



Tower Wharf Seacon Offices, Ebbsfleet

External Lighting Design Statement

TGL-WP-XX-RP-LI-E-0001

May2023

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Issue	Date	Description
P01	11/05/23	Planning

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1.0 INTRODUCTION

An external lighting assessment has been prepared by Tournay-Godfrey for submitting as supportive documentation for planning application for the proposed new development of Tower Wharf, Seacon Offices at Ebbsfleet.

The development is for a new office with ground, first and second floors with balcony areas with internal and external stair access to the building, car parking, vehicle charging facilities and cycle storage.

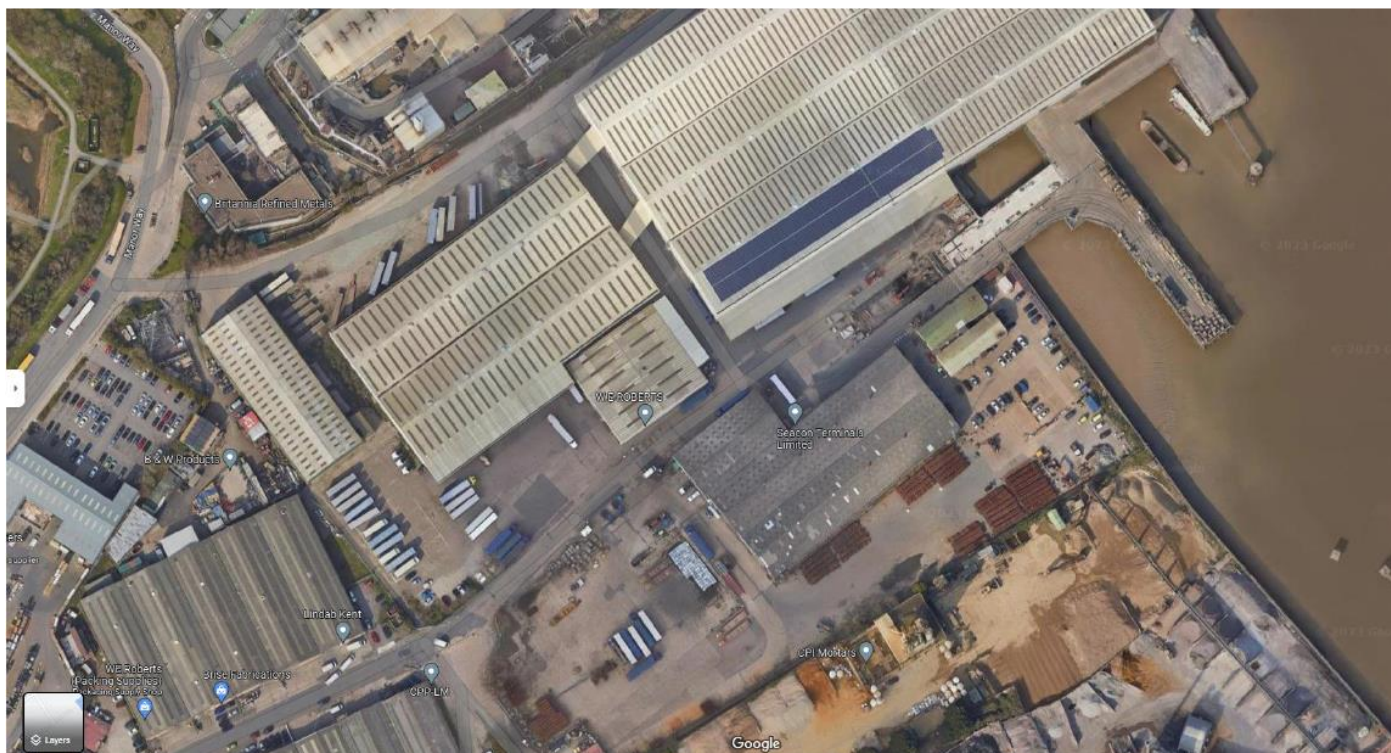


Figure 1: Existing aerial site photo of the proposed redevelopment.

The objective of the assessment is to perform a review of the proposed external lighting design strategy to demonstrate compliance with the relevant good practice guidance and dark skies policies by limiting upward light, over lighting and excessive light spill that would be detrimental to the environment and cause a nuisance to others.



Figure 2: Proposed Site boundary indicated.

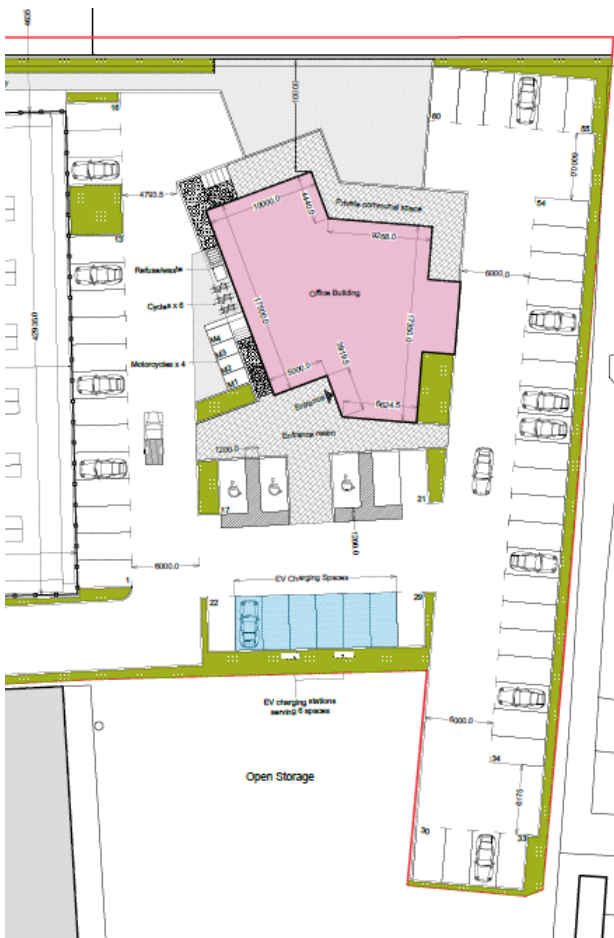


Figure 3: Proposed new development.

2.0 LEGISLATION, STANDARDS, AND CODES OF PRACTICE

- BS 5489-1:2020 Code of practice for the design of road lighting. Part 1 Lighting of roads and public amenity areas.
- SLL Lighting Guide 6: The external environment.
- SLL Lighting Guide 14: Control of electric lighting.
- ILP DG529 Obtrusive light from proposed developments.
- ILP GN01:2011 Guidance Note for the reduction of obtrusive light.

3.0 PROPOSED LIGHTING & CONTROLS STRATEGY

The proposed lighting design shall be in accordance with BS 5489-1:2020 Code of Practice for the design of road lighting for mixed vehicle and pedestrian areas to Category P3 with an S/P ratio of 1.3, 1.23 lux minimum illuminance and between 6.15 lux and 9.22 lux average lux. Maintenance calculations shall be in accordance with BS 5489-1:2020 table B1.

A combination of wall mounted downlights and zero upward light lanterns shall illuminate the car park area and pedestrian access ways. The zero upward light lanterns shall be mounted on 5 metre high columns, the building façade bulkheads shall generally be emergency versions throughout due to the number of stairs to enter and exit the building to illuminate safe passage from the building in the event of a power failure.

The colour temperature of all lighting fixtures shall be 3000K.

Lighting Controls.

The wall mounted downlights around the building shall be controlled via timeclock and photocell arrangement, such that lighting is held off in daylight hours by the photocell and automatically switched on and off between the hours of 11pm and 7am or as agreed with the local council.

The carpark lighting shall be lit with column mountain lanterns which shall be individually photocell controlled with each lantern being fitted with a NEMA socket. Consideration will be given to part-night photocells if an off time required.

Within the building the control of unwanted light spill through the roof lights shall be managed by the fitting of black blinds where it is practicable and deemed necessary. The control shall generally be in accordance with the guidance on the lighting curfew for an E3/E4 zones and E1(b) Urban and Urban transition where the lighting shall be turned off either when lights are no longer required or at the end of the business day, but no later than midnight. This shall be achieved by controlling the building lighting with absence detectors so when the room is left unoccupied the lights will automatically turn off.

4.0 LIGHTING CALCULATIONS

The lighting scheme has been calculated using the Relux Desktop software version 2023.1.20. The software allows the user to build a 'model space' which represents the development to which light fittings can then be added by using the manufacturers eulumdat file. The eulumdat file contains the photometric data which is specific to each light fitting and includes information regarding the light output levels, colour rendering, temperatures, and distribution curves.

Once the model has been built and the luminaires added, the user can analyse the effect that different luminaires have upon the scheme with regards to lux levels and uniformity of light on horizontal and vertical surfaces.

Figures 5,6 and 7 are screen shots from the model showing the how it calculates the external lighting in relation to the development and surrounding area.

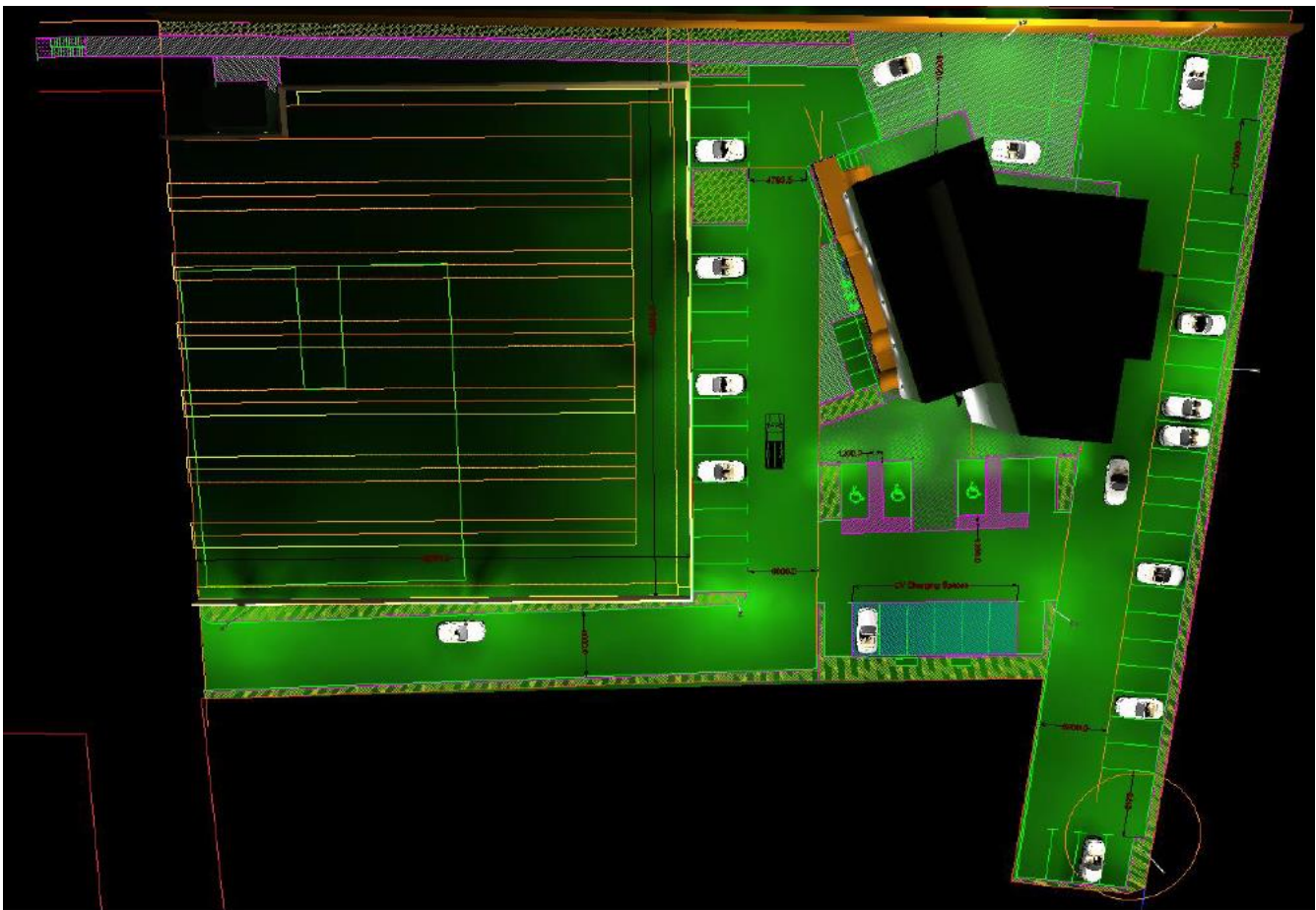
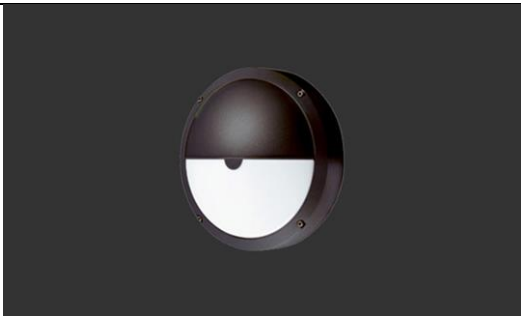


Figure 5: Visualisation Lux Plot

5.0 LUMINAIRES

Location	Indicative Images	Description
Carparking bays		Led post top mounted lantern Zero ULOR in horizontal mounting position. IP66, IK09. Efficacy 132 lumens per circuit watt. 4342 lumens, 33W NEMA socket photocell control Colour temperature 3000K.
Bulkhead luminaire. External Stair access and Final EXIT emergency version		Circular bulkhead Light output 1020 lumens 3000K LED (15W) Emergency BLF 165 lumens Downward light distribution. IP66, IK10 rated protection Finish options full polyester powder coated Graphite, silver or white. Emergency version. Control. Integral photo-cell with external time clock override
Entrance pedestrian access		1000mm high bollard. LM6- extruded Aluminium body and a removable LED module manufactured from LM6 marine grade die-cast aluminium. Luminaire body and LED module are sealed to IP65 and rated IK10. Cable is via an IP65 cable gland. 3000K CRI > 70. 1316 Lumens Control. External photo-cell with external time clock override

6.0 CONCLUSION

The external lighting principles outlined within the previous sections have been adopted within the design proposals for this new development. As such the proposed external lighting scheme has been designed to comply with the Legislations, Standards and codes of practice for external lighting.

7.0 APPENDIX – DARK SKIES STATEMENT

Project: Tower Wharf, Seacon Offices, Ebbsfleet.

The general lighting principles outlined within the previous sections are summarised below:

- i. Luminaire fixtures – Luminaires shall be placed to provide light where required with the minimum number of fixtures and positioned to avoid nuisance glare.
- ii. Light distribution – Luminaires only with upward light control and zero upward light distribution in sensitive areas shall be selected.
- iii. Lit hours of operation - Lighting controls for the office and carpark lighting to restrict the hours of illumination during the night-time by time clock control and passive infrared control where security lighting is required. The building lighting shall generally be by absence control to turn the lights off when the room is vacant.
- iv. Colour temperature – The avoidance of using 'white' LEDs using colour temperature LEDs of 3000K or less shall be specified.

The lighting around office and carpark with timeclock control and photo-cell controlled lighting will be adopted within the design to meet the requirement of minimising the use of artificial light whilst maintaining a level of security and public safety.

The design has followed the principles given in BS 5489-1 Annex G 'Outline of lighting design process for lighting urban centres and public amenity areas', and the following relevant clauses.

Clause 4.3.2.1 Daytime appearance – The proposed LED lighting for the development shall be make use of the environment for concealing the light fixtures to minimise the visual impact upon the area.

Clause 4.3.2.2 Night-time appearance – The LED lighting has been selected to produce a pleasant and attractive night-time appearance in keeping with Legislation, standards, and codes of practice by the use of warm 3000K colour temperature lamps and selecting light fittings that are in keeping with the purpose to which they are to be used.

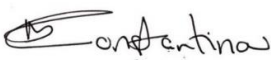
Clause 4.3.5 Obtrusive light – Lights shall be selected on their light distribution with preference for luminaires that comply with zero up light for dark skies compliance.

Clause 5.2.2.2 Lighting on horizontal surfaces – Lighting lux levels shall be calculated at design stage to ensure they comply with the lux values given in the appropriate Tables within BS 5489-1:2013.

Clause 5.2.2.3 Lighting on vertical surfaces – The edge face on vertical objects shall be it for visual recognition to these obstacles to avoid trip hazards.

Clause 6.1 Light sources –Energy efficient fittings utilising LED technology with high lumens per circuit watt efficacy. The Colour temperature shall be between 2700K and 3000K and high colour rendering index (CRI)

Clause 7.4.3.4 Pedestrian access – Lighting shall be installed to promote safe movement within the carpark area, access to the first floor via the external stairs and to access the cycle stands and bin store.

Signed: 

Print name: Mark Constantinou

ILP Membership No. 19336

8.0 APPENDIX – RELUX LIGHTING REPORT

Seacon Ebbsfleet

Installation : External Lighting

Project number : J1093

Customer : Seacon Group

Processed by : Mark Constantinou (TGL)

Date : 09.05.2023

Project description:

External Lighting

Building Facade

Carparks

Access roads

Pedestrian thoroughfares

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

1 Luminaire data

1.1 HOLOPHANE EUROPE LIMITED, D-Series 0 Area luminaire (DSX0.1.LA083.FW)

1.1.1 Data sheet

Manufacturer: HOLOPHANE EUROPE LIMITED

DSX0.1.LA083.FW

D-Series 0 Area luminaire

Luminaire data

Absolute Photometry

Luminaire efficacy : 116.38 lm/W

Classification : A20 ↓100.0% ↑0.0%

CIE Flux Codes : 19 50 93 100 100

UGR 4H 8H : 38.8 / 33.4

Power : 64 W

Luminous flux : 7448 lm

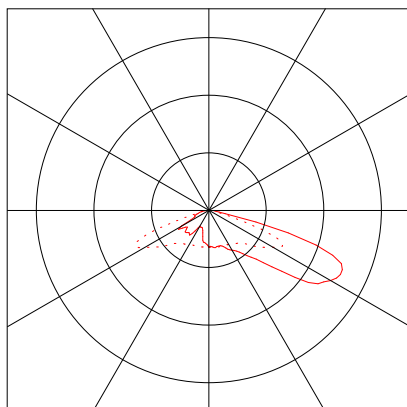
Dimensions : 329 mm x 201 mm x 1 mm

Equipped with

Quantity : 1

Designation : LED C.8000
Lumens

Colour :



Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

1 Luminaire data

1.2 HOLOPHANE EUROPE LIMITED, D-Series 0 Area luminaire (DSX0.1.LA083.NR)

1.2.1 Data sheet

Manufacturer: HOLOPHANE EUROPE LIMITED

DSX0.1.LA083.NR

D-Series 0 Area luminaire

Luminaire data

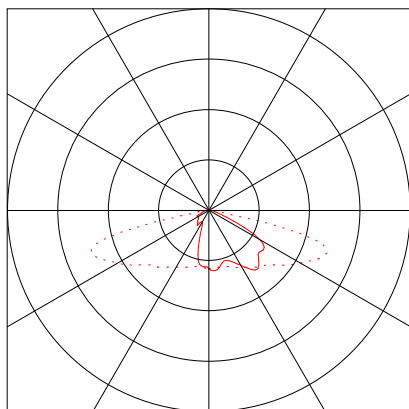
Absolute Photometry

Luminaire efficacy : 117.45 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 30 62 92 100 100
UGR 4H 8H : 28.9 / 38.6
Power : 64 W
Luminous flux : 7517 lm

Equipped with

Quantity : 1
Designation : LED C.8000
Lumens
Colour :

Dimensions : 329 mm x 201 mm x 1 mm



Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

1 Luminaire data

1.3 HOLOPHANE EUROPE LIMITED, Denver iD Bollard (DBD.1.LA023.DO.AY.LS.W014)

1.3.1 Data sheet

Manufacturer: HOLOPHANE EUROPE LIMITED

DBD.1.LA023.DO.AY.LS.W014

Denver iD Bollard

Luminaire data

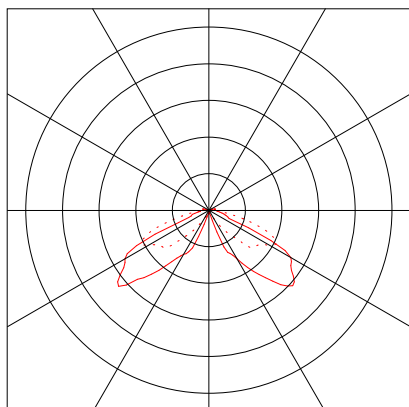
Absolute Photometry

Luminaire efficacy : 84.71 lm/W
Classification : A11 ↓96.2% ↑3.8%
CIE Flux Codes : 12 49 91 96 100
UGR 4H 8H : 22.9 / 29.1
Power : 14 W
Luminous flux : 1186 lm

Equipped with

Quantity : 1
Designation : LED C.2,000
Lumens
Colour :

Dimensions : 228 mm x 143 mm x 120 mm



Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

1 Luminaire data

1.4 Thorlux, COBALT HOOD LED (CT19015)

1.4.1 Data sheet

Manufacturer: Thorlux

CT19015 COBALT HOOD LED

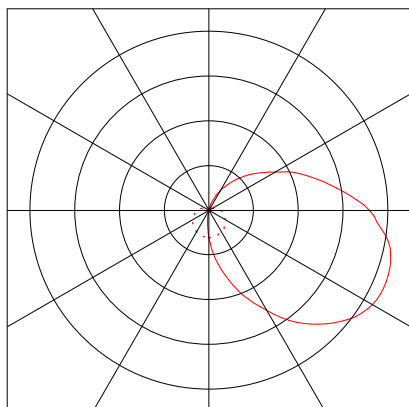
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 56.67 lm/W
Classification : B11 ↓68.7% ↑31.3%
CIE Flux Codes : 20 47 75 69 100
UGR 4H 8H : 34.4 / 22.3
Power : 18 W
Luminous flux : 1020 lm

Equipped with

Quantity : 1
Designation : 15W LED
Colour : 4000
Luminous flux : 1020 lm
Colour reproduction : 80

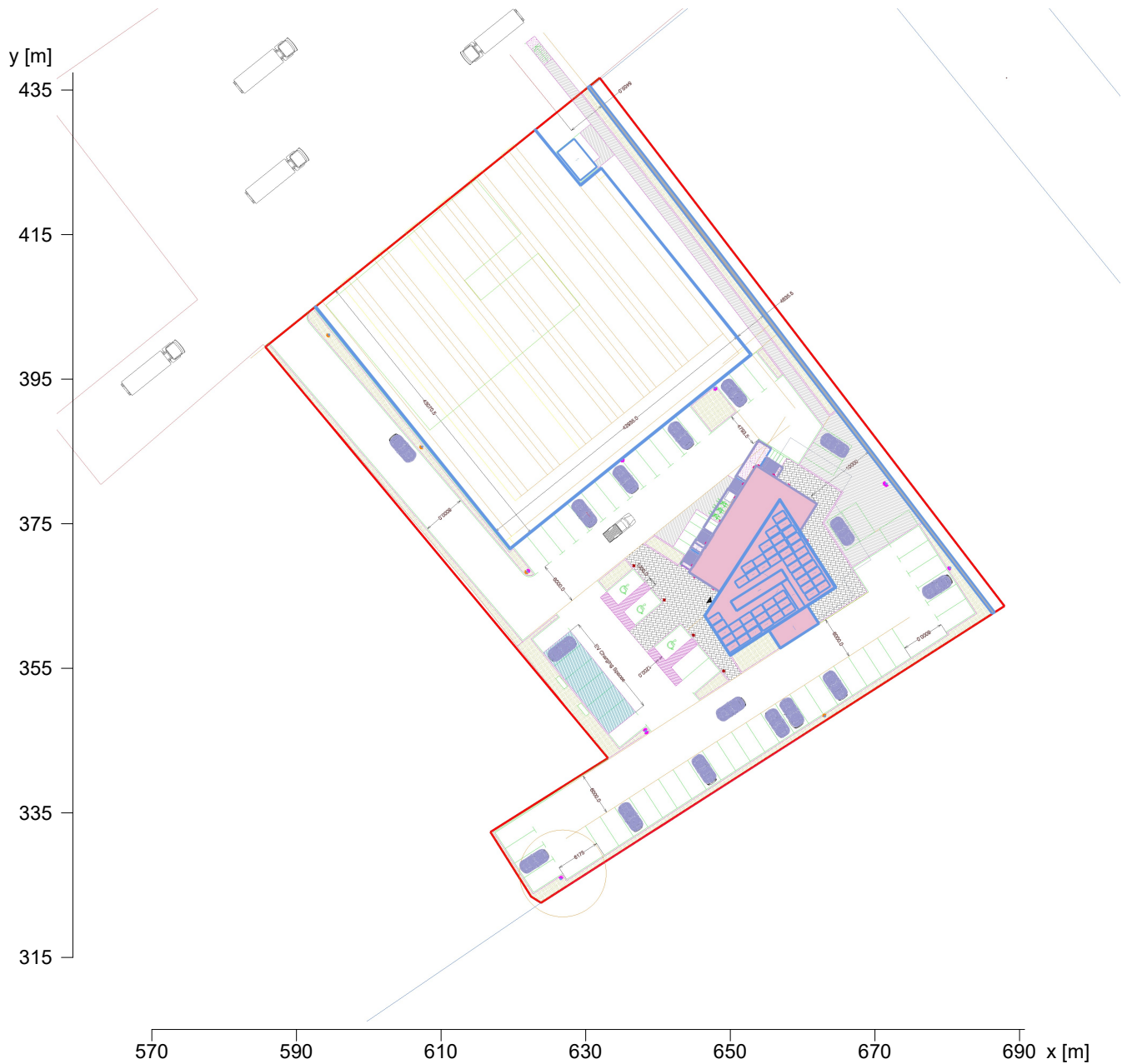
Dimensions : 310 mm x 120 mm x 310 mm



2 Exterior 1

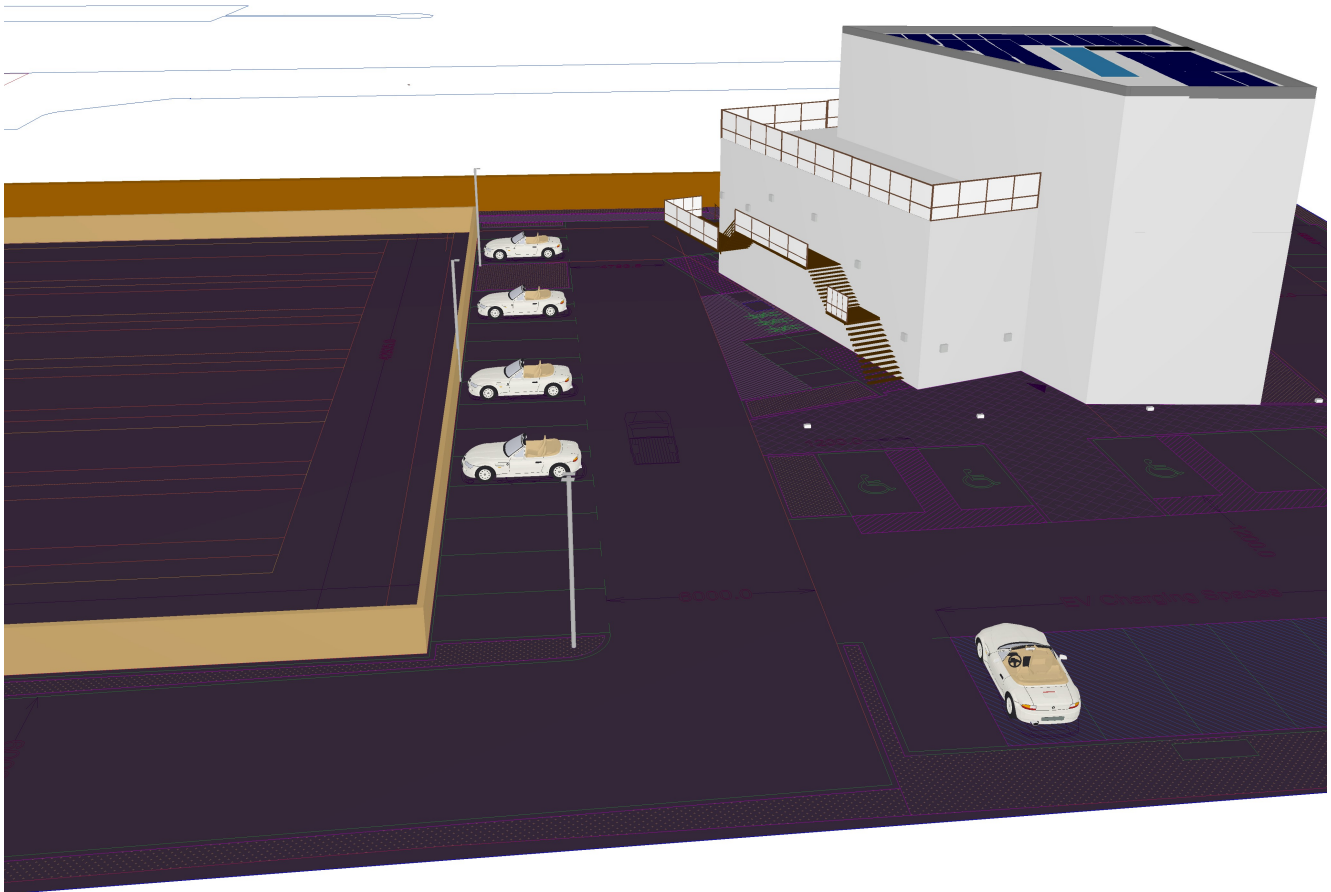
2.1 Description, Exterior 1

2.1.1 Floor plan



2.1 Description, Exterior 1

2.1.2 3D view, View 1

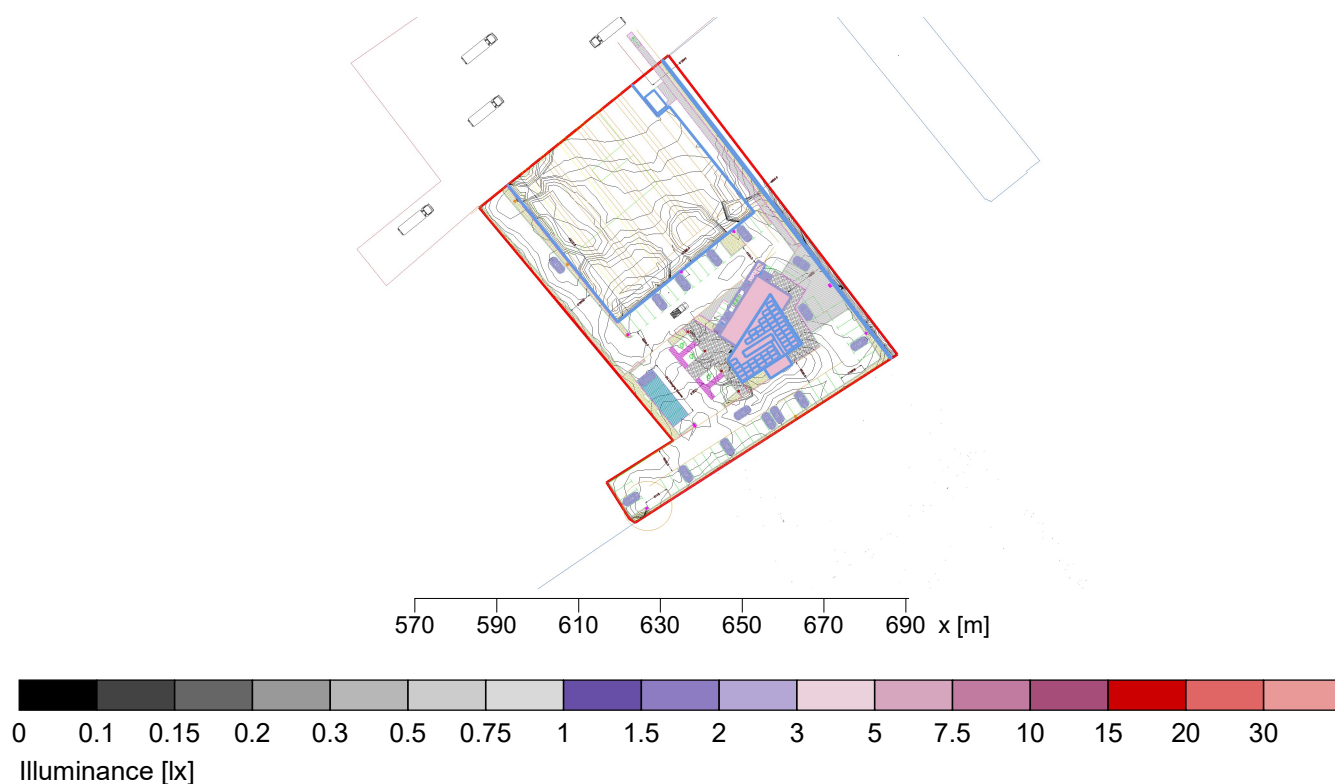


Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

2 Exterior 1

2.2 Summary, Exterior 1

2.2.1 Result overview, Evaluation area 1



General

Calculation algorithm used
Maintenance factor

Average indirect fraction
0.80

Total luminous flux

114084.00 lm

Total power

1104.0 W

Total power per area (5349.36 m²)

0.21 W/m² (1.59 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 $\bar{E}_m$ 13 lx
 E_{min} 0 lx
 $E_{min}/\bar{E}_m (U_o)$ 0.00
 $E_{min}/E_{max} (U_d)$ 0.00
Position 0.00 m

Type No.\Make

2 9 x



HOLOPHANE EUROPE LIMITED

Order No. : DSX0.1.LA083.FW
Luminaire name : D-Series 0 Area luminaire
Equipment : 1 x LED C.8000 Lumens 64 W / 7448 lm

3 4 x



Order No. : DSX0.1.LA083.NR
Luminaire name : D-Series 0 Area luminaire
Equipment : 1 x LED C.8000 Lumens 64 W / 7517 lm

Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

2 Exterior 1

2.2 Summary, Exterior 1

2.2.1 Result overview, Evaluation area 1

4	4 x	Order No.	: DBD.1.LA023.DO.AY.LS.W014
		Luminaire name	: Denver iD Bollard
		Equipment	: 1 x LED C.2,000 Lumens 14 W / 1186 lm

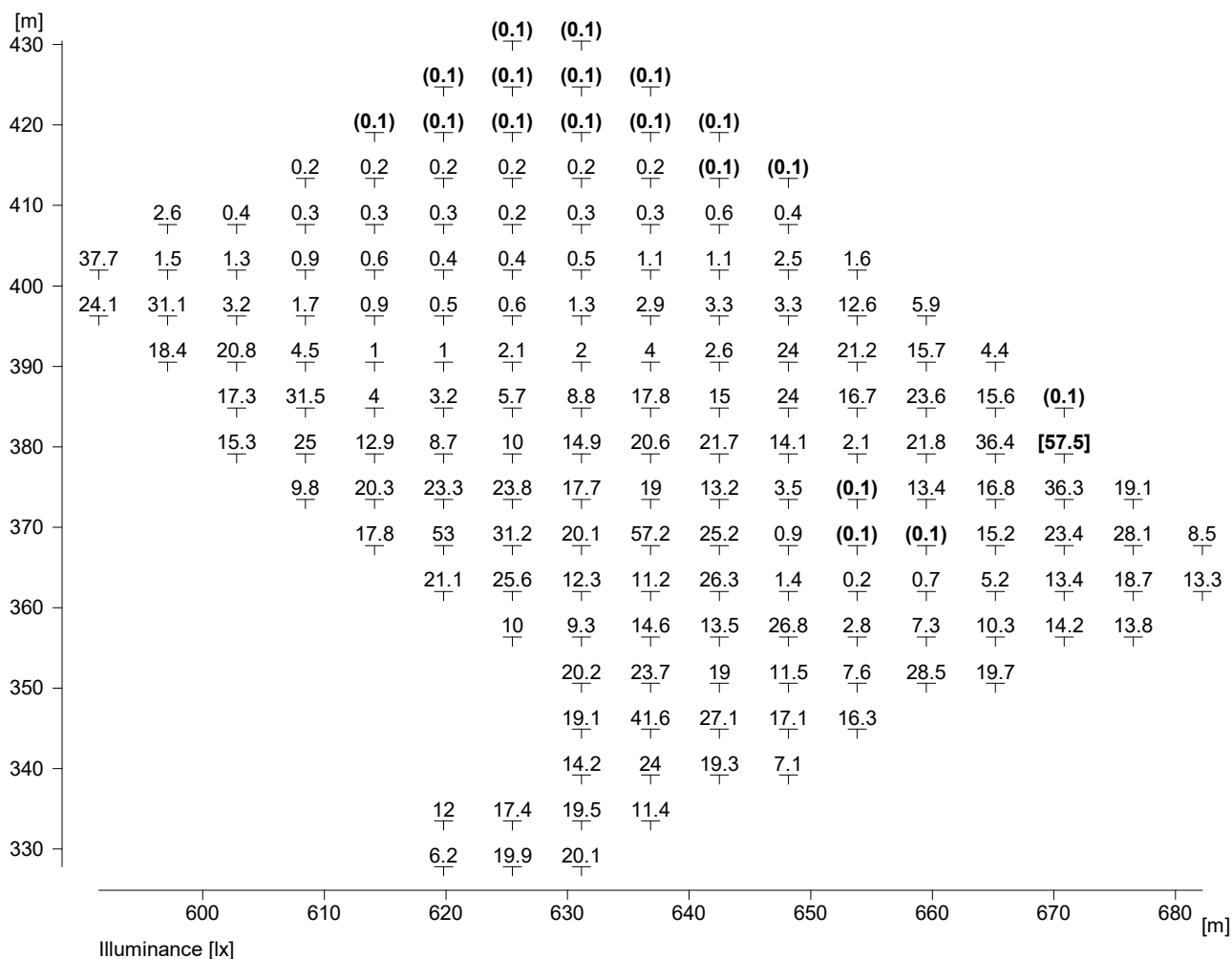
		Thorlux	
5	12 x	Order No.	: CT19015
		Luminaire name	: COBALT HOOD LED
		Equipment	: 1 x 15W LED 18 W / 1020 lm

Object : Seacon Ebbsfleet
Installation : External Lighting
Project number : J1093
Date : 09.05.2023

2 Exterior 1

2.3 Calculation results, Exterior 1

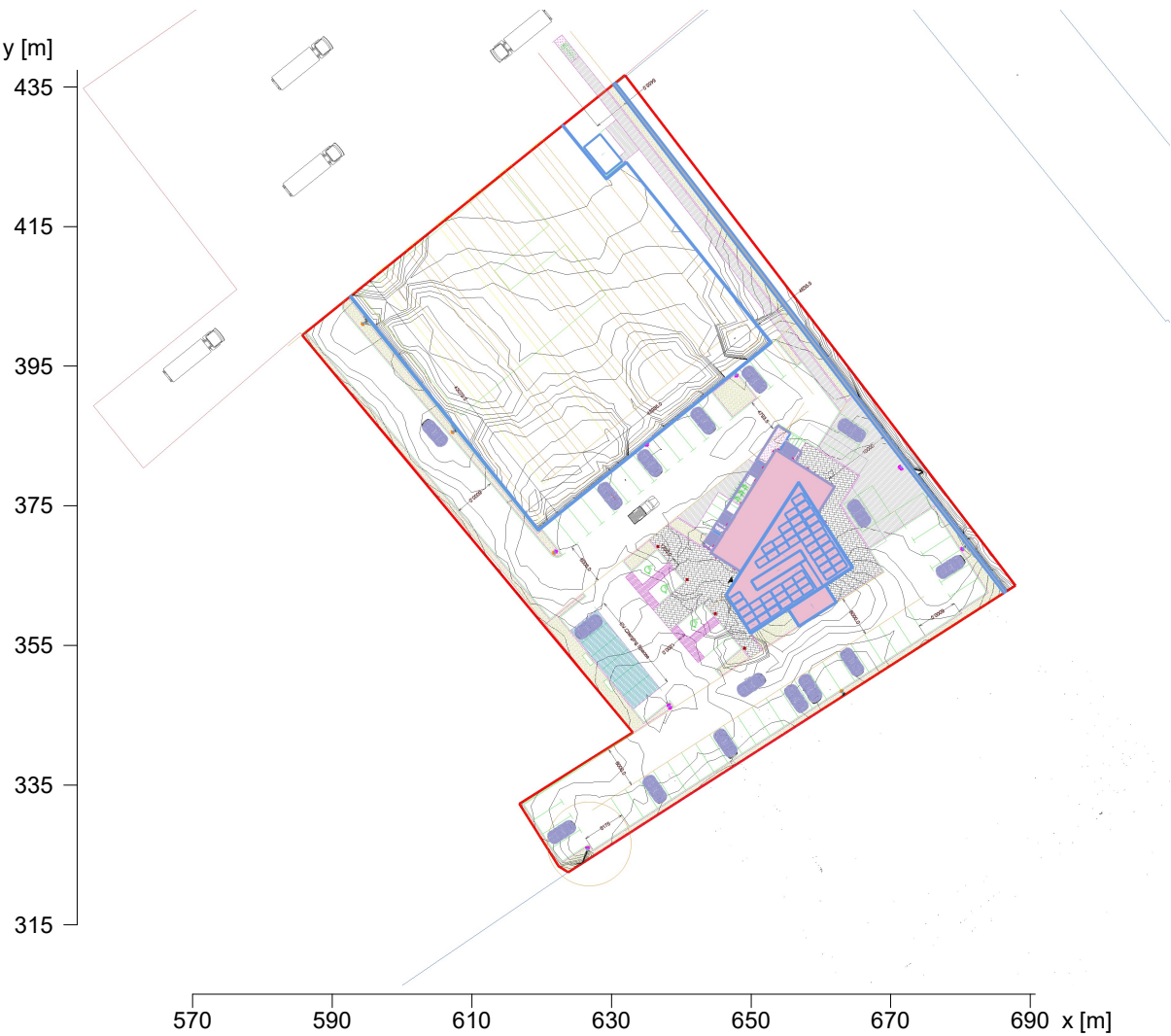
2.3.1 Table, Floor (E)



Average illuminance $\bar{E}_m$: 11.6 lx
Minimum illuminance E_{min} : 0.1 lx
Maximum illuminance E_{max} : 57.5 lx
Uniformity U_o $E_{min}/\bar{E}_m$: 1 : 147.24 (0.01)
Diversity U_d E_{min}/E_{max} : 1 : 732.80 (0.00)

2.3 Calculation results, Exterior 1

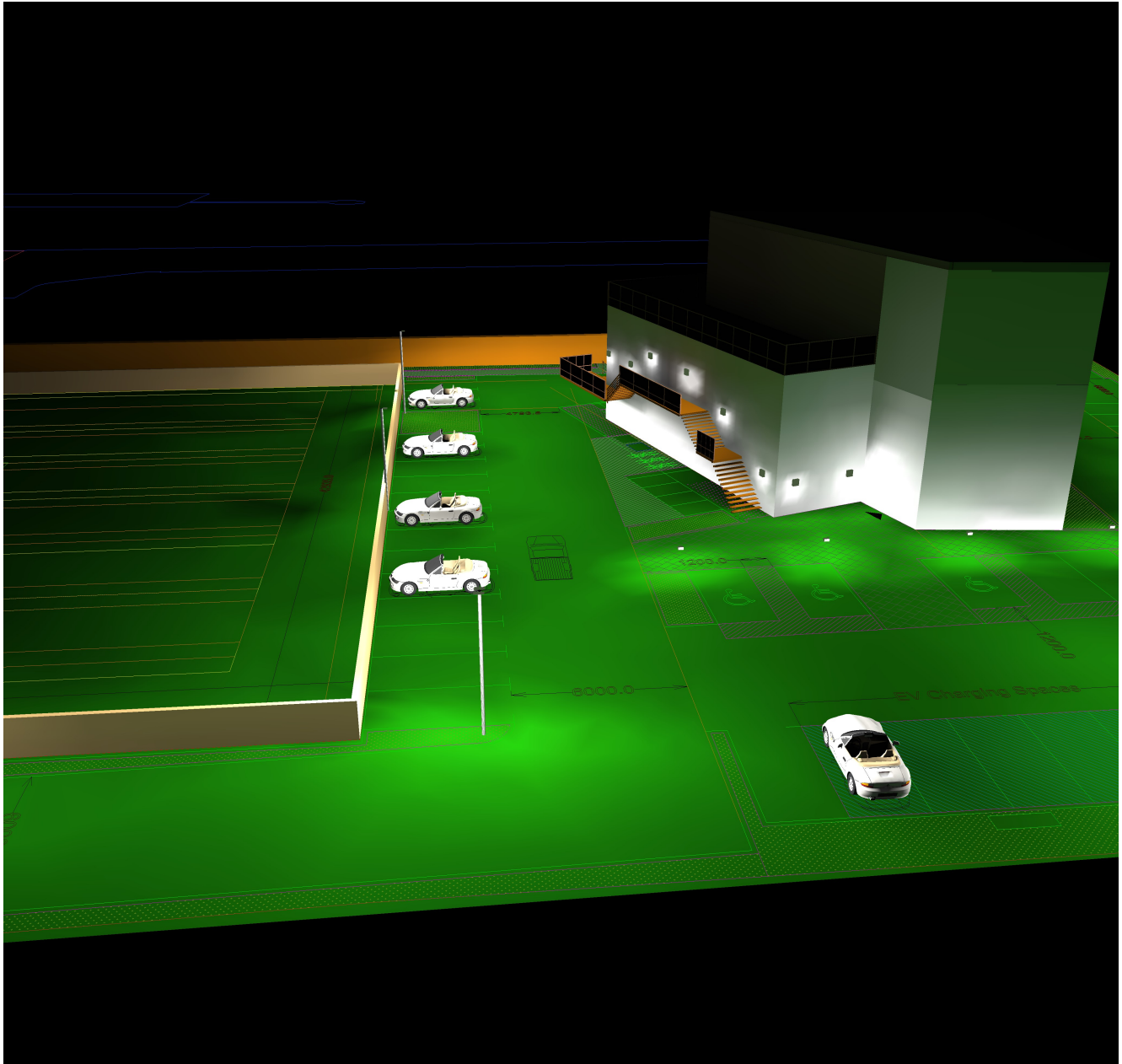
2.3.2 Pseudo colours, Reference plane 1.1 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 13 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 49 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 4738.19 (0.00)
Diversity U_d	E_{min}/E_{max}	: 1 : 17876.71 (0.00)

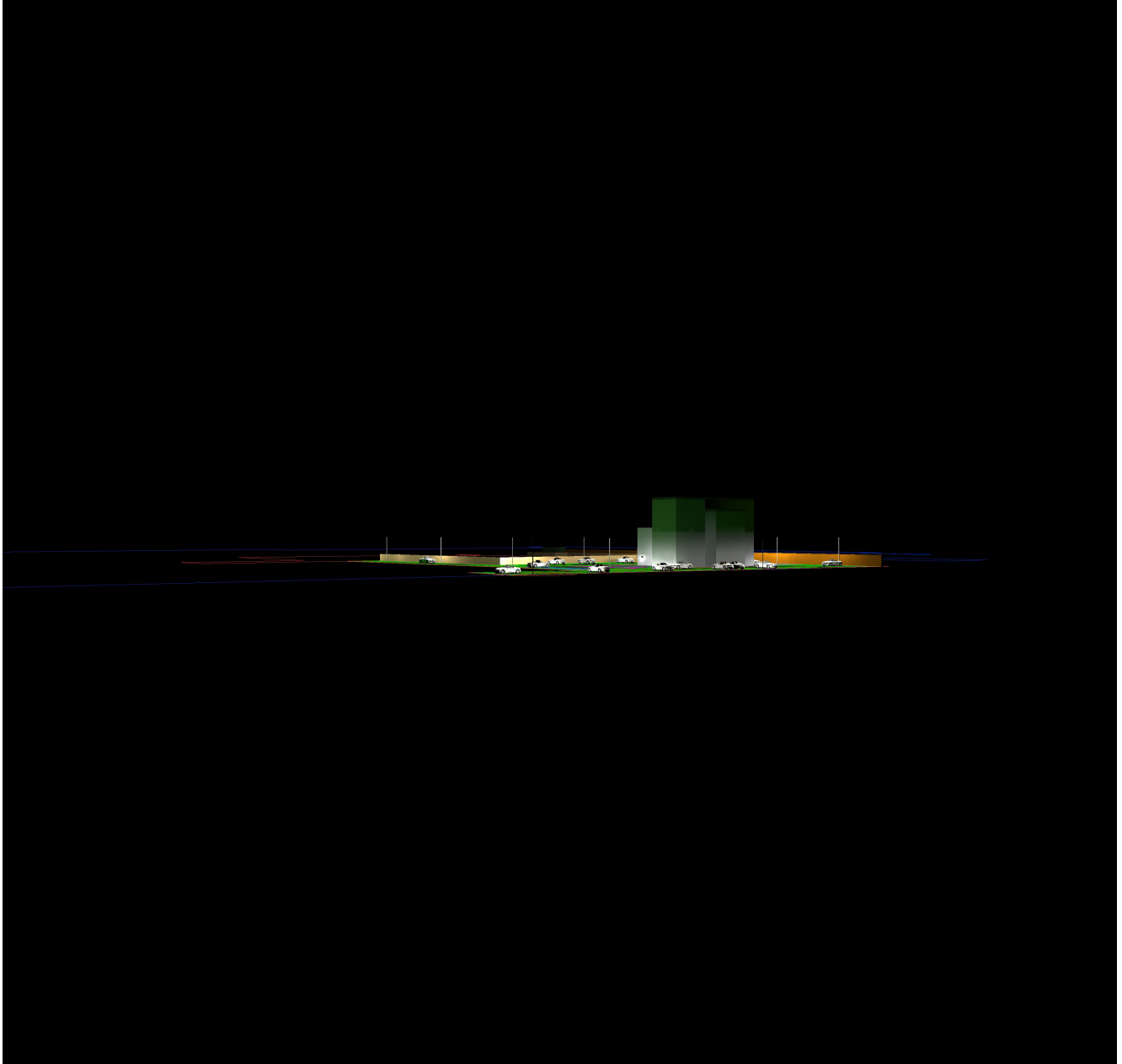
2.3 Calculation results, Exterior 1

2.3.3 3D luminance, View 1



2.3 Calculation results, Exterior 1

2.3.4 3D luminance, View from the front



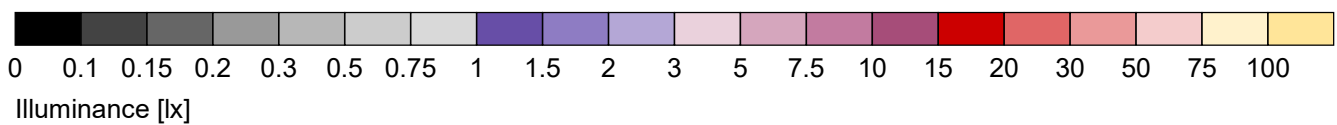
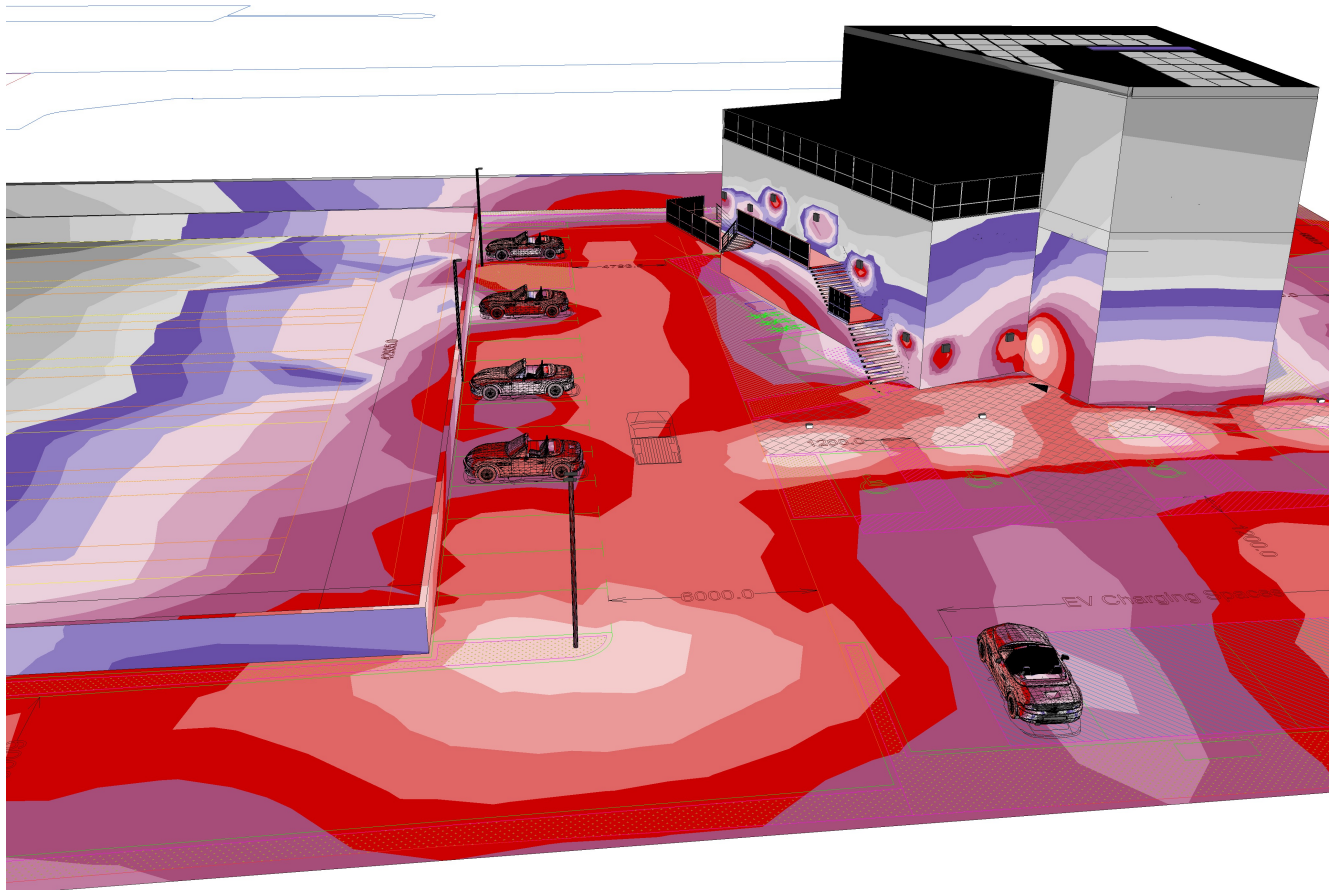
2.3 Calculation results, Exterior 1

2.3.5 3D luminance, View from the left



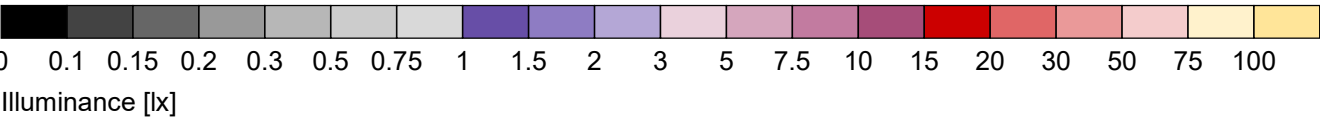
2.3 Calculation results, Exterior 1

2.3.7 3D pseudo colours, View 1 (E)



2.3 Calculation results, Exterior 1

2.3.8 3D pseudo colours, View from the front (E)



2.3 Calculation results, Exterior 1

2.3.9 3D pseudo colours, View from the left (E)

