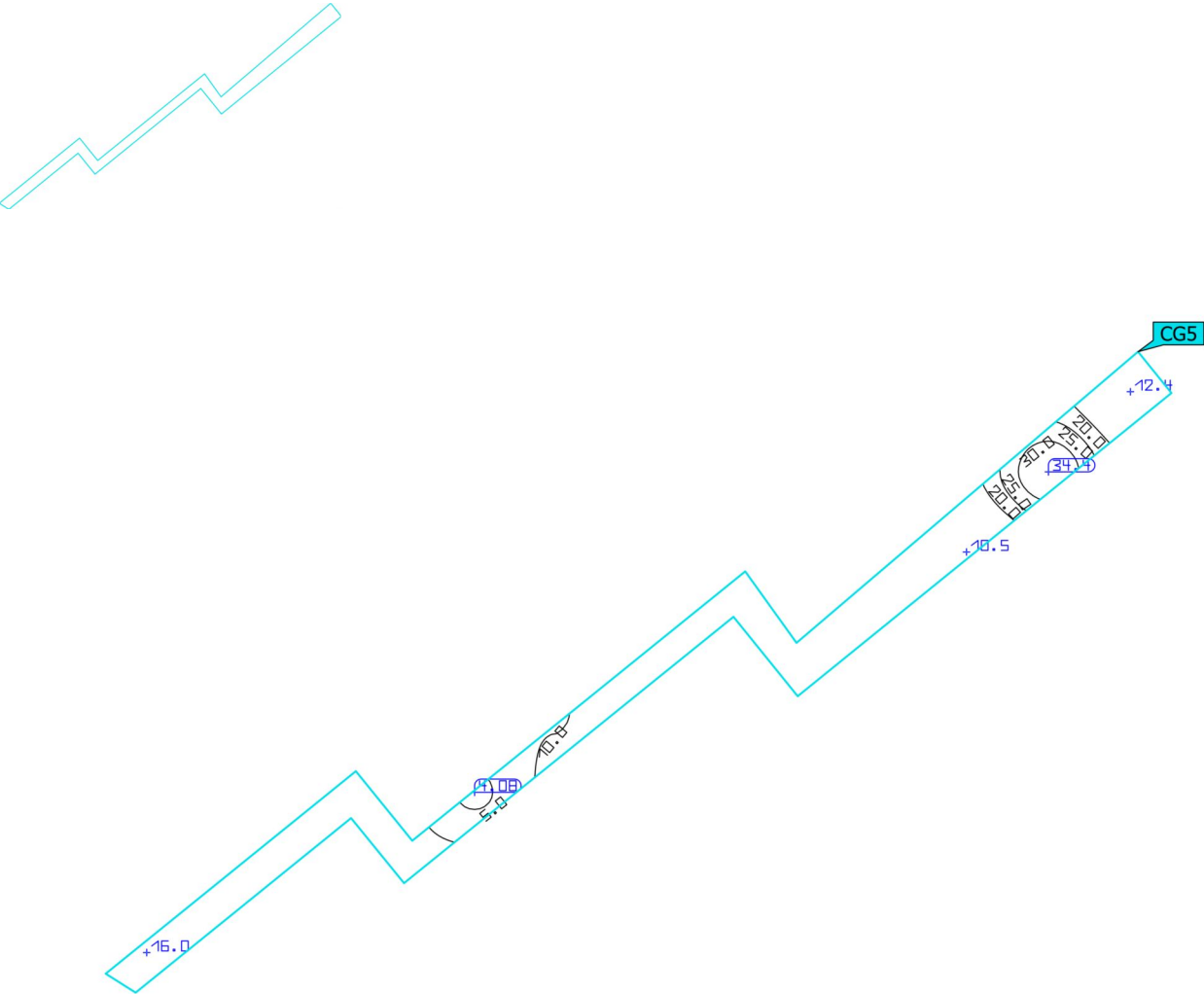
Walkway 3 (Main Building)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Walkway 3 (Main Building) Perpendicular illuminance Height: 0.000 m	21.6 lx	6.47 lx	35.4 lx	0.30	0.18	CG4

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

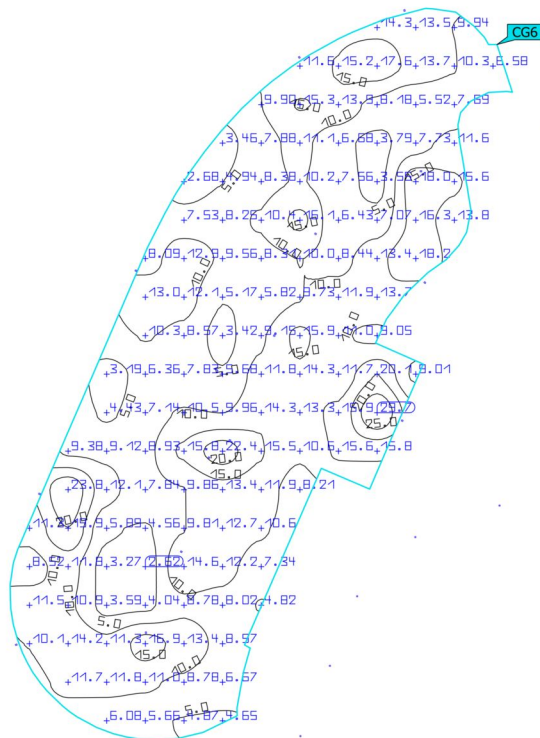
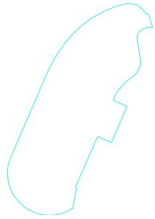
Site 1 (Light scene 1)
Walkway 2 (Main Building)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Walkway 2 (Main Building) Perpendicular illuminance Height: 0.000 m	15.5 lx	4.08 lx	34.4 lx	0.26	0.12	CG5

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

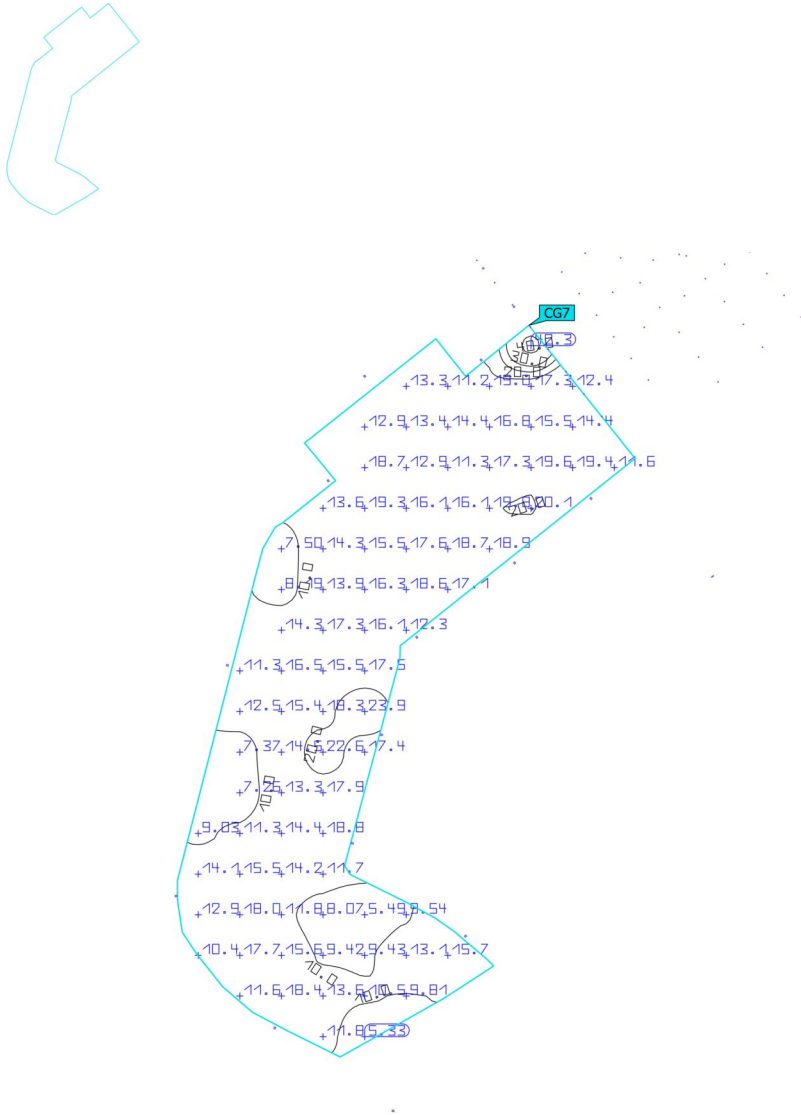
Site 1 (Light scene 1)

Carpark (bottom)

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Carpark (bottom) Perpendicular illuminance Height: 0.000 m	10.5 lx	2.62 lx	29.7 lx	0.25	0.088	CG6

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

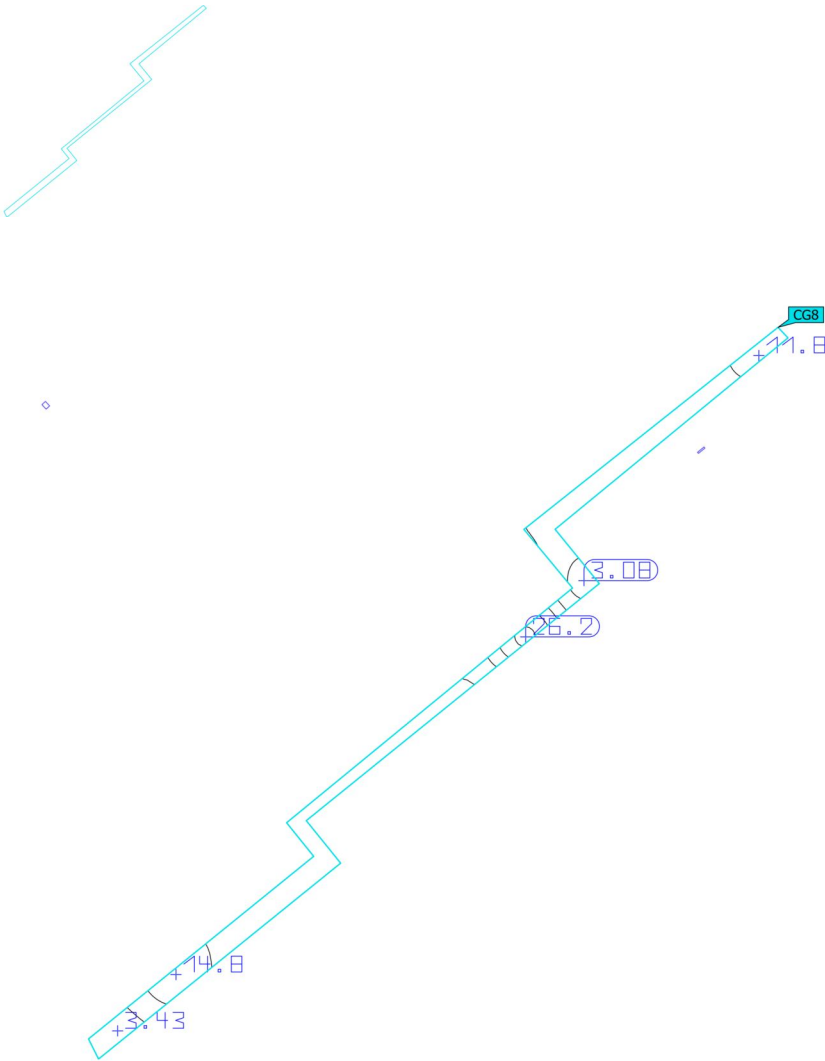
Site 1 (Light scene 1)

Carpark (Top)

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Carpark (Top) Perpendicular illuminance Height: 0.000 m	14.7 lx	5.33 lx	42.3 lx	0.36	0.13	CG7

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

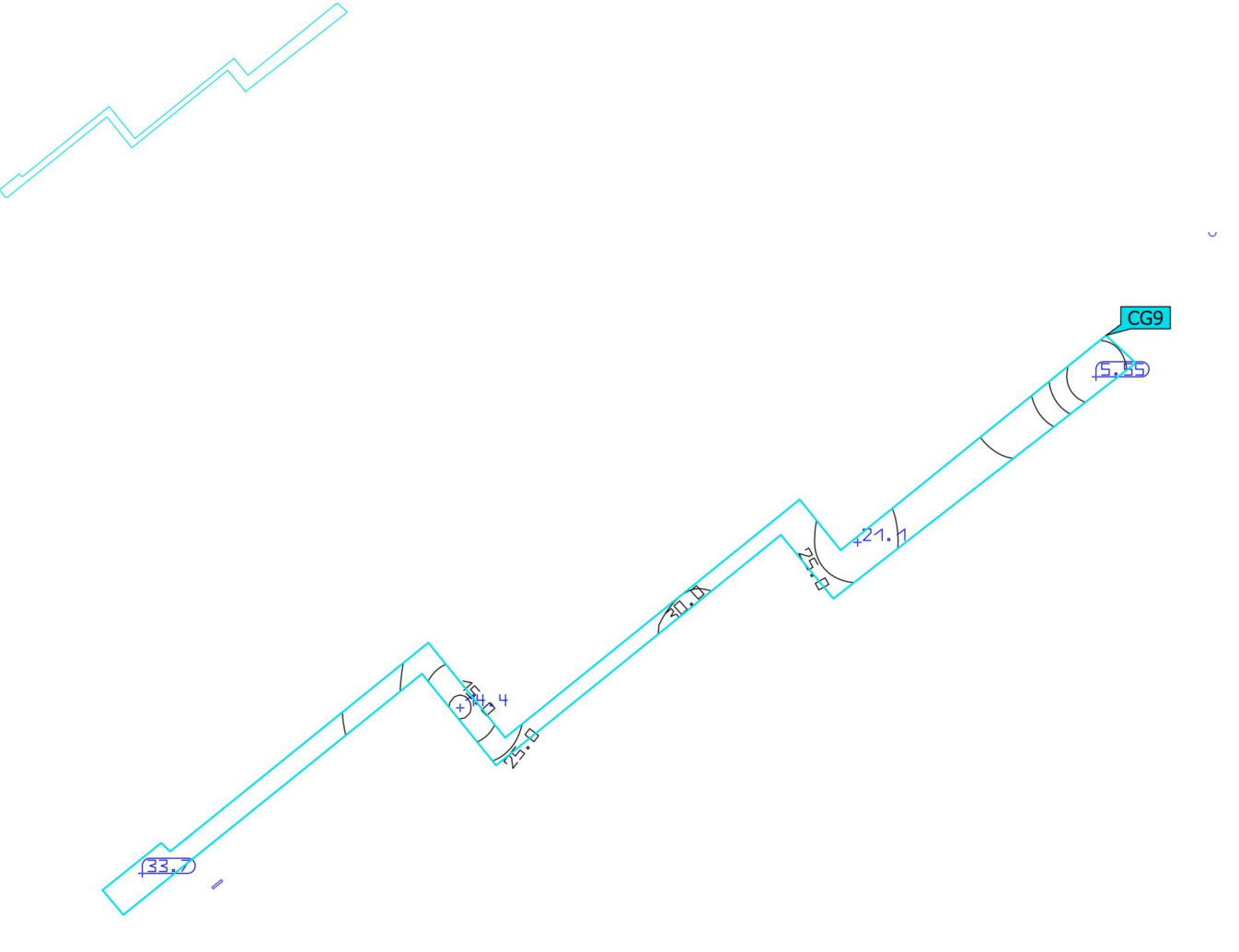
Site 1 (Light scene 1)
Walkway 5 (Main Building)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Walkway 5 (Main Building) Perpendicular illuminance Height: 0.000 m	11.9 lx	3.08 lx	26.2 lx	0.26	0.12	CG8

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

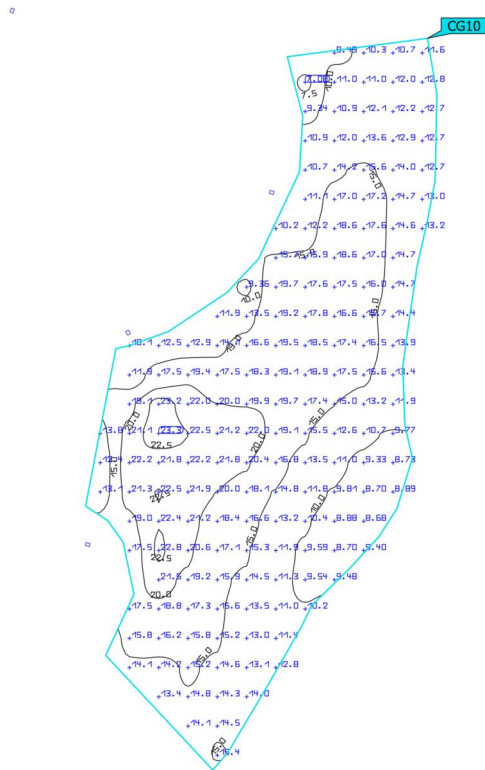
Site 1 (Light scene 1)
Walkway 1 (Main Building)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Walkway 1 (Main Building) Perpendicular illuminance Height: 0.000 m	18.7 lx	5.55 lx	33.7 lx	0.30	0.16	CG9

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

Site 1 (Light scene 1)

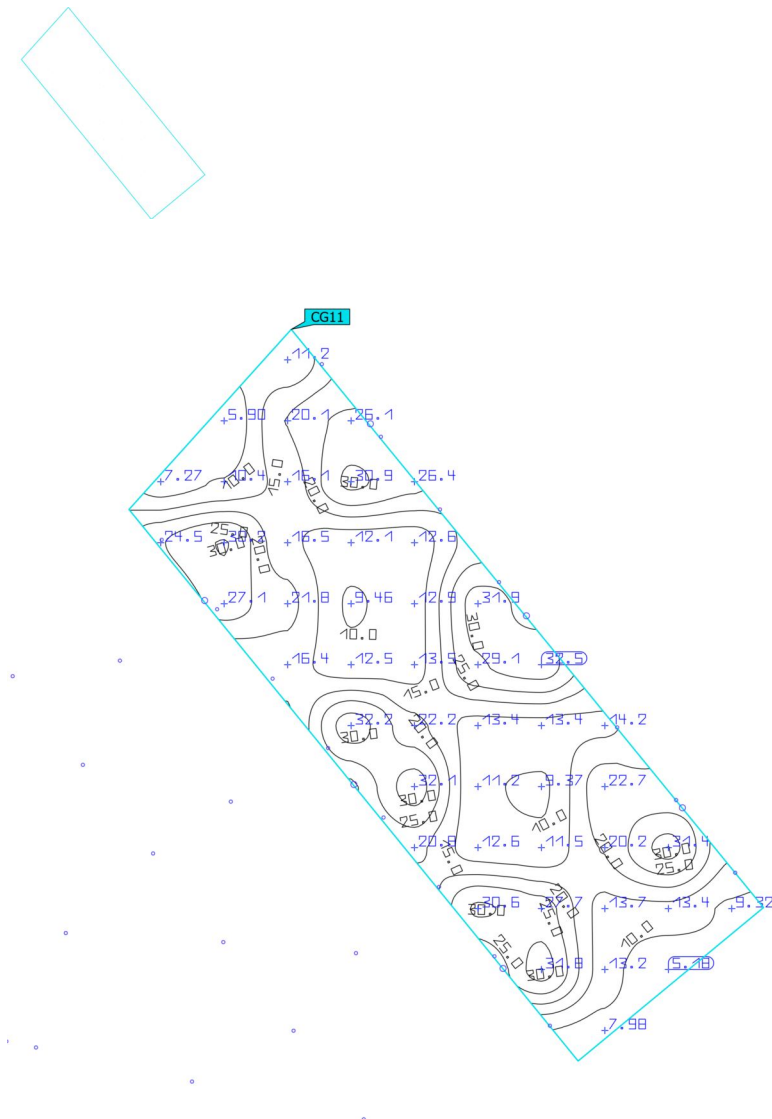
Roundabout

Properties	$\bar{E}$	E_{min}	E_{max}	$U_0 (g_1)$	g_2	Index
Roundabout Perpendicular illuminance Height: 0.000 m	15.1 lx	7.08 lx	23.3 lx	0.47	0.30	CG10

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

Site 1 (Light scene 1)

Plaza and entrance walkway1

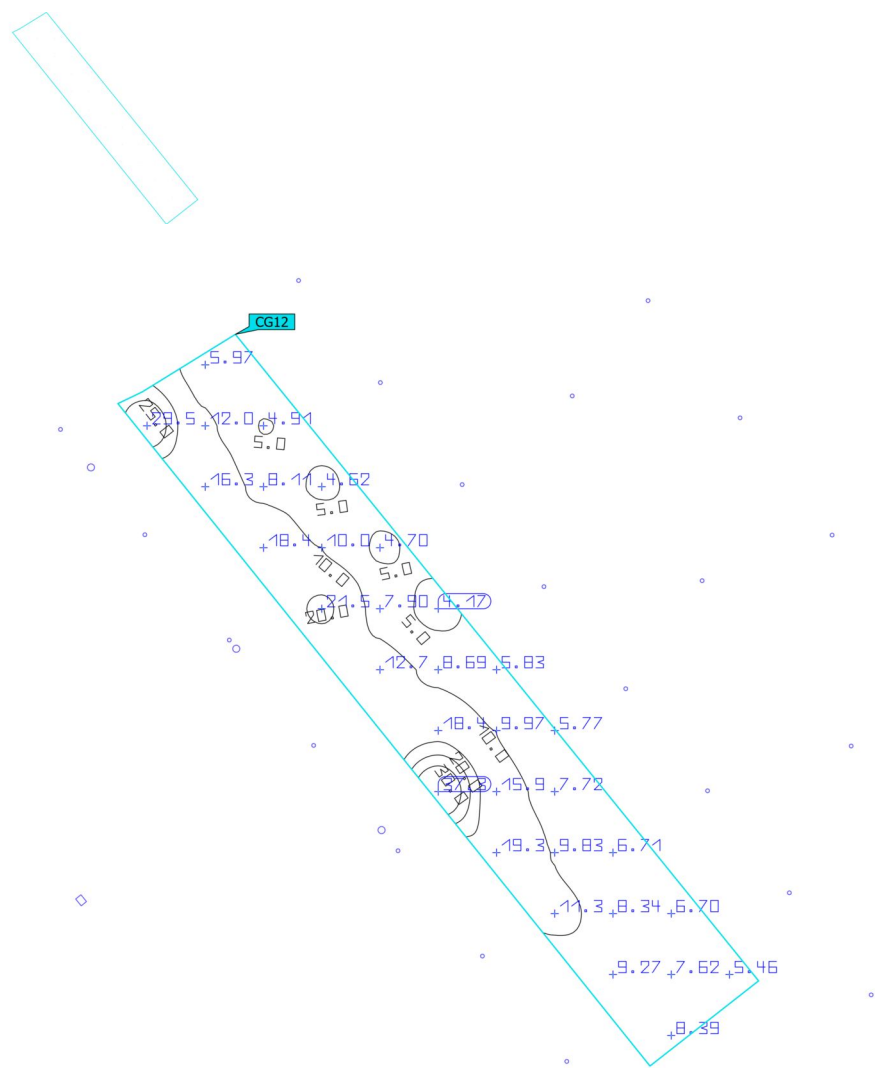


Properties	E	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Plaza and entrance walkway1 Perpendicular illuminance Height: 0.000 m	18.7 lx	5.18 lx	32.5 lx	0.28	0.16	CG11

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

Site 1 (Light scene 1)

Plaza and entrance walkway 2

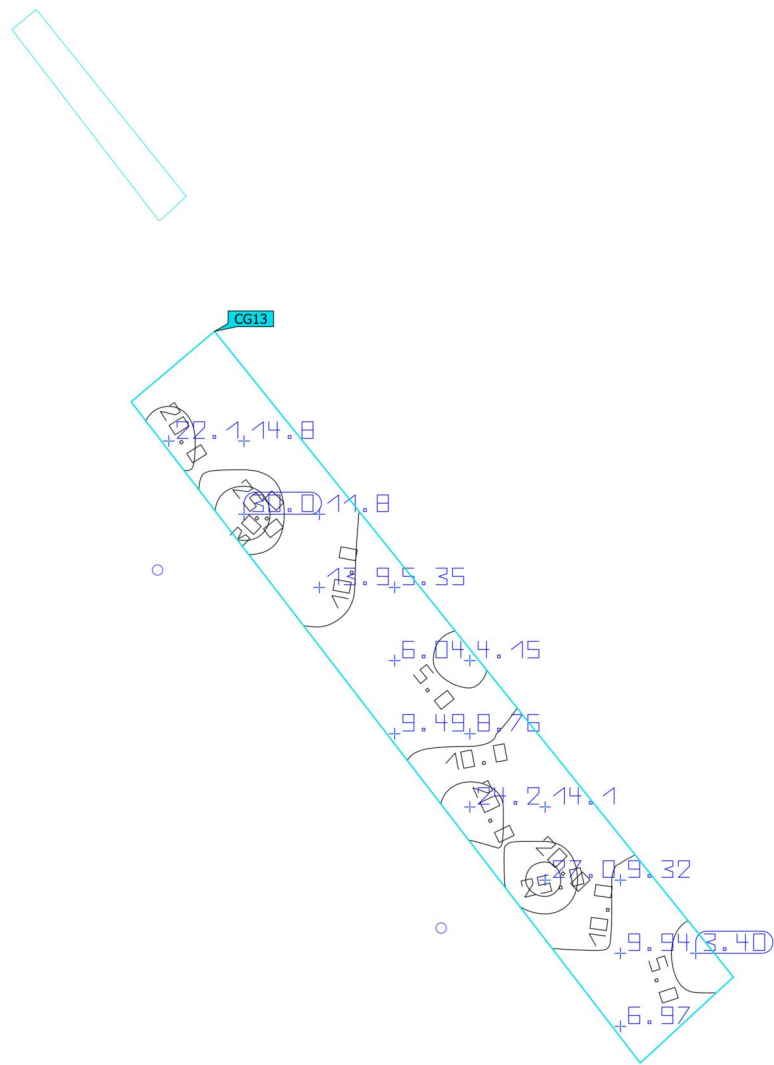


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Plaza and entrance walkway 2	11.4 lx	4.17 lx	37.3 lx	0.37	0.11	CG12
Perpendicular illuminance						
Height: 0.000 m						

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

Site 1 (Light scene 1)

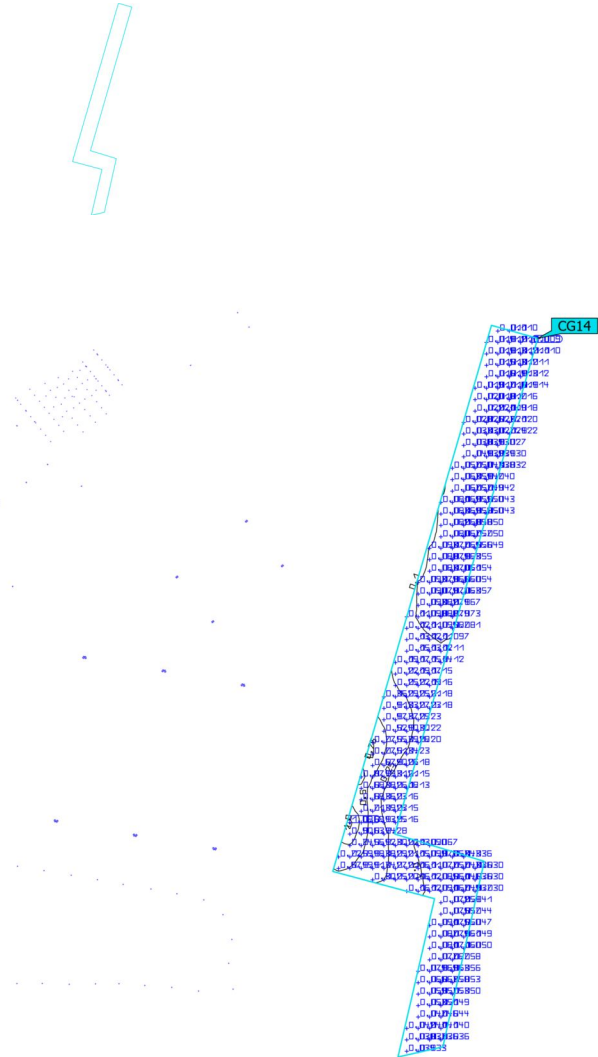
Cycle/ Scooter Store



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Cycle/ Scooter Store Perpendicular illuminance Height: 0.000 m	13.0 lx	3.40 lx	30.0 lx	0.26	0.11	CG13

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

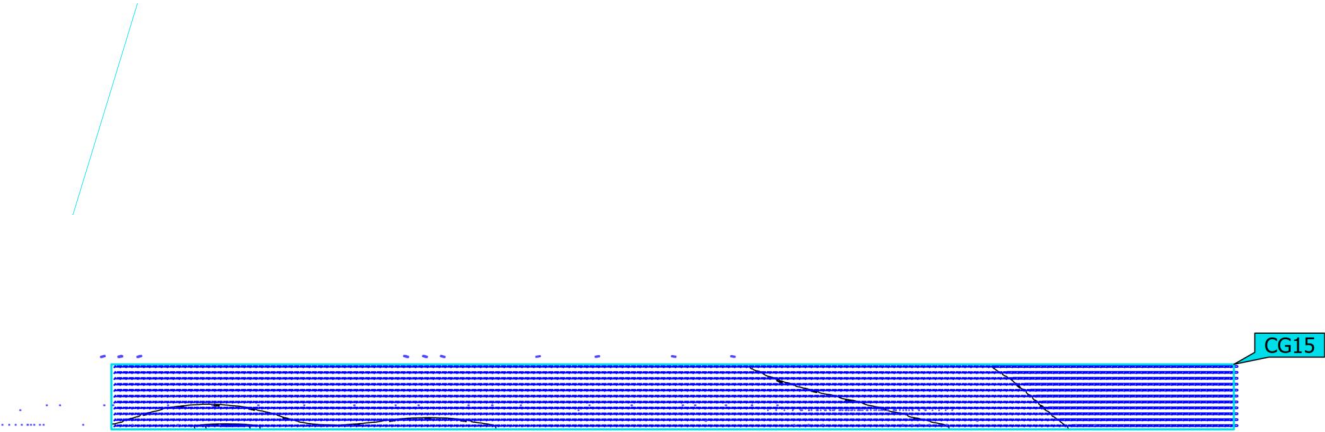
Site 1 (Light scene 1)
Bat Commuting Area (Horizontal)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Bat Commuting Area (Horizontal) Perpendicular illuminance Height: 0.000 m	0.15 lx	0.009 lx	1.08 lx	0.060	0.008	CG14

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

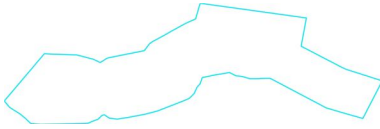
Site 1 (Light scene 1)
Bat Commuting Area (Vertical)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Bat Commuting Area (Vertical) Perpendicular illuminance Height: 6.674 m	0.005 lx	0.000 lx	0.023 lx	-	0.00	CG15

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

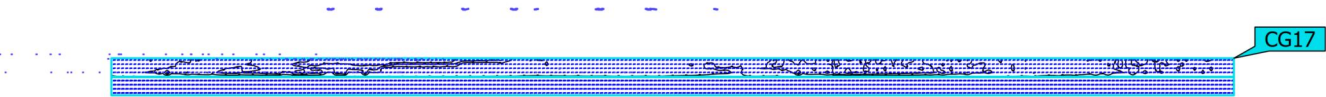
Site 1 (Light scene 1)

Ecological Buffer (Horizontal)

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Ecological Buffer (Horizontal) Perpendicular illuminance Height: 0.000 m	0.018 lx	0.001 lx	1.47 lx	0.056	0.001	CG16

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

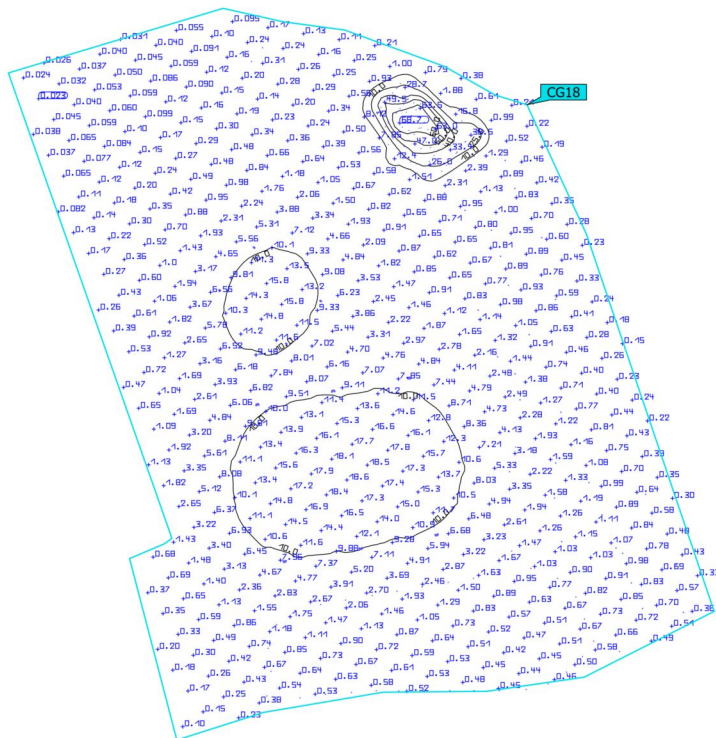
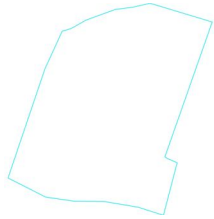
Site 1 (Light scene 1)
Ecological Buffer (Vertical)



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Ecological Buffer (Vertical) Perpendicular illuminance Height: 0.000 m	0.095 lx	0.00 lx	0.37 lx	0.00	0.00	CG17

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

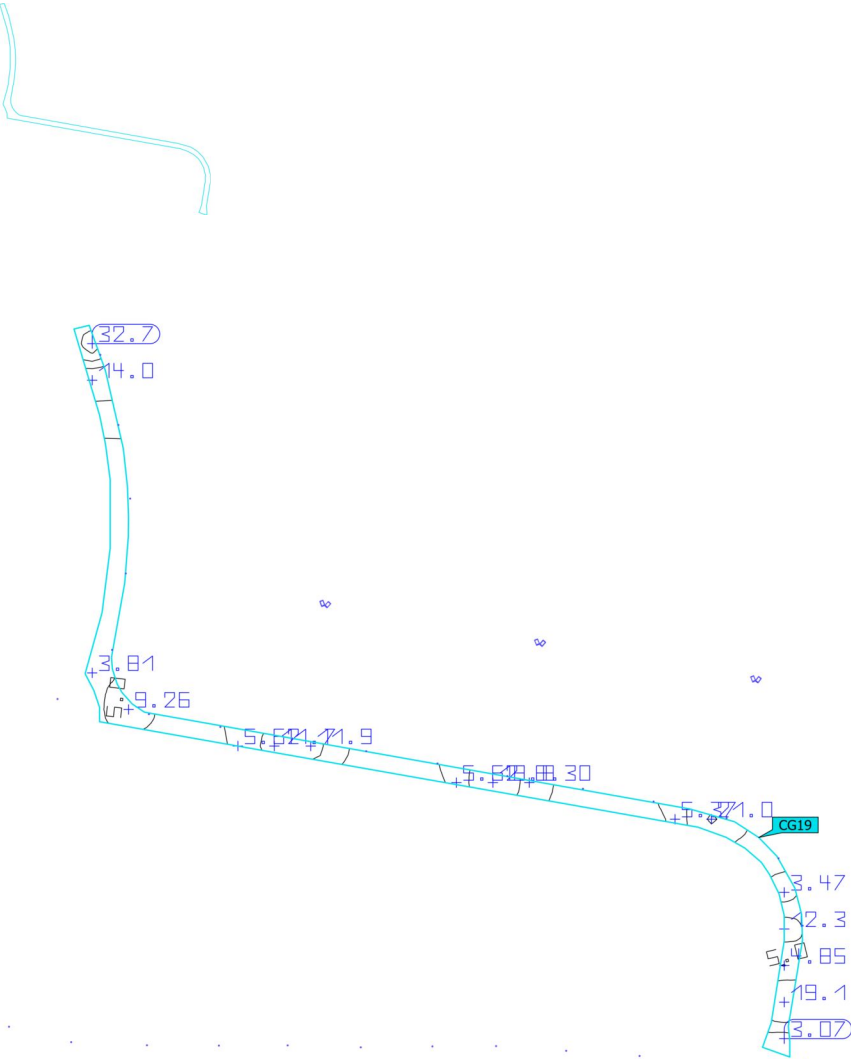
Site 1 (Light scene 1)

Site Uplight

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Site Uplight Perpendicular illuminance Height: 16.000 m	4.03 lx	0.023 lx	68.7 lx	0.006	0.000	CG18

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

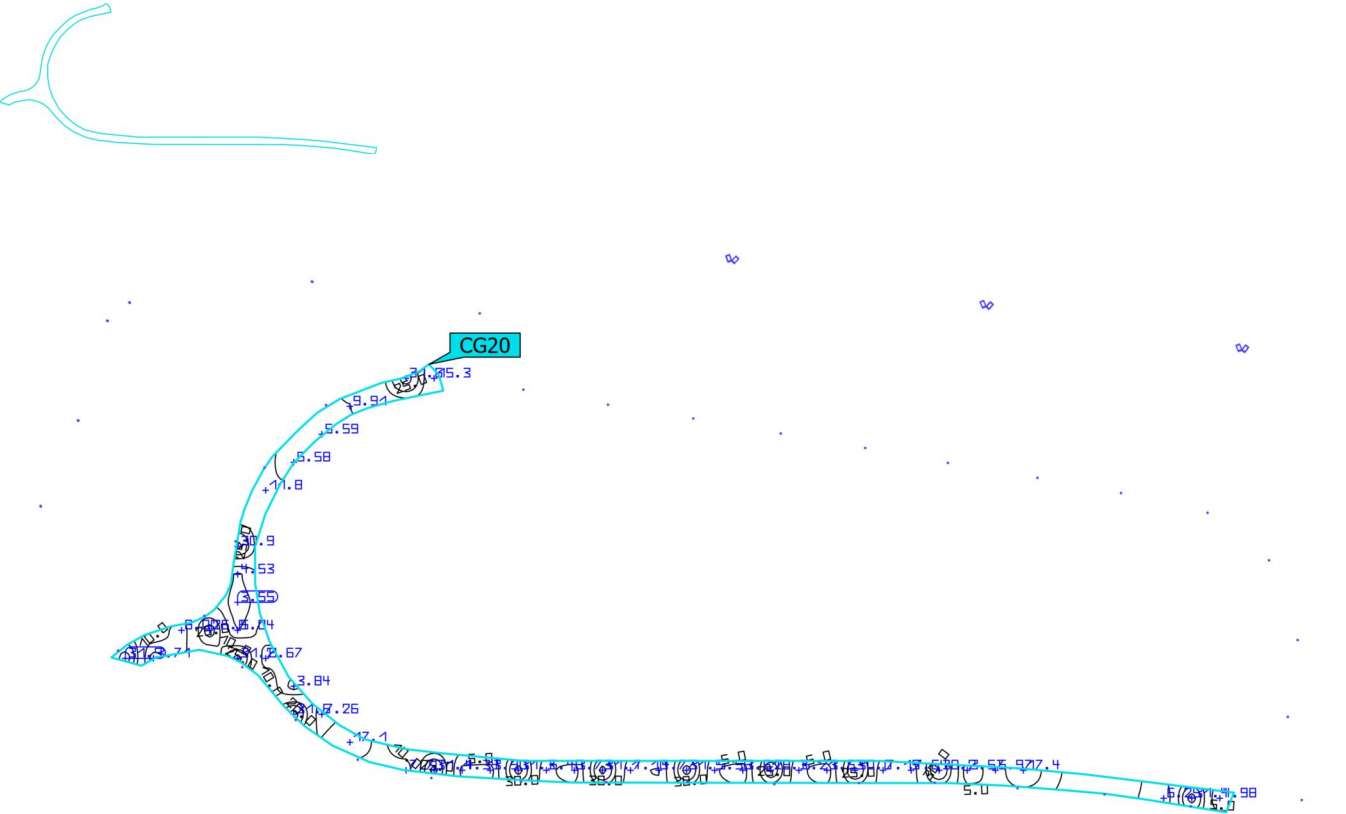
Site 1 (Light scene 1)
Cycle Route 1



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Cycle Route 1	11.2 lx	3.07 lx	32.7 lx	0.27	0.094	CG19
Perpendicular illuminance						
Height: 0.000 m						

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

Site 1 (Light scene 1)
Cycle Route 2



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Cycle Route 2	14.1 lx	3.55 lx	31.9 lx	0.25	0.11	CG20
Perpendicular illuminance						
Height: 0.000 m						

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

Glossary

A

A	Formula symbol for a surface in the geometry
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B

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

CCT	(Engl. correlated color temperature) Body temperature of a thermal radiator which serves to describe its light color. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light colour. The color temperature of gas-discharge lamps and semi-conductors are termed "correlated color temperature" in contrast to the color temperature of thermal radiators. Allocation of the light colors to the color temperature ranges acc. to EN 12464-1: Light color - color temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
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Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
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Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
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CRI	(Engl. color rendering index) Designation for the color rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general color rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colors (see DIN 6169 or CIE 1974) to a reference light source.
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Glossary

D

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

E

Energy evaluation	Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx. The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight. The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.
Environmental zones	The assessment of intrusive light and light immission depends on the environment of the lighting installation. Depending on the standard, 4-6 different zones are defined, ranging from highly protected areas in natural settings to urban areas, commercial zones, and industrial zones.
Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %

Glossary

G

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

I

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

K

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

L

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

Glossary

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

Glossary

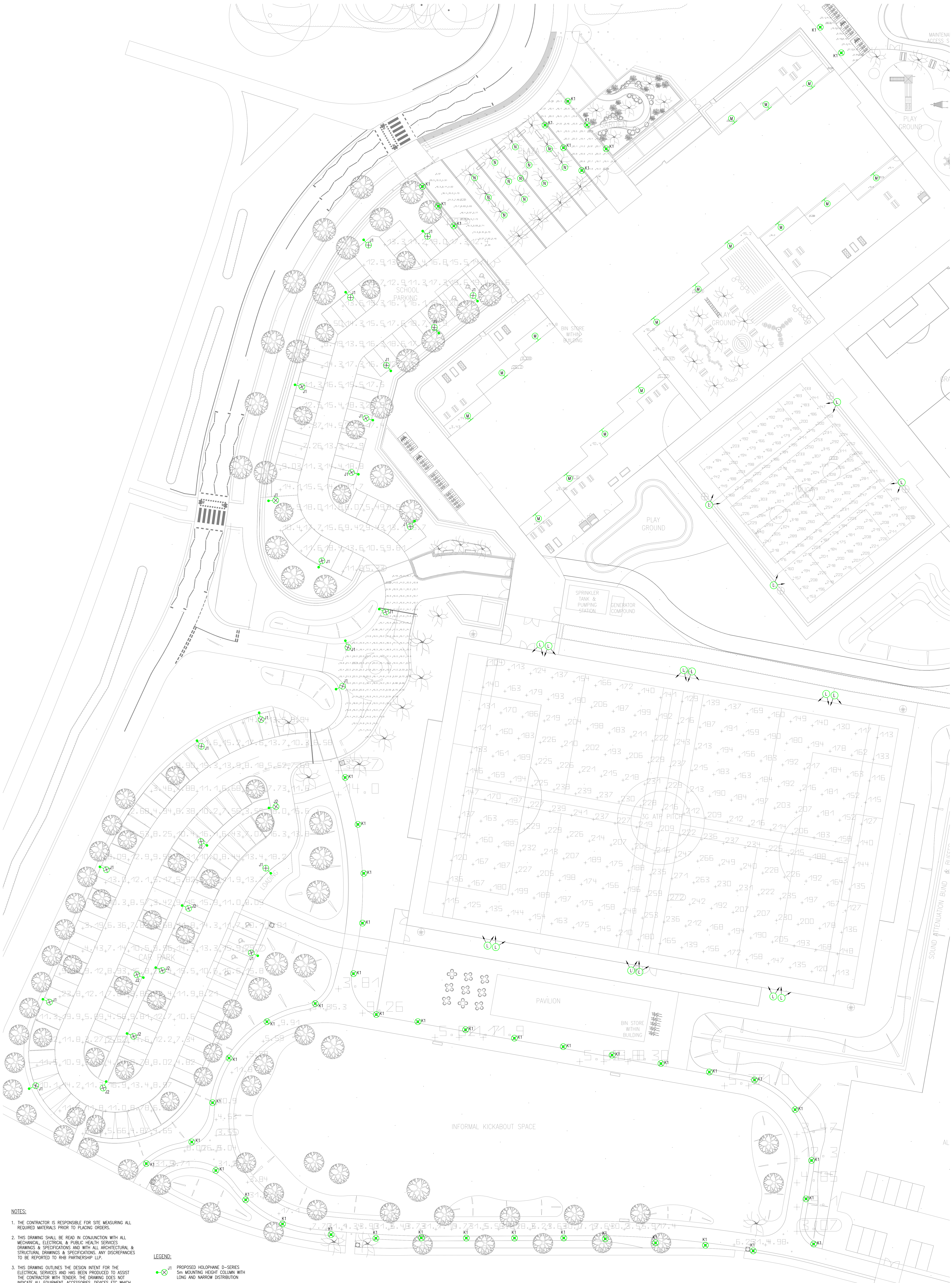
R

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

Glossary

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

Appendix B
External Lighting Layout



NOTES:

1. THE CONTRACTOR IS RESPONSIBLE FOR SITE MEASURING ALL REQUIRED MATERIALS PRIOR TO PLACING ORDERS.
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL MECHANICAL, ELECTRICAL & PUBLIC HEALTH SERVICES DRAWINGS & SPECIFICATIONS AND WITH ALL ARCHITECTURAL & STRUCTURAL DRAWINGS & SPECIFICATIONS. ANY DISCREPANCIES TO BE REPORTED TO RHB PARTNERSHIP LLP.
3. THIS DRAWING OUTLINES THE DESIGN INTENT FOR THE ELECTRICAL SERVICES AND HAS BEEN PRODUCED TO ASSIST THE CONTRACTOR WITH TENDER. THE DRAWING DOES NOT INDICATE ALL EQUIPMENT, ACCESSORIES, DEVICES ETC WHICH MAY BE REQUIRED FOR THE SATISFACTORY DESIGN. INSTALLATION AND COMPLETION OF THE PROJECT AND SHALL THEREFORE BE USED FOR GUIDANCE PURPOSES ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INCLUDING EVERYTHING WITHIN HIS TENDER NECESSARY FOR SATISFACTORY COMPLETION.
4. ALL ELECTRICAL SERVICES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF BS 7671 (INCLUDING AMENDMENTS)-REQUIREMENTS FOR ELECTRICAL INSTALLATIONS & WITH OTHER RELEVANT STANDARDS & CODES OF PRACTICE.
5. THE ROUTING OF ELECTRICAL SERVICES SHALL BE CO-ORDINATED WITH THE ROUTING OF MECHANICAL & PUBLIC HEALTH SERVICES & WITH STRUCTURAL & ARCHITECTURAL ELEMENTS.
6. DUCTING IS CURRENTLY IN ABEYANCE & WILL BE CONFIRMED FOLLOWING AGREEMENT ON THE FEEDER PILLAR LOCATION.

LEGEND:

- J1 PROPOSED HOLOPHANE D-SERIES 5m MOUNTING HEIGHT COLUMN WITH LONG AND NARROW DISTRIBUTION
- J2 PROPOSED HOLOPHANE D-SERIES 5m MOUNTING HEIGHT COLUMN WITH FORWARD AND THROW DISTRIBUTION
- K1 PROPOSED THORN SLIM BOLLARD ROOT MOUNTED
- L PROPOSED THORN ALTS GS 288L COLUMN MOUNTED 15m WITH BASE HINGED MAST
- M PROPOSED SEMITA URBAN WALL MOUNTED LIGHT
- N PROPOSED TREE RECESSED FLOOR LIGHT

RISK SCHEDULE	
ITEM	DESCRIPTION OF RISK
△	SPECIFIC HEALTH AND SAFETY RISKS ASSOCIATED WITH THIS DRAWING ARE HIGHLIGHTED WITH THE CAUTION SYMBOL ADJUNCT TO THE ITEM OF RISK. PLEASE REFER TO RISK SCHEDULE CONTAINED ON INDIVIDUAL DRAWINGS.
	UNLESS HIGHLIGHTED THERE ARE NO SPECIFIC HEALTH AND SAFETY RISKS ASSOCIATED WITH THIS DRAWING, AS A DIRECT RESULT OF OUR DESIGN, APART FROM THE COMMON ISSUES ASSOCIATED WITH CONSTRUCTION THAT WILL NEED TO BE ASSESSED BY A COMPETENT CONTRACTOR PRIOR TO THE UNDERTAKING OF ANY WORK.

PI	12/06/26	ISSUED FOR INFORMATION	C2
REV	DATE	DESCRIPTION	NAME

CLIENT:
EASTLEIGH BOROUGH COUNCIL



ARCHITECT:
RE-FORMAT

PROJECT:
ONE HORTON HEATH SCHOOL

TITLE:
SITE
EXTERNAL LIGHTING LAYOUT

DESIGNED BY:
CC

DRAWN BY:
ML

CHECKED:
ML

RHB REF:
4666

DATE:
JUNE 2026

SCALE:
1:250

(AO)

DRAWING NO:
OHH-RHB-XX-XX-DR-C-4003-P1

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Appendix C
Proposed Luminaire Schedule



1. Schedule of Luminaires

Notes:

1. All lamps shall be colour temperature 3000K with a colour rendering of group 1B (>RA80) unless stated otherwise.
2. Any luminaire reference may be suffixed with the letter 'E'. This denotes an integral maintained 3 hour emergency version of the luminaire as described.
3. The description of any luminaire shall be deemed to include any additional fixing items required to suit the mounting of the luminaire.
4. All LED luminaires without integral drivers shall be provided with appropriate remote drivers supplied by the luminaire manufacturer.
5. External columns and bollards shall be supplied complete with fused cut-out and cable terminations suitable for loop-in/loop-out cabling using SWA cables.

Reference	Manufacturer	Range	Description	Lamp / LED light engine	Efficacy	Image
J1	Holophane	D-SERIES 0 BLC	IP65, IK07 LED column floodlight with die-cast aluminium body. 5m mounting height Long and Narrow distribution with back light cut-off	27W LED 4000 lumen	148lm/W	
J2	Holophane	D-SERIES 0 FWE	IP65, IK07 LED column floodlight with die-cast aluminium body. 5m mounting height Forward Throw distribution.	27W LED 4000 lumen	148lm/W	
K1	Thorn	Thorn Slim Bollard	IP66, IK10 LED die-cast aluminium. Glazing: Polycarbonate. Symmetric distribution. Dimension – 232mm, Height – 1000mm. Integral driver.	9W LED 1113 lumen 3000K	125lm/W	



Reference	Manufacturer	Range	Description	Lamp / LED light engine	Efficacy	Image
L	Thorn	Altis G5 288L	IP66, IK08 LED column floodlight with die-cast aluminium body. 15m mounting height with base-hinged mast. Forward Throw distribution.	1095W LED	112lm/W	
M	Kingfisher Lighting	SEMITA Urban	IP66 IK10 Surface wall mounted Die cast aluminium luminaire with opal diffuser. Integral LED driver	6W LED 802 lumen	125lm/W	
N	Holophane	Mini Full Inox	AISI 316L stainless steel Body. IP68, IK10, recessed box set in concrete. +-5° tilt angle	10W LED 1140 lumen	114m/W	