

# Monarch Quay Car Park

Installation : Bat box lighting KAL380

Project number : 25781

Customer : Sure Engineering

Processed by : NM

Date : 10.10.2017

Project description:

DESIGN >5 LUX ON CAR PARK \_0.0 LUX ON BAT BOX AREAS

REFLECTANCIES 70,50,20

MAINTENANCE FACTOR 0.8

LUMINAIRE MOUNTING HEIGHT 5.0 M ABOVE TOP CAR PARK LEVEL

LUMINAIRE TYPE:

KAL380/ASY/CG

LAMP TYPES:

84W LED@ 9,271 total lumen package

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.

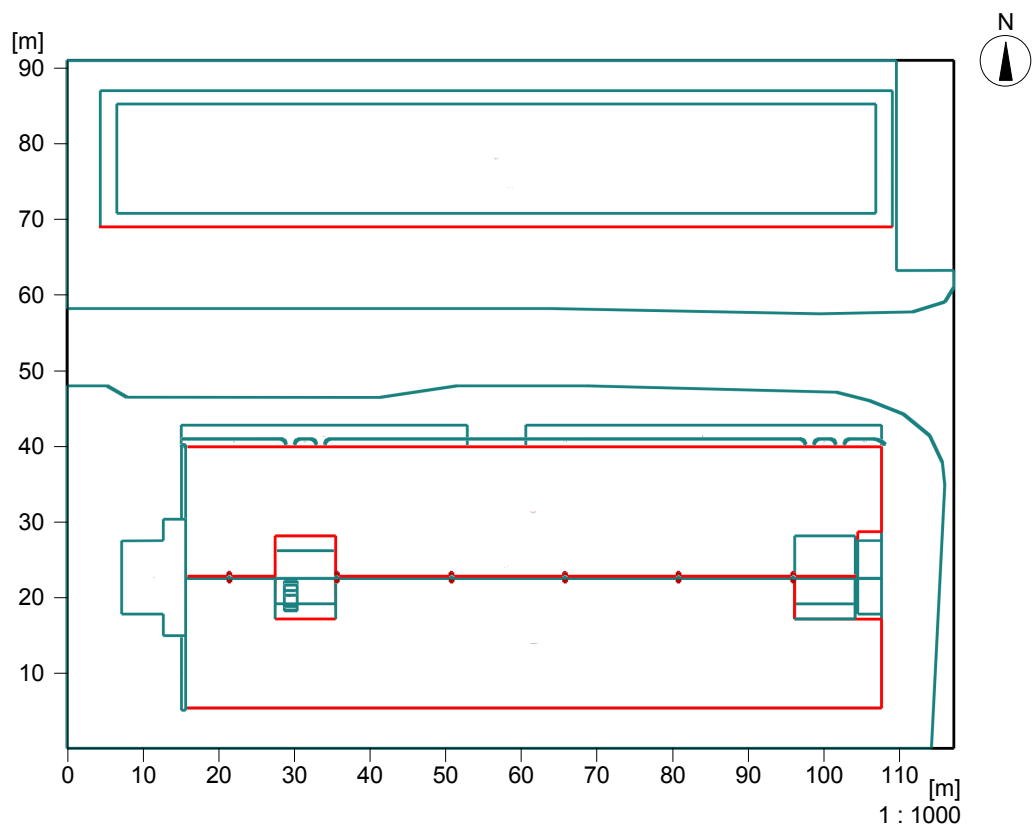
Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

Object : Monarch Quay Car Park  
Installation : Bat box lighting KAL380  
Project number : 25781  
Date : 10.10.2017

## 1 Exterior 1

### 1.1 Description, Exterior 1

#### 1.1.1 Floor plan

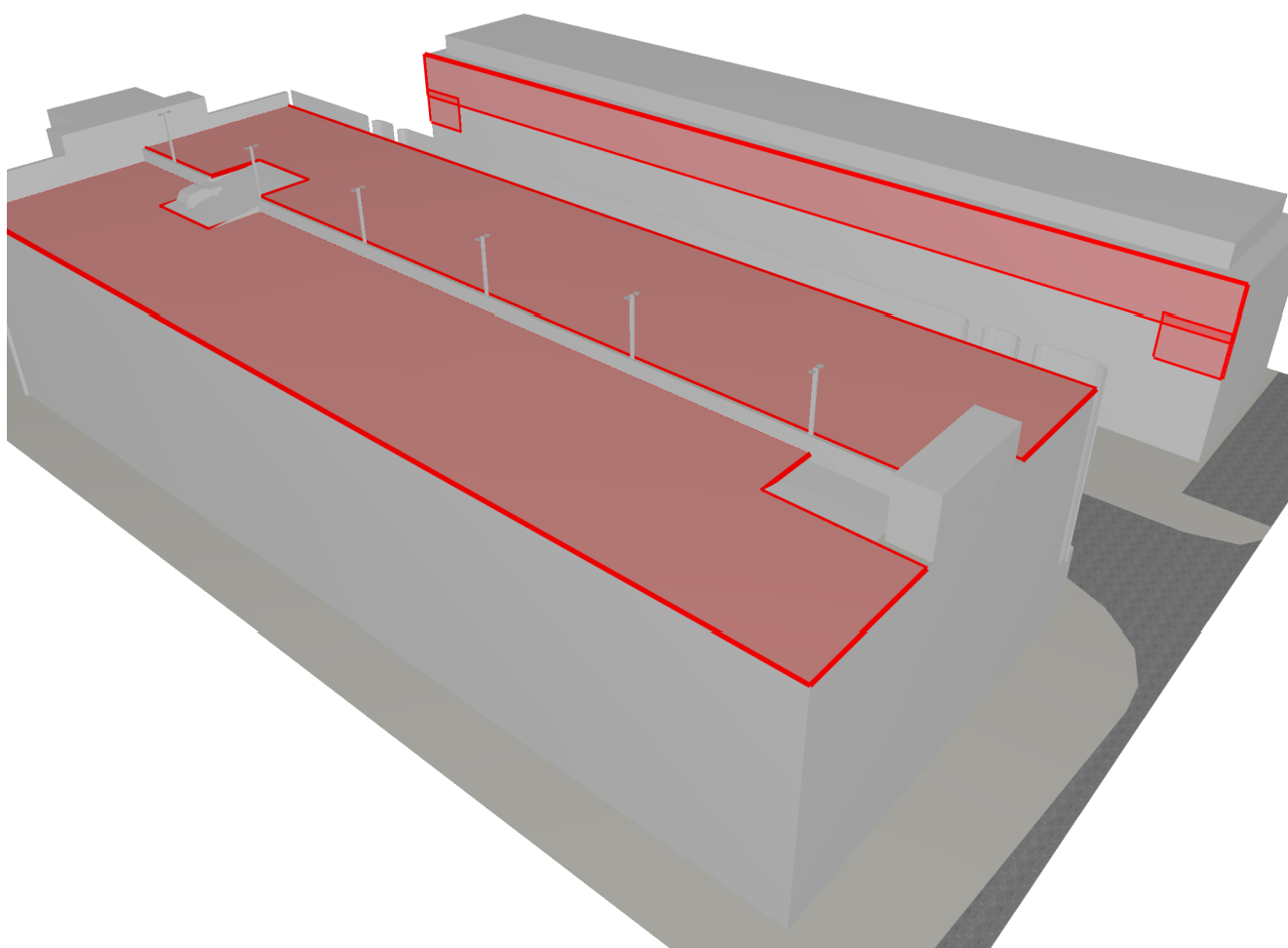


Object : Monarch Quay Car Park  
Installation : Bat box lighting KAL380  
Project number : 25781  
Date : 10.10.2017

## 1.1 Description, Exterior 1

### 1.1.2 3D view, View 1

---



Object : Monarch Quay Car Park  
 Installation : Bat box lighting KAL380  
 Project number : 25781  
 Date : 10.10.2017

# 1 Exterior 1

## 1.2 Calculation results, Exterior 1

### 1.2.1 Table, Upper Car Park (E)

[m]	4.5	5	5.5	6	6.4	7	7.6	7.6	7.4	7.4	7.4	7.5	7.4	7.5	7.8	7.8	7.4	7.3	7.3	7.3	7.3	7.3	7.7	7.8	7.4	7.3	7.3
16	6.9	7.6	8.4	9.2	9.9	10.5	11.4	11.4	11.1	11	11	11	11	11	11.4	11.5	10.9	10.8	10.7	10.7	10.7	10.8	11.2	11.4	10.9	10.9	10.6
14	9.8	11	12.2	13.3	14.1	15.1	15.9	16	15.5	15.4	15.3	15.3	15.3	15.4	15.7	15.6	15.1	14.9	14.9	14.9	14.9	15.1	15.6	15.5	15.2	15	14.9
12	13	14.9	16.6	18.2	18.9	19.9	20.1	20.2	20.1	20.1	20.4	20.1	19.8	19.8	19.7	19.7	19.8	19.4	19.6	19.7	19.5	19.5	19.6	19.6	19.3	19.4	19.6
10	16.3	18.4	20.8	22.5	23.4	24.8	25	25.6	24.7	24.5	24.7	24.4	24	24.7	24.4	24.2	24.2	23.4	23.7	23.8	23.7	24.4	24.4	24.3	24.2	23.6	23.8
8	22.8	23.6	26.5	28.6	29.9	31.5	32.1	32.4	31.5	30	30.9	30.2	30.2	31	30.2	30.6	30.5	29.4	29.4	29.3	28.5	30.8	30.7	30.3	30.5	28.9	29.2
6	31.1	33.6	37.5	40.3	38.5	40	40.2	40.1	40	38.3	40.5	41.1	38.3	38.8	36.9	36.6	38.7	37.5	40.4	40.9	37	38.8	37.5	37.1	39	37.2	39.2
4	38.9	43.6	39	42.7	48.5	<b>49.4</b>						41.8	46.5	47.7	42.6	42.3	47.8	46.9	42.8	40.7	46.4	47.2	44.1	41.8	45.6	46.5	42.8
2	38.2	41.4	37.6	39.2	47.1	47.1						39	43.4	45.6	42.5	41.6	45.3	44.8	36.8	37.9	43.6	46.2	43.6	40.1	45.4	43.9	37.7
	27	35.3	36.2	33.4	40.3	39.7						36.2	37.1	35.6	36.7	36.9	36.6	36.8	39.1	38.8	37.1	35.1	36.6	37.1	35.6	36.7	38.3
							10					20											40				5
	Illuminance [lx]																										

Part1

Height of the reference plane	: 20.86 m
Average illuminance	Eav : 24.9 lx
Minimum illuminance	Emin : 2.9 lx
Maximum illuminance	Emax : 49.4 lx
Uniformity g1	Emin/Eav : 1 : 8.60 (0.12)
Uniformity g2	Emin/Emax : 1 : 17.07 (0.06)

Object : Monarch Quay Car Park  
 Installation : Bat box lighting KAL380  
 Project number : 25781  
 Date : 10.10.2017

# 1 Exterior 1

## 1.2 Calculation results, Exterior 1

### 1.2.1 Table, Upper Car Park (E)

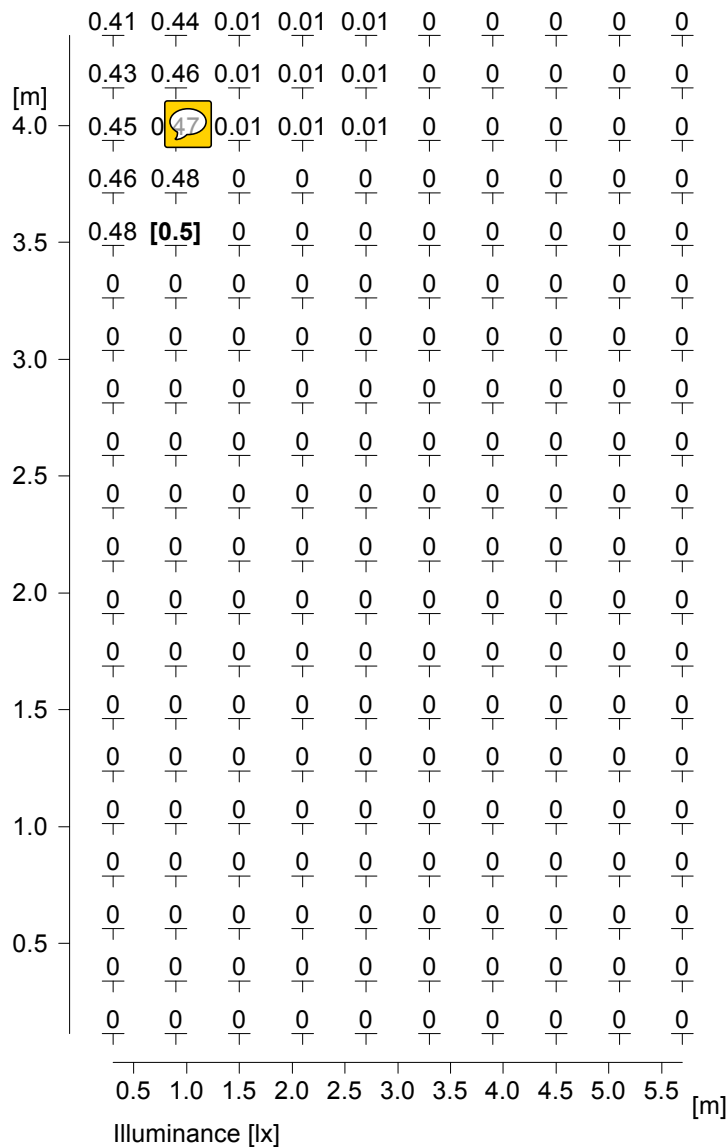
7.3	7.3	7.3	7.7	7.8	7.5	7.3	7.2	7.2	7.2	7.3	7.4	7.4	7.1	6.5	6	5.5	5	4.7	4.3	4.2	3.4	(2.9)
10.7	10.7	10.9	11.3	11.4	11	10.8	10.6	10.6	10.6	10.7	10.9	11	10.7	9.8	9.2	8.5	7.8	7.1	6.6	6	4.9	4
14.9	15	15.3	15.6	15.7	15.2	15	14.9	14.8	14.8	14.9	15.3	15.3	14.8	14	13.3	12.5	11.3	10.4	9.7	8.4	6.4	5.2
19.7	19.6	19.6	19.6	19.6	19.6	19.3	19.5	19.6	19.4	19.4	19.5	19.1	19	18.4	17.8	16.9	15.4	13.8	12.6	10.3	7.9	6.3
23.8	23.6	24.5	24.4	24.2	24.4	23.9	23.7	23.6	23.4	24.3	24.7	23.6	23.6	22.9	21.7	20.6	18.6	16.9	15.6	13	9.7	7.9
30	28.5	30.1	31.2	30.3	30.5	29.7	29	29.6	28.9	30.4	30.6	29.6	30.2	29.1	27.3	26.5	23.6	21.6	20.4	16.7	11.9	9.4
38.5	39.2	38.4	38.1	36.6	38.9	38.1	38.1	39.8	37.2	38.2	38.2	35.5	37.7	37.5	36.6	37.5	33.6	29.1	27.2	20.9	13.9	10.2
42.6	46.9	47.8	44.4	41.3	47.2	48.3	43.5	41.9	44.6	48.1	45.5	39.9	45.5	47.3	43.3	38.6	37	38.2	33.8	25.2		
40.2	43.8	45.8	44	41.1	45	42.5	41.7	32.9	42.7	44	44.5	40.8	44.2	44.6	40.3	32.2	37.7	35.6	30.2	24.2		
31.8	38.4	35.2	36.8	36.9	36	36.7	38.6	24.2	37.9	35.5	35.8	36.9	35.4	35.1	37.7	30.2	35.4	28.5	22.3	22.5		
0					60					70					80					90	[m]	

Part2

Object : Monarch Quay Car Park  
 Installation : Bat box lighting KAL380  
 Project number : 25781  
 Date : 10.10.2017

## 1.2 Calculation results, Exterior 1

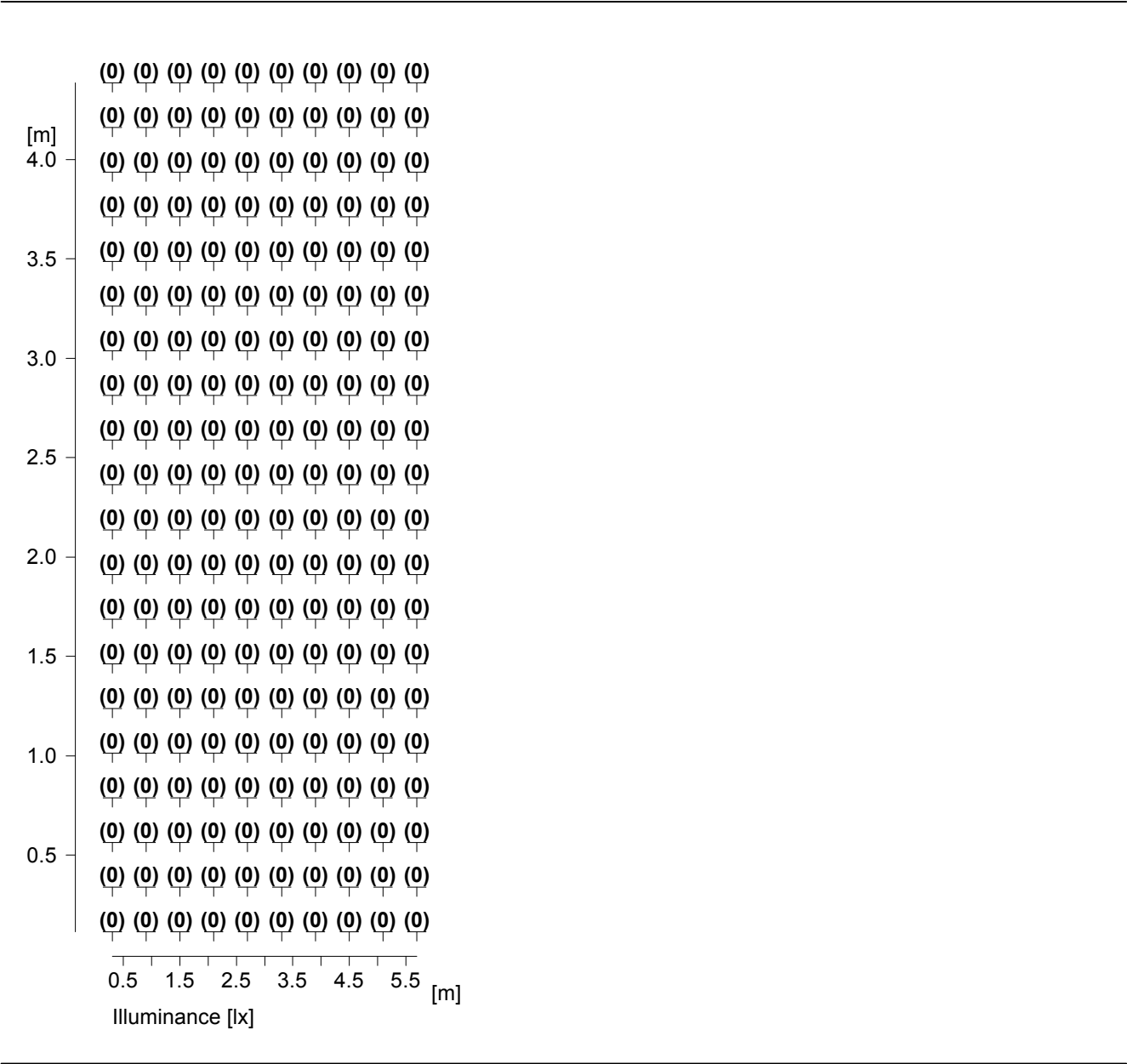
### 1.2.2 Table, Left bat Box (E)



Average illuminance	Eav	: 0.02 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0.5 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

1.2 Calculation results, Exterior 1

1.2.3 Table, Right Bat Box (E)



Average illuminance	Eav	: 0 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

Object : Monarch Quay Car Park  
 Installation : Bat box lighting KAL380  
 Project number : 25781  
 Date : 10.10.2017

## 1.2 Calculation results, Exterior 1

### 1.2.4 Table, Lower carpark (E)

[m]	19.1	24.8	22	26	28.9	25.4							25.2	26.2	25.2	23.6	22.5	25.4	29.3	28.7	24.4	25.8	26.2	23.3	21.8	23.6	27.9	28.8
16	30.2	32.9	33.8	31.5	38.2	34.1							37.1	38.2	38	37.3	37.5	37.8	38.2	34.1	31.4	35.5	36.6	36.9	37	36.9	38	37.2
14	31.8	36.8	35	36.5	40.5	40							39.7	41.3	41.4	41.8	41.2	41	41.1	38.5	37.7	39.1	40.8	41.6	42.3	41.8	41.2	38.8
12	29.5	33	35.4	36.5	36.3	36.8	40.1	40.5	37.9	37.4	38.7		40.1	37.2	37	38.1	37.7	36.4	37.3	37.3	39.6	36.7	36.5	37.8	38.8	36.9	36.3	37.6
10	23.7	24.6	28.3	29.3	30.5	31.2	33.7	33.9	31.6	30.5	33		32.4	32	31.3	32.4	32.4	30.7	30.8	31.8	31.4	29.7	30.8	32.1	32.9	31.2	30.6	30.7
8	19.4	21.2	22.6	24	24.5	25.8	27.8	28.3	26.5	26.5	27.1		26.9	26.1	26.5	27.1	27	26.4	26.2	26	26.3	25.6	25.7	26.8	27.3	26.2	25.6	26.1
6	16.6	17.5	18.8	20.1	21.1	21.6	23	23.4	22.5	22.5	23		22.8	22.3	22.3	22.5	22.6	22.2	21.9	22.3	22.4	21.8	21.6	22.3	22.7	22.3	22	22.5
4	12.2	13.4	14.5	15.6	16.4	17.3	18.6	18.8	18	18	18		17.9	17.8	18	18.4	18.3	17.9	17.4	17.4	17.5	17.4	17.5	18.1	18.4	17.8	17.4	17.5
2	8.2	9.1	9.8	10.6	11.3	12.1	13.1	13.2	12.7	12.6	12.6		12.8	12.6	12.8	13.2	13.2	12.7	12.4	12.3	12.3	12.3	12.5	12.8	13.2	12.6	12.4	12.3
	5	5.6	5.9	6.4	7	7.5	8.2	8.2	8	8	8		8	8.1	8.2	8.6	8.5	8.1	7.9	7.8	7.7	7.8	7.9	8.2	8.3	8.1	7.9	7.8
					10								20											40				5
	Illuminance [lx]																											

Part1

Height of the reference plane	:	19.54 m
Average illuminance	Eav	: 23.8 lx
Minimum illuminance	Emin	: 3.1 lx
Maximum illuminance	Emax	: 42.7 lx
Uniformity g1	Emin/Eav	: 1 : 7.67 (0.13)
Uniformity g2	Emin/Emax	: 1 : 13.76 (0.07)



Object : Monarch Quay Car Park  
Installation : Bat box lighting KAL380  
Project number : 25781  
Date : 10.10.2017

## 1.2 Calculation results, Exterior 1

#### 1.2.4 Table, Lower carpark (E)

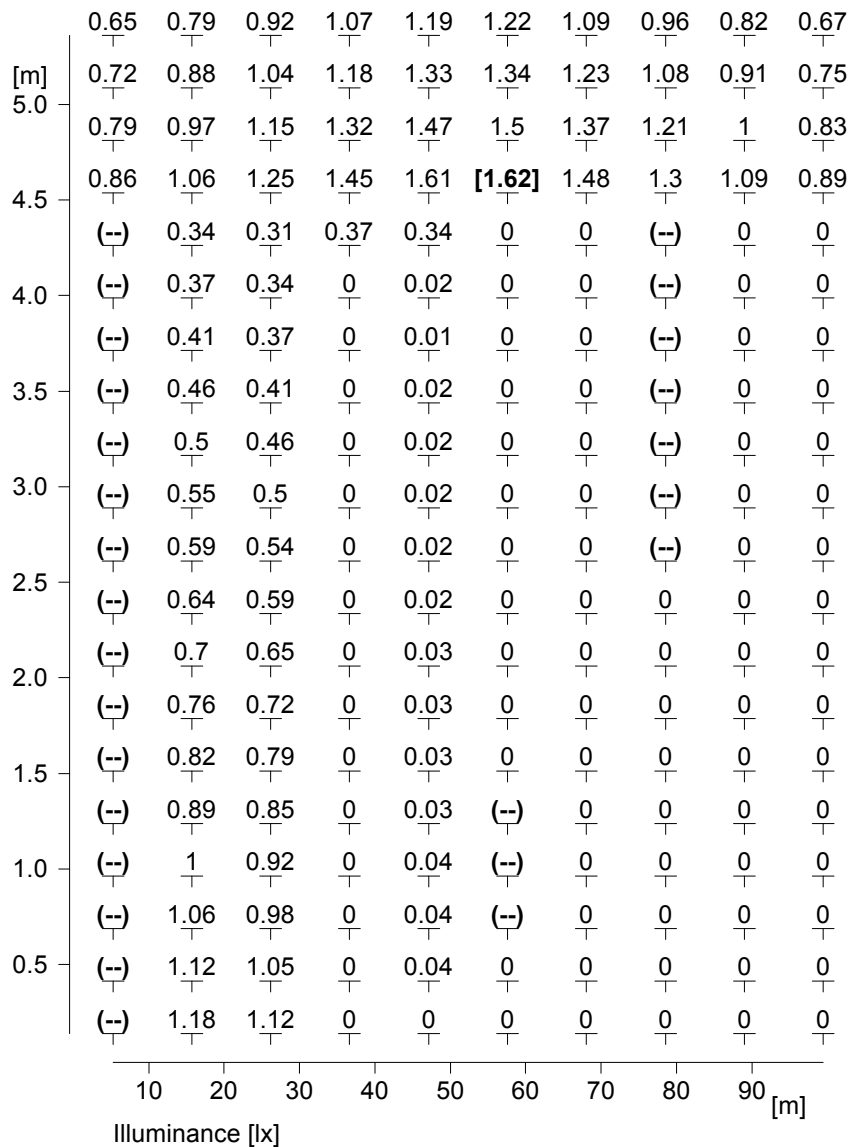
[illegible]

Part2

Object : Monarch Quay Car Park  
 Installation : Bat box lighting KAL380  
 Project number : 25781  
 Date : 10.10.2017

## 1.2 Calculation results, Exterior 1

### 1.2.5 Table, Over spill (E)

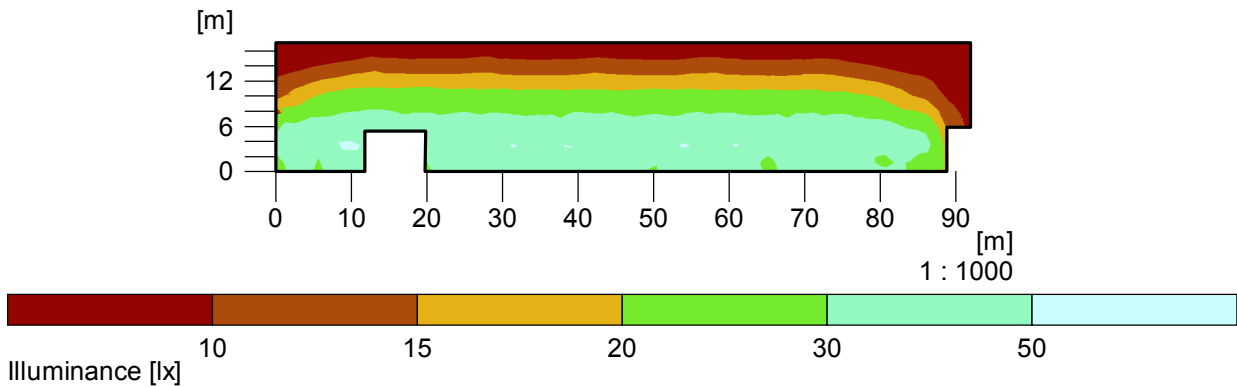


Average illuminance	Eav	: 0.34 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 1.62 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

Object : Monarch Quay Car Park  
Installation : Bat box lighting KAL380  
Project number : 25781  
Date : 10.10.2017

1.2 Calculation results, Exterior 1

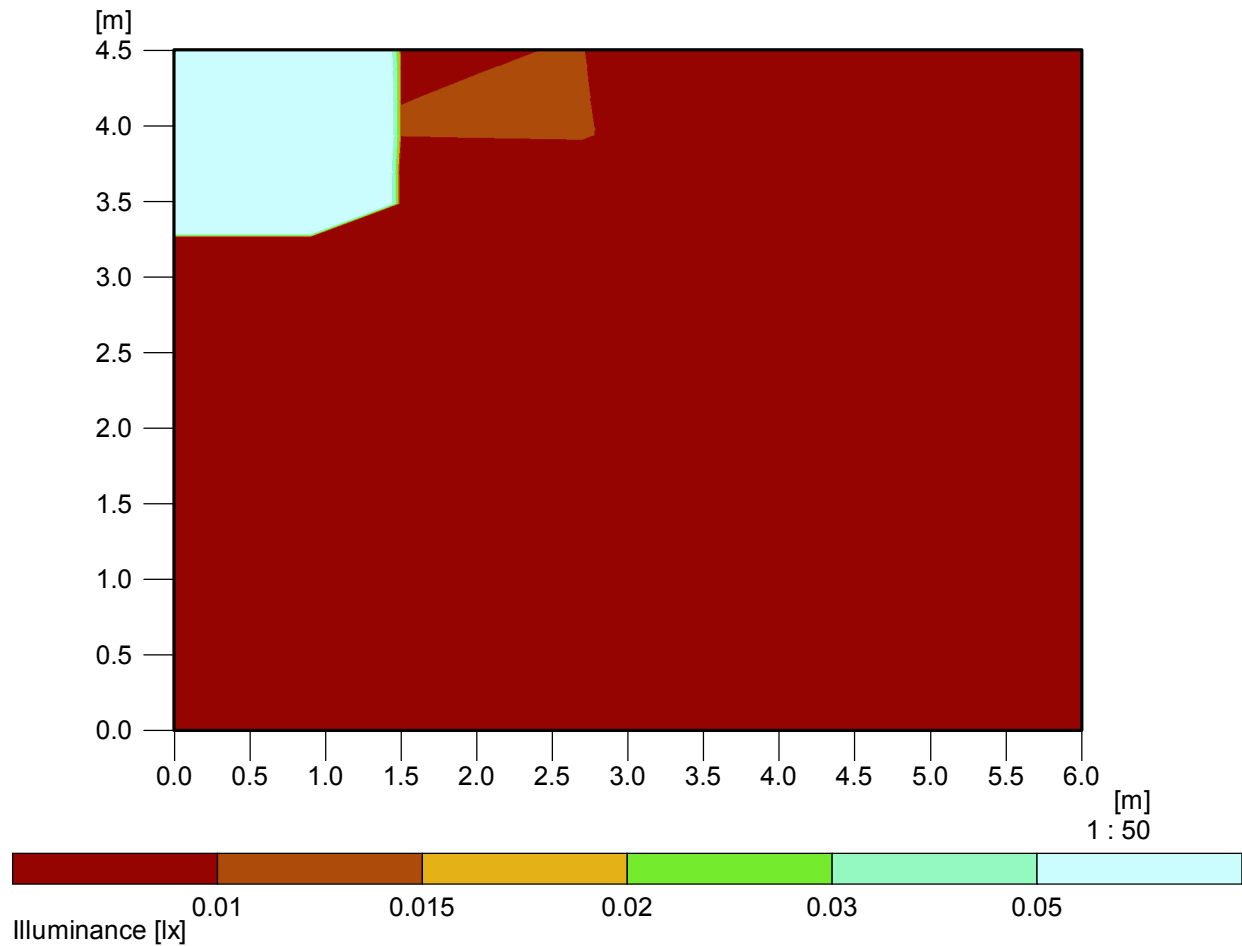
1.2.6 Pseudo colours, Upper Car Park (E)



Height of the reference plane	:	20.86 m
Average illuminance	Eav	: 24.9 lx
Minimum illuminance	Emin	: 2.9 lx
Maximum illuminance	Emax	: 49.4 lx
Uniformity g1	Emin/Eav	: 1 : 8.60 (0.12)
Uniformity g2	Emin/Emax	: 1 : 17.07 (0.06)

1.2 Calculation results, Exterior 1

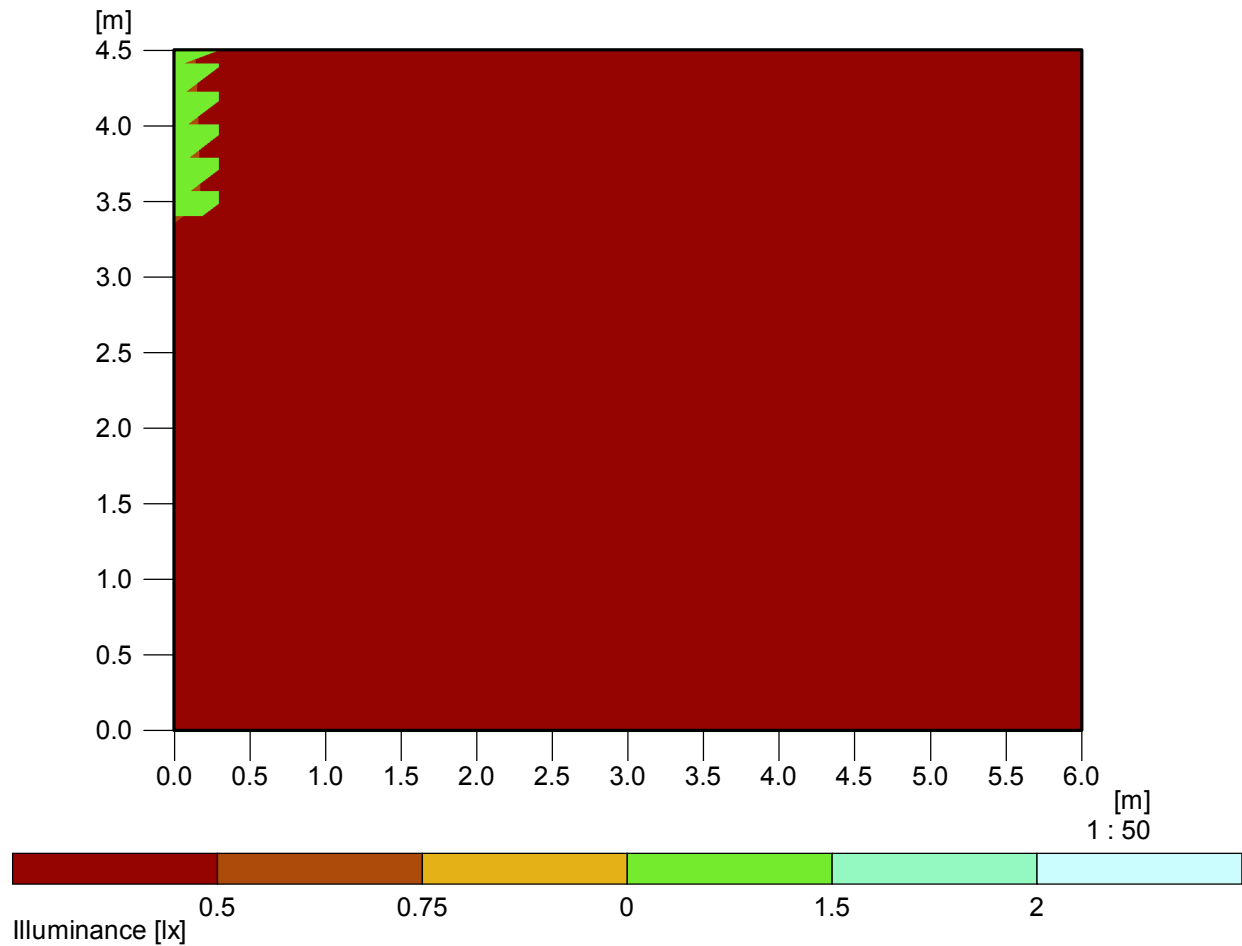
1.2.7 Pseudo colours, Left bat Box (E)



Average illuminance	Eav	: 0.02 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0.5 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

1.2 Calculation results, Exterior 1

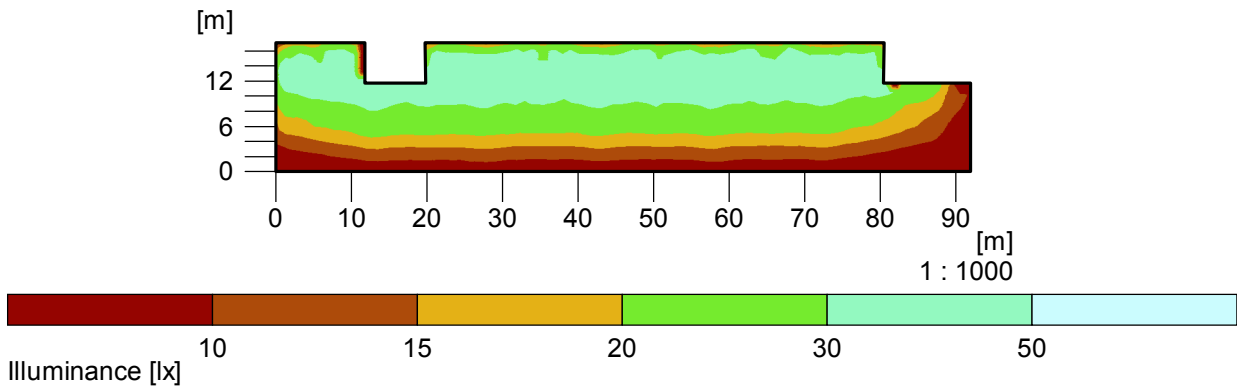
1.2.8 Pseudo colours, Right Bat Box (E)



Average illuminance	Eav	: 0 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 0 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

1.2 Calculation results, Exterior 1

1.2.9 Pseudo colours, Lower carpark (E)

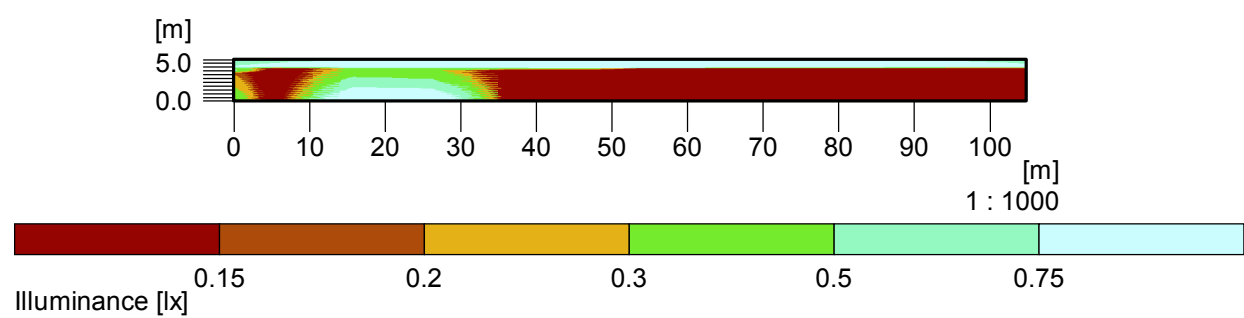


---

Height of the reference plane	:	19.54 m
Average illuminance	Eav	: 23.8 lx
Minimum illuminance	Emin	: 3.1 lx
Maximum illuminance	Emax	: 42.7 lx
Uniformity g1	Emin/Eav	: 1 : 7.67 (0.13)
Uniformity g2	Emin/Emax	: 1 : 13.76 (0.07)

1.2 Calculation results, Exterior 1

1.2.10 Pseudo colours, Over spill (E)



---

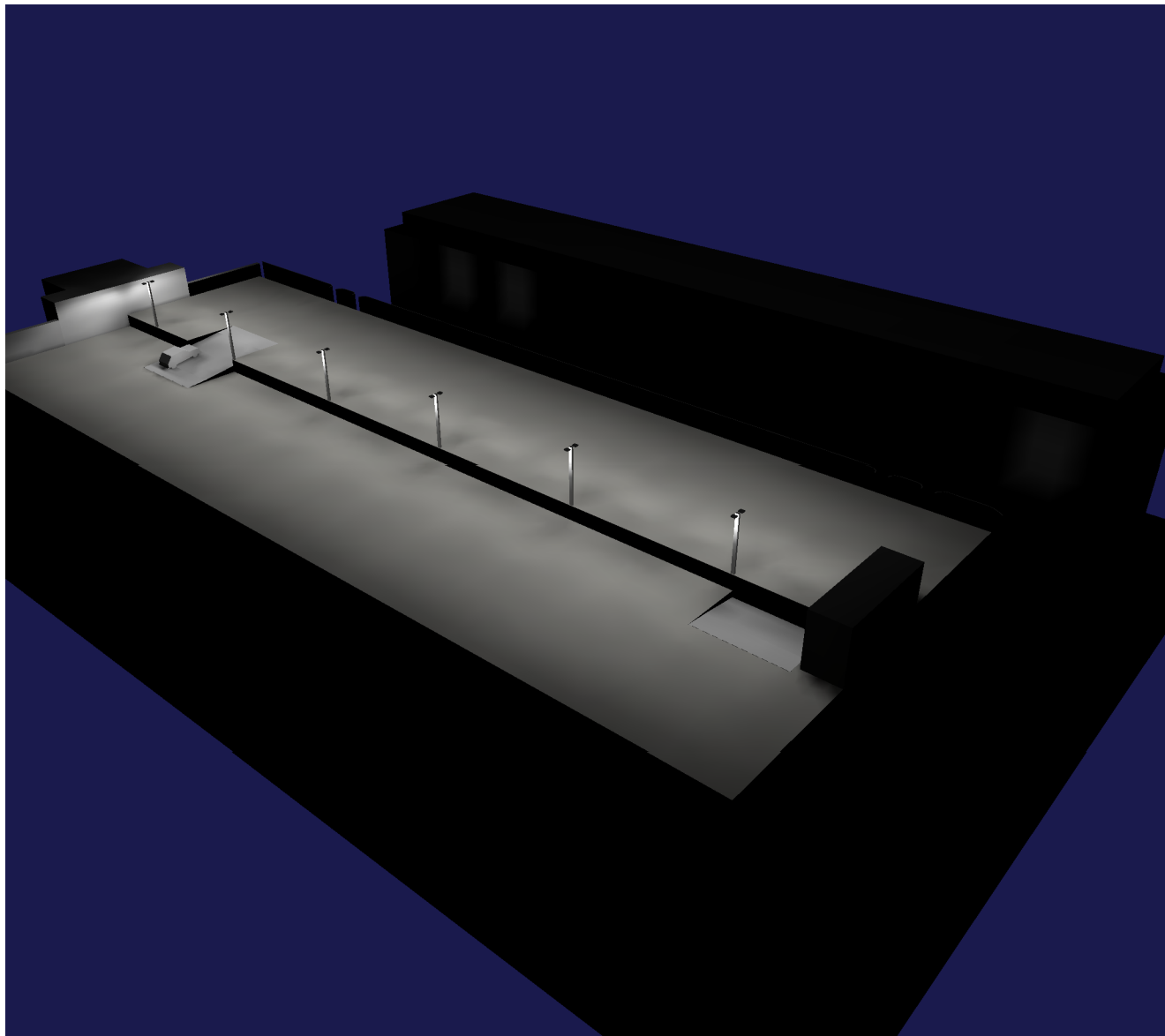
Average illuminance	Eav	: 0.34 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 1.62 lx
Uniformity g1	Emin/Eav	: ---
Uniformity g2	Emin/Emax	: ---

Object : Monarch Quay Car Park  
Installation : Bat box lighting KAL380  
Project number : 25781  
Date : 10.10.2017

## 1.2 Calculation results, Exterior 1

### 1.2.11 3D luminance, View 1

---



---

Luminance in the scene

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

Maximum: : 133 cd/m<sup>2</sup>