

# Airton Road, Residential

Installation : Exterior Lighting

Project number : ALD20023

Customer : Renaissance Engineering

Processed by : BG

Date : 27.01.2020

Project description:  
Lighting to Class P2  
10 Lux average  
2.0 lux minimum

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.

# 1 Luminaire data

## 1.1 NORTHCLIFFE, Squall LED1x4850 E946 ... (I\_270\_Squall LE...)

### 1.1.1 Data sheet

Manufacturer: NORTHCLIFFE

I\_270\_Squall LED1x4850 E946 T730 LS140.Idt

Squall LED1x4850 E946 T730 LS140

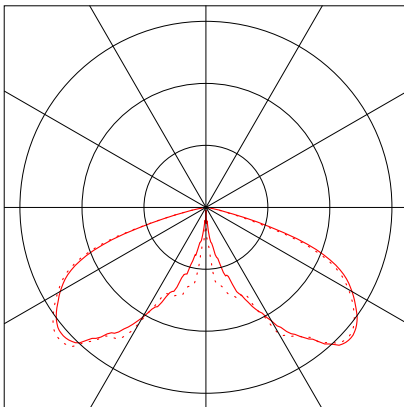
#### Luminaire data

Luminaire efficiency : 100%  
Luminaire efficacy : 107.09 lm/W  
Classification : A30 ↓100.0% ↑0.0%  
CIE Flux Codes : 31 71 98 100 100  
UGR 4H 8H : 29.3 / 29.3  
Power : 43.3 W  
Luminous flux : 4637 lm

#### Equipped with

Quantity : 1  
Designation : LED1x4850  
T730  
Colour : 3000  
Luminous flux : 4637 lm  
Colour reproduction : 70

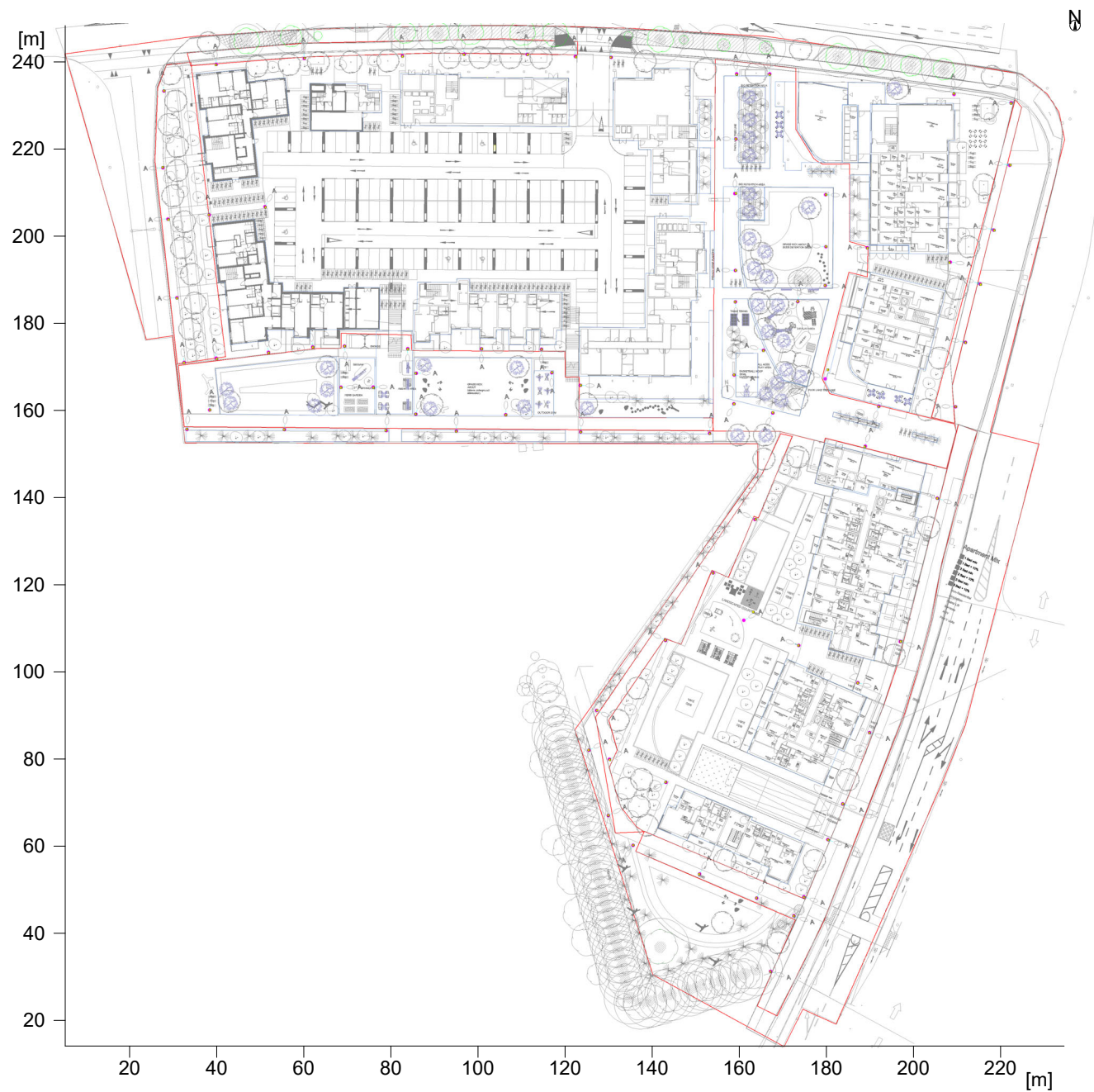
Dimensions : 475 mm x 475 mm x 535 mm



## 2 Exterior 1

### 2.1 Description, Exterior 1

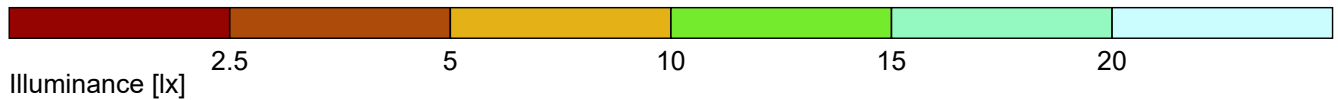
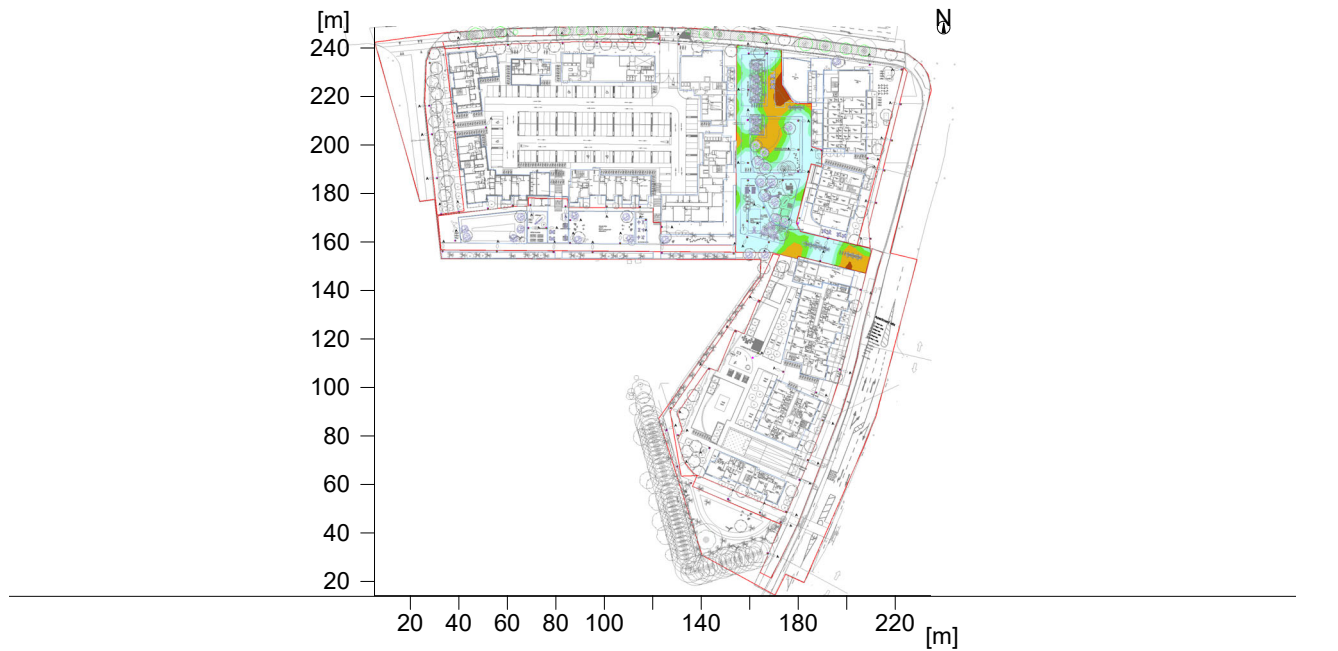
#### 2.1.1 Floor plan



## 2 Exterior 1

### 2.2 Summary, Exterior 1

#### 2.2.1 Result overview, Central Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot.center) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

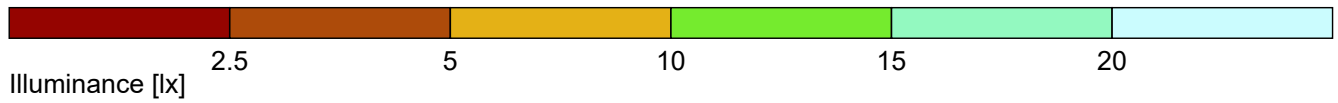
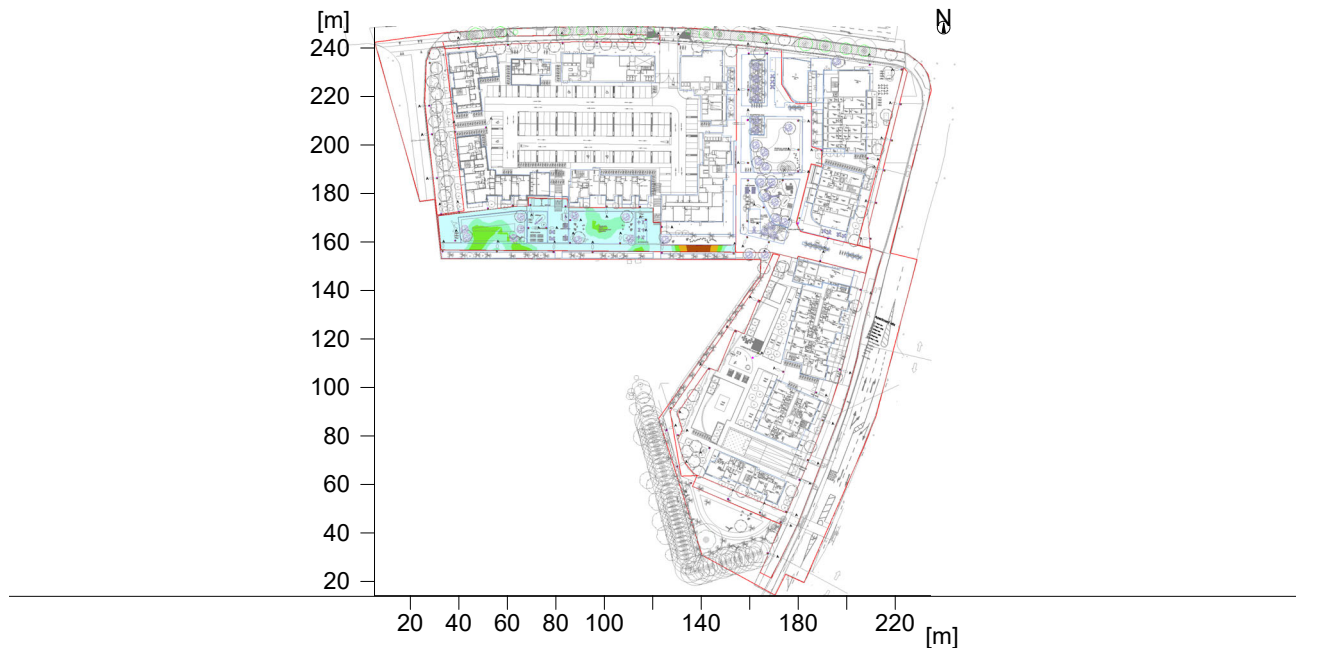
Average illuminance	Em	19.6 lx
Minimum illuminance	Emin	2.9 lx
Maximum illuminance	Emax	42.9 lx
Uniformity U <sub>o</sub>	Emin/Em	1:6.73 (0.15)
Diversity U <sub>d</sub>	Emin/Emax	1:14.7 (0.07)

#### Type No.Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2.2 Summary, Exterior 1

### 2.2.2 Result overview, South West Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

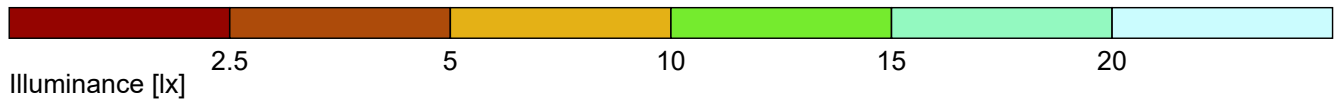
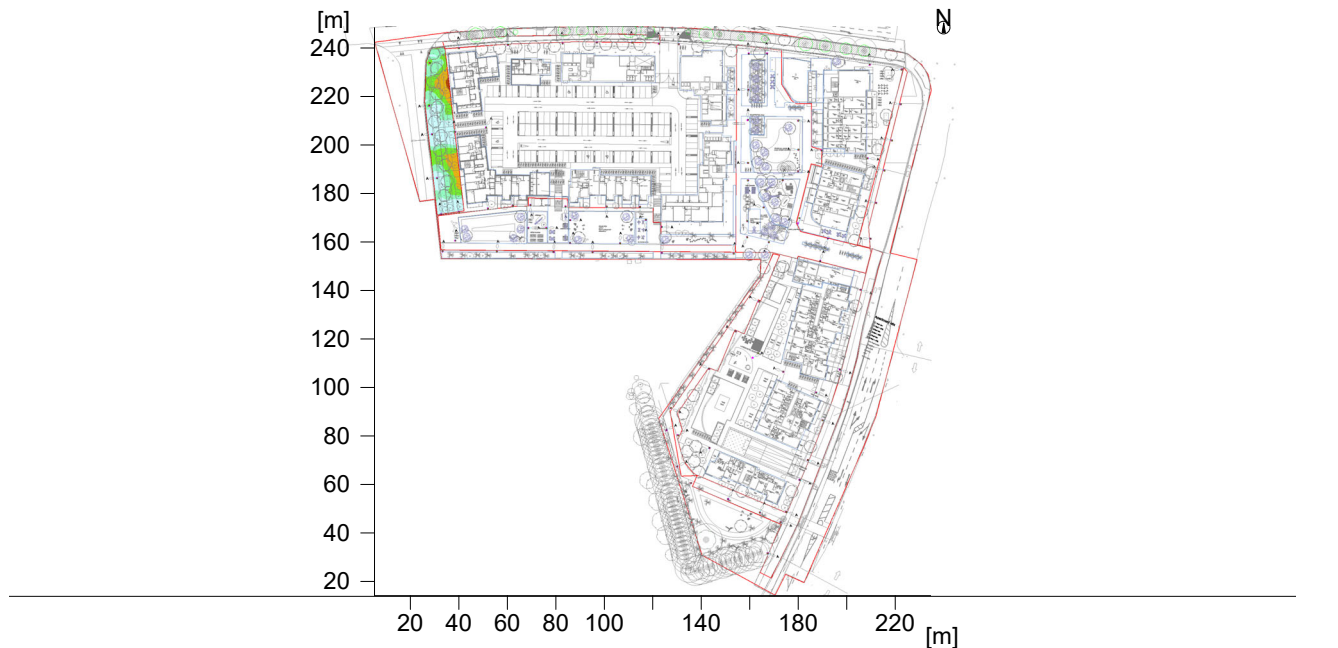
Average illuminance	Em	25.8 lx
Minimum illuminance	Emin	2.5 lx
Maximum illuminance	Emax	46.3 lx
Uniformity U <sub>o</sub>	Emin/Em	1:10.5 (0.1)
Diversity U <sub>d</sub>	Emin/Emax	1:18.9 (0.05)

#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2.2 Summary, Exterior 1

### 2.2.3 Result overview, West Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

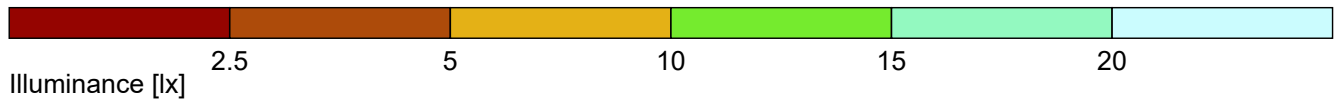
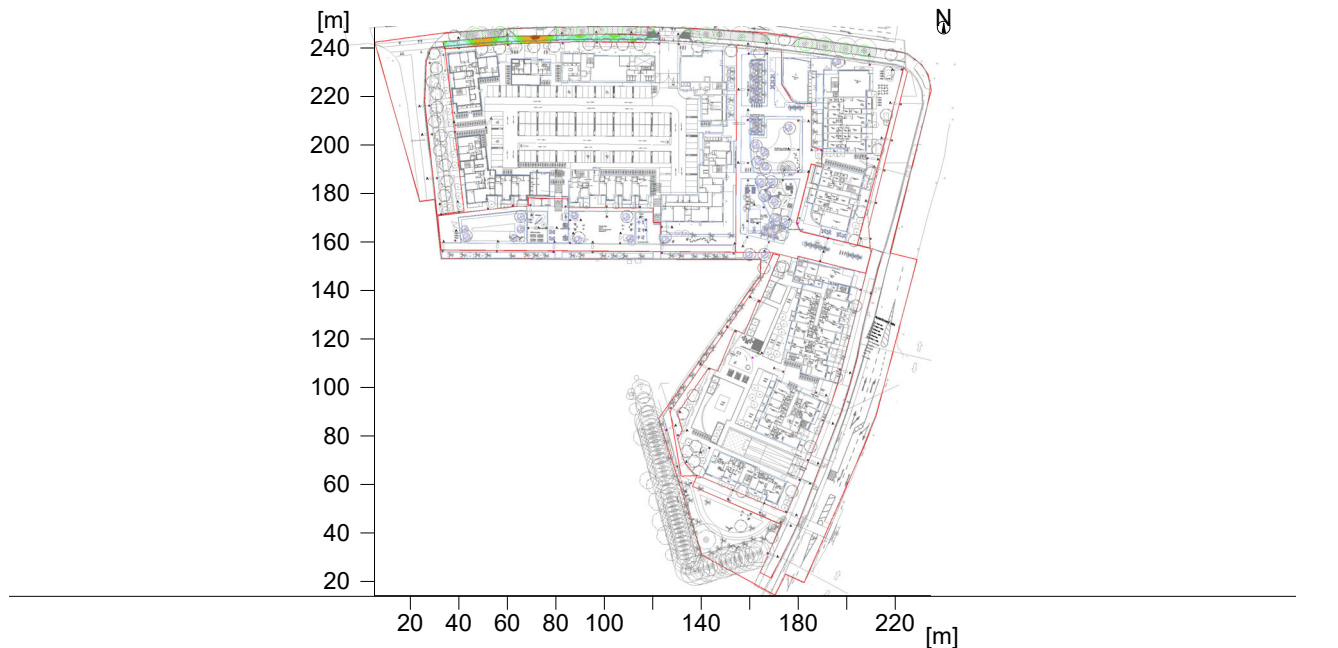
Average illuminance	Em	17 lx
Minimum illuminance	Emin	3.7 lx
Maximum illuminance	Emax	39.1 lx
Uniformity U <sub>o</sub>	Emin/Em	1:4.59 (0.22)
Diversity U <sub>d</sub>	Emin/Emax	1:10.6 (0.09)

#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2.2 Summary, Exterior 1

### 2.2.4 Result overview, North West Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

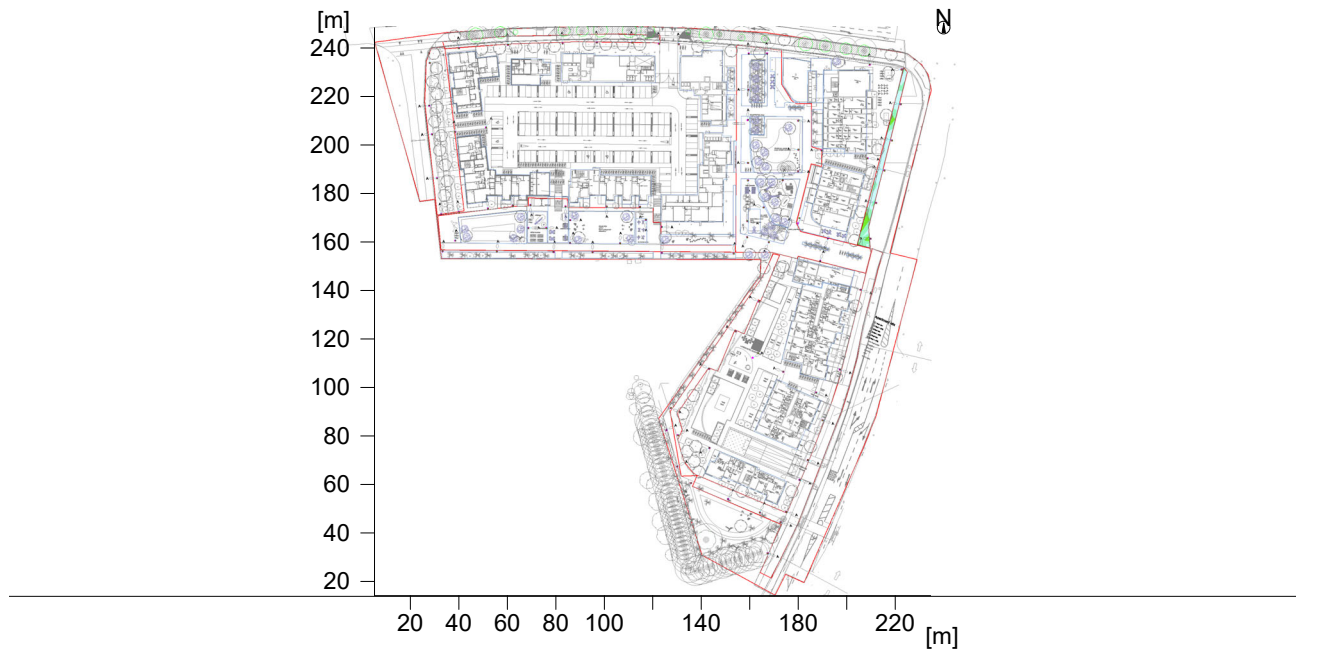
Average illuminance	Em	15.7 lx
Minimum illuminance	Emin	4.1 lx
Maximum illuminance	Emax	25 lx
Uniformity U <sub>o</sub>	Emin/Em	1:3.83 (0.26)
Diversity U <sub>d</sub>	Emin/Emax	1:6.09 (0.16)

#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2.2 Summary, Exterior 1

### 2.2.5 Result overview, North East Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

Average illuminance	Em	20.1 lx
Minimum illuminance	Emin	9.9 lx
Maximum illuminance	Emax	30.9 lx
Uniformity Uo	Emin/Em	1:2.04 (0.49)
Diversity Ud	Emin/Emax	1:3.14 (0.32)

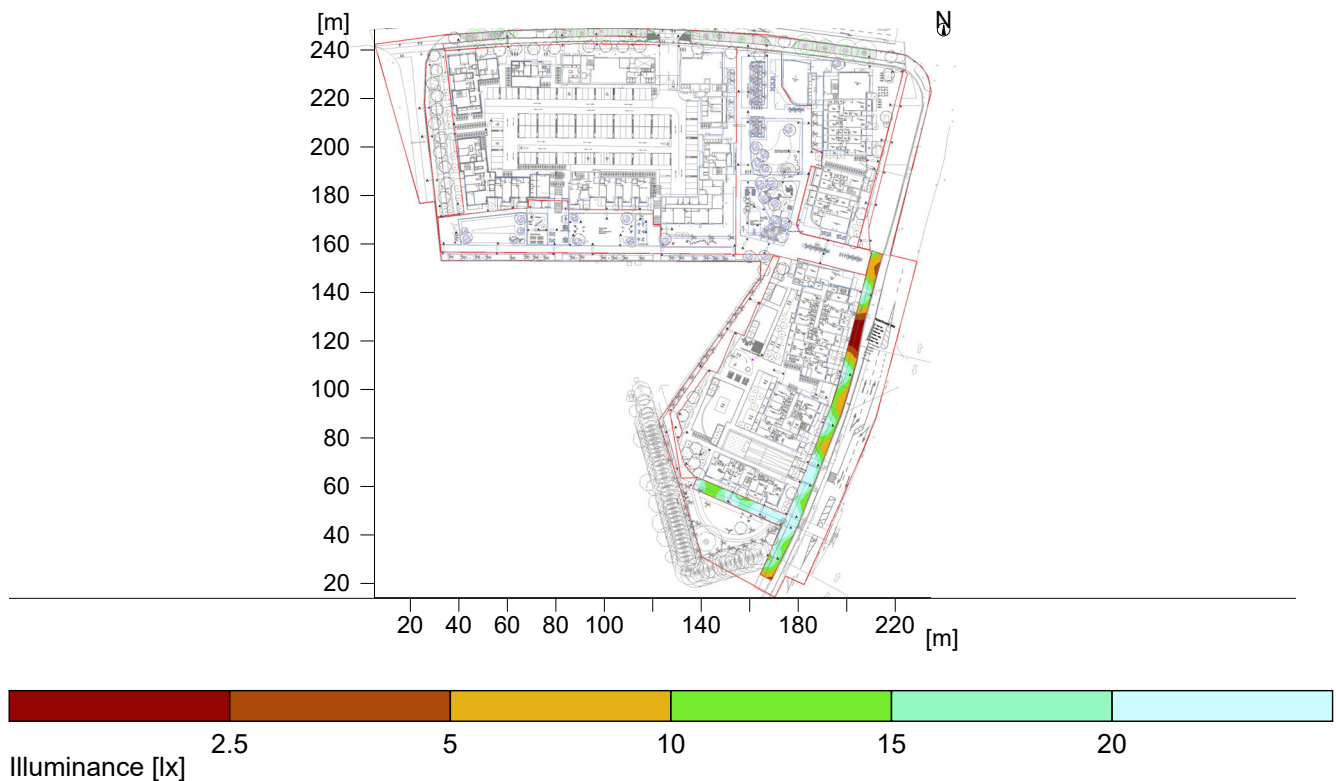
#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm



## 2.2 Summary, Exterior 1

### 2.2.6 Result overview, South East Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

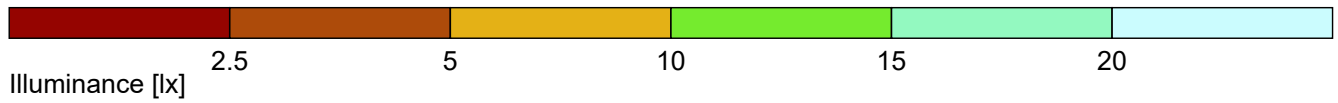
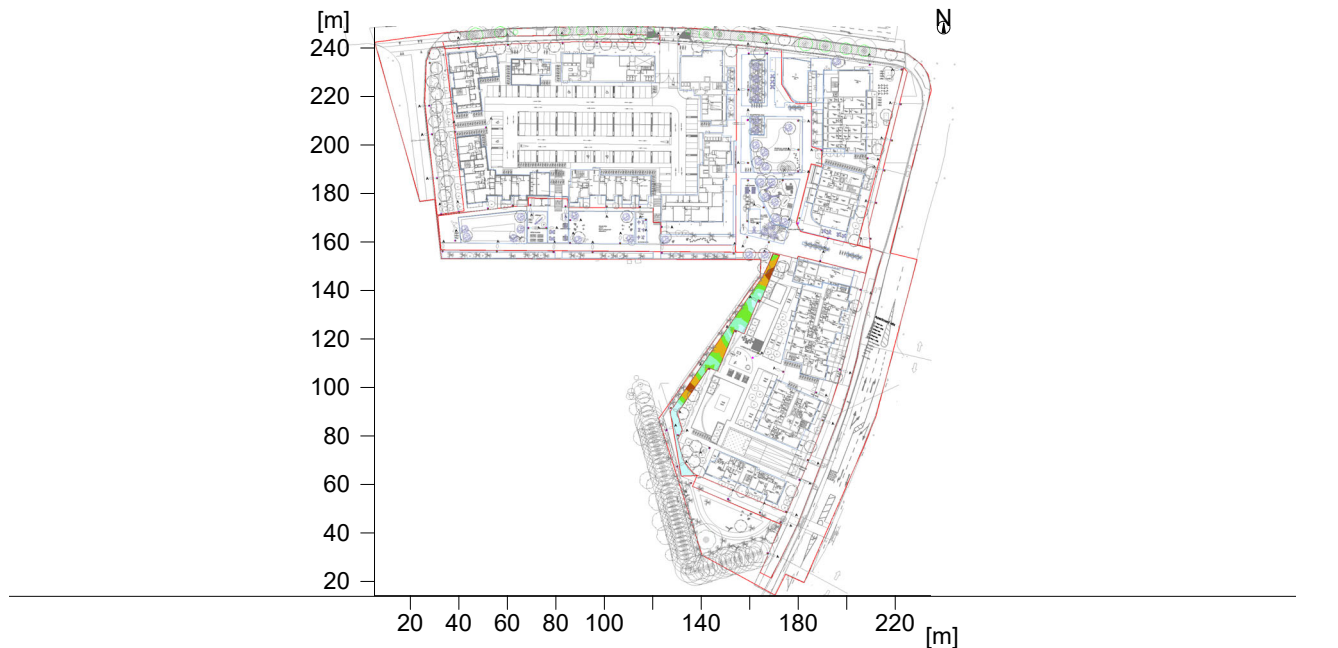
Average illuminance	Em	15.3 lx
Minimum illuminance	Emin	0.8 lx
Maximum illuminance	Emax	43 lx
Uniformity U <sub>o</sub>	Emin/Em	1:19.9 (0.05)
Diversity U <sub>d</sub>	Emin/Emax	1:55.7 (0.02)

#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2.2 Summary, Exterior 1

### 2.2.7 Result overview, South Area



#### General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	5.23 m
Maintenance factor	0.80

Total luminous flux of all lamps	384871 lm
Total power	3593.9 W
Total power per area (28491.47 m <sup>2</sup> )	0.13 W/m <sup>2</sup>

#### Illuminance

Average illuminance	Em	16.4 lx
Minimum illuminance	Emin	3.6 lx
Maximum illuminance	Emax	42.3 lx
Uniformity U <sub>o</sub>	Emin/Em	1:4.51 (0.22)
Diversity U <sub>d</sub>	Emin/Emax	1:11.6 (0.09)

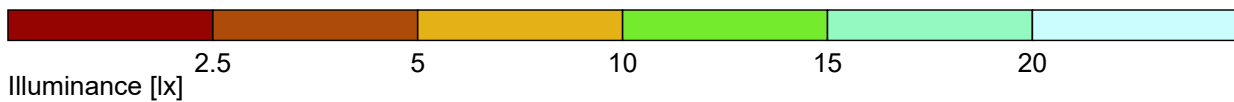
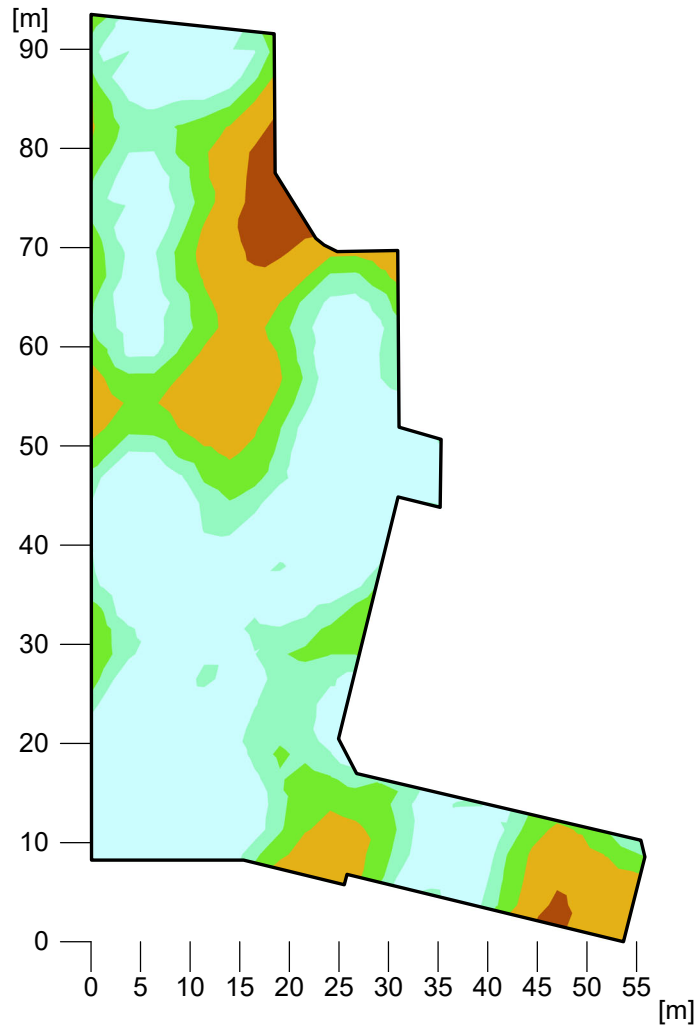
#### Type No. Make

1	83	<b>NORTHCLIFFE</b>
	Order No.	: I_270_Squall LED1x4850 E946 T730 LS140.Idt
	Luminaire name	: Squall LED1x4850 E946 T730 LS140
	Equipment	: 1 x LED1x4850 T730 43.3 W / 4637 lm

## 2 Exterior 1

### 2.3 Calculation results, Exterior 1

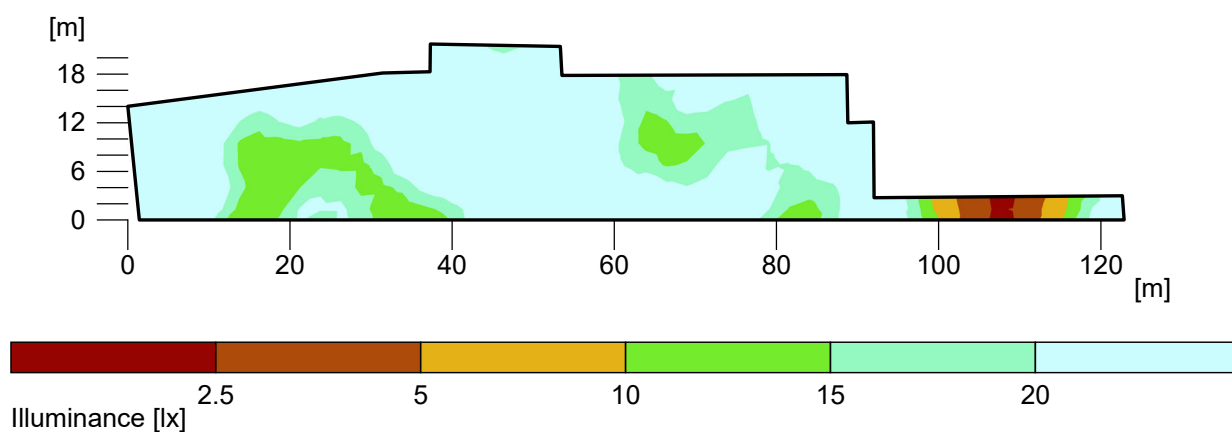
#### 2.3.1 Pseudo colours, Central Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 19.6 lx
Minimum illuminance	Emin	: 2.9 lx
Maximum illuminance	Emax	: 42.9 lx
Uniformity Uo	Emin/Em	: 1 : 6.73 (0.15)
Diversity Ud	Emin/Emax	: 1 : 14.75 (0.07)

## 2.3 Calculation results, Exterior 1

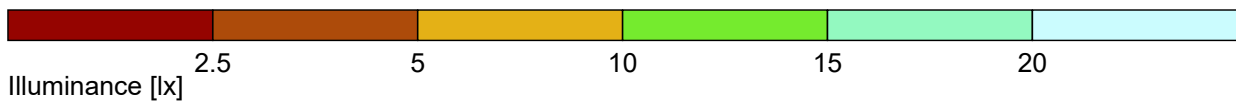
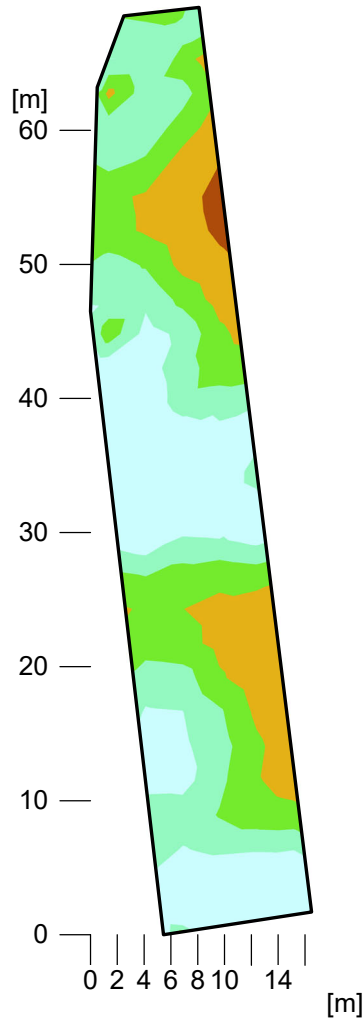
### 2.3.2 Pseudo colours, South West Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 25.8 lx
Minimum illuminance	Emin	: 2.5 lx
Maximum illuminance	Emax	: 46.3 lx
Uniformity Uo	Emin/Em	: 1 : 10.51 (0.10)
Diversity Ud	Emin/Emax	: 1 : 18.89 (0.05)

## 2.3 Calculation results, Exterior 1

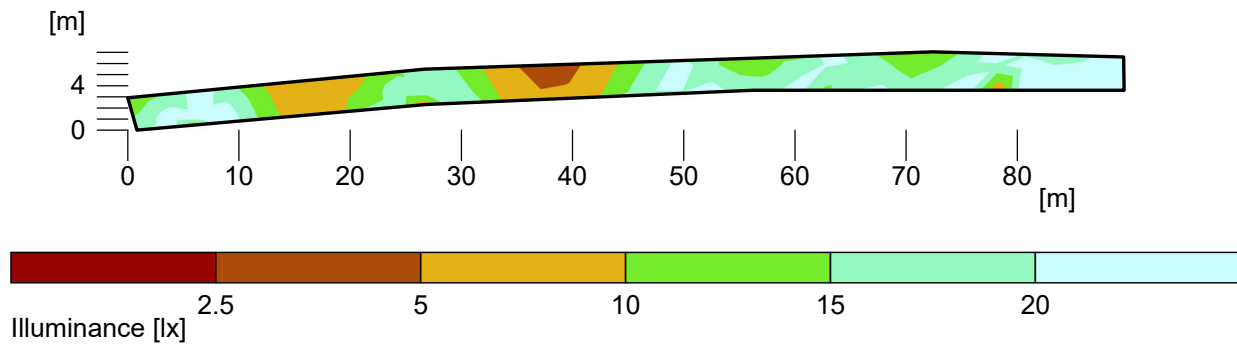
### 2.3.3 Pseudo colours, West Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 17 lx
Minimum illuminance	Emin	: 3.7 lx
Maximum illuminance	Emax	: 39.1 lx
Uniformity Uo	Emin/Em	: 1 : 4.59 (0.22)
Diversity Ud	Emin/Emax	: 1 : 10.56 (0.09)

## 2.3 Calculation results, Exterior 1

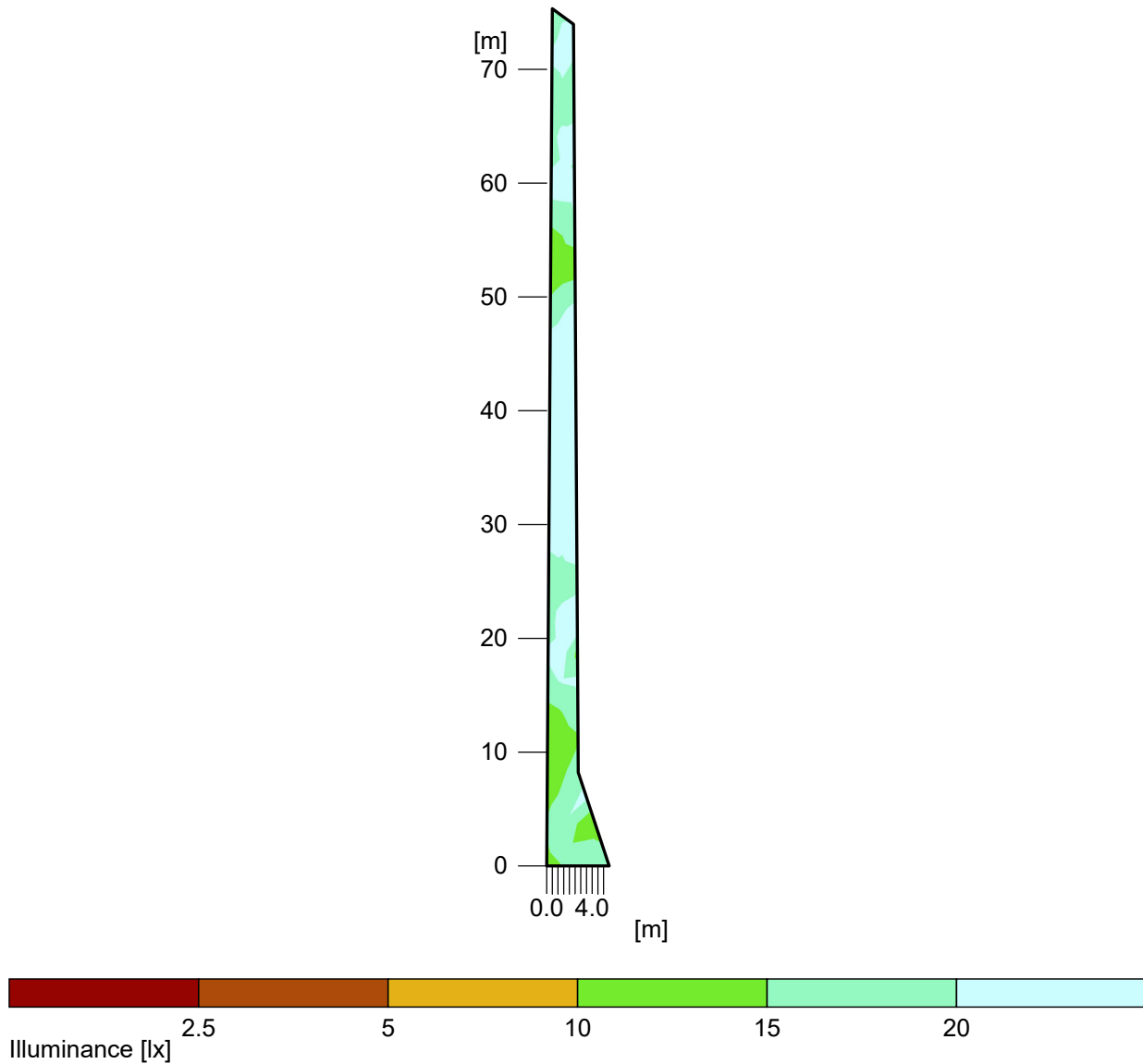
### 2.3.4 Pseudo colours, North West Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 15.7 lx
Minimum illuminance	Emin	: 4.1 lx
Maximum illuminance	Emax	: 25 lx
Uniformity Uo	Emin/Em	: 1 : 3.83 (0.26)
Diversity Ud	Emin/Emax	: 1 : 6.09 (0.16)

## 2.3 Calculation results, Exterior 1

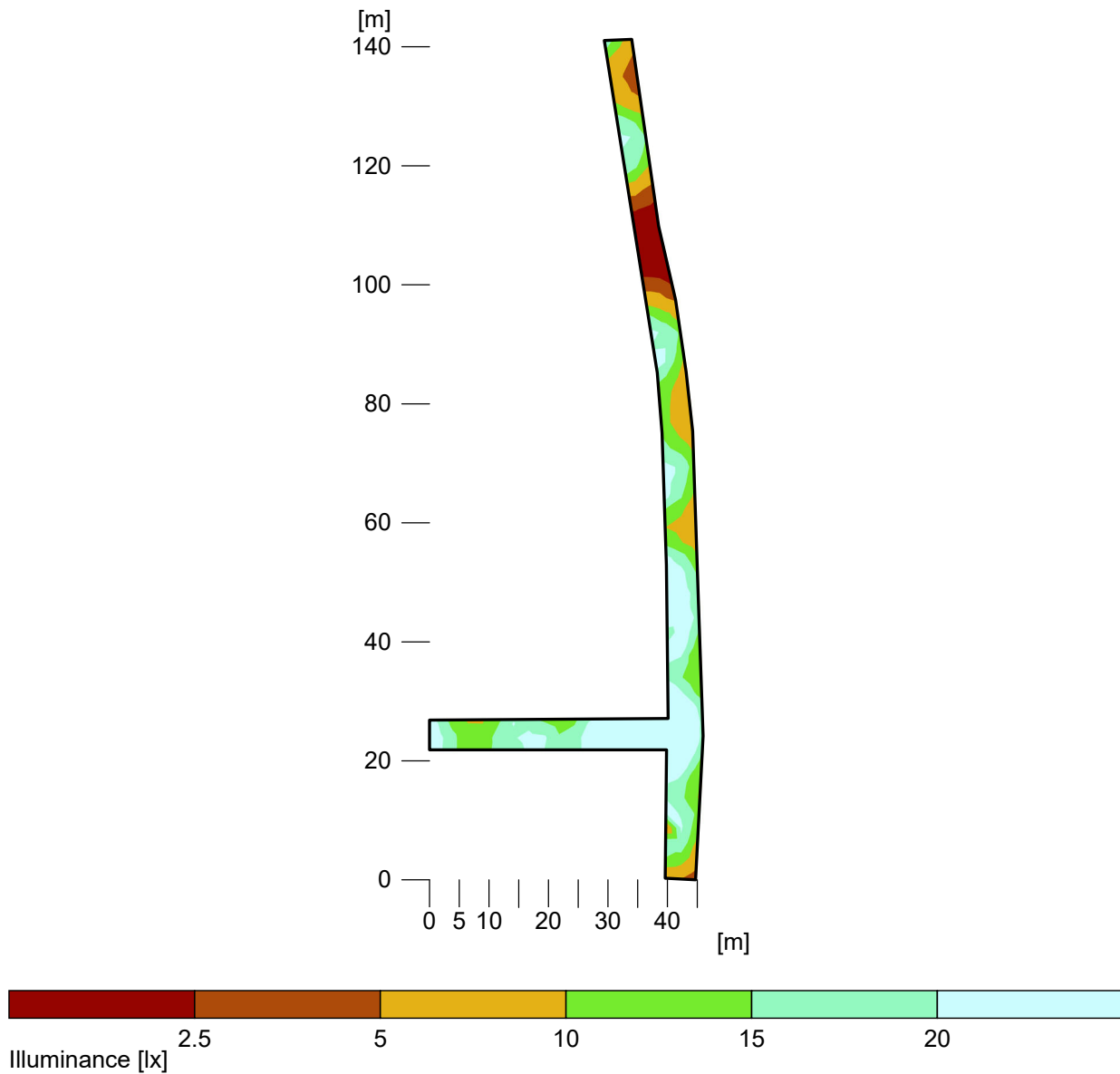
### 2.3.5 Pseudo colours, North East Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 20.1 lx
Minimum illuminance	Emin	: 9.9 lx
Maximum illuminance	Emax	: 30.9 lx
Uniformity Uo	Emin/Em	: 1 : 2.04 (0.49)
Diversity Ud	Emin/Emax	: 1 : 3.14 (0.32)

## 2.3 Calculation results, Exterior 1

### 2.3.6 Pseudo colours, South East Area (E)

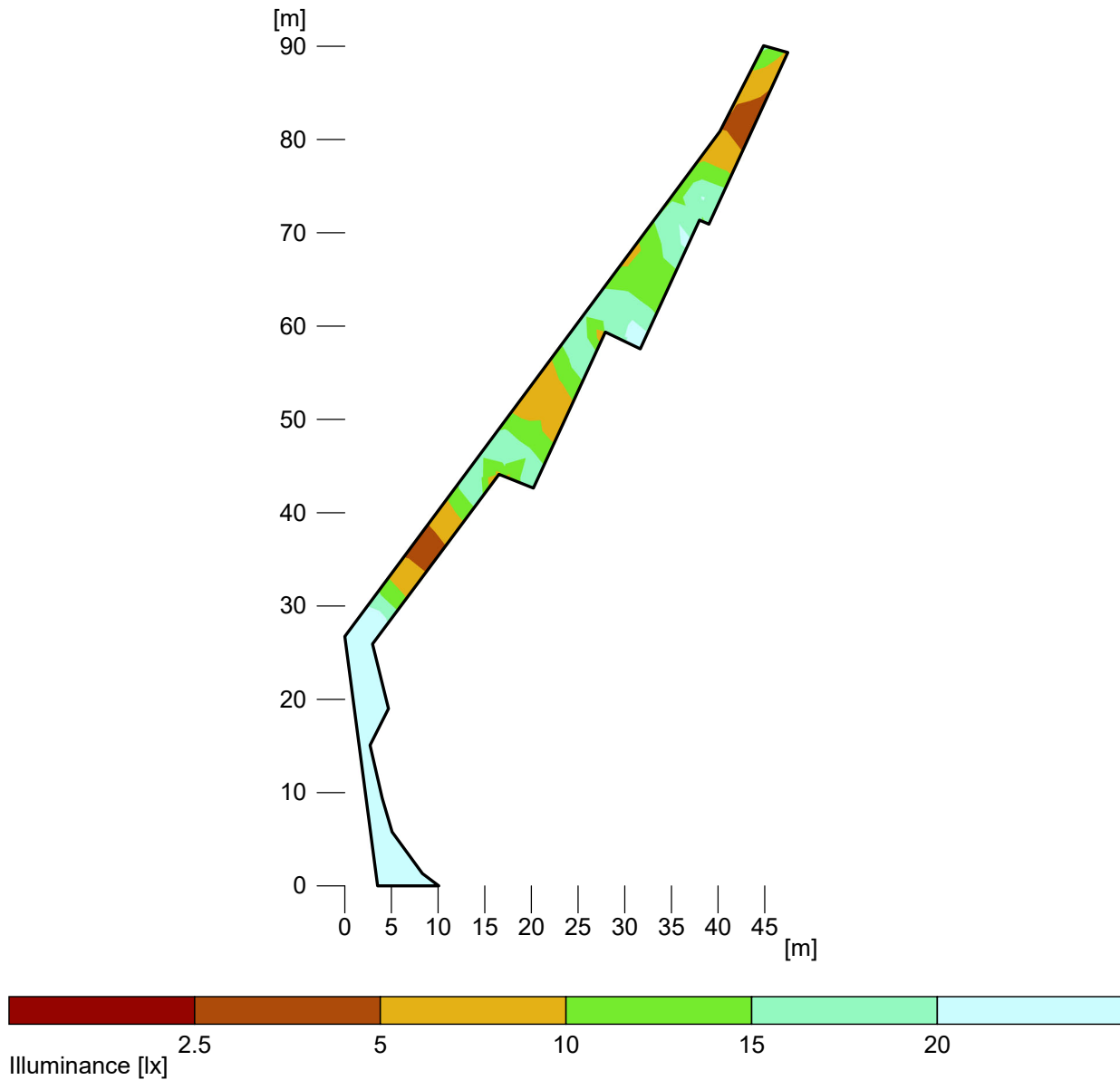


Height reference plane	:	0.00 m
Average illuminance	Em	: 15.3 lx
Minimum illuminance	Emin	: 0.8 lx
Maximum illuminance	Emax	: 43 lx
Uniformity Uo	Emin/Em	: 1 : 19.88 (0.05)
Diversity Ud	Emin/Emax	: 1 : 55.74 (0.02)



## 2.3 Calculation results, Exterior 1

### 2.3.7 Pseudo colours, South Area (E)



Height reference plane	:	0.00 m
Average illuminance	Em	: 16.4 lx
Minimum illuminance	Emin	: 3.6 lx
Maximum illuminance	Emax	: 42.3 lx
Uniformity Uo	Emin/Em	: 1 : 4.51 (0.22)
Diversity Ud	Emin/Emax	: 1 : 11.63 (0.09)

## 2 Exterior 1

### 2.4 Calculation results, Exterior 1

#### 2.4.1 3D luminance (raytracing), Variable view



Luminance in the illustration:

Minimum: : 0 cd/m<sup>2</sup>  
Maximum: : 287 cd/m<sup>2</sup>

Artificial light calculation : Direct part, with 2 inter-reflections

## 2.4 Calculation results, Exterior 1

### 2.4.2 3D luminance (raytracing), Variable view

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Luminance in the illustration:

Minimum: : 0 cd/m<sup>2</sup>  
Maximum: : 1670 cd/m<sup>2</sup>

Artificial light calculation : Direct part, with 2 inter-reflections

## 2.4 Calculation results, Exterior 1

### 2.4.3 3D luminance (raytracing), Variable view



Luminance in the illustration:

Minimum: : 0 cd/m<sup>2</sup>  
Maximum: : 289 cd/m<sup>2</sup>

Artificial light calculation : Direct part, with 2 inter-reflections