

E05076 – Hexham Road External Lighting Strategy for Planning

HCC Property Services

Electrical Engineering Services

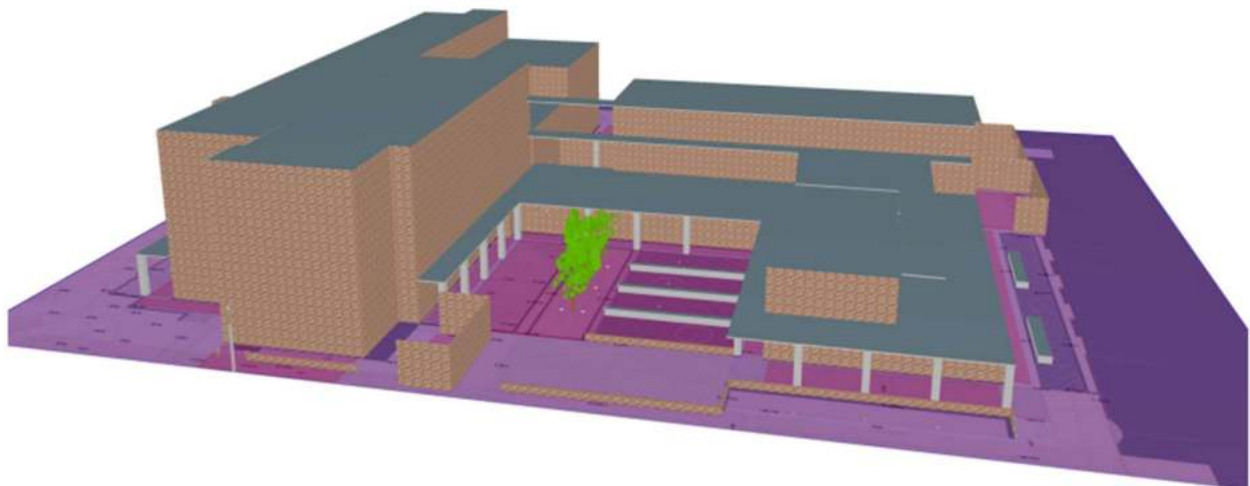
Information for Planning – External

Lighting Strategy

E05076 Hexham Road Redevelopment

February 2023

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E05076 – Hexham Road External Lighting Strategy for Planning

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1 Executive Summary

The following information outlines the strategy at planning stage for the proposed external lighting at Hexham Road Redevelopment, Reading. RG2 7UQ.

An appropriate lighting strategy for the site has been developed and assessment made of effects on the surrounding environment and neighboring properties.

The lighting scheme in this report is a lighting design strategy rather than a detailed design solution. It is recommended that the lighting strategy outlined in this report is adopted including criteria, luminaries, switching methods, lamp types etc. and developed into a more detailed design when undertaking the full external lighting design of the site.

An adequate and safe level of lighting will be provided for site tasks, residents and community activities, amenity and security, whilst maintaining a minimal impact on the site surroundings, environment and neighboring properties.

This lighting strategy considers building-mounted external lighting, pathway lighting, amenity lighting, car park lighting, lighting to the courtyard and sensory garden.

These proposals have been prepared with due note of the recommendations made within ILP Guidance Note 01: 2020 – Guidance notes for the reduction of obtrusive light.

2 Introduction

This report outlines the external lighting strategy for the new development and considers the potential effects of the proposed development's lighting installation on the surrounding areas. The report accompanies the planning application for the proposed Hexham Road Redevelopment.

3 Scope of External Lighting Report

3.2 Site Location & Description

The Hexham Road Redevelopment is well connected to existing transport and footway infrastructure, with doctors, dentists, parks, shops, etc. all within easy walking distance. The development proposals seek full planning permission.

The redevelopment of the site will consist of a day centre providing social care services (Use Class E(f)) and specialist housing (Use Class C3) with landscaping, car parking and access at 2 Hexham Road, Reading. The building will provide a total of 42 dwellings, including 6 general needs flats located at ground floor level and 36 sheltered housing flats on the upper three levels. Two of the general needs flats will be wheelchair accessible. The ground floor also accommodates a 31 place day care service for people with profound and multiple learning difficulties and associated, car parking, open garden spaces and other infrastructure.

3.3 Objectives

The general objective of this report is to provide details of the proposed external lighting and assess the likely impact of the lighting scheme for the proposed Hexham Road Redevelopment Development on the environment and surrounding areas.

The specific objectives of the proposed lighting scheme, when fully designed, will be able:

- To limit light pollution and sky glow
- To limit obtrusive light, spill light / trespass light and glare to neighboring land and properties
- To provide an external lighting strategy and level of illuminance that addresses site security and complies with the police initiative 'Secured by Design' approach
- To provide a safe and adequate level of illuminance for the proposed exterior areas, consisting of entrances/ exits, access routes for cars and transportation, pedestrian and cycle paths, loading bays and lay down areas, car parks and cycle parks, and to allow the site to receive deliveries notionally Mon-Fri 0700-1700, to be confirmed and agreed with the site.
- To provide a safe level of illuminance for movement of vehicles, goods and persons

4 Assessment methodology

An appropriate initial lighting scheme for the site has been assessed using Relux standard industry software. Any stated lighting outputs have been calculated with all the luminaires switched on.

From these initial calculations, lighting plots illustrating the illuminance levels throughout the site and at the boundary have been produced so that the lighting scheme's impact can be assessed. Refer to accompanying lighting information for details.

4.1 Lighting Design Criteria

Relevant legislation, key guidance documents and design standards will be indicated as part of this lighting report, which will form the basis of the detailed lighting design.

4.2 Legislation

- Clean Neighborhoods and Environment Act
- The Clean Neighborhoods and Environment Act 2005 (CNEA) amended
- Section 79 of the Environmental Protection Act 1990

Since 6th April 2006, artificial light can be considered a statutory nuisance unless it is from exempt premises.

If a light nuisance is considered by a local authority to exist, the local authority must serve a notice on the person responsible requiring the abatement of the nuisance, and/or restricting or prohibiting its recurrence.

4.3 National Policy Planning Policy Framework

The National Planning Policy Framework (NPPF) was revised on the 24th of July 2018 and subsequently updated on 19th February 2019 and 19th June 2019. This supersedes the existing policy within the previous NPPF (March 2012). The revised NPPF includes several references to the need to consider the effects of artificial lighting.

4.4 Local Policy Reading Borough Local Plan (2019)

- The Reading Borough Local Plan was adopted in November 2019 and guides development in Reading up to 2031.
- CC7: Design and the Public Realm: The development will be of high design quality that maintains and enhances the character and appearance of the area of Reading in which it is located.
- CC8: Safeguarding Amenity: The Development will not cause a detrimental impact on the living environment of existing residential properties or unacceptable living conditions for new residential properties, in terms of Artificial lighting.
- EN16: Pollution and Water Resources: The Development will only be permitted where it would not be damaging the environment and sensitive receptors through land, noise, or light pollution.

5 Standards

- BS EN 13201-1:2014 Road Lighting, Part 1 Guidelines on selection of lighting classes: specifies the lighting classes set out in EN 13201-2 and gives guidelines on the selection of the most appropriate class for a given situation.
- BS EN 13201-2:2015 Road lighting - Performance requirements: Defines performance requirements which are specified as lighting classes for road lighting aiming at the visual needs of road users, and it considers environmental aspects of road lighting.

- BS EN 5489-1:2013 Code of Practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas: This document provides specific guidance on selecting lighting classes that will help design more energy efficient road lighting schemes. It gives the most up-to-date recommendations for general principles of road lighting including aesthetic, technical aspects, operation and maintenance.
- BS EN 12464-2:2014 Light and lighting - Lighting of workplaces Part 2: Outdoor work: This document outlines requirements for lighting outdoor work places, focusing primarily on visual comfort and performance.
- CIBSE (2016) Lighting Guide LG6 – The Outdoor Environment: presents lighting solutions to basic visual problems and individual characteristics of outdoor lighting applications.

5.1 Lighting Requirements

All external lighting will be designed in accordance with the following lighting standards and guidance, as a minimum.

- BS EN 12464-2:2014; Light and lighting – Lighting of workplaces Part 2: Outdoor work.
- BS EN 5489-1:2013; Code of Practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas.
- BS EN 13201-1:2015 Road Lighting, Part 1 Guidelines on selection of lighting classes.
- BS EN 13201-2:2015 Road Lighting, Part 2 Performance Requirements.
- CIBSE (2016) Lighting Guide LG6 – The Outdoor Environment.

5.2 The Proposed Lighting Scheme

The lighting scheme detailed in this report is a lighting design strategy rather than a detailed design solution.

5.3 Recommended lighting level values

Lighting levels will be in accordance with SLL Code for Lighting and ILP Guidance Note 01-2020 – Guidance note for the reduction of obtrusivelight.

5.4 Strategy for Minimizing Obtrusive Light and Visual Impact of lighting Scheme

Careful consideration will be given to reducing obtrusive light during the night and the visual impact of the lighting scheme during the day, whilst maintaining an adequate level of illuminance for its application on the site. Particular attention will be paid to minimizing any intrusion, glare or sky glow produced by the scheme.

The proposed columns have been chosen to be as inconspicuous as possible. The luminaire column shall generally be galvanized steel or grey coloured. All the luminaires will have 0% upward light ratio, and all necessary measures to reduce the visibility of the light source.

Wherever possible luminaires are to be orientated towards the site, away from the land outside the site to make them less intrusive. Luminaires have been selected to have good light control and cut off angles to reduce light spillage. All the luminaires are directed at the ground to minimize glare.

Building mounted luminaires have been proposed to illuminate final exits and pathways around the building, which have a flat glass to reduce visibility of the light source and have 0% upward light component.

Consideration has been given to reducing the extent of illuminance falling on the building façade to reduce the visual impact of the buildings from a distance, whilst maintaining safe light levels for pedestrian circulation during the hours of darkness, and for security.

5.5 Strategy for Luminaire Types

The site shall be lit using LED luminaries throughout. These will be column-mounted in the car park area, and building mounted LED luminaires will be utilized around the building for amenity and security purposes.

LED luminaires will be utilized throughout, which will provide good colour rendering to improve visibility and provide a safer environment in line with a 'secured by design' approach. Using LED luminaires will provide an energy efficient solution, and Part L and BREEAM compliance. The proposed luminaries, or equal and approved, have been selected as they have been designed to be anti-light pollution and low glare with good levels of efficiency and low upward light ratio.

All the luminaries are IP54/ 66 rated and impact resistant. For specific details, refer to supplementary information that accompanies this report.

5.6 Lighting Strategy and Luminaire Controls

Lighting controls will be utilized to ensure energy saving and minimized impact on the surrounding areas.

The amenity lighting and car park lighting will be timeclock controlled, with individual switches for each lighting column, bollard which will be located in a control cubicle in a suitable location, with consideration given to a duplicate set of switch controls located within the building. Time periods will be set to facilitate community use for the required days/times.

An override facility will be installed should car park lighting outside normal time periods be required.

Building mounted lighting for amenity and security will have timeclock and photocell control, with lights coming on at dusk for amenity and security use, and going off at a pre-determined time, which will be agreed.

Photocells are to be used as a primary control on all amenity and car park lighting so that no luminaries will be left on during daylight hours. In addition, several programmable 7-day time clocks will be wired into the control system so that the amenity lighting circuits can be programmed to turn on/off as and when they are needed to suit the development activities.

5.7 Lighting for Car Park

Column-mounted, dark sky compliant luminaries, utilising 20W LED luminaires as per Thorn Alumet Control Direct LED architectural lighting columns. These luminaries also have controlled directional light with zero upward light output to reduce light pollution, light spill and discomfort glare. The lighting columns will be positioned to keep light spill beyond the site boundary to a minimum.

The carpark will also benefit from the borrowed light from the pedestrian walkway lighting under the north facing entrance canopy.

The luminaires accompanying this report will be controlled via photocell, timeclock and override switch to come on at dusk and go off at predetermined time at night.

5.8 Walkways & Terraces

The pedestrian/ tenant walkways will be provided with recessed linear soffit luminaires comprising LED tape mounted within an IP20 enclosure that will be recessed within the ceiling pathway soffit at all levels above ground floor. Terraces will be provided with a combination of wall mounted aluminum IP65 11W cylinder downlights mounted to the columns. These wall mounted downlights will provide a cylindrical cone of light to the floor and will have a colour temperature of 3000⁰K, together with IP65 recessed wall mounted brick luminaires, which are made of stainless steel and aluminum, the built-in LEDs are covered by a glass sheet utilising 9.5W LEDs with built-in reflector means that the light output is asymmetrically to provide lighting at low level. These recessed wall mounted brick lights will have a colour temperature of 3000⁰K.

The central pedestrian/ tenant walkway area surrounding the courtyard will be provided with wall mounted cylinder uplighter/ downlighters, these wall mounted aluminum IP65 19W LED cylinder uplighter/ downlights. These wall mounted uplighter/ downlights will provide a cylindrical cone of light to the floor and ceiling soffit and have a colour temperature of 3000⁰K.

The luminaires as proposed by CLS:

- FLS6 10W LED Tape & PRO35SR Extruded Enclosure (See EL-2 luminaire type below)
- Enola Round M Downlight (See EL-3 luminaire type below)
- Enola Round M Up/ Downlight (See EL-6 luminaire type below)
- Brick (See EL-5 luminaire type below)

The luminaires accompanying this report will be controlled via photocell, timeclock and override switch to come on at dusk and go off at predetermined time at night.

5.9 Lighting for South Entrance

Column-mounted, dark sky compliant luminaries, utilising 20W LED luminaires as per Thorn Alumat Control Direct LED architectural lighting columns. These luminaries also have controlled directional light with zero upward light output to reduce light pollution, light spill and discomfort glare. The lighting columns will be positioned to keep light spill beyond the site boundary to a minimum.

Recessed wall mounted brick luminaire, which is made of stainless steel and aluminum, the built-in LEDs are covered by a glass sheet utilising 9.5W LEDs with built-in reflector means that the light output is asymmetrically to provide lighting at low level. These recessed wall mounted brick lights will have a colour temperature of 3000⁰K.

The luminaire as proposed by CLS:

- Alumat Direct Control (See EL 1 luminaire type below)
- Brick light (See EL 5 luminaire type below)

5.10 Communal Garden to the Day Service

The communal garden trees will be provided with in ground 29W LED uplighters strategically located on either side to illuminate the tree trunk. The uplighter will be provided with close optic control so that minimal spill light is generated. These in ground mounted uplighters will have a colour temperature of 3000⁰K.

Recessed wall mounted brick luminaire will be installed within the planter boxes, the luminaire is made of stainless steel and aluminum, the built-in LEDs are covered by a glass sheet utilising 9.5W LED's with built-in reflector means that the light output is asymmetrically to provide lighting at low level. These recessed wall mounted brick lights will have a colour temperature of 3000⁰K

17W LED Bollards will be installed within the planter boxes to provide a downward light to the planters.

The luminaires as proposed by CLS:

- Brick light (See EL 5 luminaire type below)

- Dasara Symmetrical In ground uplight (See EL-7 luminaire type below)
- Bollard (See EL-4 luminaire type below)

The luminaires accompanying this report will be controlled via photocell, timeclock and override switch to come on at dusk and go off at predetermined time at night.

5.11 The Building mounted luminaires

Building-mounted wall luminaires are proposed for amenity, walkway and security external lighting to the external perimeter of the building at ground floor level, these will generally comprise a combination of wall mounted cylinder uplighter/ downlighters, these wall mounted aluminum IP65 20W LED cylinder uplighter/ downlights. These wall mounted uplighter/ downlights will provide a cylindrical cone of light to the floor and ceiling soffit and have a colour temperature of 3000⁰K. and wall mounted aluminum IP65 11W LED cylinder downlights mounted to the columns. These wall mounted downlights will provide a cylindrical cone of light to the floor and will have a colour temperature of 3000⁰K.

The luminaires as proposed by CLS:

- Enola Round M Downlight (See EL 3 luminaire type below)
- Enola Round M Up/ Downlight (See EL 6 luminaire type below)

The luminaires accompanying this report. will be controlled via photocell, timeclock and override switch to come on at dusk and go off at predetermined time at night.

Assessment of the impact of the overall lighting scheme

Drawings and the accompanying manufacturer's calculations and data sheets, show the lighting scheme for the:

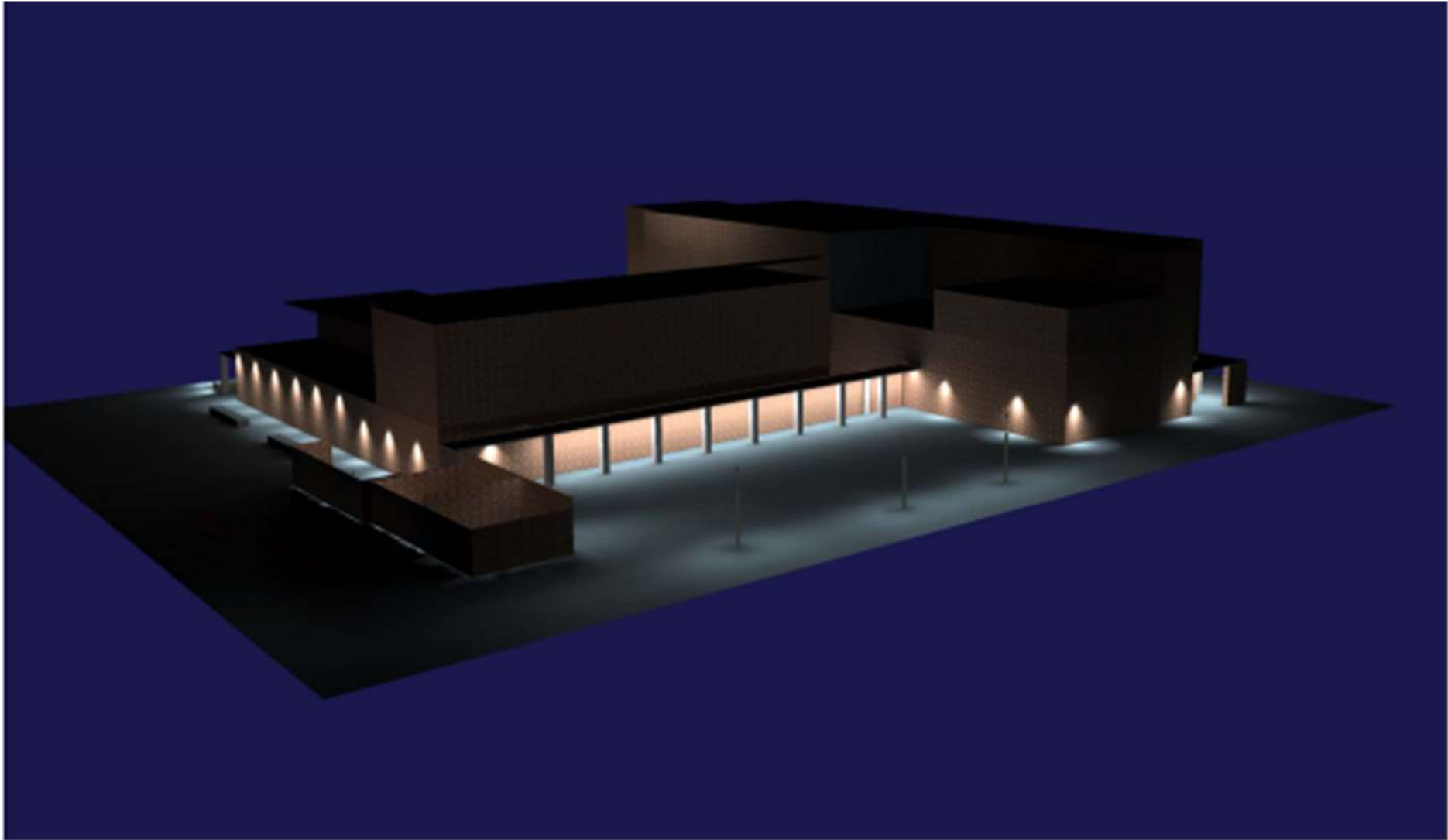
- Ground floor - Car park and pedestrian entrance lighting
- Ground floor – Courtyard and walkways lighting
- First floor - Walkway lighting
- Second floor – Walkway lighting
- Third floor - Walkway and terraces lighting

With the illuminance levels shown throughout the site and at the boundaries. The calculation model was prepared using industry standard software, Relux. It shows that adequate levels of lighting have been achieved on the site with minimal effect on the surrounding area, as required by the various standards.

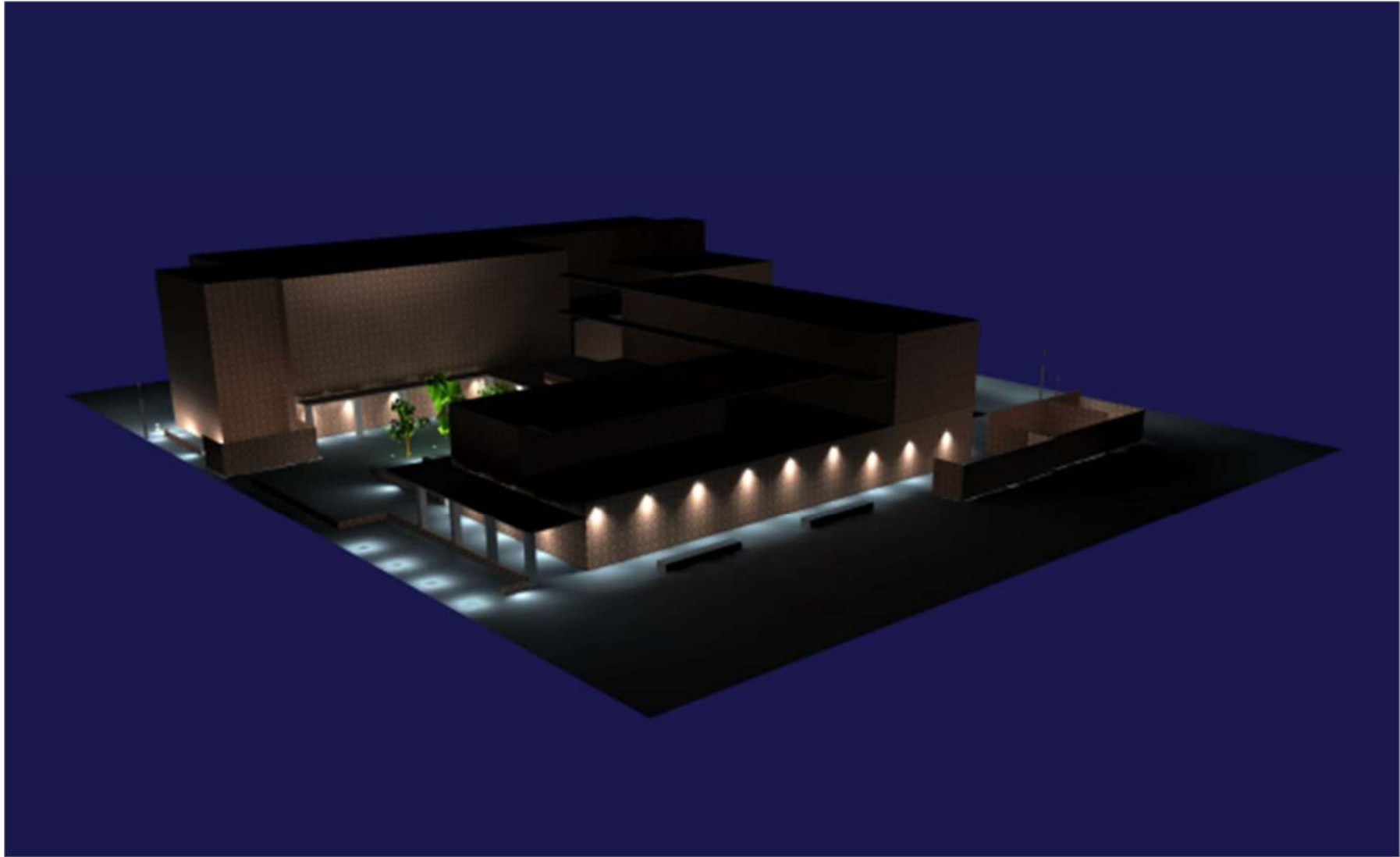
Refer to Appendix A for the detailed calculations.

Ground Floor Architectural External Lighting Proposal





Carpark & Pedestrian Entrance Lighting View – 3D Illuminance



East Elevation Lighting View – 3D Illuminance

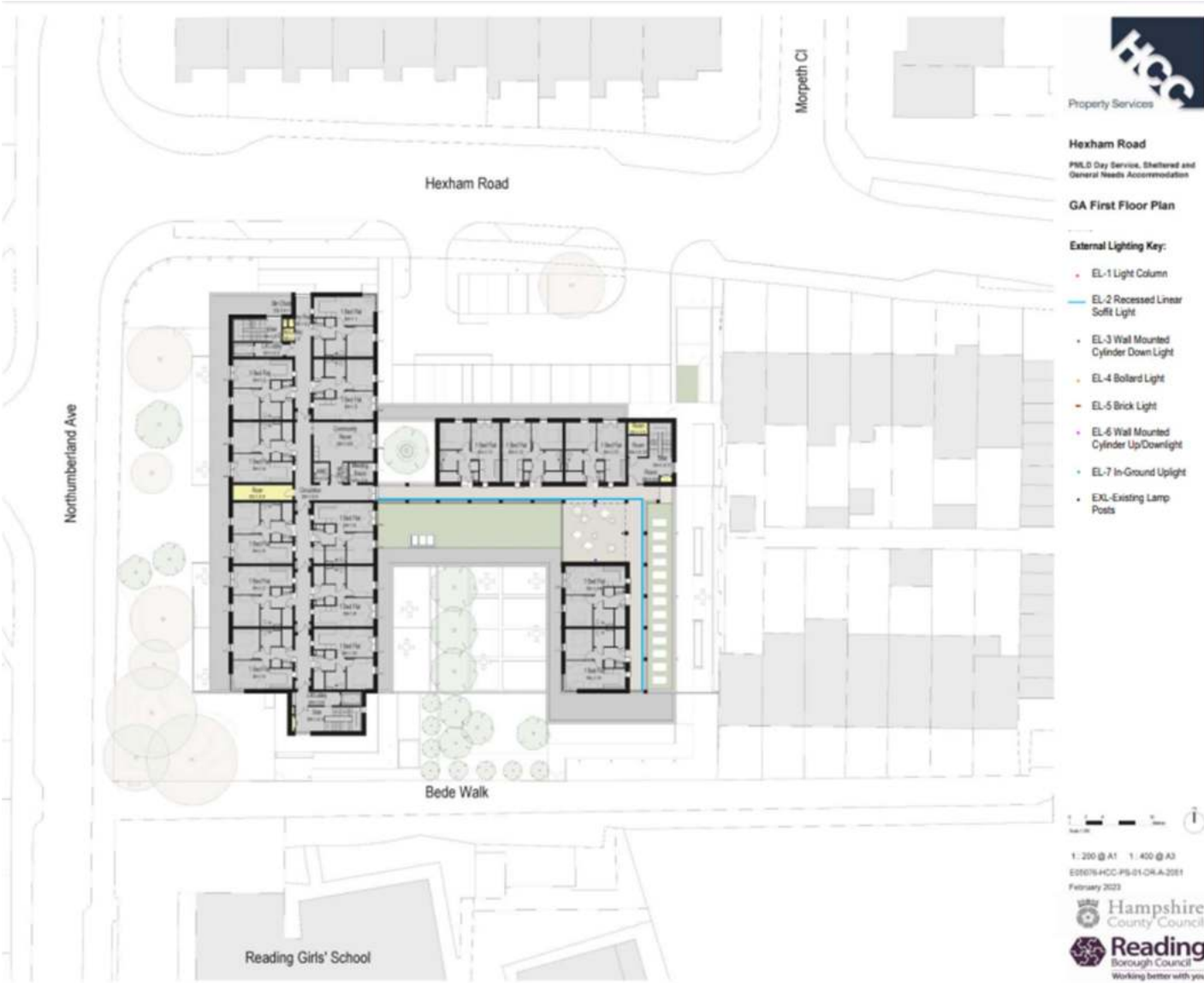


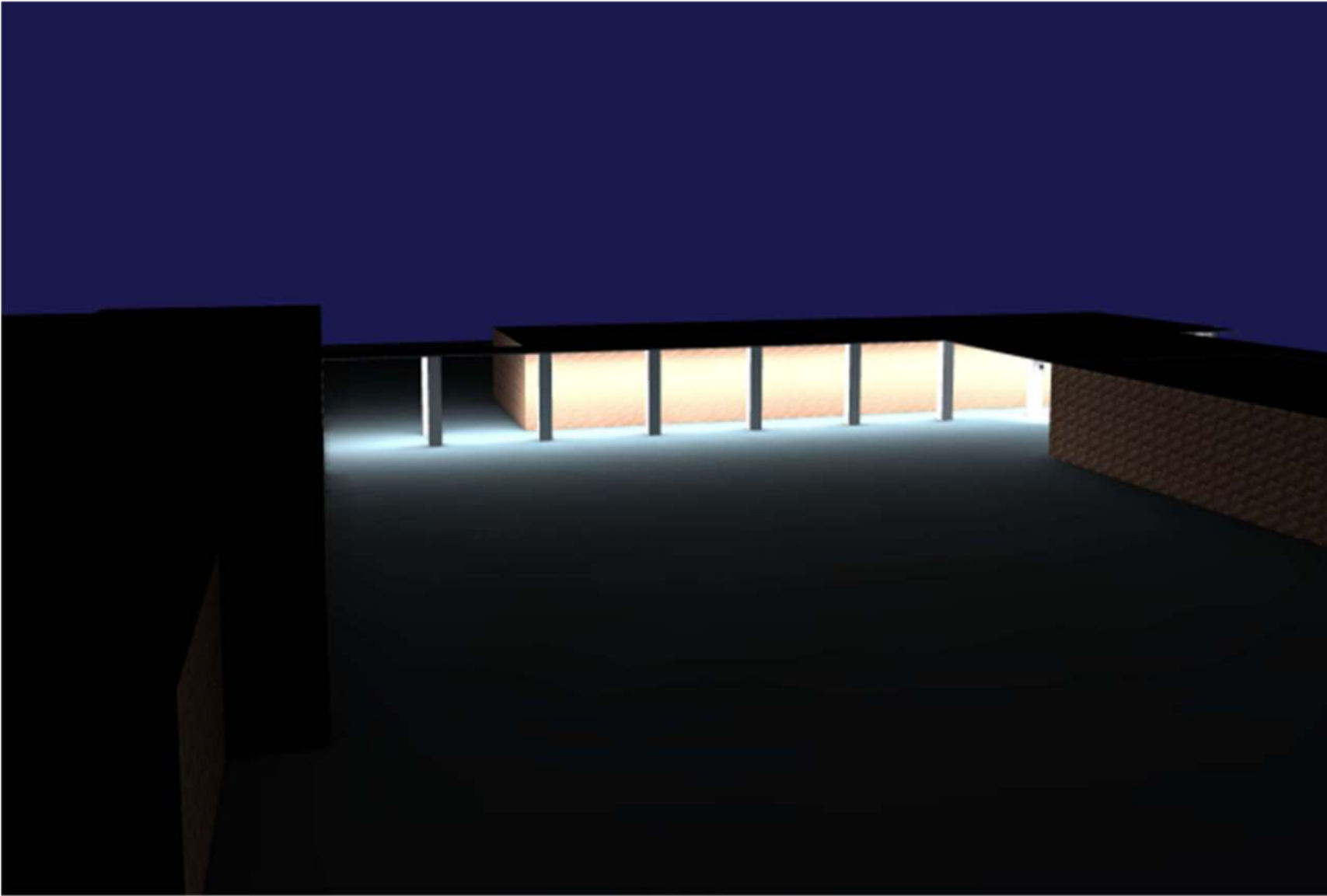
Courtyard Lighting View – 3D Illuminance



West Elevation Lighting View – 3D Illuminance

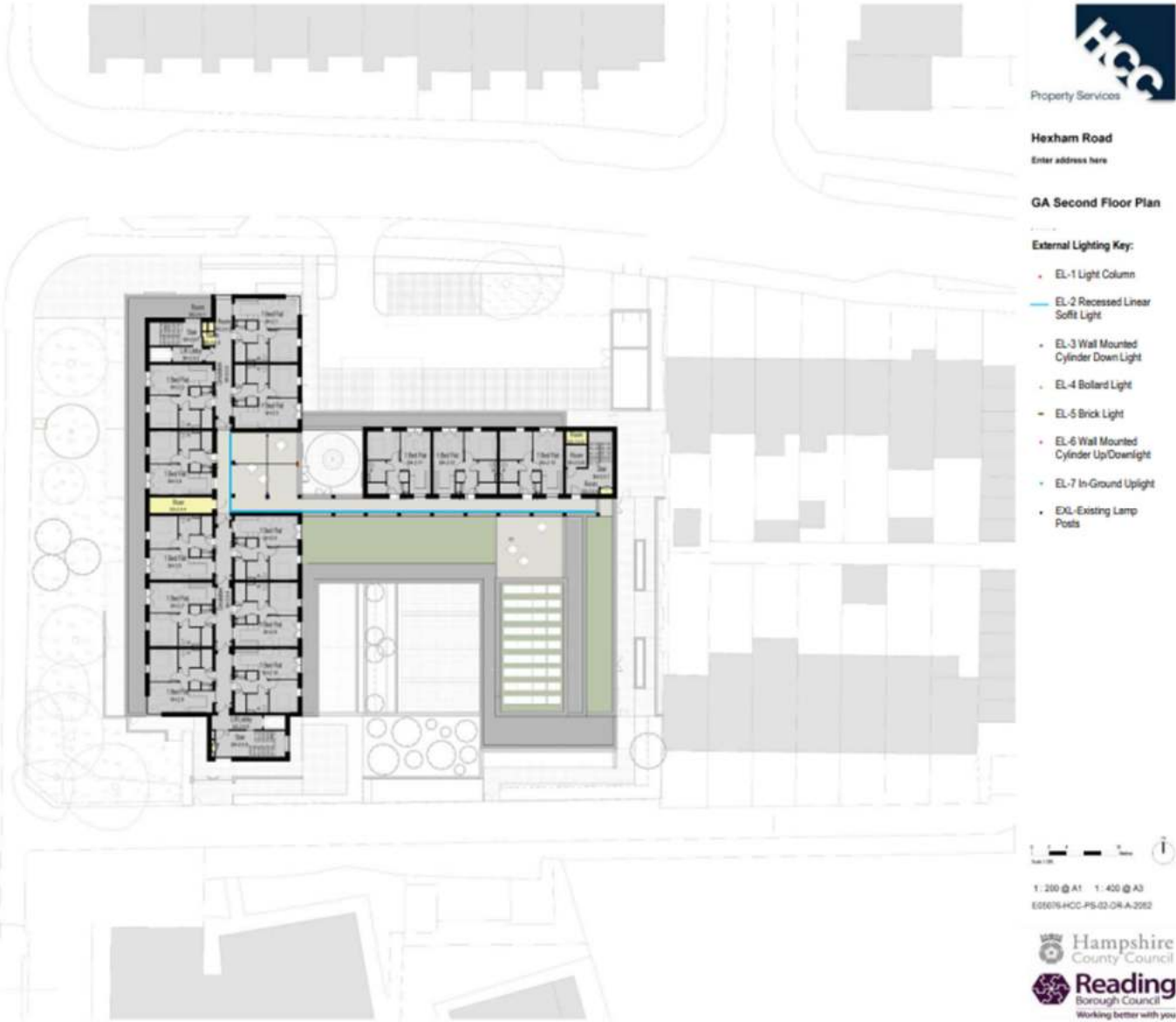
First Floor Architectural External Lighting Proposal

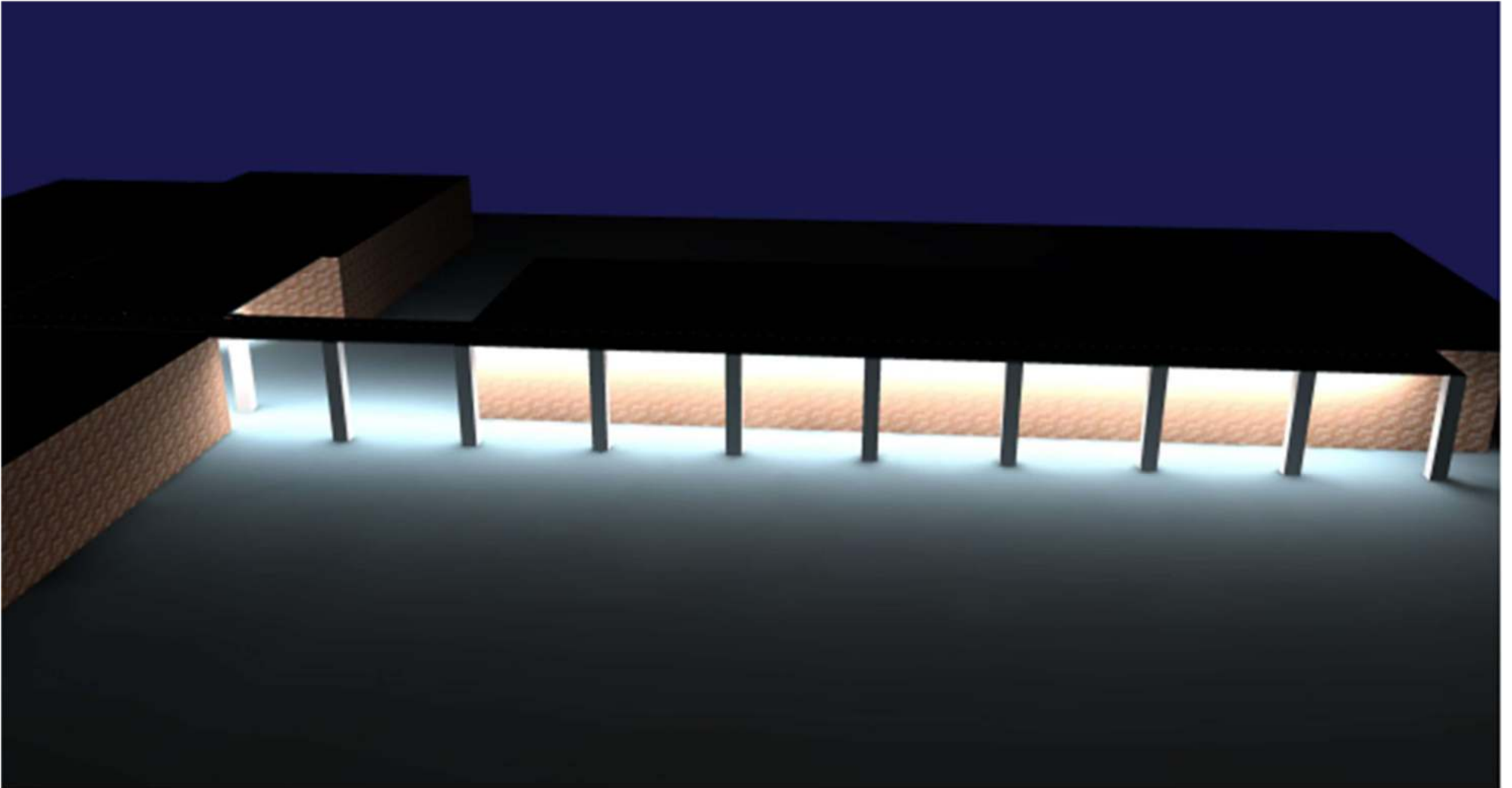




First Floor Walkway Lighting View – 3D Illuminance

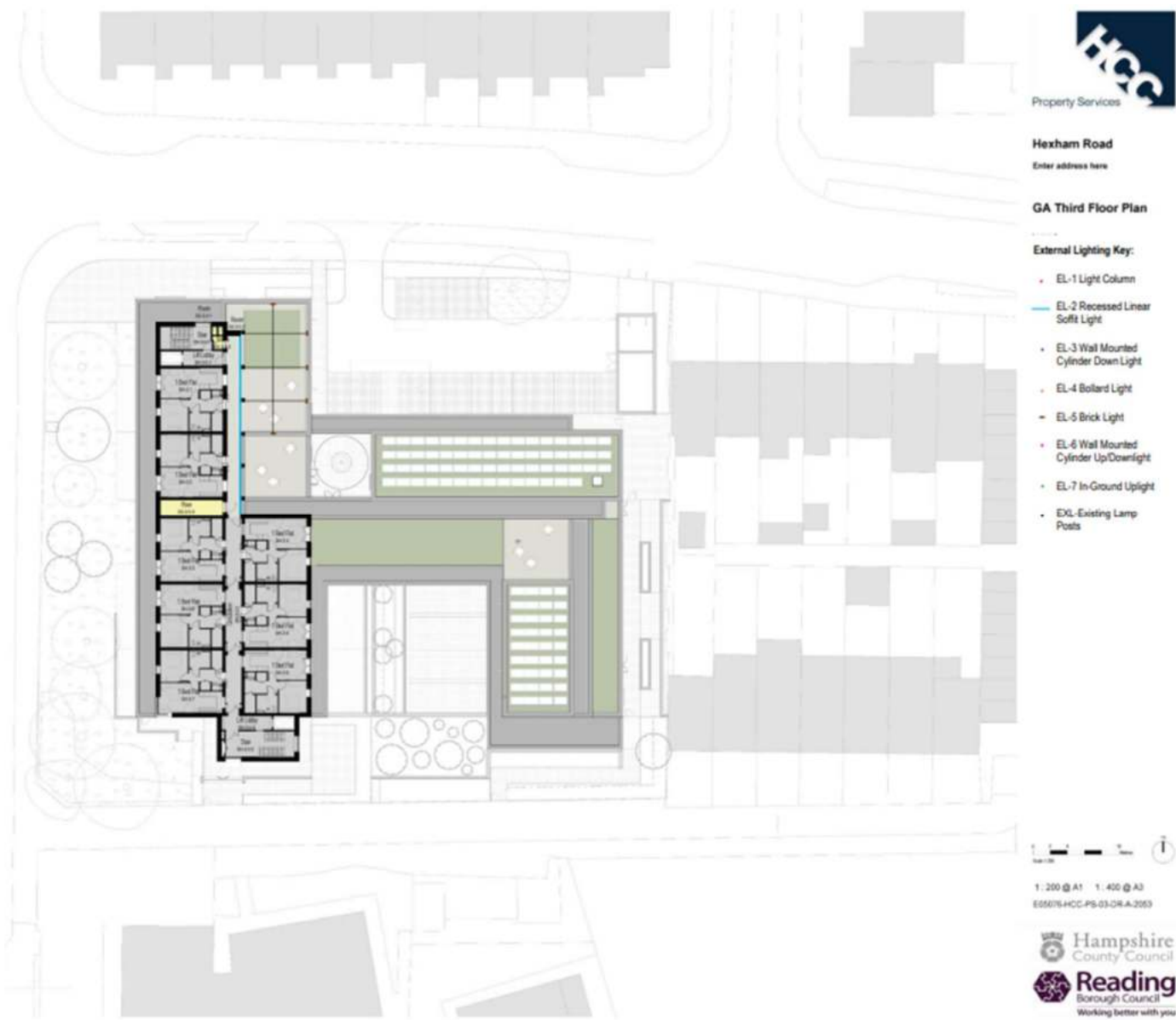
Second Floor Architectural External Lighting Proposal

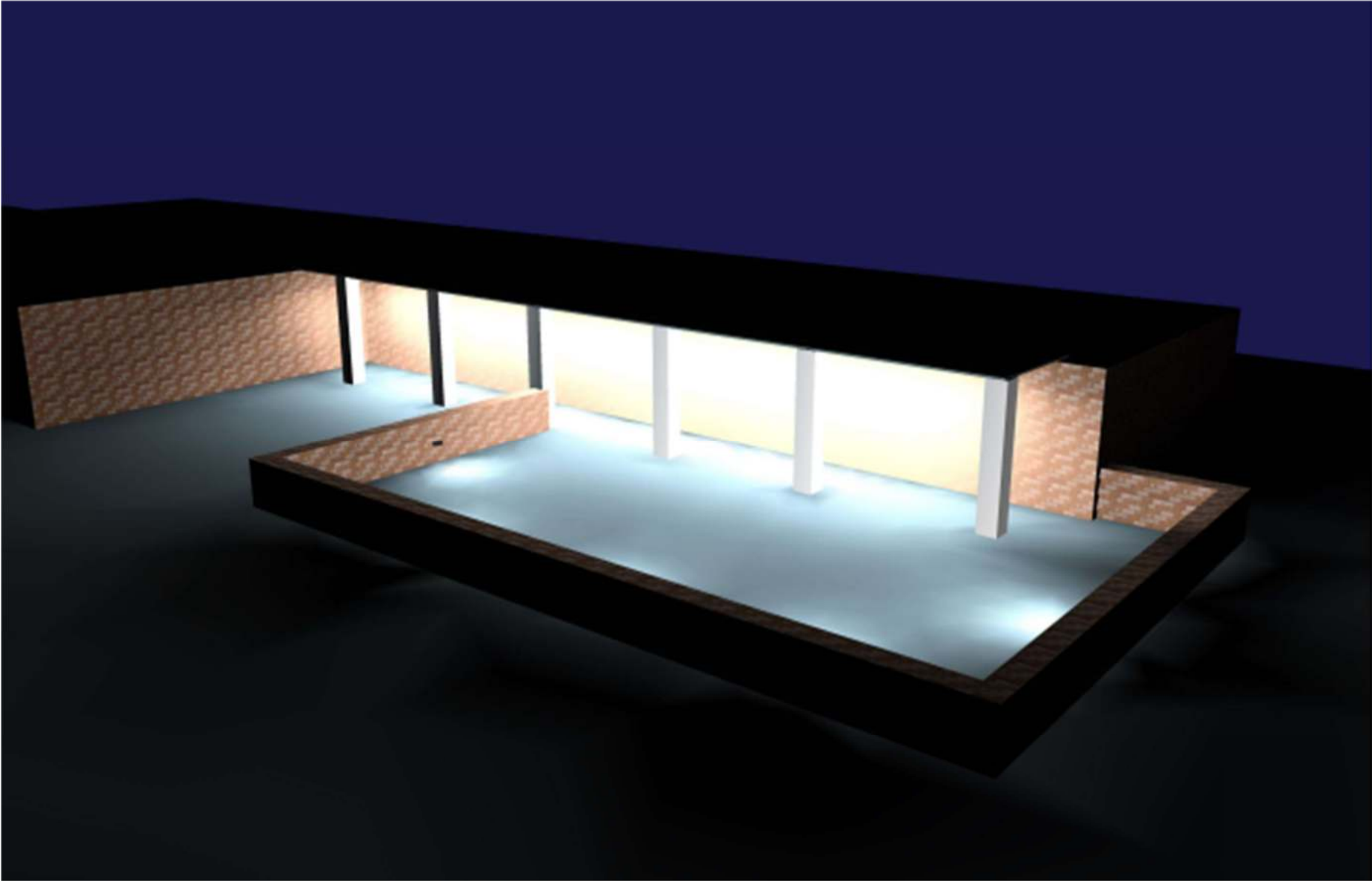




Second Floor Walkway Lighting View – 3D Illuminance

Third Floor Architectural External Lighting Proposal





Third Floor Walkway & Terrace Lighting View – 3D Illuminance

6 Proposed luminaires types

- EL- 1 Alumet IP66 20W LED Light Column
- EL- 2 Extruded Enclosure with IP65 10W LED tape Linear Soffit Light
- EL-2E As above but complete with Remote Emergency Battery Pack
- EL- 3 Enola Wall Mounted 11W LED Cylinder Down Light
- EL- 3E As above but complete with Remote Emergency Battery Pack
- EL- 4 17W LED Bollard Light
- EL- 5 Brick Light
- EL- 6 Enola Wall Mounted 20W LED Cylinder Up & Down Light
- EL- 6E As above but complete with Remote Emergency Battery Pack
- EL- 7 Symmetrical in Ground 29W LED Up Light
- EXL-Existing Lamp Posts

6.1 Manufacturers Data Sheets

- EL- 1 20W LED Light Column (Alumet Direct Control)

Alumet Control Direct

96274743 ALUMET CD 24L25-730 WSC-A CL LRT CL2 G4

THORN

LED 20W ALUL_24L25WSC3KCL	ISO 9223	C3	IP66	IK10		CE						T _a 25	
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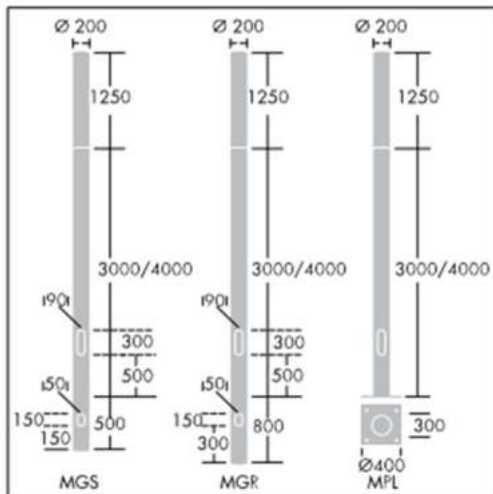
Alumet Control Direct

An architectural lighting column head with 24 LEDs driven at 250mA with a Wide Street & Comfort, asymmetric distribution and clear optic, configured for power reduction, controlled by an additional switched phase cable. ON = 100%, OFF = 50%, Top cap: die-cast aluminium. Diffuser: clear UV stabilised polycarbonate treated with anti graffiti varnish. Top cap and column: powder coated textured silver grey (close to RAL 9006), other RAL colours on request. Class II electrical, IK10, IP66. To be mounted on an Alumet column. Surge protection: 10kV single pulse common mode and 8kV multipulse common mode and 6kV multipulse differential mode. If permanent DALI system is connected, 6kV multipulse common and differential mode. Complete with 3000K LED

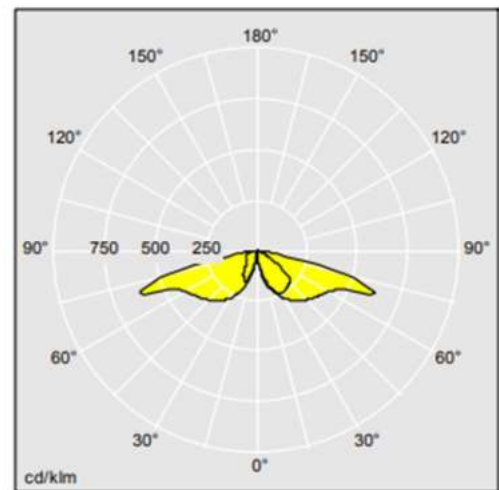
Dimensions: Ø200 x 1250 mm
 Luminaire input power: 20 W
 Luminaire luminous flux: 2069 lm
 Luminaire efficacy: 103 lm/W
 Weight: 9.8 kg
 Scx: 0.079 m²



TLG_ALUM_F_DIR_LED24_LGY.jpg



TLG_ALUM_M_2LD1.wmf



TLLA_ALCD24L25WSC3KG33_DC.lxt

Lamp position: STD - standard
 Light Source: LED
 Luminaire luminous flux*: 2069 lm
 Luminaire efficacy*: 103 lm/W
 Colour Rendering Index min.: 70
 Ballast: 1 x 96271178 DRV OS OT 60W 1.05A 115V
 D #1A0 4DIMLT2

Correlated colour temperature: 3000 Kelvin
 Chromaticity tolerance (initial MacAdam): 5
 Rated useful life (B10)*:
 L80 100000h at 25°C
 Luminaire input power*: 20 W Power factor = 0.95
 Dimming: SETLRT dimmable to 10%
 LOR: 1,00 ULOR: 0,00 DLOR: 1,00

- EL- 2 Recessed Linear Soffit Light (Enclosure)

Recessed PRO Black - 50 x 35

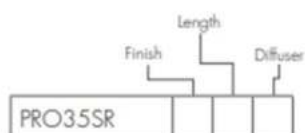
PRO35SR - XXX



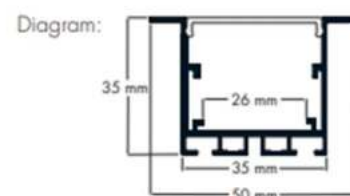
PRO



Product Reference:



PRO35SR	Finish	Length	Diffuser	Accessories
	1 Black	1m 1 meter 2m 2 meter	O Opal C Clear	PRO-90D Corner Coupler PRO-180D Straight Coupler



* Each meter of Foss Profile comes with 2 Clips + End Caps as standard; for extra packs please quote code PRO35SR-1AC

- EL- 2 Recessed Linear Soffit Light (LED Tape located within above enclosure)

Single Colour - 10W Per Metre
FLS3 - XXXXX



IP65

IP20

DC 24V

WA 80

Single
Binning

CRI 92+

Dimmable

3 Step
Manuals

5 Year

Our ECO SERIES 10W per metre LED Strip features branded high efficiency 2835 SMD LEDs on a 2oz PCB board for a durable finish.

Easy mounting thanks to added strength (3M 300LSE) self adhesive and backed up by a 3 year standard and 5 year Extended Manufacturer's Warranty.

Product Reference:

	Finish	Kelvin	Beam Angle	Light Source	Pack
FLS3					

FLS3

Finish

0 IP20

5 IP65

Kelvin

G 2700K

C 3000K

N 4000K

D 6500K

B Blue

Beam Angle

1 120°

Light Source - Per Metre

S3 780 - 900 lm/10w

Blue 165lm / MCD Conversion

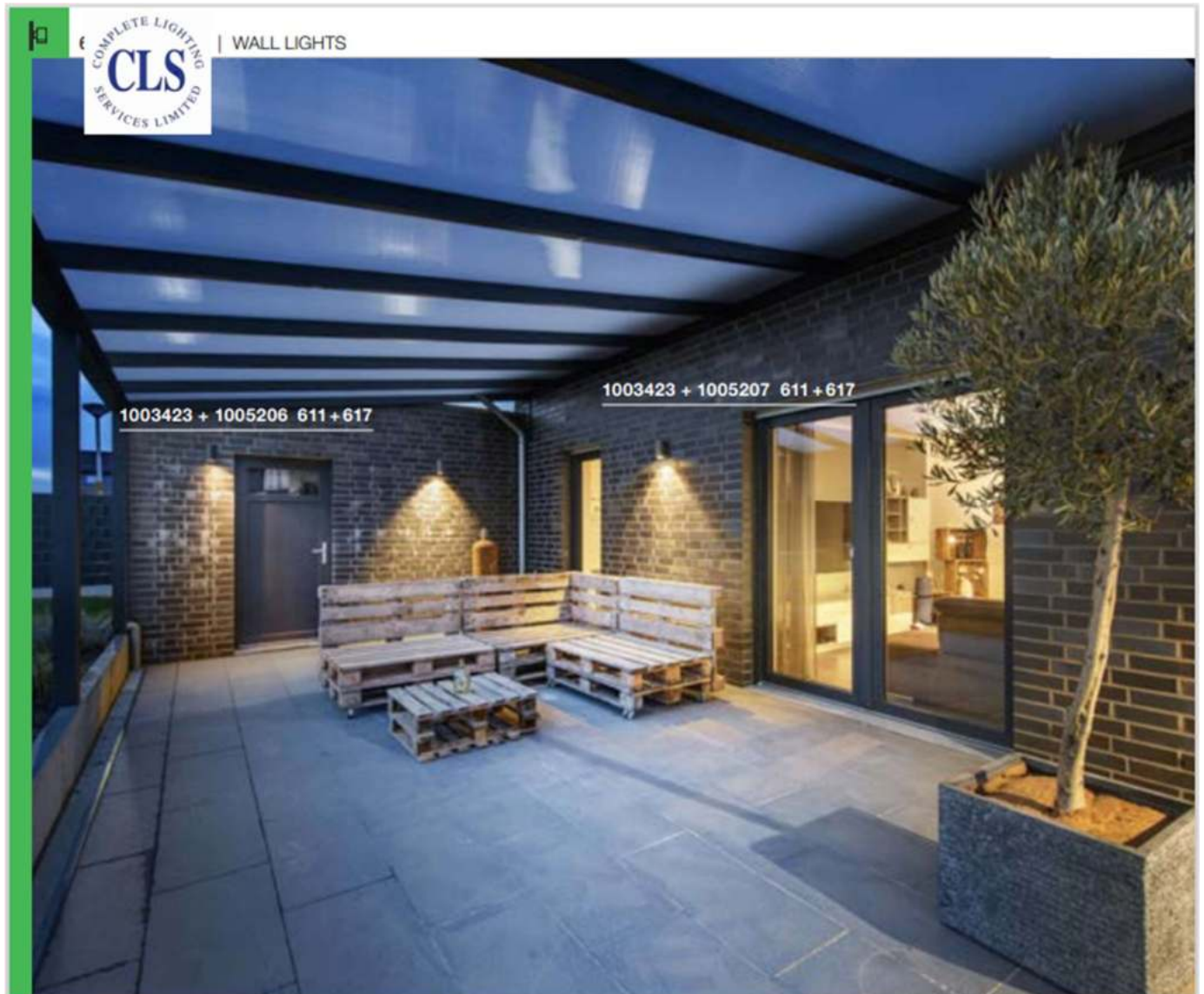
Pack

1 5 metre Reel

2 10 metre Reel




- EL- 3 Wall Mounted Cylinder Down Light



- EL- 3 Wall Mounted Cylinder Down Light

OUTDOOR | WALL LIGHTS 611

ENOLA ROUND S
WL, single

60°




4500m / 5000m
3000K / 4000K



100-240V ~50/60Hz | 500mA
Total wattage: 6W
Material: aluminium/glass

ENOLA ROUND M
WL, single

60°




8600m / 9600m
3000K / 4000K



220-240V ~50/60Hz | 500mA
Total wattage: 11W
Material: aluminium/glass

ENOLA ROUND L
WL, single

60°




3000m / 37000m
3000K / 4000K



220-240V ~50/60Hz | 900mA
Total wattage: 30W
Material: aluminium/glass

Complete Lighting Services Limited
 Brookdown House, Southern Road, Basingstoke, Hants, RG21 3DZ
 Tele: 01256 811680 Fax: 01256 811681 email: wex@clslighting.co.uk



1003422

450/500m
3000/4000K

Options: 1003422

1003423

860/960m
3000/4000K

Options: 1003423

1003440

3000/3700m
3000/4000K

Options: 1003440

- EL-4 -17W LED Bollard Light

EasyLED Technology

The CLS UK EasyLED Full Cutoff Bollards with choice of optics are designed to replace HID lighting systems up to 70w MH or HPS. These fixtures are ideal for retail centres, industrial parks, schools and universities, public transit and airports, office buildings and medical facilities.

Specifications and Features:

Housing:

Extruded aluminium housing with flush mounting base, flat top.

Listing & Ratings:

CE: Listed for wet locations, ANSI/UL 1598, 8750
IP66 sealed LED compartment.

Finish:

Textured architectural black (close to RAL 9005) powdercoat finish over a chromate conversion coating. Custom colours available upon request.

Styles:

360° light distribution or 180° shield

Lens:

Clear UV-stabilised polycarbonate vandal-resistant lens

Mounting Options:

Mounting kit with 200mm Zinc-Plated Anchor Bolts, included.

EasyLED LED:

Aluminium boards

Wattage:

360° 17w array model: 18.9w
180° 16w array model: 18.5w
(70w HID equivalent)

Driver:

CE Certified Driver

Warranty:

5-year Warranty for -40°C to +50°C environment.

See page 2 for Projected Lumen Maintenance Table.



EasyLED Full Cutoff Bollard

L70
25°C

147,000 Hours



BSEOQF
Full Cutoff Bollard
with 360° Distribution



BSEHQF
Full Cutoff Bollard
with 180° Shield



Shown with "S3"
Sensor

Dimensions

Diameter (D)	120mm
Height (A)	1019mm



Order Information Example:

BSEOQF1X17U4KCB

	U		C		
Model	Driver	CCT	Lens	Colour	Options
BSEOQF1X17=Full Cutoff Bollard - 360° BSEHQF1X16=Full Cutoff Bollard with 180° Shield	U=CE Certified Driver	3K=3000K 4K=4000K	C=Clear UV-Stabilised Polycarbonate Vandal-Resistant Lens	B=Black C=Custom (Consult Factory)	S3=Microwave Sensor with Dimming & Remote Programming. 120-277V Only. See P17121 Spec Page for Details.

Certification & Listings:



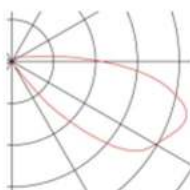
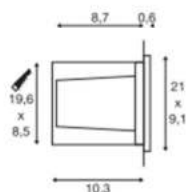
- EL-5 9.5W LED Brick Light



BRICK

outdoor recessed wall light, LED, 3000K, stainless steel, 230V, IP67, 850lm, 10W

With the BRICK LED recessed wall light, which is made of stainless steel and aluminium, the built-in LEDs are covered by a glass sheet. The built-in reflector means that the light is output asymmetrically. The functional luminaire is connected directly to the 230V mains supply. With IP65 protection class, the luminaire is suitable for outdoor use. A mounting pot is included in the delivery for simple assembly. This luminaire contains built-in LED lamps.



TECHNICAL DATA

Item no.	233660
Number of different light outlets	1
IP Code	IP 65
Impact resistance class	IK 02
Impact resistance	0.2 Joule
Assembly	Recessed
Assembly details	Wall
Primary nominal voltage	220-240V ~50/60Hz
Secondary power / voltage	144 mA
Safety class	I
Wattage	9.5 W
Minimum ambient temperature	-20 °C
Maximum ambient temperature	45 °C
Stroboscopic effect (SVM)	0.02
Lumen	850 lm
Colour temperature	3000 Kelvin
Color	stainless steel
CRI	80
LXXBXX data	L70B50
Service life	25000 h
Length	21 cm
Width	9.1 cm

Complete Lighting Services Limited

Rooksdown House, Southern Road, Basingstoke, Hants, RG21 3DZ

Tele: 01256 811600 Fax: 01256 811601 email: reception@completelighting.co.uk



Light Source

916633	
--------	--

Depth	9.3 cm
Net weight	1.756 kg
Gross weight	1.844 kg
Shape of cut-out	square
Installation length	19.6 cm
Installation width	8.5 cm
Installation depth	10.3 cm
BIG WHITE Page	702

- EL-6 20W LED Up/Downlight

ENOLA ROUND S UP/DOWN WL



220-240V ~50/60Hz | 350mA
Total wattage: 7.8W
Material: aluminium/glass

ENOLA ROUND M UP/DOWN WL



220-240V ~50/60Hz | 500mA
Total wattage: 20W
Material: aluminium/glass

ENOLA ROUND L UP/DOWN WL



220-240V ~50/60Hz | 700mA
Total wattage: 55W
Material: aluminium/glass

Up/Down	310/350lm 3000/4000K	A→G E
---------	-------------------------	----------

Options	Prod. no.
Spacers	Prod. no. 1002853
Reflector, 60°	Prod. no. 1005262

Options	Prod. no.
Up: 310/350lm 3000/4000K CRI90	
Down: 310/350lm 3000/4000K CRI90	
anthracite	1003424

Up/Down	830/950lm 3000/4000K	A→G E
---------	-------------------------	----------

Options	Prod. no.
Spacers	Prod. no. 1002853
Lens, 19°	Prod. no. 1005205
Asymmetrical lens	Prod. no. 1005206
Reflector, 60°	Prod. no. 1005207

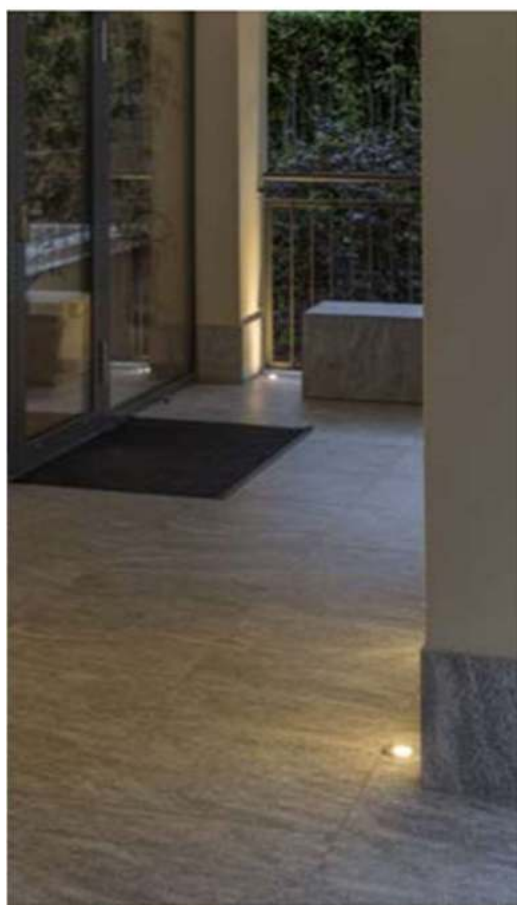
Options	Prod. no.
Up: 830/950lm 3000/4000K CRI90	
Down: 830/950lm 3000/4000K CRI90	
anthracite	1003425

Up/Down	2700/3000lm 3000/4000K	A→G E
---------	---------------------------	----------

Options	Prod. no.
Spacers	Prod. no. 1002853
Reflector, 60°	Prod. no. 1005263

Options	Prod. no.
Up: 2700/3000lm 3000/4000K CRI90	
Down: 2700/3000lm 3000/4000K CRI90	
anthracite	1003441

- EL- 7 Inground Uplighter



DASAR® 270
EL, asymmetrical



220-240V ~50/60Hz | 700mA
Total wattage: 30W
Material: aluminium/316 stainless steel

Options	Prod. no.
2000lm 3000K CR180	
2100lm 4000K CR180	
stainless steel	1002893
stainless steel	1002895

DASAR® 270
EL, symmetrical



220-240V ~50/60Hz | 700mA
Total wattage: 30W
Material: aluminium/316 stainless steel

Options	Prod. no.
2500lm 3000K CR180	
2600lm 4000K CR180	
stainless steel	1002897
stainless steel	1002898

DASAR® 270 |
 Honeycomb cover
 Prod. no. 1002899

Options	Prod. no.
2500lm 3000K CR180	
2600lm 4000K CR180	
stainless steel	1002897
stainless steel	1002898

7 Conclusions

By adopting the lighting strategy including criteria, luminaries, control and switching methods etc. outlined in this report it can be concluded that:

- Lighting levels at the site boundary will be as regulated by the current standards.
- The proposed luminaires and the provided lighting levels should not cause excessive glare to neighboring properties.
- The majority of the luminaries will not be directly visible to neighboring properties.
- The effect on the night sky and ecology should be minimal inside the site and zero outside the site.
- The lighting scheme will be energy efficient utilizing luminaires with high efficiency LED light sources, combined with efficient lighting controls.
- An adequate and safe level of lighting can be provided for site tasks, amenity and security, whilst maintaining a minimal impact on the site surroundings, environment and neighboring properties.

Appendix A – External Lighting Calculations



Exterior lighting4 - Ground Floor- Hexham Road

Installation : Hexham Road PLMD

Project number : P0223013

Customer :

Processed by :

Date : 15.02.2023

Project description:

Luminaire Height. 3m Under canopy, 2m Wall mounted and 1m. Bollard.

Working Plane: 0m.

Maintenance Factor: 0.8

Reflection Factors: 50% Walls, 20% Floor

The calculations predict illuminance levels based on the correct luminaire being installed as shown in this document. Any deviation to the product type or lamp type will render the calculations void. This similarly applies to changes of mounting height, reflection factors or maintenance factor.

Ensure that the design parameters meet the client specification

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



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Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
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Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
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1 Luminaire data

1.1 Complete Lighting Services Limited, Type EL3-ENOLA Wall mounte... (!CLS -1003423)

1.1.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS -1003423 **Type EL3-ENOLA Wall mounted down light**

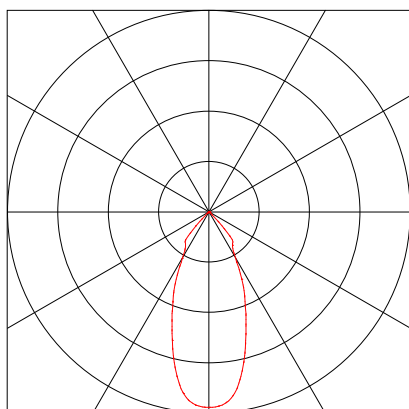
Luminaire data

Luminaire efficiency : 103.667%
Luminaire efficacy : 92.55 lm/W
Classification : A70 ↓100.0% ↑0.0%
CIE Flux Codes : 94 99 100 100 104
UGR 4H 8H : <10.0 / <10.0
Power : 11 W
Luminous flux : 1018 lm

Equipped with

Quantity : 1
Designation : LED
Power : 11 W
Colour :
Luminous flux : 982 lm

Dimensions : Ø150 mm x 160 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
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Date : 15.02.2023



1 Luminaire data

1.2 Complete Lighting Services Limited, Type EL4 - Bollard 17W... (!CLS-B5OQF1X17U4K)

1.2.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS-B5OQF1X17U4K Type EL4 - Bollard 17W LED

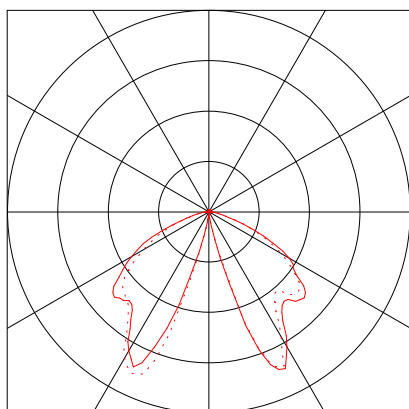
Luminaire data

Absolute Photometry
Luminaire efficacy : 38.8 lm/W
Classification : A40 ↓98.1% ↑1.9%
CIE Flux Codes : 42 82 97 98 96
UGR 4H 8H : 21.4 / 21.2
Power : 18.1 W
Luminous flux : 702.2 lm

Dimensions : Ø120 mm x 100 mm

Equipped with

Quantity : 1
Designation : ONE 17W LED
ARRAY
Colour : 3000K
Colour reproduction : 0



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.3 Complete Lighting Services Limited, Type EL2 -Extruded enc... (!FLS5-5N IP65 3...)

1.3.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!FLS5-5N IP65 3000K

Type EL2 -Extruded enclosure with 10W LED tape IP65 3000K

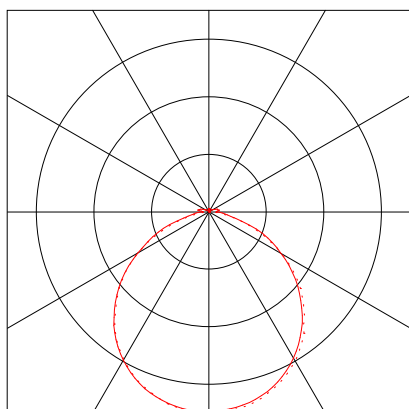
Luminaire data

Absolute Photometry
Luminaire efficacy : 82 lm/W
Classification : A41 ↓96.6% ↑3.4%
CIE Flux Codes : 49 81 96 97 100
UGR 4H 8H : 31.0 / 30.2
Power : 10 W
Luminous flux : 820 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Colour reproduction : 92

Dimensions : 1000 mm x 10 mm x 4 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.4 Thorn, ALUMET CD 24L25-730 WSC-A CL LR... (96274743)

1.4.1 Data sheet

Manufacturer: Thorn

96274743 ALUMET CD 24L25-730 WSC-A CL LRT CL2 G4M

An architectural lighting column head with 24 LEDs driven at 250mA with a Wide Street & Comfort, asymmetric distribution and clear optic, configured for power reduction, controlled by an additional switched phase cable. ON = 100%, OFF = 50%, Top cap: die-cast aluminium. Diffuser: clear UV stabilised polycarbonate treated with anti graffiti varnish. Top cap and column: powder coated textured silver grey (close to RAL 9006), other RAL colours on request. Class II electrical, IK10, IP66. To be mounted on an Alumet column. Complete with 3000K LED

Dimensions: Ø200 x 1250 mm

Total power: 20 W

Luminaire luminous flux: 2069 lm

Luminaire efficacy: 103 lm/W

Weight: 9.8 kg

Scx: 0.079 m²

Luminaire data

Absolute Photometry

Luminaire efficacy : 103.45 lm/W

Classification : A20 ↓99.7% ↑0.3%

CIE Flux Codes : 31 64 93 100 100

UGR 4H 8H : 25.8 / <10.0

Power : 20 W

Luminous flux : 2069 lm

Equipped with

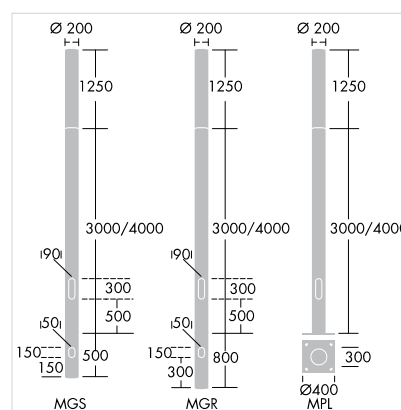
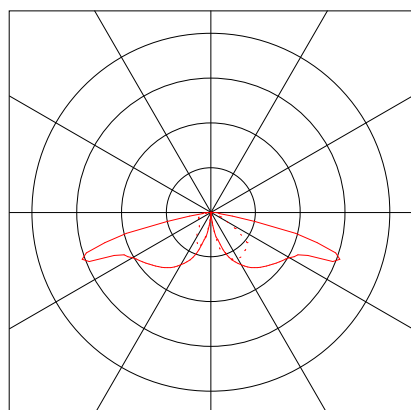
Quantity : 1

Designation :

Colour : 3000

Colour reproduction : 70

Dimensions : Ø200 mm x 1250 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.5 Complete Lighting Services Limited, BRICK (233650)

1.5.1 Data sheet

Manufacturer: Complete Lighting Services Limited

233650 BRICK

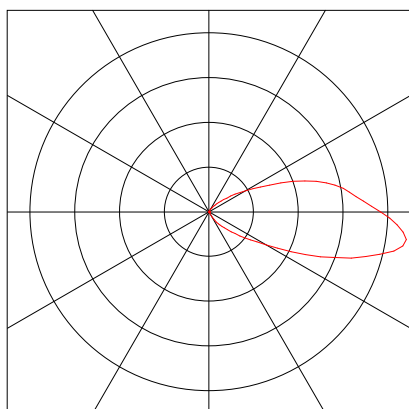
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 79.91 lm/W
Classification : C11 ↓59.2% ↑40.8%
CIE Flux Codes : 1 12 47 59 100
UGR 4H 8H : 44.7 / 23.6
Power : 11 W
Luminous flux : 879 lm

Equipped with

Quantity : 1
Designation : LED 0
Colour : 3000K
Luminous flux : 879 lm
Colour reproduction : 0

Dimensions : 210 mm x 91 mm x 93 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.6 Complete Lighting Services Limited, DASARÂ Symmtrical In-ground... (CLS -1002897)

1.6.1 Data sheet

Manufacturer: Complete Lighting Services Limited

CLS -1002897 DASARÂ Symmtrical In-ground 29W LED Uplight

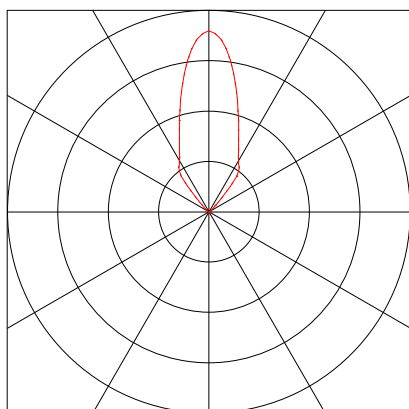
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 87.83 lm/W
Classification : E04 ↓0.0% ↑100.0%
CIE Flux Codes : - - - 0 100
UGR 4H 8H : - / -
Power : 29 W
Luminous flux : 2547 lm

Equipped with

Quantity : 1
Designation : LED 0
Colour : 3000K
Luminous flux : 2547 lm
Colour reproduction : 0

Dimensions : Ø270 mm x 3 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.7 Complete Lighting Services Limited, ENOLA Wall mounted 19W LE... (!CLS - 1003425)

1.7.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS - 1003425 **ENOLA Wall mounted 19W LED Up _ Down luminaire**

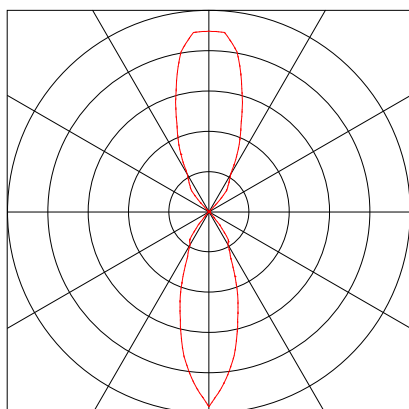
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 100.63 lm/W
Classification : C74 ↓45.8% ↑54.2%
CIE Flux Codes : 97 100 100 46 102
UGR 4H 8H : <10.0 / <10.0
Power : 19 W
Luminous flux : 1912 lm

Equipped with

Quantity : 1
Designation : LED 0
Colour : 3000K
Luminous flux : 1912 lm

Dimensions : Ø150 mm x 230 mm



Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



1 Luminaire data

1.8 Complete Lighting Services Limited, ENOLA Wall mounted 19W... (!CLS - 1003425 ...)

1.8.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS - 1003425 - EMG

ENOLA Wall mounted 19W LED Up _ Down luminaire - Emergency

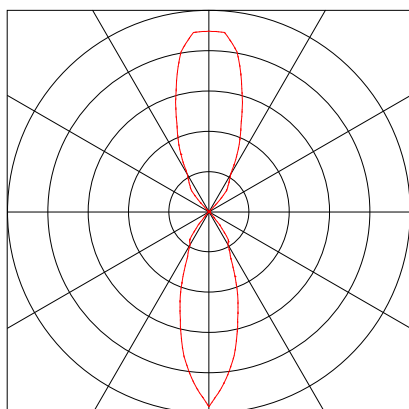
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 100.63 lm/W
Classification : C74 ↓45.8% ↑54.2%
CIE Flux Codes : 97 100 100 46 102
UGR 4H 8H : <10.0 / <10.0
Power : 19 W
Luminous flux : 1912 lm

Equipped with

Quantity : 1
Designation : LED 0
Colour : 3000K
Luminous flux : 1912 lm

Dimensions : Ø150 mm x 230 mm



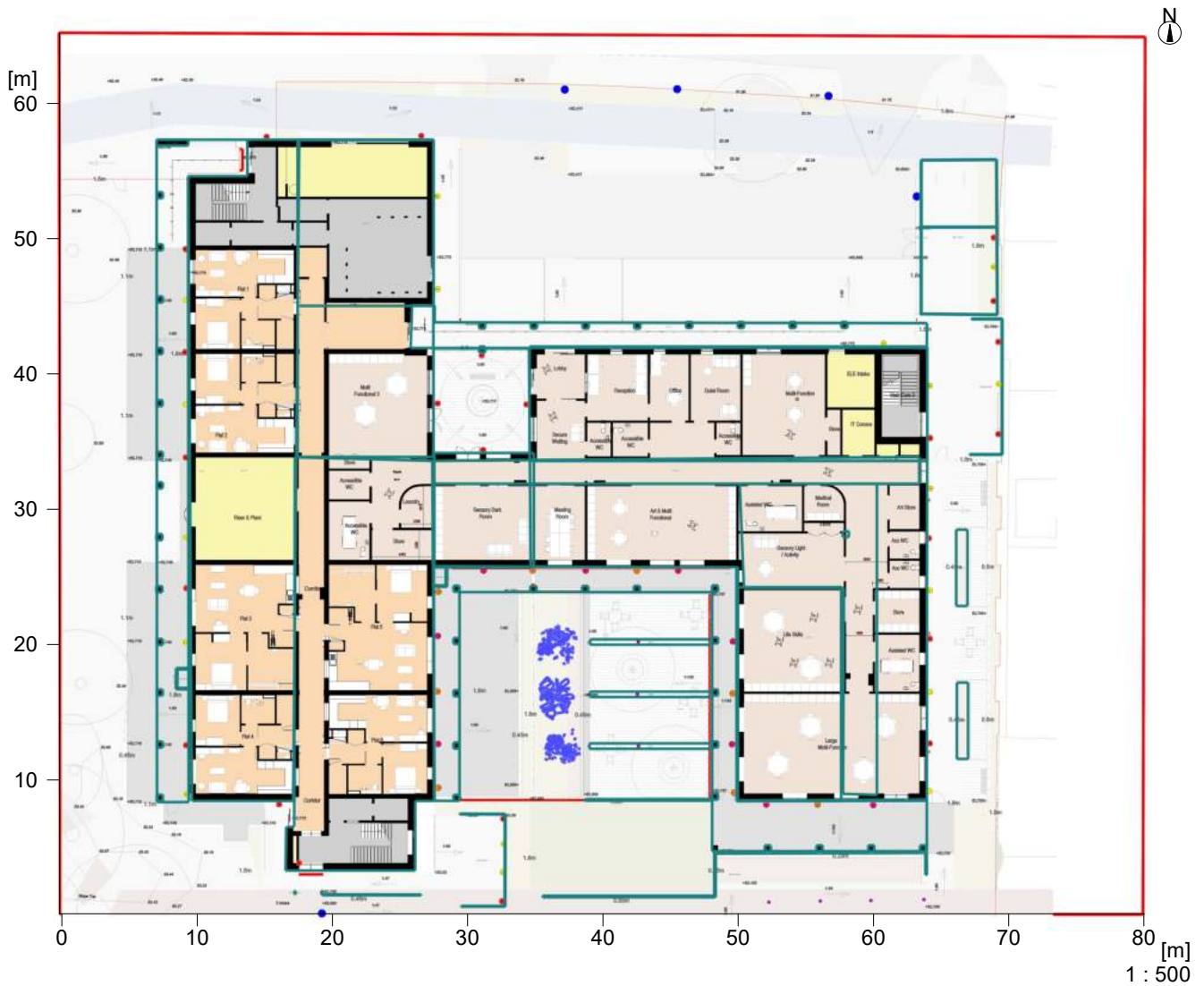
Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2 Exterior lighting4 - Ground Floor- Hexham Road

2.1 Description, Exterior lighting4 - Ground Floor- Hexham Road

2.1.1 Floor plan

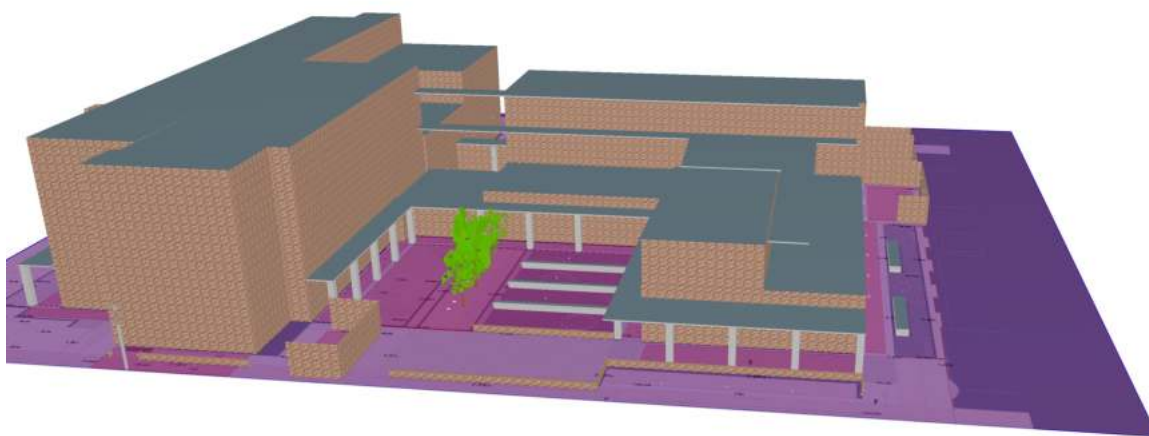


Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.1 Description, Exterior lighting4 - Ground Floor- Hexham Road

2.1.2 3D view, View 1



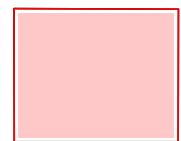
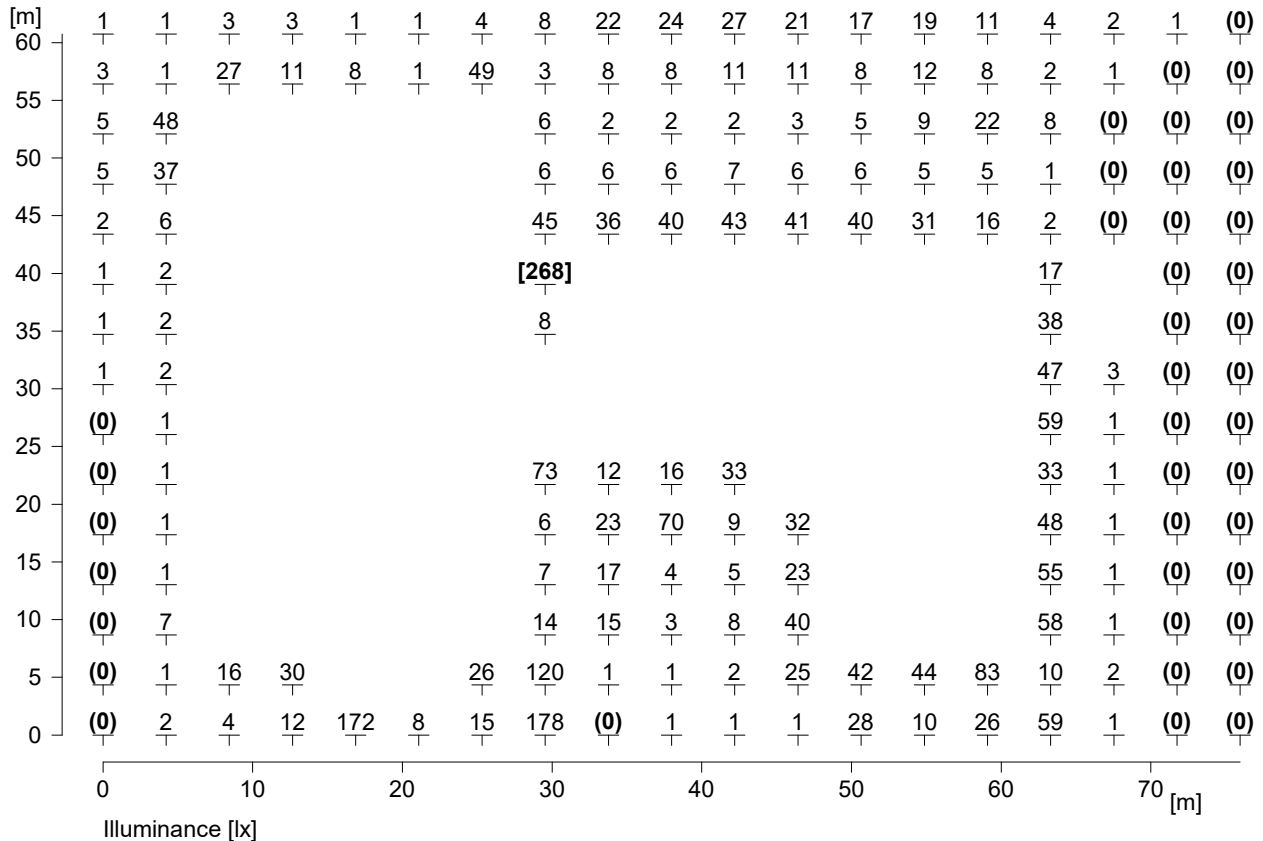
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2 Exterior lighting4 - Ground Floor- Hexham Road

2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.1 Table, Reference plane 1.1 (E)



Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 268 lx
Uniformity Uo	Emin/Eav	: ---
Diversity Ud	Emin/Emax	: ---

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.2 Table, Parking area (E)

[m]	1.8	1.7	(1.6)	1.7	2.1	2.5	3	3.4	2.9	2.6	2.5	2.6	2.9	3.3	3.5	3.2	3.1	3.2	3.7	4.3	5.2	6.1	7.2	8.4	9.1	10.1	11.2
12	7.4	2.4	1.8	1.8	1.8	2.1	2.3	2.5	2.3	2.1	2	2.1	2.3	2.6	2.8	2.7	2.7	2.9	3.5	4.3	5.3	6.2	7.1	8.7	10.4	13.2	16.3
10	32.2	7.8	2.2	2	2	2.1	2.3	2.4	2.2	2.1	2.1	2.1	2.3	2.5	2.6	2.6	2.7	3	3.5	4.5	5.5	6.4	7.3	9.3	12.1	16.3	20.9
8	56.8	12.4	2.8	2.5	2.4	2.5	2.6	2.7	2.5	2.5	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.2	3.6	4.2	5	5.7	6.6	8.2	10.9	14.8	20.8
6	31.7	9.8	3.6	3.3	3.3	3.4	3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.5	3.5	3.5	3.7	3.8	4.1	4.4	4.7	5.2	5.9	7.2	9.8	13
4	8.1	5.2	5	4.7	4.7	4.8	5	4.8	4.6	4.6	4.7	4.7	4.6	4.8	4.7	4.8	4.8	4.7	4.7	4.6	4.7	4.6	4.4	4.4	4.4	4.9	5.8
2	7.4	7.8	7.5	7.3	7.2	7.6	7.3	7.3	7.1	7.3	7.2	7.1	7.1	7.3	7	7.1	7.2	7.3	6.8	6.5	6.7	6.3	5.8	5	4.5	3.9	3.7
0	22.6	12.4	12.4	12.1	11.9	12.6	11.9	12	11.8	12	11.9	11.8	12	11.9	11.9	11.4	12.1	11.8	11.3	11	10.8	10.2	9	7.8	6.2	4.7	3.6
	71.1	28.4	21.9	21.9	22	21.3	21	21.2	21.9	21.4	21.5	20.8	21.5	21.5	21.2	20.8	21.4	21.2	20.9	19.9	20.8	18.9	17.5	13.9	9.9	6.5	4.4
	84.9	50.4	40.3	41.2	39.3	40.6	37.6	39.2	40.9	39.3	39.3	39	40.4	39.4	40	39.4	40.2	39.9	39.2	38.8	37.4	37.4	34.7	29.8	18.1	9.2	5.4
	92.4	72.7	62.5	68.9	67.3	60.5	66	65.8	67.7	63.8	65.9	62	66.9	65.5	56.1	62.6	68.2	66.6	61.9	68.1	61.3	58.4	62.2	54	22.4	16.6	18.6
	0				5				10				15				20				25				30	[m]	
	Illuminance [lx]																										



Part1

Height of the reference plane

		: 0.00 m
Average illuminance	Eav	: 15 lx
Minimum illuminance	Emin	: 1.6 lx
Maximum illuminance	Emax	: 92.4 lx
Uniformity Uo	Emin/Eav	: 1 : 9.44 (0.11)
Diversity Ud	Emin/Emax	: 1 : 58.10 (0.02)

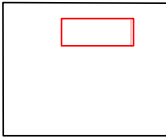
Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.2 Table, Parking area (E)

12	8.4
18.1	18.6
23.2	20.1
21	6.9
15.3	14.2
6.8	8
4	4
3.4	3
3.3	2.7
3.7	2.7
10.4	4



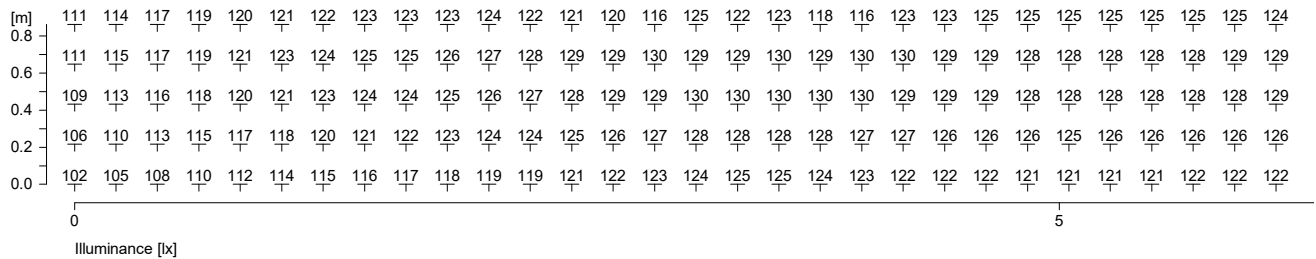
Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)



Part1

Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 114 lx
Maximum illuminance	Emin	: 8 lx
Uniformity Uo	Emin/Eav	: 1 : 13.40 (0.07)
Diversity Ud	Emin/Emax	: 1 : 19.71 (0.05)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)

125	123	112	106	124	124	122	118	124	124	124	126	126	125	126	126	125	124	124	122	121	101	125	124	124	119	124	123	125	125	126	126
130	130	130	129	129	129	129	130	130	130	129	129	129	129	129	129	129	129	130	130	130	129	130	129	129	130	130	129	129	129	129	129
129	129	129	129	129	129	129	130	129	129	129	129	128	128	128	128	129	129	129	129	130	129	129	129	129	129	129	129	129	129	128	128
127	127	127	127	127	127	127	127	127	127	127	126	126	126	126	126	126	126	127	127	127	127	127	127	127	127	127	127	126	126	126	126
122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122

10



Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023

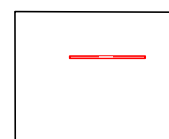


2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)

126	125	125	124	124	123	121	99	125	124	125	113	122	123	125	125	126	126	126	126	127	127	127	127	124	122	125	125	125	118	123	127
129	129	129	129	130	130	130	129	130	129	129	130	130	130	129	129	129	129	129	129	129	129	129	130	130	130	130	129	130	129	130	129
128	128	128	129	129	129	129	129	129	129	129	129	130	129	129	129	128	128	128	128	128	129	129	129	129	129	129	129	129	129	129	129
126	126	126	126	127	127	127	127	126	127	127	127	127	127	126	126	126	126	126	126	126	126	126	127	127	126	126	126	126	126	126	126
122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122	122

15



Part3

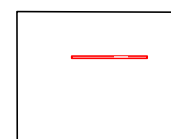
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)

127	126	126	126	126	126	126	126	127	126	125	119	124	124	124	114	124	125	126	125	125	125	125	124	124	124	124	124	122	116	120	119
129	129	128	128	128	128	128	129	129	129	130	129	128	129	129	129	129	128	128	127	127	127	126	126	126	126	126	126	125	124	124	
129	128	128	128	128	128	128	128	128	129	129	129	129	129	129	129	128	128	127	127	127	126	126	126	126	126	125	125	125	124	123	
126	126	126	125	125	125	126	126	126	126	126	126	126	126	126	126	125	125	125	124	124	124	123	123	123	123	123	123	122	121	121	
121	121	121	121	121	121	121	121	121	122	122	122	122	122	121	121	121	121	121	120	120	120	119	119	119	119	119	118	118	118	117	116
20										25																					



Part4

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)

119	111	116	116	115	114	112	109	107	104	101	97	93	89	85	79	72	66	61	57	51	53	54	52	51	53	57	65	72	78	81	83
123	122	121	120	118	116	114	111	108	106	102	99	95	91	85	80	74	68	63	60	59	59	56	55	56	60	68	77	87	96	102	105
122	121	120	119	117	115	113	111	108	105	102	98	94	90	85	79	74	68	64	62	61	60	57	56	59	66	77	88	103	116	127	131
120	119	118	116	115	113	111	108	106	103	100	96	92	88	83	78	72	67	63	61	62	60	58	57	62	72	84	99	118	135	150	154
115	114	113	112	110	109	107	104	102	99	96	92	88	84	80	75	69	65	61	60	60	59	57	58	63	75	88	105	127	149	164	[167]

30



Part5

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023

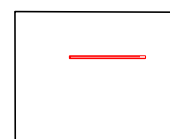


2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.3 Table, Canopy - Upper Central (E)

80	74	66	56	45	36	29	25	22	18	13	(8)
102	93	82	69	56	43	33	27	23	20	15	10
127	116	99	81	66	51	38	29	24	21	17	12
150	137	116	94	74	57	42	31	25	21	18	13
163	151	128	102	79	61	45	32	25	21	18	13

35
[m]



Part6

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.4 Table, Right Side of Building (E)

	47	45	42	37	32
	42	41	39	37	34
	44	43	40	37	33
[m]	53	50	45	37	30
24	65	61	53	41	31
	82	77	66	53	39
	110	100	84	66	50
	141	127	104	80	59
	162	149	121	90	65
	[169]	158	129	95	68
	168	155	126	93	67
	153	139	114	86	64
22	125	115	96	76	58
	97	90	78	65	49
	74	70	62	51	41
	57	54	48	41	35
	46	44	40	36	33
	45	43	40	37	33
	49	47	44	39	33
	54	51	46	39	32
20	57	53	48	40	33
	65	60	53	45	37
	76	70	61	51	42
	85	79	69	57	46
	90	85	74	61	49
	92	87	76	63	50
	91	85	74	61	49
	88	81	71	58	47
18	80	74	65	55	45
	69	65	58	51	43
	58	55	51	45	39
	50	48	45	40	35
	45	43	40	36	31
	43	41	37	34	30



Part1

Height of the reference plane

		: 0.00 m
Average illuminance	Eav	: 62 lx
Minimum illuminance	Emin	: 29 lx
Maximum illuminance	Emax	: 169 lx
Uniformity Uo	Emin/Eav	: 1 : 2.13 (0.47)
Diversity Ud	Emin/Emax	: 1 : 5.85 (0.17)

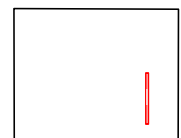
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.4 Table, Right Side of Building (E)

	45	43	40	35	31
	49	47	44	40	35
	57	54	50	45	40
	67	64	58	51	44
16	78	74	66	57	47
	87	82	73	61	50
	92	88	78	65	52
	94	90	81	68	54
	95	92	82	68	55
	95	90	80	67	54
	88	84	75	64	53
	77	73	66	58	49
14	66	63	58	51	45
	58	55	51	46	40
	53	51	47	42	36
	52	50	46	40	35
	53	51	47	42	36
	57	55	51	46	40
	65	62	57	51	44
	77	73	65	57	48
	88	83	74	63	52
12	94	90	79	66	53
	95	91	81	68	54
	94	90	80	67	53
	91	87	77	64	51
	86	81	72	60	49
	78	73	65	56	46
	67	64	58	51	43
	56	54	50	45	39
10	48	47	44	40	34
	43	42	39	35	30
	41	39	36	33	(29)
	43	41	38	34	30
	47	46	43	39	34



Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.4 Table, Right Side of Building (E)

	55	53	49	45	39
	65	63	57	51	43
	77	73	65	56	46
	86	81	72	61	49
8	91	87	77	65	52
	93	90	81	68	54
	93	90	81	68	54
	92	88	78	66	53
	87	82	73	62	50
	77	74	66	57	48
	66	63	58	51	44
	56	54	50	45	40
6	49	47	44	40	35
	45	44	41	36	32
	45	43	40	36	31
	48	46	43	39	34
	54	52	48	44	38
	63	60	55	49	43
	75	71	64	55	47
	85	80	71	60	49
	92	87	77	64	51
4	94	90	80	67	53
	96	92	82	68	54
	96	91	81	68	54
	92	87	77	65	53
	82	77	69	60	50
	70	67	61	53	46
	60	58	53	48	42
	55	53	49	43	37
2	53	51	47	41	35
	53	51	47	41	35
	57	54	50	44	38
	64	61	55	49	42
	74	70	63	55	47
	86	80	71	61	50



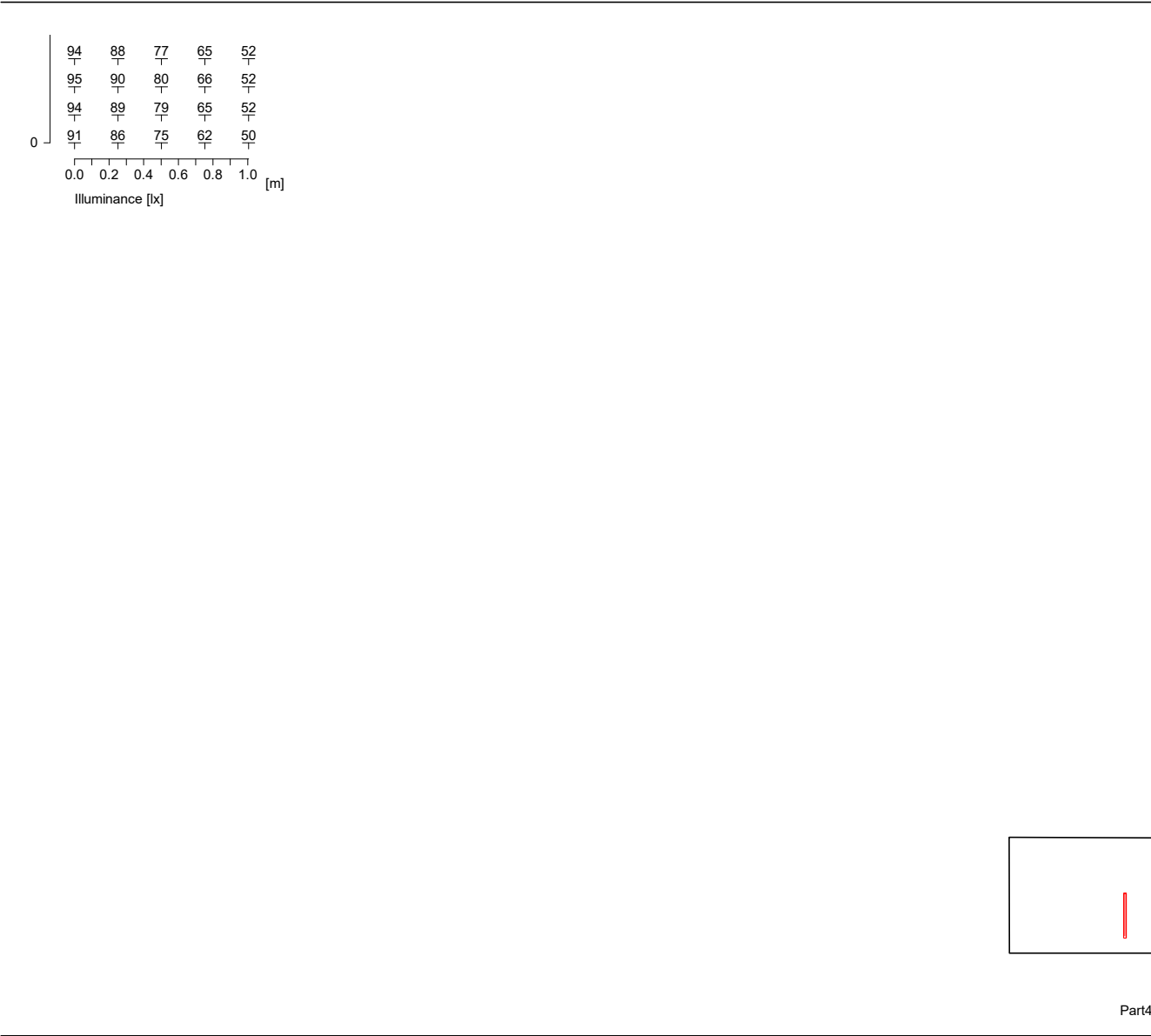
Part3

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.4 Table, Right Side of Building (E)



Part4

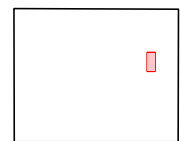
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.5 Table, Bike Storage2 (E)

	(3)	(3)	(3)	(3)	5	21	31	53
[m]	(3)	(3)	(3)	(3)	10	26	47	101
8	(3)	(3)	(3)	4	13	28	58	[126]
7	4	(3)	(3)	4	10	26	45	95
6	16	10	4	4	6	21	34	59
5	24	20	13	5	5	14	41	52
4	48	27	20	10	7	23	34	67
3	80	42	23	15	12	27	49	106
2	97	50	25	17	13	27	54	120
1	79	41	23	15	10	25	40	83
0	47	27	20	10	6	17	28	40
	34	24	14	6	5	7	21	38
	35	25	12	5	5	12	26	33
	41	26	20	9	7	24	34	66
	72	38	23	14	13	27	51	111
	96	49	24	17	14	28	55	121
	86	45	23	16	10	25	40	81
	0.0	0.5	1.0	1.5	2.0	2.5	3.0	[m]
	Illuminance [lx]							



Height of the reference plane

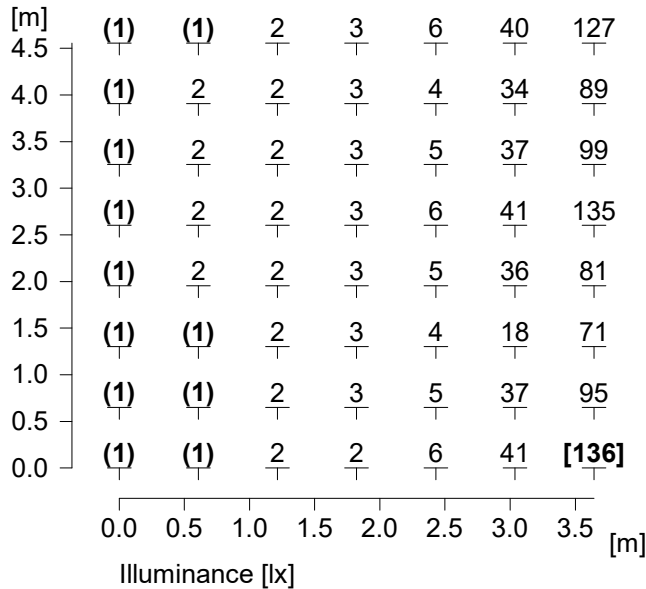
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 3 lx
Maximum illuminance	Emax	: 126 lx
Uniformity Uo	Emin/Eav	: 1 : 12.10 (0.08)
Diversity Ud	Emin/Emax	: 1 : 49.74 (0.02)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.6 Table, Enclosure (E)



Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 1 lx
Maximum illuminance	Emax	: 136 lx
Uniformity Uo	Emin/Eav	: 1 : 19.56 (0.05)
Diversity Ud	Emin/Emax	: 1 : 122.82 (0.01)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.7 Table, Canopy - Left Side of Building1 (E)

	102	118	124	122	114	105	95	82	67
	119	136	140	133	120	109	100	86	70
	129	142							
35	132	138							
	127	126							
	121	120							
	113	113							
	108	117							
	108	117							
	106	145							
30	107	175							
	81	134							
	50	73							
	46	55							
	38	62							
	53	109							
	57	122							
	37	72							
25	29	42							
	27	42							
	38	75							
	58	127							
	50	105							
	28	52							
	30	39							
20	26	46							
	43	94							
	54	122							
	37	78							
	24	38							
	26	38							
	29	58							
15	49	109							



Part1

Height of the reference plane

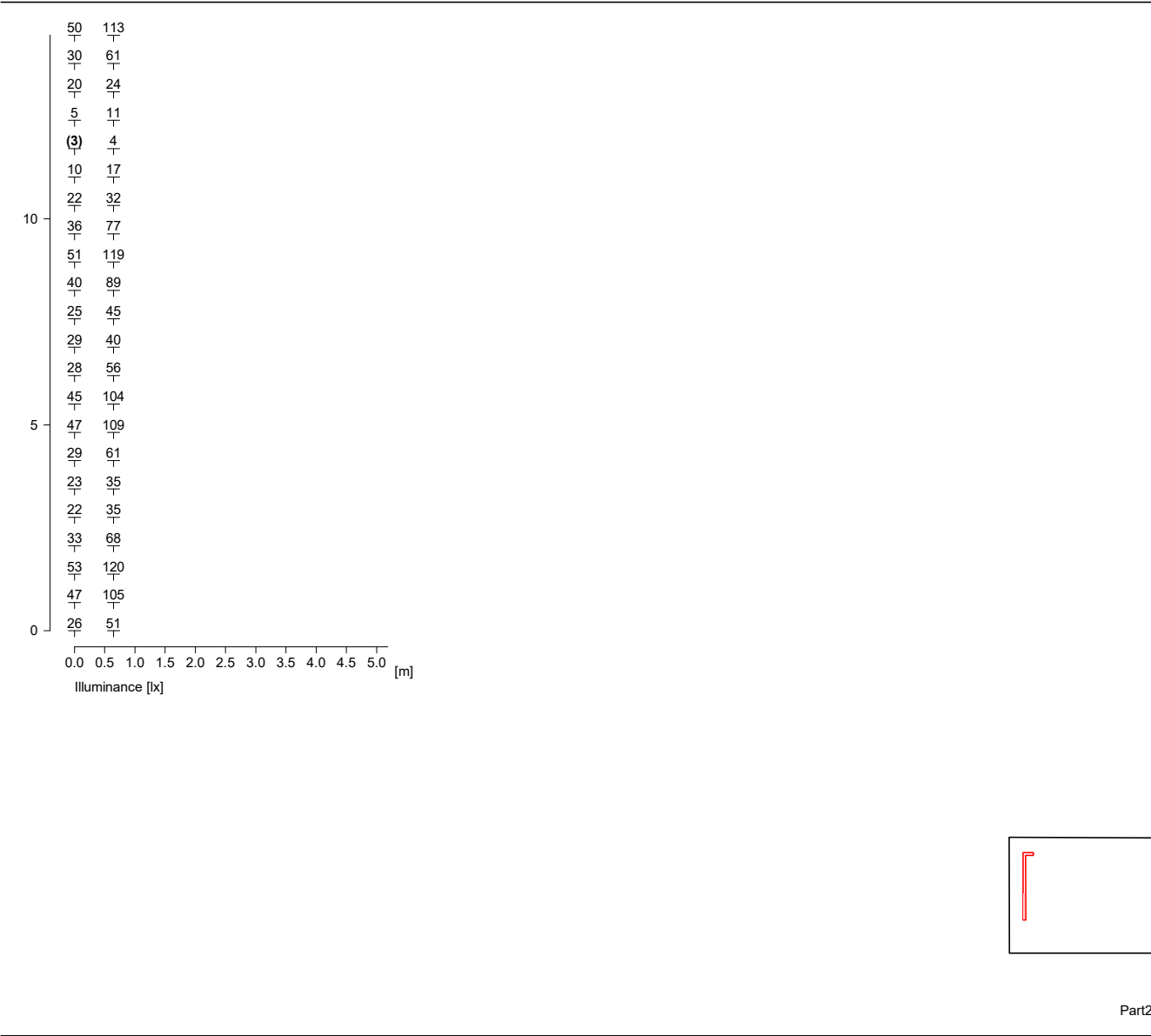
		: 0.00 m
Average illuminance	Eav	: 71 lx
Minimum illuminance	Emin	: 3 lx
Maximum illuminance	Emax	: 175 lx
Uniformity Uo	Emin/Eav	: 1 : 22.13 (0.05)
Diversity Ud	Emin/Emax	: 1 : 54.21 (0.02)

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.7 Table, Canopy - Left Side of Building1 (E)

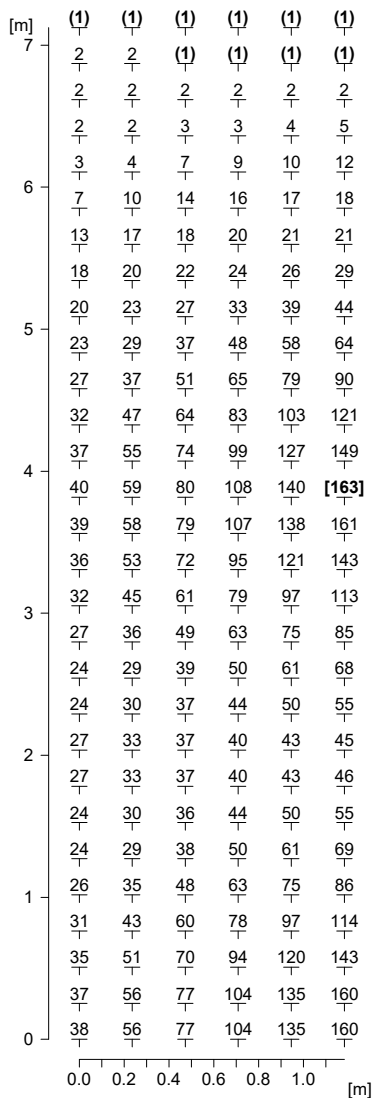


Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.8 Table, Canopy - Left Side of Building2 (E)



Height of the reference plane

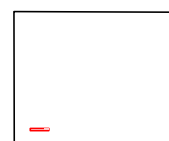
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 1 lx
Maximum illuminance	Emax	: 163 lx
Uniformity Uo	Emin/Eav	: 1 : 46.40 (0.02)
Diversity Ud	Emin/Emax	: 1 : 153.89 (0.01)





2.2.9 Table, Lower Left of Building-1 (E)

<u>42</u>	<u>60</u>	<u>81</u>	<u>108</u>	<u>137</u>	<u>159</u>	<u>167</u>	<u>165</u>	<u>151</u>	<u>125</u>	
<u>38</u>	<u>55</u>	<u>74</u>	<u>96</u>	<u>121</u>	<u>142</u>	<u>151</u>	<u>149</u>	<u>134</u>	<u>112</u>	
<u>33</u>	<u>48</u>	<u>63</u>	<u>81</u>	<u>99</u>	<u>114</u>	<u>122</u>	<u>120</u>	<u>109</u>	<u>92</u>	
<u>28</u>	<u>38</u>	<u>52</u>	<u>65</u>	<u>77</u>	<u>87</u>	<u>92</u>	<u>91</u>	<u>84</u>	<u>73</u>	
<u>23</u>	<u>30</u>	<u>38</u>	<u>49</u>	<u>58</u>	<u>65</u>	<u>68</u>	<u>67</u>	<u>63</u>	<u>56</u>	
					7					8 [m]



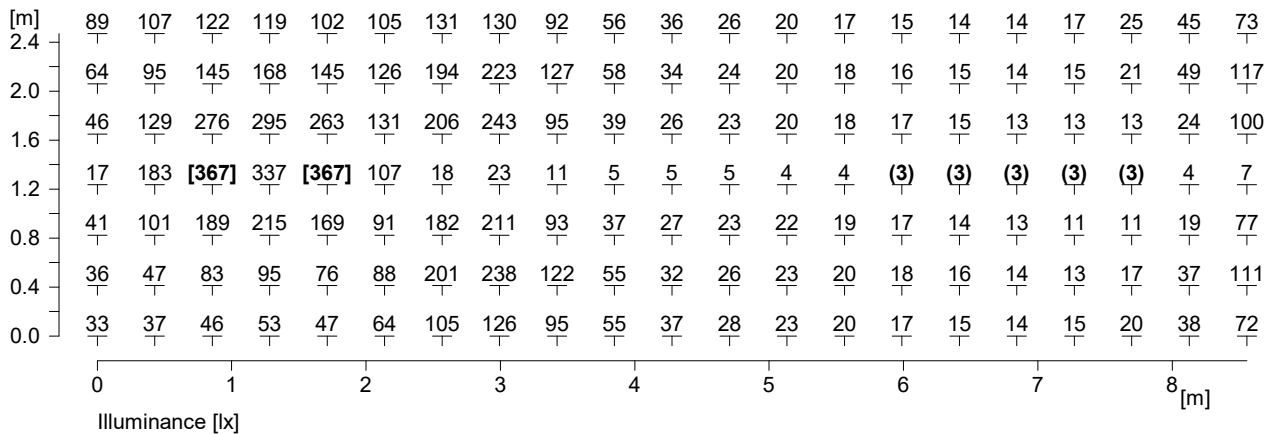
Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.10 Table, Lower Left of Building-2 (E)



Height of the reference plane

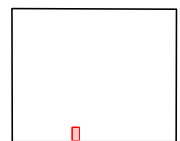
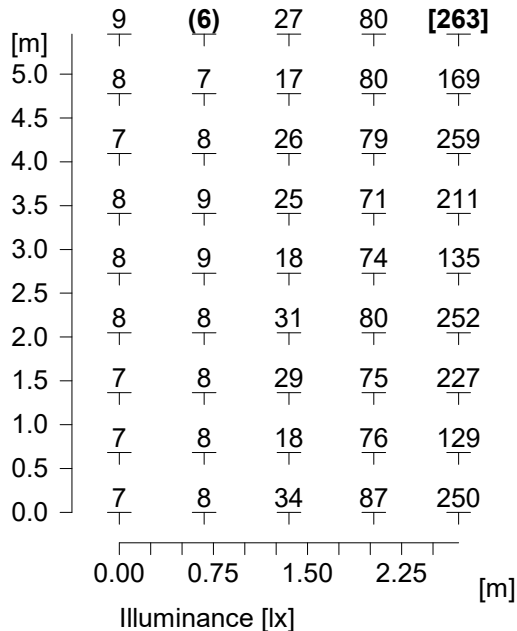
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 71 lx
Maximum illuminance	Emax	: 3 lx
Uniformity Uo	Emin/Eav	: 367 lx
Diversity Ud	Emin/Emax	: 1 : 24.71 (0.04)
		: 1 : 127.67 (0.01)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.11 Table, Bike Storage1 (E)



Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 6 lx
Maximum illuminance	Emax	: 263 lx
Uniformity Uo	Emin/Eav	: 1 : 10.84 (0.09)
Diversity Ud	Emin/Emax	: 1 : 43.31 (0.02)

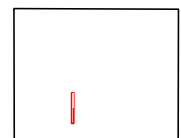
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.12 Table, Canopy - Left of Central Area (E)

14	211	183	149	112	80
	192	172	141	108	79
	164	148	122	97	72
	129	118	101	81	60
	101	95	82	66	52
	80	74	64	55	47
	68	66	60	52	46
	64	63	61	57	50
	66	64	62	58	51
	71	69	63	55	48
	86	80	69	59	50
	109	101	88	70	57
	139	126	108	87	65
	174	157	129	103	77
12	203	180	147	114	85
	[217]	189	154	119	88
	201	180	147	116	85
	174	156	130	105	77
	138	127	109	88	66
	106	99	86	70	56
	79	74	64	57	48
	58	56	52	47	43
	47	46	44	42	39
	45	44	42	38	32
	42	41	37	32	(27)
	42	40	36	32	(27)
	42	41	39	36	30
	44	42	40	38	35
10	54	51	47	42	38
	76	70	59	50	42
	103	94	80	63	49
	134	120	100	79	57
	168	148	119	93	67
	193	168	134	102	73
8					



Part1

Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 91 lx
Maximum illuminance	Emax	: 27 lx
Uniformity Uo	Emin/Eav	: 1 : 3.39 (0.30)
Diversity Ud	Emin/Emax	: 1 : 8.10 (0.12)

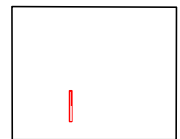
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.12 Table, Canopy - Left of Central Area (E)

	201	173	138	105	74
	184	162	129	99	70
	155	137	112	88	63
	120	109	92	72	52
	91	83	70	55	45
	65	60	52	46	38
	50	47	43	38	35
6	43	42	40	38	34
	46	45	42	36	30
	48	47	42	37	30
	46	45	43	40	36
	51	49	45	42	39
	63	59	55	49	43
	88	83	72	60	51
	118	110	96	78	60
	153	140	119	97	73
4	187	171	142	112	85
	213	190	157	123	92
	[217]	192	159	125	92
	195	178	148	118	88
	164	150	128	104	79
	131	123	108	88	68
	106	100	89	73	62
	87	83	76	67	57
	81	79	74	67	60
2	76	76	73	70	64
	80	78	74	67	60
	86	82	75	67	57
	104	99	87	72	62
	130	122	106	87	67
	162	148	127	103	79
	194	177	147	116	89
	[217]	192	159	124	94
	216	191	158	123	93



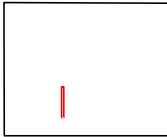
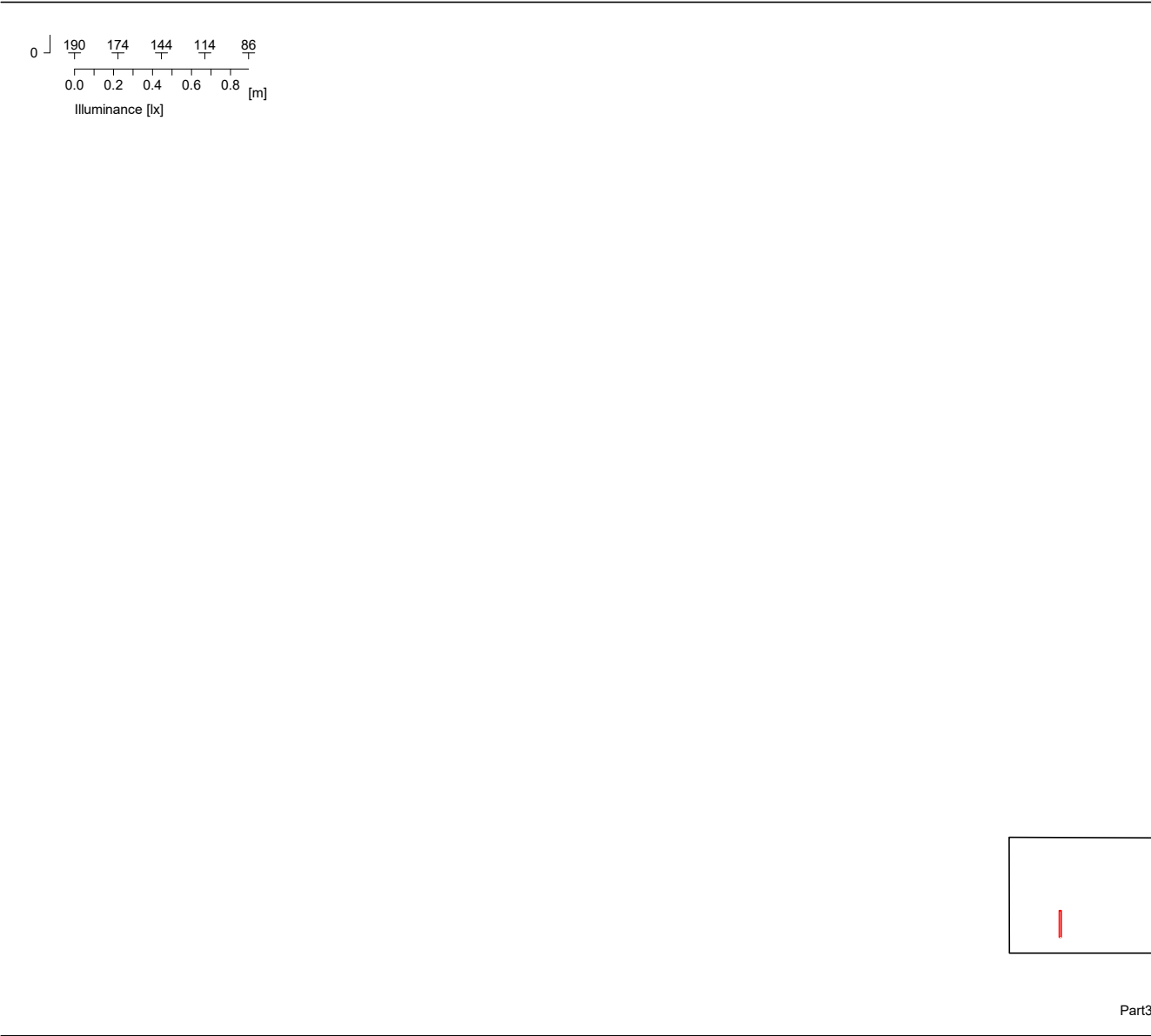
Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.12 Table, Canopy - Left of Central Area (E)



Part3

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.13 Table, Canopy - Right of Central Area (E)

	(6)	(6)	(6)	(6)	(6)
	7	7	7	7	7
	11	10	8	8	8
	12	11	11	11	9
14	13	13	12	12	11
	14	14	15	15	14
	17	18	19	19	18
	21	23	25	26	26
	28	32	34	36	36
	37	40	41	41	41
	42	45	47	49	49
	47	54	59	62	62
	57	66	78	86	88
12	68	87	103	114	117
	84	108	129	146	152
	97	126	155	179	187
	105	138	174	201	215
	106	140	177	207	[225]
	100	130	164	189	199
	88	114	139	160	167
	73	94	113	126	130
	60	74	88	97	100
10	51	58	64	71	73
	45	49	54	57	58
	44	47	49	51	51
	40	47	52	54	54
	41	47	52	54	54
	44	48	50	51	51
	46	50	55	57	58
	52	59	65	71	72
	61	75	88	97	99
8	76	96	114	126	129
	91	117	141	160	166
	104	134	166	191	199



Part1

Height of the reference plane

		: 0.00 m
Average illuminance	Eav	: 85 lx
Minimum illuminance	Emin	: 6 lx
Maximum illuminance	Emax	: 225 lx
Uniformity Uo	Emin/Eav	: 1 : 14.03 (0.07)
Diversity Ud	Emin/Emax	: 1 : 37.32 (0.03)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.13 Table, Canopy - Right of Central Area (E)

	110	145	181	210	[225]
	109	142	179	207	220
	101	130	161	184	192
	88	112	133	151	157
	72	91	107	118	122
	59	70	82	90	92
	50	57	63	67	68
6	47	51	54	57	57
	46	51	54	55	55
	45	51	57	60	60
	46	50	53	54	55
	46	50	53	56	55
	50	57	62	65	65
	59	70	82	88	89
	74	92	107	116	117
	90	113	134	150	152
4	104	132	163	182	185
	111	146	180	206	212
	112	147	182	209	216
	105	135	167	187	191
	91	116	139	156	159
	75	94	110	121	122
	57	72	84	91	92
	48	55	62	67	68
	43	47	52	55	55
2	42	47	50	52	53
	41	49	53	54	54
	40	44	48	49	50
	38	42	48	51	52
	40	48	55	64	68
	47	60	75	86	91
	57	77	97	112	122
	69	93	118	143	157
	77	105	138	168	186



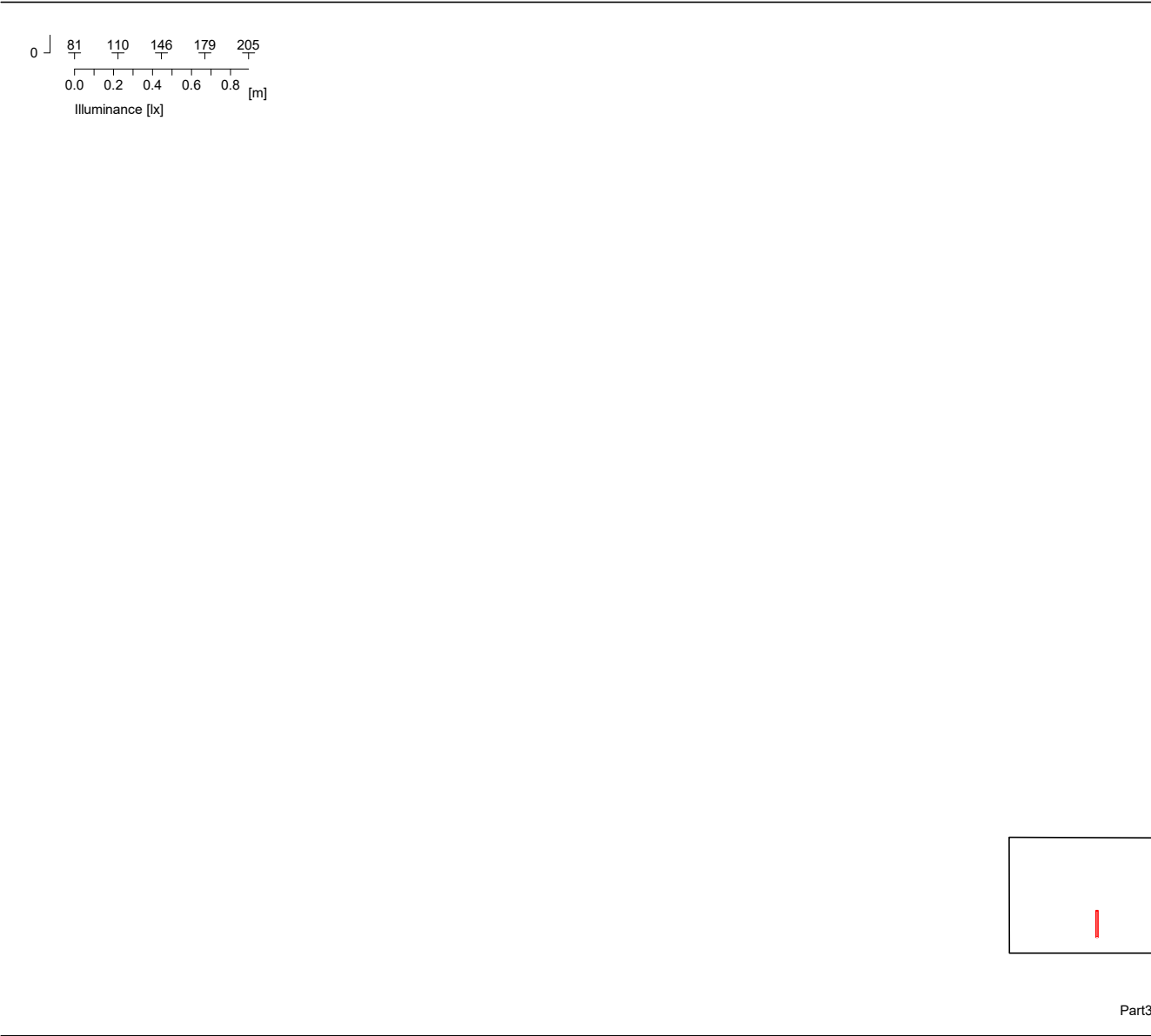
Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.13 Table, Canopy - Right of Central Area (E)

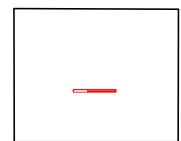
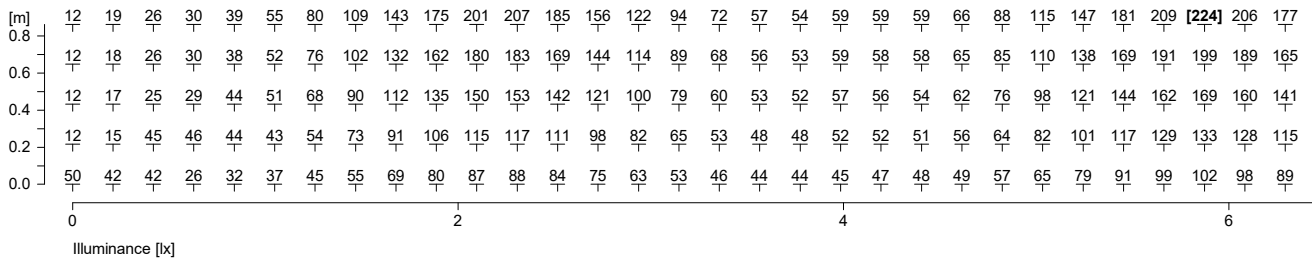


Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.14 Table, Canopy - Upper Middle Central Area (E)



Part1

Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 80 lx
Maximum illuminance	Emax	: 6 lx
Uniformity Uo	Emin/Eav	: 224 lx
Diversity Ud	Emin/Emax	: 1 : 13.51 (0.07)
		: 1 : 37.70 (0.03)

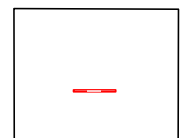
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.14 Table, Canopy - Upper Middle Central Area (E)

142	110	83	60	52	48	51	49	47	53	67	91	119	153	184	209	212	188	158	122	93	67	52	44	47	47	43	48	60	84	112	146	178
133	105	79	59	51	48	50	48	47	52	64	87	113	142	171	189	190	174	146	115	88	64	50	44	46	47	43	47	57	80	106	136	165
117	94	71	56	48	47	47	47	46	49	58	78	100	123	145	159	160	147	125	102	79	57	47	43	45	45	41	44	51	70	93	116	139
98	79	61	51	46	44	42	42	44	45	53	65	83	101	116	125	125	117	102	84	65	51	43	41	41	40	39	39	46	58	76	94	110
77	62	54	46	43	40	36	37	42	42	47	55	65	78	89	95	95	89	78	65	53	45	39	38	34	33	36	36	40	47	58	71	83
8								10								12																



Part2

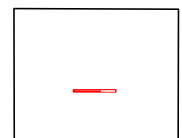
Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.14 Table, Canopy - Upper Middle Central Area (E)

203	207	184	155	123	100	83	71	67	74	90	109	136	169	197	217	204	177	143	110	82	57	44	36	32	21	13	10	7	8	7	7	(6)
183	185	170	144	116	95	80	70	66	73	86	103	127	156	181	193	186	165	134	104	78	55	44	36	32	21	14	10	7	8	8	7	7
154	156	143	122	102	84	71	66	63	69	76	92	112	133	153	163	157	139	116	93	70	52	41	36	30	21	13	9	7	9	8	8	7
119	121	113	99	84	69	62	61	61	63	65	76	92	107	120	126	122	112	95	77	58	47	39	35	28	20	13	9	7	9	8	8	7
89	90	85	75	64	55	52	54	57	54	55	59	71	83	92	96	94	86	74	59	50	41	37	33	25	18	12	8	7	(6)	9	8	8
14							16							18							20 [m]											

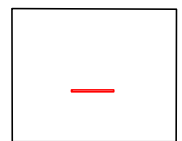


Part3



2.2.14 Table, Canopy - Upper Middle Central Area (E)

1

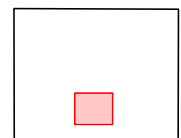
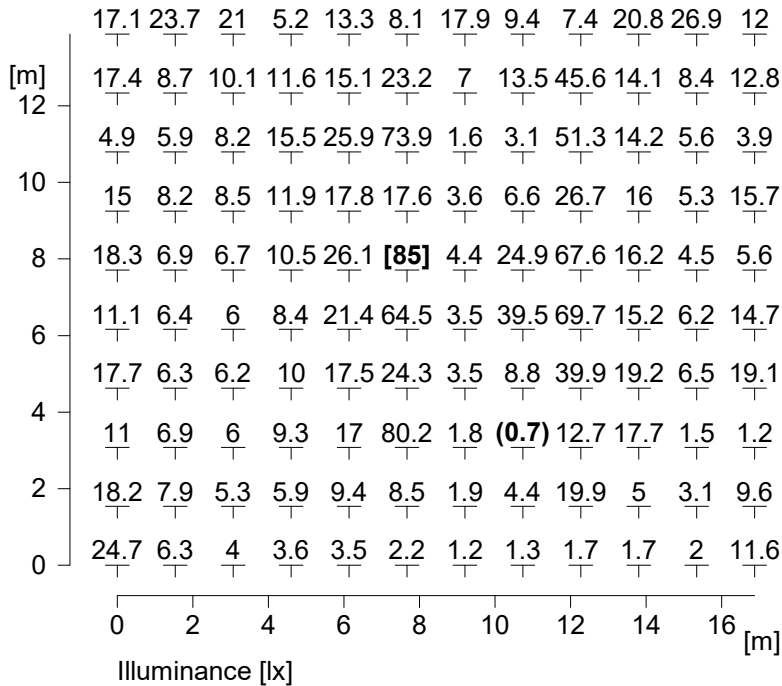


Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.15 Table, Lower Central Area (E)



Height of the reference plane

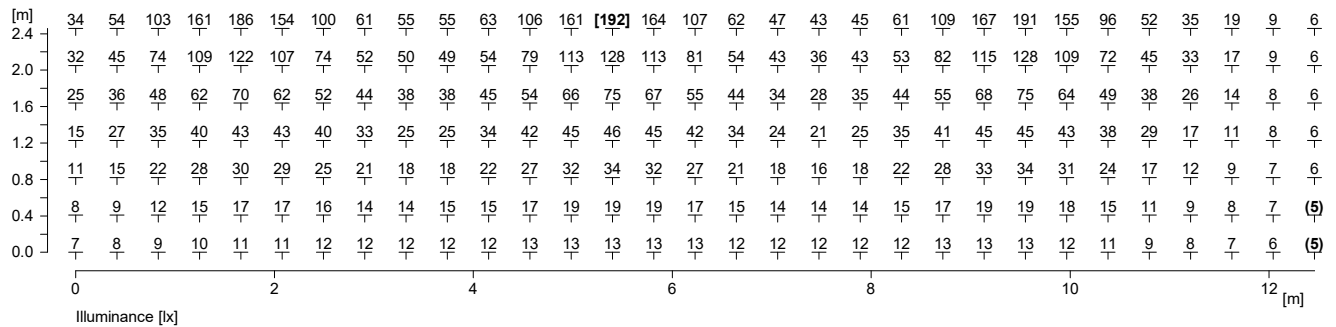
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 14.9 lx
Maximum illuminance	Emax	: 0.7 lx
Uniformity Uo	Emin/Eav	: 85 lx
Diversity Ud	Emin/Emax	: 1 : 21.56 (0.05)
		: 1 : 122.97 (0.01)

Object : Exterior lighting4 - Ground Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0223013
 Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.16 Table, Canopy - Lower Right of Building (E)



Part1

Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 5 lx
Maximum illuminance	Emax	: 192 lx
Uniformity Uo	Emin/Eav	: 1 : 8.69 (0.12)
Diversity Ud	Emin/Emax	: 1 : 42.01 (0.02)

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.16 Table, Canopy - Lower Right of Building (E)

(5)	
(5)	
(5)	
(5)	
12	
7	
(5)	

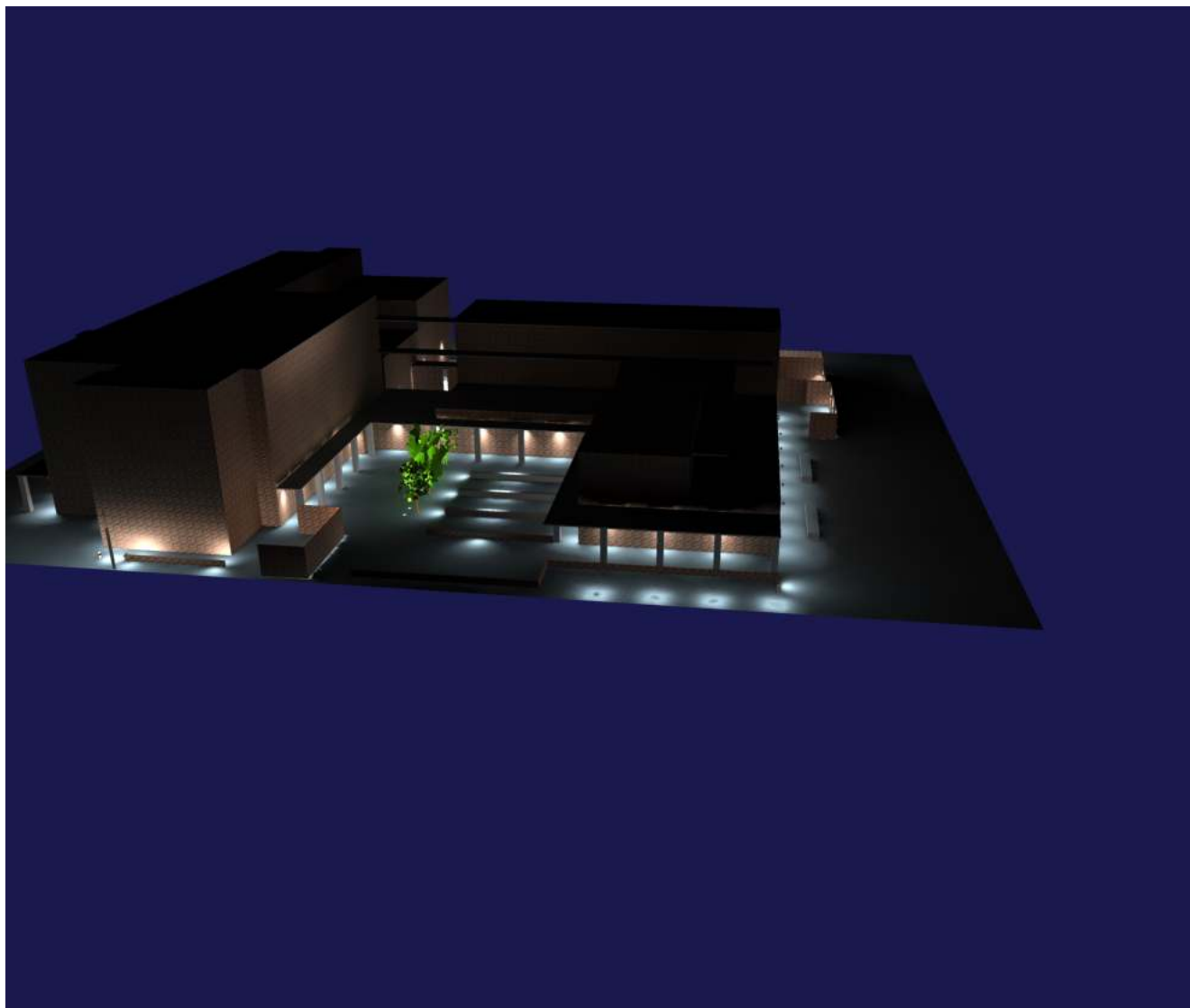
Part2

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.17 3D luminance, View 1



Luminance in the scene

Minimum: : 0 cd/m²

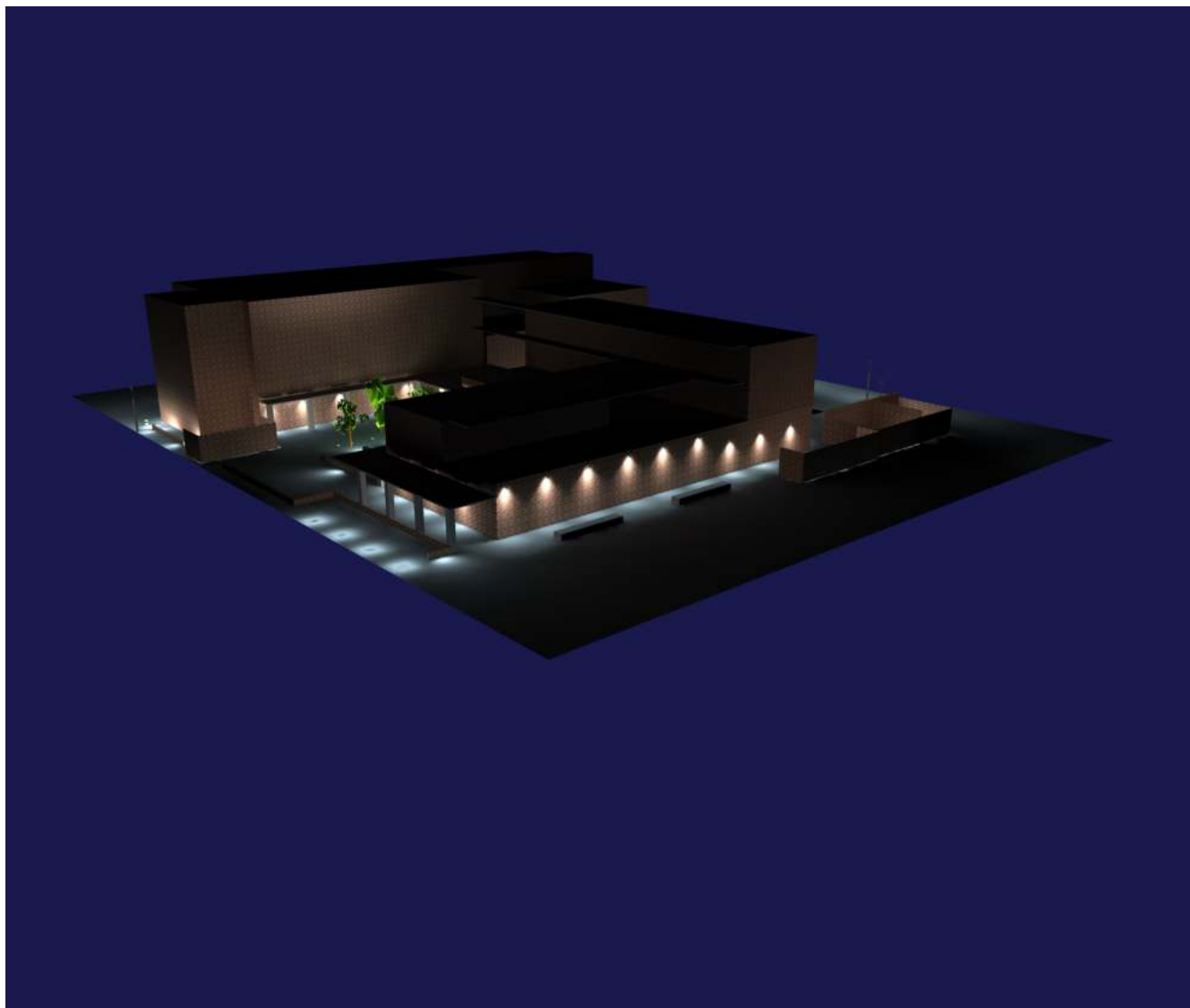
Maximum: : 776 cd/m²

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.18 3D luminance, View 2



Luminance in the scene

Minimum: : 0 cd/m²

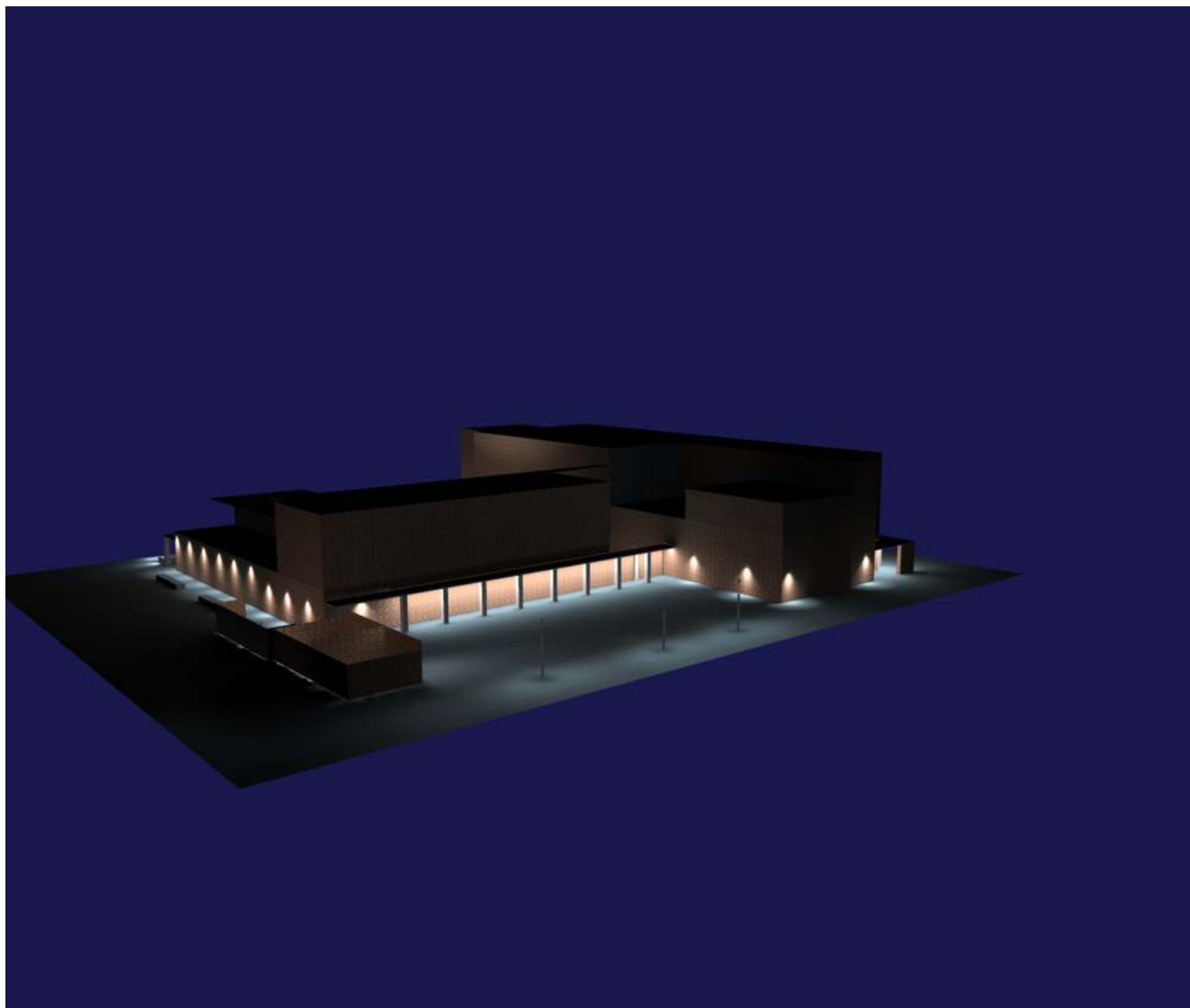
Maximum: : 776 cd/m²

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.19 3D luminance, View 3



Luminance in the scene

Minimum: : 0 cd/m²

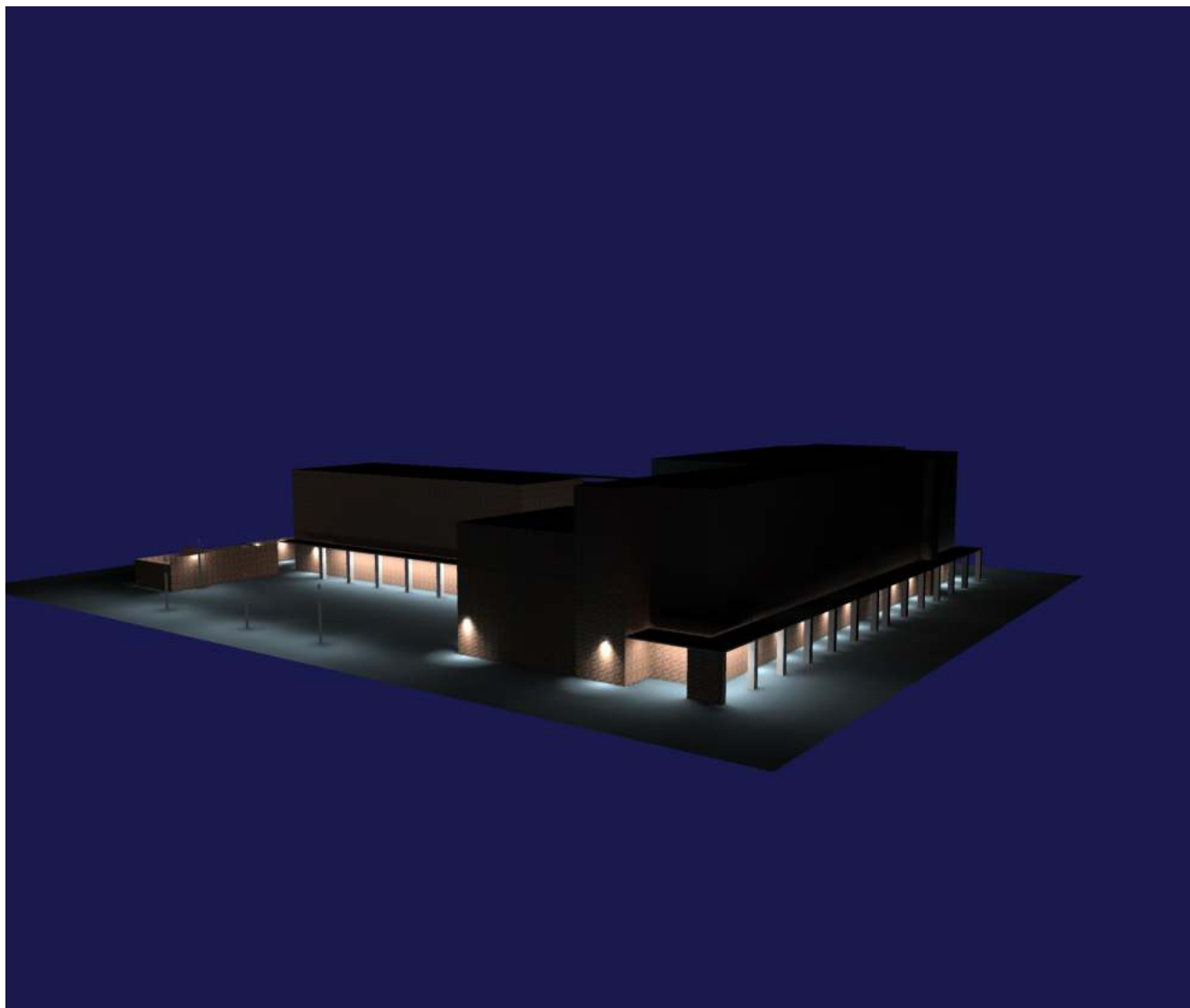
Maximum: : 776 cd/m²

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.20 3D luminance, View 4



Luminance in the scene

Minimum: : 0 cd/m²

Maximum: : 776 cd/m²

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.2 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.2.21 3D luminance, View 5



Luminance in the scene

Minimum: : 0 cd/m²

Maximum: : 776 cd/m²

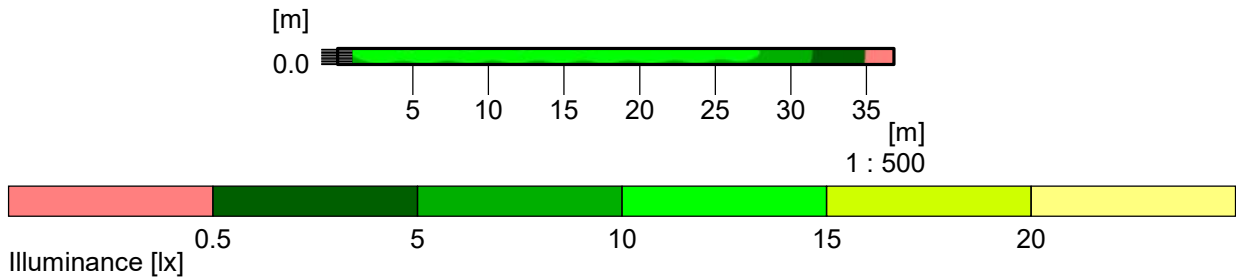
Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2 Exterior lighting4 - Ground Floor- Hexham Road

2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.1 Boundary line, Canopy - Upper Central - Emergency (E)

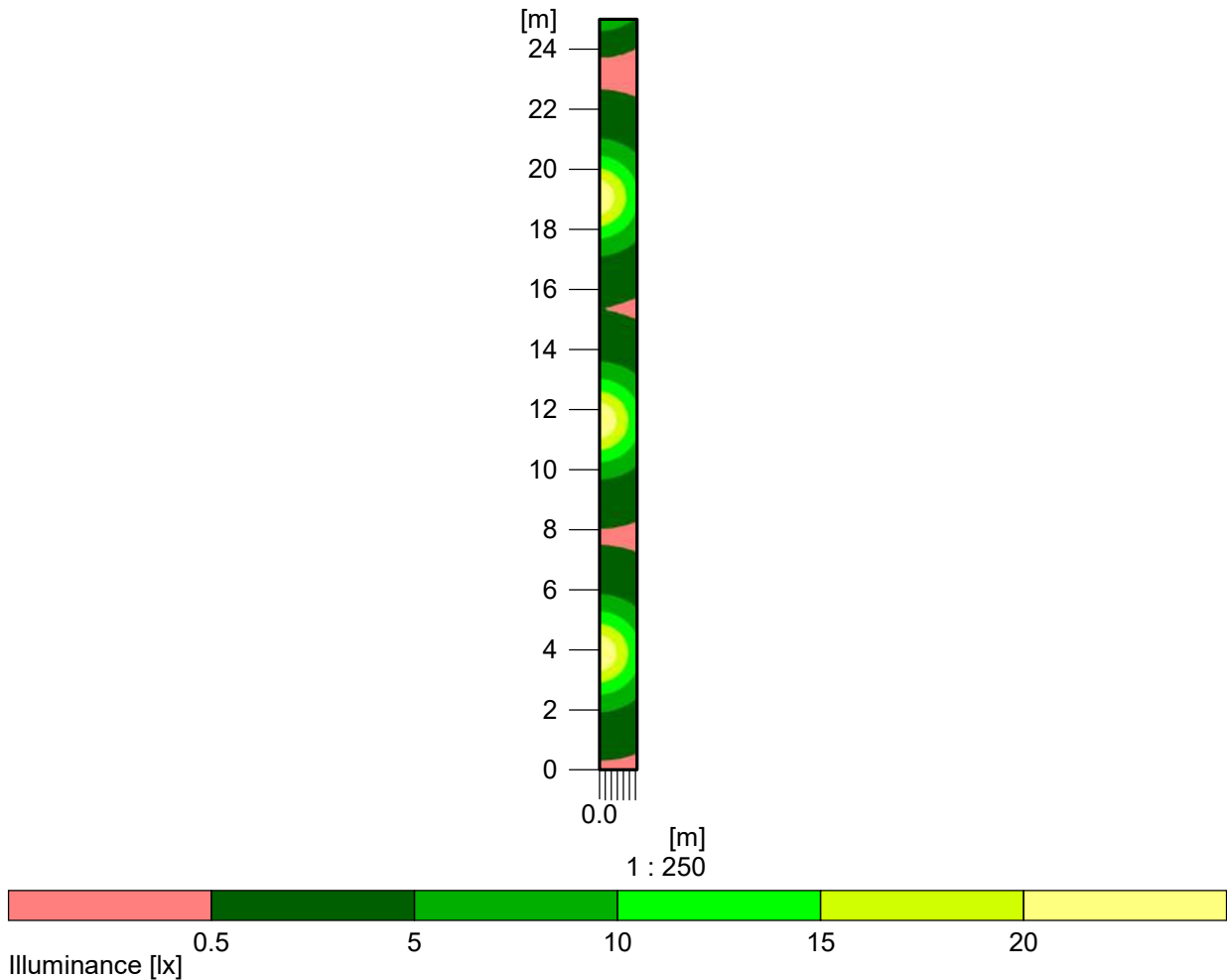


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.2 lx
Maximum illuminance	Emax	: 11 lx
Uniformity	Emin/Emax	: 1 : 67.90 (0.01) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.2 Boundary line, Right Side of Building - Emergency (E)

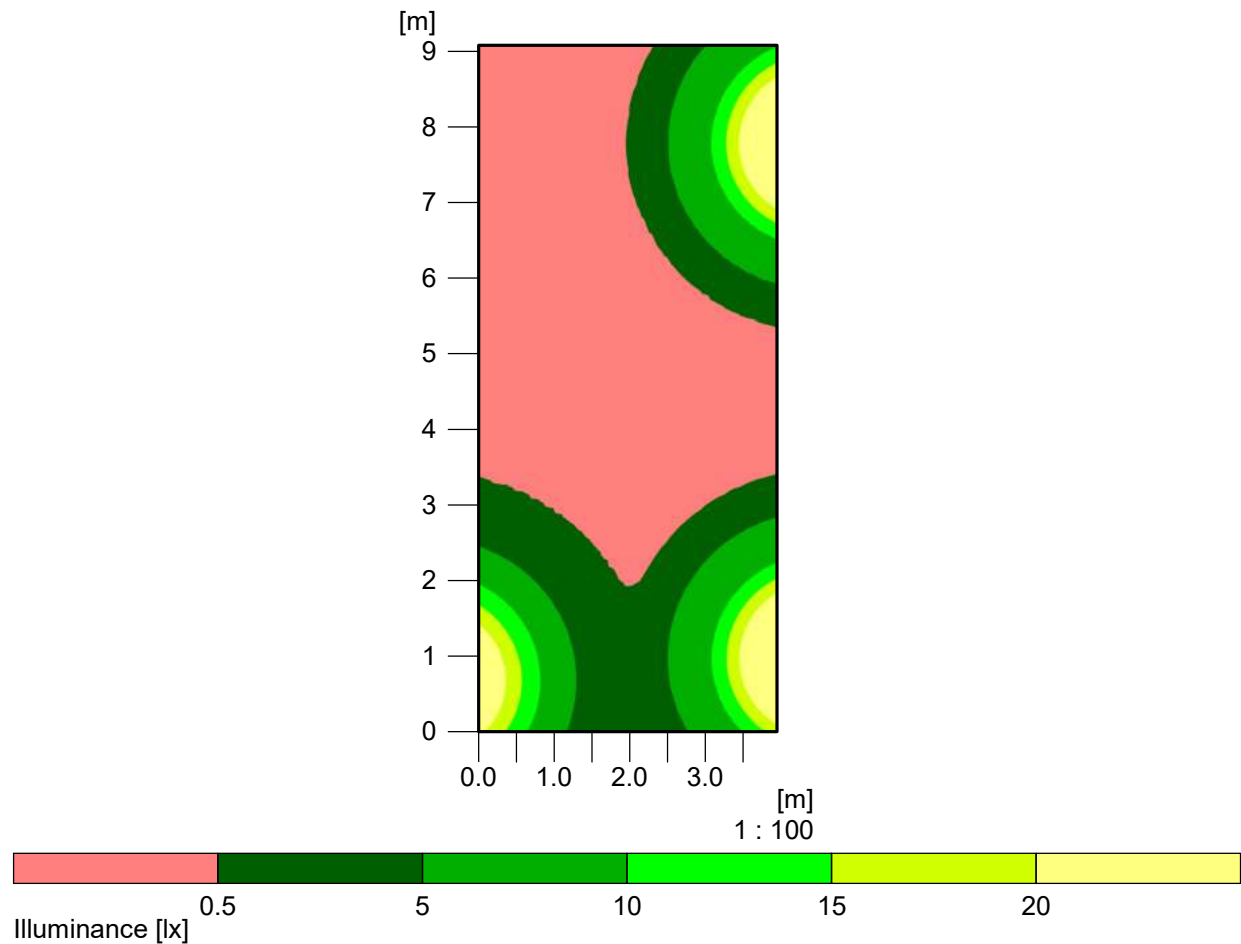


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.1 lx
Maximum illuminance	Emax	: 23 lx
Uniformity	Emin/Emax	: 1 : 430.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.3 Boundary line, Bike Storage2 - Emergency (E)

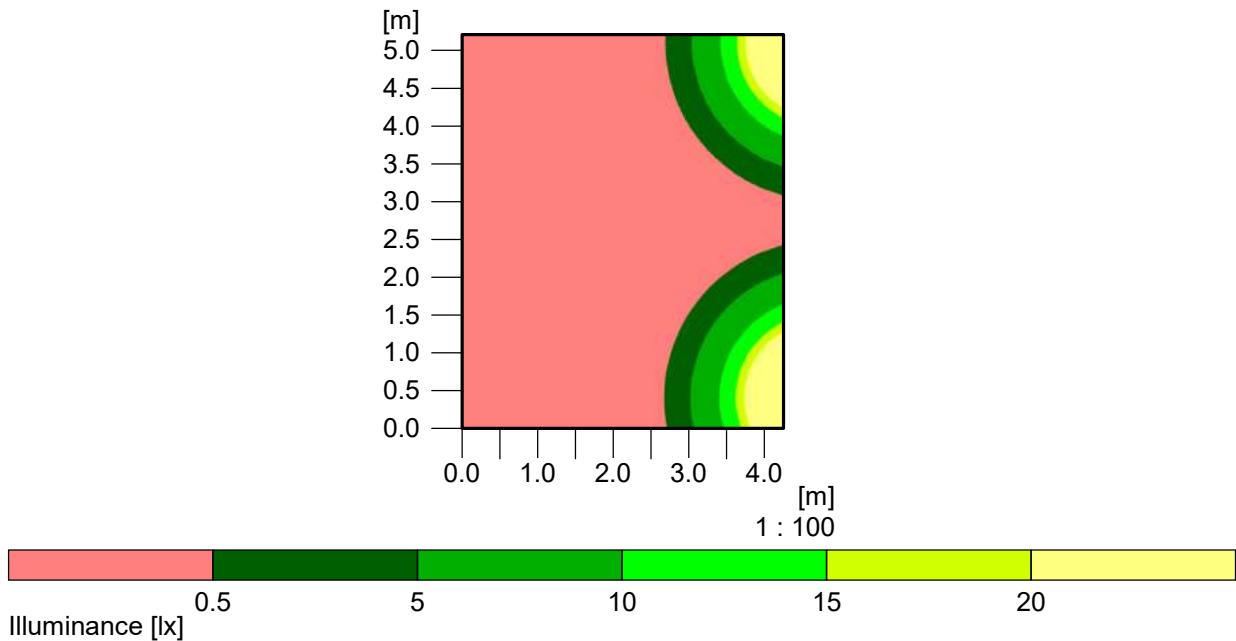


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 43 lx
Uniformity	Emin/Emax	: 1 : 1780.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.4 Boundary line, Enclosure -Emergency (E)

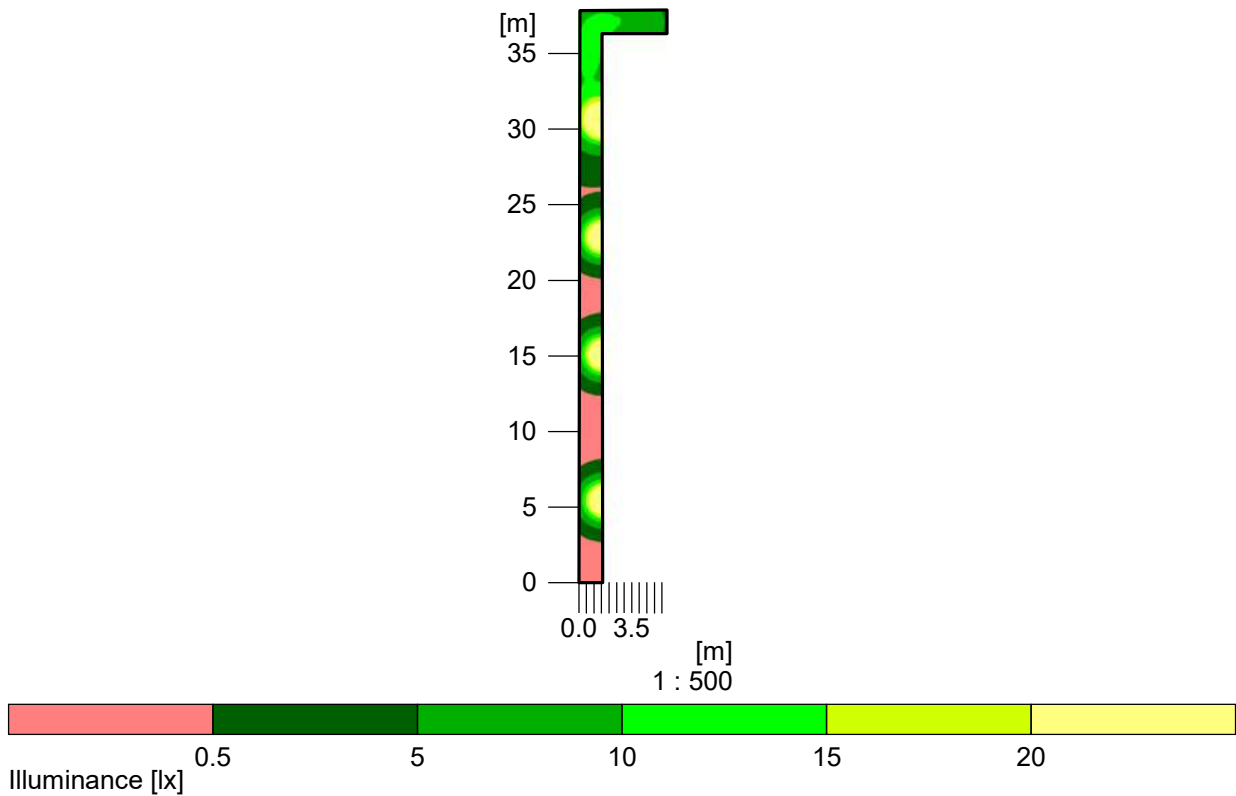


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 59 lx
Uniformity	Emin/Emax	: 1 : 5850.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.5 Boundary line, Canopy - Left Side of Building1 - Emergency (E)

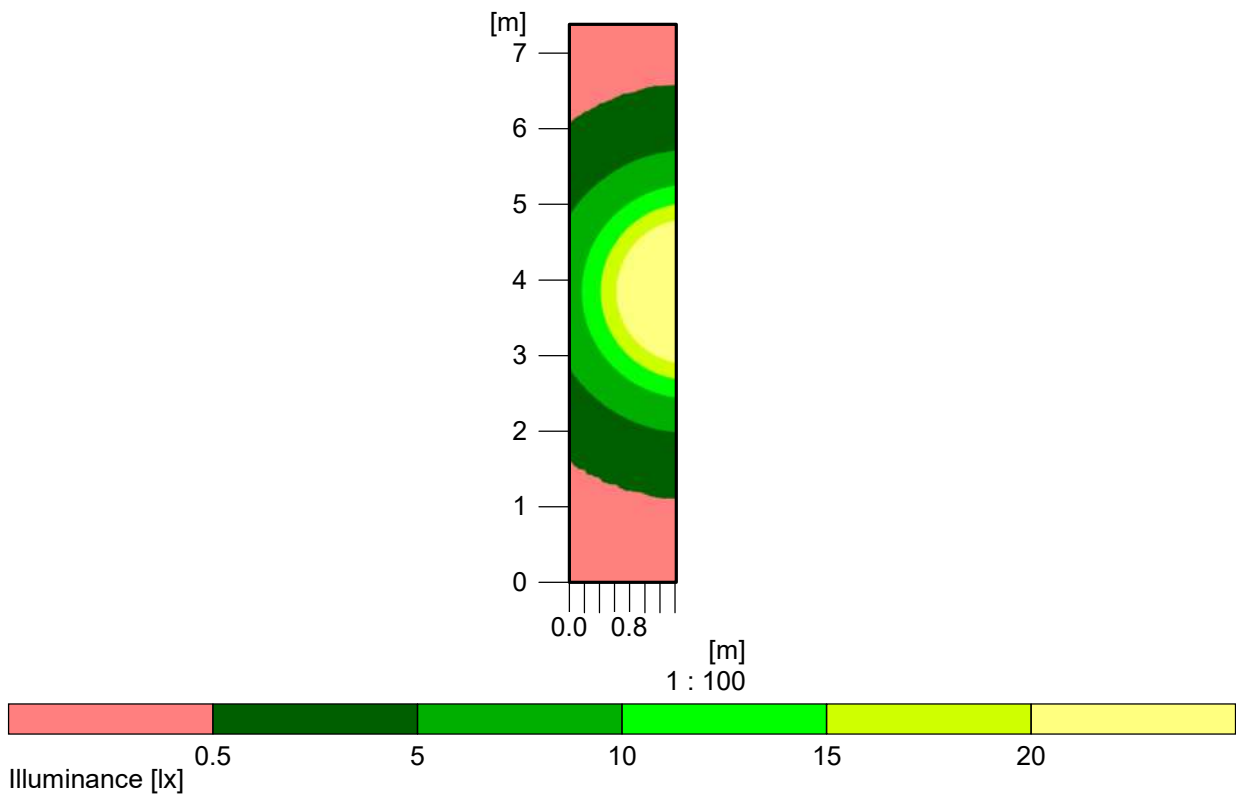


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 47 lx
Uniformity	Emin/Emax	: 1 : 4810.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.6 Boundary line, Canopy - Left Side of Building2 - Emergency (E)

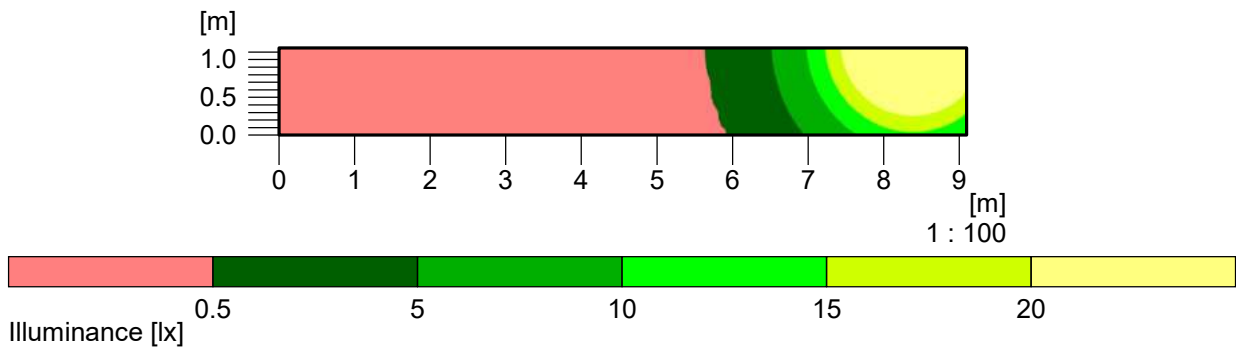


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 41 lx
Uniformity	Emin/Emax	: 1 : 1370.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.7 Boundary line, Lower Left of Building-1 - Emergency (E)

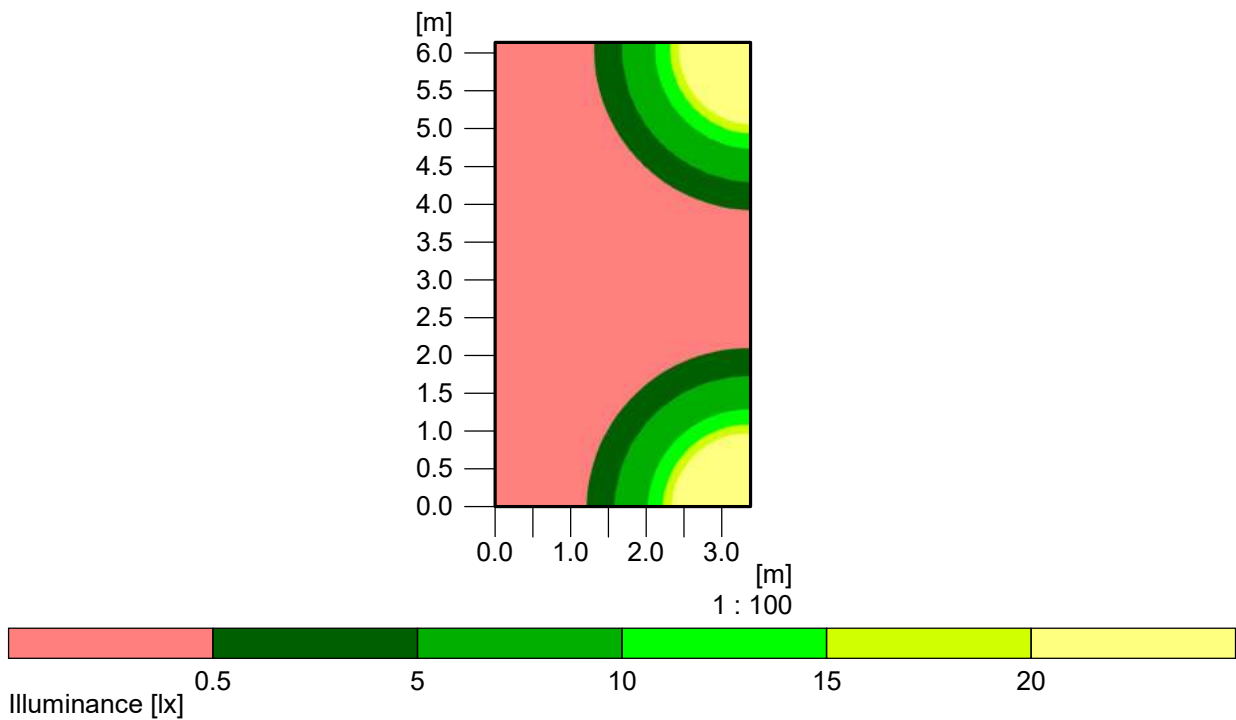


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 42 lx
Uniformity	Emin/Emax	: 1 : 6590.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.8 Boundary line, Bike Storage1 - Emergency (E)

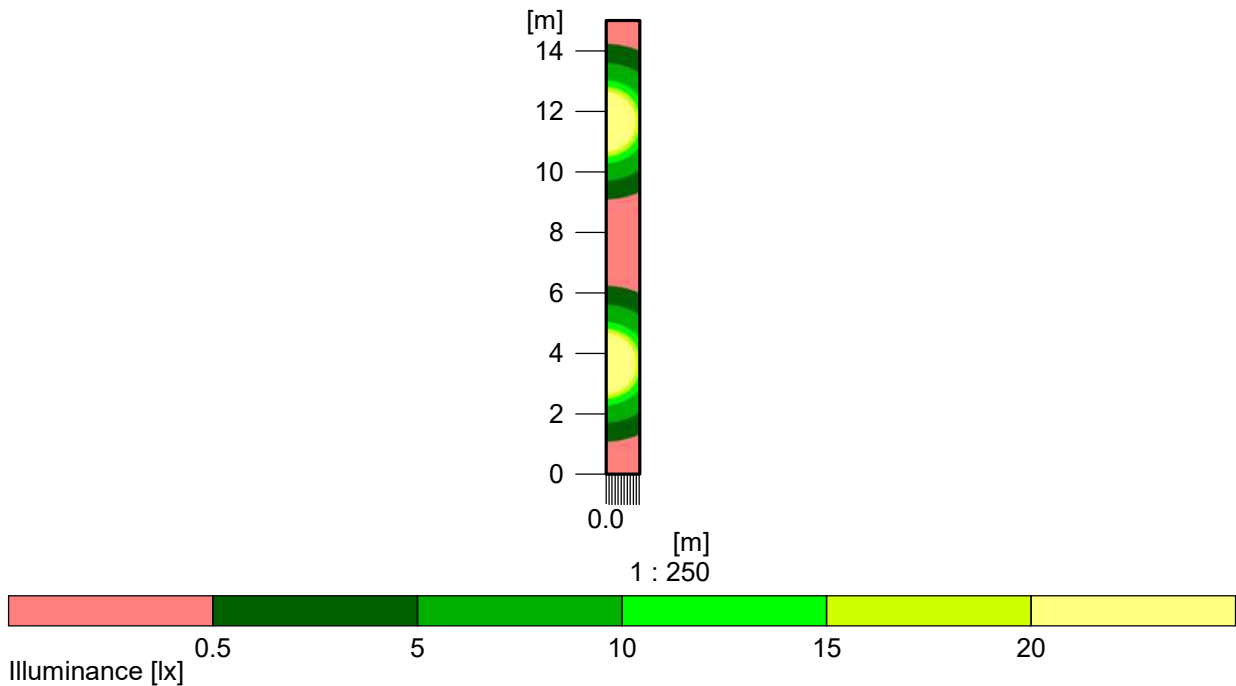


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 77 lx
Uniformity	Emin/Emax	: 1 : 3290.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.9 Boundary line, Canopy - Left of Central Area - Emergency (E)

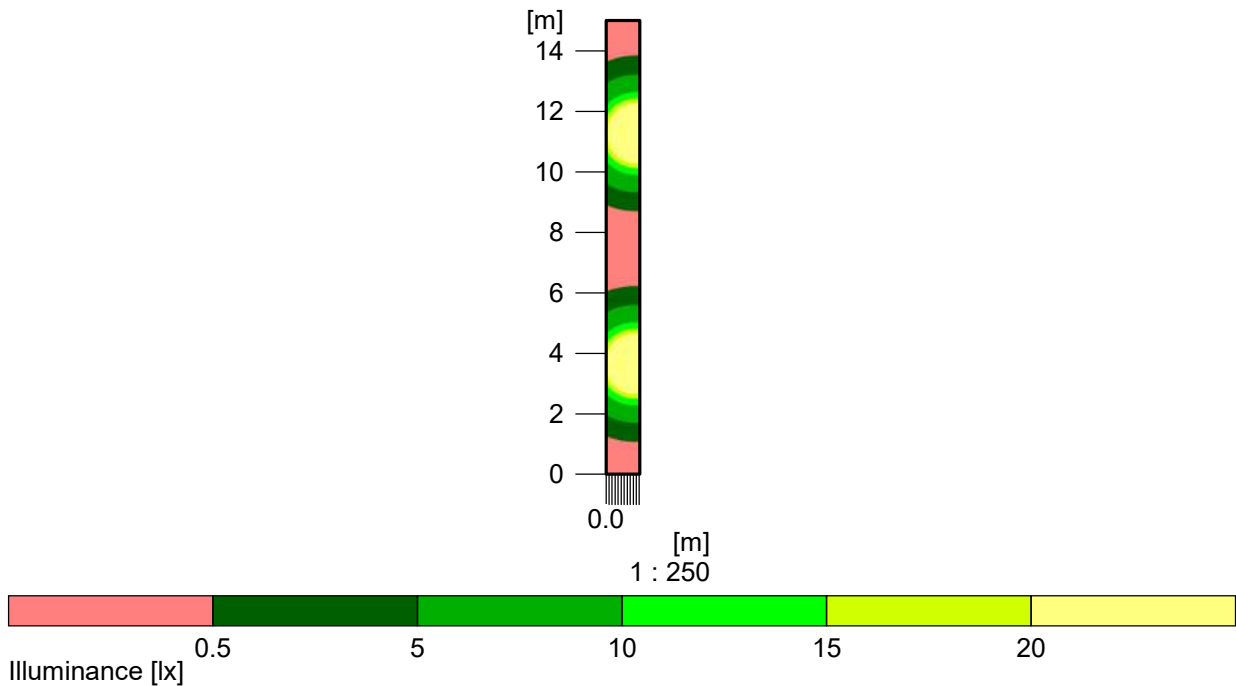


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 59 lx
Uniformity	Emin/Emax	: 1 : 1640.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.10 Boundary line, Canopy - Right of Central Area - Emergency (E)



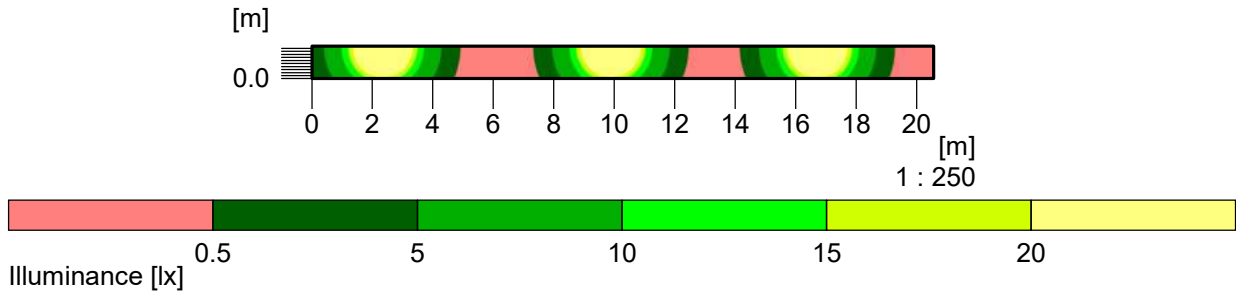
Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 58 lx
Uniformity	Emin/Emax	: 1 : 1710.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

Object : Exterior lighting4 - Ground Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0223013
Date : 15.02.2023



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.11 Boundary line, Canopy - Upper Middle Central Area - Emergency (E)

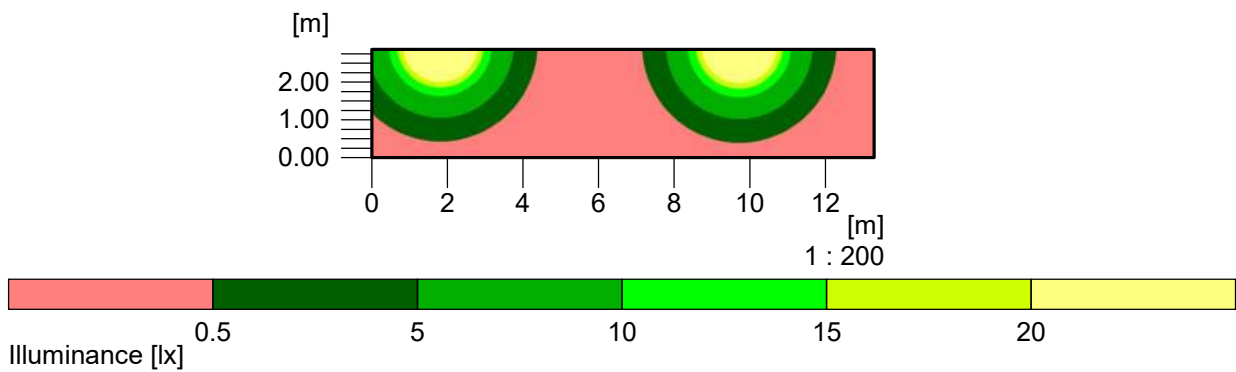


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 59 lx
Uniformity	Emin/Emax	: 1 : 1310.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



2.3 Calculation results, Exterior lighting4 - Ground Floor- Hexham Road

2.3.12 Boundary line, Canopy - Lower Right of Building - Emergency (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 56 lx
Uniformity	Emin/Emax	: 1 : 3460.00 (0.00) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



Exterior lighting3 - First Floor- Hexham Road

Installation : Hexham Road PLMD

Project number : P0123005-3

Customer :

Processed by :

Date : 01.02.2023

Project description:

Luminaire Height. 3m Under canopy, 2m Wall mounted

Working Plane: 0m.

Maintenance Factor: 0.8

Reflection Factors: 50% Walls, 20% Floor

The calculations predict illuminance levels based on the correct luminaire being installed as shown in this document. Any deviation to the product type or lamp type will render the calculations void. This similarly applies to changes of mounting height, reflection factors or maintenance factor.

Ensure that the design parameters meet the client specification

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



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Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.1 Complete Lighting Services Limited, Type EL3 - ENOLA 11W LED ... (!CLS -1003423)

1.1.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS -1003423 **Type EL3 - ENOLA 11W LED Wall mounted down light**

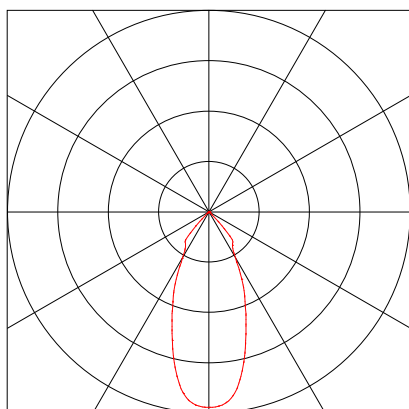
Luminaire data

Luminaire efficiency : 103.667%
Luminaire efficacy : 92.55 lm/W
Classification : A70 ↓100.0% ↑0.0%
CIE Flux Codes : 94 99 100 100 104
UGR 4H 8H : <10.0 / <10.0
Power : 11 W
Luminous flux : 1018 lm

Equipped with

Quantity : 1
Designation : LED
Colour :
Luminous flux : 982 lm

Dimensions : Ø150 mm x 160 mm



Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.2 Complete Lighting Services Limited, Type EL2 -Extruded enc... (!FLS5-5N IP65 3...)

1.2.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!FLS5-5N IP65 3000K

Type EL2 -Extruded enclosure with 10W LED tape IP65 3000K

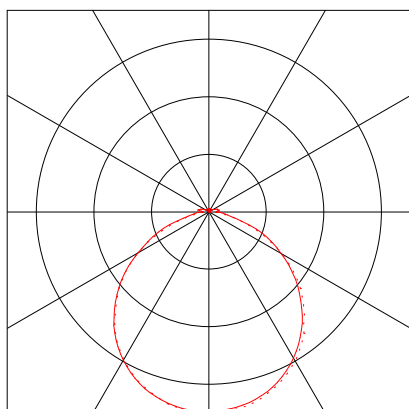
Luminaire data

Absolute Photometry
Luminaire efficacy : 82 lm/W
Classification : A41 ↓96.6% ↑3.4%
CIE Flux Codes : 49 81 96 97 100
UGR 4H 8H : 31.0 / 30.2
Power : 10 W
Luminous flux : 820 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Colour reproduction : 92

Dimensions : 1000 mm x 10 mm x 4 mm



Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2 Exterior Lighting - First Floor3 - Hexham Road

2.1 Description, Exterior Lighting - First Floor3 - Hexham Road

2.1.1 Floor plan

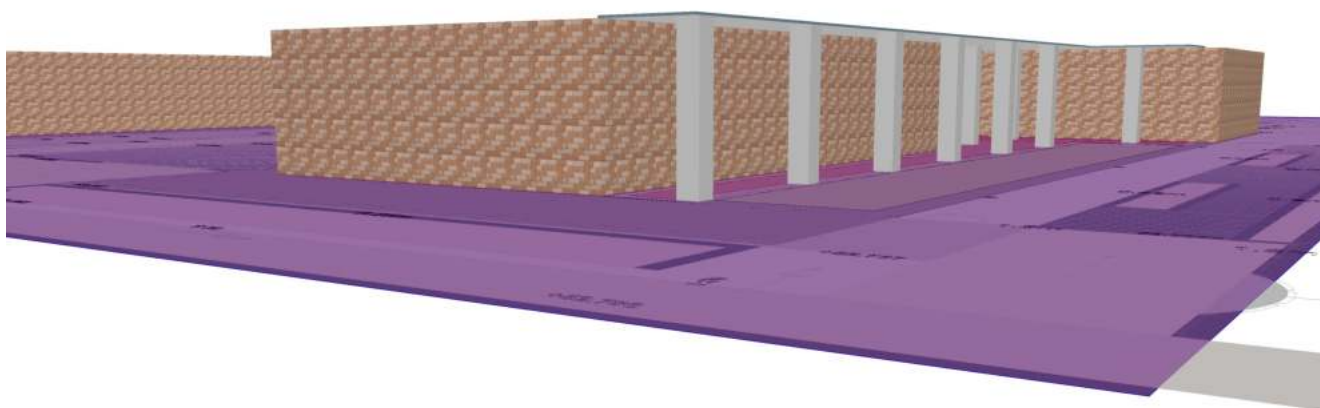


Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.1 Description, Exterior Lighting - First Floor3 - Hexham Road

2.1.2 3D view, View 1



Object : Exterior lighting3 - First Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023

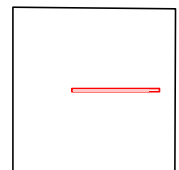


2 Exterior Lighting - First Floor3 - Hexham Road

2.2 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.2.1 Table, Under Canopy 1 (E)

[m]	64	80	92	100	100	101	103	108	109	110	110	110	110	110	110	110	110	110	111	111	111	113	113	113	114	115	115	114	116	114
1.0	70	88	100	107	108	109	112	116	117	118	118	118	118	118	118	118	118	119	119	119	120	121	121	122	122	124	124	123	124	124
0.8	74	93	106	113	115	116	119	122	123	123	124	125	124	124	124	124	125	125	125	125	126	127	128	129	129	131	131	130	130	134
0.6	77	97	110	116	119	120	123	126	127	127	128	129	128	128	128	129	128	128	129	129	129	130	131	132	135	132	135	143	135	142
0.4	79	99	112	117	121	122	125	127	128	128	129	130	129	129	128	130	129	130	129	130	130	132	134	146	133	136	156	137	125	148
0.2																														
0.0																														
	0				5					10					15					20					25					30
	Illuminance [lx]																													



Part1

Height of the reference plane

		: 0.00 m
Average illuminance	Eav	: 114 lx
Minimum illuminance	Emin	: 21 lx
Maximum illuminance	Emax	: 156 lx
Uniformity Uo	Emin/Eav	: 1 : 5.34 (0.19)
Diversity Ud	Emin/Emax	: 1 : 7.31 (0.14)

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



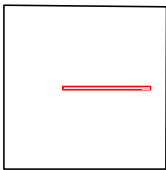
2 Exterior Lighting - First Floor3 - Hexham Road

2.2 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.2.1 Table, Under Canopy 1 (E)

100	73	45	24
109	80	49	23
119	87	53	24
127	94	57	23
134	100	59	(21)

[m]



Part2

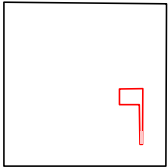
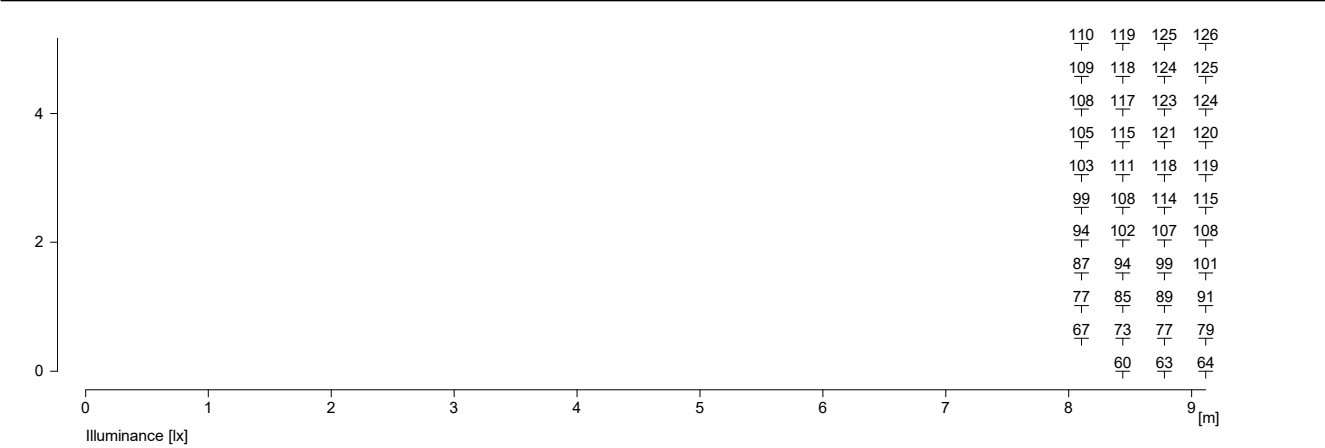


Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.2.2 Table, Under Canopy 2 (E)



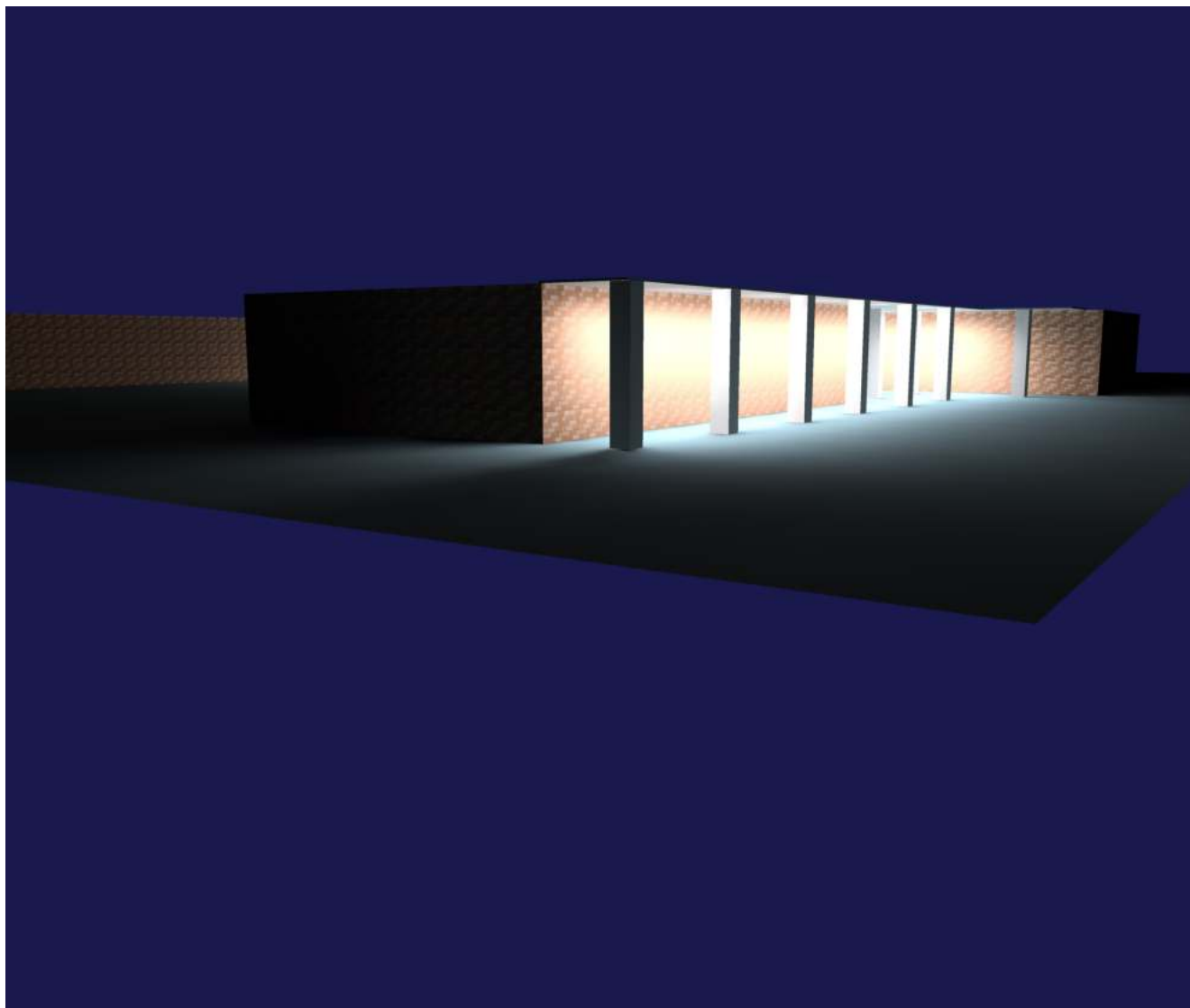
Part2

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.2.3 3D luminance, View 1



Luminance in the scene

Minimum: : 0 cd/m²

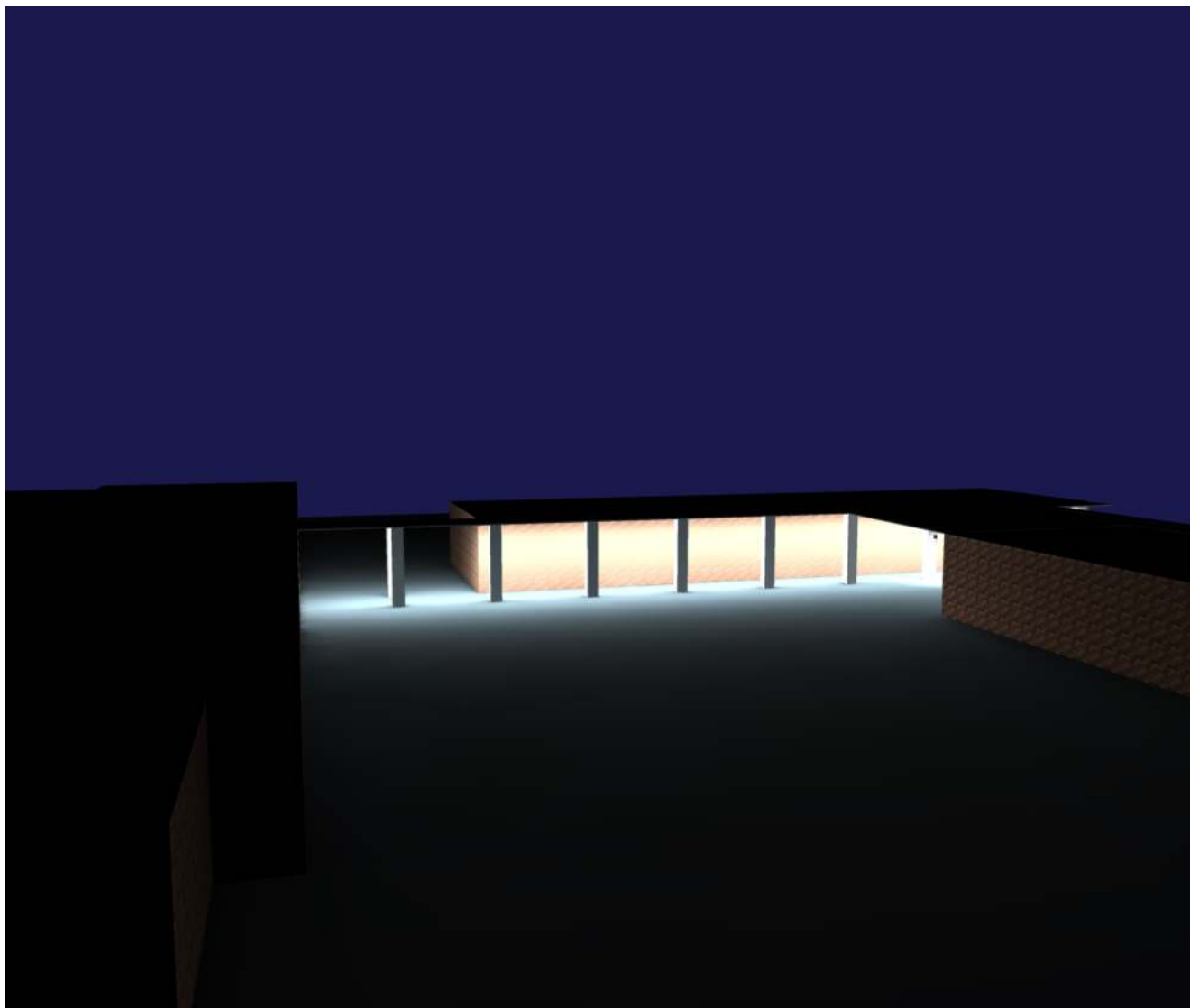
Maximum: : 100 cd/m²

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.2.4 3D luminance, View 2



Luminance in the scene

Minimum: : 0 cd/m²

Maximum: : 100 cd/m²

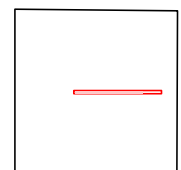
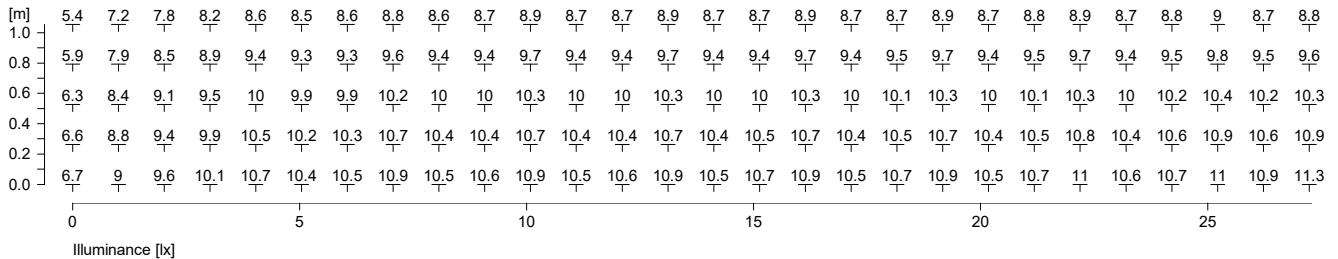
Object : Exterior lighting3 - First Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023



2 Exterior Lighting - First Floor3 - Hexham Road

2.3 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.3.1 Table, Under Canopy 1 - Emergency (E)



Part1

Required minimum illuminance : 0.5 lx

Minimum illuminance Emin : 1.8 lx (* 1.5 lx)
 Maximum illuminance Emax : 14 lx (* 15 lx)
 Uniformity Emin/Emax : 1 : 7.89 (0.13) (Threshold value 1:40) (* 1:7.90)
 Height : 0 m
 Calculation algorithm used : Direct component
 Maintenance factor : 0.8

*: Values on fine measuring grid (0.1m - 0.5m)!

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2 Exterior Lighting - First Floor3 - Hexham Road

2.3 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.3.1 Table, Under Canopy 1 - Emergency (E)



Object : Exterior lighting3 - First Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023



2.3 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.3.2 Table, Under Canopy 2 - Emergency (E)

	5.8	5.9	6	6.3	7	7.1	7.5	8.5	8.5	8.5	7.5	6.1	4.7	5.4	6	6.6	7.2	7.6	8	9	11.2	12.3	13.3	14	14.2	14.7	15
	4.7	4.9	5.1	5.5	5.7	6	6.6	6.8	6.9	6.9	6.9	6.1	5.4	5.3	5.4	5.7	6.5	7.4	8.6	9.4	10.4	11.4	12.5	13.7	14.8	15.7	[15.8]
	4	4.1	4.2	4.3	4.5	4.7	4.9	5	5.4	5.4	5.5	4.9	5.1	4.9	5.2	5.4	5.9	6.5	7.3	8.3	9.3	10.4	11.7	13	14.2	15.1	15.6
	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4	4.2	4.4	4.5	4.3	4.5	4.6	5	5.3	5.6	6.3	7	8.3	9.5	10.8	12.2	13.4	14.4	15
20	2.3	2.5	2.5	2.6	2.7	2.8	2.9	3	3.1	3.2	3.4	3.6	3.5	3.8	4.1	4.4	4.6	5	5.3	6	6.9	8.6	10.1	11.4	12.6	13.6	14.3
	1.6	1.9	2	2	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.9	3.1	3.1	3.5	3.8	4.1	4.7	5.1	5.3	5.8	6.7	9.4	10.6	11.8	12.7	13.4
	1.3	1.5	1.5	1.6	1.6	1.7	1.8	1.9	2	2.1	2.2	2.3	2.5	2.6	2.8	3.1	3.5	3.9	4.2	4.1	2.9	3.3	9.8	10.9	11.8	12.4	
18	1	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2	2.1	2.3	2.5	2.8	3.1	2.9	3.1	5	7.7	9	10.2	11.1	11.7
	0.8	0.9	0.9	1	1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.9	2.4	2.8	3.2	3.9	4.7	6.4	7.5	8.6	9.9	10.7	11.2
	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.9	1	1	1.1	1.1	1.3	1.5	1.6	1.9	2.2	2.6	3.4	4	5.1	6.4	7.4	8.5	9.6	10.6	11.2
	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1	1	1.2	1.4	1.6	1.7	2	2.4	2.8	3.9	5.1	6.2	7.5	8.5	9.6	10.6	11.2
16	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1	1.1	1.2	1.4	1.6	1.8	2.1	2.6	3.2	4.5	6	7.4	8.4	9.5	10.4	11
	(0.4)	(0.4)	(0.4)	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.8	0.9	1	1.1	1.2	1.4	1.6	1.9	2.4	2.9	3.5	4.2	7	8.3	9.2	10.1	10.7
																									9.1	9.9	10.5
																									9	9.9	10.4
14																									9.1	10	10.6
																									9.2	10.1	10.8
																									9.2	10.1	10.7
																									9	9.9	10.5
12																									8.9	9.7	10.3
																									8.9	9.8	10.3
																									9.1	10	10.6
																									9.2	10.1	10.7
10																									9.1	10	10.6
																									9	9.8	10.4
																									8.9	9.7	10.3
																									8.9	9.7	10.3
8																									9	9.9	10.5
																									9.1	10	10.7
																									9.1	10	10.6
																									8.9	9.7	10.3
6																									8.8	9.6	10.2
																									8.8	9.6	10.2

Part1

Required minimum illuminance

: 0.5 lx

Minimum illuminance

Emin : 0.4 lx (* 0 lx)

Maximum illuminance

Emax : 16 lx (* 16 lx)

Uniformity

Emin/Emax : 1 : 38.30 (0.03) (Threshold value 1:40)

Height

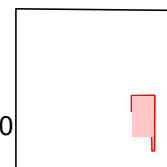
: 0 m

Calculation algorithm used

: Direct component

Maintenance factor

: 0.8



*: Values on fine measuring grid (0.1m - 0.5m)!

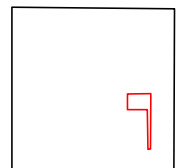
Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.3 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.3.2 Table, Under Canopy 2 - Emergency (E)

15
15.5
15.7
15.1
14.4
13.6
12.6
11.9
11.4
11.4
11.4
11.3
11
10.7
10.6
10.8
11
11
10.7
10.5
10.5
10.8
10.9
10.9
10.7
10.5
10.5
10.7
10.9
10.8
10.6
10.4
10.4



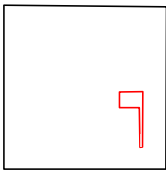
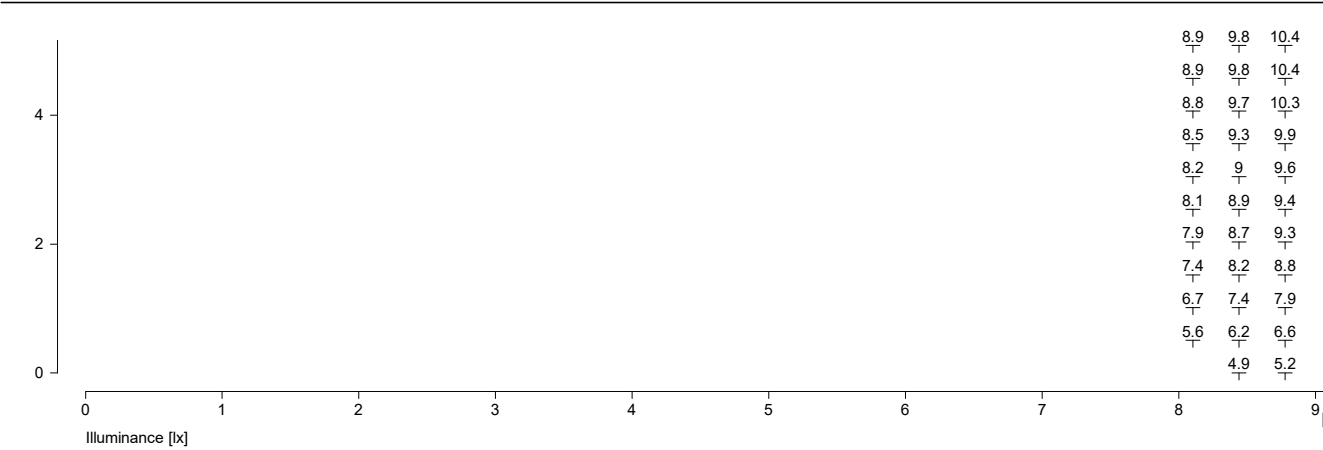
Part2

Object : Exterior lighting3 - First Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.3 Calculation results, Exterior Lighting - First Floor3 - Hexham Road

2.3.2 Table, Under Canopy 2 - Emergency (E)

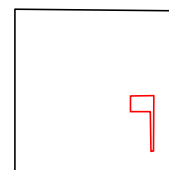


Part3



2.3.2 Table, Under Canopy 2 - Emergency (E)

10.6
+
10.7
+
10.5
+
10.1
+
9.8
+
9.6
+
9.5
+
9
+
8.1
+
6.7
+
5.3
+
-
[m]



Part4



Exterior lighting3 - Second Floor- Hexham Road

Installation : Hexham Road PLMD

Project number : P0123005-3

Customer :

Processed by :

Date : 01.02.2023

Project description:

Luminaire Height. 3m Under canopy, 2m Wall mounted

Working Plane: 0m.

Maintenance Factor: 0.8

Reflection Factors: 50% Walls, 20% Floor

The calculations predict illuminance levels based on the correct luminaire being installed as shown in this document. Any deviation to the product type or lamp type will render the calculations void. This similarly applies to changes of mounting height, reflection factors or maintenance factor.

Ensure that the design parameters meet the client specification

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



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Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.1 Complete Lighting Services Limited, Type EL3 ENOLA 11W LED Wal... (!CLS -1003423)

1.1.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS -1003423 **Type EL3 ENOLA 11W LED Wall mounted down light**

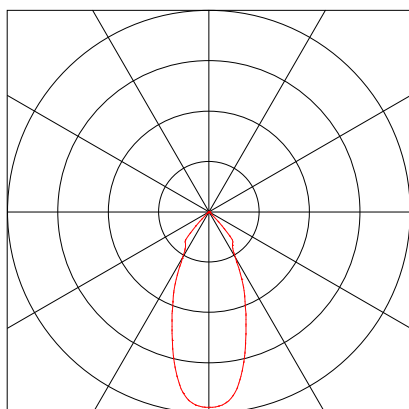
Luminaire data

Luminaire efficiency : 103.667%
Luminaire efficacy : 92.55 lm/W
Classification : A70 ↓100.0% ↑0.0%
CIE Flux Codes : 94 99 100 100 104
UGR 4H 8H : <10.0 / <10.0
Power : 11 W
Luminous flux : 1018 lm

Equipped with

Quantity : 1
Designation : LED
Colour :
Luminous flux : 982 lm

Dimensions : Ø150 mm x 160 mm



Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.2 Complete Lighting Services Limited, Type EL2 -Extruded enc... (!FLS5-5N IP65 3...)

1.2.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!FLS5-5N IP65 3000K

Type EL2 -Extruded enclosure with 10W LED tape IP65 3000K

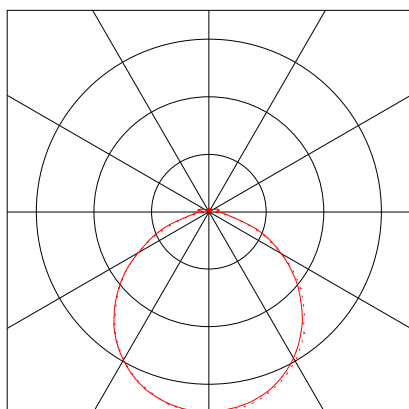
Luminaire data

Absolute Photometry
Luminaire efficacy : 82 lm/W
Classification : A41 ↓96.6% ↑3.4%
CIE Flux Codes : 49 81 96 97 100
UGR 4H 8H : 31.0 / 30.2
Power : 10 W
Luminous flux : 820 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Colour reproduction : 92

Dimensions : 1000 mm x 10 mm x 4 mm



Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.3 Complete Lighting Services Limited, Type EL2E - Extruded e... (!FLS5-5N IP65 3...)

1.3.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!FLS5-5N IP65 3000K-EMG
Emergency

Type EL2E - Extruded enclosure with 10W LED tape IP65 3000K -

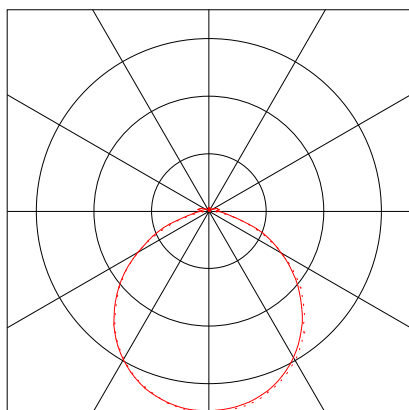
Luminaire data

Absolute Photometry
Luminaire efficacy : 82 lm/W
Classification : A41 ↓96.6% ↑3.4%
CIE Flux Codes : 49 81 96 97 100
UGR 4H 8H : 31.0 / 30.2
Power : 10 W
Luminous flux : 820 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Colour reproduction : 92

Dimensions : 1000 mm x 10 mm x 4 mm



Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.4 Complete Lighting Services Limited, Type EL3E - ENOLA 11W ... (!CLS -1003423 -...)

1.4.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!CLS -1003423 - EMG

Type EL3E - ENOLA 11W LED Wall mounted down light - Emergency

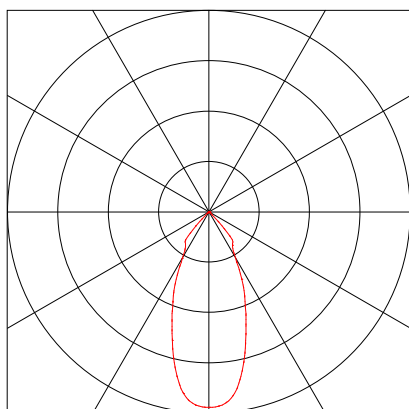
Luminaire data

Luminaire efficiency : 103.667%
Luminaire efficacy : 92.55 lm/W
Classification : A70 ↓100.0% ↑0.0%
CIE Flux Codes : 94 99 100 100 104
UGR 4H 8H : <10.0 / <10.0
Power : 11 W
Luminous flux : 1018 lm

Equipped with

Quantity : 1
Designation : LED
Colour :
Luminous flux : 982 lm

Dimensions : Ø150 mm x 160 mm



Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2 Exterior Lighting - Second Floor3 - Hexham Road

2.1 Description, Exterior Lighting - Second Floor3 - Hexham Road

2.1.1 Floor plan

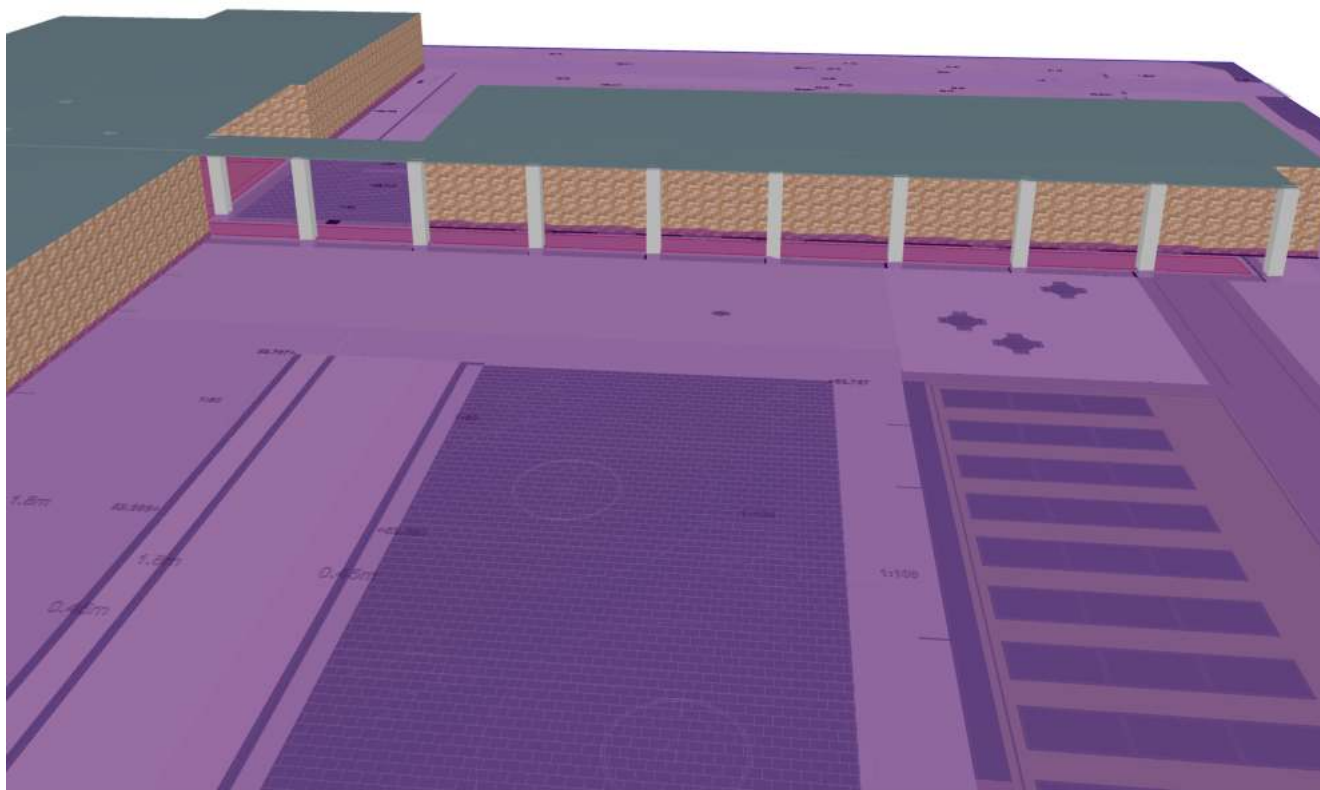


Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.1 Description, Exterior Lighting - Second Floor3 - Hexham Road

2.1.2 3D view, View 1



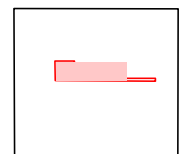
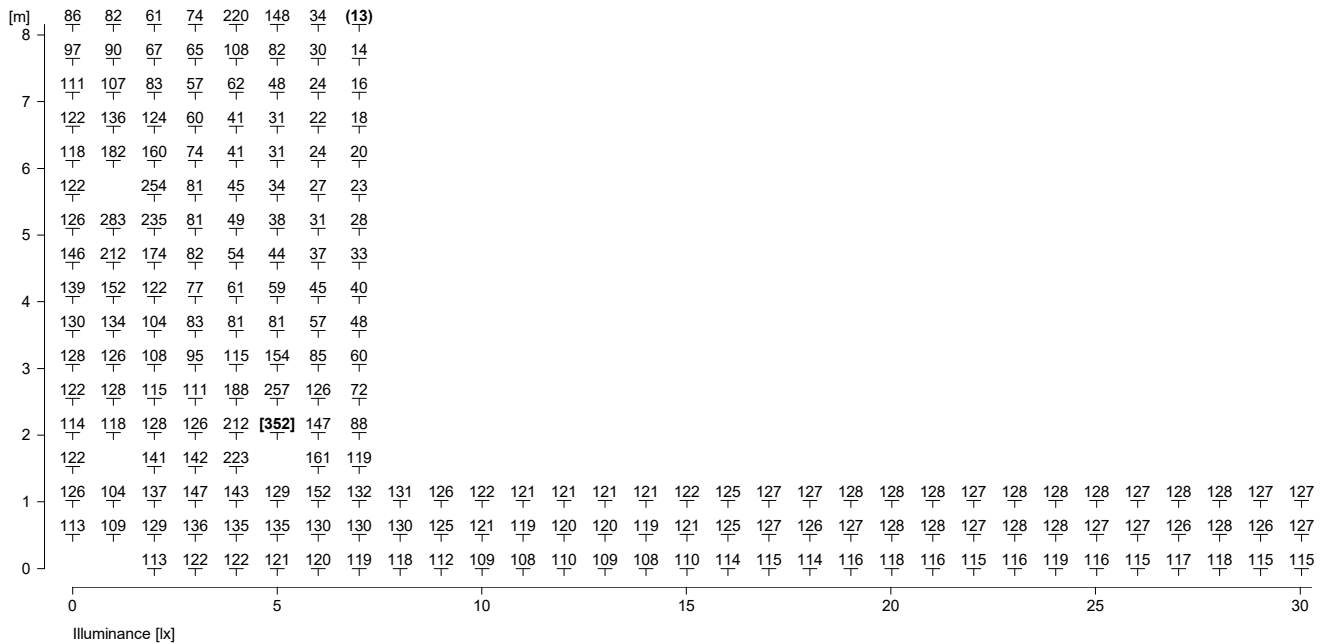
Object : Exterior lighting3 - Second Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023



2 Exterior Lighting - Second Floor3 - Hexham Road

2.2 Calculation results, Exterior Lighting - Second Floor3 - Hexham Road

2.2.1 Table, Under canopy (E)



Part1

Height of the reference plane

Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 13 lx
Maximum illuminance	Emax	: 352 lx
Uniformity Uo	Emin/Eav	: 1 : 8.71 (0.11)
Diversity Ud	Emin/Emax	: 1 : 27.67 (0.04)

Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023

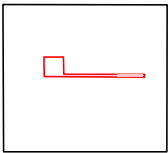


2 Exterior Lighting - Second Floor3 - Hexham Road

2.2 Calculation results, Exterior Lighting - Second Floor3 - Hexham Road

2.2.1 Table, Under canopy (E)

128	127	127	127	127	126	124	123	120	112	98	76
127	127	126	126	127	126	124	121	119	111	97	74
117	116	114	114	116	114	111	111	108	100	87	69
35						40 [m]					



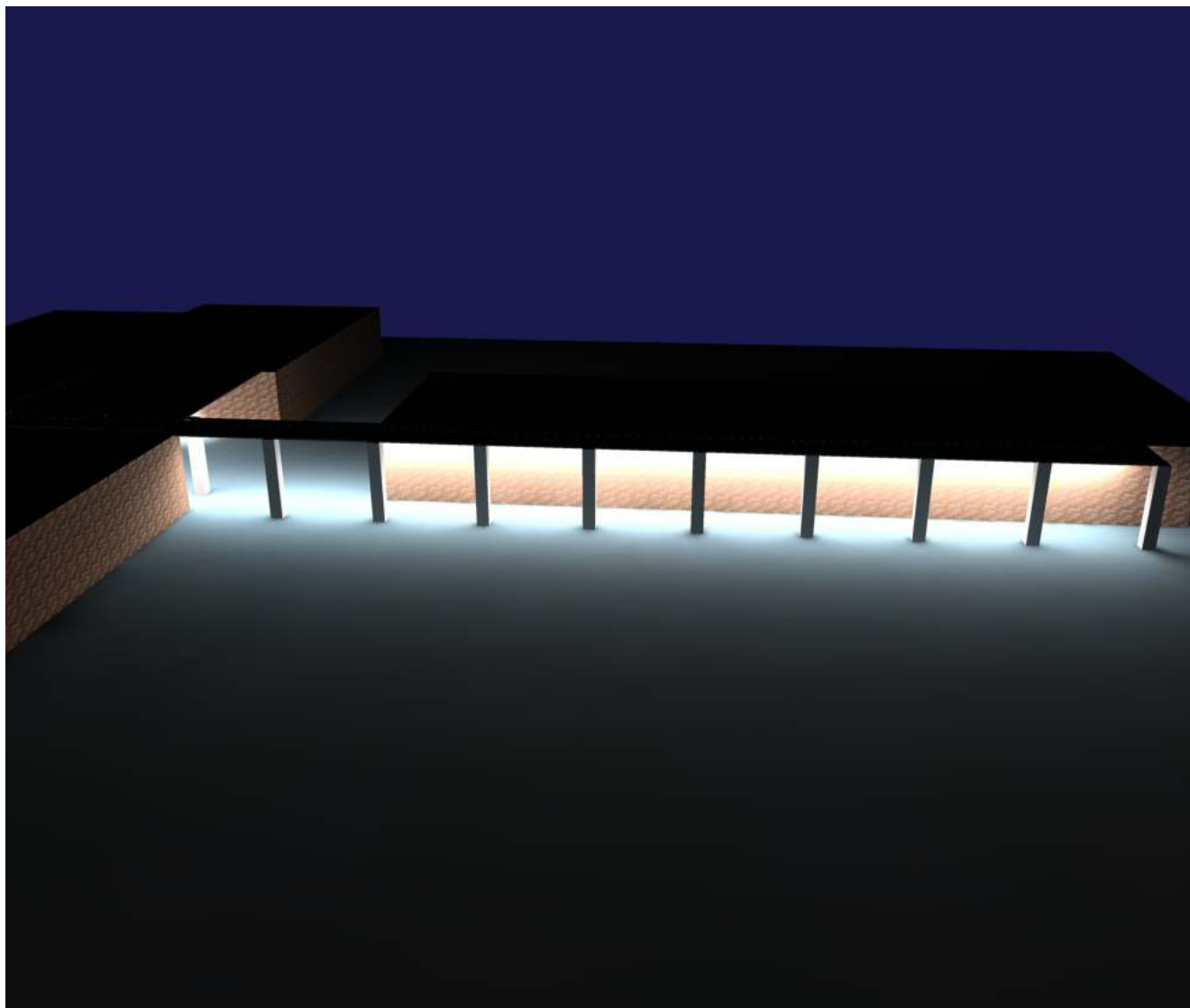
Part2

Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - Second Floor3 - Hexham Road

2.2.2 3D luminance, View 1



Luminance in the scene

Minimum: : 0 cd/m²

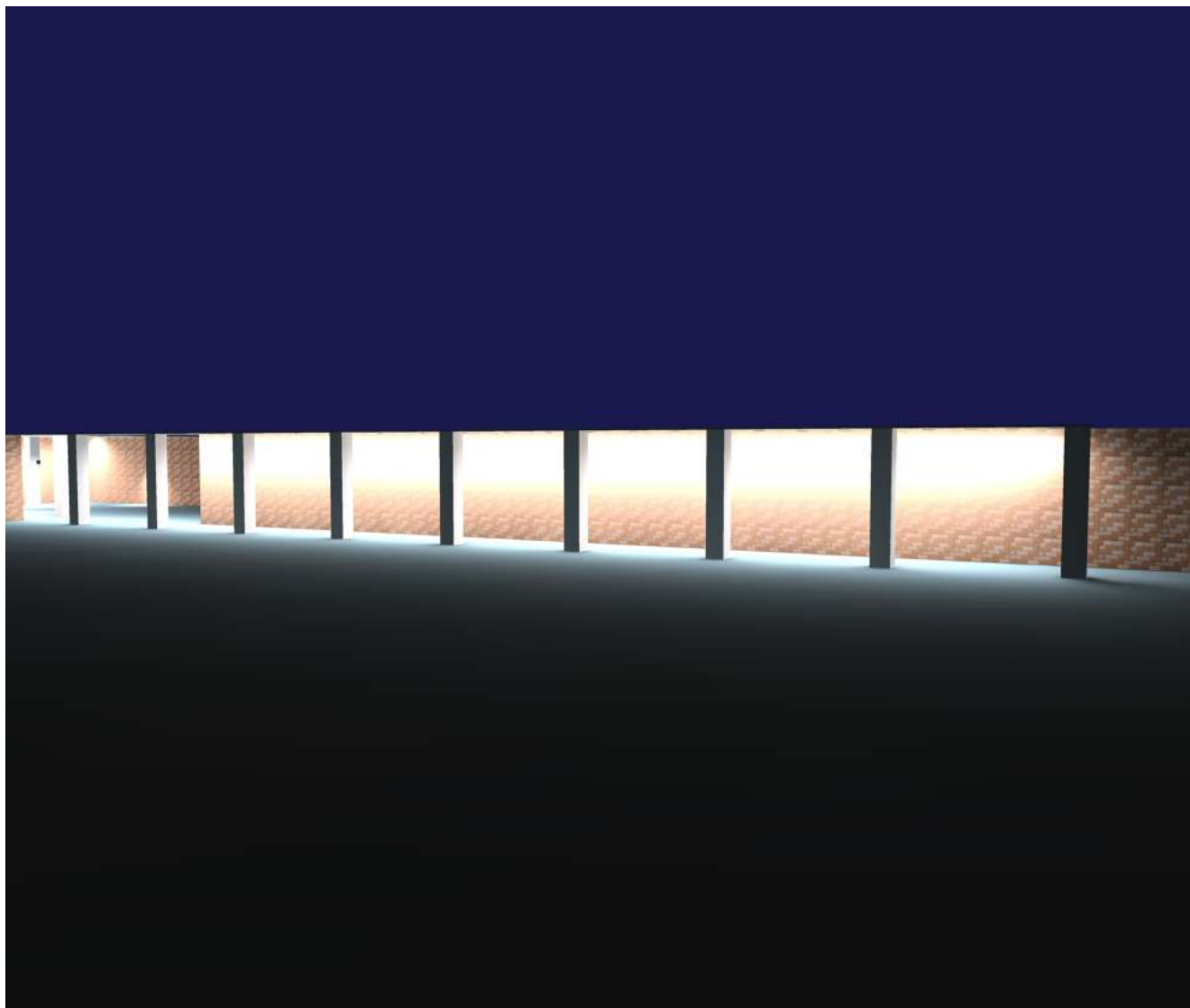
Maximum: : 117 cd/m²

Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - Second Floor3 - Hexham Road

2.2.3 3D luminance, View 2



Luminance in the scene

Minimum: : 0 cd/m²

Maximum: : 117 cd/m²

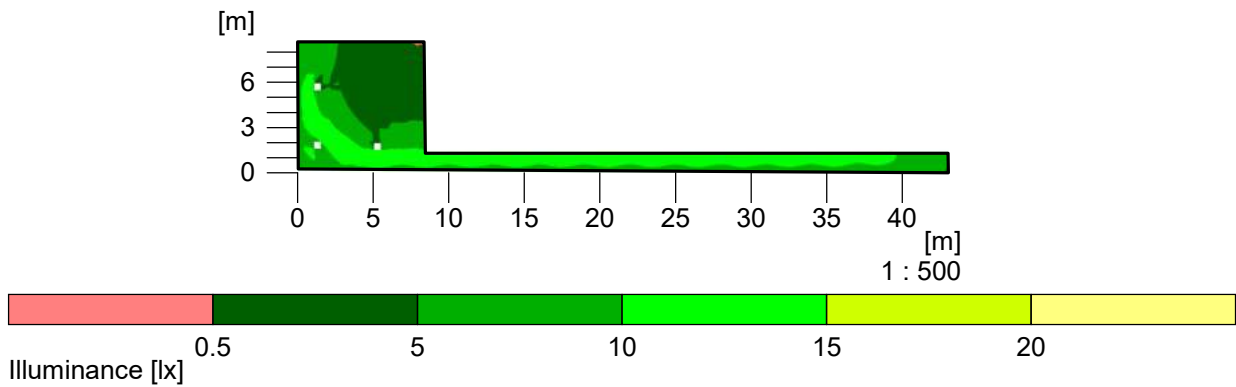
Object : Exterior lighting3 - Second Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2 Exterior Lighting - Second Floor3 - Hexham Road

2.3 Calculation results, Exterior Lighting - Second Floor3 - Hexham Road

2.3.1 Boundary line, Under canopy - Emergency (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 13 lx
Uniformity	Emin/Emax	: --- (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8



Exterior lighting3 - Third Floor- Hexham Road

Installation : Hexham Road PLMD

Project number : P0123005-3

Customer :

Processed by :

Date : 01.02.2023

Project description:

Luminaire Height. 3m Under canopy, 2m Wall mounted

Working Plane: 0m.

Maintenance Factor: 0.8

Reflection Factors: 50% Walls, 20% Floor

The calculations predict illuminance levels based on the correct luminaire being installed as shown in this document. Any deviation to the product type or lamp type will render the calculations void. This similarly applies to changes of mounting height, reflection factors or maintenance factor.

Ensure that the design parameters meet the client specification

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



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Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.1 Complete Lighting Services Limited, Type EL2 -Extruded enc... (!FLS5-5N IP65 3...)

1.1.1 Data sheet

Manufacturer: Complete Lighting Services Limited

!FLS5-5N IP65 3000K

Type EL2 -Extruded enclosure with 10W LED tape IP65 3000K

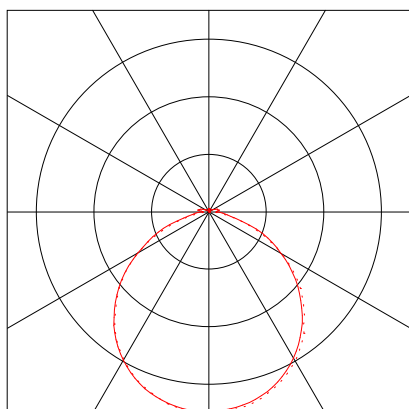
Luminaire data

Absolute Photometry
Luminaire efficacy : 82 lm/W
Classification : A41 ↓96.6% ↑3.4%
CIE Flux Codes : 49 81 96 97 100
UGR 4H 8H : 31.0 / 30.2
Power : 10 W
Luminous flux : 820 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Colour reproduction : 92

Dimensions : 1000 mm x 10 mm x 4 mm



Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



1 Luminaire data

1.2 Complete Lighting Services Limited, BRICK (233650)

1.2.1 Data sheet

Manufacturer: Complete Lighting Services Limited

233650 BRICK

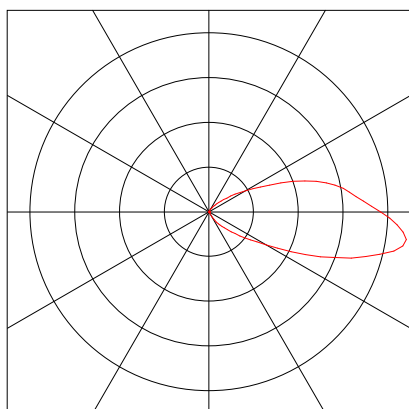
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 79.91 lm/W
Classification : C11 ↓59.2% ↑40.8%
CIE Flux Codes : 1 12 47 59 100
UGR 4H 8H : 44.7 / 23.6
Power : 11 W
Luminous flux : 879 lm

Equipped with

Quantity : 1
Designation : LED 0
Colour : 3000K
Luminous flux : 879 lm
Colour reproduction : 0

Dimensions : 210 mm x 91 mm x 93 mm



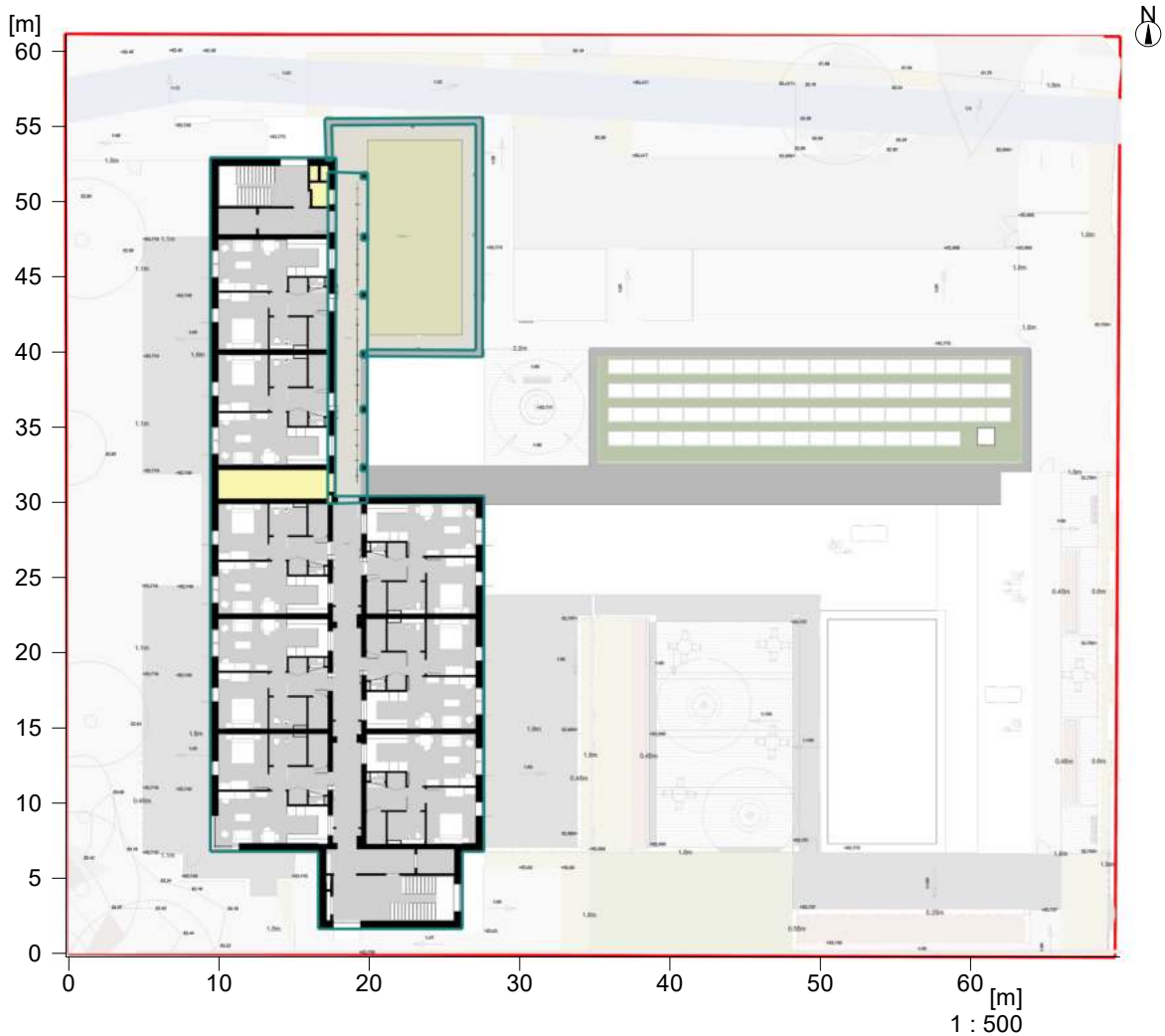
Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2 Exterior Lighting - Third Floor3 - Hexham Road

2.1 Description, Exterior Lighting - Third Floor3 - Hexham Road

2.1.1 Floor plan

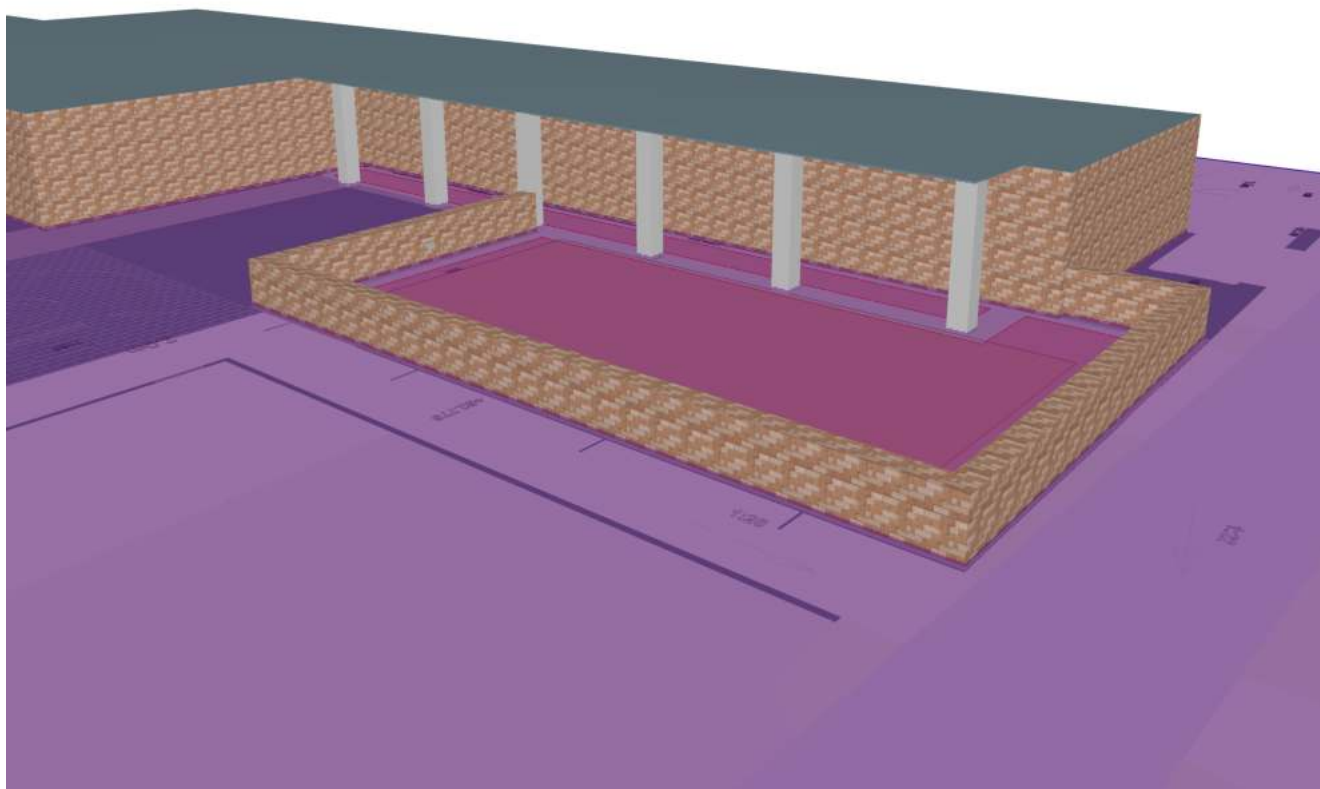


Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.1 Description, Exterior Lighting - Third Floor3 - Hexham Road

2.1.2 3D view, View 1



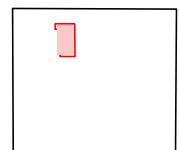
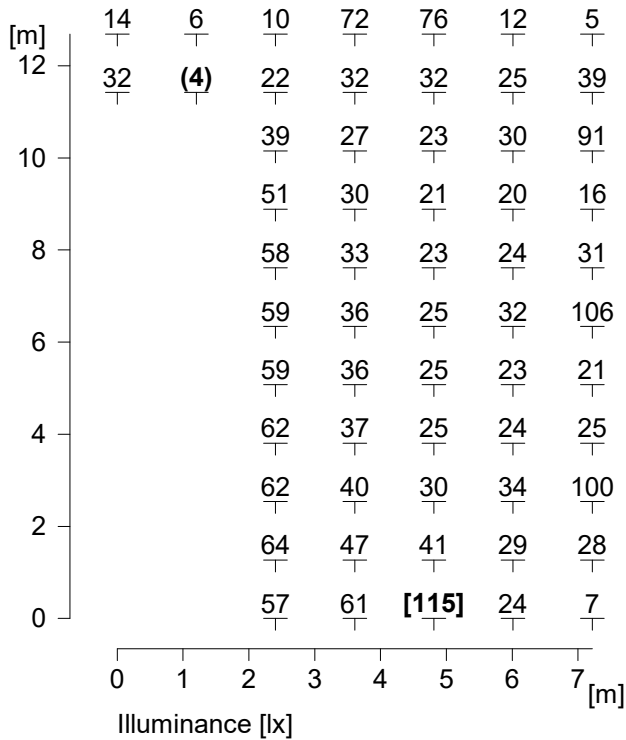
Object : Exterior lighting3 - Third Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023



2 Exterior Lighting - Third Floor3 - Hexham Road

2.2 Calculation results, Exterior Lighting - Third Floor3 - Hexham Road

2.2.1 Table, Roof lighting (E)



Height of the reference plane

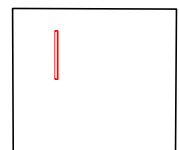
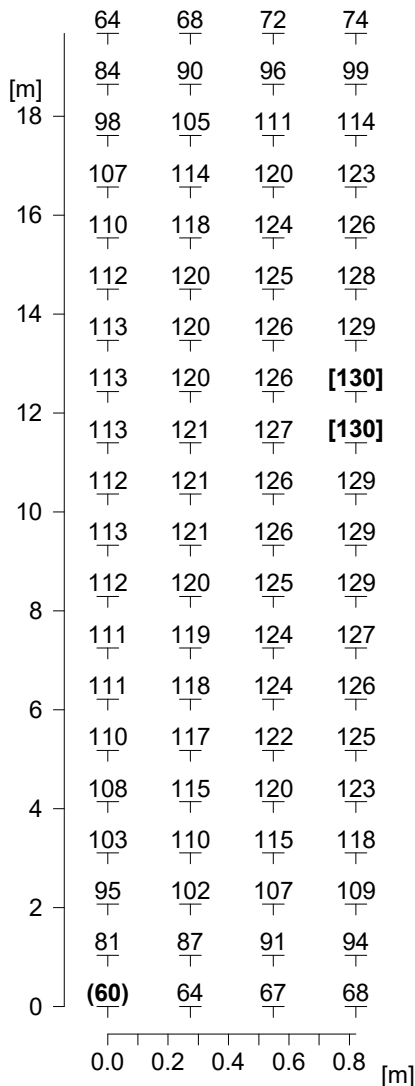
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 38 lx
Maximum illuminance	Emax	: 4 lx
Uniformity Uo	Emin/Eav	: 1 : 8.51 (0.12)
Diversity Ud	Emin/Emax	: 1 : 25.84 (0.04)

Object : Exterior lighting3 - Third Floor- Hexham Road
 Installation : Hexham Road PLMD
 Project number : P0123005-3
 Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - Third Floor3 - Hexham Road

2.2.2 Table, Under Canopy lighting (E)



Height of the reference plane

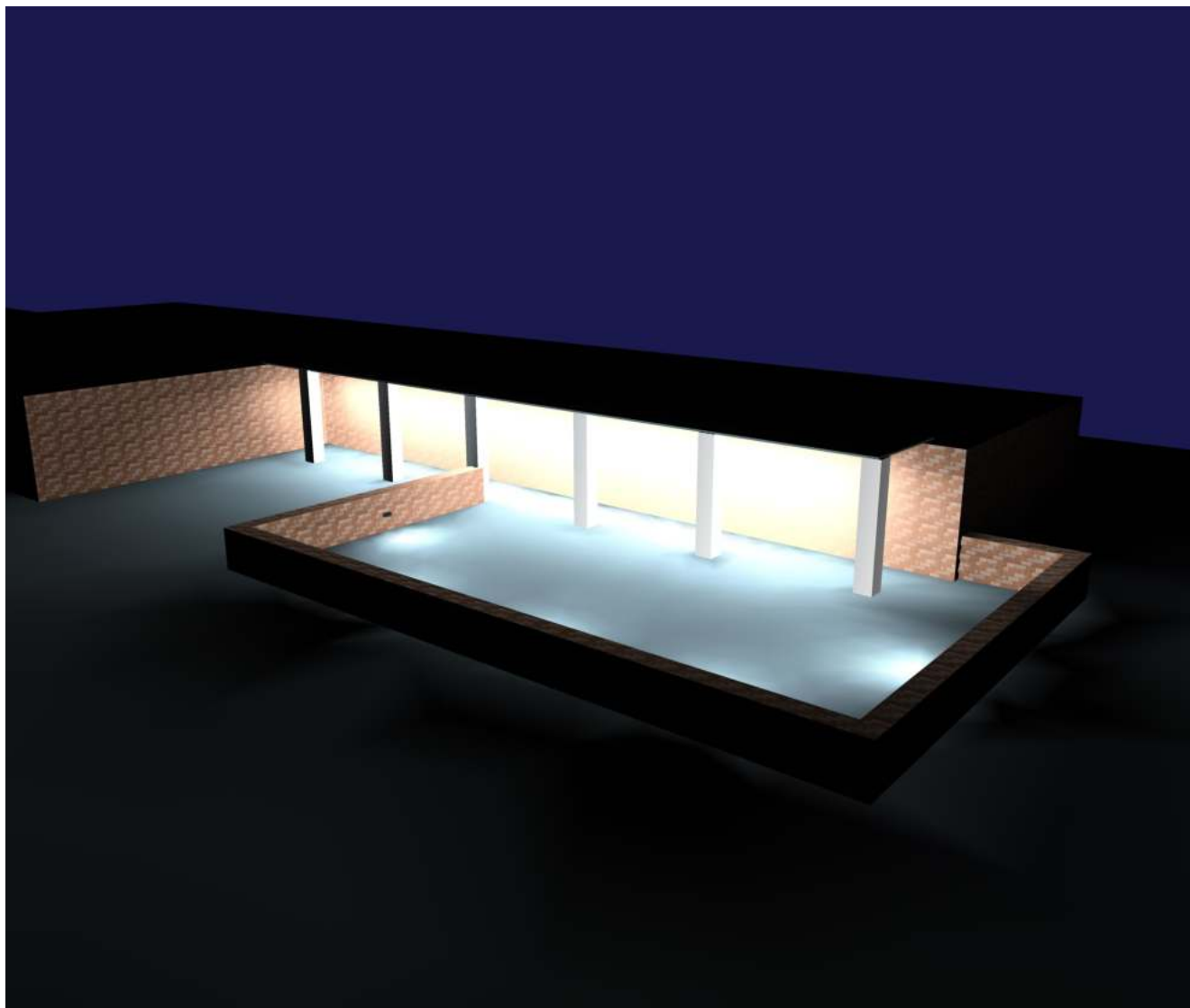
Average illuminance	Eav	: 0.00 m
Minimum illuminance	Emin	: 60 lx
Maximum illuminance	Emax	: 130 lx
Uniformity Uo	Emin/Eav	: 1 : 1.82 (0.55)
Diversity Ud	Emin/Emax	: 1 : 2.16 (0.46)

Object : Exterior lighting3 - Third Floor- Hexham Road
Installation : Hexham Road PLMD
Project number : P0123005-3
Date : 01.02.2023



2.2 Calculation results, Exterior Lighting - Third Floor3 - Hexham Road

2.2.3 3D luminance, View 1



Luminance in the scene

Minimum: : 0 cd/m²

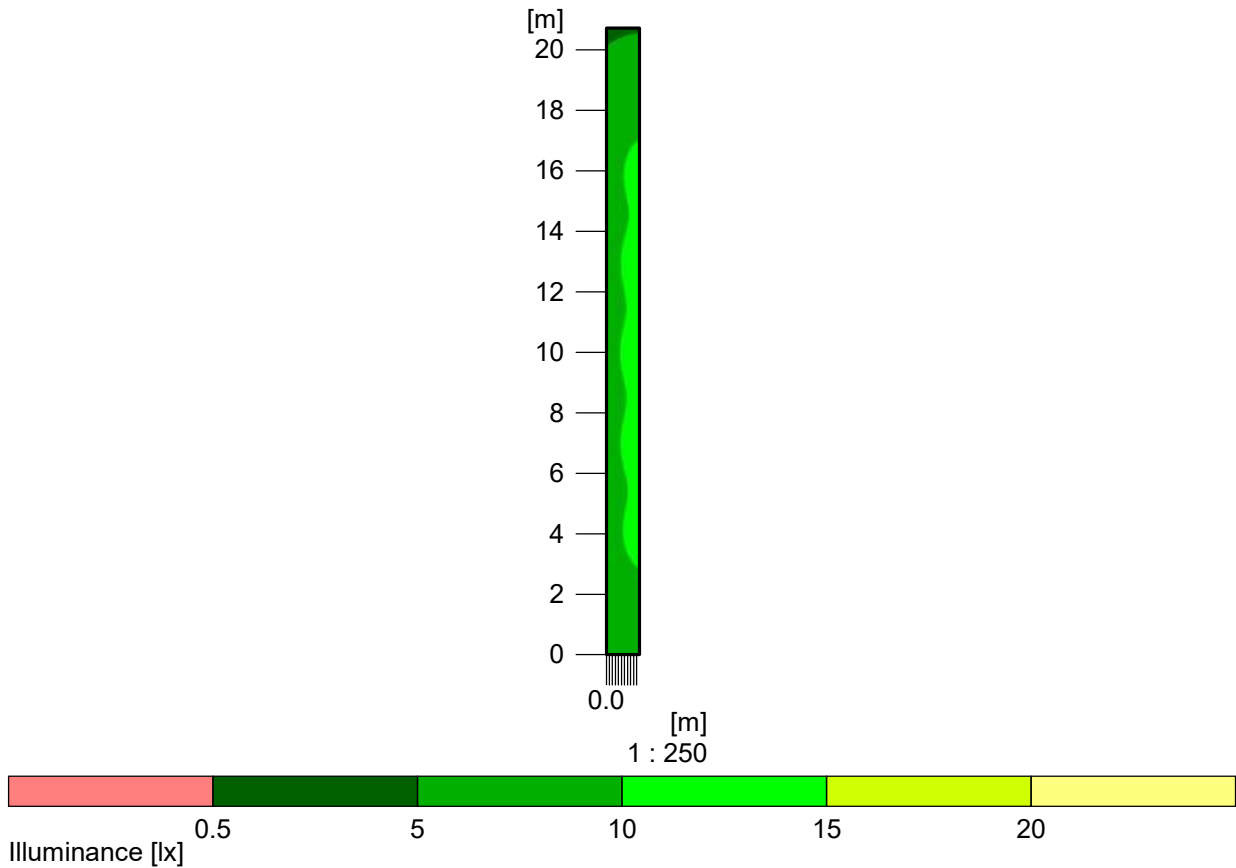
Maximum: : 80 cd/m²



2 Exterior Lighting - Third Floor3 - Hexham Road

2.3 Calculation results, Exterior Lighting - Third Floor3 - Hexham Road

2.3.1 Boundary line, Under Canopy lighting - Emergency (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 3.7 lx
Maximum illuminance	Emax	: 11 lx
Uniformity	Emin/Emax	: 1 : 2.95 (0.34) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8