

New Build Lighting Calculations

Installation : External Lighting

Project number : 1338B-NGB-NB-CA-E-6300002
Customer : Manchester Metropolitan University
Processed by : A. Douglas
Date : 11.02.2022

Project description:
Revision P1

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.

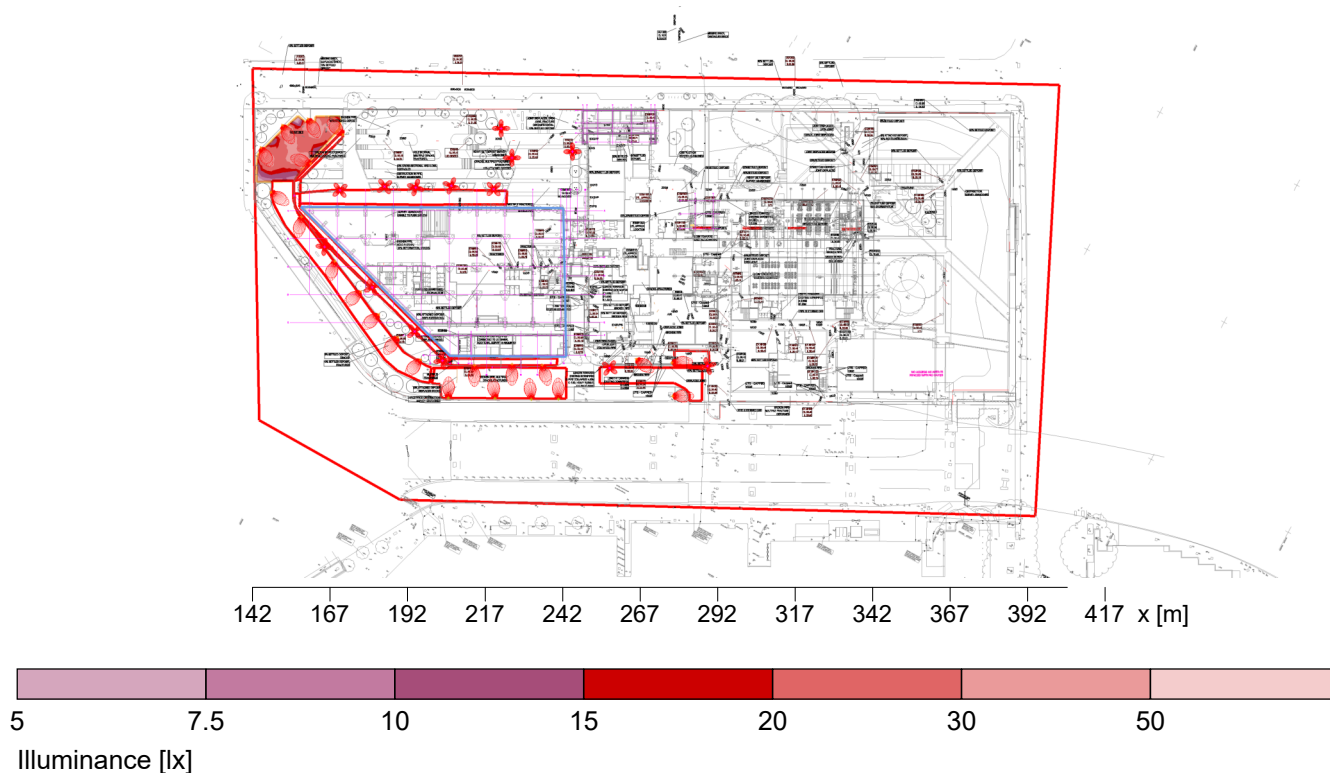
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1 Exterior 1

1.1 Summary, Exterior 1

1.1.1 Result overview, CAR PARK 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	27.9 lx
Minimum illuminance	Emin	6.9 lx
Maximum illuminance	Emax	64.8 lx
Uniformity Uo	Emin/Em	1:4.03 (0.25)
Diversity Ud	Emin/Emax	1:9.35 (0.11)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

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1 Exterior 1

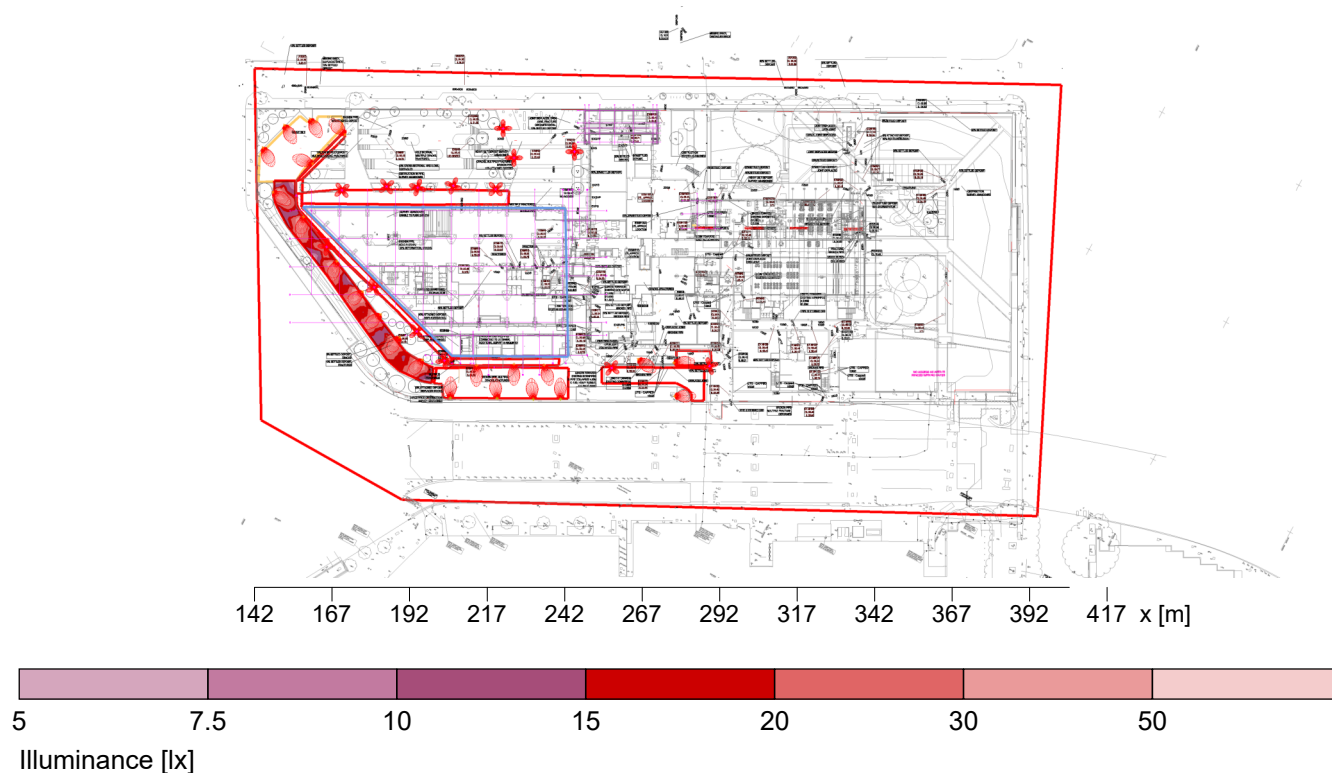
1.1 Summary, Exterior 1

1.1.1 Result overview, CAR PARK 1

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.2 Result overview, ROAD1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	25.7 lx
Minimum illuminance	Emin	7.1 lx
Maximum illuminance	Emax	71 lx
Uniformity Uo	Emin/Em	1:3.63 (0.28)
Diversity Ud	Emin/Emax	1:10 (0.1)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

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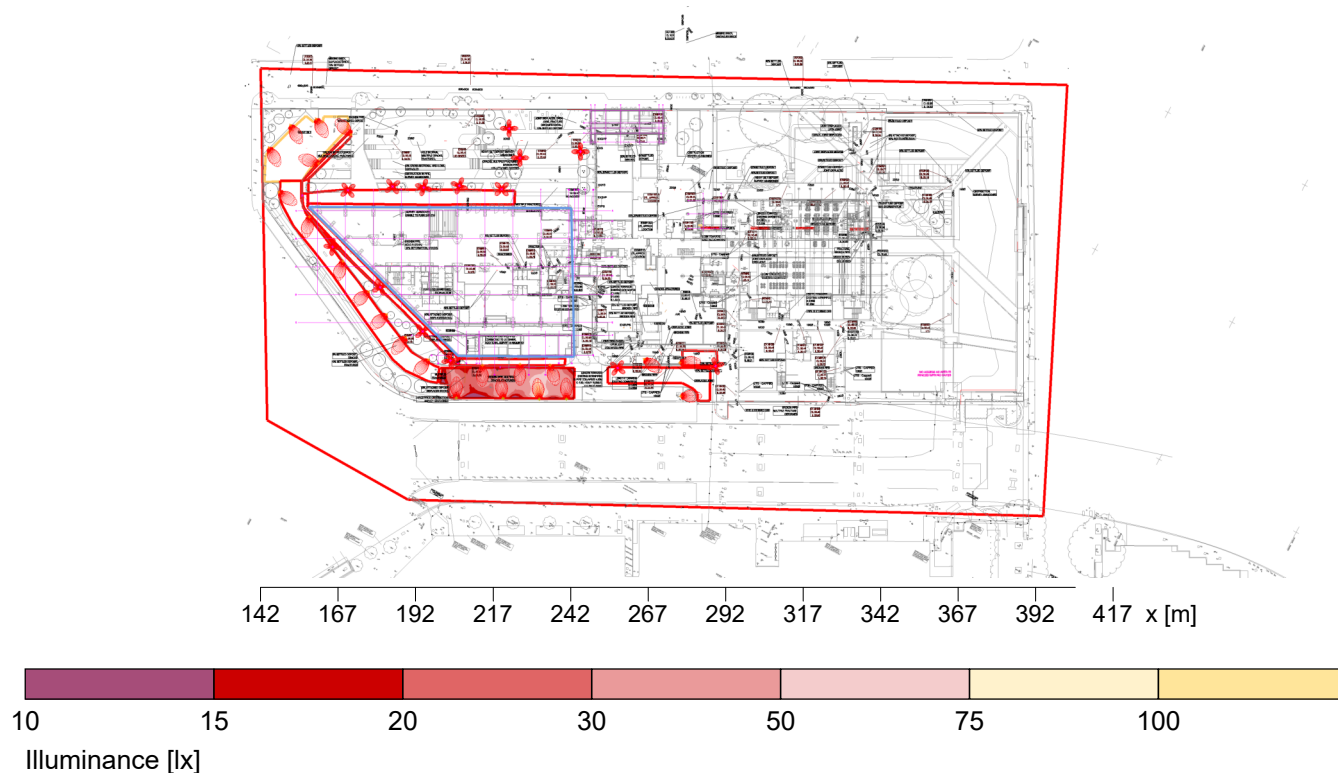
1.1 Summary, Exterior 1

1.1.2 Result overview, ROAD1

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.3 Result overview, CAR PARK2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m ²)	0.03 W/m ²

Illuminance

Average illuminance	Em	39 lx
Minimum illuminance	Emin	10 lx
Maximum illuminance	Emax	136 lx
Uniformity Uo	Emin/Em	1:3.93 (0.25)
Diversity Ud	Emin/Emax	1:13.6 (0.07)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

Object : New Build Lighting Calculations
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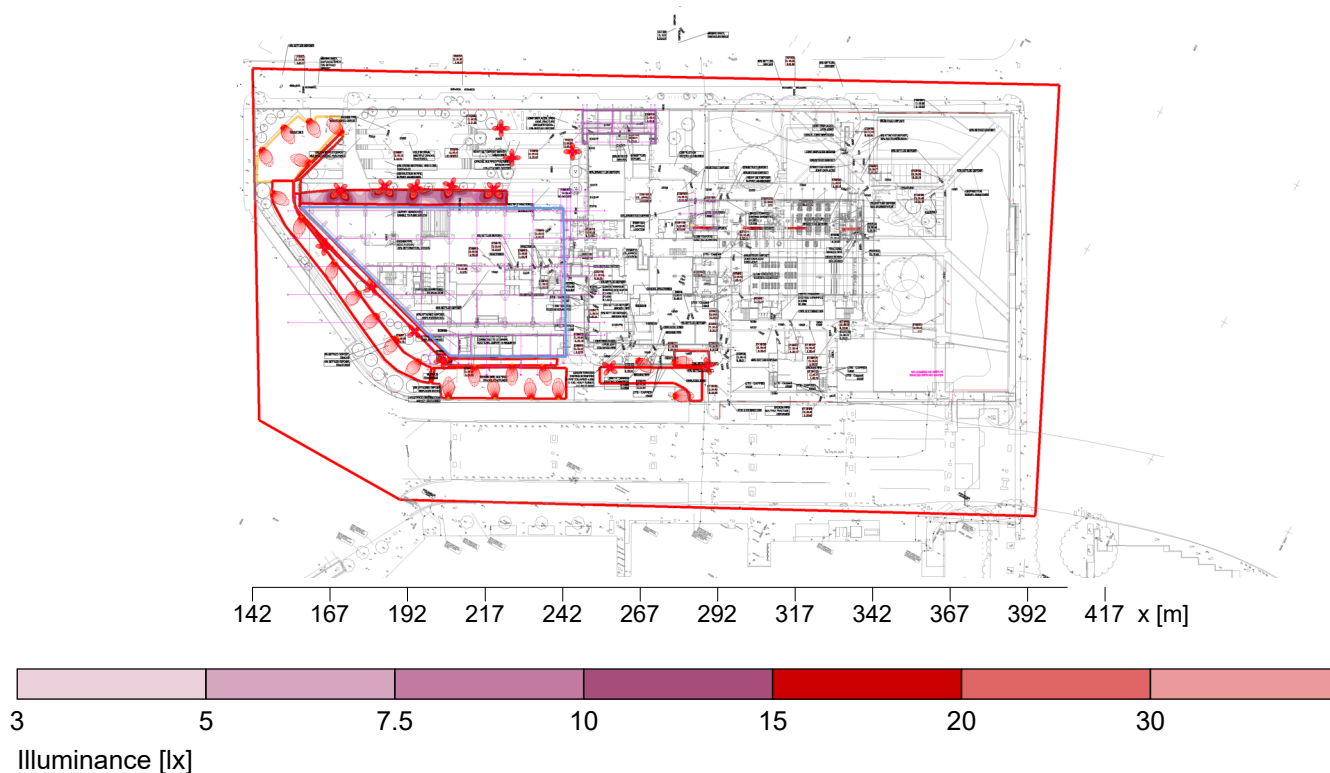
1.1 Summary, Exterior 1

1.1.3 Result overview, CAR PARK2

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.4 Result overview, ROAD2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	11.2 lx
Minimum illuminance	Emin	3.4 lx
Maximum illuminance	Emax	36.4 lx
Uniformity Uo	Emin/Em	1:3.33 (0.3)
Diversity Ud	Emin/Emax	1:10.9 (0.09)

Type No. Make

BEGA		
1	5 x	Order No. : !BE_24351K3.LDT
		Luminaire name : CC1
		Equipment : 1 x LED 21,3W 25 W / 3256 lm
2	14 x	Order No. : !BE_84065K3 (1).LDT
		Luminaire name : AA
		Equipment : 1 x LED 39W 44 W / 2641 lm

Object : New Build Lighting Calculations
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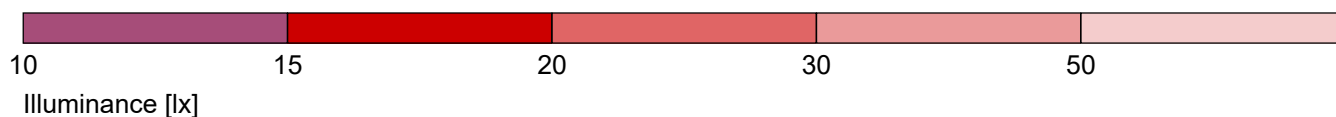
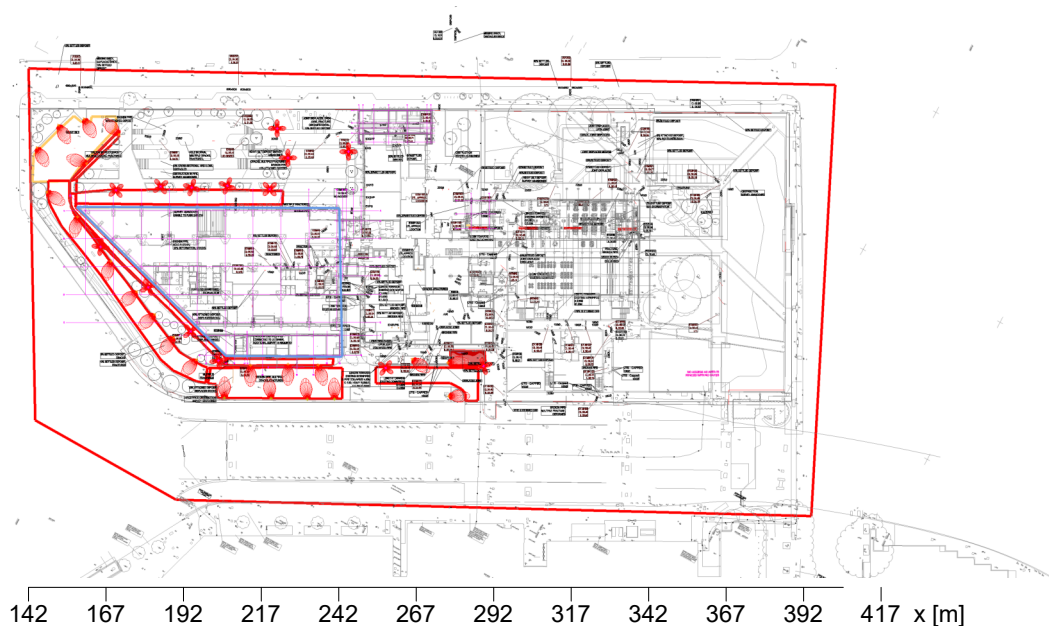
1.1 Summary, Exterior 1

1.1.4 Result overview, ROAD2

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.5 Result overview, DISABLED PARKING



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	28.6 lx
Minimum illuminance	Emin	11.9 lx
Maximum illuminance	Emax	63.9 lx
Uniformity Uo	Emin/Em	1:2.41 (0.41)
Diversity Ud	Emin/Emax	1:5.38 (0.19)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

Object : New Build Lighting Calculations
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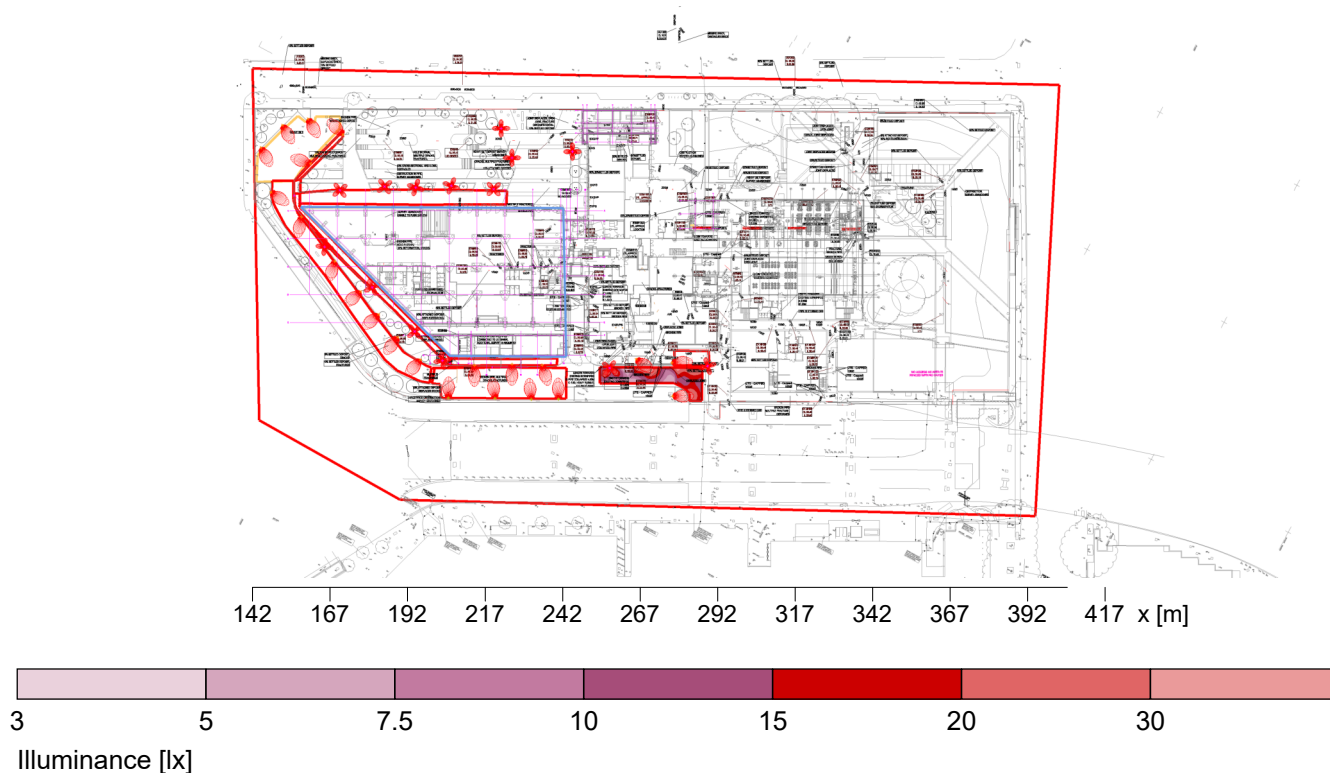
1.1 Summary, Exterior 1

1.1.5 Result overview, DISABLED PARKING

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.6 Result overview, ROAD 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	15.5 lx
Minimum illuminance	Emin	3.9 lx
Maximum illuminance	Emax	42.6 lx
Uniformity Uo	Emin/Em	1:3.99 (0.25)
Diversity Ud	Emin/Emax	1:10.9 (0.09)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

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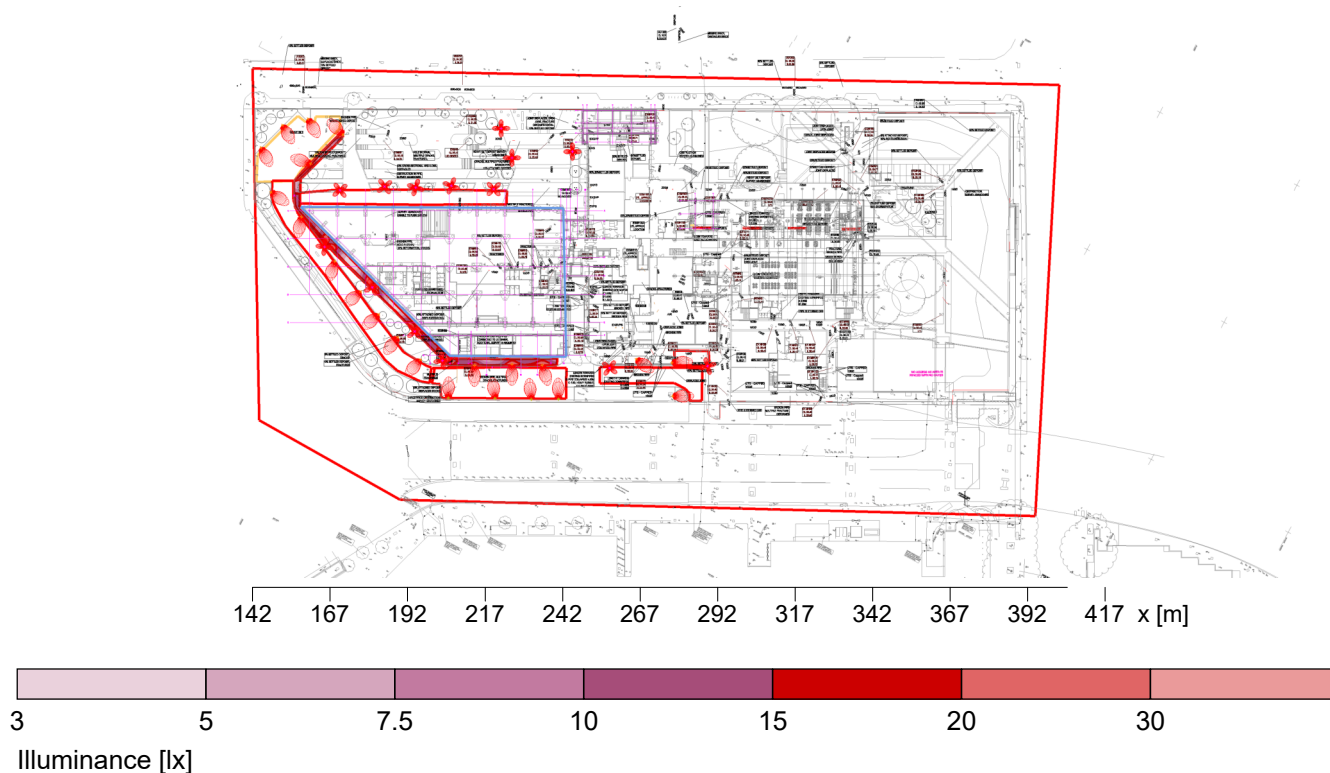
1.1 Summary, Exterior 1

1.1.6 Result overview, ROAD 3

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.7 Result overview, ROAD PATH



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	13.8 lx
Minimum illuminance	Emin	3.5 lx
Maximum illuminance	Emax	46.2 lx
Uniformity Uo	Emin/Em	1:3.97 (0.25)
Diversity Ud	Emin/Emax	1:13.4 (0.07)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

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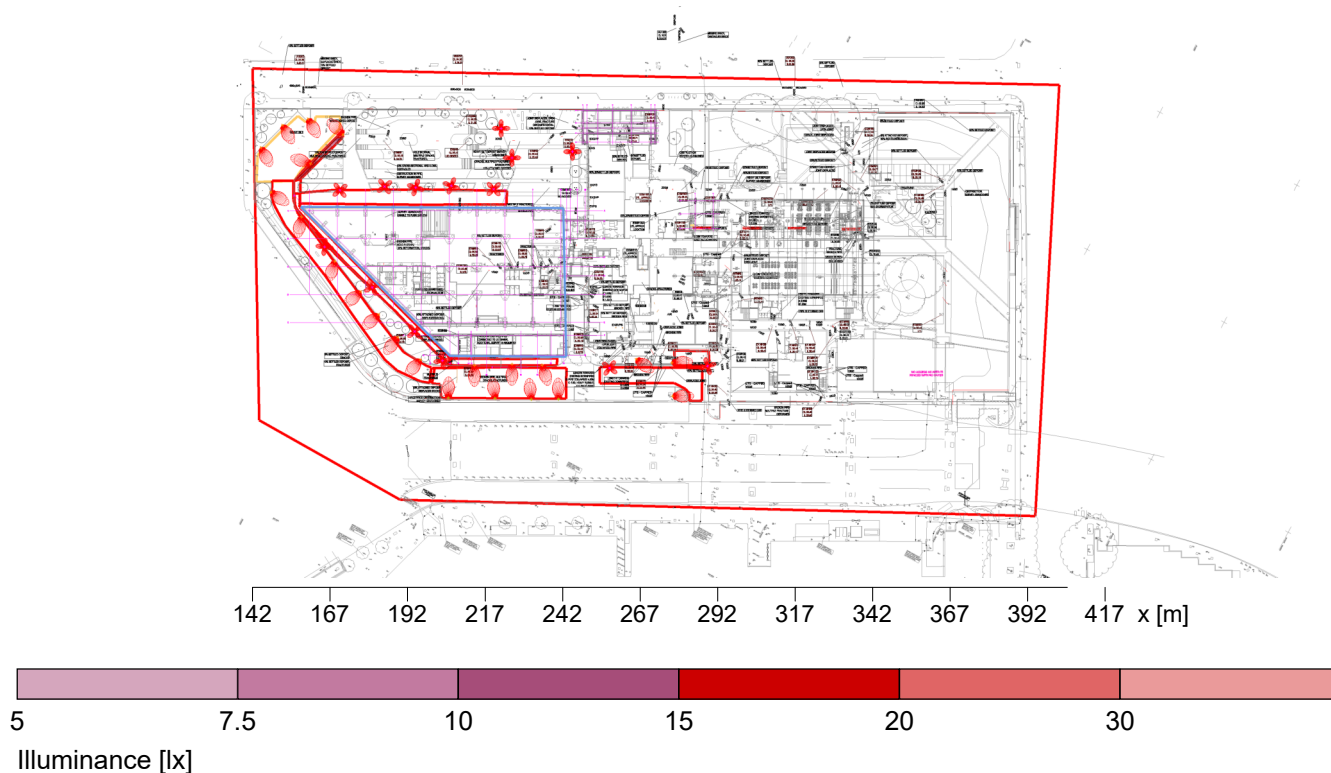
1.1 Summary, Exterior 1

1.1.7 Result overview, ROAD PATH

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.8 Result overview, P1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	11.8 lx
Minimum illuminance	Emin	6 lx
Maximum illuminance	Emax	41.8 lx
Uniformity Uo	Emin/Em	1:1.98 (0.51)
Diversity Ud	Emin/Emax	1:6.99 (0.14)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

Object : New Build Lighting Calculations
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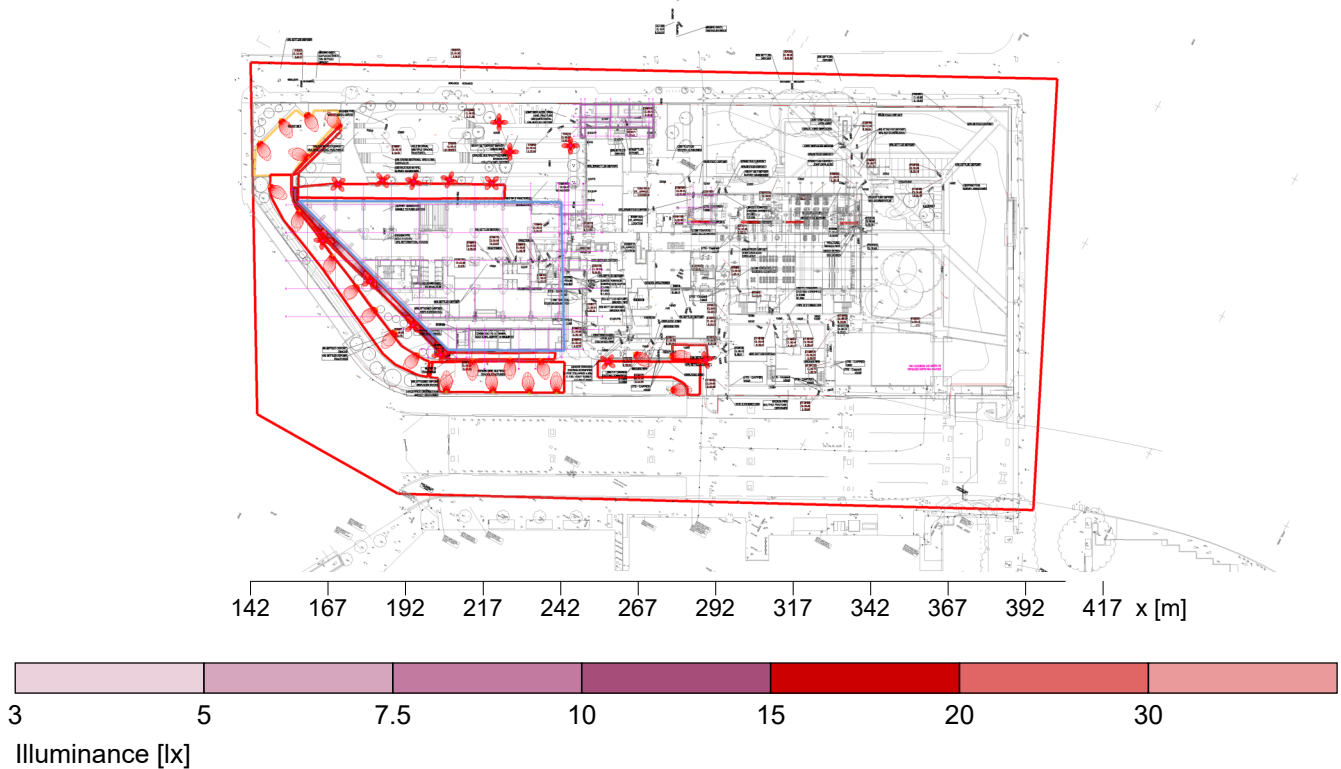
1.1 Summary, Exterior 1

1.1.8 Result overview, P1

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.9 Result overview, P2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	13.6 lx
Minimum illuminance	Emin	3.4 lx
Maximum illuminance	Emax	39.8 lx
Uniformity Uo	Emin/Em	1:3.96 (0.25)
Diversity Ud	Emin/Emax	1:11.6 (0.09)

Type No. Make

BEGA	
1 5 x	Order No. : !BE_24351K3.LDT
	Luminaire name : CC1
	Equipment : 1 x LED 21,3W 25 W / 3256 lm
2 14 x	Order No. : !BE_84065K3 (1).LDT
	Luminaire name : AA
	Equipment : 1 x LED 39W 44 W / 2641 lm

Object : New Build Lighting Calculations
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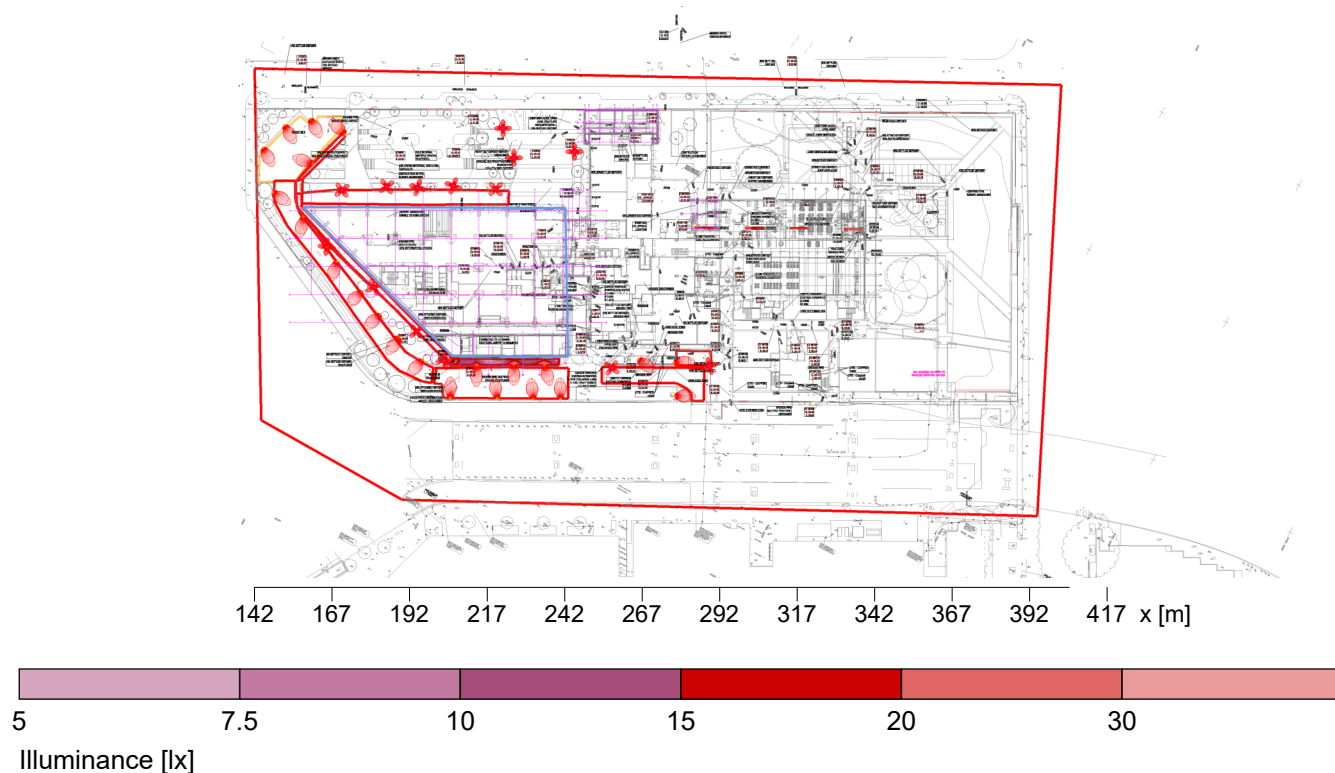
1.1 Summary, Exterior 1

1.1.9 Result overview, P2

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm

1.1 Summary, Exterior 1

1.1.10 Result overview, P3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.80

Total luminous flux	111862 lm
Total power	1191 W
Total power per area (34728.61 m²)	0.03 W/m²

Illuminance

Average illuminance	Em	14.2 lx
Minimum illuminance	Emin	6 lx
Maximum illuminance	Emax	37.1 lx
Uniformity Uo	Emin/Em	1:2.35 (0.43)
Diversity Ud	Emin/Emax	1:6.13 (0.16)

Type No. Make

- | | |
|---|--|
| BEGA | |
| 1 5 x | Order No. : !BE_24351K3.LDT |
|  | Luminaire name : CC1 |
| | Equipment : 1 x LED 21,3W 25 W / 3256 lm |
| | |
| 2 14 x | Order No. : !BE_84065K3 (1).LDT |
|  | Luminaire name : AA |
| | Equipment : 1 x LED 39W 44 W / 2641 lm |

Object : New Build Lighting Calculations
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1.1 Summary, Exterior 1

1.1.10 Result overview, P3

3	18 x	Order No.	: !BE_84247K3.LDT
		Luminaire name	: CC
		Equipment	: 1 x LED 21,3W 25 W / 3256 lm