

SMP, Huyton

CDM 2015 Design Statement

This design drawing/information is for a lighting scheme which has been prepared for the client in collaboration with the client and other stakeholders, and is based upon the pre-construction information provided. The lighting scheme should only be installed and maintained by competent persons and in accordance with the design drawing/information, applicable installation instructions and all applicable laws. No changes should be made to the design of the lighting scheme without formal written approval in advance from ZG Lighting (UK) limited, to ensure that any risks to health, safety and welfare from any proposed changes can be identified and properly assessed.

Preface

This lighting calculation is based on our understanding of the information provided and is for comment/review with the client and design team.
It represents an initial lighting concept and is so not exhaustive or definitive.

Please refer to CAD drawing: "ZG-DWG-0002420007-EXT-R02-061025" for further details.

INFORMATION PROVIDED & USED
250923_L0016_Working.dwg

And all information contained with project E-Mails and conversations up to and including the date of the calculations shown. This includes comments on the original R00 & R01 designs.

ACCURACY

Please note the current 3D model created within these lighting calculations is based on information provided in only PDF format (such as building elevations) therefore the tolerance in accuracy of the illuminance results and lit effect shown and that achieved on-site would be expected to be significantly higher than normal.

ASSUMPTIONS

Surface Reflectance's = Building (23%), Ground (soft landscaping 15%, hard landscaping 45%)

Maintenance Factor (Light Loss Factor) = 0.8

Illuminance = See summary page for results.

LIGHTING CALCULATIONS

The area has been calculated using a basic 3D model to represent the main buildings, soft & hard landscaping and other main furniture to more accurately consider the main obstructions.

It should be noted that, the contribution of daylight and any other luminaires (existing or to be supplied by others) have not been included or considered in these lighting renders and that some luminaires have been dimmed on the lighting calculation therefore the use of some form of lighting control, presence detection and dimming is required to achieve the calculated results shown, maximise energy efficiency and reduce W/m2.

OBTRUSIVE / UPWARD LIGHT

Considering all luminaires used within the current lighting calculation (not the final design) the total upward light, $R(UL) = 1.5\%$ (worst case scenario)

However, any post curfew planning permission requirements will also need to be confirmed and considered within the final design.

INITIAL LIGHTING CONCEPT

The 3D renders and calculated results contained within this document represent an initial lighting concept and not a final design.

It should be considered solely a guide as to what can be achieved.

Once the design and construction for the entire site has been finalised, the lighting solution will need to be reviewed and updated to establish whether all client expectations, lighting targets and planning requirements are all fulfilled. Any quote will also need to be revised accordingly.

3D IMAGE CAVEAT

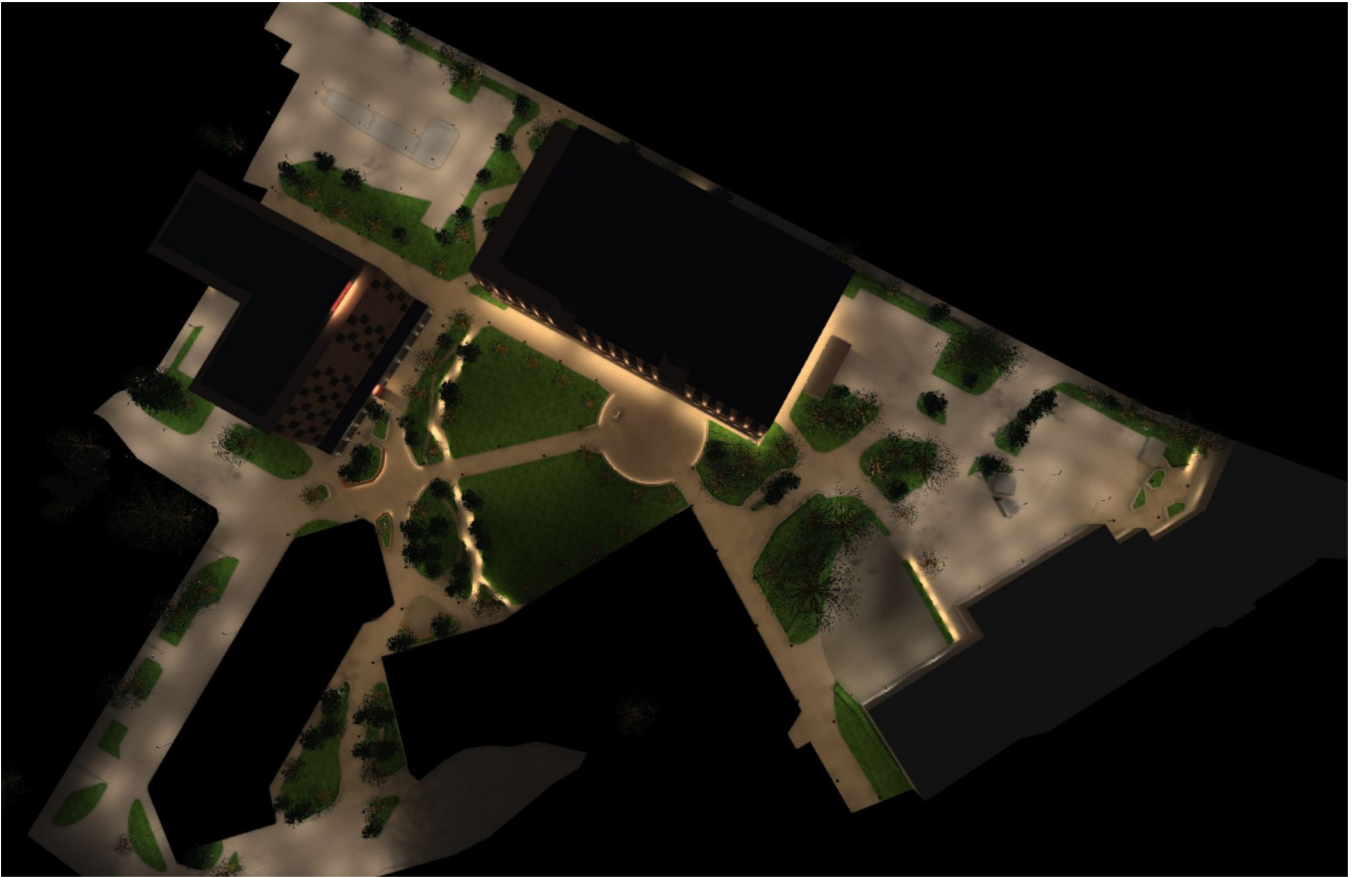
It is also important to note that there are limitations with all computer-generated images from any 3D software. Some 3D software may have less limitations than others, but no 3D software can accurately represent what the human eye sees and so any 3D computer generated images should be used for guidance only. It is also a case that all humans see slightly differently to one another.

Furthermore, every screen will have different brightness/contrast/saturation/colour temperature settings meaning that the same 3D render will look different on each digital device.

LUMINAIRE SAMPLES

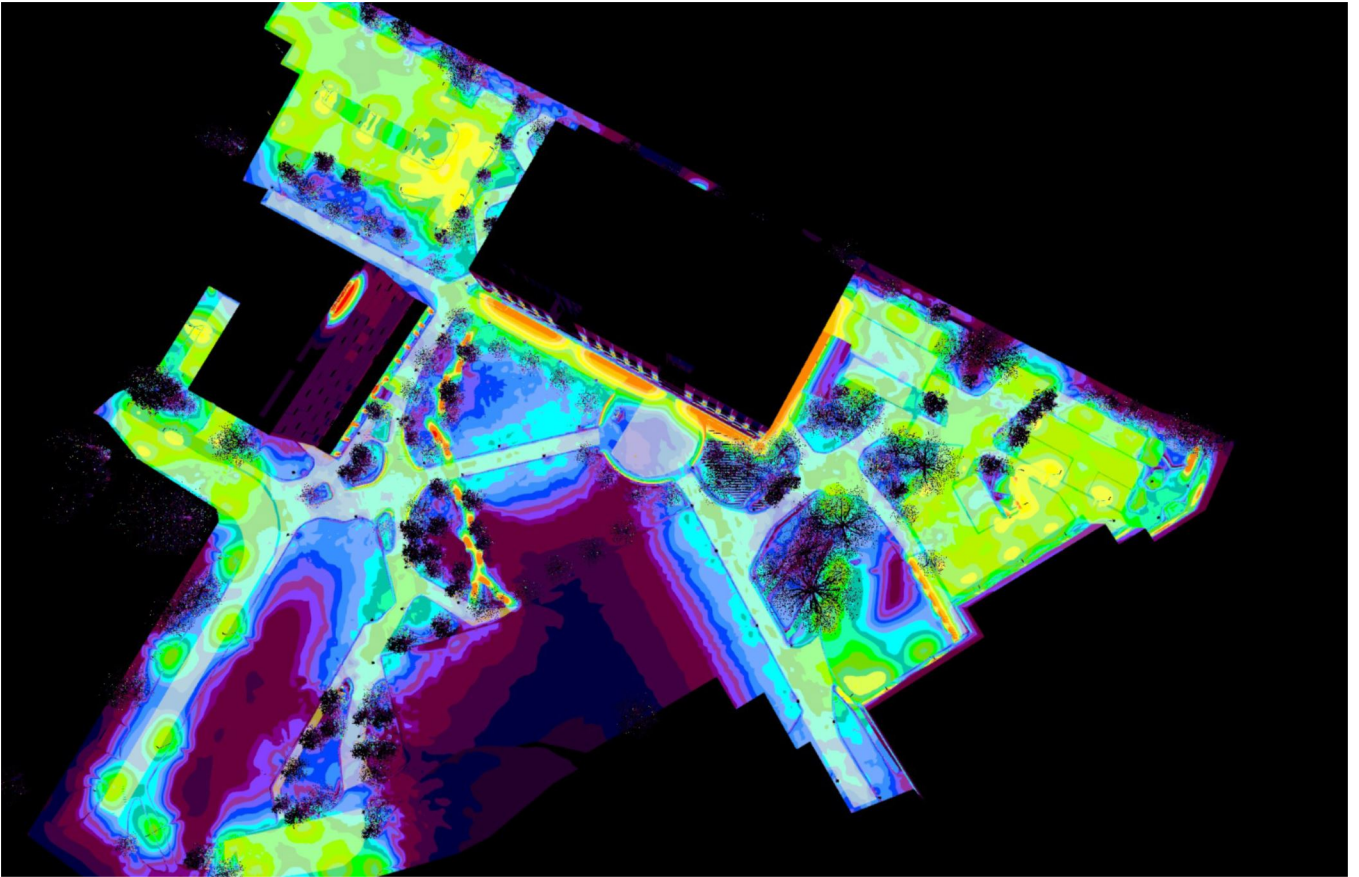
In order to show the design team and client exactly what lit effect can be achieved it is essential for some sample luminaires to be shown and tried on-site or as part of a mock-up.

Images



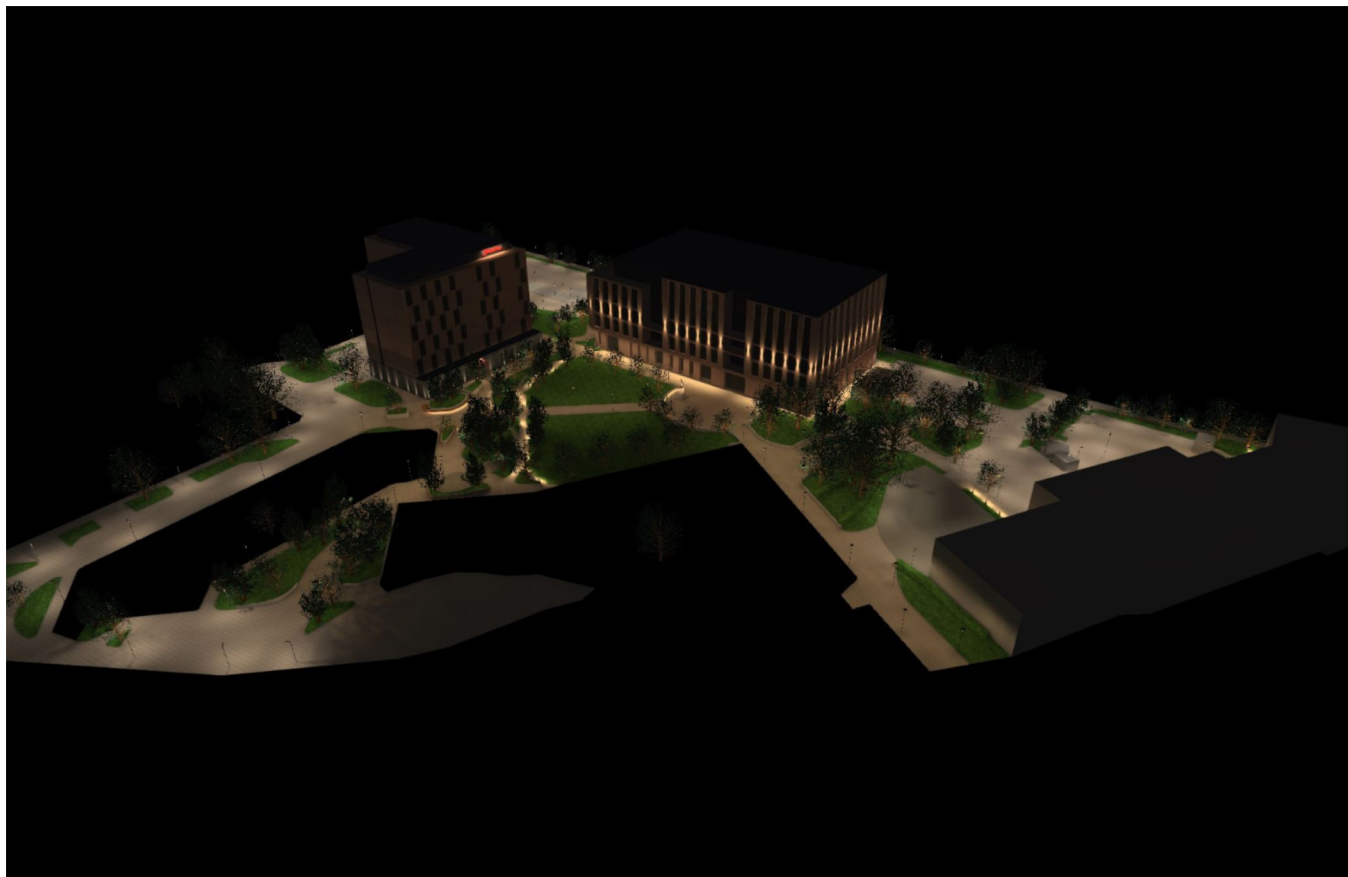
Public Realm Redevelopment (3D)

Images



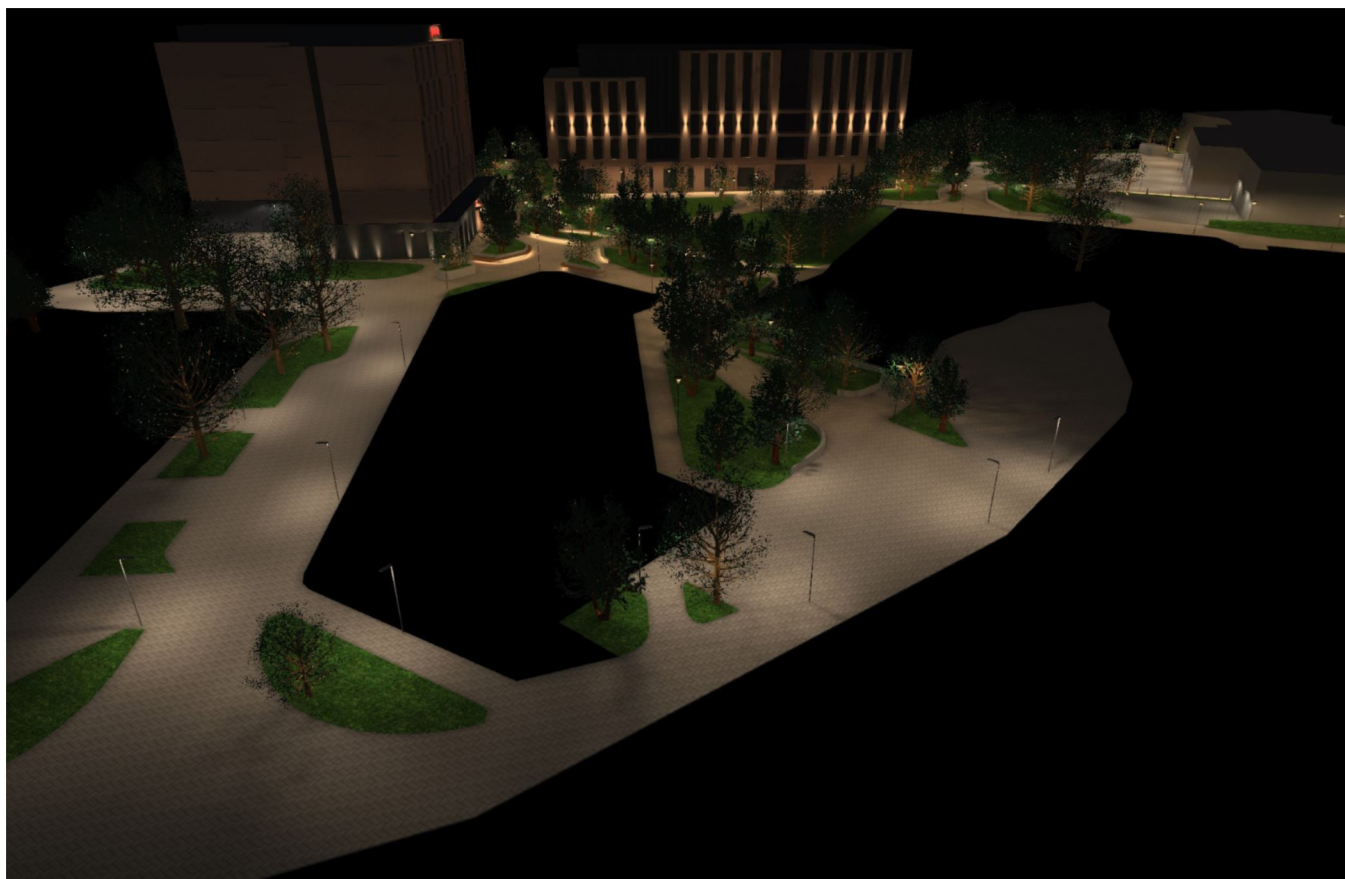
Public Realm Redevelopment (FCS)

Images



ZG-3D1-0002420007-X01-R02-061025

Images



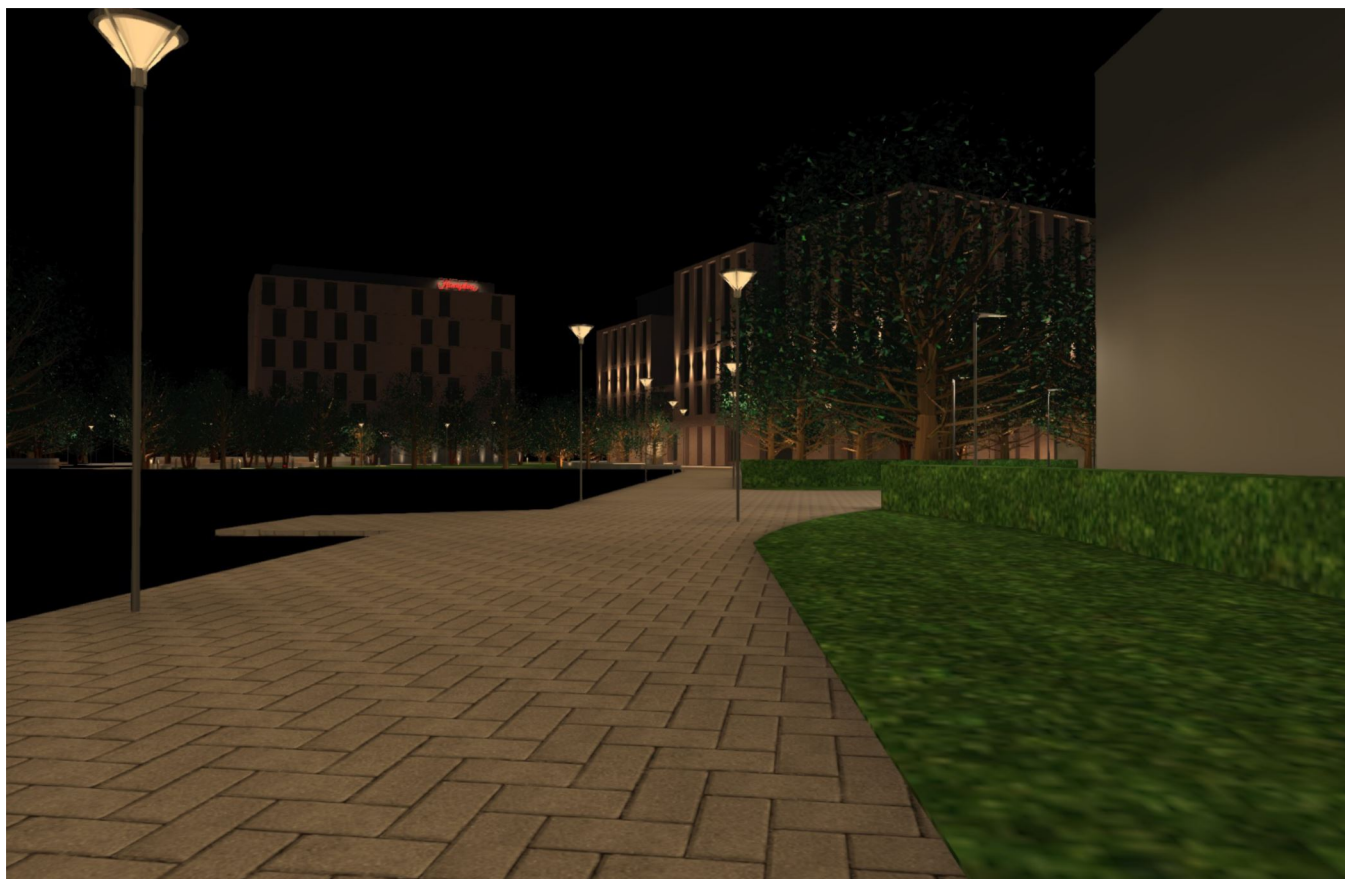
ZG-3D1-0002420007-X02-R02-061025

Images



ZG-3D1-0002420007-X03-R02-061025

Images



ZG-3D1-0002420007-X04-R02-061025

Images



ZG-3D1-0002420007-X05-R02-061025

Images



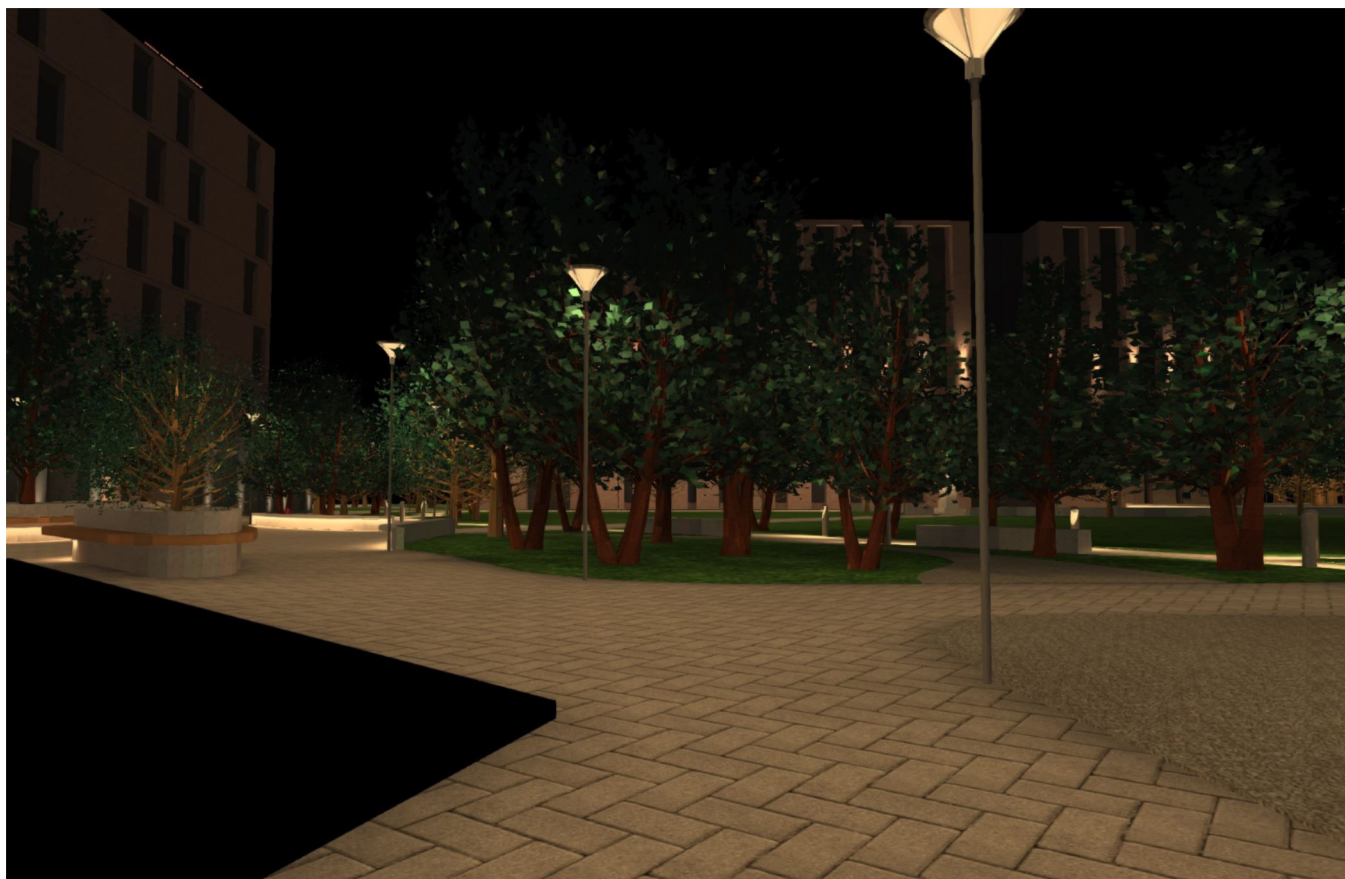
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Images



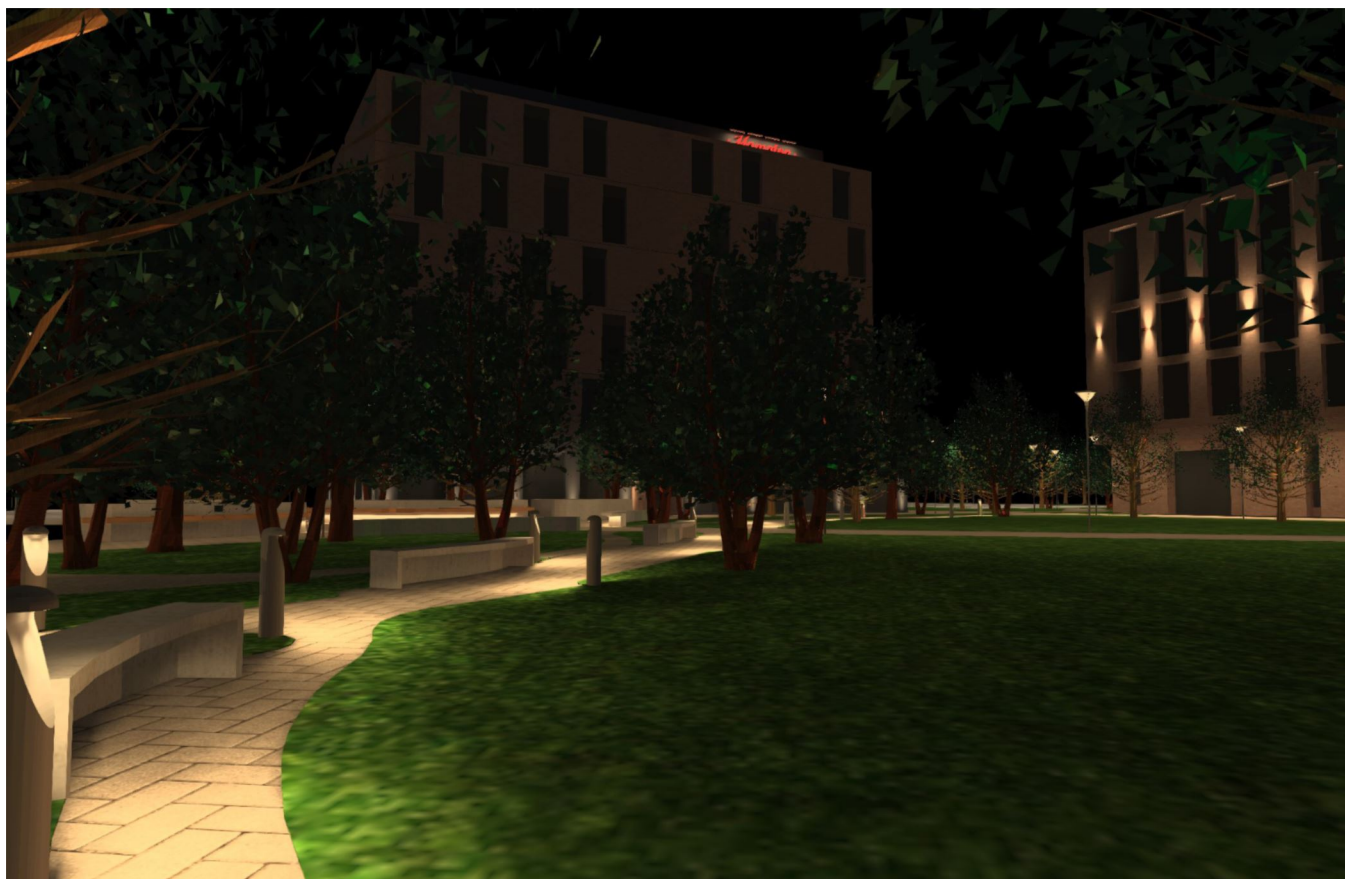
ZG-3D1-0002420007-X07-R02-061025

Images



ZG-3D1-0002420007-X08-R02-061025

Images



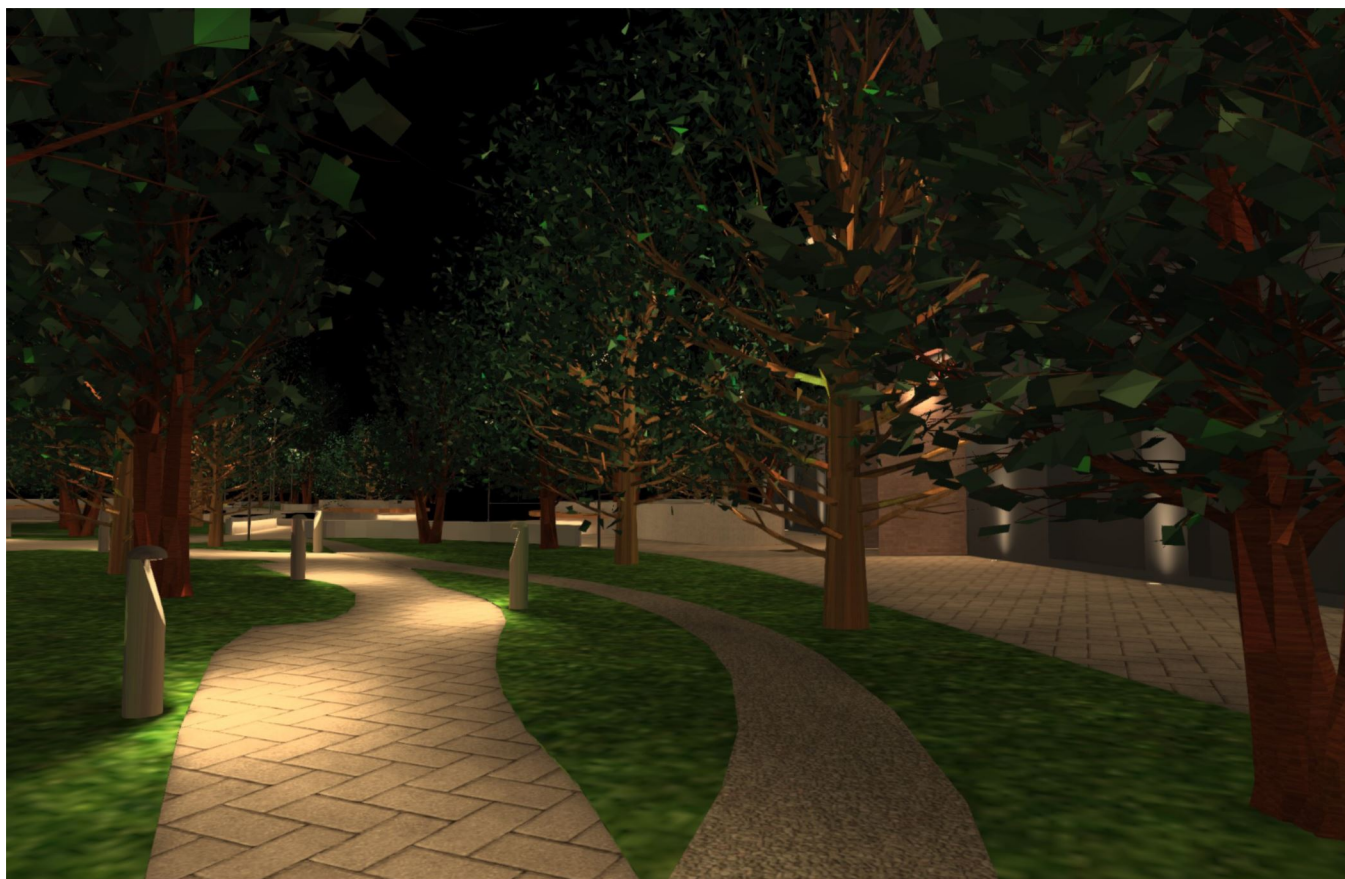
ZG-3D1-0002420007-X09-R02-061025

Images



ZG-3D1-0002420007-X10-R02-061025

Images



ZG-3D1-0002420007-X11-R02-061025

Images



ZG-3D1-0002420007-X12-R02-061025

Images



ZG-3D1-0002420007-X13-R02-061025

Summary



Summary

General information on the obtrusive light calculation

Standard	CIE 150:2017
Zone	Environmental Zone E4
Period under review	Pre-curfew
Apply limits for	Amenity lighting

General obtrusive light scene results

Symbol	Calculated	
R _{UL}	1.5 %	
R _{DLO}	98.5 %	–
R _{ULO}	1.5 %	–

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

Calculation objects



Calculation objects

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
40 Car Parking Spaces Perpendicular illuminance Height: 0.000 m	75.4 lx	39.0 lx	155 lx	0.52	0.25	CG10
Acc Car Park Perpendicular illuminance Height: 0.000 m	58.5 lx	25.2 lx	100 lx	0.43	0.25	CG11
Acc. Car Park Bays Perpendicular illuminance Height: 0.000 m	44.5 lx	29.0 lx	74.8 lx	0.65	0.39	CG8
Acc. Car Park Bays & M/C Bays Perpendicular illuminance Height: 0.000 m	83.0 lx	61.3 lx	120 lx	0.74	0.51	CG6
Car Park Bays Perpendicular illuminance Height: 0.000 m	57.7 lx	29.9 lx	89.4 lx	0.52	0.33	CG12
Car Park Roadway Area Perpendicular illuminance Height: 0.000 m	68.3 lx	30.9 lx	114 lx	0.45	0.27	CG7
Car Park Roadway Area Perpendicular illuminance Height: 0.000 m	51.6 lx	25.3 lx	158 lx	0.49	0.16	CG13
Cenotaph Area Perpendicular illuminance Height: 0.000 m	20.8 lx	9.34 lx	106 lx	0.45	0.088	CG4
Existing Car Park Perpendicular illuminance Height: 0.000 m	65.9 lx	29.7 lx	122 lx	0.45	0.24	CG14
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	64.3 lx	42.2 lx	98.4 lx	0.66	0.43	CG15
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	86.8 lx	66.5 lx	124 lx	0.77	0.54	CG16
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	72.6 lx	42.9 lx	105 lx	0.59	0.41	CG17
Existing Pedestrian Route Perpendicular illuminance Height: 0.000 m	87.6 lx	21.5 lx	322 lx	0.25	0.067	CG2
Existing Taxis & Loading Perpendicular illuminance Height: 0.000 m	78.5 lx	46.5 lx	126 lx	0.59	0.37	CG20

Public Realm Redevelopment (External Lighting)

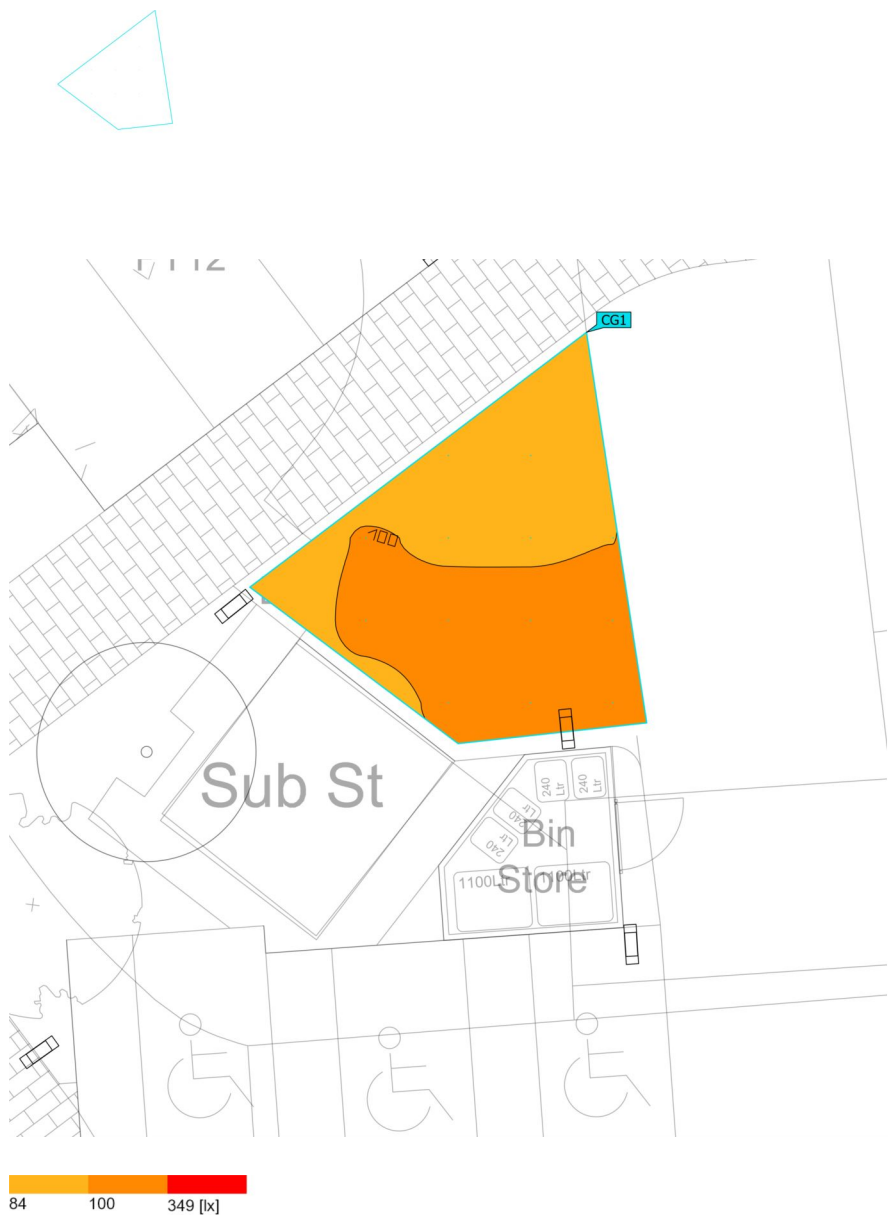
Calculation objects

Existing Taxis & Loading Acc Car Park Bays Perpendicular illuminance Height: 0.000 m	57.2 lx	34.8 lx	105 lx	0.61	0.33	CG19
Existing Taxis & Loading Turning Head Perpendicular illuminance Height: 0.000 m	106 lx	89.9 lx	127 lx	0.85	0.71	CG1
Main Access Road Perpendicular illuminance Height: 0.000 m	51.4 lx	23.6 lx	110 lx	0.46	0.21	CG9
Most Pedestrian Area Perpendicular illuminance Height: -0.000 m	25.6 lx	6.43 lx	108 lx	0.25	0.060	CG5
Pedestrian Walkway Perpendicular illuminance Height: 0.000 m	29.4 lx	11.1 lx	88.5 lx	0.38	0.13	CG3
Shared Ped/Cycle/Servicing Perpendicular illuminance Height: 0.000 m	67.1 lx	23.4 lx	118 lx	0.35	0.20	CG18

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

Public Realm Redevelopment (External Lighting)

Existing Taxis & Loading Turning Head

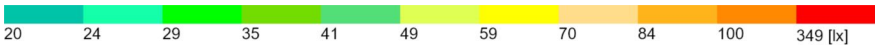


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Taxis & Loading Turning Head Perpendicular illuminance Height: 0.000 m	106 lx	89.9 lx	127 lx	0.85	0.71	CG1

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

Public Realm Redevelopment (External Lighting)

Existing Pedestrian Route



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Pedestrian Route Perpendicular illuminance Height: 0.000 m	87.6 lx	21.5 lx	322 lx	0.25	0.067	CG2

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

Public Realm Redevelopment (External Lighting)

Shared Ped/Cycle/Servicing

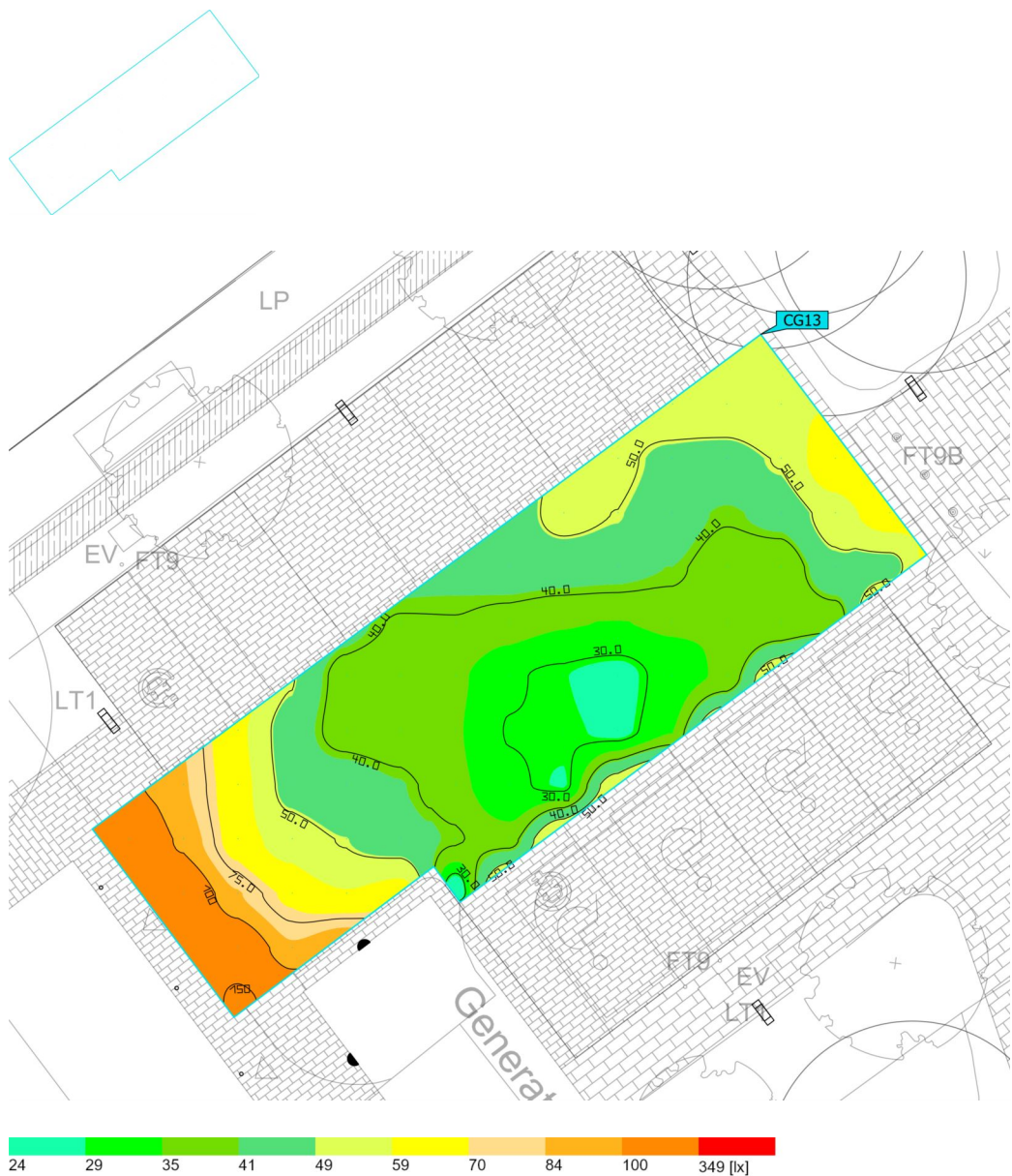


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Shared Ped/Cycle/Servicing Perpendicular illuminance Height: 0.000 m	67.1 lx	23.4 lx	118 lx	0.35	0.20	CG18

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

Public Realm Redevelopment (External Lighting)

Car Park Roadway Area

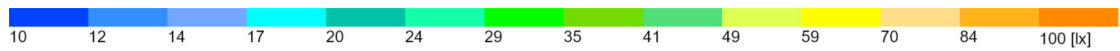
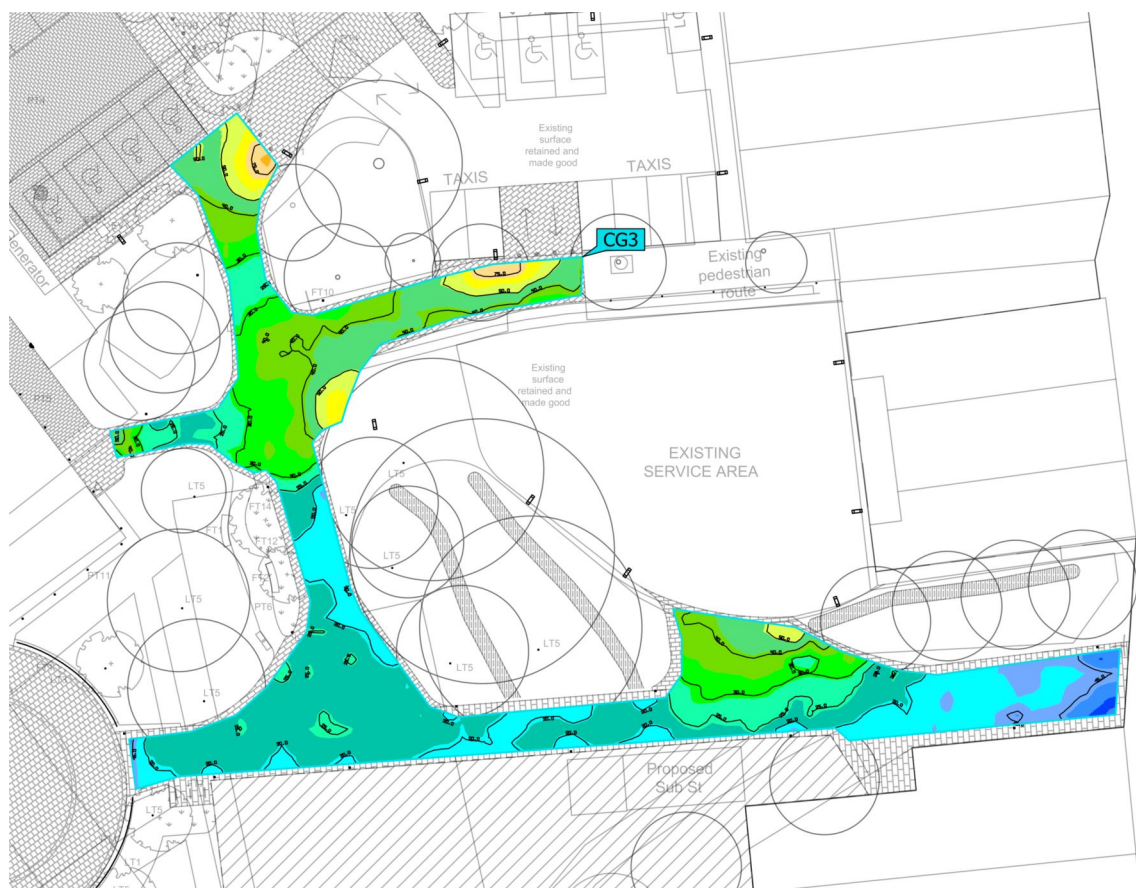
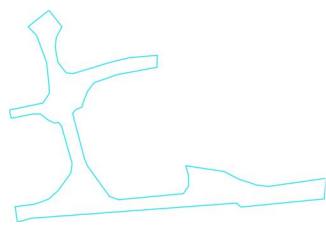


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Car Park Roadway Area Perpendicular illuminance Height: 0.000 m	51.6 lx	25.3 lx	158 lx	0.49	0.16	CG13

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

Public Realm Redevelopment (External Lighting)

Pedestrain Walkway

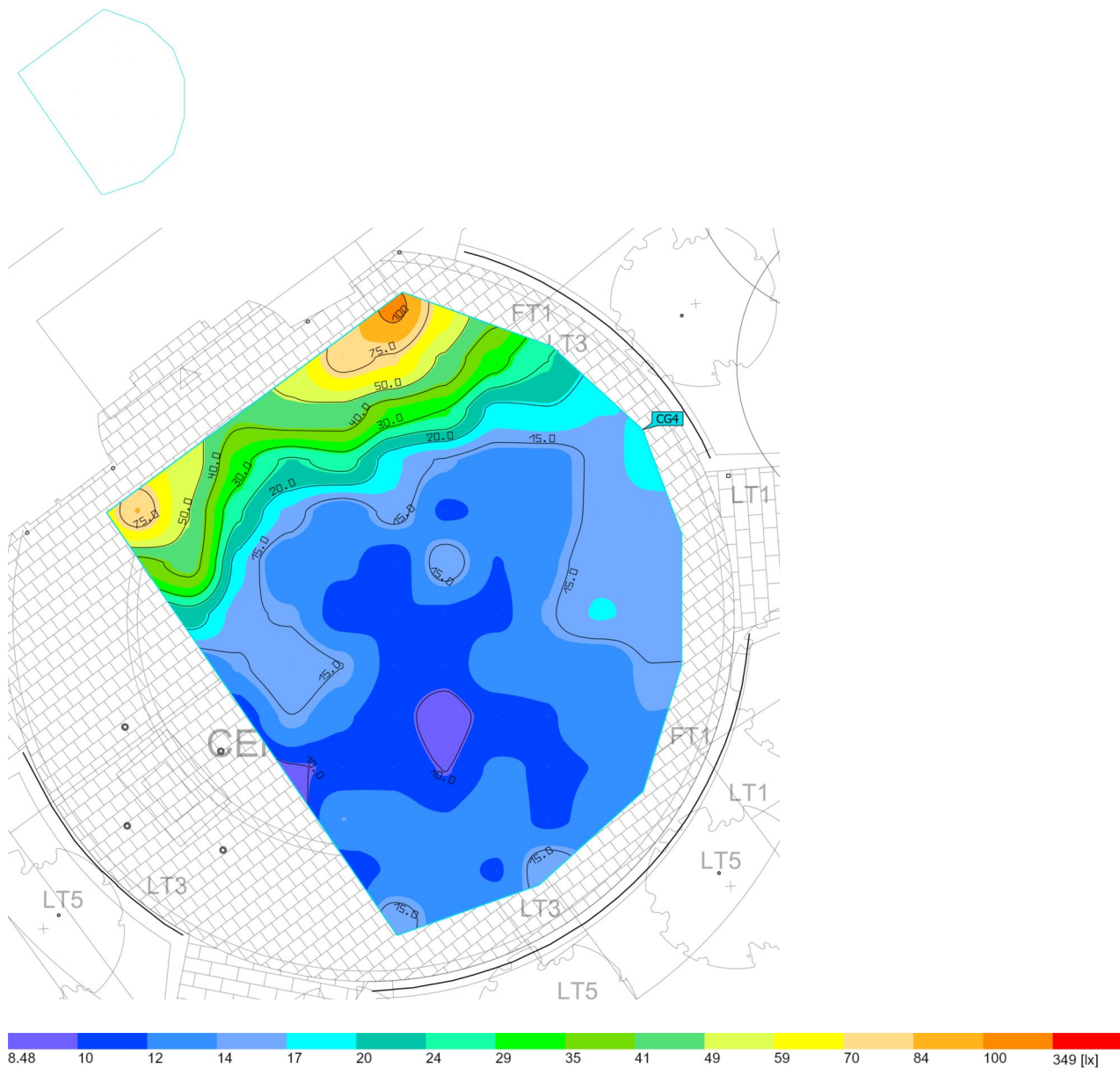


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Pedestrain Walkway Perpendicular illuminance Height: 0.000 m	29.4 lx	11.1 lx	88.5 lx	0.38	0.13	CG3

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

Public Realm Redevelopment (External Lighting)

Cenotaph Area

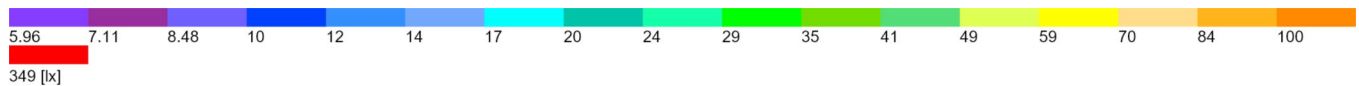
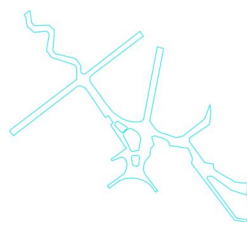


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Cenotaph Area Perpendicular illuminance Height: 0.000 m	20.8 lx	9.34 lx	106 lx	0.45	0.088	CG4

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

Public Realm Redevelopment (External Lighting)

Most Pedestrian Area



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Most Pedestrian Area Perpendicular illuminance Height: -0.000 m	25.6 lx	6.43 lx	108 lx	0.25	0.060	CG5

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

Public Realm Redevelopment (External Lighting)

Acc. Car Park Bays & M/C Bays

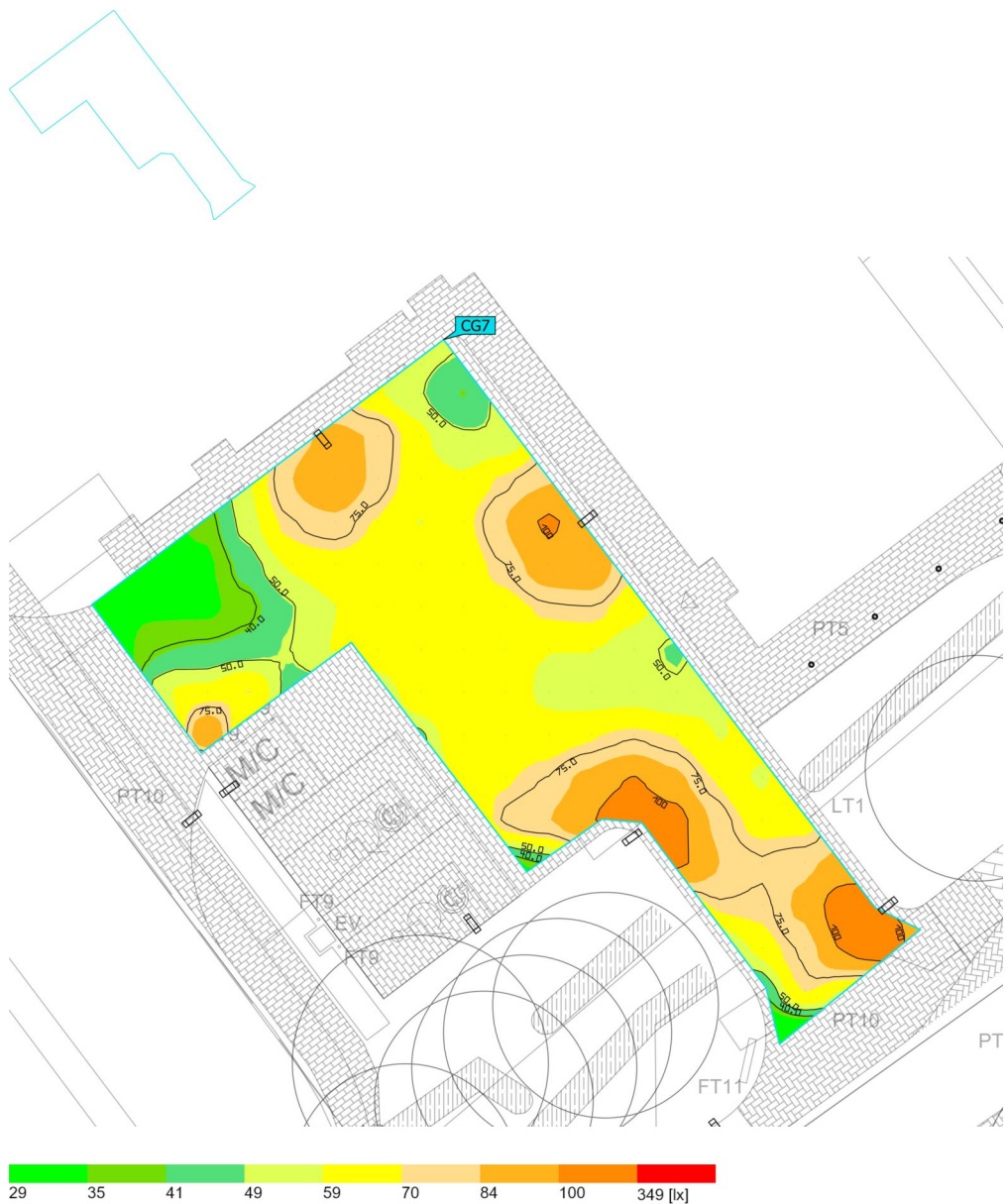


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Acc. Car Park Bays & M/C Bays Perpendicular illuminance Height: 0.000 m	83.0 lx	61.3 lx	120 lx	0.74	0.51	CG6

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

Public Realm Redevelopment (External Lighting)

Car Park Roadway Area

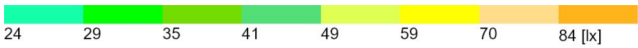
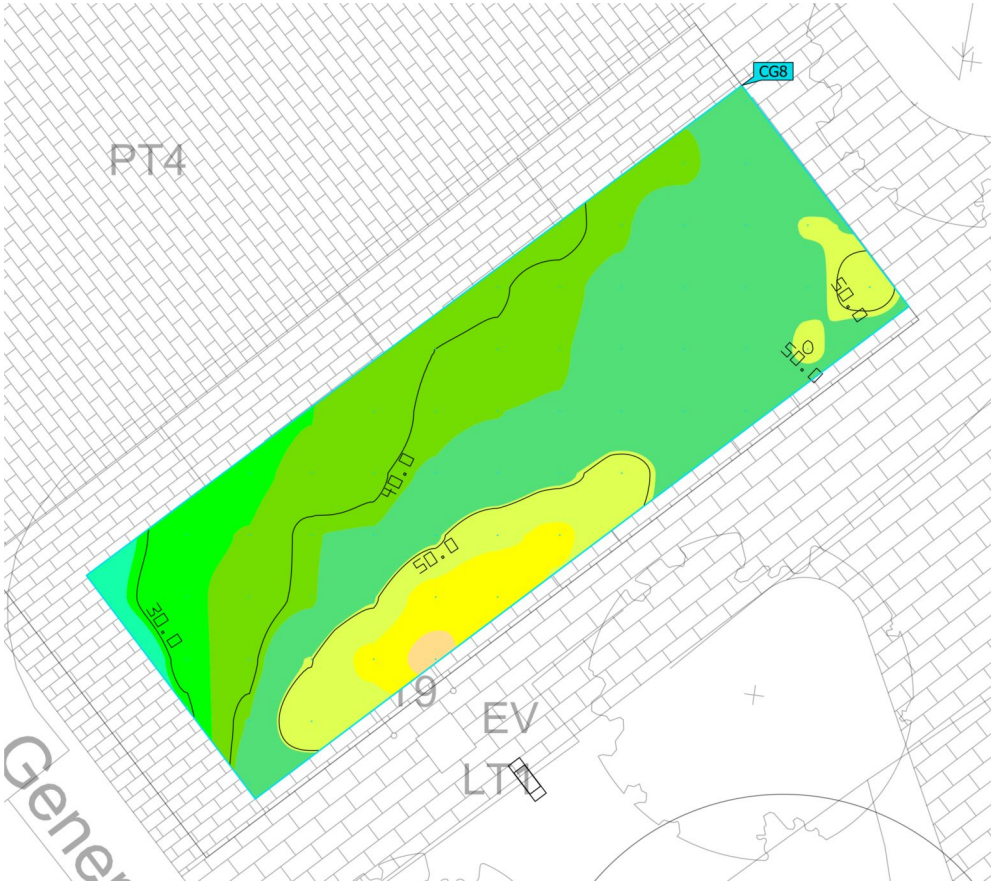
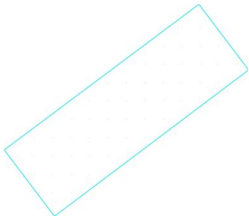


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Car Park Roadway Area Perpendicular illuminance Height: 0.000 m	68.3 lx	30.9 lx	114 lx	0.45	0.27	CG7

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

Public Realm Redevelopment (External Lighting)

Acc. Car Park Bays

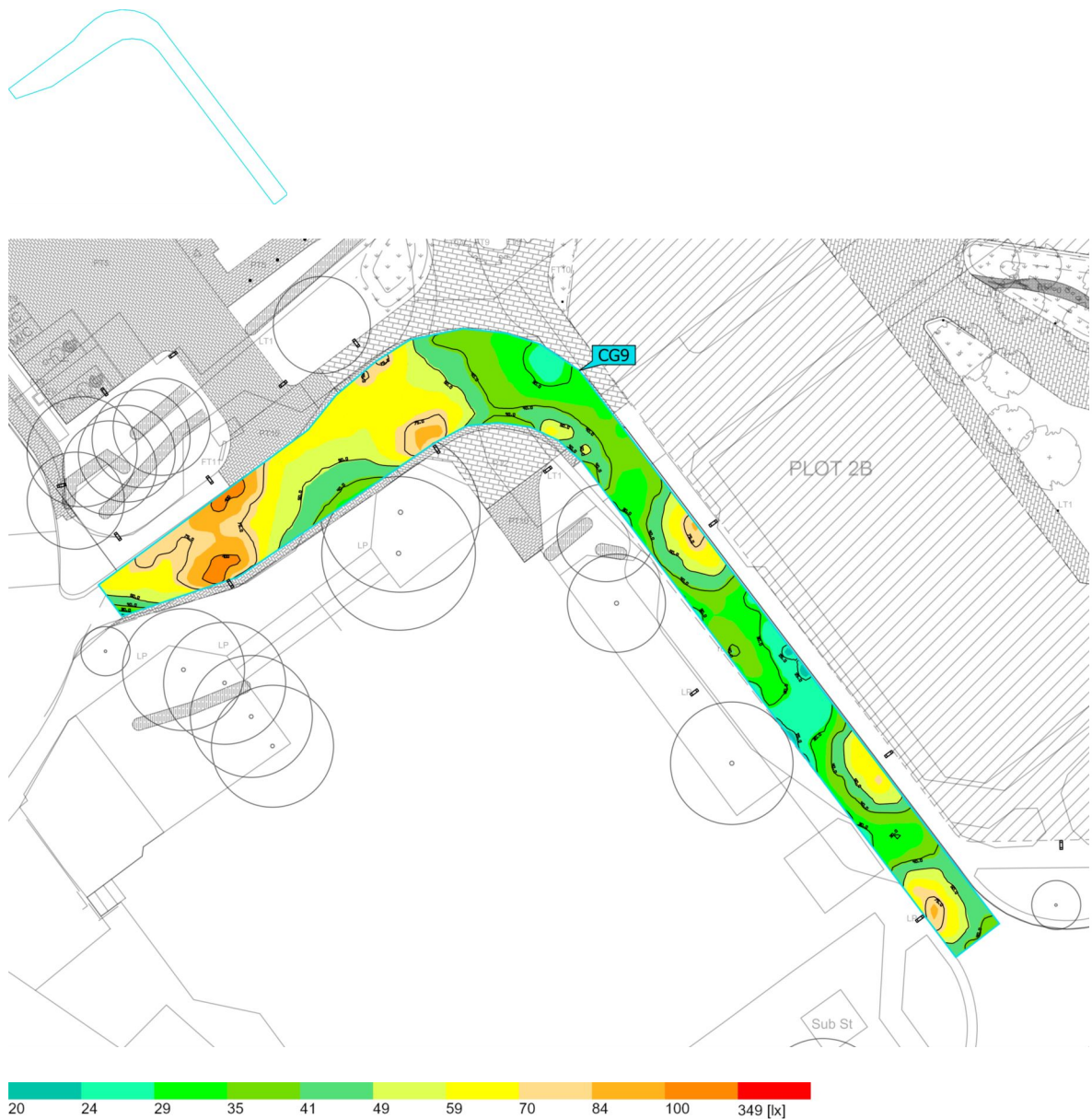


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Acc. Car Park Bays Perpendicular illuminance Height: 0.000 m	44.5 lx	29.0 lx	74.8 lx	0.65	0.39	CG8

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

Public Realm Redevelopment (External Lighting)

Main Access Road



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Main Access Road Perpendicular illuminance Height: 0.000 m	51.4 lx	23.6 lx	110 lx	0.46	0.21	CG9

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

Public Realm Redevelopment (External Lighting)

40 Car Parking Spaces

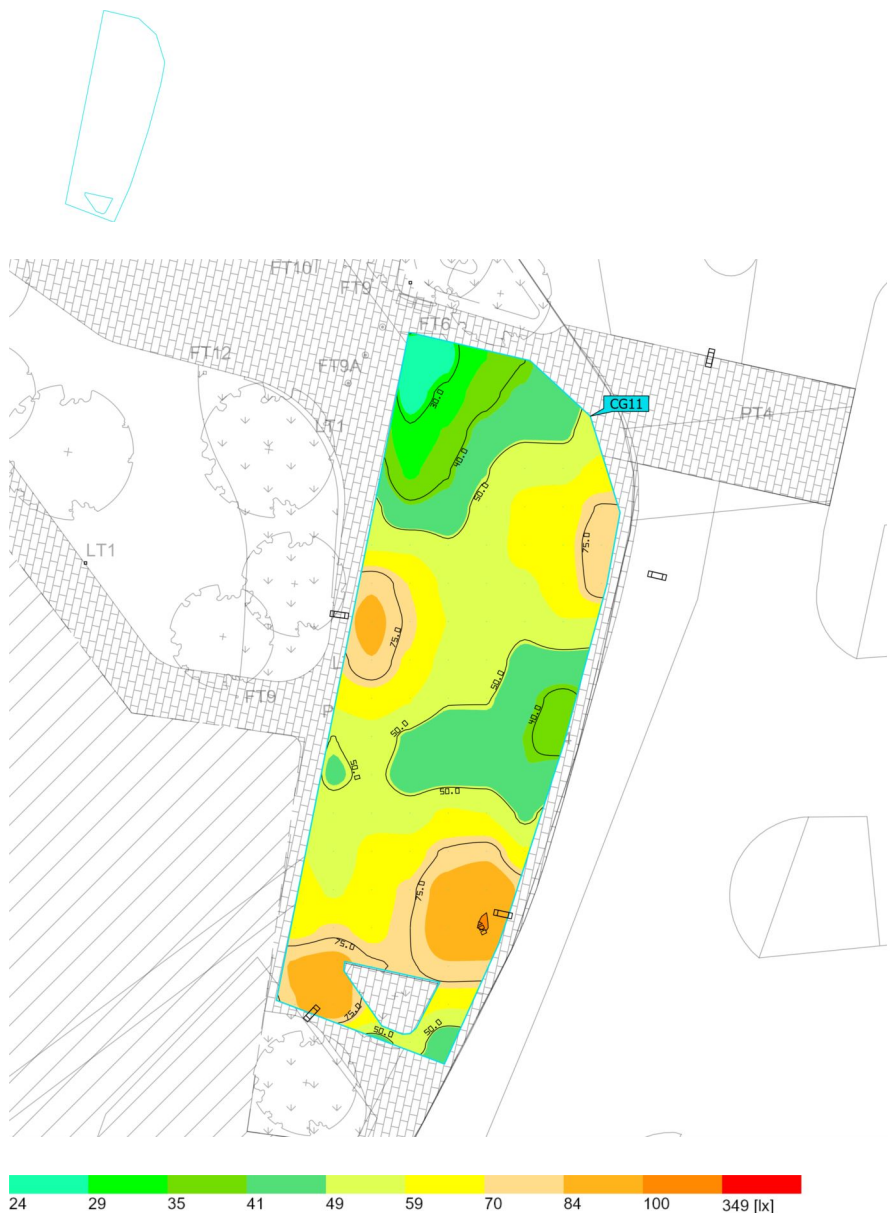


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
40 Car Parking Spaces Perpendicular illuminance Height: 0.000 m	75.4 lx	39.0 lx	155 lx	0.52	0.25	CG10

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

Public Realm Redevelopment (External Lighting)

Acc Car Park

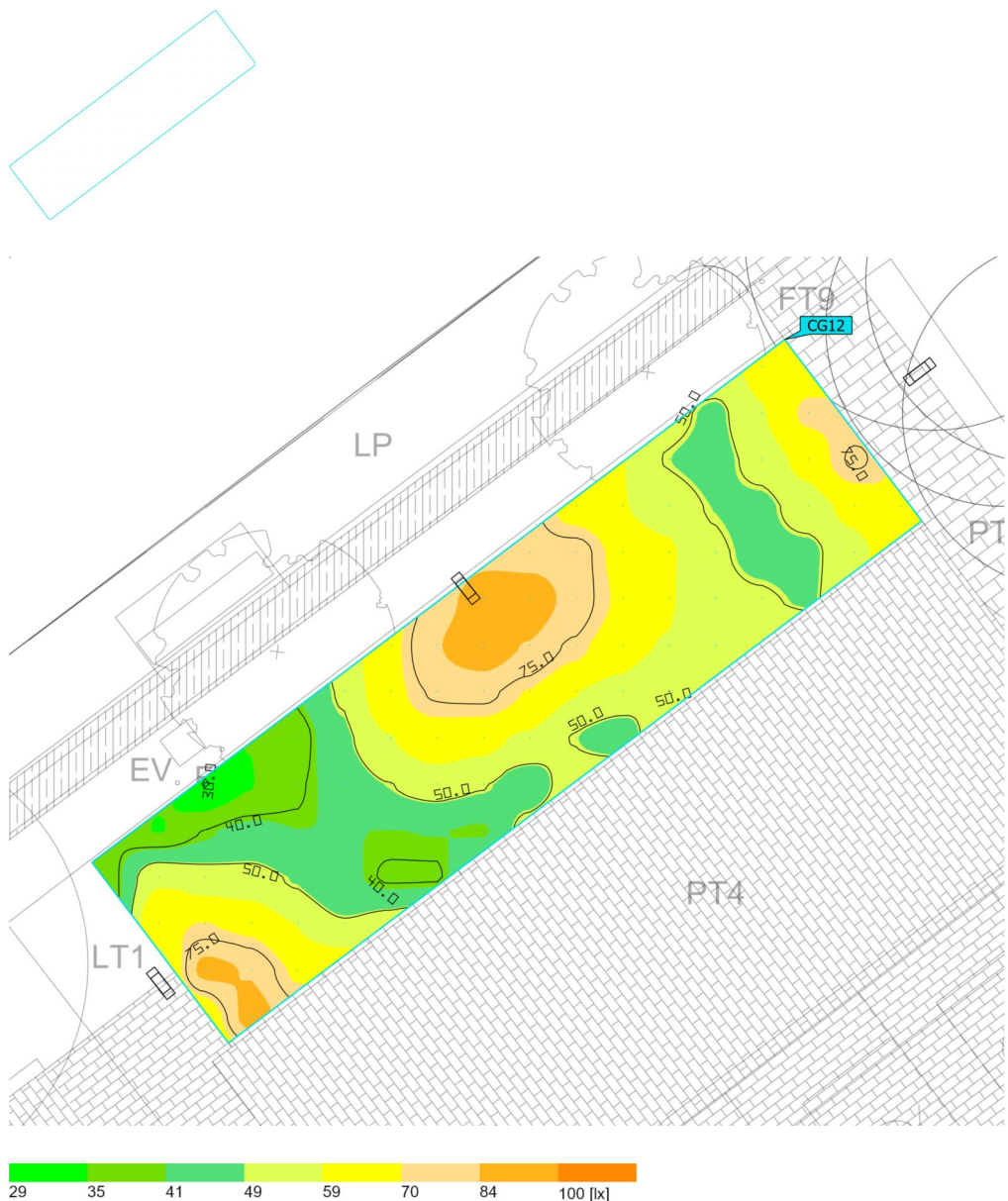


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Acc Car Park Perpendicular illuminance Height: 0.000 m	58.5 lx	25.2 lx	100 lx	0.43	0.25	CG11

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

Public Realm Redevelopment (External Lighting)

Car Park Bays



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Car Park Bays Perpendicular illuminance Height: 0.000 m	57.7 lx	29.9 lx	89.4 lx	0.52	0.33	CG12

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

Public Realm Redevelopment (External Lighting)

Existing Car Park

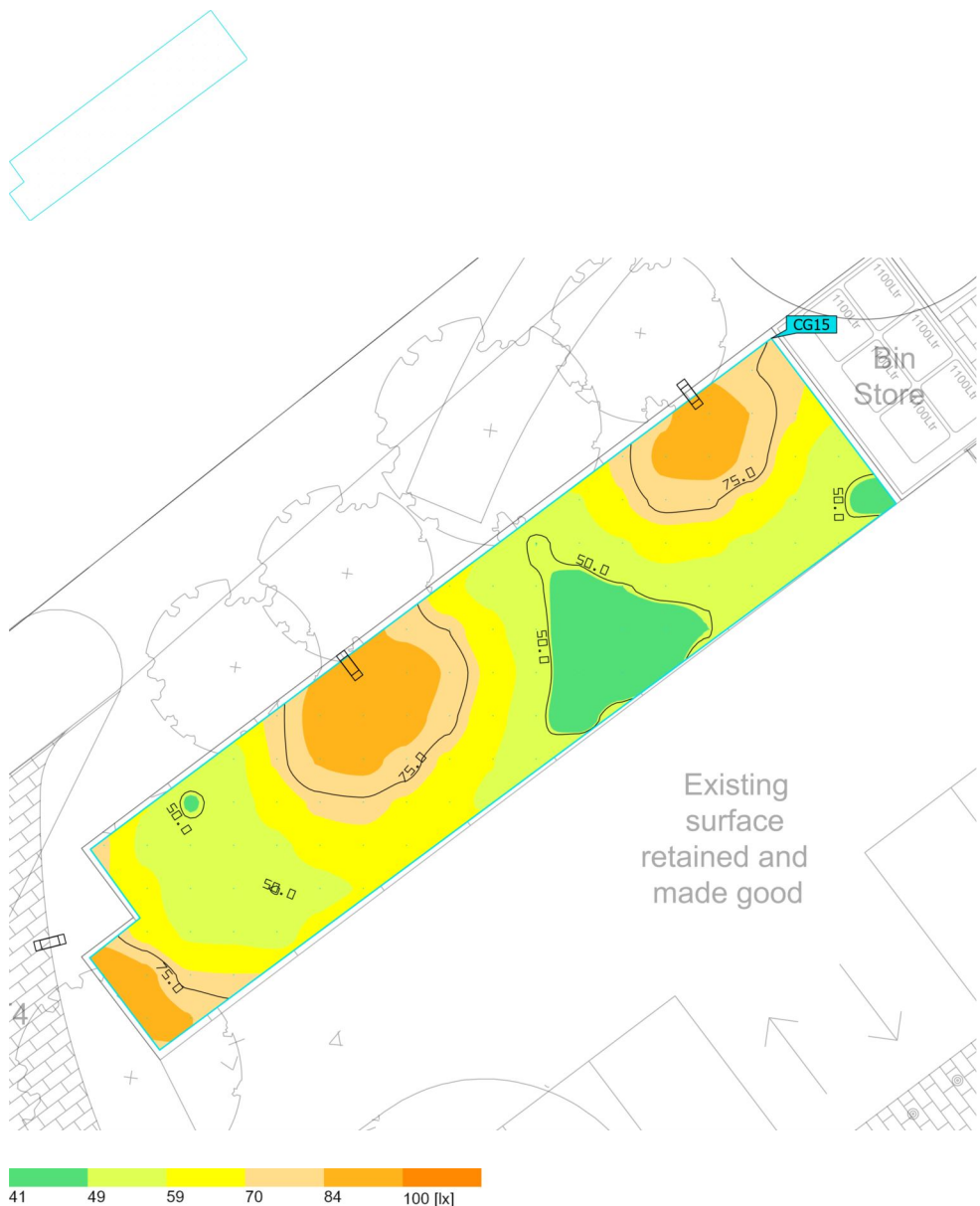


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Car Park Perpendicular illuminance Height: 0.000 m	65.9 lx	29.7 lx	122 lx	0.45	0.24	CG14

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

Public Realm Redevelopment (External Lighting)

Existing Car Park Bays

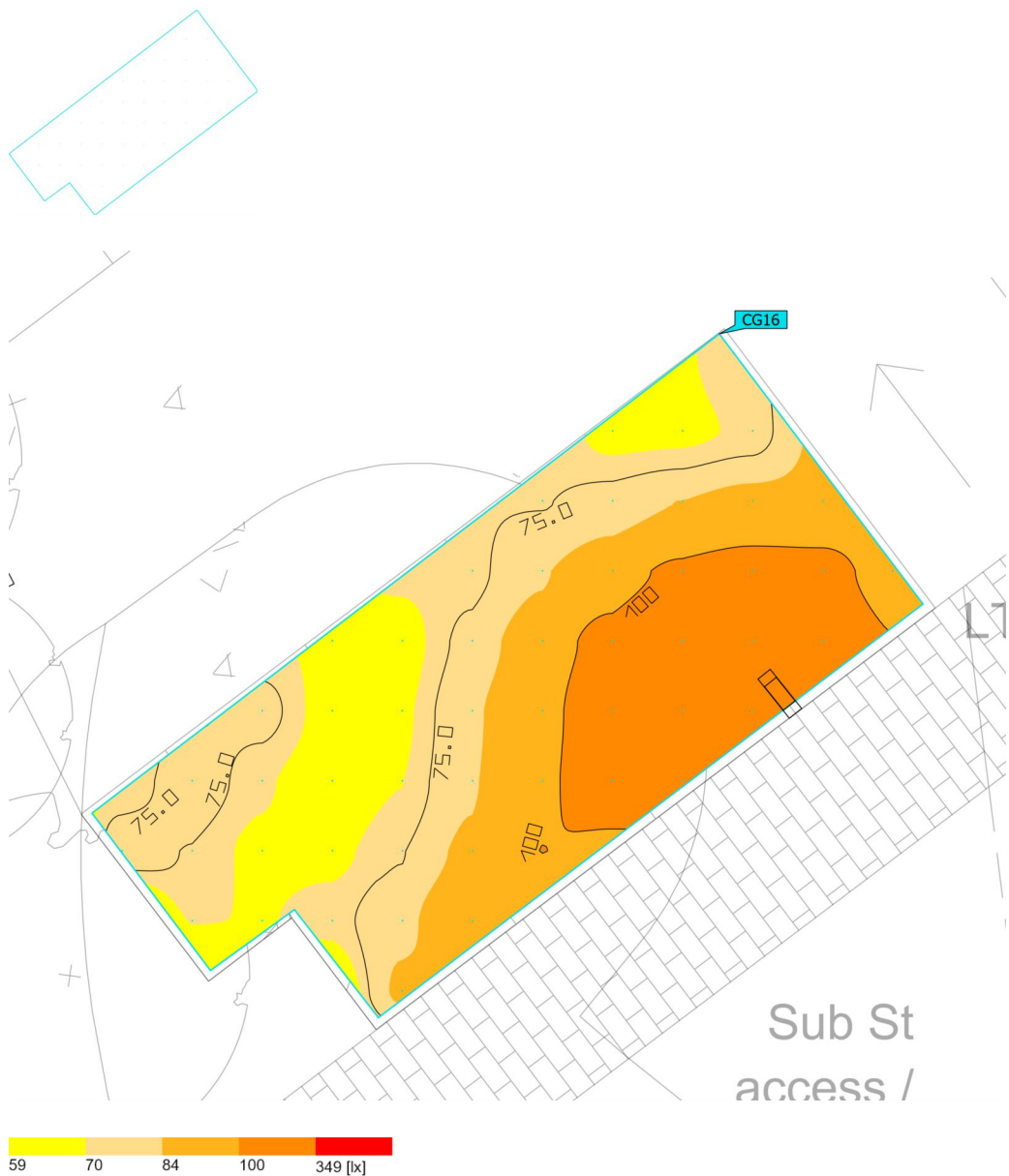


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	64.3 lx	42.2 lx	98.4 lx	0.66	0.43	CG15

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

Public Realm Redevelopment (External Lighting)

Existing Car Park Bays

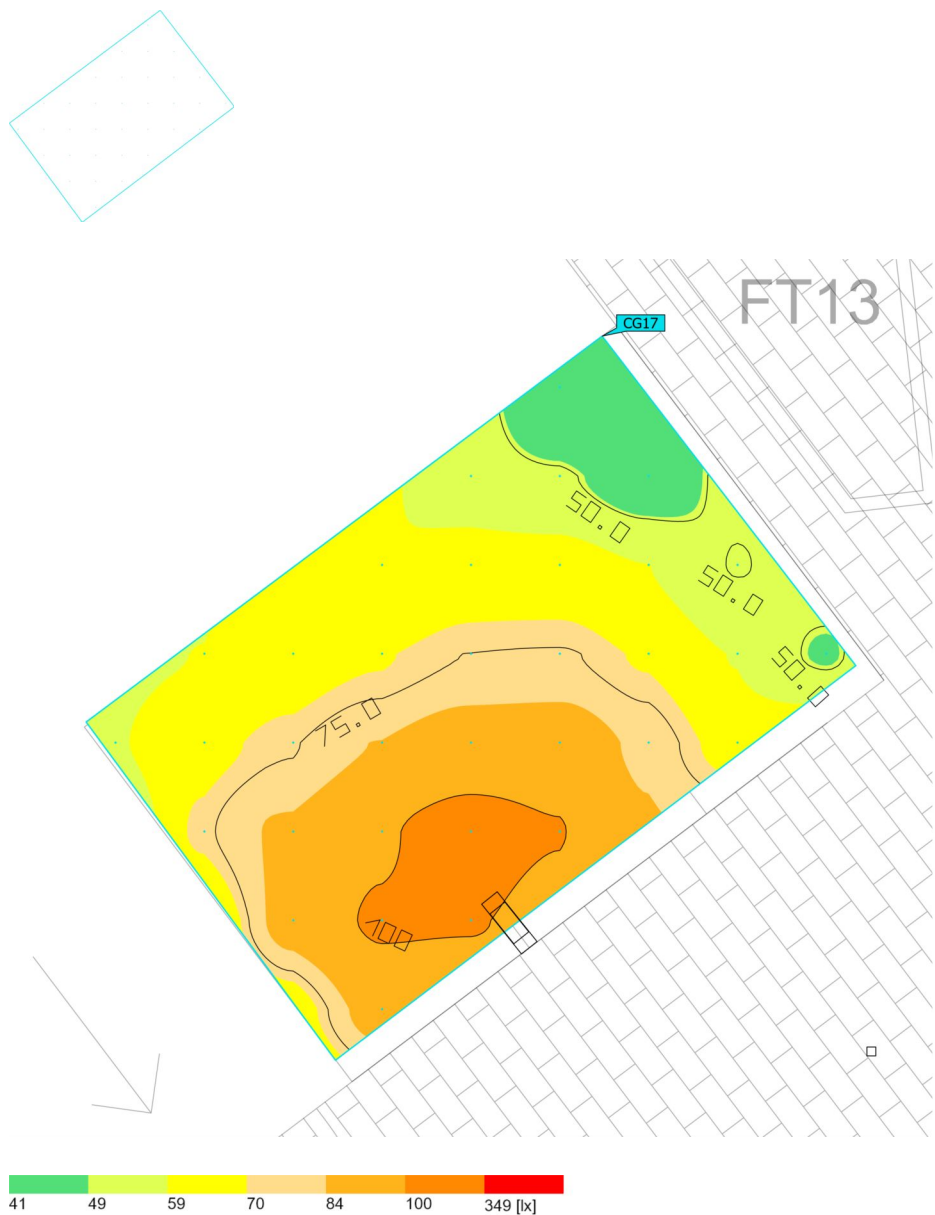


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	86.8 lx	66.5 lx	124 lx	0.77	0.54	CG16

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

Public Realm Redevelopment (External Lighting)

Existing Car Park Bays

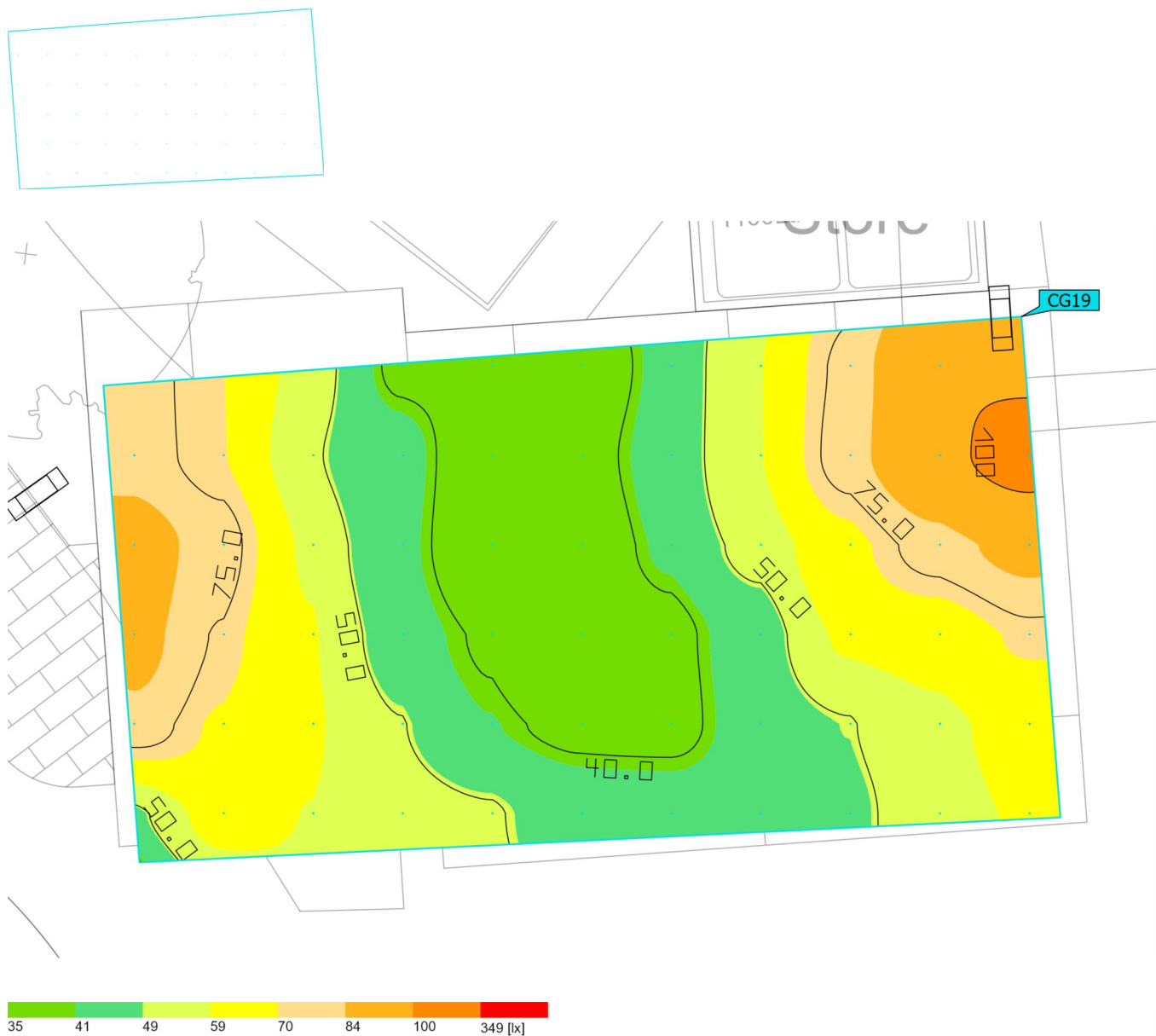


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Car Park Bays Perpendicular illuminance Height: 0.000 m	72.6 lx	42.9 lx	105 lx	0.59	0.41	CG17

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

Public Realm Redevelopment (External Lighting)

Existing Taxis & Loading Acc Car Park Bays

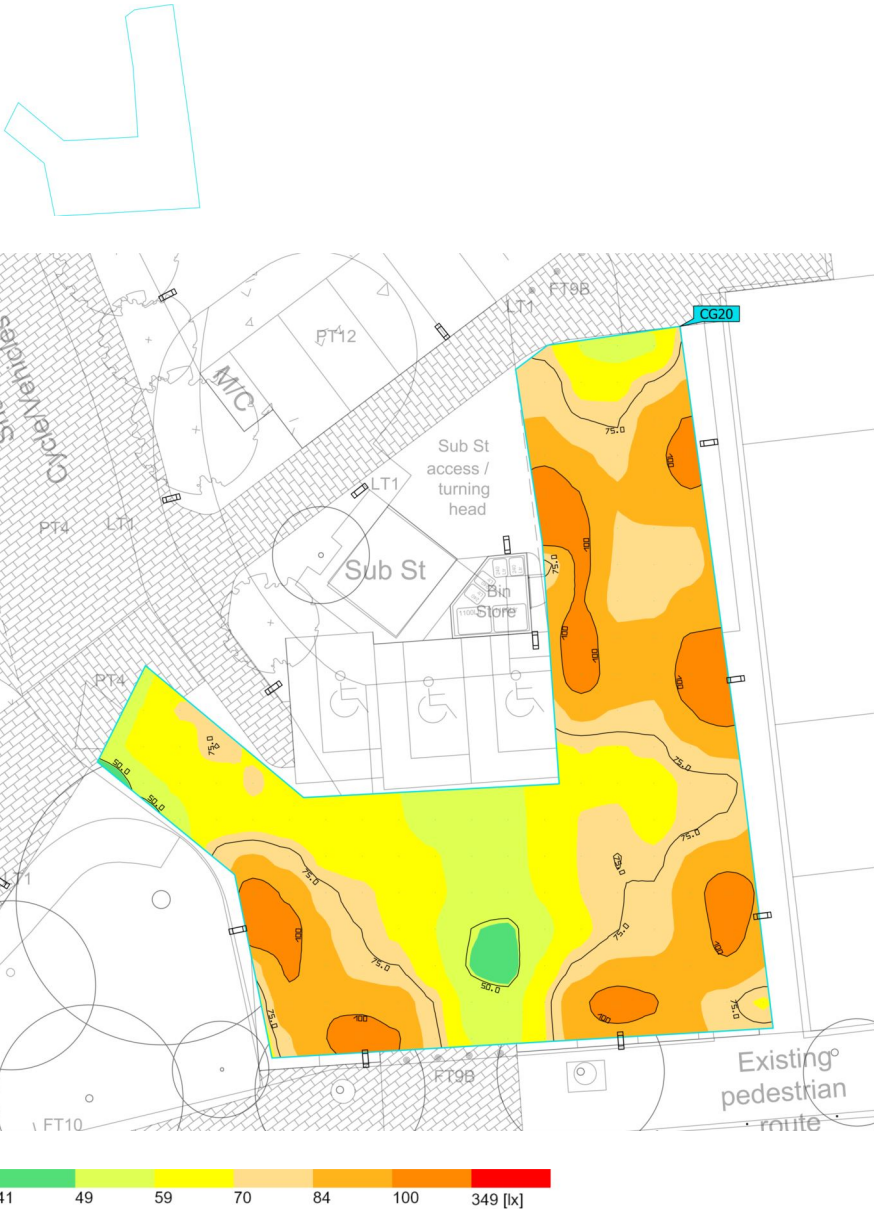


Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Taxis & Loading Acc Car Park Bays Perpendicular illuminance Height: 0.000 m	57.2 lx	34.8 lx	105 lx	0.61	0.33	CG19

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

Public Realm Redevelopment (External Lighting)

Existing Taxis & Loading



Properties	$\bar{E}$	E_{min}	E_{max}	$U_o (g_1)$	g_2	Index
Existing Taxis & Loading Perpendicular illuminance Height: 0.000 m	78.5 lx	46.5 lx	126 lx	0.59	0.37	CG20

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