

# EXTERNAL

## Installation :

Project number : 14050  
Customer : PULSE PROJECTS  
Processed by : DA  
Date : 29.10.2025

### Project description:

NO RISK ASSESMENT SUPPLIED  
NO FIRE CALL POINT POSITIONS OR FIRE FIGHT EQUIPMENT POSITIONS SUPPLIED  
POTENTIALLY THERE COULD BE AREAS OF HIGH RISK THAT NEED CLARIFICATION  
- RE DESIGN

\*\*\*\*\*

All calculations unless stated have been based upon an open plan area without any obstructions above the working plane.

With regards to CIBSE/ BSEN12464-1:2011 we have shown illuminance levels and ratios for your ultimate approval. UGR and luminance values are available for your approval if necessary. It may be necessary in some instances to check UGR values even if the luminance values are below the compliant threshold.

Emergency lighting has been designed in accordance with BS5266-1:2016 but is an indicative layout only - additional lighting may be required. All emergency lighting is to be checked and confirmed with a local building/fire control officer and ultimately approved by the owner of the building. Any emergency lighting calculations that have been completed have been based on 0.5 lux for open areas and 1 lux for escape routes (where details of escape routes have been given).

Please be aware of L2 requirements and check that conformity has been met where required. In addition, ensuring that fire tents are used where needed to conform to current building regulations is vital; please contact our sales office for a quotation.

All luminaires used are subject to approval/certification of client/end user.

Common design parameters (shown below) have been used in order to carry out all calculations. If any part of this scheme or luminaire choice within this scheme is deemed not suitable for the application, please contact us for re-calculations to be carried out prior to an order being placed. All calculations have been based upon rated lumen outputs and may vary with ambient on site temperatures.

Please ensure that this lighting scheme complies with all requirements, and if further details/calculations are required please contact us via the below details.

Final quantities are to be confirmed prior to an order/installation and we will not be held responsible for any errors or omissions.

\*\*\*\*\*

### Nominal Values Used:

Maintenance Factor - 0.8

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

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

## Table of contents

---

First Page	1
Table of contents	2
<b>1 Luminaire data</b>	
<b>1.1 Astro Lighting Ltd, Dartmouth Single LED Black (1372003)</b>	
1.1.1 Data sheet	3
1.1.2 Luminance chart	4
1.1.3 Glare Rating (RUG)	5
<b>2 Exterior 1(Copy of)</b>	
<b>2.1 Description, Exterior 1(Copy of)</b>	
2.1.1 Luminaire data/Room elements	6
2.1.2 Floor plan	9
2.1.3 3D view, View 1	10
<b>2.2 Summary, Exterior 1(Copy of)</b>	
2.2.1 Result overview, Measuring area 1	11
2.2.2 Result overview, Evaluation area 1	12
<b>2.3 Calculation results, Exterior 1(Copy of)</b>	
2.3.1 Table, Reference plane 1.1 (E)	13
2.3.2 Table, Measuring area 1 (E)	14
2.3.3 3D luminance, View 1	16
2.3.9 3D pseudo colours, View 1 (E)	17
2.3.10 3D pseudo colours, View from the front (E)	18
2.3.11 3D pseudo colours, View from the back (E)	19
2.3.12 3D pseudo colours, View from the left (E)	20
2.3.13 3D pseudo colours, View from the right (E)	21

Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

# 1 Luminaire data

## 1.1 Astro Lighting Ltd, Dartmouth Single LED Black (1372003)

### 1.1.1 Data sheet

---

**Manufacturer: Astro Lighting Ltd**

**1372003 Dartmouth Single LED Black**

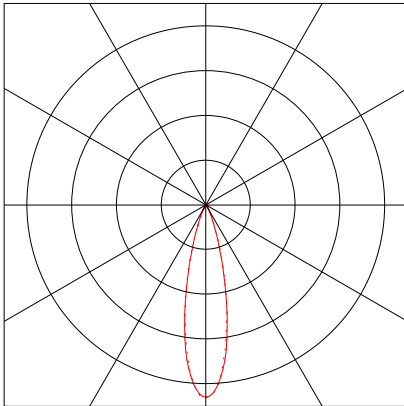
#### Luminaire data

Luminaire efficiency : 100%  
Luminaire efficacy : 52.44 lm/W  
Classification : A80 ↓99.6% ↑0.4%  
CIE Flux Codes : 96 99 100 100 100  
UGR 4H 8H : <10.0 / 10.0  
Power : 4.5 W  
Luminous flux : 236 lm

#### Equipped with

Quantity : 1  
Designation :  
Colour : 3000K  
Luminous flux : 236 lm  
Colour reproduction : 82.7

Dimensions : Ø65 mm x 90 mm



Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025



## 1.1 Astro Lighting Ltd, Dartmouth Single LED Black (1372003)

### 1.1.2 Luminance chart

	C0	C15	C30	C45	C60	C75	C90	C105	C120	C135	C150	C165
65°	1566	1554	1392	1454	1615	2148	[2235]	2148	1615	1454	1392	1554
70°	1116	1095	906	927	1034	1437	1500	1437	1034	927	906	1095
75°	597	589	517	527	572	738	764	738	572	527	517	589
80°	266	271	292	313	337	391	400	391	337	313	292	271
85°	256	267	329	355	375	389	394	389	375	355	329	267

	C180	C195	C210	C225	C240	C255	C270	C285	C300	C315	C330	C345
65°	1566	1554	1392	1454	1615	2148	[2235]	2148	1615	1454	1392	1554
70°	1116	1095	906	927	1034	1437	1500	1437	1034	927	906	1095
75°	597	589	517	527	572	738	764	738	572	527	517	589
80°	266	271	292	313	337	391	400	391	337	313	292	271
85°	256	267	329	355	375	389	394	389	375	355	329	267

Luminance [cd/m<sup>2</sup>]

Manufacturer	: Astro Lighting Ltd	Efficiency factor	: 100%
Order number	: 1372003	Luminaire efficacy	: 52.44 lm/W (A80)
Luminaire name	: Dartmouth Single LED Black	Light distribution	: sym. to C0-C180 / C90-C270
Equipment	: 1 x 4.5 W / 236 lm	Beam Angle	: 24.6° C0-C180
Dimensions	: D 65 mm x H 90 mm		: 24.7° C90-C270
File name	: Dartmouth Single LED Black.ltd		

Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025



## 1.1 Astro Lighting Ltd, Dartmouth Single LED Black (1372003)

### 1.1.3 Glare Rating (RUG)

Reflectance of										
Ceiling	0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Walls	0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Floor	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

Room dimension		Viewed crosswise					Viewed endwise				
x	y										
2H	2H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.6	10.3	10.9	11.3
	3H	<10.0	<10.0	<10.0	<10.0	10.1	10.3	11.0	10.7	11.3	11.7
	4H	<10.0	<10.0	<10.0	<10.0	10.1	10.3	10.9	10.7	11.3	11.6
	6H	<10.0	<10.0	<10.0	<10.0	<10.0	10.2	10.7	10.6	11.1	11.5
	8H	<10.0	<10.0	<10.0	<10.0	<10.0	10.1	10.6	10.6	11.0	11.5
	12H	<10.0	<10.0	<10.0	<10.0	<10.0	10.1	10.5	10.5	11.0	11.4
4H	2H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.4	10.2	10.7	11.1
	3H	<10.0	<10.0	<10.0	<10.0	10.1	10.2	10.7	10.7	11.1	11.6
	4H	<10.0	<10.0	<10.0	<10.0	10.1	10.2	10.7	10.7	11.1	11.6
	6H	<10.0	<10.0	<10.0	<10.0	<10.0	10.1	10.5	10.6	10.9	11.4
	8H	<10.0	<10.0	<10.0	<10.0	<10.0	10.0	10.4	10.5	10.9	11.3
	12H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.3	10.5	10.8	11.3
8H	4H	<10.0	<10.0	<10.0	<10.0	<10.0	10.0	10.4	10.5	10.8	11.3
	6H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.2	10.4	10.7	11.2
	8H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.1	10.4	10.7	11.2
	12H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.0	10.3	10.5	11.1
12H	4H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.3	10.5	10.7	11.3
	6H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.1	10.4	10.6	11.1
	8H	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	10.3	10.5	11.0

Distance between luminaires: 0.25

Manufacturer	: Astro Lighting Ltd	Efficiency factor	: 100%
Order number	: 1372003	Luminaire efficacy	: 52.44 lm/W (A80)
Luminaire name	: Dartmouth Single LED Black	Light distribution	: sym. to C0-C180 / C90-C270
Equipment	: 1 x 4.5 W / 236 lm	Beam Angle	: 24.6° C0-C180
Dimensions	: D 65 mm x H 90 mm		: 24.7° C90-C270
File name	: Dartmouth Single LED Black.ltd		

Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025


## 2 Exterior 1(Copy of)

### 2.1 Description, Exterior 1(Copy of)

#### 2.1.1 Luminaire data/Room elements

**Product data:**

**Type No.\Make**

1	12 x		<b>Astro Lighting Ltd</b>
			Order No. : 1372003
			Luminaire name : Dartmouth Single LED Black
			Equipment : 1 x 4.5 W / 236 lm 3000K

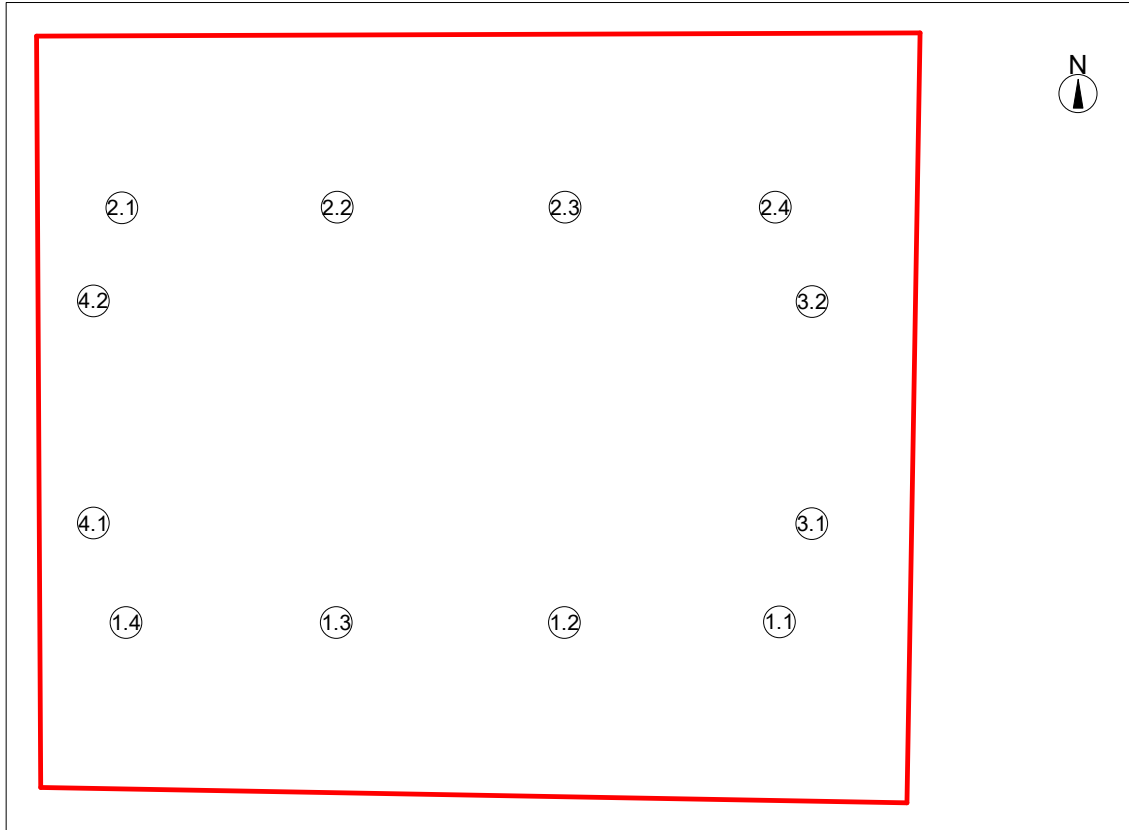
Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025

## 2 Exterior 1(Copy of)

### 2.1 Description, Exterior 1(Copy of)

#### 2.1.1 Luminaire data/Room elements

Floor with luminaire and sensor positions:



No.	Centre point			Rotation angle			Target coordinates		
	X [m]	Y [m]	Z [m]	Z [°]	C0 [°]	C90 [°]	Xa [m]	Ya [m]	Za [m]
<b>Astro Lighting Ltd Dartmouth Single LED Black 1372003</b>									
1.1	17.30	49.26	1.75	180.00	0.00	0.00	3.50	49.24	0.00
1.2	12.77	49.24	1.75	180.00	0.00	0.00	8.03	49.25	0.21
1.3	7.98	49.24	1.75	180.00	0.00	0.00	12.82	49.25	0.30
1.4	3.55	49.24	1.75	180.00	0.00	0.00	17.25	49.25	0.28
2.1	3.46	57.96	1.75	0.00	0.00	0.00	3.46	57.96	0.00
2.2	7.99	57.98	1.75	0.00	0.00	0.00	7.99	57.98	0.00
2.3	12.79	57.98	1.75	0.00	0.00	0.00	12.79	57.98	0.00
2.4	17.21	57.98	1.75	0.00	0.00	0.00	17.21	57.98	0.00
3.1	17.98	51.32	1.75	90.00	0.00	0.00	17.98	51.32	0.00
3.2	17.98	56.00	1.75	90.00	0.00	0.00	17.98	56.00	0.00
4.1	2.86	51.33	1.75	90.00	0.00	0.00	2.86	51.33	0.00
4.2	2.86	56.01	1.75	90.00	0.00	0.00	2.86	56.01	0.00

#### Structural elements

#### Measuring surface

No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle	
							L axis	Q axis
Ref. plane 1.1	1.66	61.58	0.00	18.67	16.33	270.31	0.00	0.00

Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025



## 2 Exterior 1(Copy of)

### 2.1 Description, Exterior 1(Copy of)

#### 2.1.1 Luminaire data/Room elements

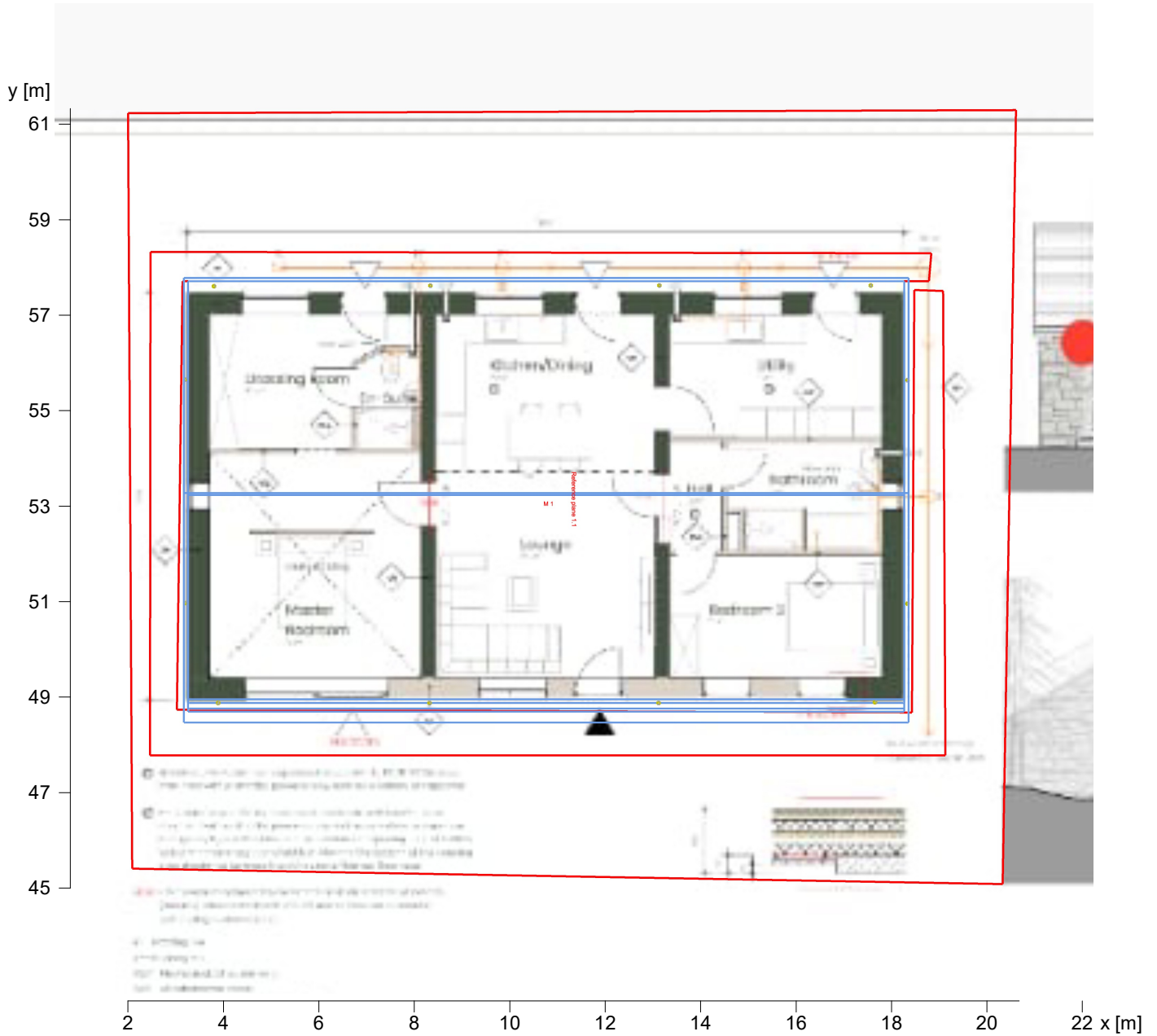
M 1	2.81	58.07	0.00	16.65	10.54	0.00	0.00	0.00
-----	------	-------	------	-------	-------	------	------	------

#### Others

No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle		rho[%]
							L axis	Q axis	
A 1	17.91	57.87	-0.20	14.99	9.01	0.00	0.00	-90.00	64
A 2	2.83	48.82	2.60	15.17	9.42	0.00	30.48	90.00	50

## 2.1 Description, Exterior 1(Copy of)

### 2.1.2 Floor plan

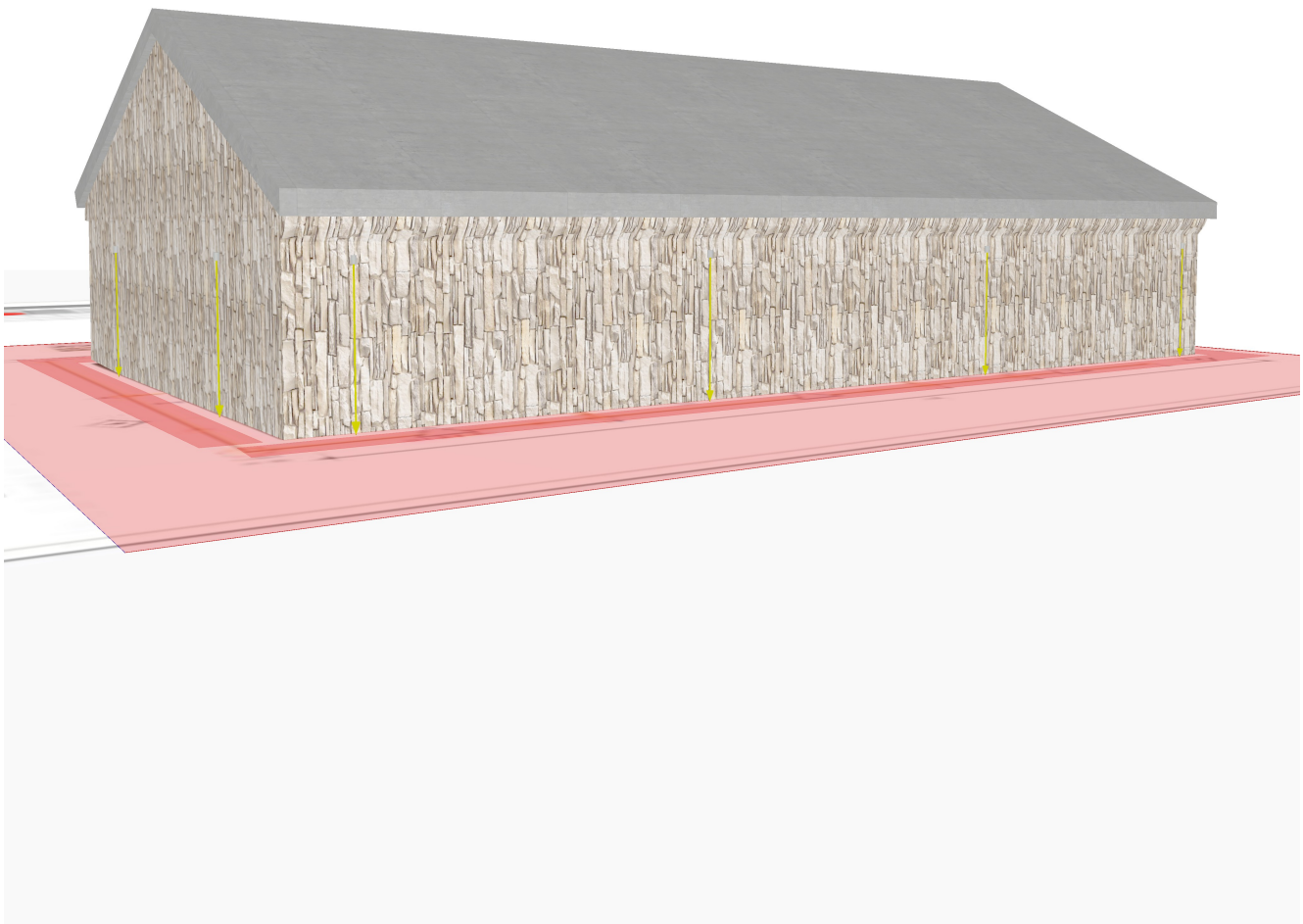


Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.1 Description, Exterior 1(Copy of)

### 2.1.3 3D view, View 1

---

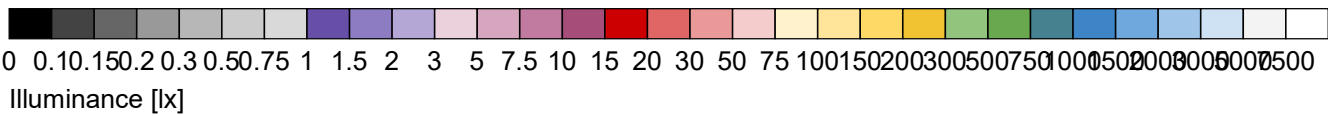
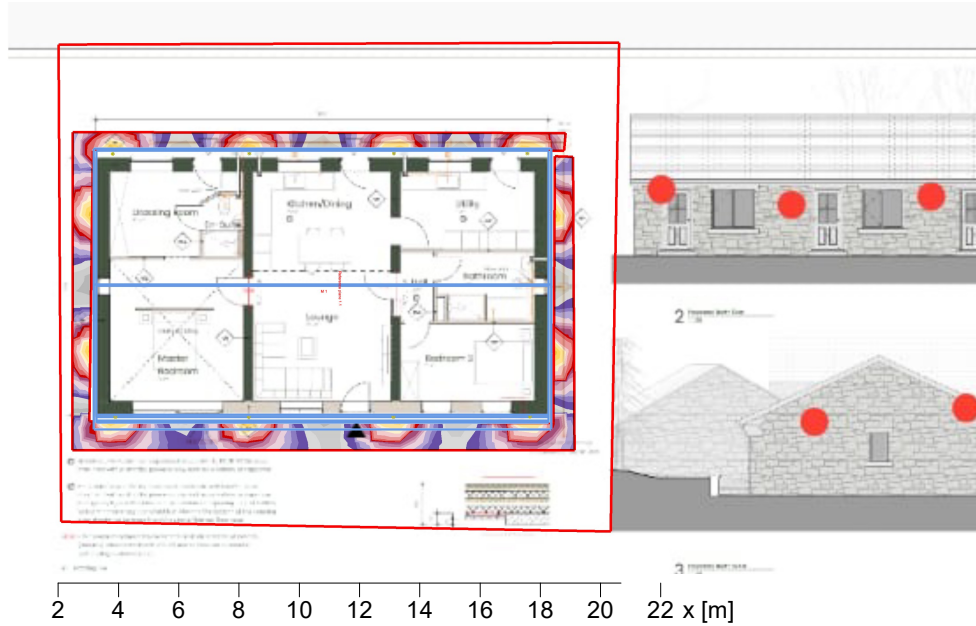


Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025

## 2 Exterior 1(Copy of)

### 2.2 Summary, Exterior 1(Copy of)

#### 2.2.1 Result overview, Measuring area 1




#### General

Calculation algorithm used	Average indirect fraction with light colours
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	1.75 m
Maintenance factor	0.80
Total luminous flux	2832 lm
Total power	54 W
Total power per area (294.46 m <sup>2</sup> )	0.18 W/m <sup>2</sup>

#### Illuminance

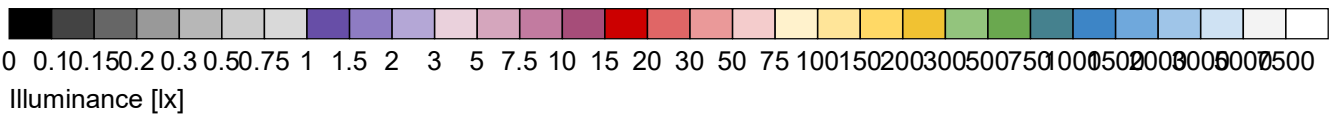
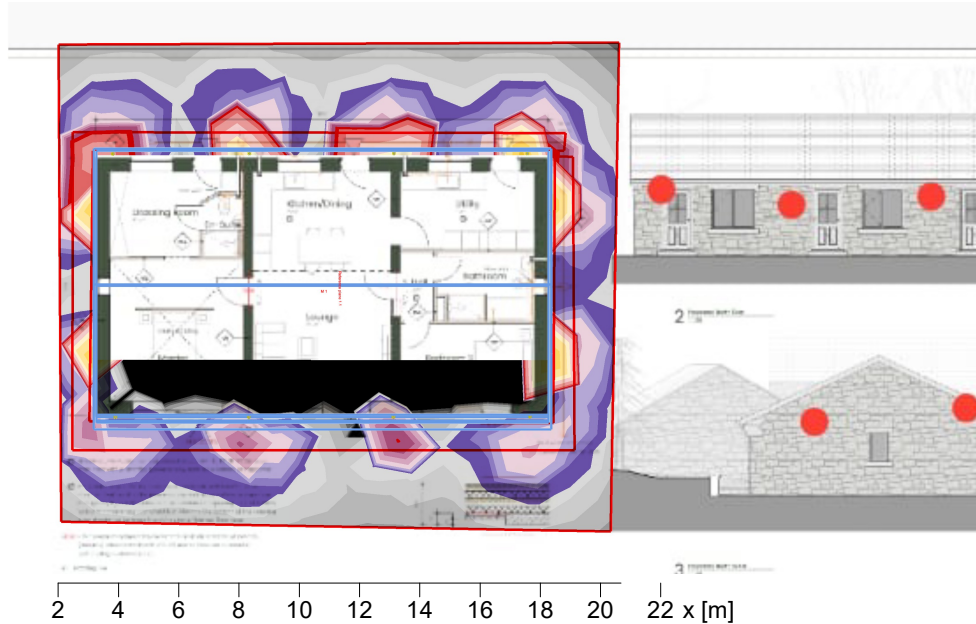
Average illuminance	$\bar{E}_m$	18 lx
Minimum illuminance	$E_{min}$	0 lx
Maximum illuminance	$E_{max}$	143 lx
Uniformity $U_o$	$E_{min}/\bar{E}_m$	1:50.5 (0.02)
Diversity $U_d$	$E_{min}/E_{max}$	1:397 (0)

#### Type No. Make

1	12 x	<b>Astro Lighting Ltd</b>
	Order No.	: 1372003
	Luminaire name	: Dartmouth Single LED Black
	Equipment	: 1 x 4.5 W / 236 lm 3000K

## 2.2 Summary, Exterior 1(Copy of)

### 2.2.2 Result overview, Evaluation area 1



#### General


Calculation algorithm used	Average indirect fraction with light colours
Height (phot. centre)	1.75 m
Maintenance factor	0.80
Total lamp luminous flux	2832.00 lm
Luminaire luminous flux	2831.87 lm
Total power	54.0 W
Total power per area (294.46 m <sup>2</sup> )	0.18 W/m <sup>2</sup> (1.84 W/m <sup>2</sup> /100lx)

#### Evaluation area 1

#### Reference plane 1.1

	Horizontal
$\bar{E}_m$	9.95 lx
$E_{min}$	0 lx
$E_{min}/\bar{E}_m (U_0)$	---
$E_{min}/E_{max} (U_d)$	---
Position	0.00 m

#### Type No./Make

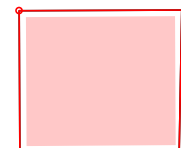
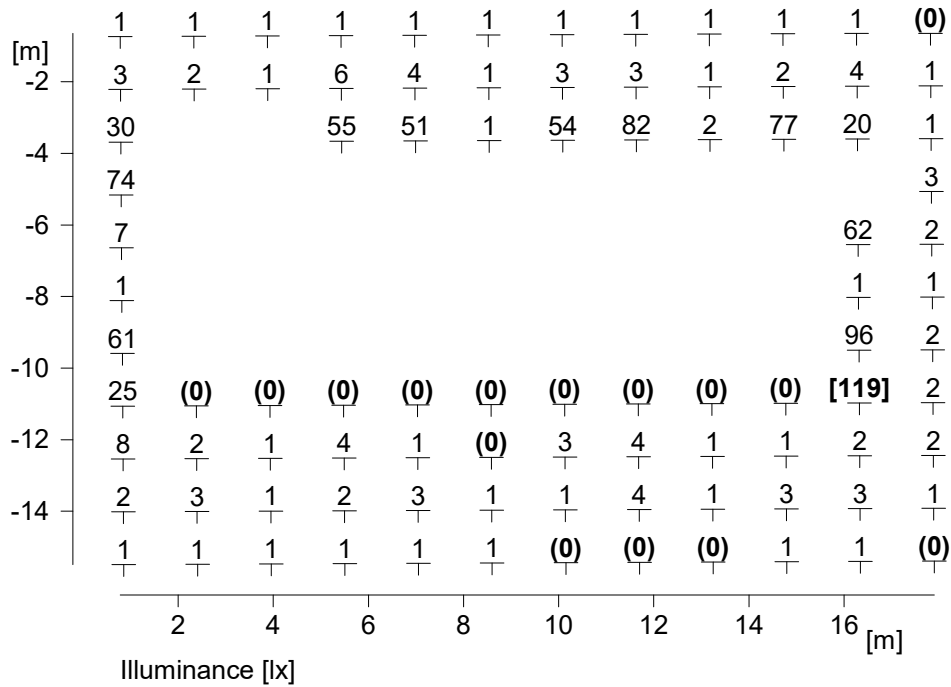
1	12 x	<b>Astro Lighting Ltd</b>
	Order No.	: 1372003
	Luminaire name	: Dartmouth Single LED Black
	Equipment	: 1 x 4.5 W / 236 lm 3000K

Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025

## 2 Exterior 1(Copy of)

### 2.3 Calculation results, Exterior 1(Copy of)

#### 2.3.1 Table, Reference plane 1.1 (E)

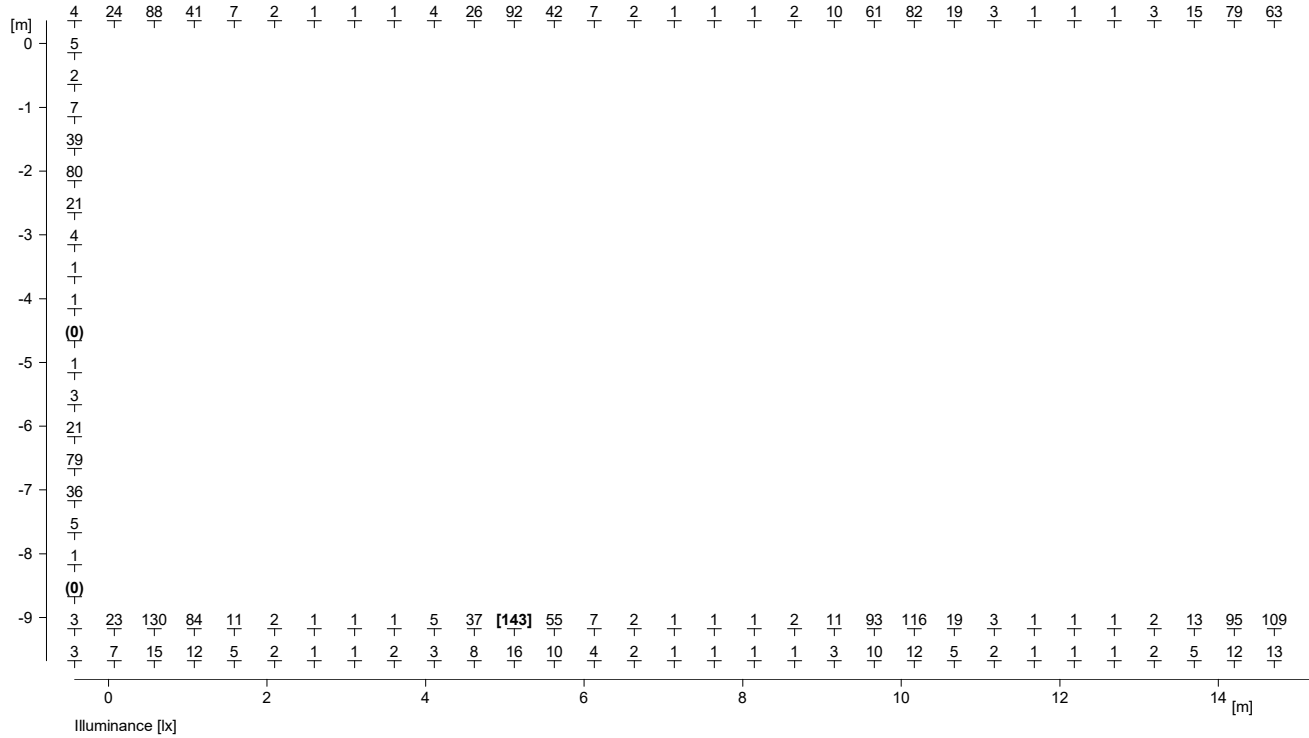


Height reference plane : 0.00 m  
 Average illuminance  $\bar{E}_m$  : 10 lx  
 Minimum illuminance  $E_{min}$  : 0 lx  
 Maximum illuminance  $E_{max}$  : 119 lx  
 Uniformity  $U_o$   $E_{min}/\bar{E}_m$  : ---

Object : EXTERNAL  
 Installation :  
 Project number : 14050  
 Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.2 Table, Measuring area 1 (E)



## 2.3 Calculation results, Exterior 1(Copy of)

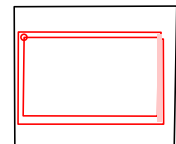
### 2.3.2 Table, Measuring area 1 (E)

---

13

$\frac{2}{T}$   
 $\frac{6}{T}$   
31  
 $\frac{64}{T}$   
19  
 $\frac{4}{T}$   
 $\frac{1}{T}$   
 $\frac{1}{T}$   
 $\frac{1}{T}$   
 $\frac{1}{T}$   
 $\frac{4}{T}$   
18  
 $\frac{63}{T}$   
33  
 $\frac{6}{T}$   
 $\frac{2}{T}$   
 $\frac{1}{T}$   
19  $\frac{3}{T}$   
 $\frac{6}{T}$   $\frac{3}{T}$

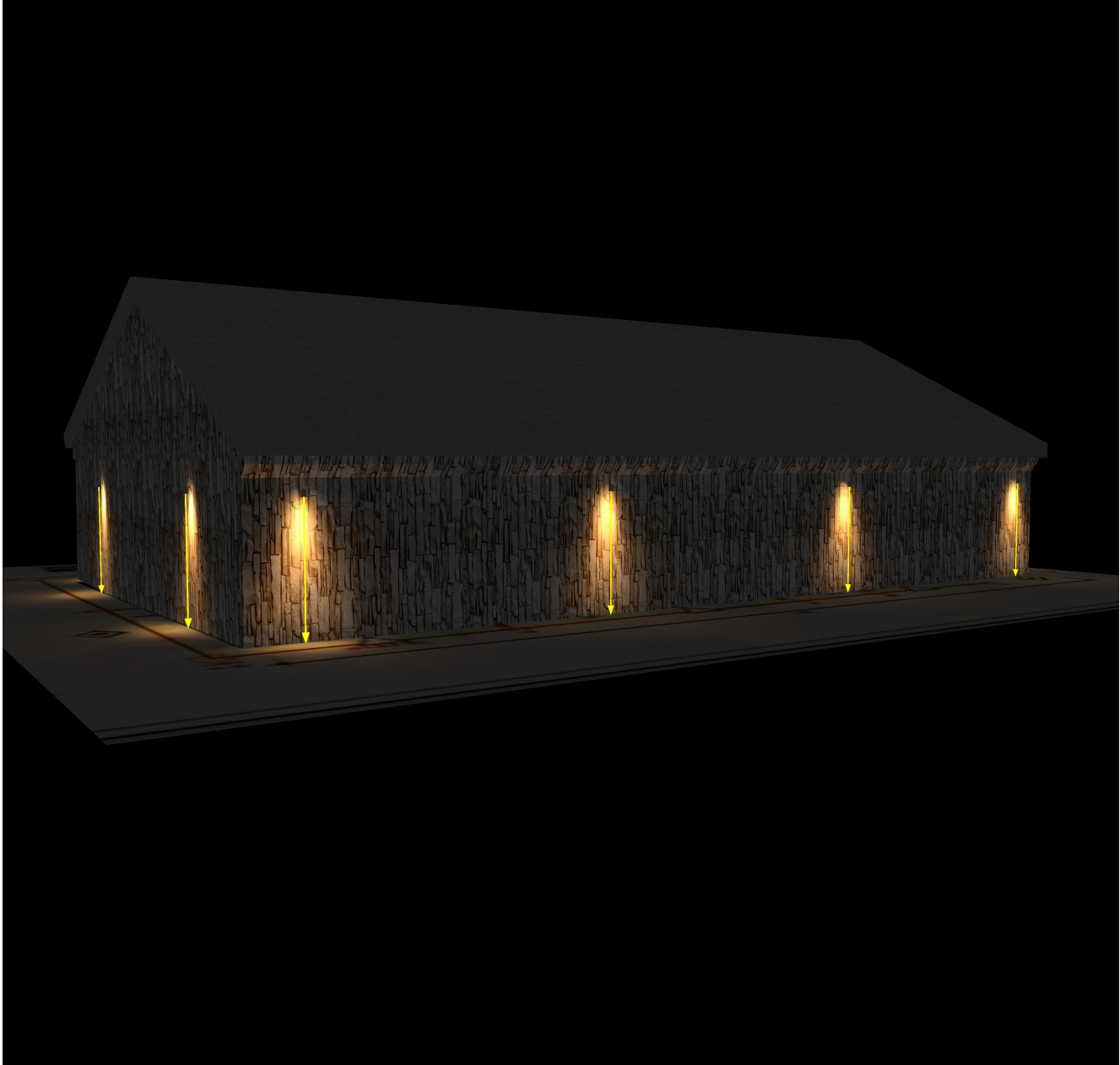
---



Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.3 3D luminance, View 1



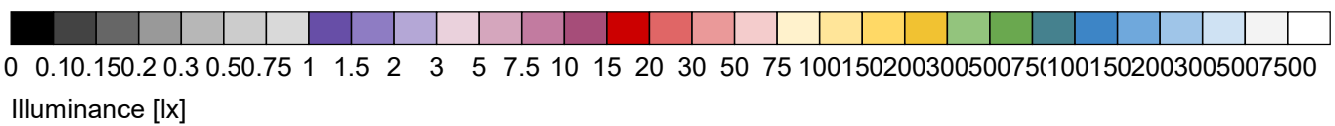
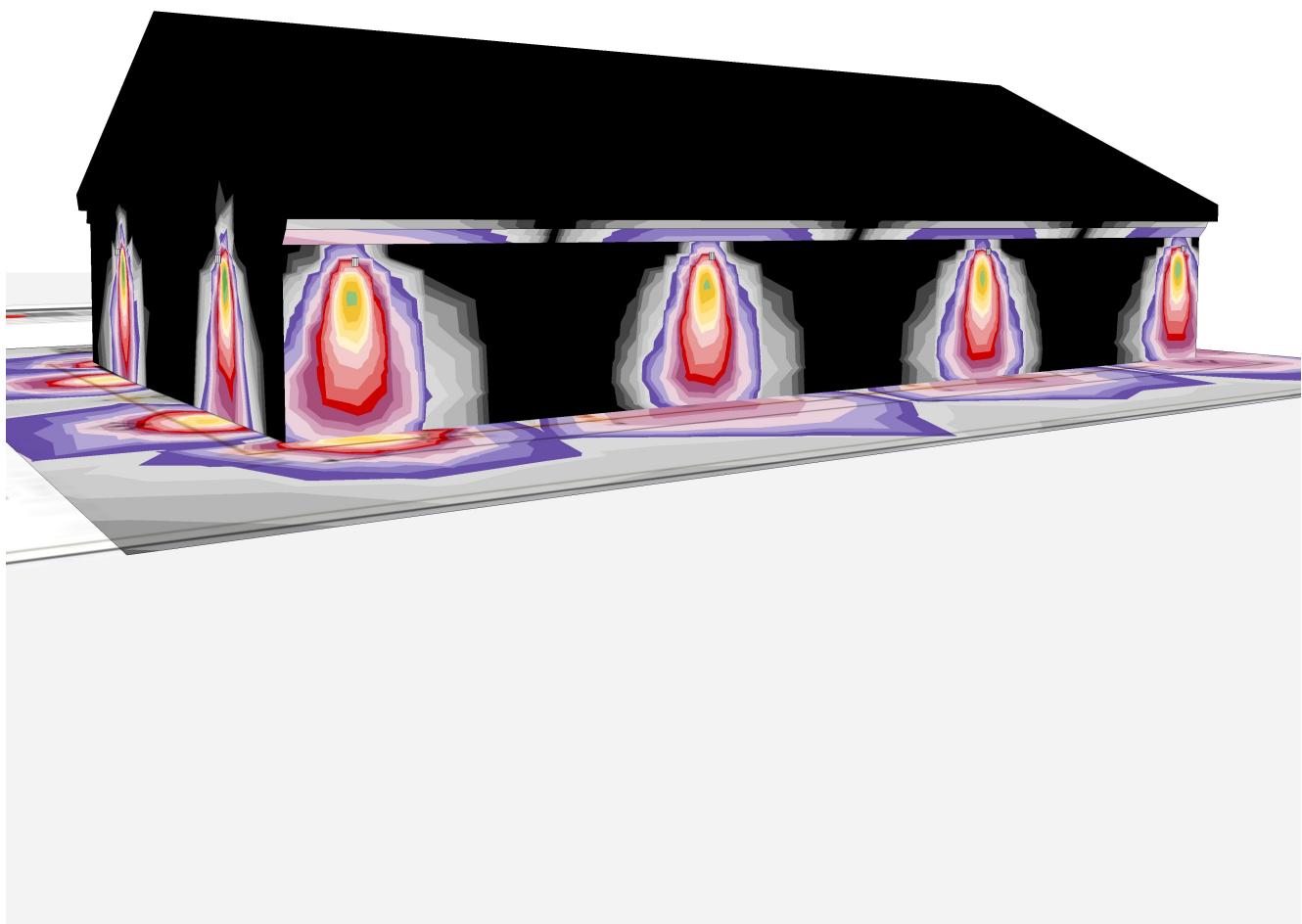
Luminance in the scene

Minimum: : 0 cd/m<sup>2</sup>

Maximum: : 536 cd/m<sup>2</sup>

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.9 3D pseudo colours, View 1 (E)

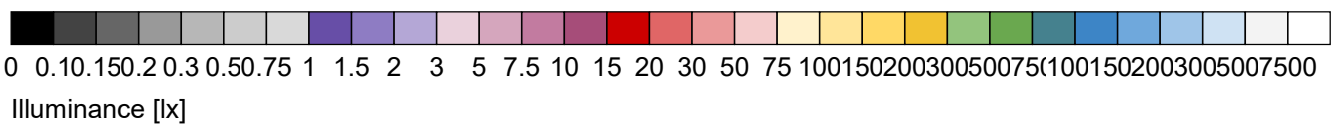


Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.10 3D pseudo colours, View from the front (E)

---

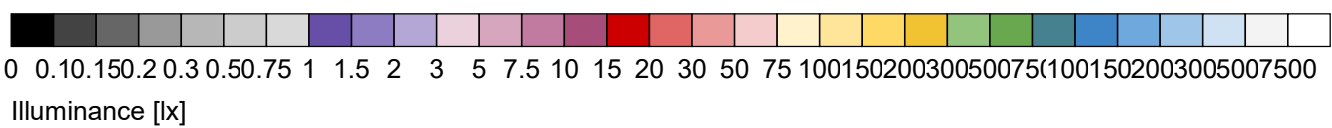


Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.11 3D pseudo colours, View from the back (E)

---

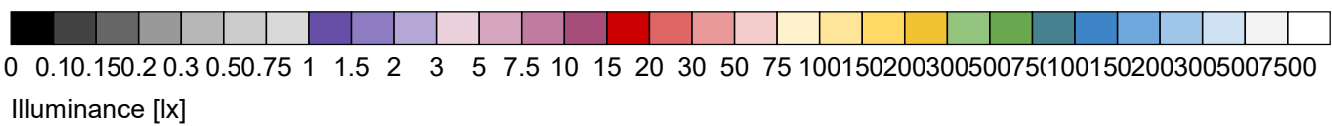


Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.12 3D pseudo colours, View from the left (E)

---



Object : EXTERNAL  
Installation :  
Project number : 14050  
Date : 29.10.2025

## 2.3 Calculation results, Exterior 1(Copy of)

### 2.3.13 3D pseudo colours, View from the right (E)

---

