



TECHNICAL SUBMITTAL

Project: Fourways House, Manchester

Project No: F3-24-007

General & Emergency Lighting

Document Ref: TS-002

Issue Date: 22.3.24

Revision: 1

TECHNICAL SUBMITTAL

Doc Ref;	Equipment;	Revision No:	Date of Issue;	Response Req'd By;
TS-002	General & Emergency Lighting	1	22.3.24	29.3.24

Attached Documents;

- General & Emergency Lighting Lux Calcs
- Zliss 2023 INDI Datasheet
- CWWOOD SP4747 14W Downligh Datasheet
- EBDSM-PRM Technical Specs sheet (Toilet Areas & Small Rooms Only)

Distribution;

Client

Principal Contractor

Consultant

Comments;

Status / Approval;

A	☐	B	☐	C	☐
Approved		Approved Subject to Comments		Rejected	

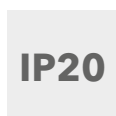
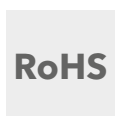
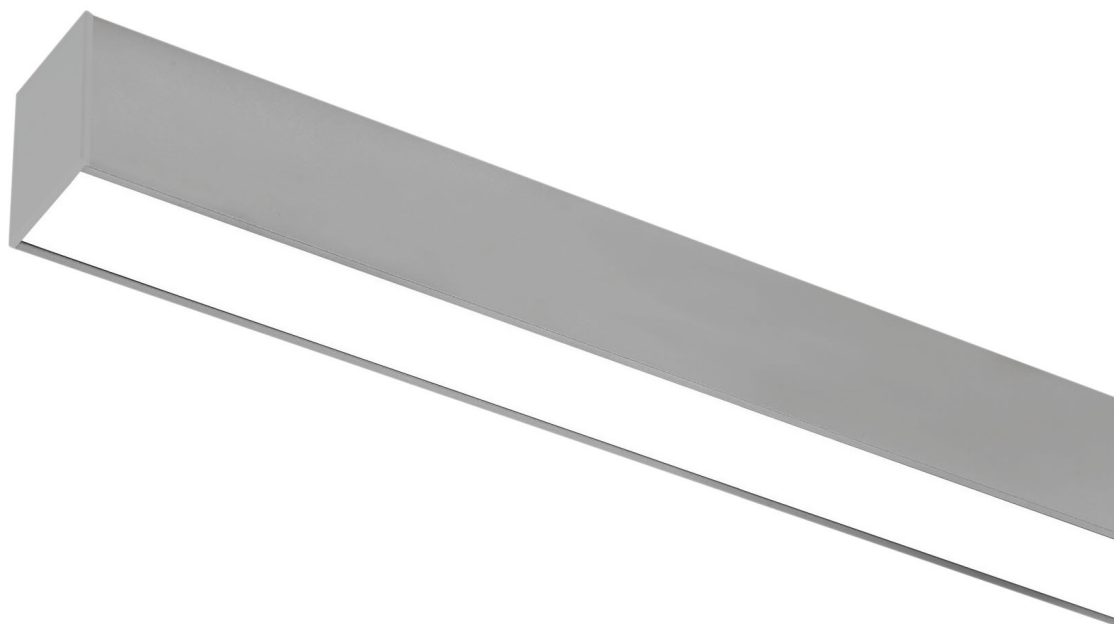
Signature *B Lester*

Print B Lester

Date: 22.3.24

Company: Cubic Works

IF THIS DOCUMENT IS NOT RETURNED WITHIN THE REQUIRED PERIOD SET IN THE CONTRACT DOCUMENTS, THEN THIS SUBMITTAL SHALL BE DEEMED TO BE ACCEPTED AS STATUS 'A'



INDI

L80 B10 > 72 000h | SDCM 3 | LLMF 85% | CRI 84

PRODUCT NAME	POWER CONSUMPTION	LUMEN OUTPUT*	EFFICACY*	PRODUCT SIZE	ORDER REFERENCE
INDI 15	13W	1230 Lm	94 lm/W	545 x 57 x 75 mm	INDI15
INDI 25	25W	2560 Lm	102 lm/W	1085 x 57 x 75 mm	INDI25
INDI 40	36W	3940 Lm	109 lm/W	1625 x 57 x 75 mm	INDI40
INDI 50	48W	5320 Lm	110 lm/W	2170 x 57 x 75 mm	INDI50

*Values are given for colour temperature of 4000K / HEX diffuser, and may vary for other options

MATERIALS

CASING - electrostatically painted aluminium; standard colour - grey

DIFFUSER - PMMA

INSTALLATION

Surface mounted

Suspended

ORDER CODE

COLOUR TEMPERATURE

3000K 3K

4000K 4K

DRIVER TYPE

Standard ST

Dimming - DALI DL

DIFFUSER

Microprismatic HEX

Opal OPQ

Parabolic Louvers PAR

CASING COLOUR

Grey GR

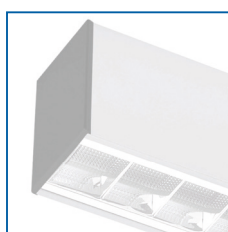
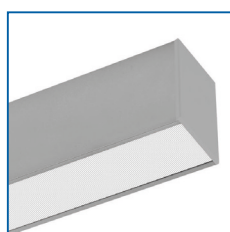
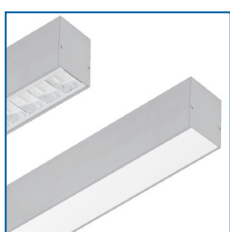
White WH

Black BL

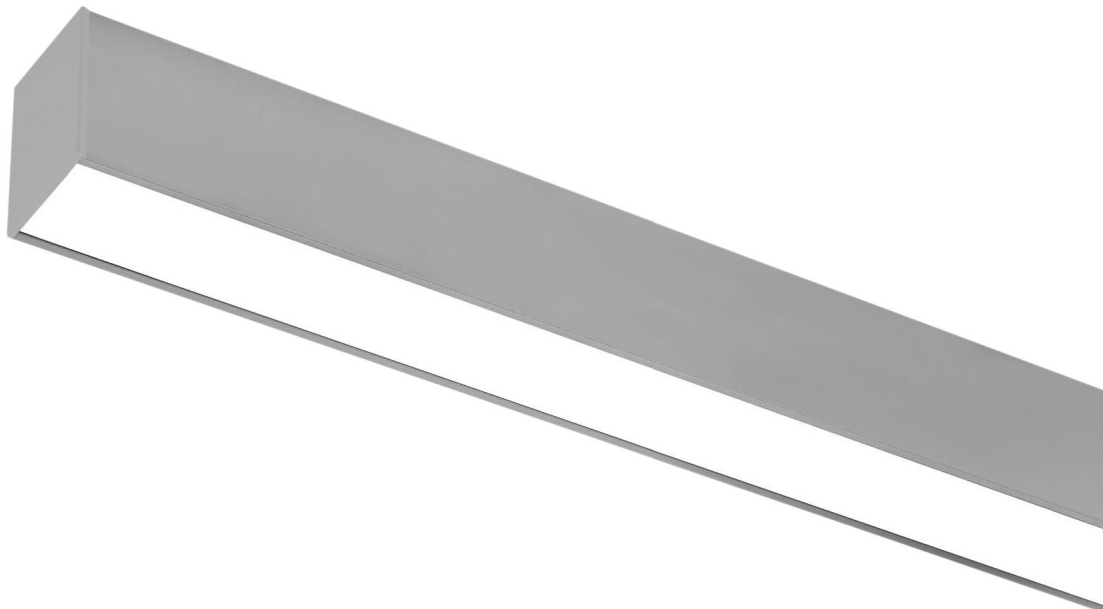
Custom RAL

EMERGENCY MODULE

3 hr EM



Order code example: **INDI40-4K-ST-HEX-GR-EM**

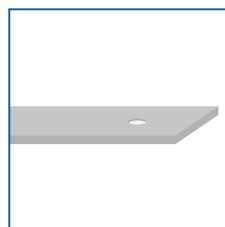
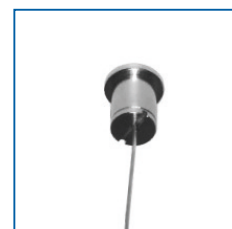
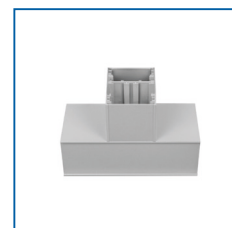
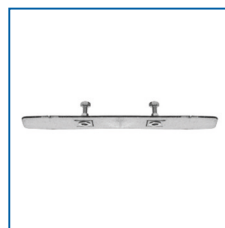
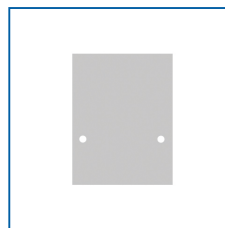


INDI

FIXINGS

	INFO	CODE
End Cap	Single/Metal*	INDI-ENDCAP
	Single/PC	INDI-ENDCAP-S
Joints	Inline	INDI-JOINT-I
	Surface Mounting Bracket*	INDI-JOINT-S
	Corner 90°*	INDI-JOINT-C
	T-joint*	INDI-JOINT-T
Suspension Kit	Simple INOX	ZLISS-INOX
	Electrical*	ZLISS-SUSP
Upper Masking Cover	545 mm*	INDI15-BACK
	1085 mm*	INDI25-BACK
	1625 mm*	INDI40-BACK
	2170 mm*	INDI50-BACK

*Any RAL colour option available. Order example: **INDI-ENDCAP-GR**



Commercial downlights specification sheet



High Performance UGR19 (using insert accessory) Downlight

Features

IP rating	IP65
CSP Switchable	Single CCT
UGR	>22 (as std) <19 (with insert)
Sensor Option	On Request
Dimmable Option	Yes (DALI-2, PUSH-DIM)
LED Lifetime	80,000h L80
CRI	80 Ra
SDCM	4 SDCM
Emergency Option	Yes, using converter

Installation information

Install Connector Type	Push-fit terminal, loop-in/loop-out
Insulation Coverable	Luminaire: yes Driver: no
Cut Out Size	165-200mm
Inrush Current	6.9A 0.3ms
Construction Material	ADC12 Aluminium Housing, Polycarbonate+PET Diffuser, TP(a) Thermoplastic
Weight	0.55
Maximum Ambient Temperature	-20°C to +40°C
Electric Class (1, 2, 3)	2

Photometrics @ 25°C

Product code	Finish	Feature I	Feature II	W	Colour	Beam	lm	lm/W	EM
SP4747	White RAL9003	On-Off	Driver Included	14W	4000K	80°	2000	142	See Accessories
SP4748	White RAL9003	On-Off	Driver Included	25W	4000K	80°	3500	140	See Accessories
SP4747X	White RAL9003	Dimmable	Driver Excluded Use THP23DD	14W	4000K	80°	2000	142	See Accessories
SP4748X	White RAL9003	Dimmable	Driver Excluded Use THP4DD	25W	4000K	80°	3500	140	See Accessories

Wiring information

Cable / Flying Lead	0.75-2.5mm ²
Type of Wiring Required	Parallel

Accessories

UGR19 Insert, THP3 + THP4	Sold Separately
DALI-2/PUSH-DIM Driver	Sold Separately
DALI-2/PUSH-DIM Driver	Sold Separately
Emergency converter, Self-test, 220lm	Sold Separately
Emergency converter, DALI Addressable, 220lm	Sold Separately
White, Man-Test, 120(O) or 130(C) lm	Sold Separately
42W CC Driver, IP20, 300-1050mA	Sold Separately



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Guarantee

5 years (product), 3 years (emergency)
2 years on-site

Features & benefits

Highly efficient 142 lm/W ensures low running costs

IP65 protected as standard against water jets, suitable for bathroom zone I

UGR19 compliant low glare lighting when insert is used

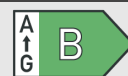
Circular economy design by Collingwood, enables the product to be disassembled quickly for easy upgrade of the LEDs and driver or recycling at end of life

TP(a) Thermoplastic

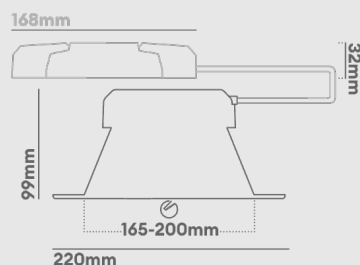
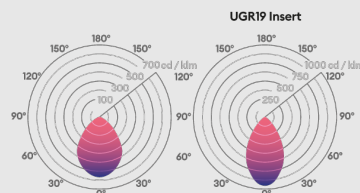
850° Glow Wire Test

2-part first/second fix connector available on request for easy maintenance

Light source
energy efficiency:



Beam angle: 80°





These compact detectors provide automatic control for lighting, heating and ventilation loads. This detector is available either as a flush mount or as a surface mounted version.

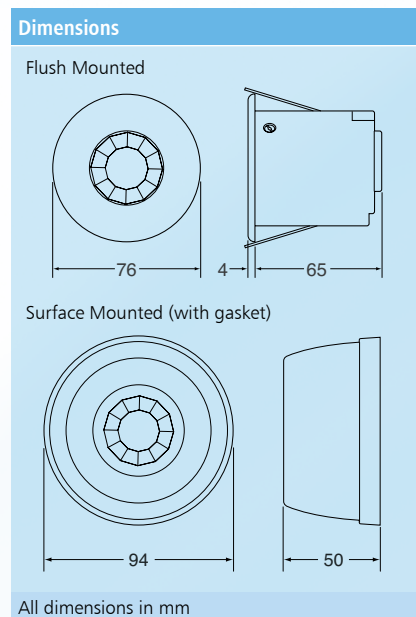
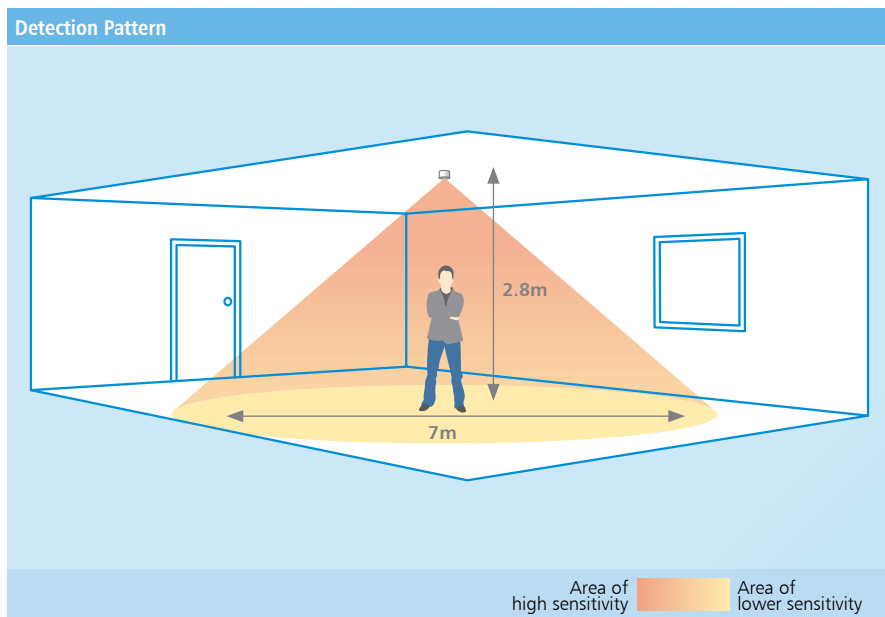
Key Product Features	
Flush mount	Surface mounted
Low profile design	IP55 rated
Self contained unit	Self contained unit
Pluggable	Easy to install via a back plate

Switching Detectors	
Basic version functionality	B 
Switching with lux level sensing (manual adjustment)	
Time delay function (manual adjustment)	
Presence detection switching	
PRM version functionality (in addition to Basic)	PRM 
Switching with lux level sensing (IR handset adjustment)	
Active photocell	
Time delay function	
Presence detection switching	
Absence detection switching	
Programmable via IR handset	
Adjustable detection sensitivity	
On/off override via optional IR handset	
Manual on/off override via switch input	

Dimming Detectors	
DD and AD version functionality (in addition to PRM)	
Dimming functionality	
Two channel flexibility	
Step-down illuminance	
Maintained illuminance (daylight harvesting)	
Scene setting and recall	
Burn in feature for fluorescent tubes	
Control of DALI, DSI or 1–10V loads depending on product	
Integral relay to reduce parasitic power	
Suitable for all lighting types	
Manual dimming with IR	
Manual dimming with switch inputs	

Selected switching detectors are available with the following options	
Low voltage 12–24V AC/DC	
Voltage free Contact	
2 channel	
2 channel normally closed for fail safe applications	
Contact our sales office for the variants available	

 Learn more about detector types on pages 11–13



	Order Code	Description	Load Rating at 230VAC					Time Delay
			R	I	F	CF	LED	
B	EBDSPIR	Compact PIR presence detector with lux level sensing and time delay function. Manual adjustment only	8A	8A	6A	3A	3A	10s–30m
	EBDSPIR-L3	As EBDSPIR plus pre-wired with 3m lead. Manual adjustment only	8A	8A	6A	3A	3A	10s–30m
	EBDSPIR-IP	As EBDSPIR plus suitable for damp environments (IP55). Manual adjustment only	8A	8A	6A	3A	3A	10s–30m
PRM	EBDSPIR-PRM	Compact PIR presence/absence detector with lux level sensing, time delay function and infrared override	10A	10A	10A	10A	10A	10s–99m
	EBDSPIR-PRM-L3	As EBDSPIR-PRM plus pre-wired with 3m lead	10A	10A	10A	10A	10A	10s–99m
	EBDSPIR-PRM-IP	As EBDSPIR-PRM plus suitable for damp environments (IP55)	10A	10A	10A	10A	10A	10s–99m
	EBDSM-PRM	Surface mounted PIR presence/absence detector with lux level sensing, time delay function and infrared override	10A	10A	10A	10A	10A	10s–99m
	EBDSPIR-DD	PIR presence/absence detector with Direct Dim and time delay function (up to 20 ballasts). DALI/DSI	10A	10A	10A	10A	10A	10s–99m
	EBDSM-DD	Surface mounted PIR presence/absence detector with Direct Dim and time delay function (up to 20 ballasts). DALI/DSI	10A	10A	10A	10A	10A	10s–99m
	EBDSPIR-AD	Presence detector with 1–10V analogue dimming output (up to 10 ballasts)	10A	10A	10A	10A	10A	10s–99m
	EBDSM-AD	Surface mounted Presence detector with 1–10V analogue dimming output (up to 10 ballasts)	10A	10A	10A	10A	10A	10s–99m

R = Resistive I = Incandescent F = Fluorescent CF = Compact Fluorescent

Accessories	Description
	UNLCDHS Professional commissioning handset. See page 16
	UHS5 Commissioning handset. See page 15
	UHS6 Building manager's handset. See page 15
	UHS7 User handset. See page 15
	DBB Surface mount back box
	DBB-EXT Surface mount back box extender

Fourways House, Manchester

Installation : General & Emergency Lighting

Project number : Rev-B
Customer : Cubicworks
Processed by : Elliot Nixon
Date : 27.02.2024

We have the pleasure in attaching our Lighting Design for the aforementioned project for your approval. Illuminance and uniformity levels are shown for your approval with calculations having been carried out as per the information, drawings and / or specifications details provided. Please check to confirm that all details are correct, especially dimensions of the room(s) and fitting specification to ensure these are as required. In the absence of a written specification areas will be illuminated to the recommended standards according to their primary function. Areas are generally to be open without any obstructions above the working plane unless otherwise advised.

Where applicable the design conforms to the latest recommendations and guidelines. If conformity to LG7 is to be proved with exact figure, we may need to add or change the luminaire types. We have used common design parameters for ceiling heights and reflectance's of room surfaces- (wall 50% ceiling 70% floor 20%) as well as maintenance factors (LED light source up to 0.9), in our calculations unless details were provided otherwise.

Please note that it is the installers responsibility to check and confirm TP(a) and TP(b) requirements as per Building Regulations Approved Document B Fire Safety 2006 with amendments 2010-2013. Compliant luminaires will generally be proposed dependant on the application and / or area type. Should the product specified by us be subsequently replaced with an inferior / non compliant product type - any liability and / or cost incurred for subsequent remedial work required would be the responsibility of the client.

Emergency lighting will be designed to the recommended guidelines set out in BS5266. Provision for High Risk areas will be made ONLY where obvious and / or those identified by the client. It is the responsibility of the Purchaser / Installer to ensure that the design complies with local fire and health and safety regulations. In the event that the design is not found to comply we will adjust the design in consultation with the customer to ensure that it does comply with such regulations. Please be aware of the Part L2 requirements and check that conformity has been met where required.

The following calculations are based on manufacturer lamp / luminaire data however, in practice gradual divergencies can occur. Specific site conditions (such as ambient temperature) can also effect the performance of luminaires and any such adverse conditions should be detailed prior to calculations being carried out to ensure adequate provision has been made for these.

Whilst every effort will be made to adhere to the written or product specification provided, it is always the responsibility of the customer to ensure that any design scheme, specification and / or product supplied satisfies fully and complies with the end users requirements and is suitable for the installation - If unsure of any suggested fittings it is advisable to order samples in advance following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergencies can occur.

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

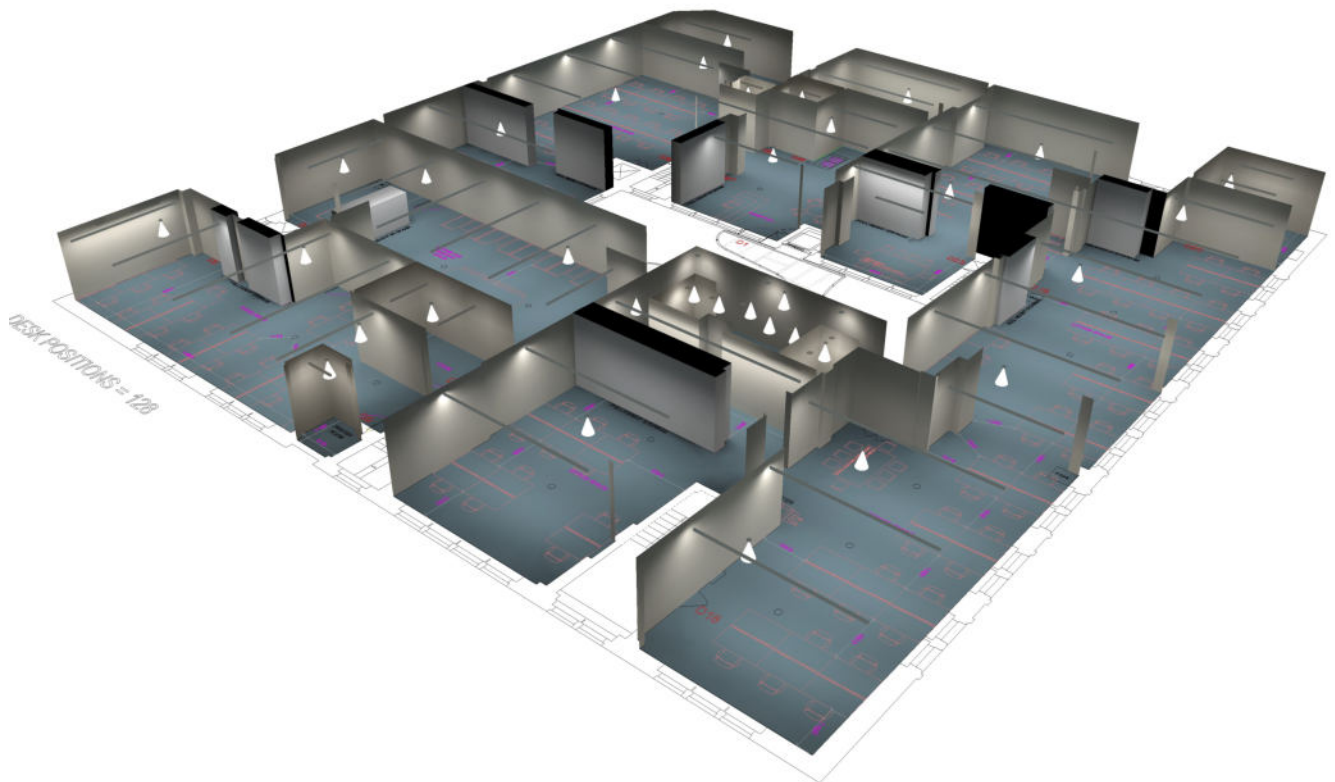
This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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.

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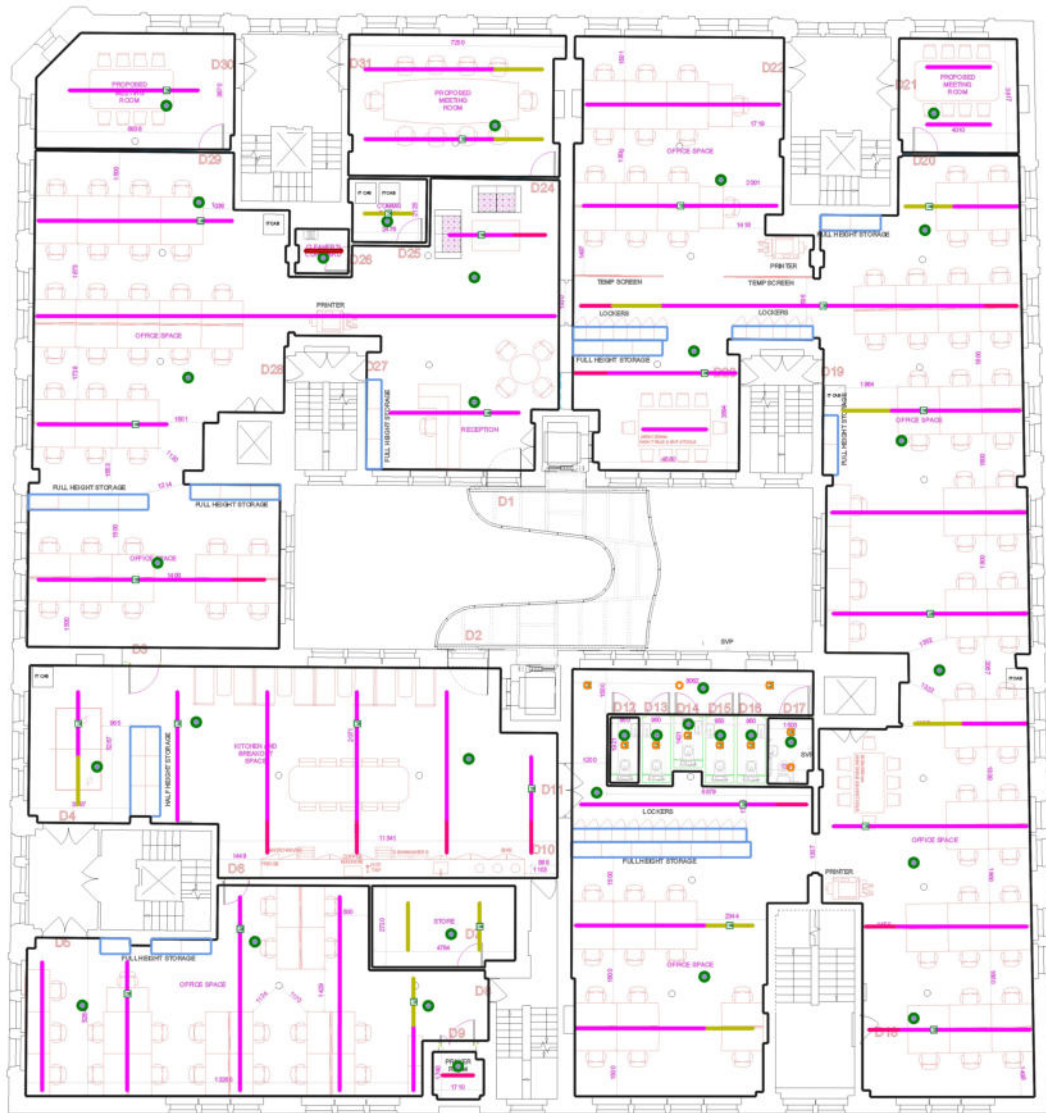
Description, Fourways House

.1 Floor 3D



Description, Fourways House

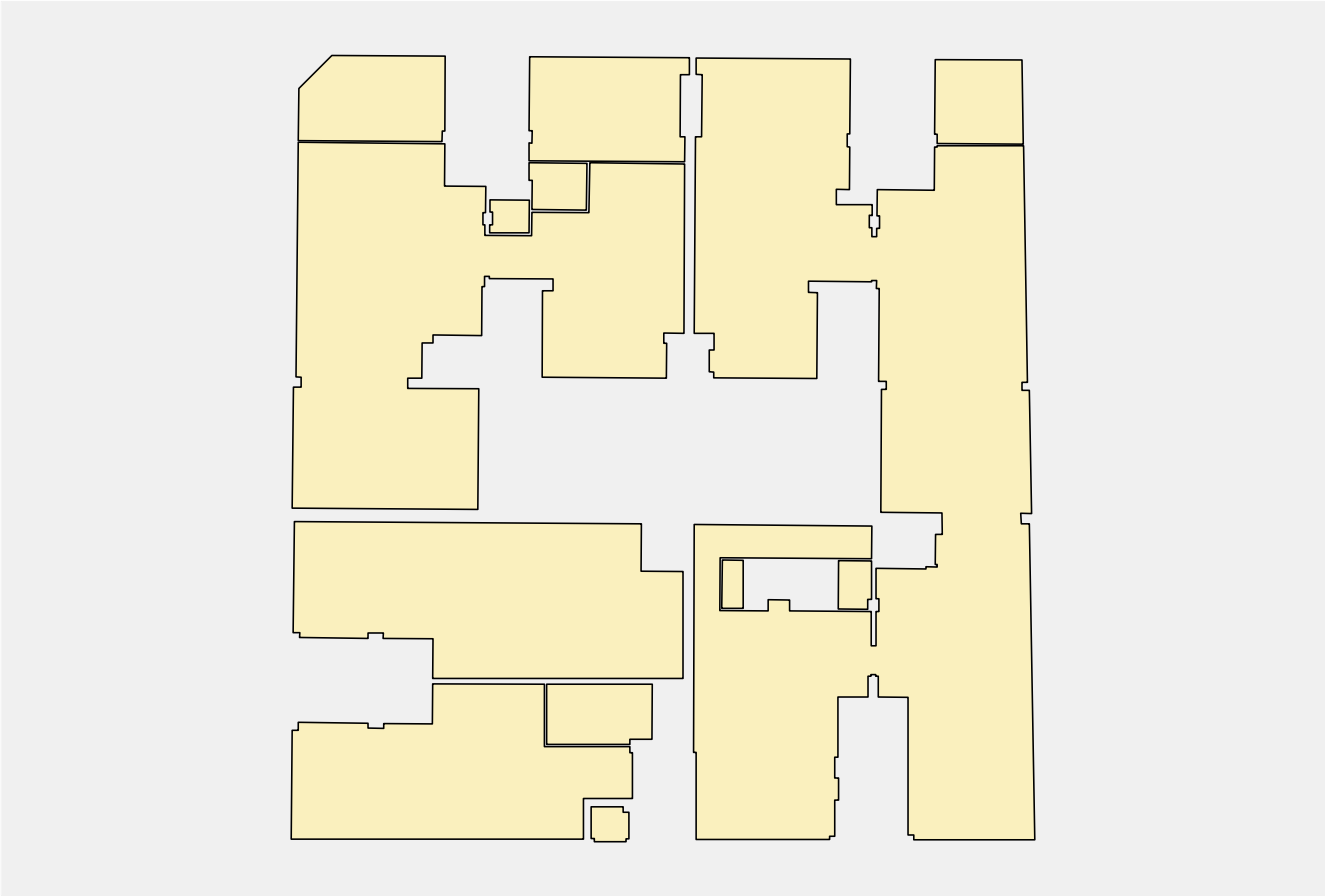
.2 Floor plan



DESK POSITIONS = 128

Summary, Fourways House

.3 Floor overview



Number of rooms	13	Calculated
Total area	862 m²	
Number of luminaires	123	
Number of sensors	34	
Total luminous flux	526980 lm	
Total power	5078 W	
Total power per area	5.89 W/m²	

Parts list

Type No. Make

ZLISS			
1	13E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	86E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)
5	13 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

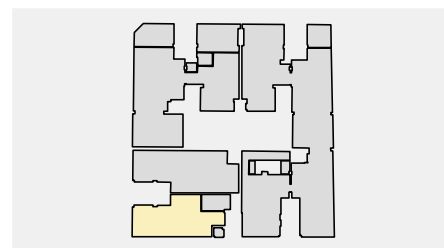
Summary, Fourways House

.3 Floor overview

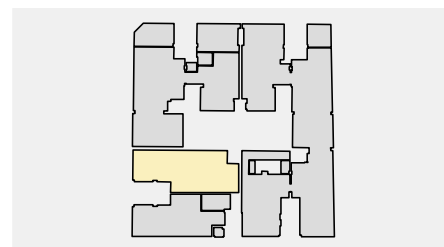
		Collingwood	
3	10E x	Order No.	: SP4747 14W DOWNLIGHT
		Luminaire name	: SP4747
		Equipment	: 1 x LED 14 W / 2000 lm
		Emergency	: 220 lm (11.0 %)
4	1 x	Order No.	: SP3246 4FT ANTI-CORROSIVE
		Luminaire name	: SP3246
		Equipment	: 1 x LED 0 17 W / 2500 lm
		B.E.G. LUXOMAT	
1	34 x	Order No.	: 92550
		Luminaire name	: PD2-M-1C
		--	--

Rooms

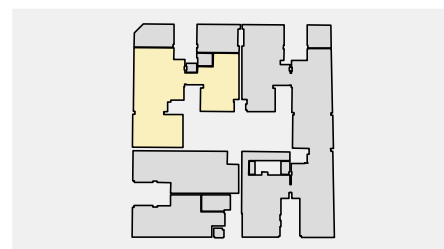
Office Space	12 x Luminaires 3 x Sensors
Total luminous flux	58130 lm
Total power	564 W
Total power per area (82 m²)	6.90 W/m²
$\bar{E}_m$	430 lx
E_{min}	149 lx
$E_{min}/\bar{E}_m (U_o)$	0.35
RUG	---



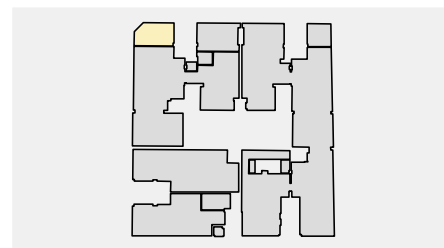
Kitchen/Breakout Space	15 x Luminaires 3 x Sensors
Total luminous flux	62700 lm
Total power	616 W
Total power per area (109 m²)	5.66 W/m²
$\bar{E}_m$	464 lx
E_{min}	221 lx
$E_{min}/\bar{E}_m (U_o)$	0.48
RUG	<=25.9



Office Space/Reception	21 x Luminaires 5 x Sensors
Total luminous flux	98810 lm
Total power	962 W
Total power per area (191 m²)	5.03 W/m²
$\bar{E}_m$	346 lx
E_{min}	118 lx
$E_{min}/\bar{E}_m (U_o)$	0.34
RUG	---



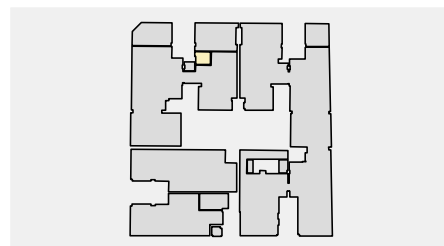
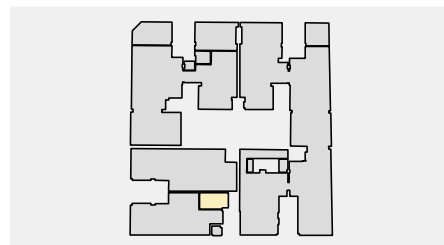
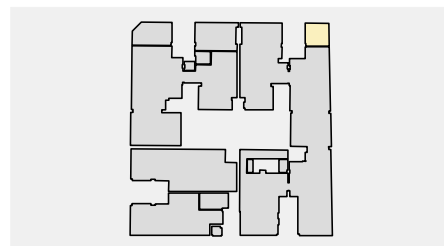
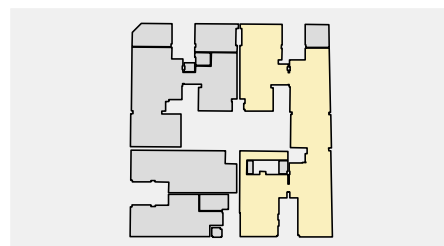
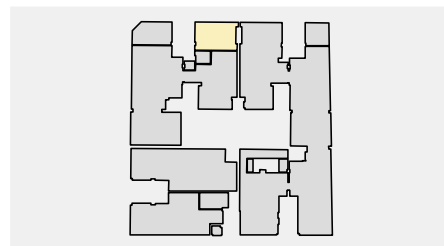
Meeting Room	2 x Luminaires 1 x Sensors
Total luminous flux	9900 lm
Total power	96 W
Total power per area (24 m²)	3.92 W/m²
$\bar{E}_m$	335 lx
E_{min}	159 lx
$E_{min}/\bar{E}_m (U_o)$	0.47
RUG	<=24.5



Summary, Fourways House

.3 Floor overview

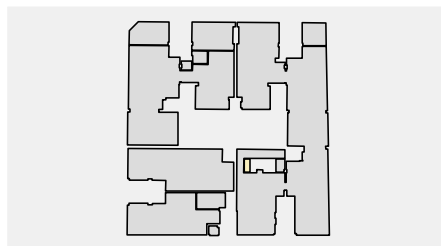
Meeting Room 2	6 x Luminaires 1 x Sensors
Total luminous flux	27160 lm
Total power	264 W
Total power per area (33 m ²)	8.05 W/m ²
$\bar{E}_m$	609 lx
E_{min}	450 lx
$E_{min}/\bar{E}_m (U_o)$	0.74
RUG	<=25.5
Office Space 2	53 x Luminaires 10 x Sensors
Total luminous flux	230460 lm
Total power	2232 W
Total power per area (379 m ²)	5.89 W/m ²
$\bar{E}_m$	419 lx
E_{min}	109 lx
$E_{min}/\bar{E}_m (U_o)$	0.26
RUG	---
Proposed Meeting Room	2 x Luminaires 1 x Sensors
Total luminous flux	9900 lm
Total power	96 W
Total power per area (15 m ²)	6.35 W/m ²
$\bar{E}_m$	433 lx
E_{min}	326 lx
$E_{min}/\bar{E}_m (U_o)$	0.75
RUG	<=24.0
Store	2 x Luminaires 1 x Sensors
Total luminous flux	7360 lm
Total power	72 W
Total power per area (13 m ²)	5.63 W/m ²
$\bar{E}_m$	335 lx
E_{min}	262 lx
$E_{min}/\bar{E}_m (U_o)$	0.78
RUG	<=24.0
Comms Room	1 x Luminaires 1 x Sensors
Total luminous flux	3680 lm
Total power	36 W
Total power per area (5 m ²)	6.70 W/m ²
$\bar{E}_m$	316 lx
E_{min}	238 lx
$E_{min}/\bar{E}_m (U_o)$	0.75
RUG	10.0
Cleaners Cupboard	1 x Luminaires 1 x Sensors
Total luminous flux	2500 lm
Total power	17 W
Total power per area (3 m ²)	6.60 W/m ²
$\bar{E}_m$	209 lx
E_{min}	186 lx
$E_{min}/\bar{E}_m (U_o)$	0.89
RUG	10.0



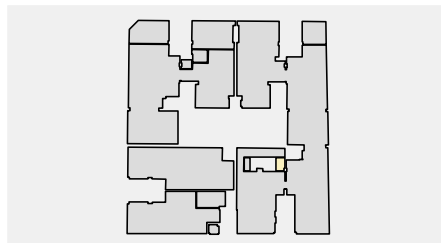
Summary, Fourways House

.3 Floor overview

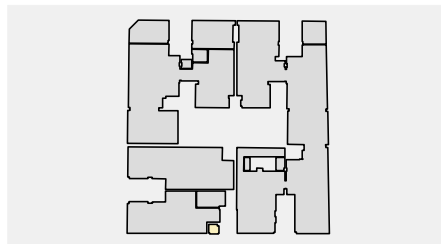
WC Cubicle	5 x Luminaires 5 x Sensors
Total luminous flux	10000 lm
Total power	70 W
Total power per area (2 m ²)	33.40 W/m ²
$\bar{E}_m$	154 lx
E_{min}	124 lx
$E_{min}/\bar{E}_m (U_o)$	0.81
R _{UG}	10.0



Disabled WC	2 x Luminaires 1 x Sensors
Total luminous flux	4000 lm
Total power	28 W
Total power per area (3 m ²)	8.67 W/m ²
$\bar{E}_m$	280 lx
E_{min}	255 lx
$E_{min}/\bar{E}_m (U_o)$	0.91
R _{UG}	10.0



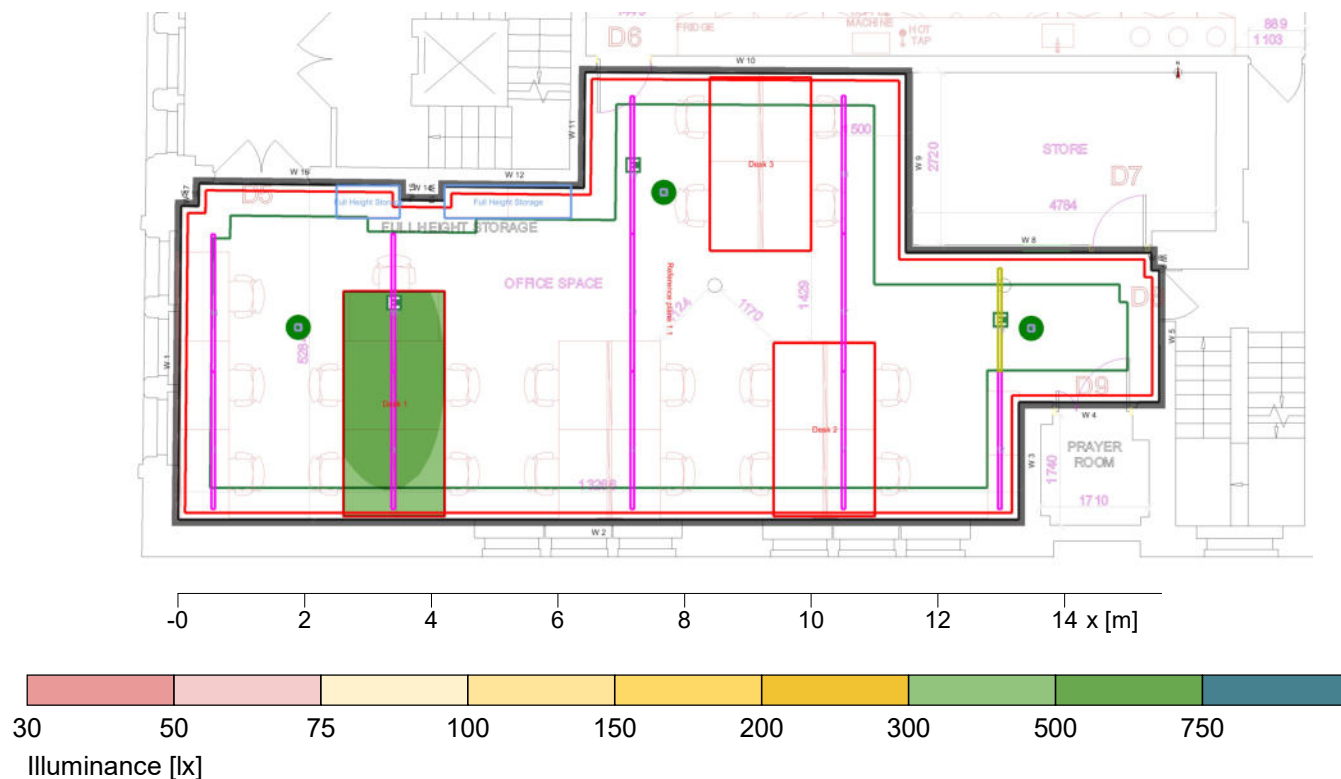
Prayer Room	1 x Luminaires 1 x Sensors
Total luminous flux	2380 lm
Total power	25 W
Total power per area (3 m ²)	9.57 W/m ²
$\bar{E}_m$	277 lx
E_{min}	247 lx
$E_{min}/\bar{E}_m (U_o)$	0.89
R _{UG}	10.0



1 Office Space

1.1 Summary, Office Space

1.1.1 Result overview, Desk 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	58130 lm
Total power	564 W
Total power per area (81.78 m²)	6.90 W/m²

Illuminance

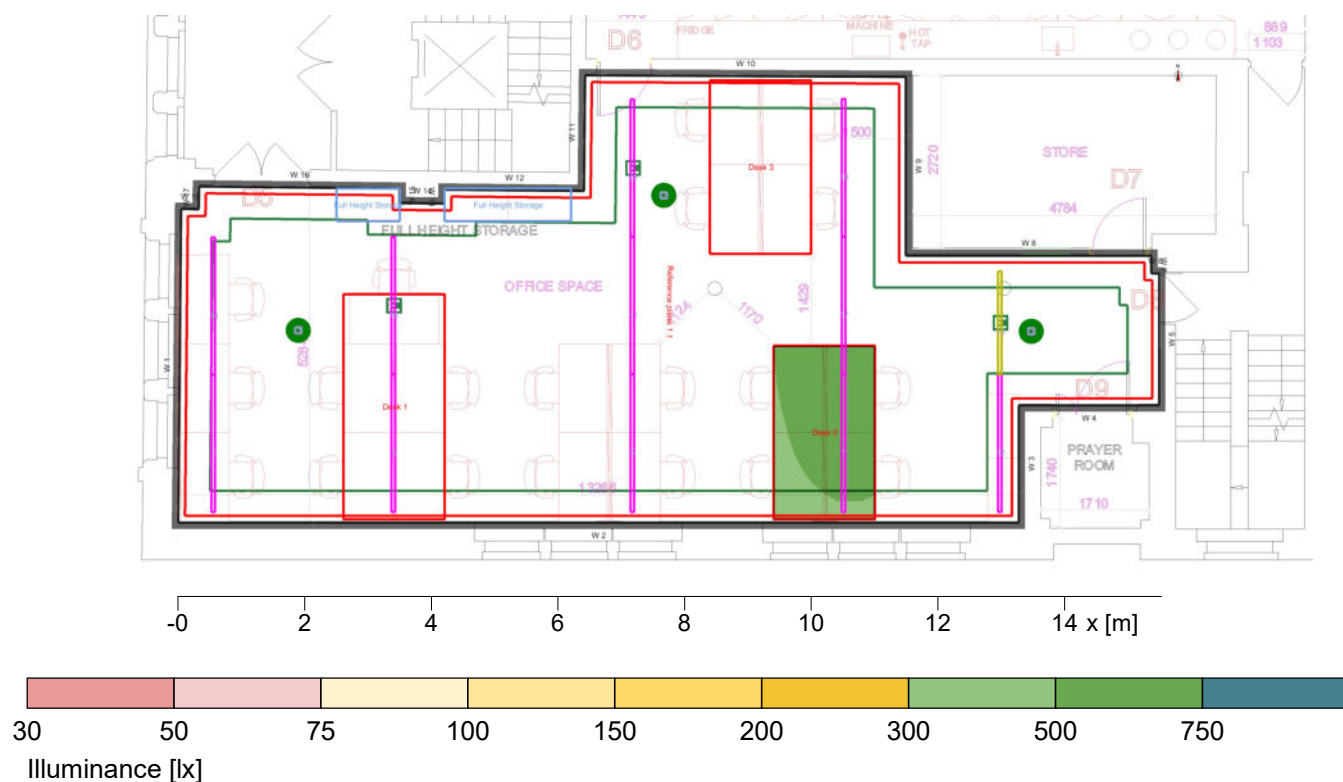
Average illuminance	$\bar{E}_m$	563 lx
Minimum illuminance	E_{min}	363 lx
Maximum illuminance	E_{max}	670 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.55 (0.65)
Diversity U_d	E_{min}/E_{max}	1:1.84 (0.54)

Type No. Make

ZLISS	
1 1E x	Order No. : INDI40-4K -- Emergency Lighting --
	Luminaire name : INDI 40 OPAL 4000K
	Equipment : 1 x LED 5630 36 W / 3680 lm
	Emergency : 350 lm (9.5 %)
2 11E x	Order No. : INDI50-4K
	Luminaire name : INDI 50 OPAL 4000K
	Equipment : 1 x LED 5630 48 W / 4950 lm
	Emergency : 350 lm (7.1 %)

1.1 Summary, Office Space

1.1.2 Result overview, Desk 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	58130 lm
Total power	564 W
Total power per area (81.78 m ²)	6.90 W/m ²

Illuminance

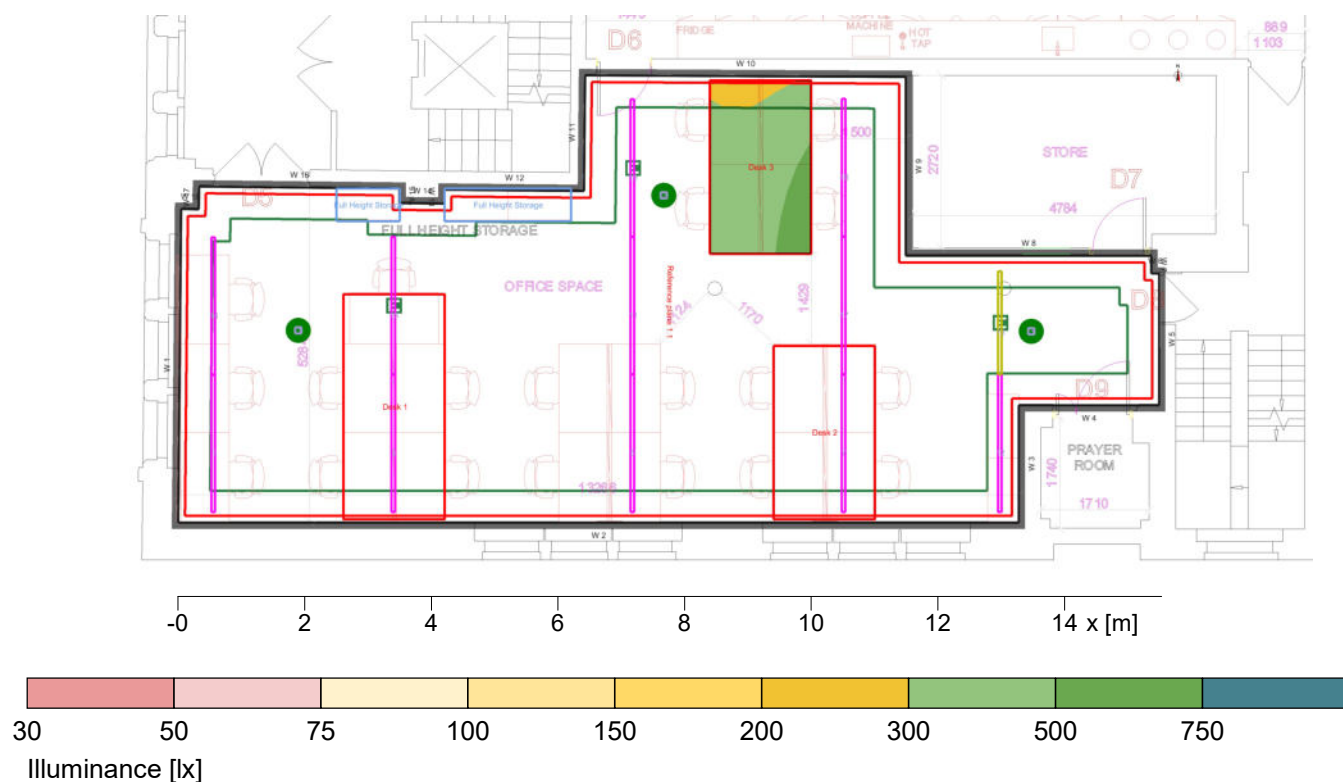
Average illuminance	$\bar{E}_m$	582 lx
Minimum illuminance	E_{min}	365 lx
Maximum illuminance	E_{max}	726 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.59 (0.63)
Diversity U_d	E_{min}/E_{max}	1:1.99 (0.5)

Type No. Make

ZLISS	
1 1E x	Order No. : INDI40-4K -- Emergency Lighting --
	Luminaire name : INDI 40 OPAL 4000K
	Equipment : 1 x LED 5630 36 W / 3680 lm
	Emergency : 350 lm (9.5 %)
2 11E x	Order No. : INDI50-4K
	Luminaire name : INDI 50 OPAL 4000K
	Equipment : 1 x LED 5630 48 W / 4950 lm
	Emergency : 350 lm (7.1 %)

1.1 Summary, Office Space

1.1.3 Result overview, Desk 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	58130 lm
Total power	564 W
Total power per area (81.78 m²)	6.90 W/m²

Illuminance

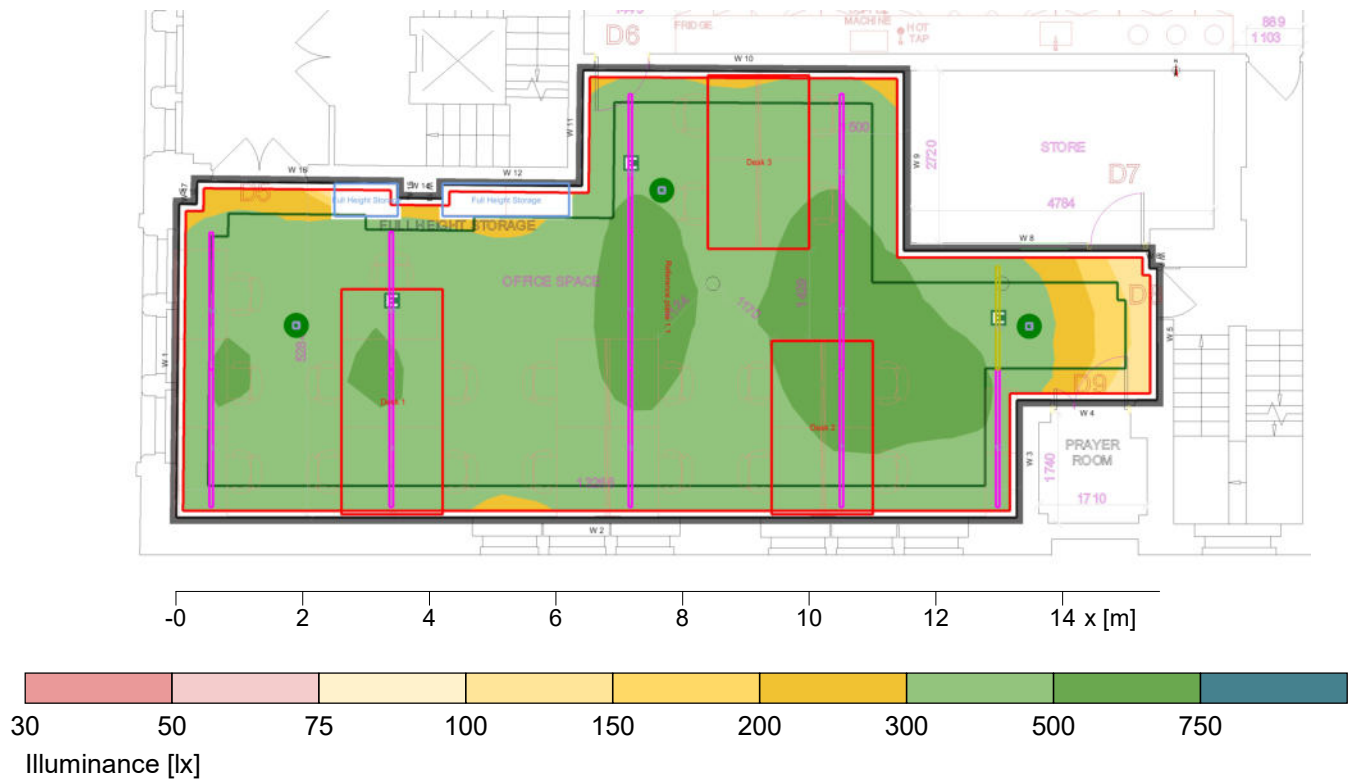
Average illuminance	$\bar{E}_m$	410 lx
Minimum illuminance	E_{min}	274 lx
Maximum illuminance	E_{max}	580 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.5 (0.67)
Diversity U_d	E_{min}/E_{max}	1:2.12 (0.47)

Type No. Make

ZLISS	
1 1E x	Order No. : INDI40-4K -- Emergency Lighting --
	Luminaire name : INDI 40 OPAL 4000K
	Equipment : 1 x LED 5630 36 W / 3680 lm
	Emergency : 350 lm (9.5 %)
2 11E x	Order No. : INDI50-4K
	Luminaire name : INDI 50 OPAL 4000K
	Equipment : 1 x LED 5630 48 W / 4950 lm
	Emergency : 350 lm (7.1 %)

1.1 Summary, Office Space

1.1.4 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux
 Total power
 Total power per area (81.78 m²)

58130.00 lm
 564.0 W
 6.90 W/m² (1.60 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$
 E_{min}
 $E_{min}/\bar{E}_m (U_o)$
 $E_{min}/E_{max} (U_d)$
 E_z/E_h
 Position
 $RUG (--- ---)$

Horizontal
 430 lx
 149 lx
 0.35
 0.26
 0.00 m

cylindrical
 186 lx
 86 lx
 0.46
 0.41
 0.45 m

Hints:
 - Room dimensions deviate too much from a rectangular room.

Major surfaces

M 1.229 (Ceiling)
 M 1.1 (Wall)
 M 1.2 (Wall)
 M 1.3 (Wall)
 M 1.4 (Wall)
 M 1.5 (Wall)
 M 1.223 (Wall)

$\bar{E}_m$
 97 lx
 411 lx
 285 lx
 489 lx
 116 lx
 109 lx
 235 lx

U_o
 0.49
 0.48
 0.34
 0.44
 0.43
 0.53
 0.26

Object : Fourways House, Manchester
 Installation : General _Emergency Lighting
 Project number : Rev-B
 Date : 27.02.2024

1.1 Summary, Office Space

1.1.4 Result overview, Evaluation area 1

M 1.224 (Wall)	314 lx	0.69
M 1.225 (Wall)	273 lx	0.43
M 1.226 (Wall)	307 lx	0.66
M 1.227 (Wall)	1 lx	0.16
M 1.228 (Wall)	152 lx	0.00

Type No.\Make

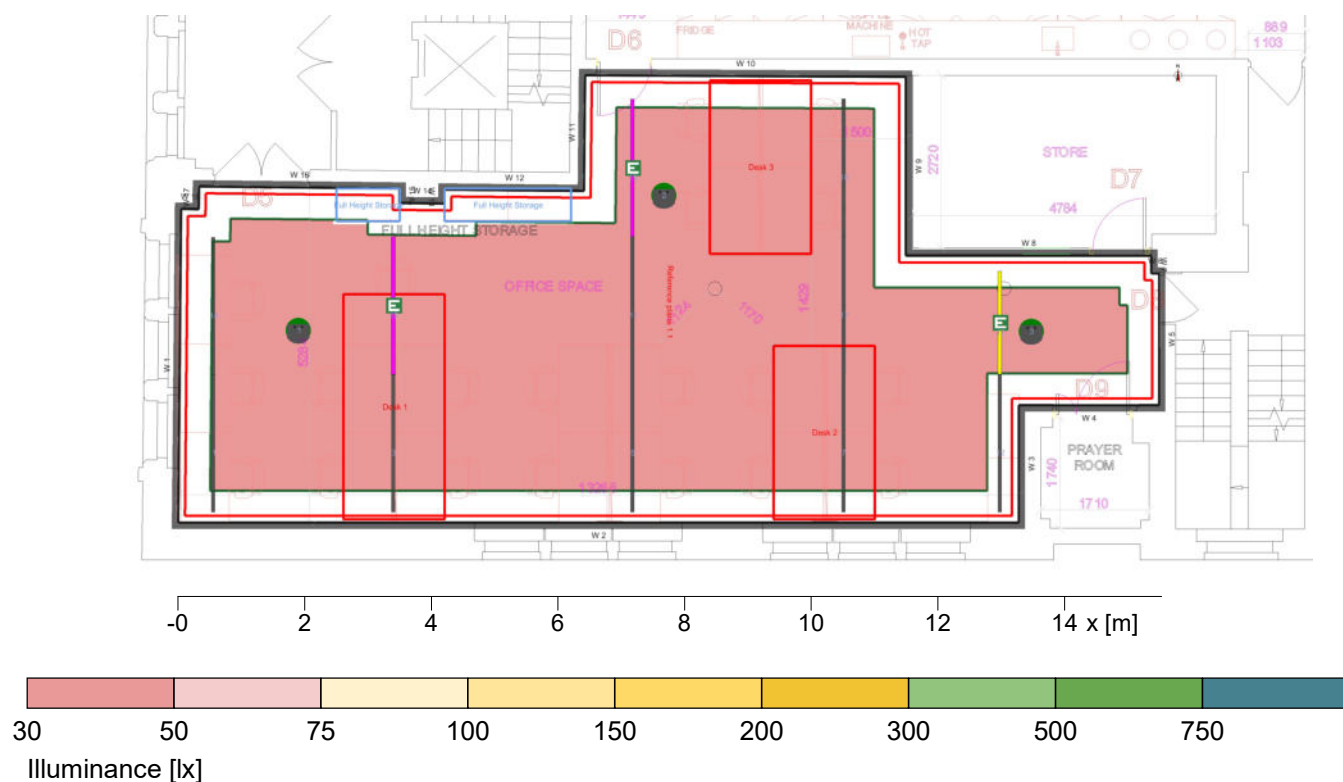
ZLISS

1	1E x	Order No.	: INDI40-4K	-- Emergency Lighting --
		Luminaire name	: INDI 40 OPAL 4000K	
		Equipment	: 1 x LED 5630 36 W / 3680 lm	
		Emergency	: 350 lm (9.5 %)	
2	11E x	Order No.	: INDI50-4K	
		Luminaire name	: INDI 50 OPAL 4000K	
		Equipment	: 1 x LED 5630 48 W / 4950 lm	
		Emergency	: 350 lm (7.1 %)	

Office Space

1.2 Summary, Office Space

1.2.1.1 Result overview (emergency lighting)



General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 6.13m x 14.46m (9 x 20 pts), Height = 0.00m				
1		1.08 lx	16.03 lx	1 : 14.82
		>= 0.5 lx		>= 1 : 40



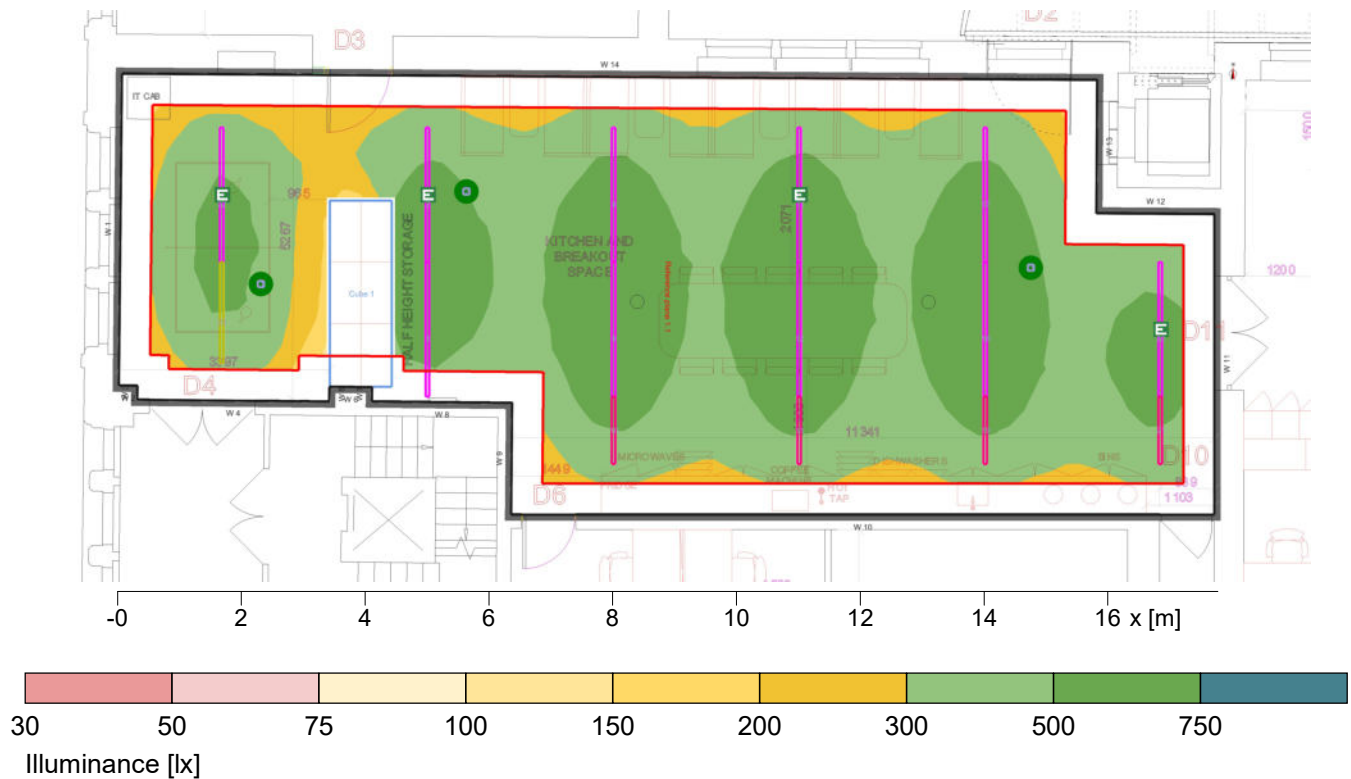
Type No. Make

ZLISS				
1	1E x	Order No.	: INDI40-4K	-- Emergency Lighting --
		Luminaire name	: INDI 40 OPAL 4000K	
		Equipment	: 1 x LED 5630 36 W / 3680 lm	
		Emergency	: 350 lm (9.5 %)	
2	2E x	Order No.	: INDI50-4K	-- Emergency Lighting --
		Luminaire name	: INDI 50 OPAL 4000K	
		Equipment	: 1 x LED 5630 48 W / 4950 lm	
		Emergency	: 350 lm (7.1 %)	

2 Kitchen/Breakout Space

2.1 Summary, Kitchen/Breakout Space

2.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux
 Total power
 Total power per area (108.76 m²)

62700.00 lm
 616.0 W
 5.66 W/m² (1.22 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$
 E_{min}
 $E_{min}/\bar{E}_m (U_o)$
 $E_{min}/E_{max} (U_d)$
 E_z/E_h
 Position
 $R_{UG} (5.2H \ 12.0H)$
 Luminaire :
 (INDI 50 OPAL 4000K, INDI50-4K)
 Hints:
 - At least one of the room dimensions has been limited to 12H.

Horizontal
 464 lx
 221 lx
 0.48
 0.33
 0.41
 0.75 m
 ≤ 25.9
 cylindrical
 210 lx
 134 lx
 0.64
 1.20 m

Major surfaces

Surface	$\bar{E}_m$	U_o
M 1.17 (Ceiling)	86 lx	0.68
M 1.1 (Wall)	176 lx	0.43
M 1.6 (Wall)	198 lx	0.50
M 1.10 (Wall)	338 lx	0.41
M 1.11 (Wall)	156 lx	0.43

2 Kitchen/Breakout Space

2.1 Summary, Kitchen/Breakout Space

2.1.1 Result overview, Evaluation area 1

M 1.12 (Wall)	207 lx	0.43
M 1.13 (Wall)	286 lx	0.51
M 1.14 (Wall)	214 lx	0.53
M 1.15 (Wall)	159 lx	0.45
M 1.16 (Wall)	200 lx	0.39

Type No.\Make

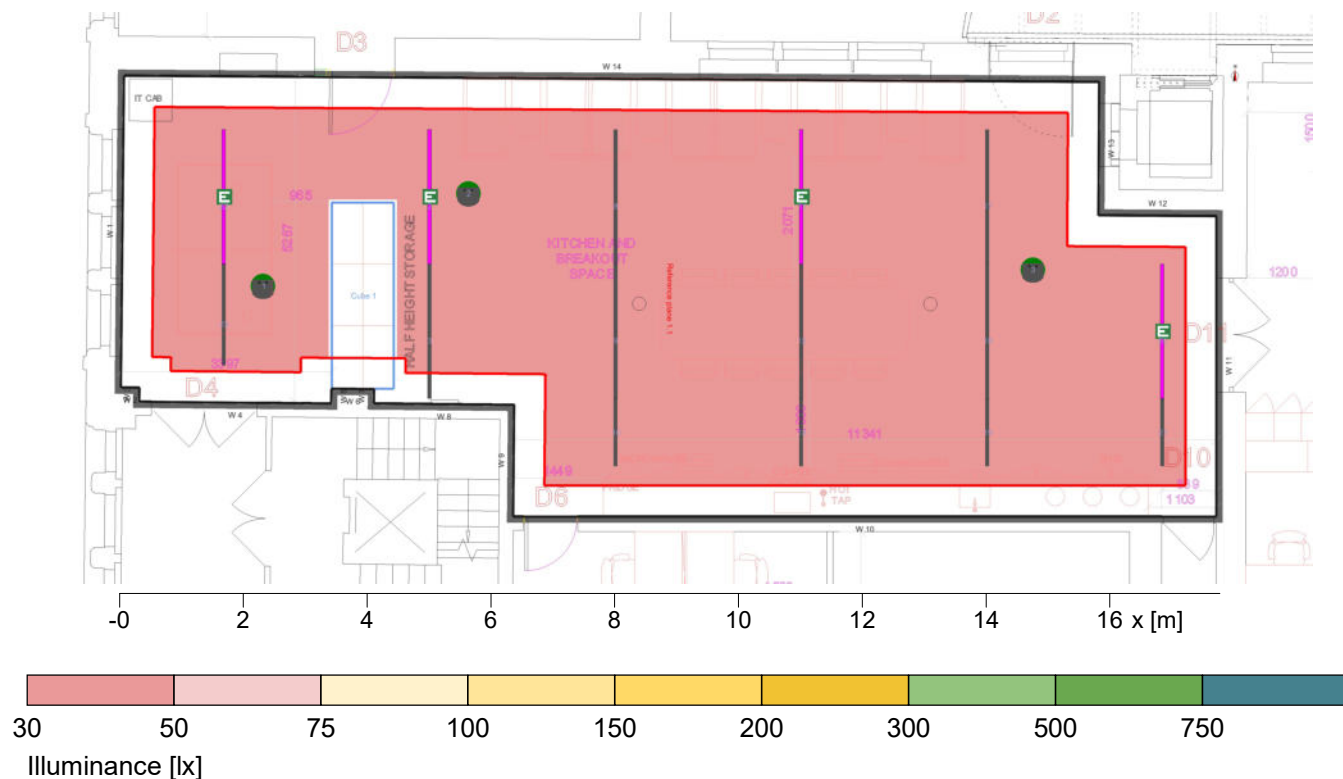
ZLISS

1	1 x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	10E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)
5	4 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

2 Kitchen/Breakout Space

2.2 Summary, Kitchen/Breakout Space

2.2.1.1 Result overview (emergency lighting)



General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 6.1m x 16.7m (9 x 24 pts), Height = 0.00m				
1		0.39 lx	16.42 lx	1: 41.84
		>= 0.5 lx		>= 1 : 40



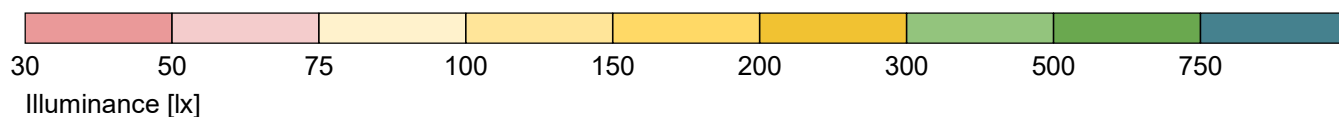
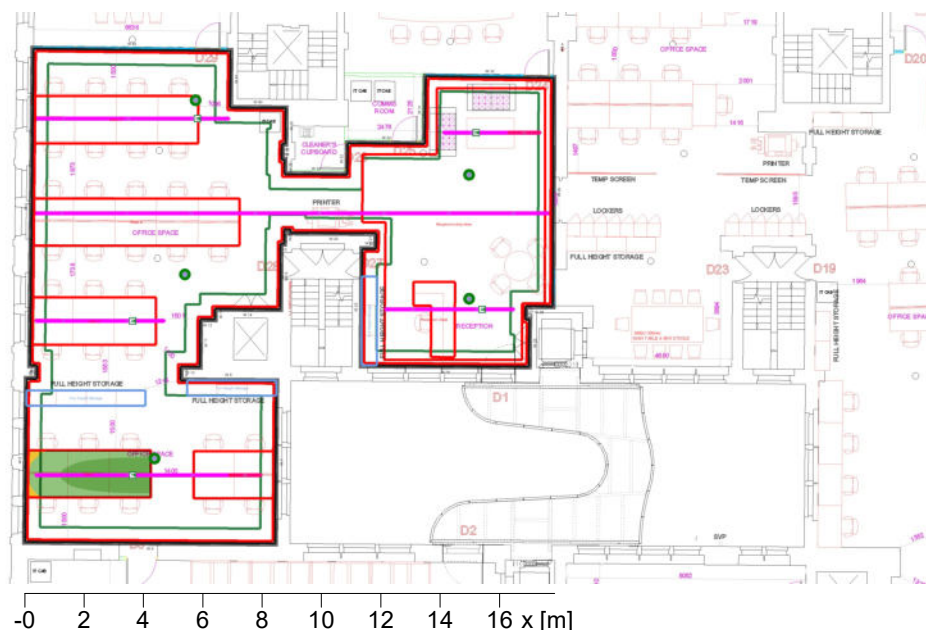
Type No.\Make

ZLISS				
2	4E x	Order No.	: INDI50-4K	-- Emergency Lighting --
		Luminaire name	: INDI 50 OPAL 4000K	
		Equipment	: 1 x LED 5630 48 W / 4950 lm	
		Emergency	: 350 lm (7.1 %)	

3 Office Space/Reception

3.1 Summary, Office Space/Reception

3.1.1 Result overview, Desk 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	481 lx
Minimum illuminance	E_{min}	255 lx
Maximum illuminance	E_{max}	609 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.89 (0.53)
Diversity U_d	E_{min}/E_{max}	1:2.39 (0.42)

Type No./Make

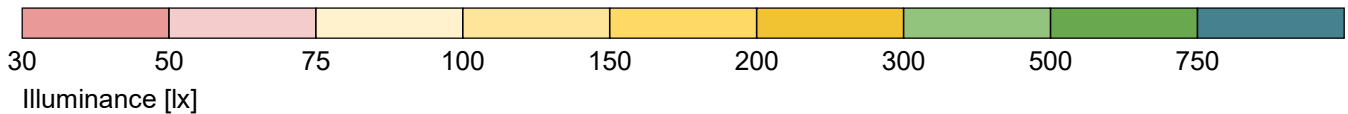
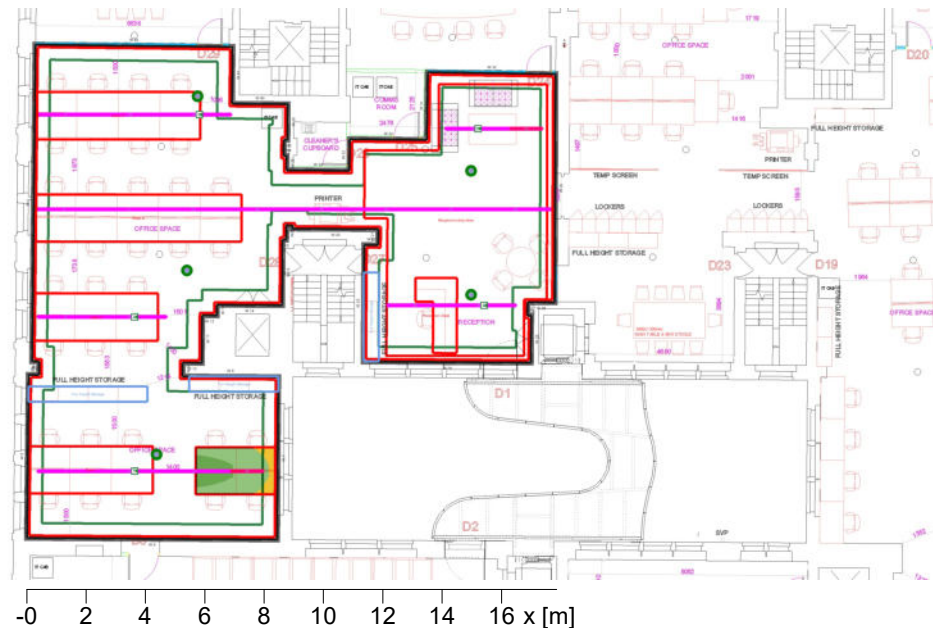
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.2 Result overview, Desk 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m ²)	5.03 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	425 lx
Minimum illuminance	E_{min}	245 lx
Maximum illuminance	E_{max}	577 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.74 (0.58)
Diversity U_d	E_{min}/E_{max}	1:2.36 (0.42)

Type No. Make

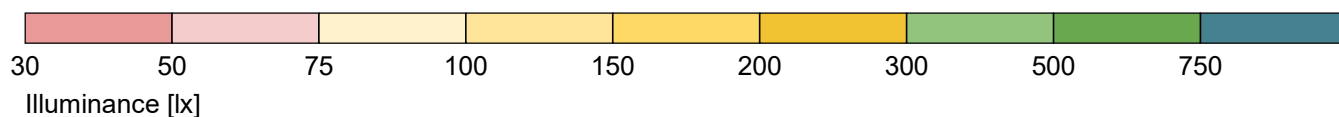
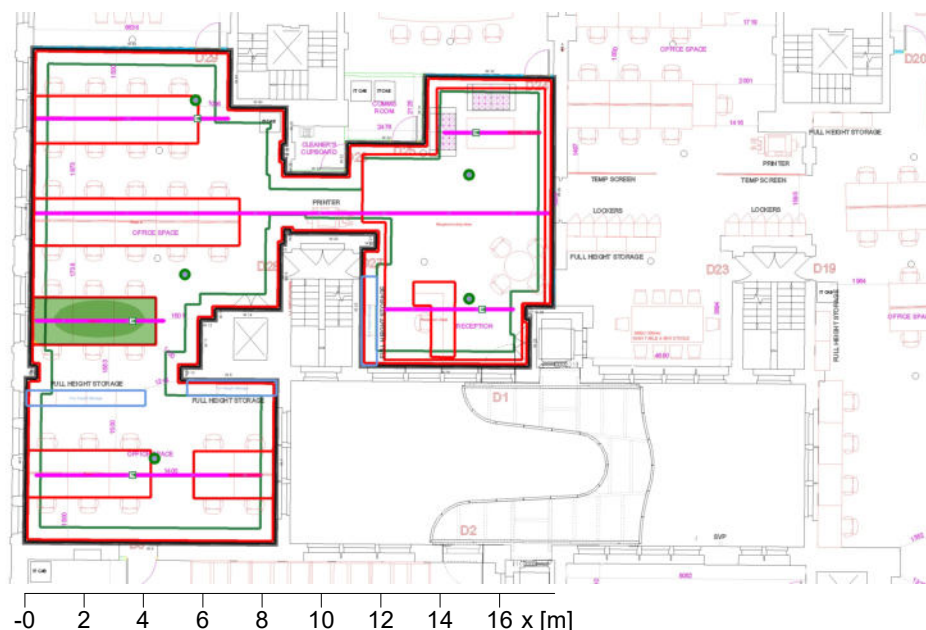
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.3 Result overview, Desk 3



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	490 lx
Minimum illuminance	E_{min}	307 lx
Maximum illuminance	E_{max}	605 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.6 (0.63)
Diversity U_d	E_{min}/E_{max}	1:1.97 (0.51)

Type No. Make

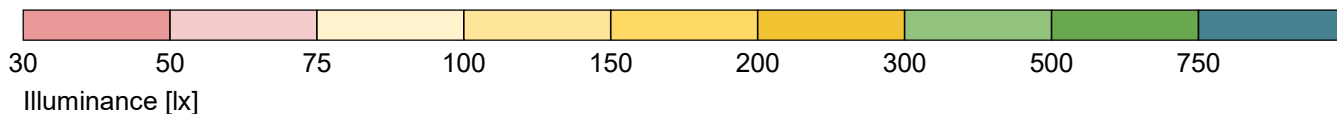
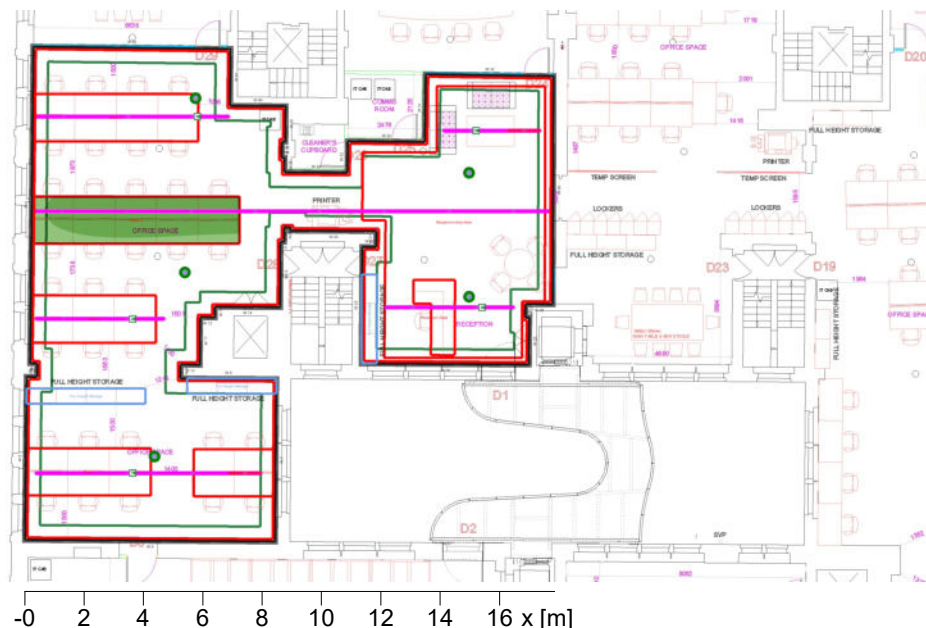
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.4 Result overview, Desk 4



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	578 lx
Minimum illuminance	E_{min}	319 lx
Maximum illuminance	E_{max}	694 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.82 (0.55)
Diversity U_d	E_{min}/E_{max}	1:2.18 (0.46)

Type No. Make

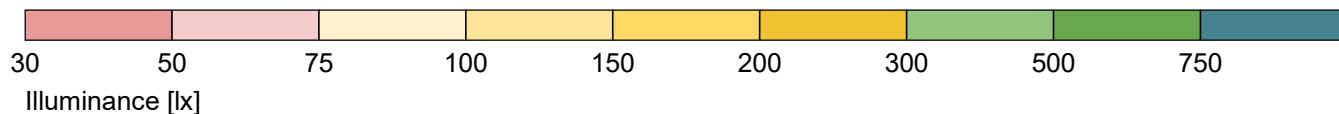
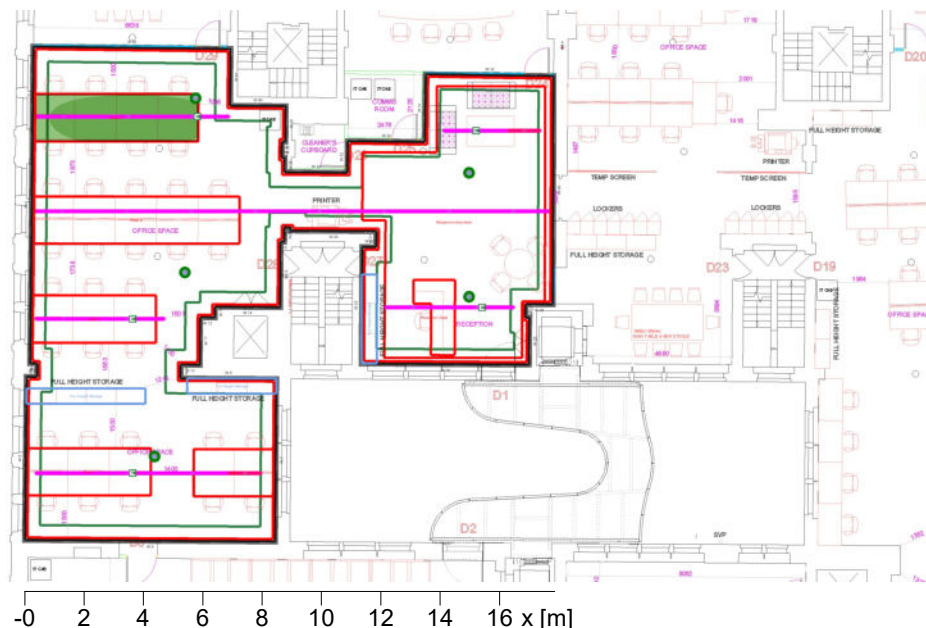
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.5 Result overview, Desk 5



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	561 lx
Minimum illuminance	E_{min}	331 lx
Maximum illuminance	E_{max}	664 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.7 (0.59)
Diversity U_d	E_{min}/E_{max}	1:2.01 (0.5)

Type No. Make

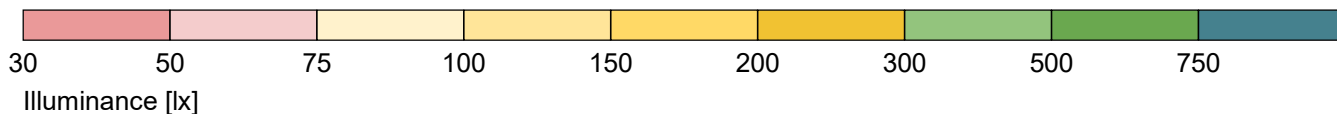
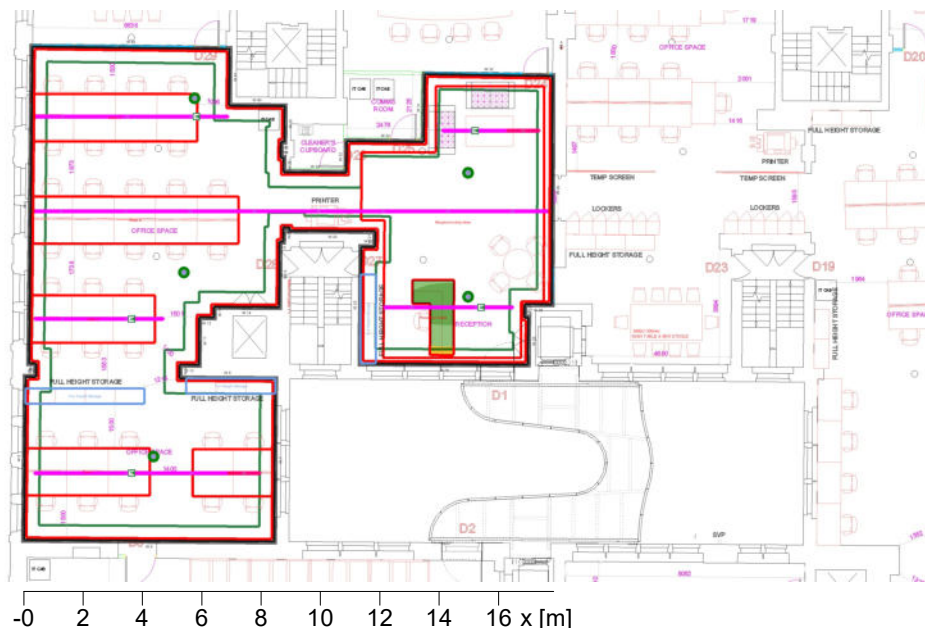
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.6 Result overview, Reception Desk



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	495 lx
Minimum illuminance	E_{min}	273 lx
Maximum illuminance	E_{max}	623 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.81 (0.55)
Diversity U_d	E_{min}/E_{max}	1:2.28 (0.44)

Type No. Make

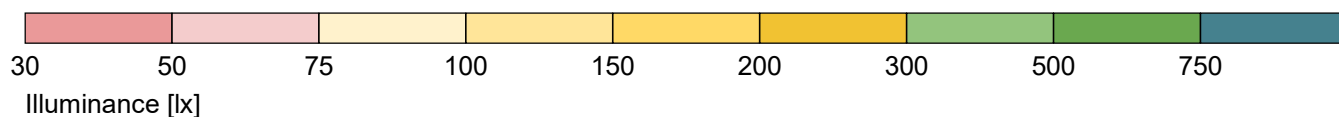
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.7 Result overview, Recption/Lobby Area



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80

Total luminous flux	98810 lm
Total power	962 W
Total power per area (191.17 m²)	5.03 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	400 lx
Minimum illuminance	E_{min}	236 lx
Maximum illuminance	E_{max}	552 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.7 (0.59)
Diversity U_d	E_{min}/E_{max}	1:2.34 (0.43)

Type No./Make

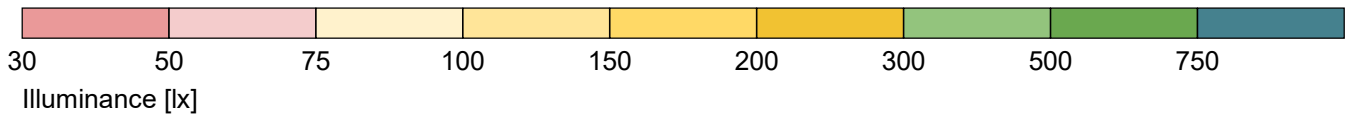
ZLISS

2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3.1 Summary, Office Space/Reception

3.1.8 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux
 Total power
 Total power per area (191.17 m²)

98810.00 lm
 962.0 W
 5.03 W/m² (1.46 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$
 E_{min}
 $E_{min}/\bar{E}_m (U_o)$
 $E_{min}/E_{max} (U_d)$
 E_z/E_h
 Position
 RUG (--- ---)

Horizontal
 346 lx
 118 lx
 0.34
 0.22
 0.00 m

cylindrical
 146 lx
 76 lx
 0.52
 0.41
 0.45 m

Hints:
 - Room dimensions deviate too much from a rectangular room.

Major surfaces

M 1.277 (Ceiling)
 M 1.1 (Wall)
 M 1.238 (Wall)
 M 1.245 (Wall)
 M 1.248 (Wall)
 M 1.249 (Wall)
 M 1.256 (Wall)

$\bar{E}_m$
 67 lx
 245 lx
 158 lx
 128 lx
 141 lx
 0 lx
 127 lx

U_o
 0.54
 0.26
 0.16
 0.41
 0.24
 0.28
 0.37

Object : Fourways House, Manchester
 Installation : General _Emergency Lighting
 Project number : Rev-B
 Date : 27.02.2024

3.1 Summary, Office Space/Reception

3.1.8 Result overview, Evaluation area 1

M 1.259 (Wall)	95 lx	0.48
M 1.260 (Wall)	104 lx	0.45
M 1.265 (Wall)	402 lx	0.62
M 1.266 (Wall)	99 lx	0.60
M 1.267 (Wall)	164 lx	0.38
M 1.268 (Wall)	144 lx	0.34
M 1.269 (Wall)	238 lx	0.34
M 1.270 (Wall)	166 lx	0.55
M 1.271 (Wall)	181 lx	0.38
M 1.272 (Wall)	171 lx	0.54
M 1.273 (Wall)	294 lx	0.54
M 1.274 (Wall)	118 lx	0.41
M 1.275 (Wall)	147 lx	0.39
M 1.276 (Wall)	154 lx	0.46

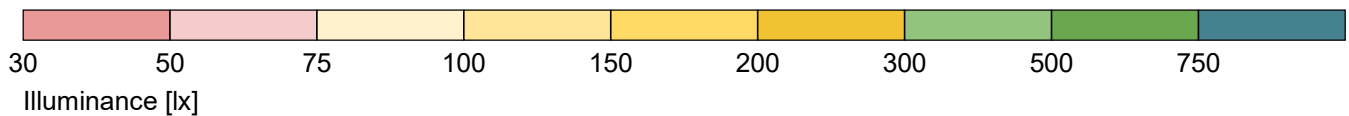
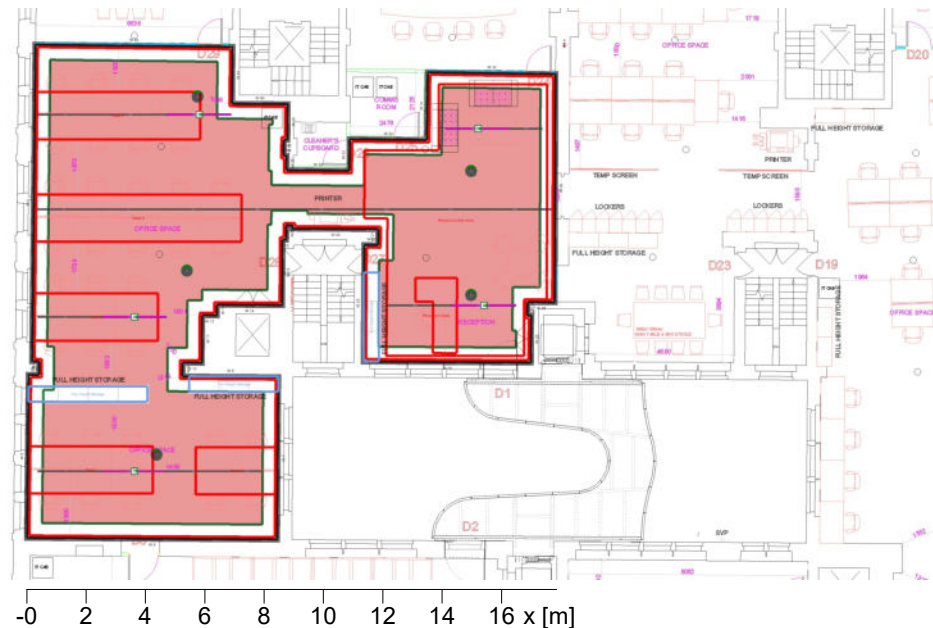
Type No.\Make

		ZLISS	
2	19E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)
5	2 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

3 Office Space/Reception

3.2 Summary, Office Space/Reception

3.2.1.1 Result overview (emergency lighting)

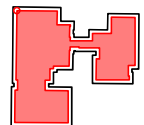


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 15.6m x 16.69m (11 x 12 pts), Height = 0.00m				
1		0.51 lx	15.28 lx	1: 29.75
		>= 0.5 lx		>= 1 : 40



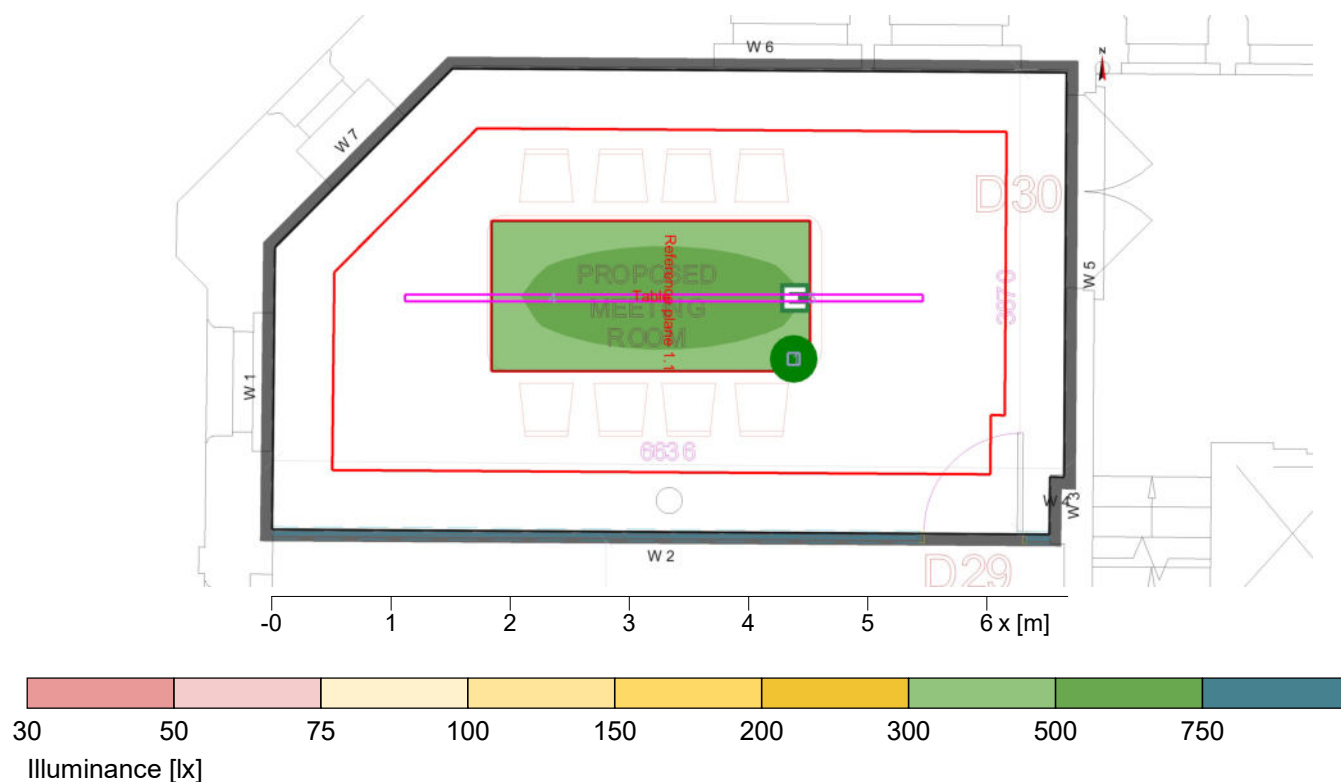
Type No.\Make

ZLISS			
2	5E x	Order No.	: INDI50-4K -- Emergency Lighting --
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

4 Meeting Room

4.1 Summary, Meeting Room

4.1.1 Result overview, Table



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.80
Total luminous flux	9900 lm
Total power	96 W
Total power per area (24.50 m²)	3.92 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	499 lx
Minimum illuminance	E_{min}	416 lx
Maximum illuminance	E_{max}	561 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.2 (0.83)
Diversity U_d	E_{min}/E_{max}	1:1.35 (0.74)

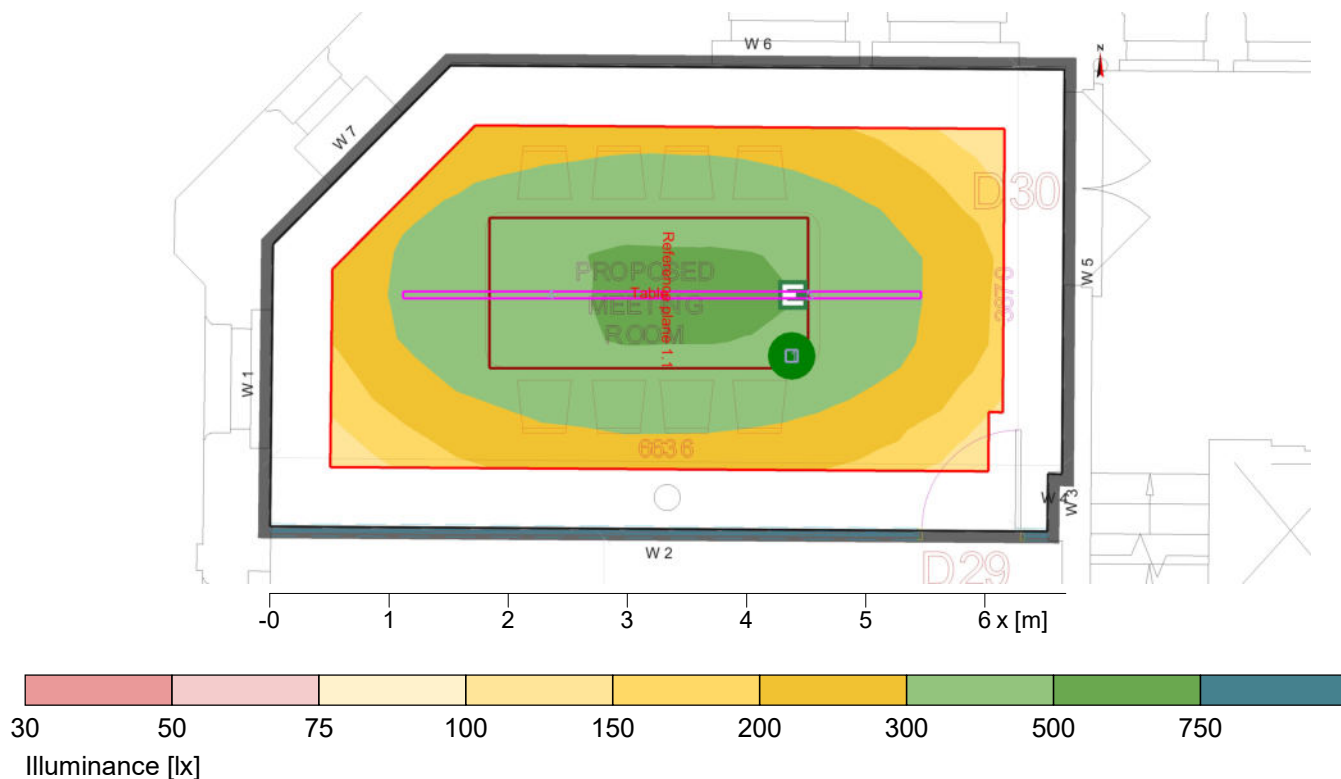
Type No. Make

ZLISS

2	2E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

4.1 Summary, Meeting Room

4.1.2 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux

9900.00 lm

Total power

96.0 W

Total power per area (24.50 m²)

3.92 W/m² (1.17 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$

Horizontal

cylindrical

E_{min}

335 lx

134 lx

E_{min}

159 lx

90 lx

$E_{min}/\bar{E}_m (U_o)$

0.47

0.67

$E_{min}/E_{max} (U_d)$

0.30

E_z/E_h

0.34

Position

0.75 m

1.20 m

$R_{UG} (2.9H \text{ } 4.9H)$

≤ 24.5

Luminaire :

(INDI 50 OPAL 4000K, INDI50-4K)

Major surfaces

$\bar{E}_m$

U_o

M 1.14 (Ceiling)

50 lx

0.82

M 1.1 (Wall)

114 lx

0.38

M 1.2 (Wall)

120 lx

0.39

M 1.11 (Wall)

114 lx

0.44

M 1.12 (Wall)

127 lx

0.35

M 1.13 (Wall)

144 lx

0.43

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024



4.1 Summary, Meeting Room

4.1.2 Result overview, Evaluation area 1

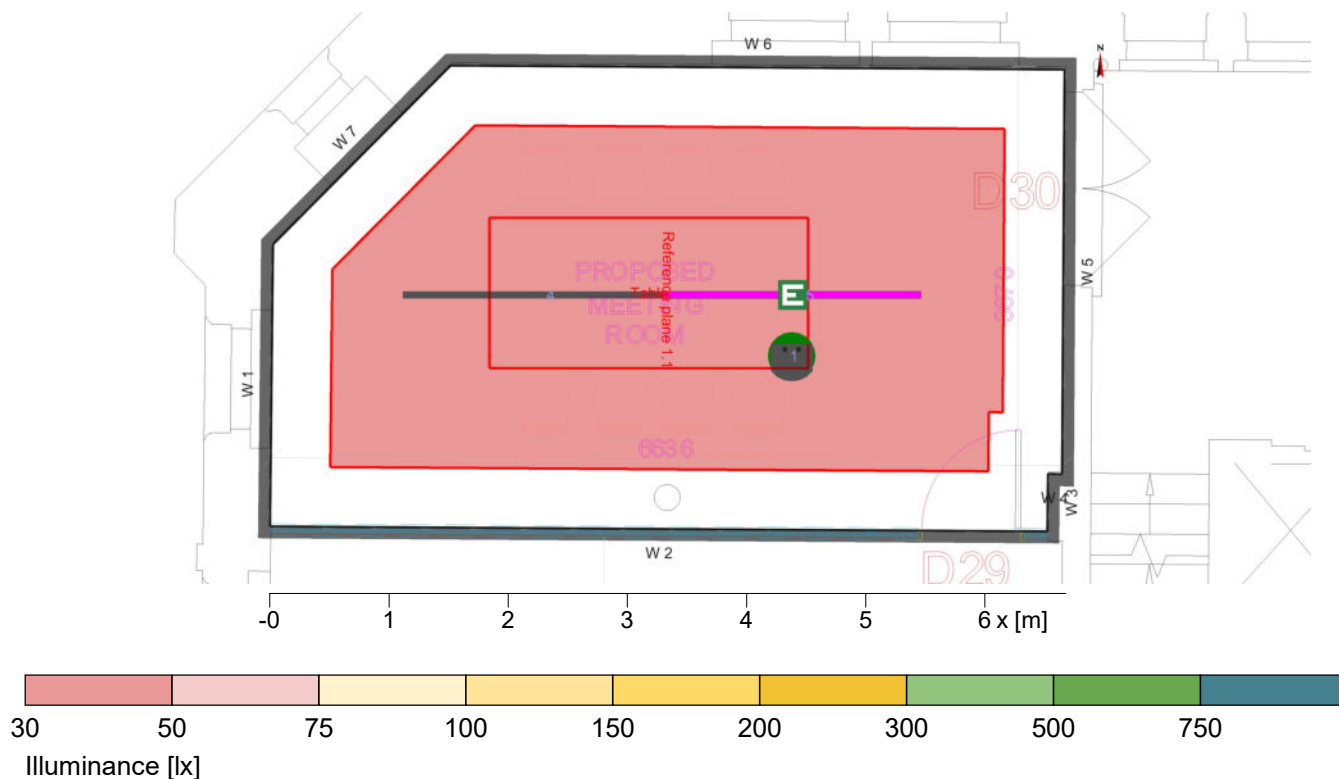
Type No.\Make

		ZLISS	
2	2E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

4 Meeting Room

4.2 Summary, Meeting Room

4.2.1.1 Result overview (emergency lighting)

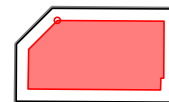


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	1.15 lx	15.03 lx	1 : 13.08
		>= 0.5 lx		>= 1 : 40



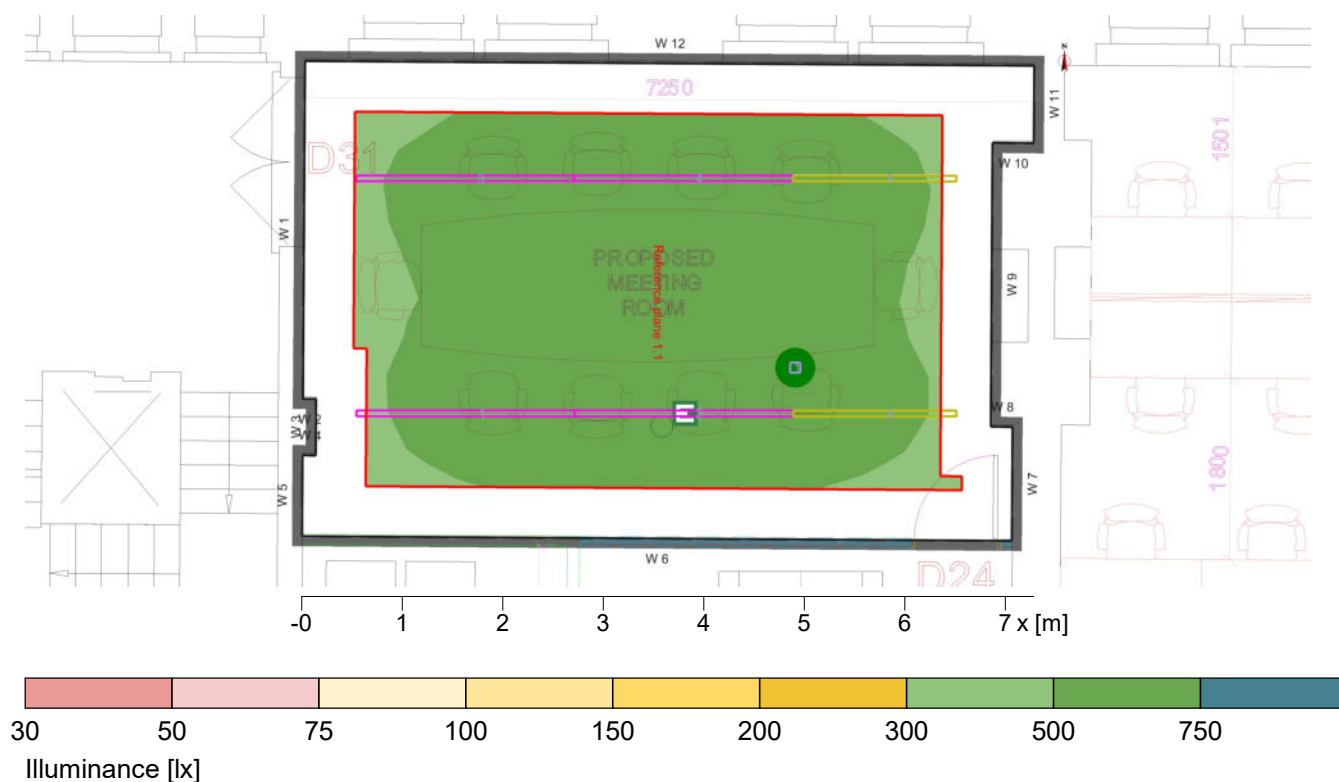
Type No.\Make

2	1E x	ZLISS	
	Order No.	: INDI50-4K	-- Emergency Lighting --
	Luminaire name	: INDI 50 OPAL 4000K	
	Equipment	: 1 x LED 5630 48 W / 4950 lm	
	Emergency	: 350 lm (7.1 %)	

5 Meeting Room 2

5.1 Summary, Meeting Room 2

5.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
Height of luminaire plane
Maintenance factor

Average indirect fraction
2.60 m
0.80

Total luminous flux

27160.00 lm

Total power

264.0 W

Total power per area (32.79 m²)

8.05 W/m² (1.32 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$

Horizontal

cylindrical

E_{min}

609 lx

262 lx

E_{min}

450 lx

207 lx

$E_{min}/\bar{E}_m (U_o)$

0.74

0.79

$E_{min}/E_{max} (U_d)$

0.62

E_z/E_h

0.38

Position

0.75 m

1.20 m

$R_{UG} (3.5H \ 5.3H)$

≤ 25.5

Luminaire :

(INDI 50 OPAL 4000K, INDI50-4K)

Major surfaces

$\bar{E}_m$

U_o

M 1.5 (Ceiling)

110 lx

0.91

M 1.1 (Wall)

279 lx

0.57

M 1.2 (Wall)

288 lx

0.48

M 1.3 (Wall)

297 lx

0.53

M 1.4 (Wall)

300 lx

0.42

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

5 Meeting Room 2

5.1 Summary, Meeting Room 2

5.1.1 Result overview, Evaluation area 1

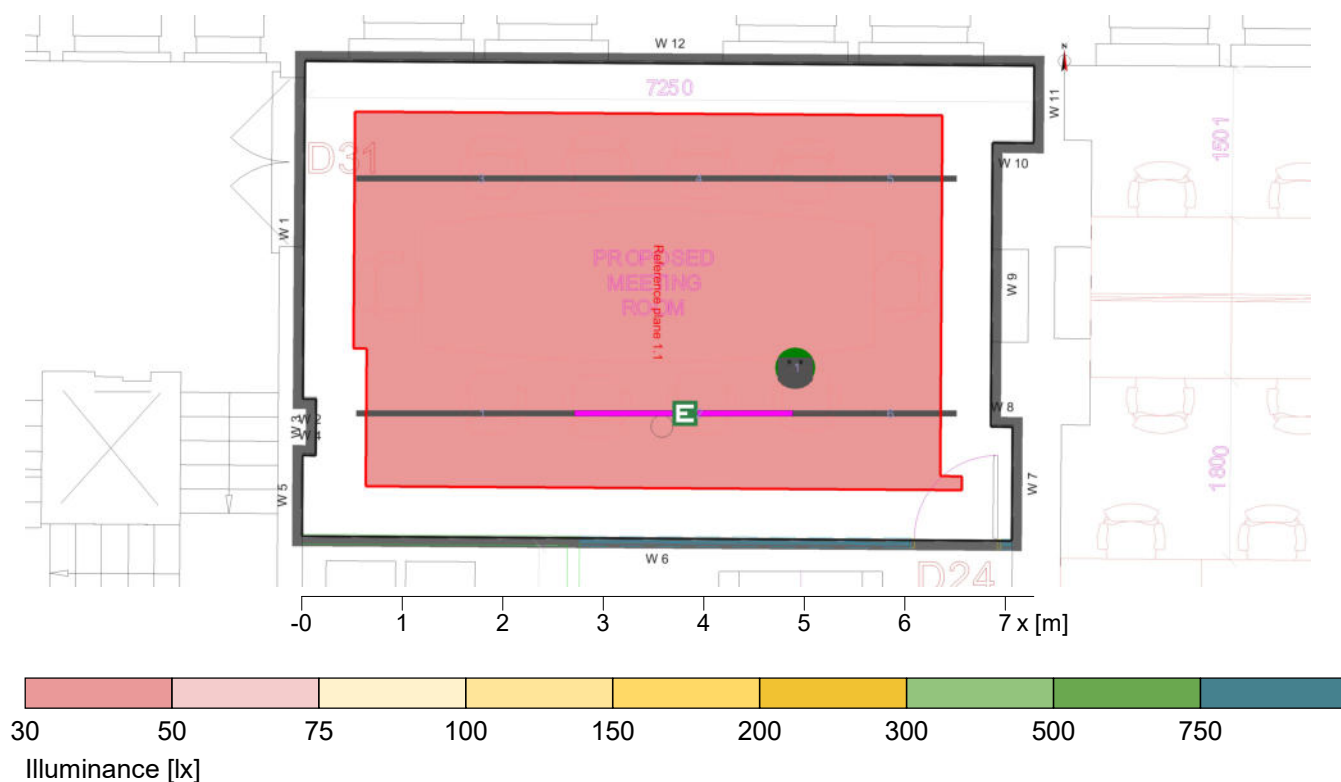
Type No.\Make

		ZLISS	
1	2 x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	4E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5 Meeting Room 2

5.2 Summary, Meeting Room 2

5.2.1.1 Result overview (emergency lighting)

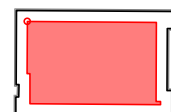


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	0.82 lx	15.02 lx	1: 18.35
		>= 0.5 lx		>= 1 : 40



Type No. Make

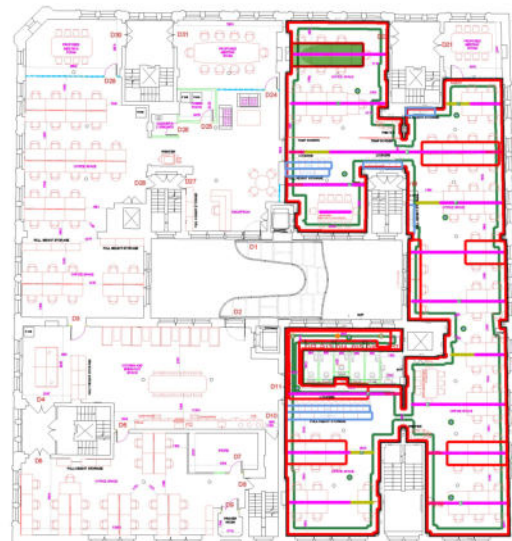
ZLISS

2	1E x	Order No.	: INDI50-4K	-- Emergency Lighting --
		Luminaire name	: INDI 50 OPAL 4000K	
		Equipment	: 1 x LED 5630 48 W / 4950 lm	
		Emergency	: 350 lm (7.1 %)	

6 Office Space 2

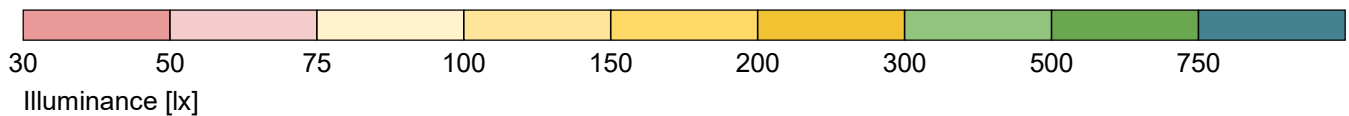
6.1 Summary, Office Space 2

6.1.1 Result overview, Desk 1



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.75 m
 0.80

Total luminous flux
 Total power
 Total power per area (378.99 m²)

230460 lm
 2232 W
 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	551 lx
Minimum illuminance	E_{min}	298 lx
Maximum illuminance	E_{max}	657 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.85 (0.54)
Diversity U_d	E_{min}/E_{max}	1:2.21 (0.45)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6 Office Space 2

6.1 Summary, Office Space 2

6.1.1 Result overview, Desk 1

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

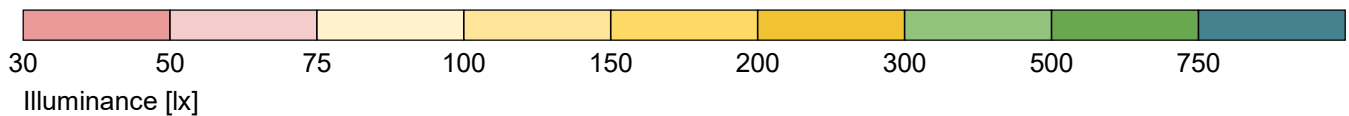
6.1 Summary, Office Space 2

6.1.2 Result overview, Desk 2



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.75 m
 0.80

Total luminous flux 230460 lm
 Total power 2232 W
 Total power per area (378.99 m²) 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	593 lx
Minimum illuminance	E_{min}	369 lx
Maximum illuminance	E_{max}	687 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.61 (0.62)
Diversity U_d	E_{min}/E_{max}	1:1.86 (0.54)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

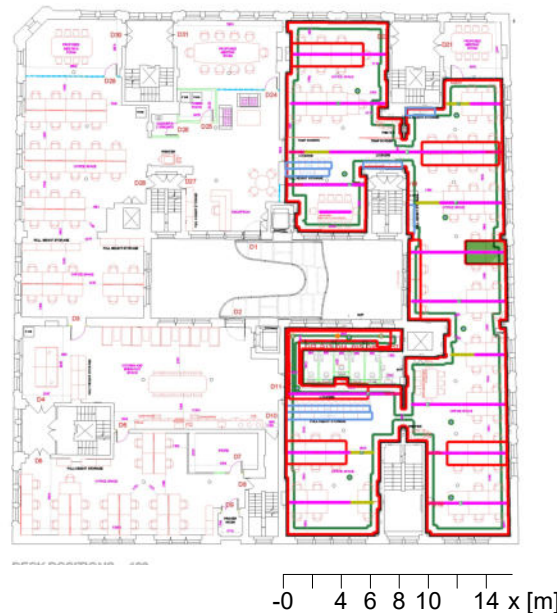
6.1.2 Result overview, Desk 2

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

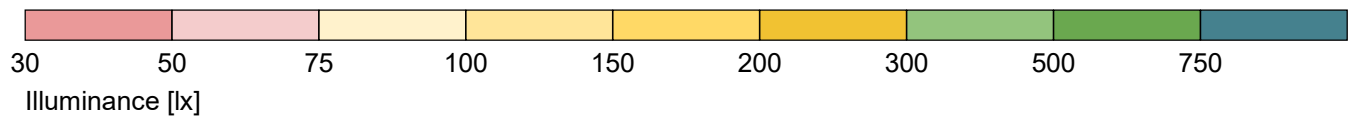
3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.3 Result overview, Desk 3



FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.75 m
 0.80

Total luminous flux
 Total power
 Total power per area (378.99 m²)

230460 lm
 2232 W
 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	561 lx
Minimum illuminance	E_{min}	371 lx
Maximum illuminance	E_{max}	683 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.51 (0.66)
Diversity U_d	E_{min}/E_{max}	1:1.84 (0.54)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

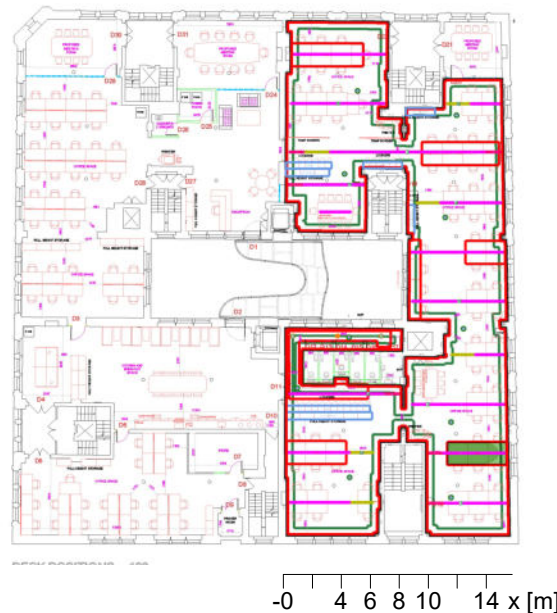
6.1.3 Result overview, Desk 3

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

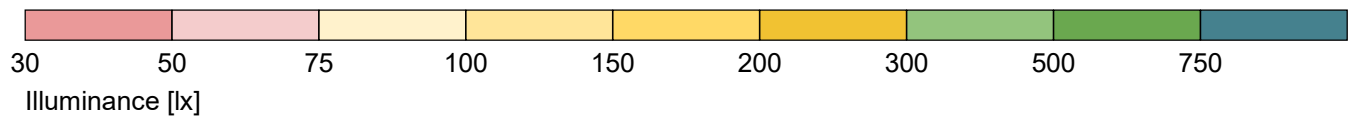
3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.4 Result overview, Desk 4



FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.75 m
 0.80

Total luminous flux
 Total power
 Total power per area (378.99 m²)

230460 lm
 2232 W
 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	567 lx
Minimum illuminance	E_{min}	337 lx
Maximum illuminance	E_{max}	676 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.68 (0.59)
Diversity U_d	E_{min}/E_{max}	1:2.01 (0.5)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

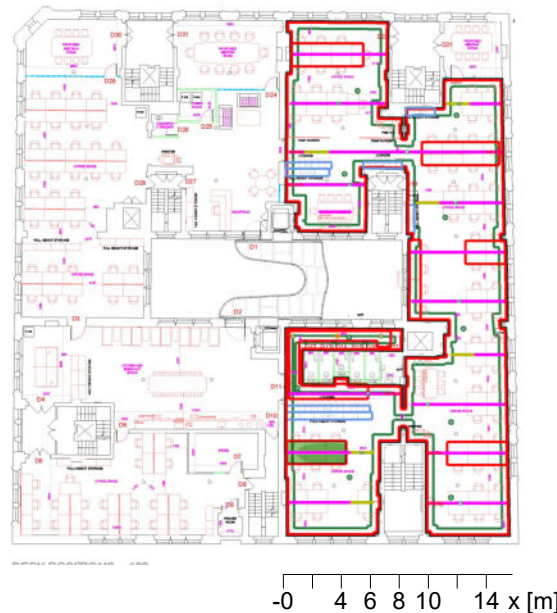
6.1.4 Result overview, Desk 4

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

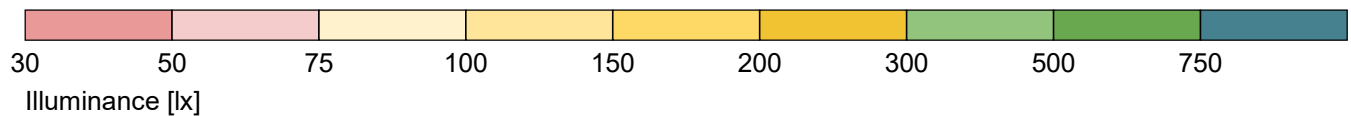
3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.5 Result overview, Desk 5



FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used : Average indirect fraction
 Height of evaluation surface : 0.75 m
 Maintenance factor : 0.80

Total luminous flux : 230460 lm
 Total power : 2232 W
 Total power per area (378.99 m²) : 5.89 W/m²

Illuminance

Average illuminance $\bar{E}_m$: 528 lx
 Minimum illuminance E_{min} : 296 lx
 Maximum illuminance E_{max} : 636 lx
 Uniformity U_o $E_{min}/\bar{E}_m$: 1:1.78 (0.56)
 Diversity U_d E_{min}/E_{max} : 1:2.15 (0.47)

Type No.\Make

ZLISS			
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

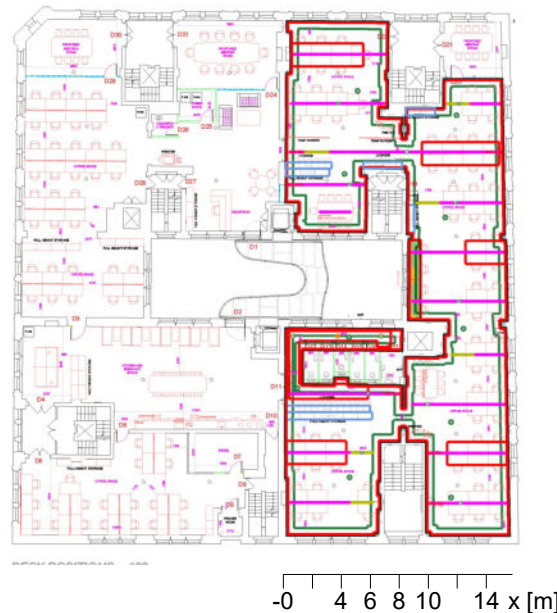
6.1.5 Result overview, Desk 5

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

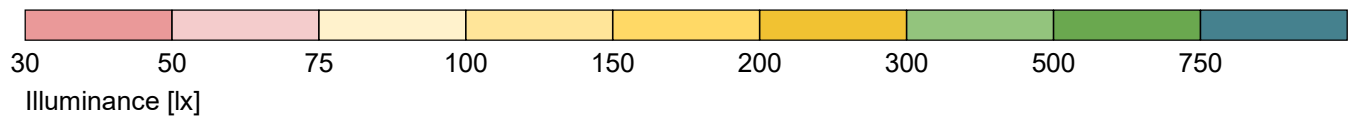
3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.6 Result overview, Desk 6



FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.75 m
 0.80

Total luminous flux
 Total power
 Total power per area (378.99 m²)

230460 lm
 2232 W
 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	371 lx
Minimum illuminance	E_{min}	229 lx
Maximum illuminance	E_{max}	529 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.62 (0.62)
Diversity U_d	E_{min}/E_{max}	1:2.31 (0.43)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

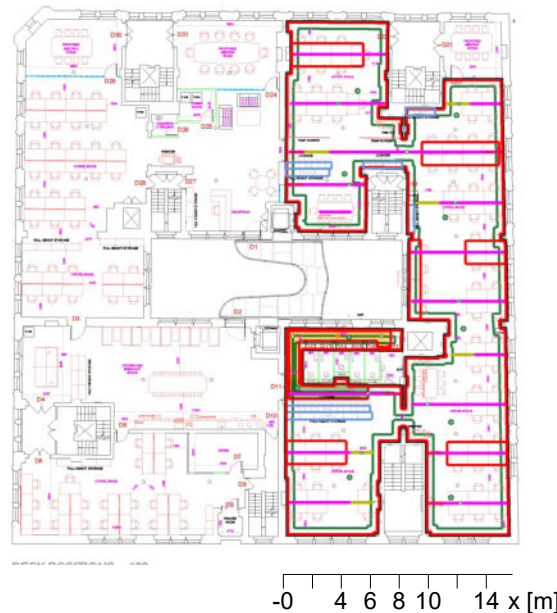
6.1.6 Result overview, Desk 6

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

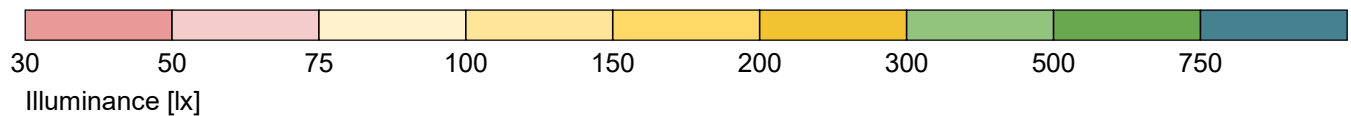
3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.7 Result overview, WC Circ



FOURWAYS HOUSE
 PROPOSED GA
 RN
 PRO-GA-LAY



General

Calculation algorithm used
 Height of evaluation surface
 Maintenance factor

Average indirect fraction
 0.00 m
 0.80

Total luminous flux
 Total power
 Total power per area (378.99 m²)

230460 lm
 2232 W
 5.89 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	269 lx
Minimum illuminance	E_{min}	1 lx
Maximum illuminance	E_{max}	514 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:300 (0)
Diversity U_d	E_{min}/E_{max}	1:574 (0)

Type No. Make

		ZLISS	
1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6.1 Summary, Office Space 2

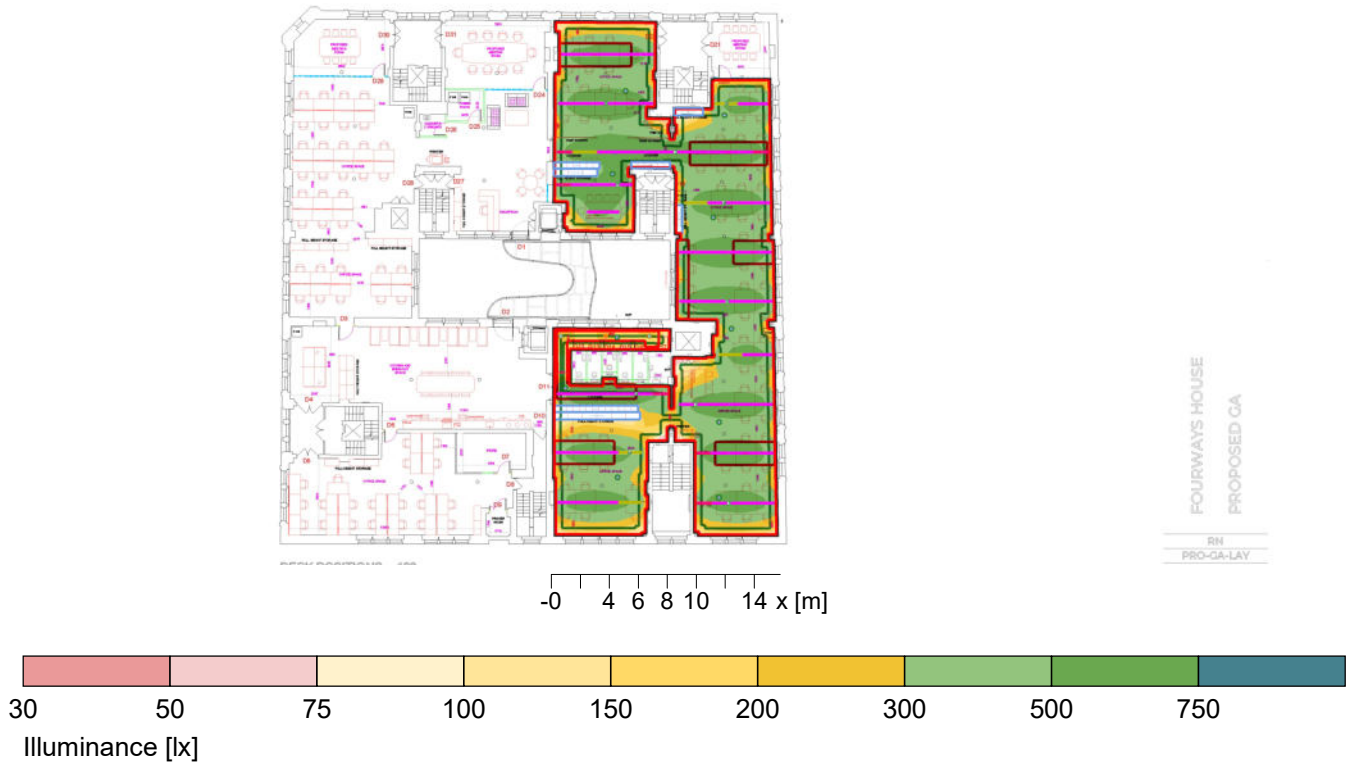
6.1.7 Result overview, WC Circ

5 6 x Order No. : INDI25-4K
Luminaire name : INDI 25 OPAL 4000K
Equipment : 1 x LED 5630 25 W / 2380 lm

3 3E x **Collingwood**
Order No. : SP4747 14W DOWNLIGHT
Luminaire name : SP4747
Equipment : 1 x LED 14 W / 2000 lm
Emergency : 220 lm (11.0 %)

6.1 Summary, Office Space 2

6.1.8 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux	230460.00 lm
Total power	2232.0 W
Total power per area (378.99 m²)	5.89 W/m² (1.41 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	419 lx	cylindrical
E_{min}	109 lx	194 lx
$E_{min}/\bar{E}_m (U_o)$	0.26	51 lx
$E_{min}/E_{max} (U_d)$	0.15	0.26
E_z/E_h		0.44
Position	0.75 m	1.20 m
RUG (--- ---)	---	

Hints:
 - Room dimensions deviate too much from a rectangular room.

Major surfaces

	$\bar{E}_m$	U_o
M 1.24587 (Ceiling)	80 lx	0.35
M 1.24515 (Wall)	304 lx	0.43
M 1.24519 (Wall)	268 lx	0.00
M 1.24540 (Wall)	205 lx	0.49
M 1.24541 (Wall)	270 lx	0.40
M 1.24544 (Wall)	0 lx	0.21
M 1.24549 (Wall)	216 lx	0.53
M 1.24553 (Wall)	285 lx	0.39

6.1 Summary, Office Space 2

6.1.8 Result overview, Evaluation area 1

M 1.24554 (Wall)	260 lx	0.58
M 1.24562 (Wall)	86 lx	0.50
M 1.24563 (Wall)	221 lx	0.28
M 1.24564 (Wall)	326 lx	0.32
M 1.24565 (Wall)	394 lx	0.44
M 1.24566 (Wall)	419 lx	0.52
M 1.24567 (Wall)	69 lx	0.66
M 1.24568 (Wall)	102 lx	0.53
M 1.24569 (Wall)	129 lx	0.35
M 1.24570 (Wall)	191 lx	0.22
M 1.24571 (Wall)	239 lx	0.30
M 1.24572 (Wall)	146 lx	0.45
M 1.24573 (Wall)	130 lx	0.34
M 1.24574 (Wall)	225 lx	0.38
M 1.24575 (Wall)	256 lx	0.31
M 1.24576 (Wall)	156 lx	0.48
M 1.24577 (Wall)	255 lx	0.27
M 1.24578 (Wall)	295 lx	0.36
M 1.24579 (Wall)	262 lx	0.38
M 1.24580 (Wall)	197 lx	0.61
M 1.24581 (Wall)	235 lx	0.34
M 1.24582 (Wall)	0 lx	0.40
M 1.24583 (Wall)	151 lx	0.42
M 1.24584 (Wall)	278 lx	0.36
M 1.24585 (Wall)	259 lx	0.30
M 1.24586 (Wall)	165 lx	0.43

Type No. Make

ZLISS

1	6E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)

2	38E x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

5	6 x	Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm

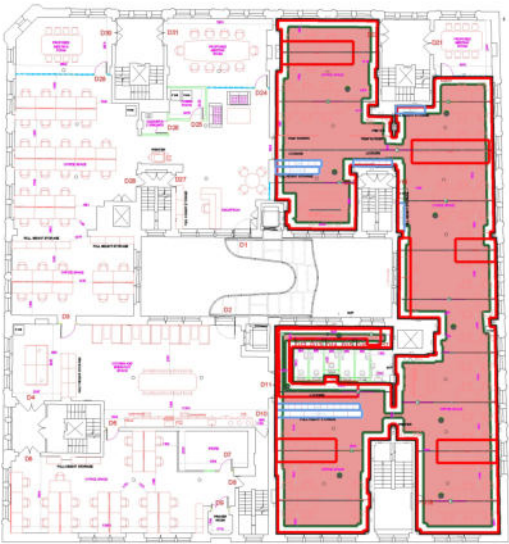
Collingwood

3	3E x	Order No.	: SP4747 14W DOWNLIGHT
		Luminaire name	: SP4747
		Equipment	: 1 x LED 14 W / 2000 lm
		Emergency	: 220 lm (11.0 %)

6 Office Space 2

6.2 Summary, Office Space 2

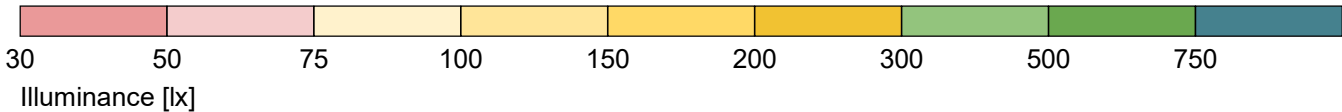
6.2.1.1 Result overview (emergency lighting)



FOURWAYS HOUSE
PROPOSED GA

BN
PRO-GA-LAY

-0 4 6 8 10 14 x [m]



General

Calculation algorithm used : Direct component
Maintenance factor : 0.8
Height (phot centre) -variable-
Maximum I : 140 cd

Anti panic area:

No. Surface
Emin [lx] Emax [lx] Ud

Anti panic area 1.1

Calculation field: 34.44m x 14.57m (26 x 11 pts), Height = 0.00m

1 0.16 lx 16.57 lx 1:106.88
>= 0.5 lx = 1 : 40



Type No. Make

ZLISS			
1	2E x	Order No.	: INDI40-4K -- Emergency Lighting --
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)
2	8E x	Order No.	: INDI50-4K -- Emergency Lighting --
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

6 Office Space 2

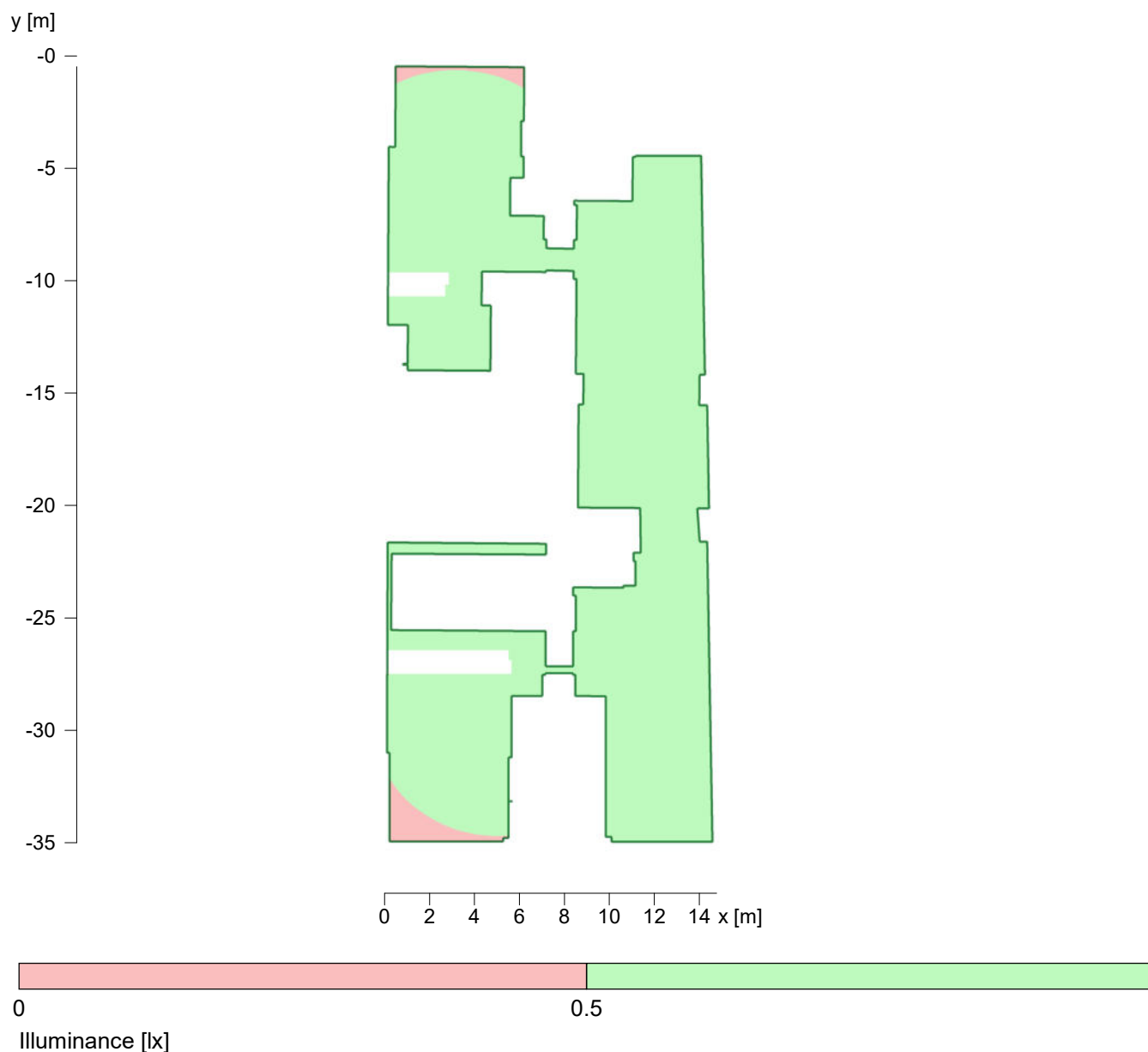
6.2 Summary, Office Space 2

6.2.1.1 Result overview (emergency lighting)

		Collingwood	
3	2E x	Order No. : SP4747 14W DOWNLIGHT	-- Emergency Lighting --
		Luminaire name : SP4747	
		Equipment : 1 x LED 14 W / 2000 lm	
		Emergency : 220 lm (11.0 %)	

6.2 Calculation results, Office Space 2

6.2.2 Boundary line, Anti panic area 1.1 (E)

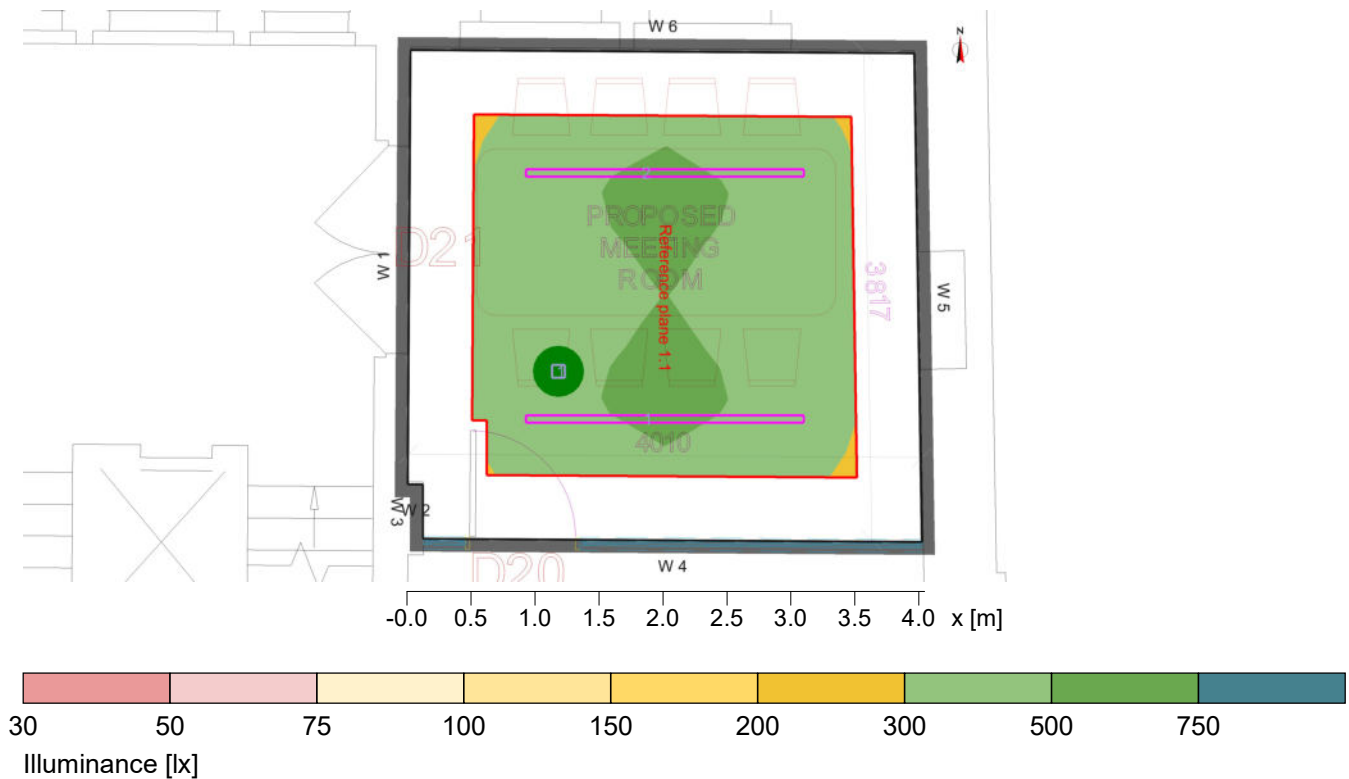


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.16 lx
Maximum illuminance	Emax	: 17 lx
Diversity	Emin/Emax	: 1 : 107.00 (0.01) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

7 Proposed Meeting Room

7.1 Summary, Proposed Meeting Room

7.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.60 m
Maintenance factor	0.80
Total luminous flux	9900.00 lm
Total power	96.0 W
Total power per area (15.12 m ²)	6.35 W/m ² (1.46 W/m ² /100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	433 lx	176 lx
$E_{min}/\bar{E}_m (U_o)$	326 lx	154 lx
$E_{min}/E_{max} (U_d)$	0.75	0.88
E_z/E_h	0.61	0.34
Position	0.75 m	1.20 m
$R_{UG} (2.9H \ 2.8H)$	≤ 24.0	
Luminaire :		
(INDI 50 OPAL 4000K, INDI50-4K)		

Major surfaces

	$\bar{E}_m$	U_o
M 1.7 (Ceiling)	78 lx	0.91
M 1.1 (Wall)	198 lx	0.63
M 1.4 (Wall)	237 lx	0.62
M 1.5 (Wall)	198 lx	0.63
M 1.6 (Wall)	235 lx	0.63

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024



7 Proposed Meeting Room

7.1 Summary, Proposed Meeting Room

7.1.1 Result overview, Evaluation area 1

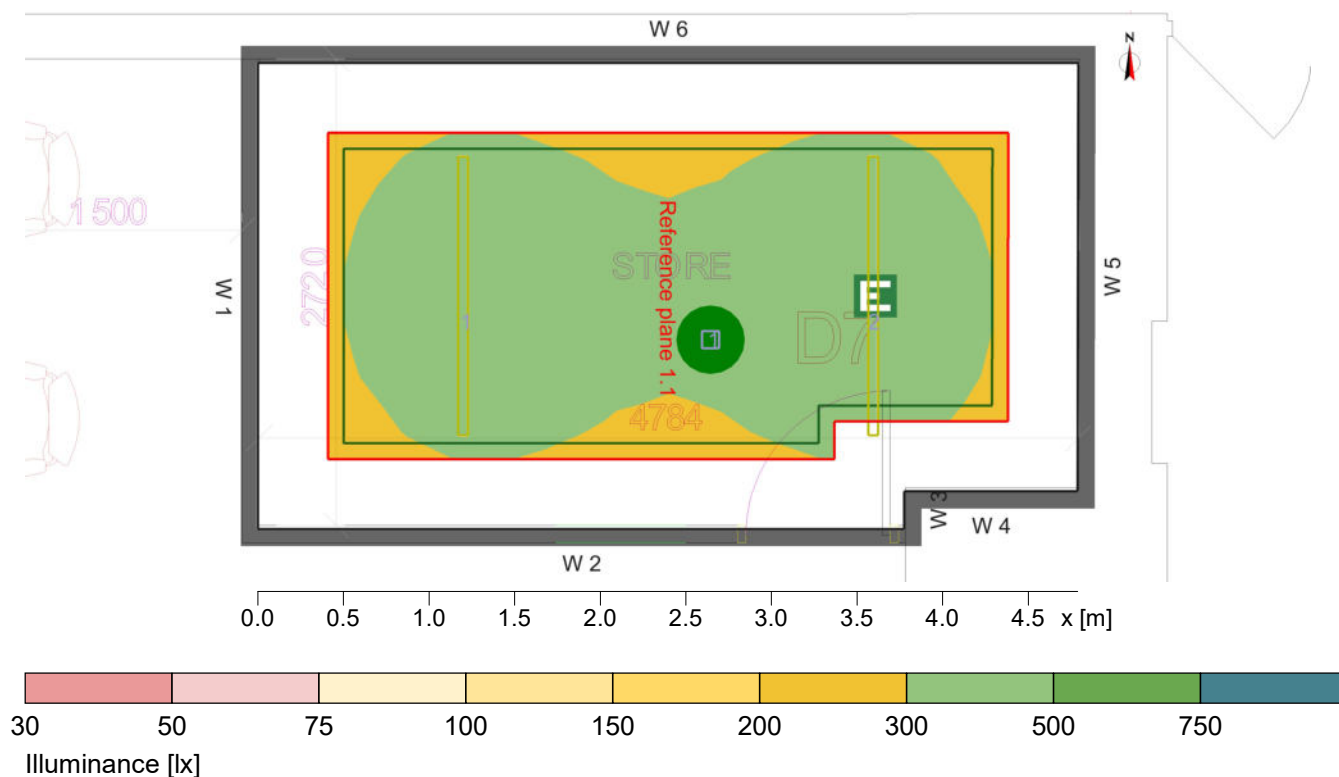
Type No.\Make

		ZLISS	
2	2 x	Order No.	: INDI50-4K
		Luminaire name	: INDI 50 OPAL 4000K
		Equipment	: 1 x LED 5630 48 W / 4950 lm
		Emergency	: 350 lm (7.1 %)

8 Store

8.1 Summary, Store

8.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.60 m
Maintenance factor	0.80
Total luminous flux	7360.00 lm
Total power	72.0 W
Total power per area (12.79 m²)	5.63 W/m² (1.68 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	335 lx	137 lx
$E_{min}/\bar{E}_m (U_o)$	262 lx	123 lx
$E_{min}/E_{max} (U_d)$	0.78	0.90
E_z/E_h	0.65	0.33
Position	0.75 m	1.20 m
$R_{UG} (2.0H \ 3.5H)$	≤ 24.0	
Luminaire :		
(INDI 40 OPAL 4000K, INDI40-4K)		

Major surfaces

	$\bar{E}_m$	U_o
M 1.9 (Ceiling)	65 lx	0.88
M 1.1 (Wall)	171 lx	0.63
M 1.2 (Wall)	185 lx	0.57
M 1.7 (Wall)	172 lx	0.59
M 1.8 (Wall)	189 lx	0.54

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024



8 Store

8.1 Summary, Store

8.1.1 Result overview, Evaluation area 1

Type No.\Make

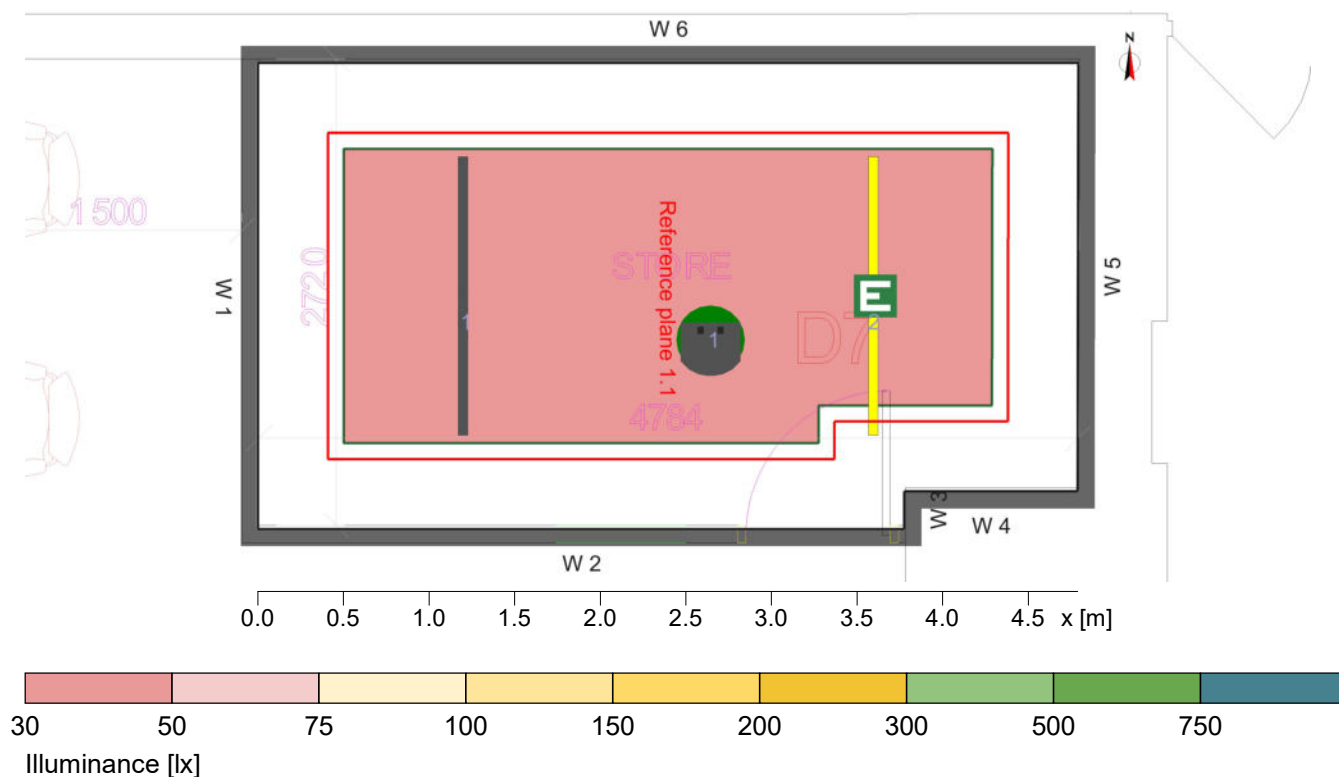
		ZLISS	
1	2E x	Order No.	: INDI40-4K
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)

Object : Fourways House, Manchester
 Installation : General _Emergency Lighting
 Project number : Rev-B
 Date : 27.02.2024

8 Store

8.2 Summary, Store

8.2.1.1 Result overview (emergency lighting)

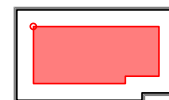


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	1.88 lx	15.78 lx	1: 8.39
		>= 0.5 lx		>= 1 : 40



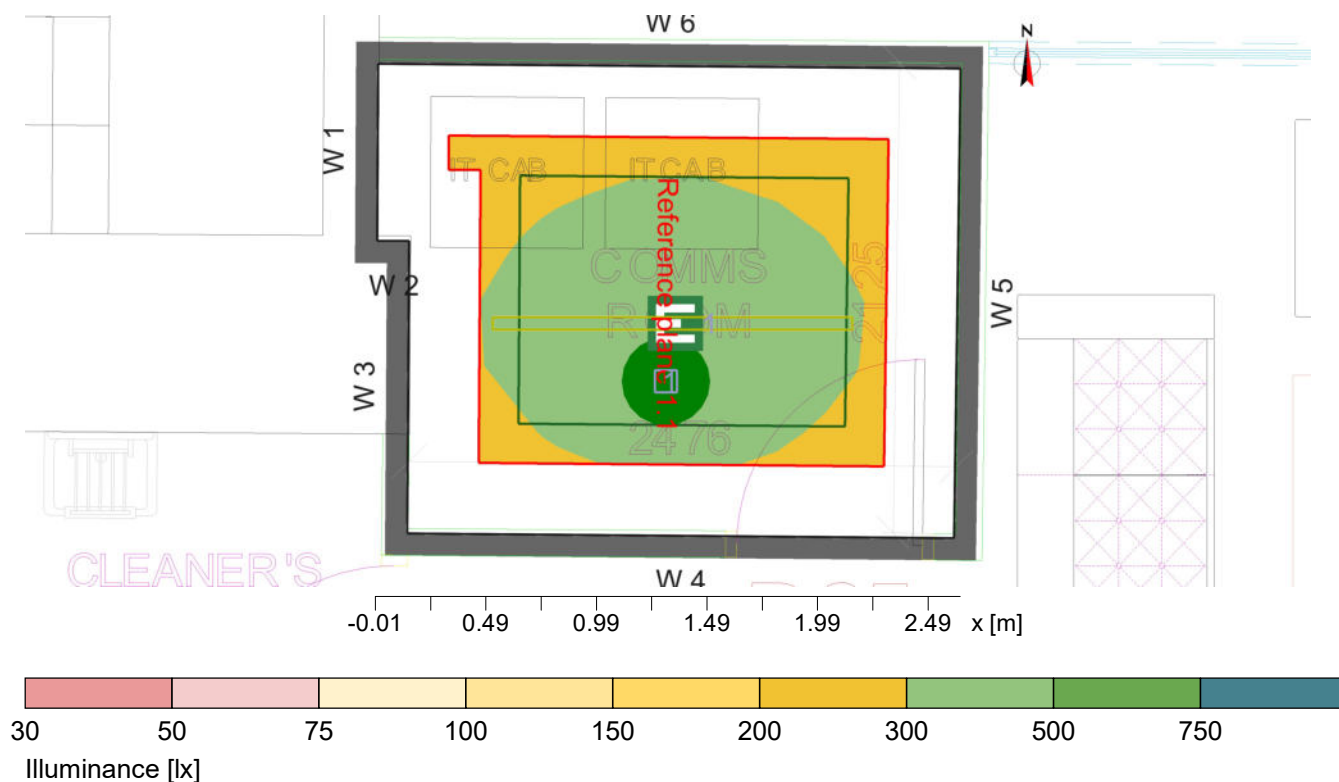
Type No.\Make

1	1E x	ZLISS	
	Order No.	: INDI40-4K	-- Emergency Lighting --
	Luminaire name	: INDI 40 OPAL 4000K	
	Equipment	: 1 x LED 5630 36 W / 3680 lm	
	Emergency	: 350 lm (9.5 %)	

9 Comms Room

9.1 Summary, Comms Room

9.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux
 Total power
 Total power per area (5.38 m²)

3680.00 lm
 36.0 W
 6.70 W/m² (2.12 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	316 lx	124 lx
$E_{min}/\bar{E}_m (U_o)$	238 lx	116 lx
$E_{min}/E_{max} (U_d)$	0.75	0.94
E_z/E_h	0.63	
Position	0.29	0.29
$R_{UG} (1.9H \ 1.6H)$	0.75 m	1.20 m
Luminaire :	10.0	
(INDI 40 OPAL 4000K, INDI40-4K)		
Hints:		
- Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.		

Major surfaces

	$\bar{E}_m$	U_o
M 1.10 (Ceiling)	69 lx	0.83
M 1.7 (Wall)	193 lx	0.62
M 1.8 (Wall)	191 lx	0.58
M 1.9 (Wall)	168 lx	0.67

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024



9 Comms Room

9.1 Summary, Comms Room

9.1.1 Result overview, Evaluation area 1

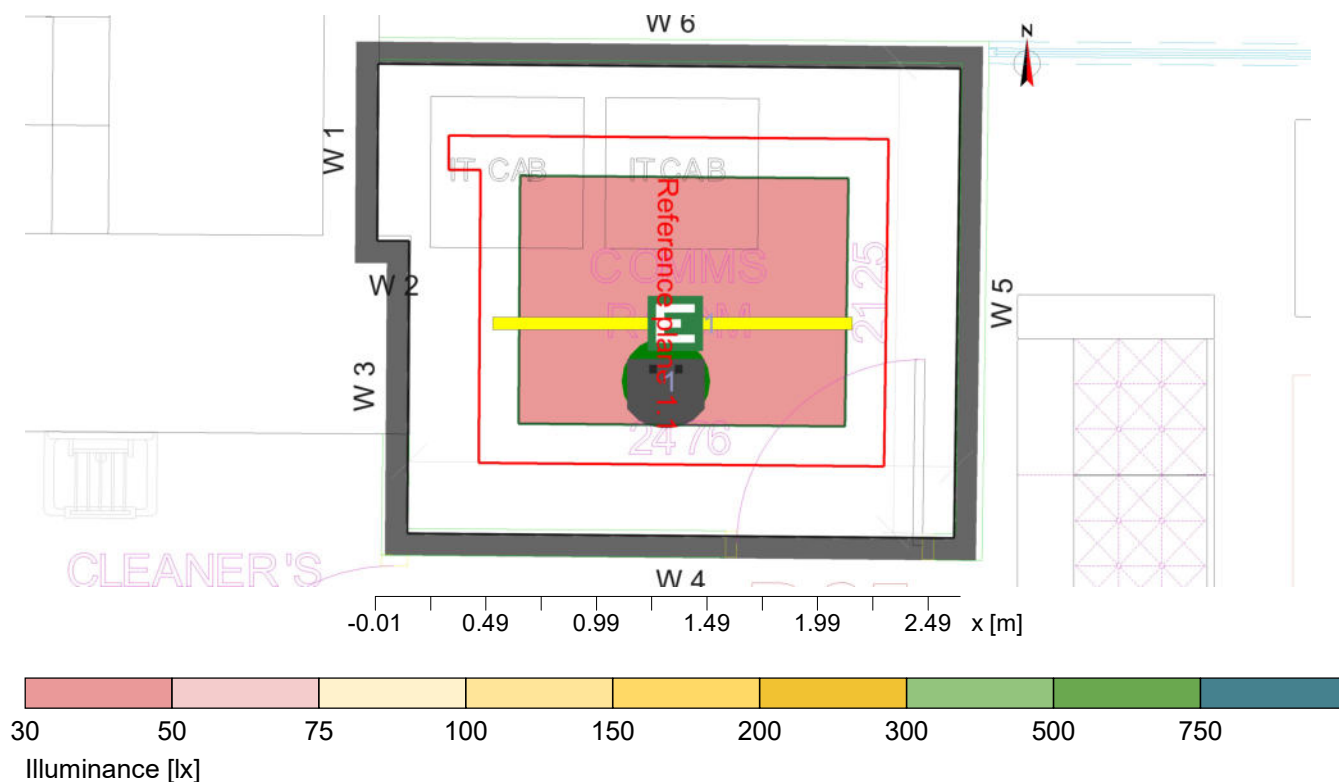
Type No.\Make

		ZLISS	
1	1E x	Order No.	: INDI40-4K -- Emergency Lighting --
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)

9 Comms Room

9.2 Summary, Comms Room

9.2.1.1 Result overview (emergency lighting)

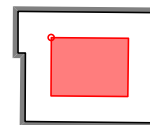


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot centre) : 2.56 m
 Maximum I : 140 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	11.49 lx	15.77 lx	1: 1.37
		>= 0.5 lx		>= 1 : 40



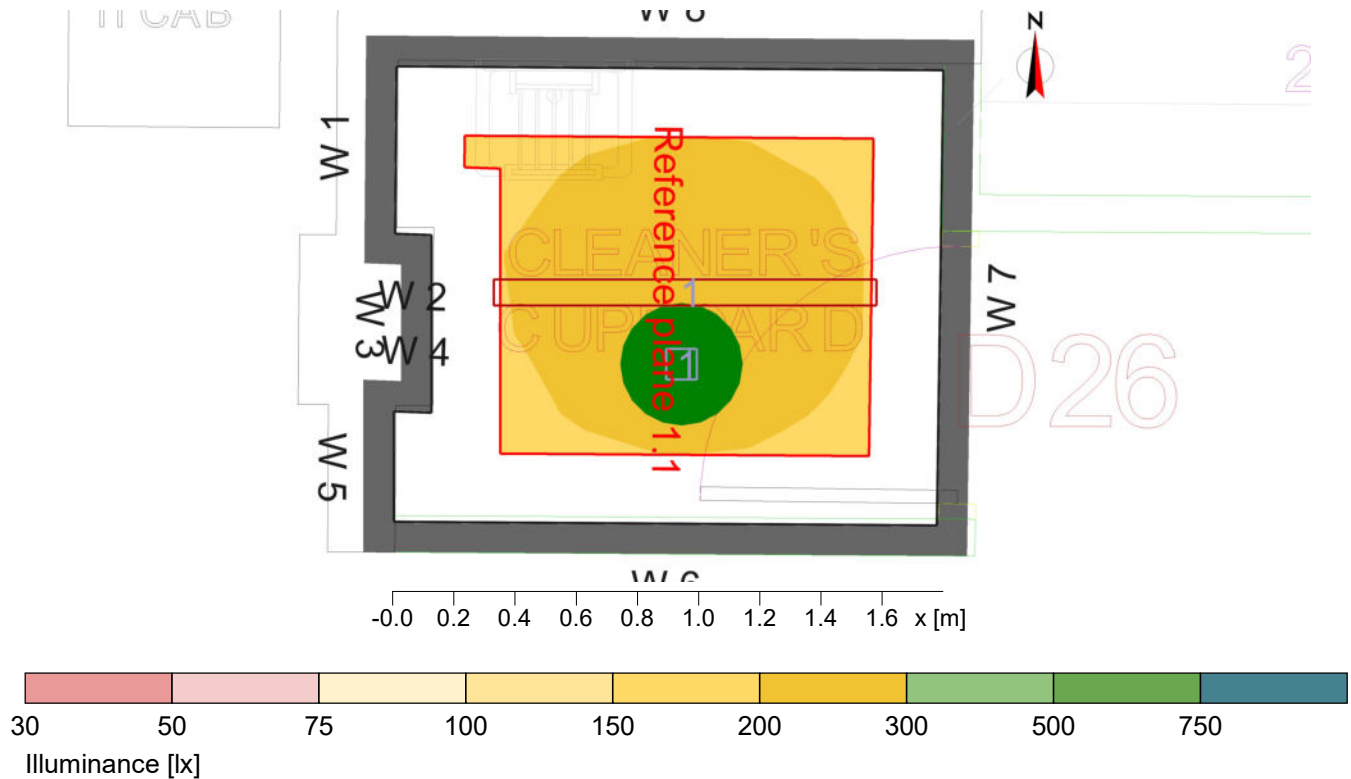
Type No.\Make

ZLISS			
1	1E x	Order No.	: INDI40-4K -- Emergency Lighting --
		Luminaire name	: INDI 40 OPAL 4000K
		Equipment	: 1 x LED 5630 36 W / 3680 lm
		Emergency	: 350 lm (9.5 %)

10 Cleaners Cupboard

10.1 Summary, Cleaners Cupboard

10.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux	2500.00 lm
Total power	17.0 W
Total power per area (2.58 m²)	6.60 W/m² (3.15 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	209 lx	85 lx
$E_{min}/\bar{E}_m (U_o)$	186 lx	82 lx
$E_{min}/E_{max} (U_d)$	0.89	0.97
E_z/E_h	0.81	0.29
Position	0.75 m	1.20 m
$R_{UG} (1.2H \ 1.0H)$	10.0	

Luminaire :
 (SP3246, SP3246 4FT ANTI-CORROSIVE)

Hints:

- Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.

Major surfaces

	$\bar{E}_m$	U_o
M 1.3 (Ceiling)	157 lx	0.72
M 1.1 (Wall)	176 lx	0.38
M 1.2 (Wall)	178 lx	0.38

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

10 Cleaners Cupboard

10.1 Summary, Cleaners Cupboard

10.1.1 Result overview, Evaluation area 1

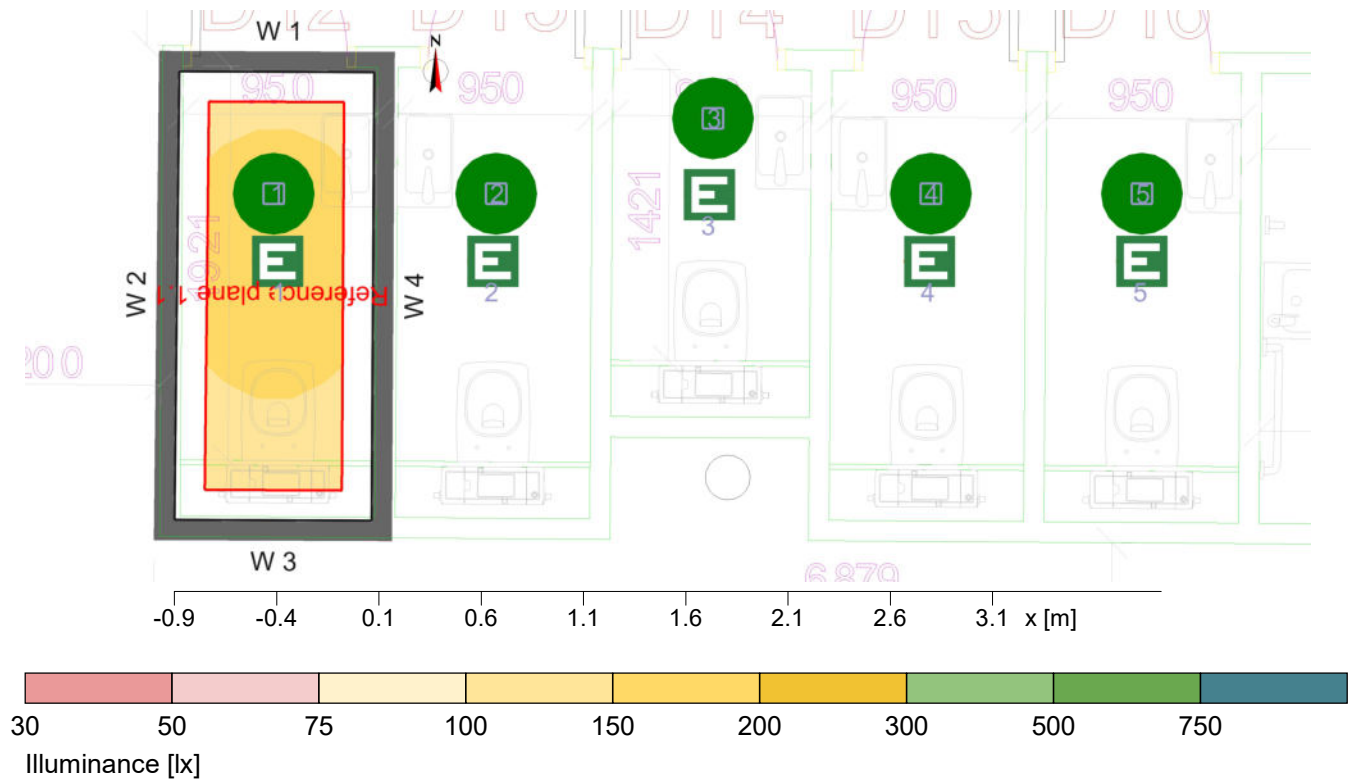
Type No.\Make

		Collingwood	
4	1 x	Order No.	: SP3246 4FT ANTI-CORROSIVE
		Luminaire name	: SP3246
		Equipment	: 1 x LED 0 17 W / 2500 lm

11 WC Cubicle

11.1 Summary, WC Cubicle

11.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux	2000.00 lm
Total power	14.0 W
Total power per area (2.10 m²)	6.68 W/m² (4.34 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	154 lx	50 lx
$E_{min}/\bar{E}_m (U_o)$	124 lx	44 lx
$E_{min}/E_{max} (U_d)$	0.81	0.88
E_z/E_h	0.73	0.24
Position	0.00 m	0.45 m
$R_{UG} (0.6H \ 1.4H)$	10.0	

Luminaire :
 (SP4747, SP4747 14W DOWNLIGHT)

Hints:

- Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.

Major surfaces

	$\bar{E}_m$	U_o
M 1.149 (Ceiling)	93 lx	0.54
M 1.147 (Wall)	206 lx	0.35
M 1.148 (Wall)	206 lx	0.35

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

11 WC Cubicle

11.1 Summary, WC Cubicle

11.1.1 Result overview, Evaluation area 1

Type No.\Make

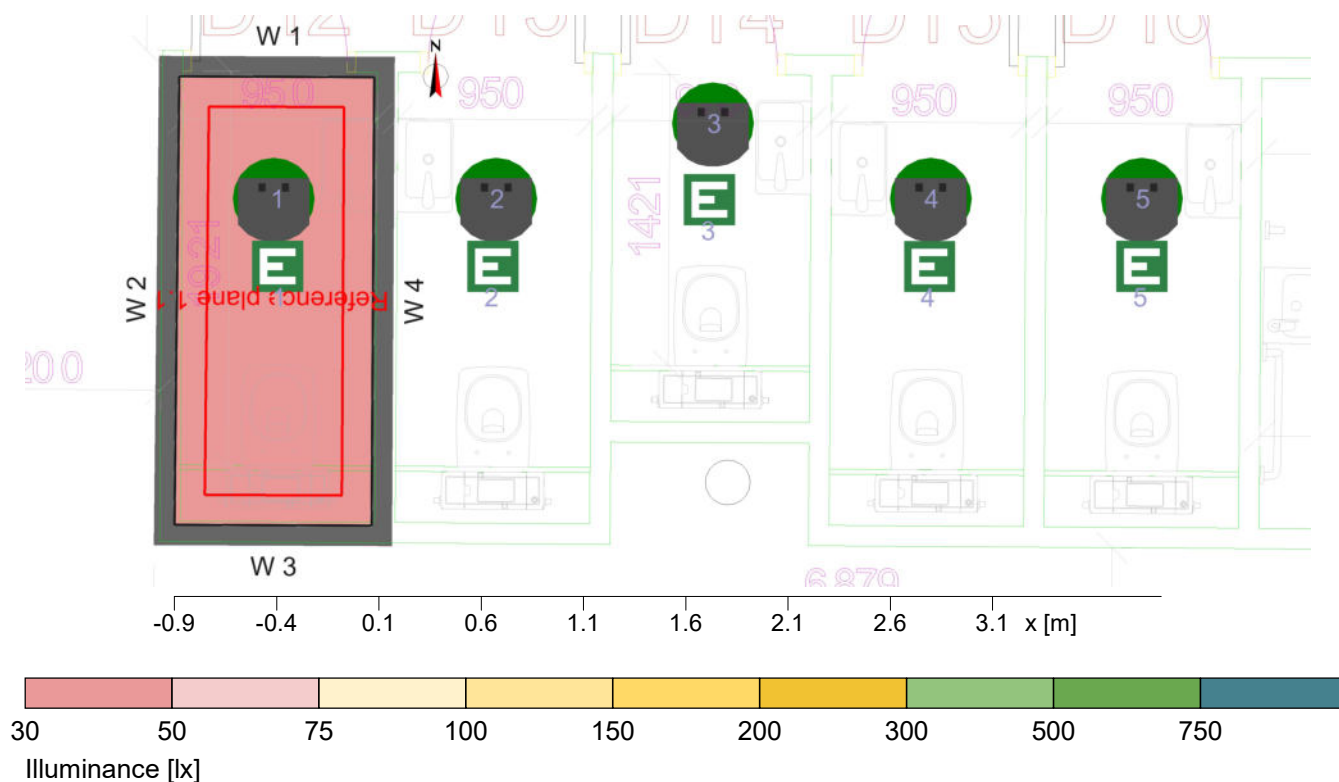
3	1E x	Collingwood		
		Order No.	: SP4747 14W DOWNLIGHT	-- Emergency Lighting --
		Luminaire name	: SP4747	
		Equipment	: 1 x LED 14 W / 2000 lm	
		Emergency	: 220 lm (11.0 %)	



11 WC Cubicle

11.2 Summary, WC Cubicle

11.2.1.1 Result overview (emergency lighting)



General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.80 m
 Maximum I : 130 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 0.97m x 2.19m (5 x 11 pts), Height = 0.00m				
1		0.00 lx	12.87 lx	---
		>= 0.5 lx	>= 1 : 40	



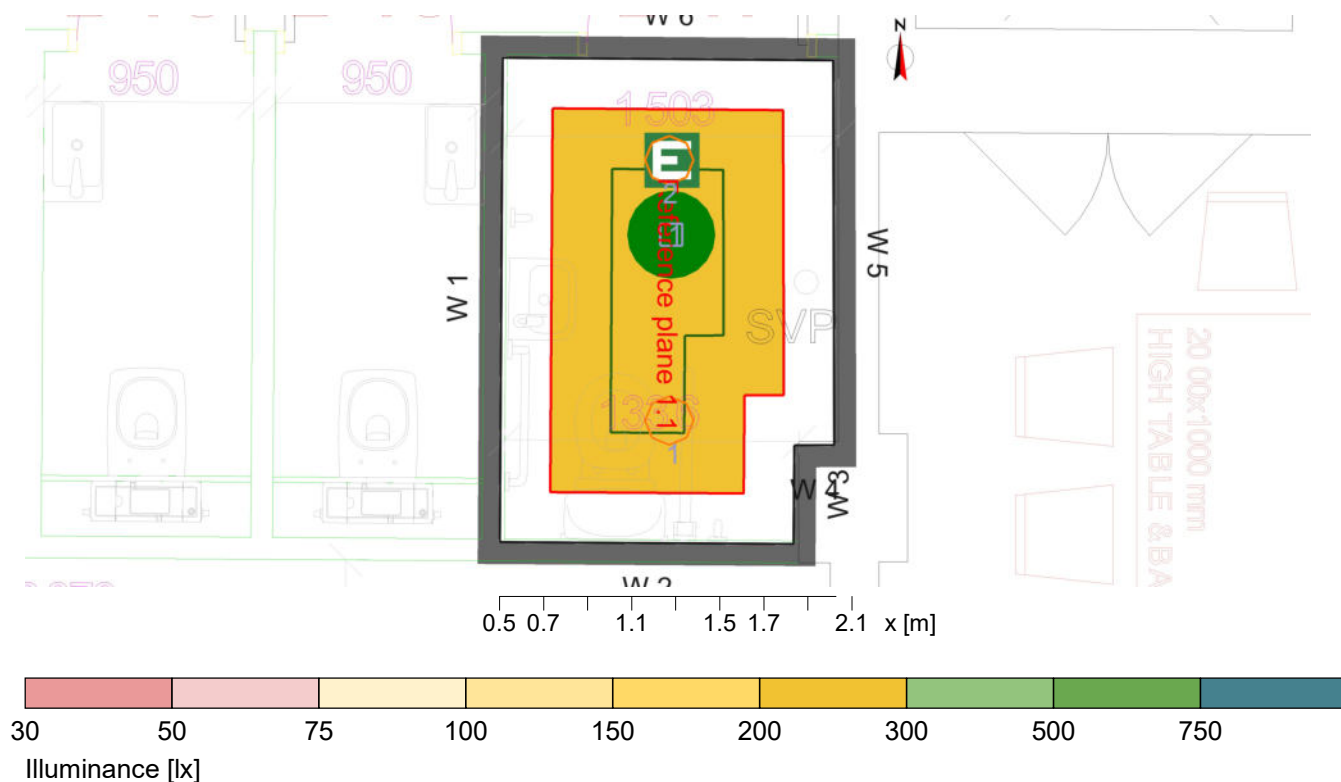
Type No. Make

3	5E x		Collingwood			-- Emergency Lighting --
			Order No.	: SP4747 14W DOWNLIGHT		
			Luminaire name	: SP4747		
			Equipment	: 1 x LED 14 W / 2000 lm		
			Emergency	: 220 lm (11.0 %)		

12 Disabled WC

12.1 Summary, Disabled WC

12.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.80 m
Maintenance factor	0.80
Total luminous flux	4000.00 lm
Total power	28.0 W
Total power per area (3.23 m²)	8.67 W/m² (3.09 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	280 lx	94 lx
$E_{min}/\bar{E}_m (U_o)$	255 lx	90 lx
$E_{min}/E_{max} (U_d)$	0.91	0.95
E_z/E_h	0.85	0.26
Position	0.00 m	0.45 m
$R_{UG} (0.9H \ 1.4H)$	10.0	
Luminaire :		
(SP4747, SP4747 14W DOWNLIGHT)		
Hints:		
- Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.		

Major surfaces

	$\bar{E}_m$	U_o
M 1.3 (Ceiling)	116 lx	0.92
M 1.1 (Wall)	251 lx	0.58
M 1.2 (Wall)	246 lx	0.58

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024

12 Disabled WC

12.1 Summary, Disabled WC

12.1.1 Result overview, Evaluation area 1

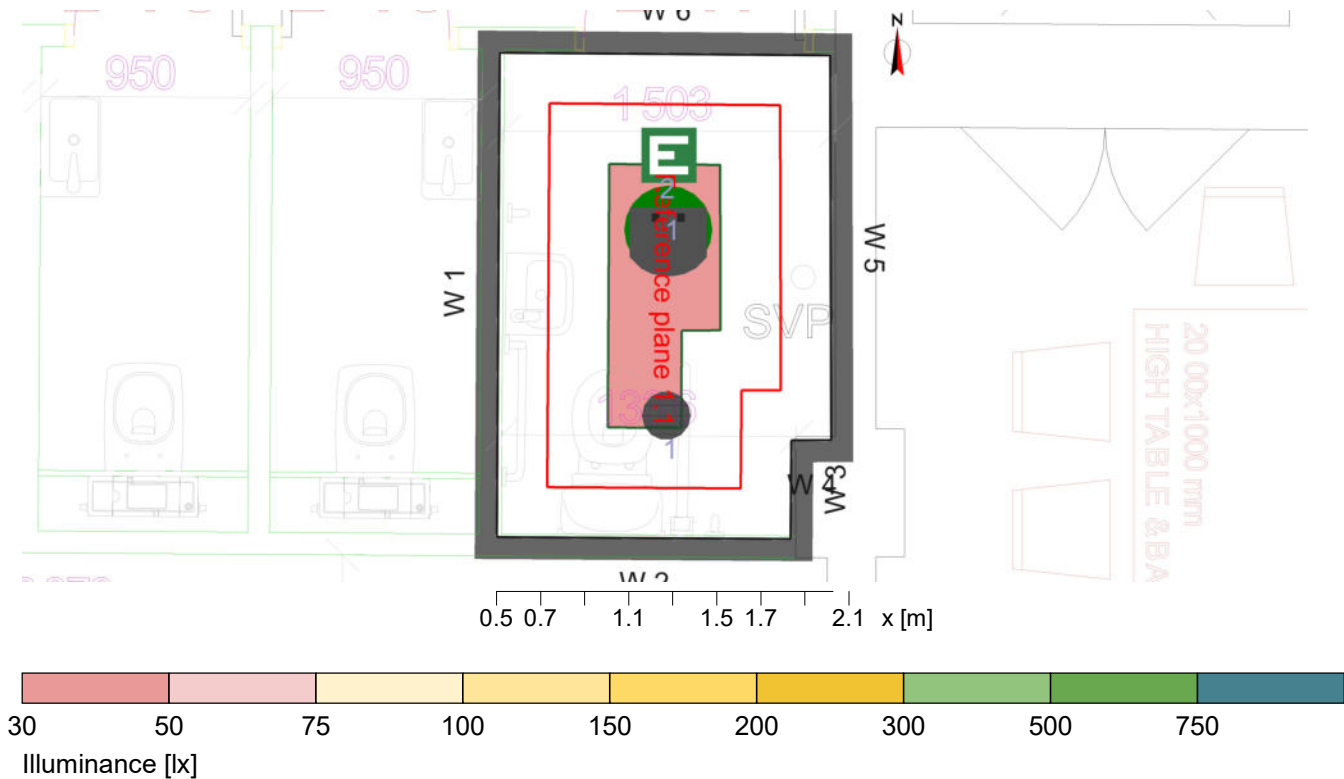
Type No.\Make

3	2E x	Collingwood	
		Order No.	: SP4747 14W DOWNLIGHT
		Luminaire name	: SP4747
		Equipment	: 1 x LED 14 W / 2000 lm
		Emergency	: 220 lm (11.0 %)

12 Disabled WC

12.2 Summary, Disabled WC

12.2.1.1 Result overview (emergency lighting)

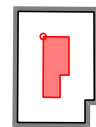


General

Calculation algorithm used : Direct component
Maintenance factor : 0.8
Height (phot centre) : 2.80 m
Maximum I : 130 cd <= 900 cd

Anti panic area:

No.	Surface		Ud
	Emin [lx]	Emax [lx]	
Anti panic area 1.1			
Calculation field: 1.19m x 0.51m (10 x 4 pts), Height = 0.00m			
1	7.94 lx	12.86 lx	1: 1.62
	>= 0.5 lx		>= 1 : 40



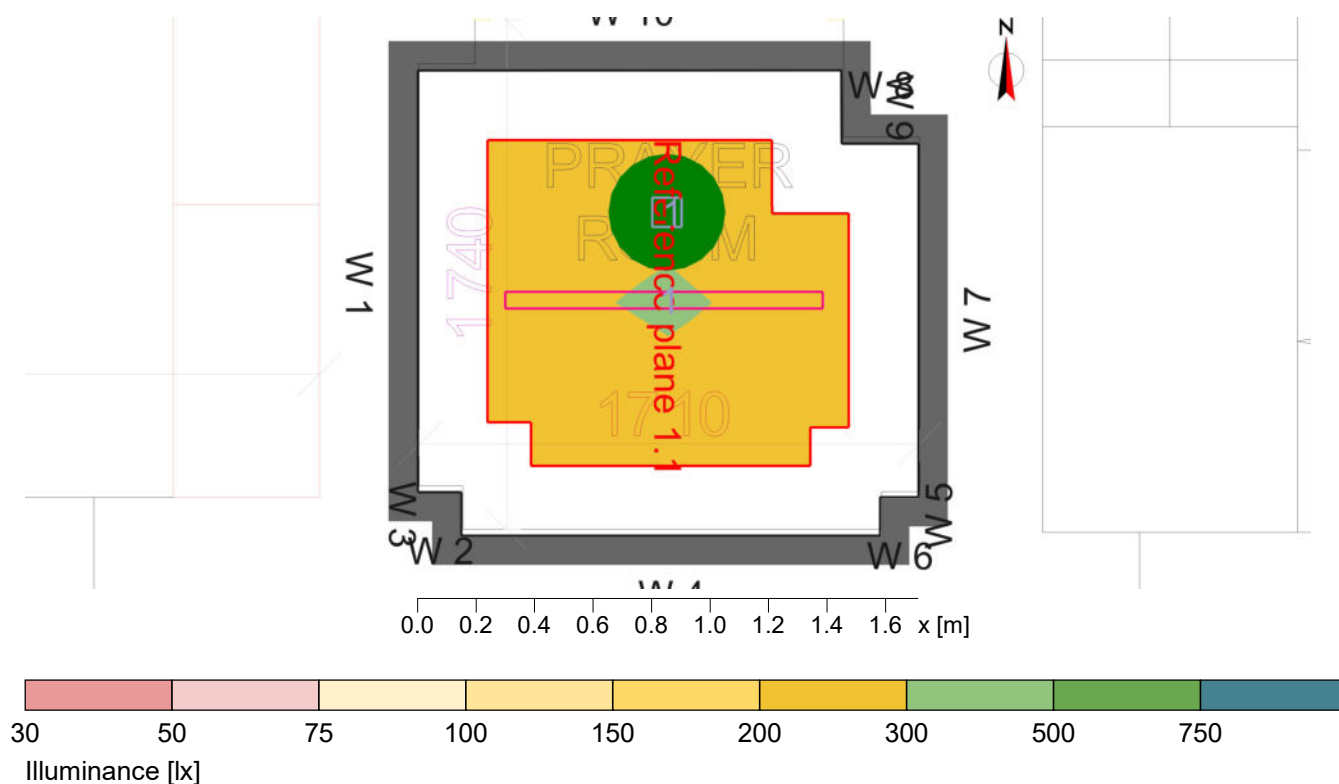
Type No.\Make

3 1E x 	Collingwood	
	Order No.	: SP4747 14W DOWNLIGHT -- Emergency Lighting --
	Luminaire name	: SP4747
	Equipment	: 1 x LED 14 W / 2000 lm
	Emergency	: 220 lm (11.0 %)

13 Prayer Room

13.1 Summary, Prayer Room

13.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.80

Total luminous flux
 Total power
 Total power per area (2.61 m²)

2380.00 lm
 25.0 W
 9.57 W/m² (3.45 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	277 lx	109 lx
$E_{min}/\bar{E}_m (U_o)$	247 lx	101 lx
$E_{min}/E_{max} (U_d)$	0.89	0.93
E_z/E_h	0.81	0.27
Position	0.75 m	1.20 m
$R_{UG} (1.3H \ 1.2H)$	10.0	
Luminaire : (INDI 25 OPAL 4000K, INDI25-4K)		
Hints:		

- Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.

Major surfaces

M 1.1 (Ceiling)	$\bar{E}_m$ 85 lx	U_o 0.90
-----------------	----------------------	---------------

Object : Fourways House, Manchester
Installation : General _Emergency Lighting
Project number : Rev-B
Date : 27.02.2024



13 Prayer Room

13.1 Summary, Prayer Room

13.1.1 Result overview, Evaluation area 1

Type No.\Make

5	1 x	ZLISS	
		Order No.	: INDI25-4K
		Luminaire name	: INDI 25 OPAL 4000K
		Equipment	: 1 x LED 5630 25 W / 2380 lm