

Stamford Road Development

Installation : Stair 02

Project number : C4C23846

Customer : Edwin McGinn

Processed by : EE

Date : 10.08.2021

Project description:

Drawing Reference: SRD-EOC-XX-ZZ-DR-S-2702-Stair-02-Plans

Rev 00 - Stair 02 calculation.

Reflectances: walls and stair threads all 50%.

Lighting Design: we are to use a MF as 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.

W.Blows

Whitecroft Lighting Ltd, Ashton-under-Lyne, Lancashire, OL7 0AX

1 Luminaire data

1.1 Whitecroft Lighting, KOLO IP65 (K6H4274KS)

1.1.1 Data sheet

Manufacturer: Whitecroft Lighting



K6H4274KS ceiling mounted luminaire **KOLO IP65**
 KOLO IP65

Surface mounted circular IP65 LED vandal resitant luminaire in 400mm diameter. Polycarbonate opal diffuser with optional 3 hour emergency.

Emergency Output - 500lm

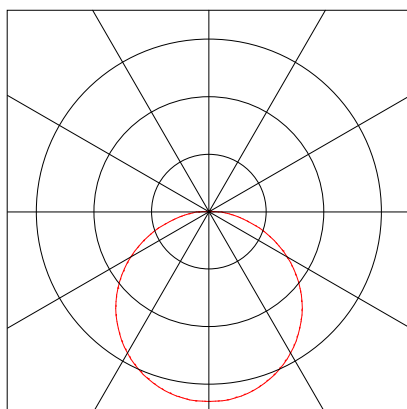
Luminaire data

Absolute Photometry
 Luminaire efficacy : 132.86 lm/W
 Classification : A40 ↓ 98.9% ↑ 1.1%
 CIE Flux Codes : 45 76 94 99 100
 UGR 4H 8H : 23.1 / 23.0
 Control gear : electronic ballast
 Power : 21 W
 Luminous flux : 2790 lm

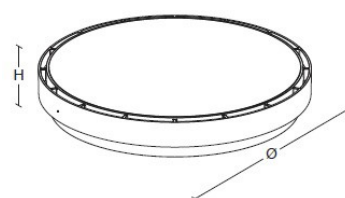
Equipped with

Quantity : 1
 Designation : LED
 Colour : 4000K
 Colour reproduction : 80

Dimensions : Ø400 mm x 95 mm



Dimensions



Version	Ø	H	KG	KG
300mm surface	300	95	2.1	2.5
400mm surface	400	95	3.5	3.9

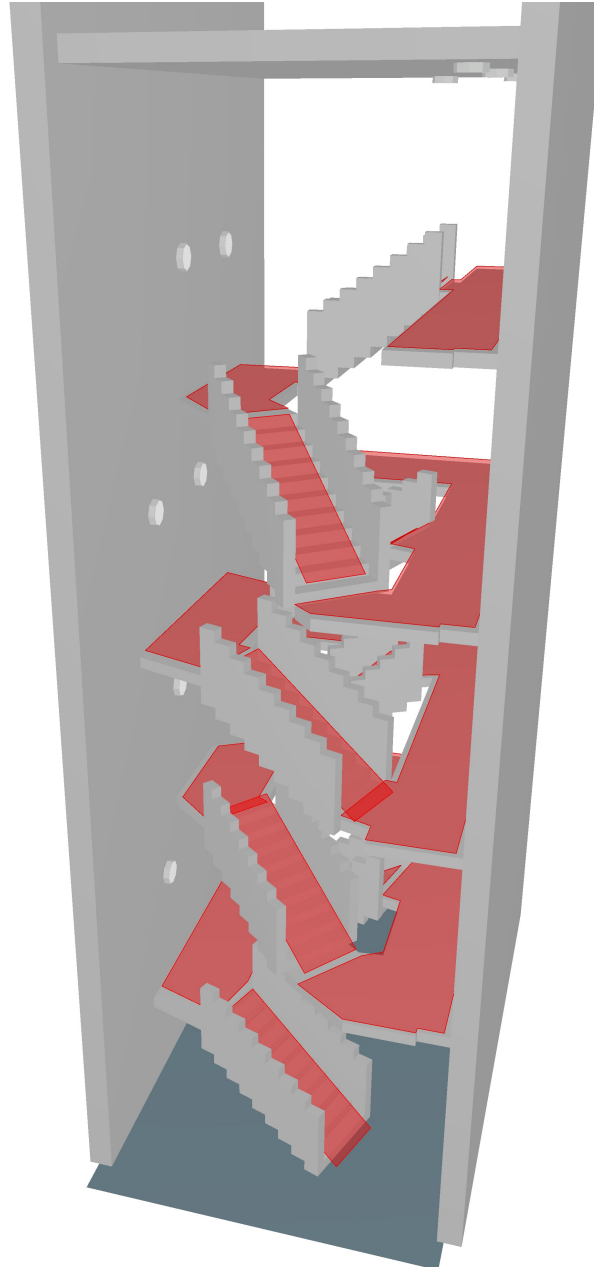
Emergency Lighting

Light source from normal operation with reduced flux
 Luminous flux : 500 lm

2 Exterior 1

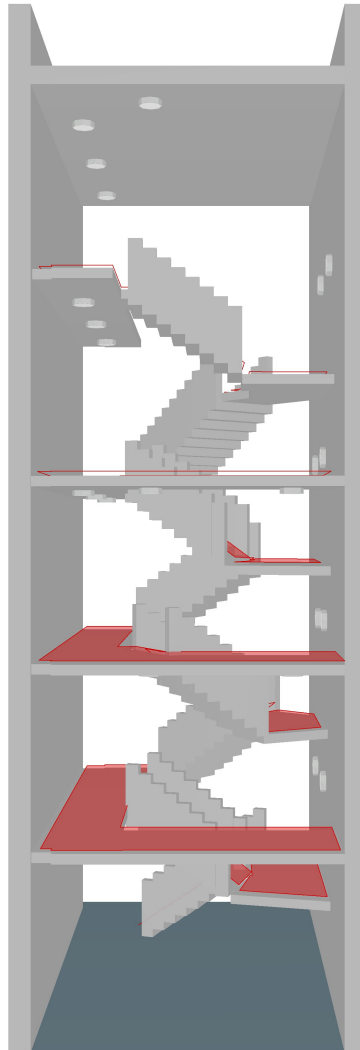
2.1 Description, Exterior 1

2.1.1 3D view, View 1



2.1 Description, Exterior 1

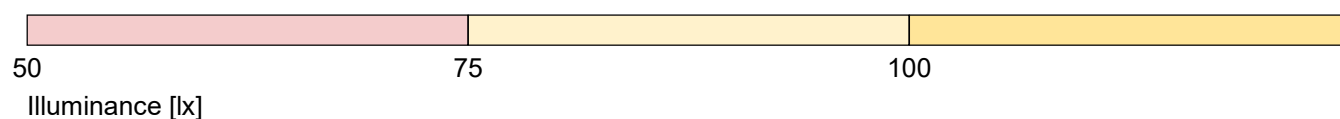
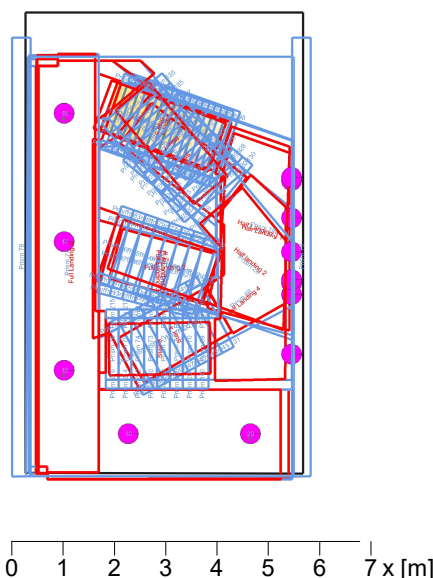
2.1.2 3D view, View from the front



2 Exterior 1

2.2 Summary, Exterior 1

2.2.1 Result overview, Stair 1



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	103 lx
Minimum illuminance	Emin	58 lx
Maximum illuminance	Emax	137 lx
Uniformity Uo	Emin/Em	1:1.77 (0.56)
Diversity Ud	Emin/Emax	1:2.37 (0.42)

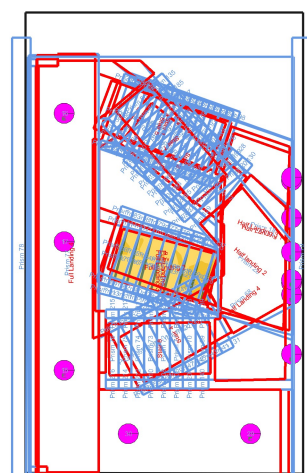
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm

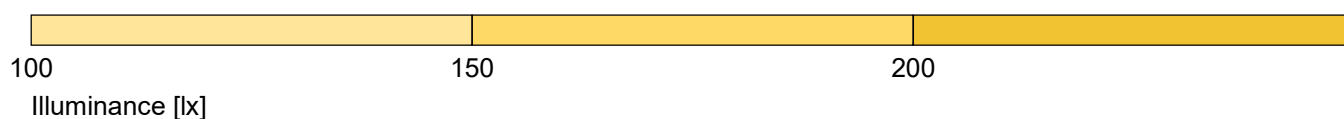


2.2 Summary, Exterior 1

2.2.2 Result overview, Stair 2



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m²)	12.99 W/m²

Illuminance

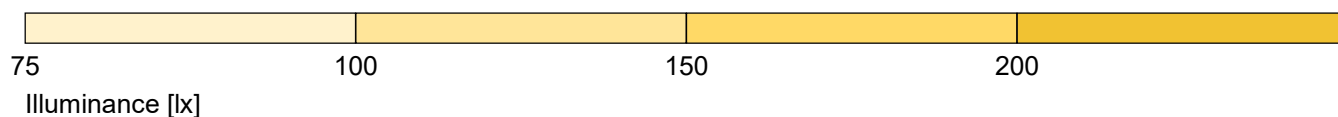
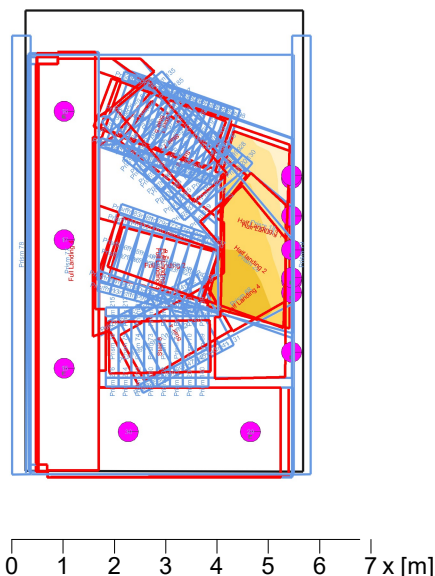
Average illuminance	Em	184 lx
Minimum illuminance	Emin	145 lx
Maximum illuminance	Emax	215 lx
Uniformity Uo	Emin/Em	1:1.27 (0.78)
Diversity Ud	Emin/Emax	1:1.49 (0.67)

Type No. Make

1	30	Whitecroft Lighting
	Order No.	: K6H4274KS
	Luminaire name	: KOLO IP65
	Equipment	: 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.3 Result overview, Half Landing 1



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 1.77 m
 0.80

Total luminous flux of all lamps
 Total power
 Total power per area (48.48 m²)

83700 lm
 630 W
 12.99 W/m²

Illuminance

Average illuminance	Em	155 lx
Minimum illuminance	Emin	76 lx
Maximum illuminance	Emax	229 lx
Uniformity Uo	Emin/Em	1:2.05 (0.49)
Diversity Ud	Emin/Emax	1:3.02 (0.33)

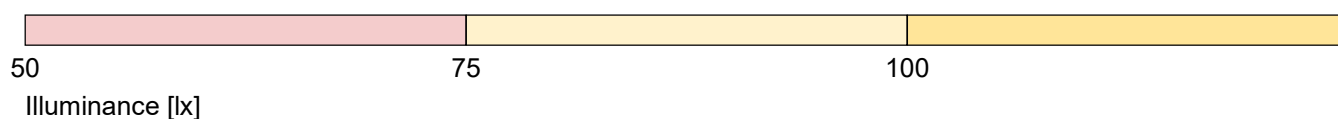
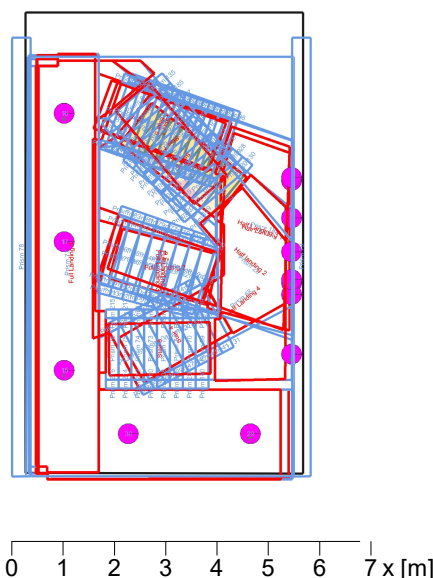
Type No. Make

1 30 **Whitecroft Lighting**
 Order No. : K6H4274KS
 Luminaire name : KOLO IP65
 Equipment : 1 x LED 21 W / 2790 lm



2.2 Summary, Exterior 1

2.2.4 Result overview, Stair 3



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	101 lx
Minimum illuminance	Emin	63 lx
Maximum illuminance	Emax	144 lx
Uniformity Uo	Emin/Em	1:1.59 (0.63)
Diversity Ud	Emin/Emax	1:2.27 (0.44)

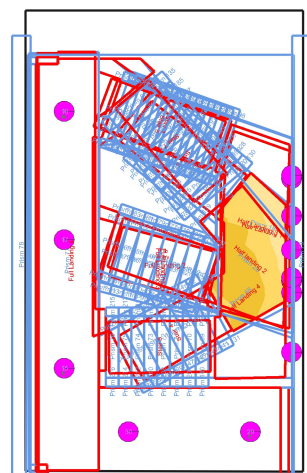
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm

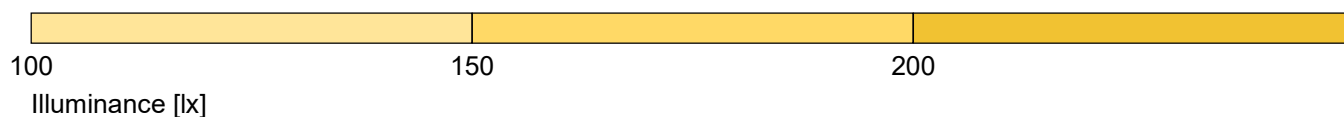


2.2 Summary, Exterior 1

2.2.5 Result overview, Half landing 2



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	4.79 m
Maintenance factor	0.80

Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

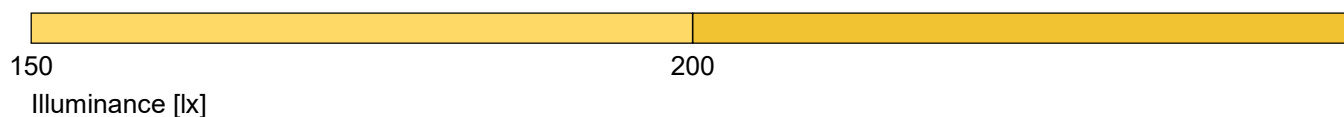
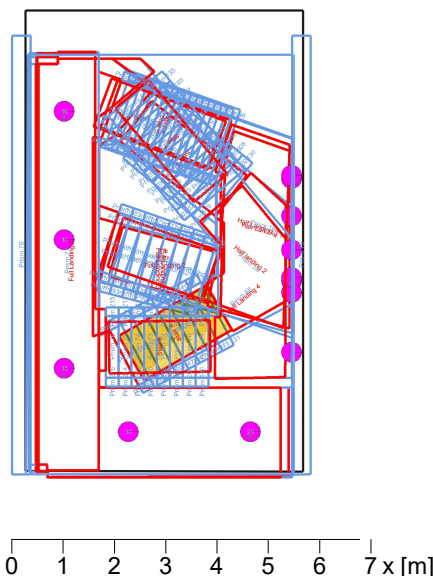
Average illuminance	Em	179 lx
Minimum illuminance	Emin	120 lx
Maximum illuminance	Emax	240 lx
Uniformity Uo	Emin/Em	1:1.49 (0.67)
Diversity Ud	Emin/Emax	1:2 (0.5)

Type No. Make

1	30	Whitecroft Lighting
	Order No.	: K6H4274KS
	Luminaire name	: KOLO IP65
	Equipment	: 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.6 Result overview, Stair 4



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	207 lx
Minimum illuminance	Emin	171 lx
Maximum illuminance	Emax	242 lx
Uniformity Uo	Emin/Em	1:1.21 (0.82)
Diversity Ud	Emin/Emax	1:1.42 (0.71)

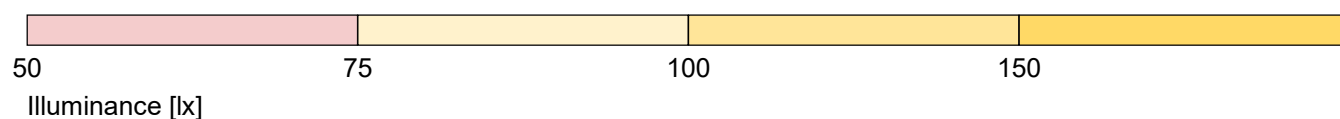
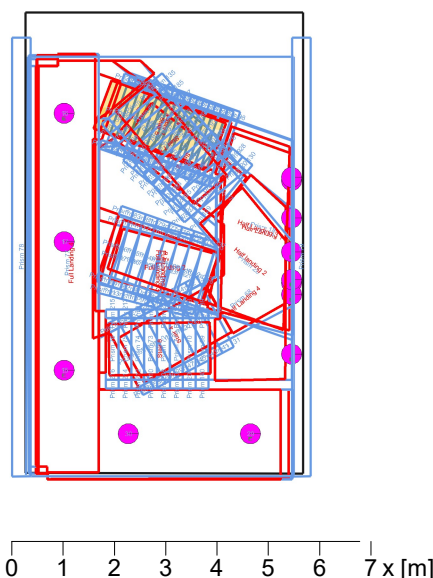
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm



2.2 Summary, Exterior 1

2.2.7 Result overview, Stair 5



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m²)	12.99 W/m²

Illuminance

Average illuminance	Em	117 lx
Minimum illuminance	Emin	66 lx
Maximum illuminance	Emax	160 lx
Uniformity Uo	Emin/Em	1:1.76 (0.57)
Diversity Ud	Emin/Emax	1:2.42 (0.41)

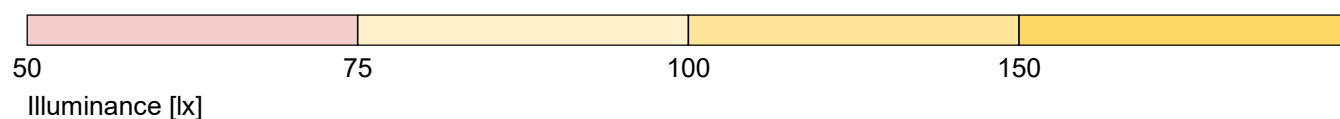
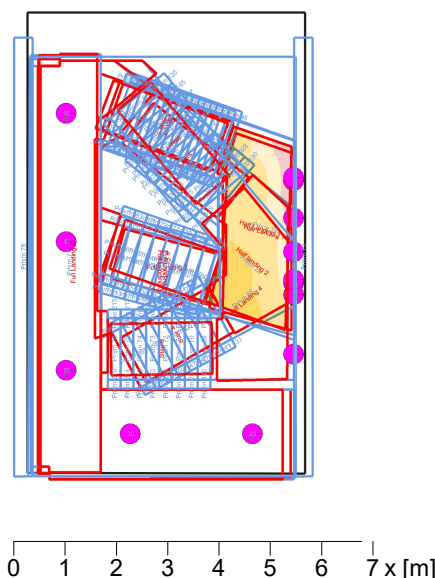
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm



2.2 Summary, Exterior 1

2.2.8 Result overview, Half Landing 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	7.88 m
Maintenance factor	0.80

Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

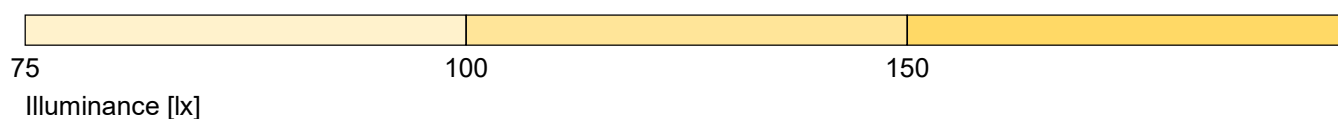
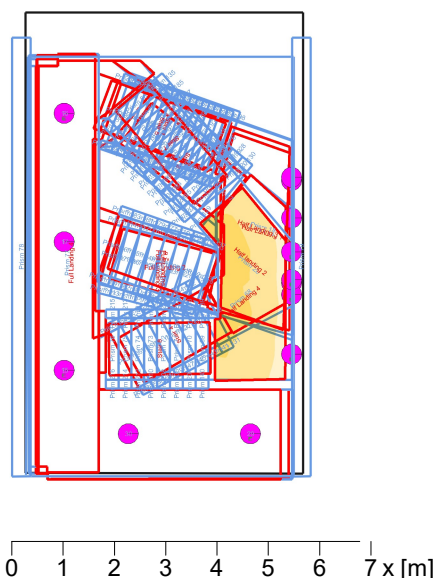
Average illuminance	Em	117 lx
Minimum illuminance	Emin	61 lx
Maximum illuminance	Emax	170 lx
Uniformity Uo	Emin/Em	1:1.92 (0.52)
Diversity Ud	Emin/Emax	1:2.79 (0.36)

Type No. Make

1 30 	Whitecroft Lighting	
	Order No.	: K6H4274KS
	Luminaire name	: KOLO IP65
	Equipment	: 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.9 Result overview, Half Landing 4



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 11.26 m
 0.80

Total luminous flux of all lamps
 Total power
 Total power per area (48.48 m²)

83700 lm
 630 W
 12.99 W/m²

Illuminance

Average illuminance	Em	128 lx
Minimum illuminance	Emin	77 lx
Maximum illuminance	Emax	169 lx
Uniformity Uo	Emin/Em	1:1.66 (0.6)
Diversity Ud	Emin/Emax	1:2.2 (0.45)

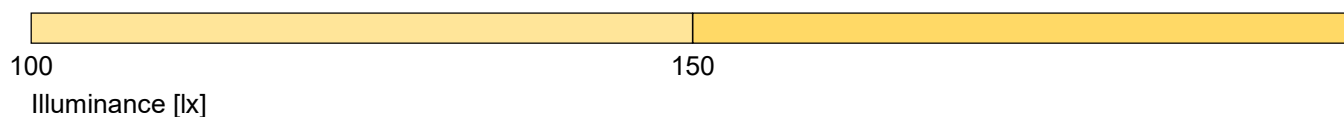
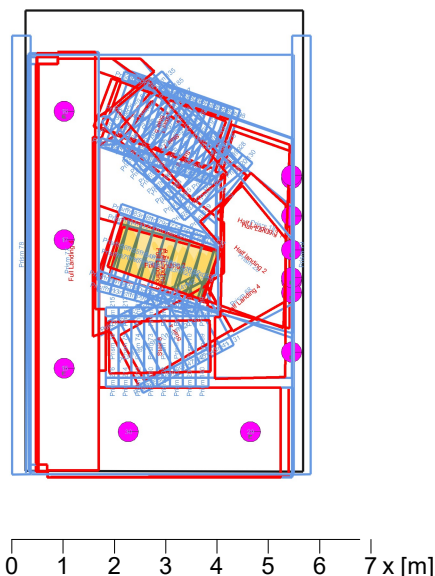
Type No. Make

1 30

Whitecroft Lighting
 Order No. : K6H4274KS
 Luminaire name : KOLO IP65
 Equipment : 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.10 Result overview, Stair 6



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	148 lx
Minimum illuminance	Emin	118 lx
Maximum illuminance	Emax	179 lx
Uniformity Uo	Emin/Em	1:1.25 (0.8)
Diversity Ud	Emin/Emax	1:1.52 (0.66)

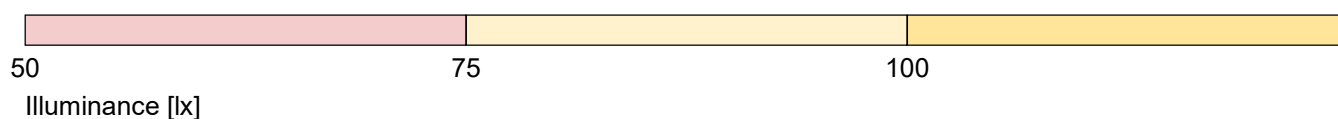
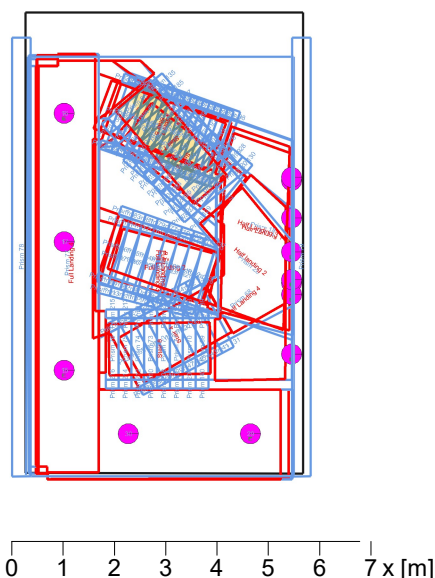
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm



2.2 Summary, Exterior 1

2.2.11 Result overview, Stair 7



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	99 lx
Minimum illuminance	Emin	70 lx
Maximum illuminance	Emax	116 lx
Uniformity Uo	Emin/Em	1:1.42 (0.7)
Diversity Ud	Emin/Emax	1:1.66 (0.6)

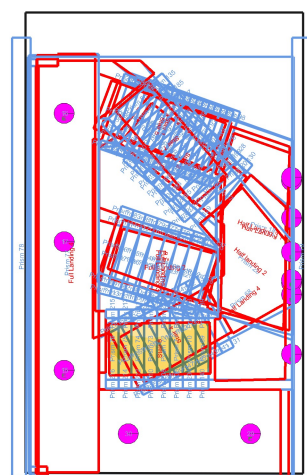
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm

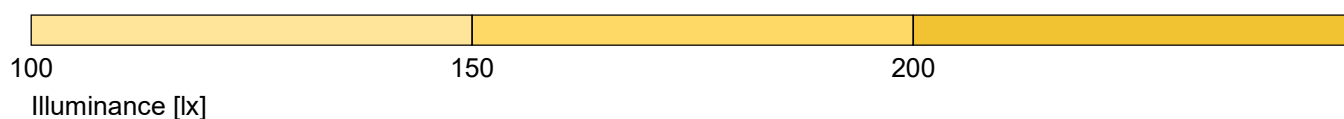


2.2 Summary, Exterior 1

2.2.12 Result overview, Stair 8



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m²)	12.99 W/m²

Illuminance

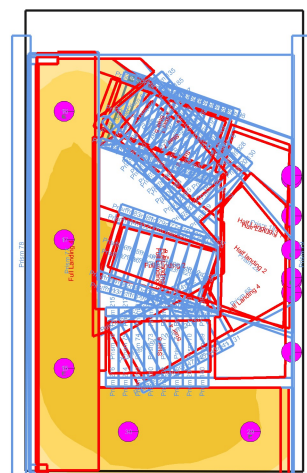
Average illuminance	Em	162 lx
Minimum illuminance	Emin	131 lx
Maximum illuminance	Emax	207 lx
Uniformity Uo	Emin/Em	1:1.24 (0.81)
Diversity Ud	Emin/Emax	1:1.59 (0.63)

Type No. Make

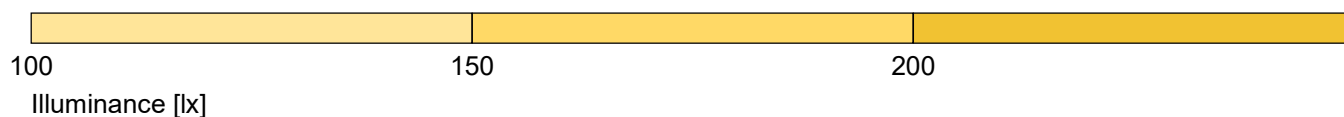
1	30	Whitecroft Lighting
	Order No.	: K6H4274KS
	Luminaire name	: KOLO IP65
	Equipment	: 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.13 Result overview, Full Landing 1



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	3.29 m
Maintenance factor	0.80

Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	198 lx
Minimum illuminance	Emin	119 lx
Maximum illuminance	Emax	244 lx
Uniformity Uo	Emin/Em	1:1.67 (0.6)
Diversity Ud	Emin/Emax	1:2.06 (0.49)

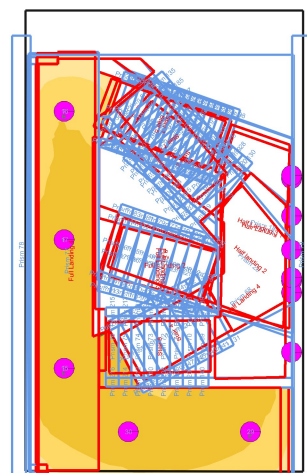
Type No.Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm

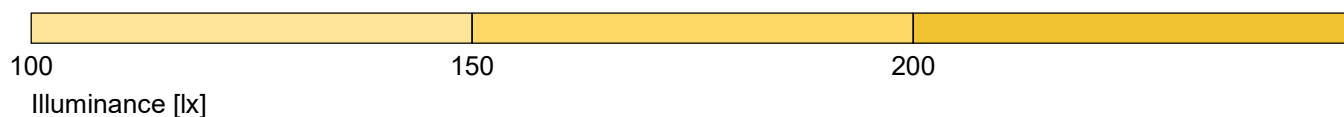


2.2 Summary, Exterior 1

2.2.14 Result overview, Full Landing 2



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m ²)	12.99 W/m ²

Illuminance

Average illuminance	Em	205 lx
Minimum illuminance	Emin	116 lx
Maximum illuminance	Emax	263 lx
Uniformity Uo	Emin/Em	1:1.76 (0.57)
Diversity Ud	Emin/Emax	1:2.26 (0.44)

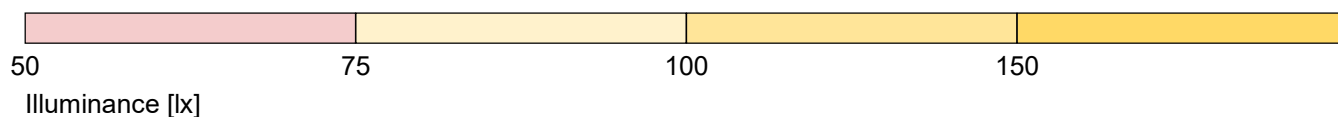
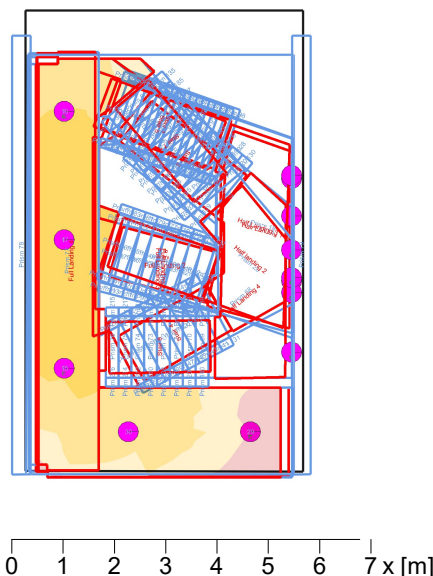
Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm



2.2 Summary, Exterior 1

2.2.15 Result overview, Full Landing 3



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 9.42 m
 0.80

Total luminous flux of all lamps
 Total power
 Total power per area (48.48 m²)

83700 lm
 630 W
 12.99 W/m²

Illuminance

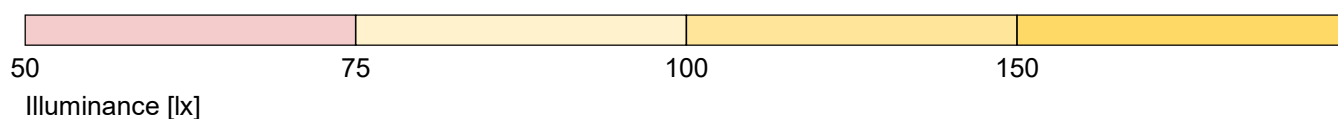
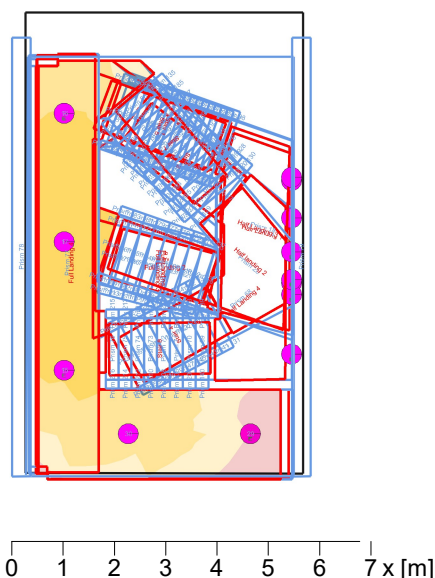
Average illuminance	Em	130 lx
Minimum illuminance	Emin	52 lx
Maximum illuminance	Emax	198 lx
Uniformity Uo	Emin/Em	1:2.49 (0.4)
Diversity Ud	Emin/Emax	1:3.81 (0.26)

Type No. Make

1 30 **Whitecroft Lighting**
 Order No. : K6H4274KS
 Luminaire name : KOLO IP65
 Equipment : 1 x LED 21 W / 2790 lm

2.2 Summary, Exterior 1

2.2.16 Result overview, Full Landing 3



General

Calculation algorithm used : Average indirect fraction
 Height of evaluation surface : 9.42 m
 Maintenance factor : 0.80

Total luminous flux of all lamps : 83700 lm
 Total power : 630 W
 Total power per area (48.48 m²) : 12.99 W/m²

Illuminance

Average illuminance	Em	130 lx
Minimum illuminance	Emin	52 lx
Maximum illuminance	Emax	198 lx
Uniformity Uo	Emin/Em	1:2.49 (0.4)
Diversity Ud	Emin/Emax	1:3.81 (0.26)

Type No. Make

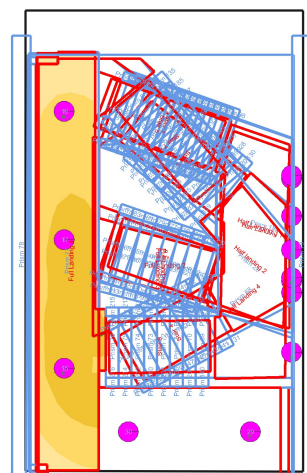
Whitecroft Lighting

1	30	Order No.	: K6H4274KS
		Luminaire name	: KOLO IP65
		Equipment	: 1 x LED 21 W / 2790 lm

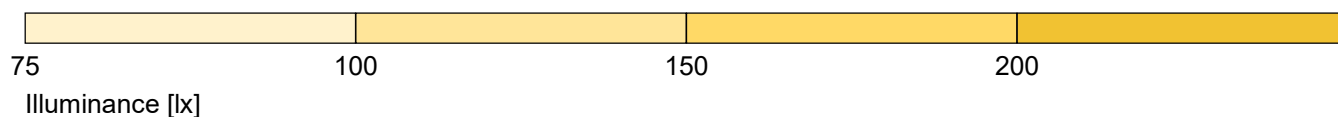


2.2 Summary, Exterior 1

2.2.17 Result overview, Full Landing 4



0 1 2 3 4 5 6 7 x [m]



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	12.78 m
Maintenance factor	0.80

Total luminous flux of all lamps	83700 lm
Total power	630 W
Total power per area (48.48 m²)	12.99 W/m²

Illuminance

Average illuminance	Em	179 lx
Minimum illuminance	Emin	100 lx
Maximum illuminance	Emax	223 lx
Uniformity Uo	Emin/Em	1:1.79 (0.56)
Diversity Ud	Emin/Emax	1:2.24 (0.45)

Type No. Make

1	30	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 2790 lm



2 Exterior 1

2.3 Summary, Exterior 1

2.3.1 Result overview (emergency lighting)

Type No.\Make

1	17	Whitecroft Lighting
		Order No. : K6H4274KS
		Luminaire name : KOLO IP65
		Equipment : 1 x LED 21 W / 500 lm

Result evaluation area

Calculation algorithm used: Direct component
 Maintenance factor: 0.8

Emergency area:

No.	Default[lx]	Emin[lx]	Surface Emax[lx]	Diversity	Height
Stair 1					
1	1.0	3.5	14.5	1: 4.19	0.13
Stair 2					
2	1.0	8.2	19.1	1: 2.34	1.86
Half Landing 1					
3	1.0	1.8	20.2	1: 11.09	1.77
Stair 3					
4	1.0	3.0	13.3	1: 4.41	3.31
Half landing 2					
5	1.0	3.7	20.9	1: 5.67	4.79
Stair 4					
6	1.0	14.8	23.2	1: 1.57	4.94
Stair 5					
7	1.0	3.8	18.8	1: 4.95	6.30

2 Exterior 1

2.3 Summary, Exterior 1

2.3.1 Result overview (emergency lighting)

Half Landing 3					
8	1.0	2.0	17.7	1: 8.72	7.88
Half Landing 4					
9	1.0	4.3	19.2	1: 4.49	11.26
Stair 6					
10	1.0	10.5	18.2	1: 1.74	7.98
Stair 7					
11	1.0	4.2	17.0	1: 4.03	9.66
Stair 8					
12	1.0	13.5	24.4	1: 1.81	11.44
Full Landing 1					
13	1.0	1.3	19.9	1: 14.96	3.29
Full Landing 2					
14	1.0	7.0	23.7	1: 3.41	6.35
Full Landing 4					
15	1.0	7.6	18.1	1: 2.37	12.78