

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.

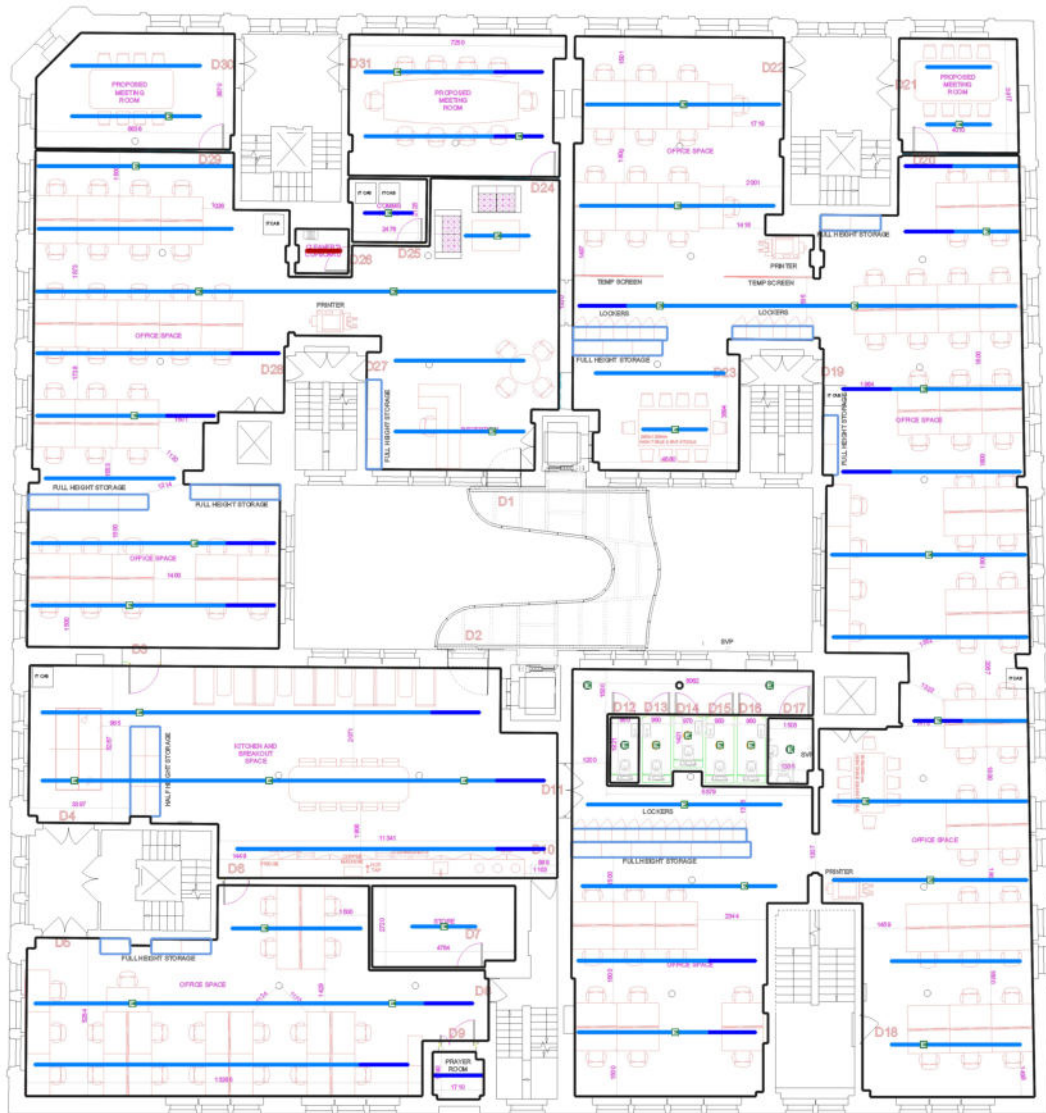
This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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.

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

Description, Fourways House

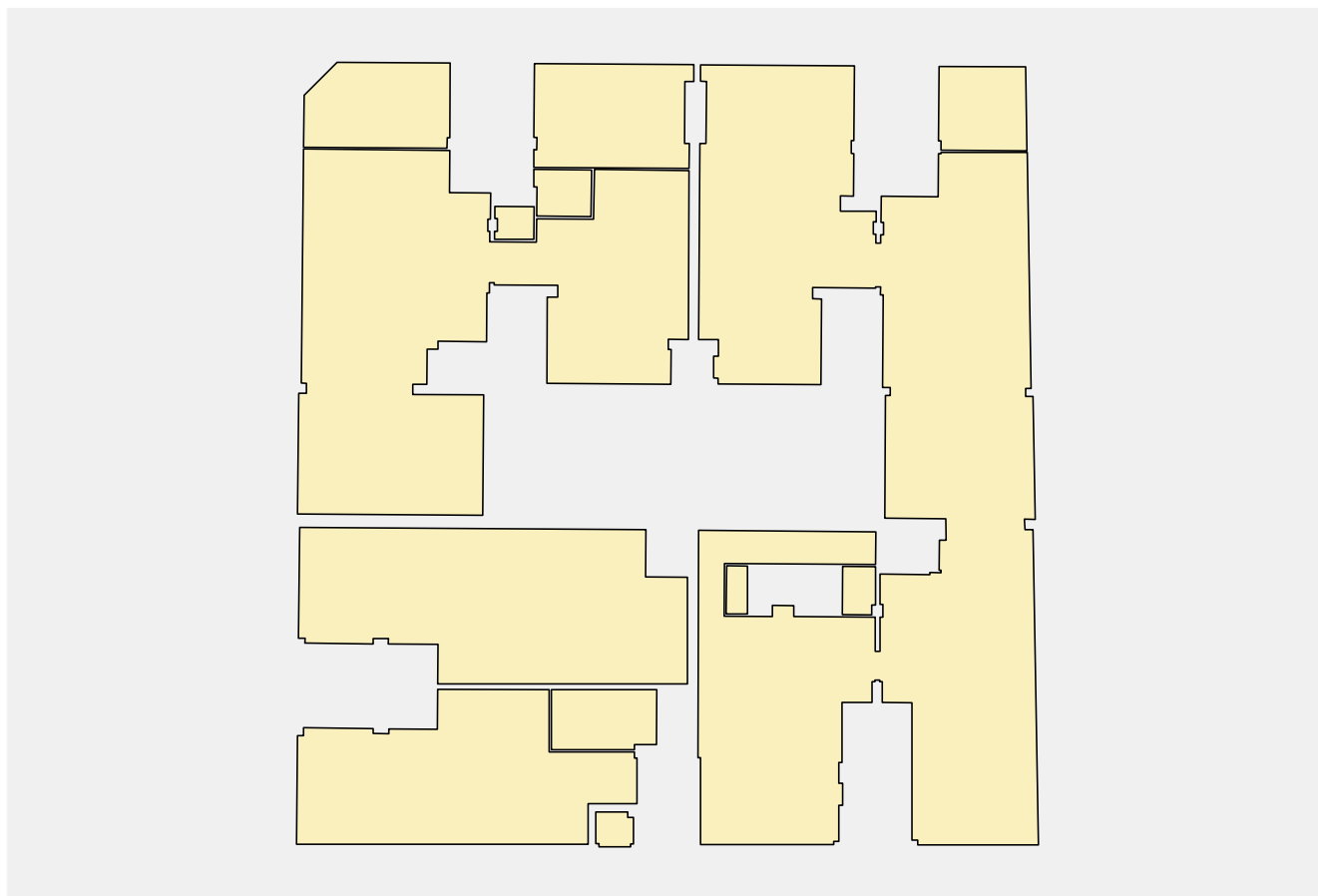
.1 Floor plan



DESK POSITIONS = 128

Summary, Fourways House

.2 Floor overview



Number of rooms	13	
Total area	862 m ²	Calculated
Number of luminaires	152	
Total luminous flux	611599.9 lm	
Total power	10120.7 W	
Total power per area	11.74 W/m ²	

Parts list

Type No. Make

ZLISS			
8	121E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	21E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

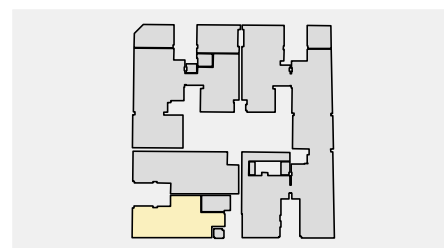
Summary, Fourways House

.2 Floor overview

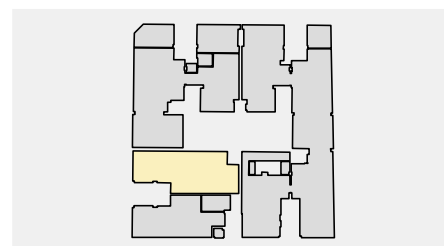
11 9E x 	ANSELL	
	Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
	Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
	Equipment	: 1 x LED single 840 17.26 W / 2305 lm
	Emergency	: 300 lm (13.0 %)
10 1 x 	Order No.	: ATORE4/1 (40W 4000K)
	Luminaire name	: WEATHERPROOFS & BATTENS - Tornado EVO 4000K
	Equipment	: 1 x LED 39.4 W / 6089.9 lm

Rooms

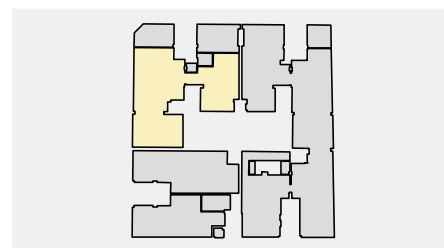
Office Space	15 x Luminaires
Total luminous flux	62010 lm
Total power	1059 W
Total power per area (82 m ²)	12.95 W/m ²
$\bar{E}_m$	501 lx
E_{min}	189 lx
$E_{min}/\bar{E}_m (U_o)$	0.38
RUG	---



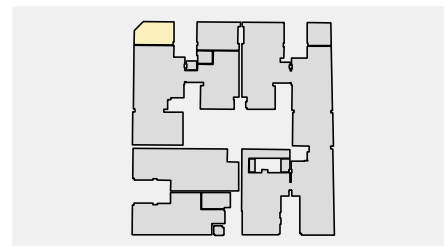
Kitchen/Breakout Space	20 x Luminaires
Total luminous flux	82315 lm
Total power	1396 W
Total power per area (109 m ²)	12.84 W/m ²
$\bar{E}_m$	491 lx
E_{min}	272 lx
$E_{min}/\bar{E}_m (U_o)$	0.55
RUG	<=19.1



Office Space/Reception	36 x Luminaires
Total luminous flux	149700 lm
Total power	2580 W
Total power per area (191 m ²)	13.50 W/m ²
$\bar{E}_m$	457 lx
E_{min}	187 lx
$E_{min}/\bar{E}_m (U_o)$	0.41
RUG	---



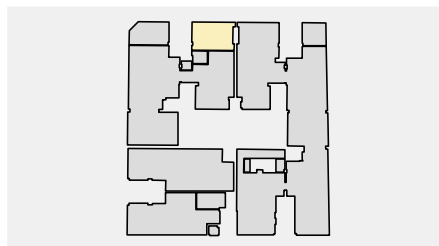
Meeting Room	4 x Luminaires
Total luminous flux	17120 lm
Total power	308 W
Total power per area (24 m ²)	12.57 W/m ²
$\bar{E}_m$	493 lx
E_{min}	283 lx
$E_{min}/\bar{E}_m (U_o)$	0.57
RUG	<=17.2



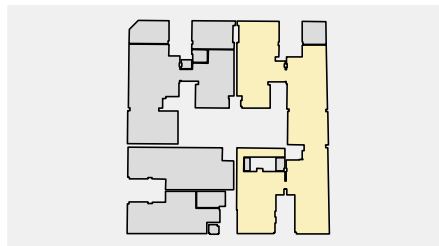
Summary, Fourways House

.2 Floor overview

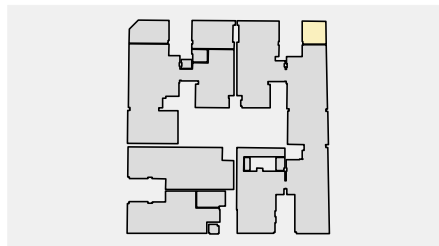
Meeting Room 2	6 x Luminaires
Total luminous flux	23490 lm
Total power	366 W
Total power per area (33 m ²)	11.16 W/m ²
$\bar{E}_m$	563 lx
E_{min}	382 lx
$E_{min}/\bar{E}_m (U_o)$	0.68
RUG	<=17.8



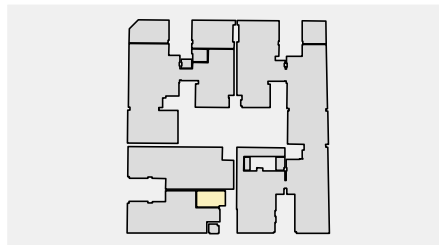
Office Space 2	59 x Luminaires
Total luminous flux	237835 lm
Total power	3979.78 W
Total power per area (379 m ²)	10.50 W/m ²
$\bar{E}_m$	389 lx
E_{min}	73 lx
$E_{min}/\bar{E}_m (U_o)$	0.19
RUG	---



Proposed Meeting Room	2 x Luminaires
Total luminous flux	8560 lm
Total power	154 W
Total power per area (15 m ²)	10.18 W/m ²
$\bar{E}_m$	365 lx
E_{min}	248 lx
$E_{min}/\bar{E}_m (U_o)$	0.68
RUG	<=16.5



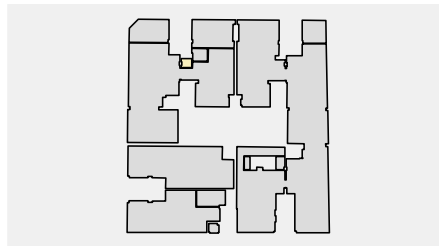
Store	1 x Luminaires
Total luminous flux	4280 lm
Total power	77 W
Total power per area (13 m ²)	6.02 W/m ²
$\bar{E}_m$	248 lx
E_{min}	100 lx
$E_{min}/\bar{E}_m (U_o)$	0.40
RUG	<=16.7



Comms Room	1 x Luminaires
Total luminous flux	3185 lm
Total power	29 W
Total power per area (5 m ²)	5.39 W/m ²
$\bar{E}_m$	287 lx
E_{min}	195 lx
$E_{min}/\bar{E}_m (U_o)$	0.68
RUG	10.0



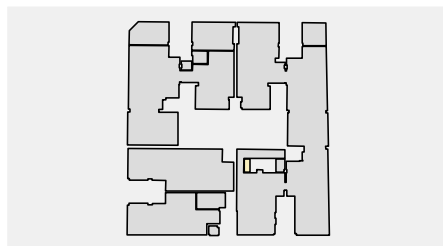
Cleaners Cupboard	1 x Luminaires
Total luminous flux	6089.8999 lm
Total power	39.4 W
Total power per area (3 m ²)	15.29 W/m ²
$\bar{E}_m$	314 lx
E_{min}	290 lx
$E_{min}/\bar{E}_m (U_o)$	0.92
RUG	10.0



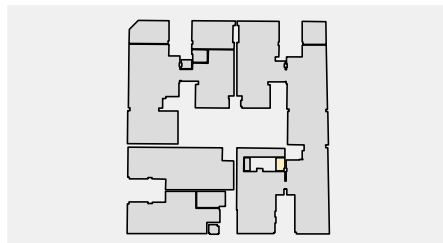
Summary, Fourways House

.2 Floor overview

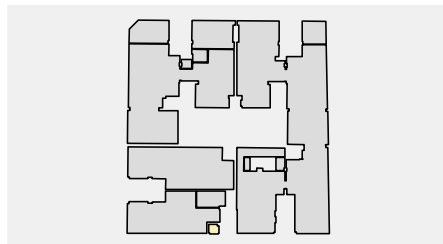
WC Cubicle	5 x Luminaires
Total luminous flux	11525 lm
Total power	86.3 W
Total power per area (2 m ²)	41.18 W/m ²
$\bar{E}_m$	189 lx
E_{min}	151 lx
$E_{min}/\bar{E}_m (U_o)$	0.80
R _{UG}	10.0



Disabled WC	1 x Luminaires
Total luminous flux	2305 lm
Total power	17.26 W
Total power per area (3 m ²)	5.34 W/m ²
$\bar{E}_m$	302 lx
E_{min}	241 lx
$E_{min}/\bar{E}_m (U_o)$	0.80
R _{UG}	10.0



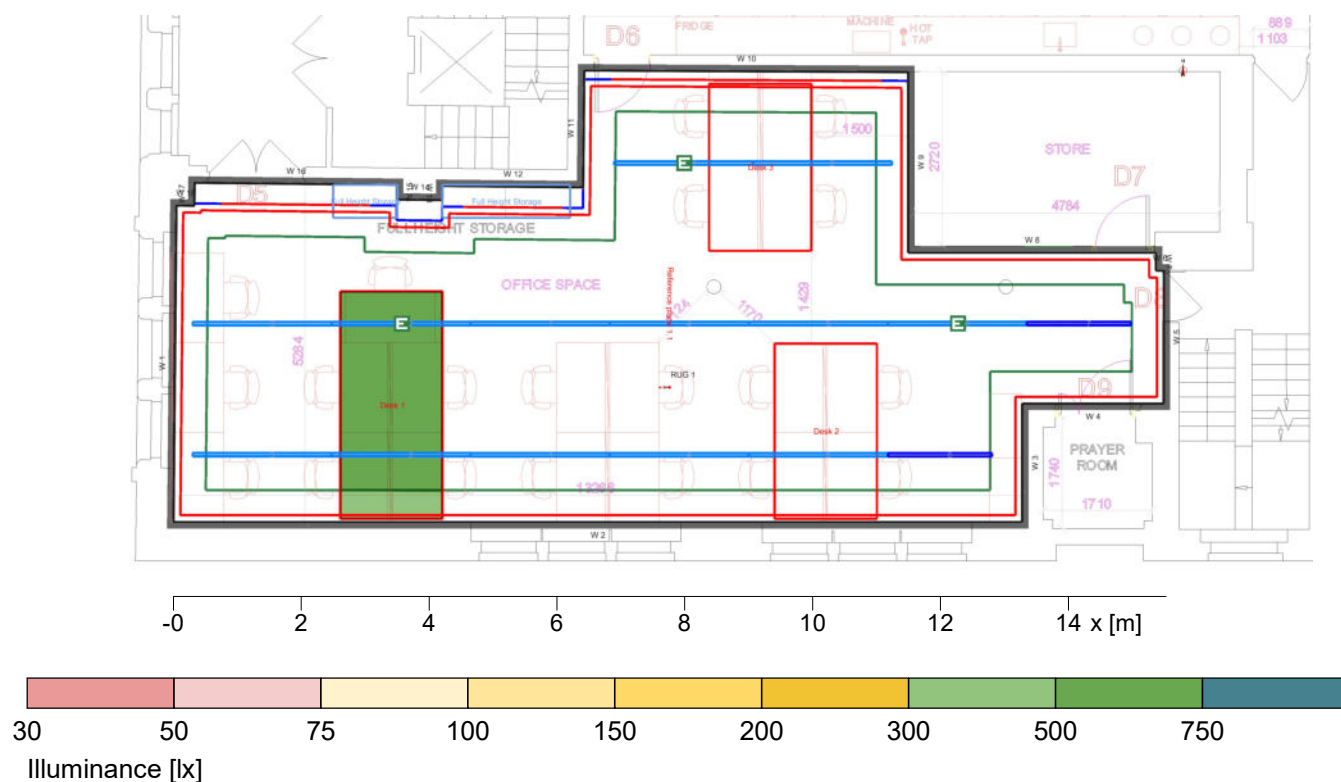
Prayer Room	1 x Luminaires
Total luminous flux	3185 lm
Total power	29 W
Total power per area (3 m ²)	11.11 W/m ²
$\bar{E}_m$	373 lx
E_{min}	319 lx
$E_{min}/\bar{E}_m (U_o)$	0.85
R _{UG}	10.0



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	62010 lm
Total power	1059 W
Total power per area (81.78 m ²)	12.95 W/m ²

Illuminance

Average illuminance	$\bar{E}_m$	589 lx
Minimum illuminance	E_{min}	362 lx
Maximum illuminance	E_{max}	696 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.63 (0.61)
Diversity U_d	E_{min}/E_{max}	1:1.92 (0.52)

Type No. Make

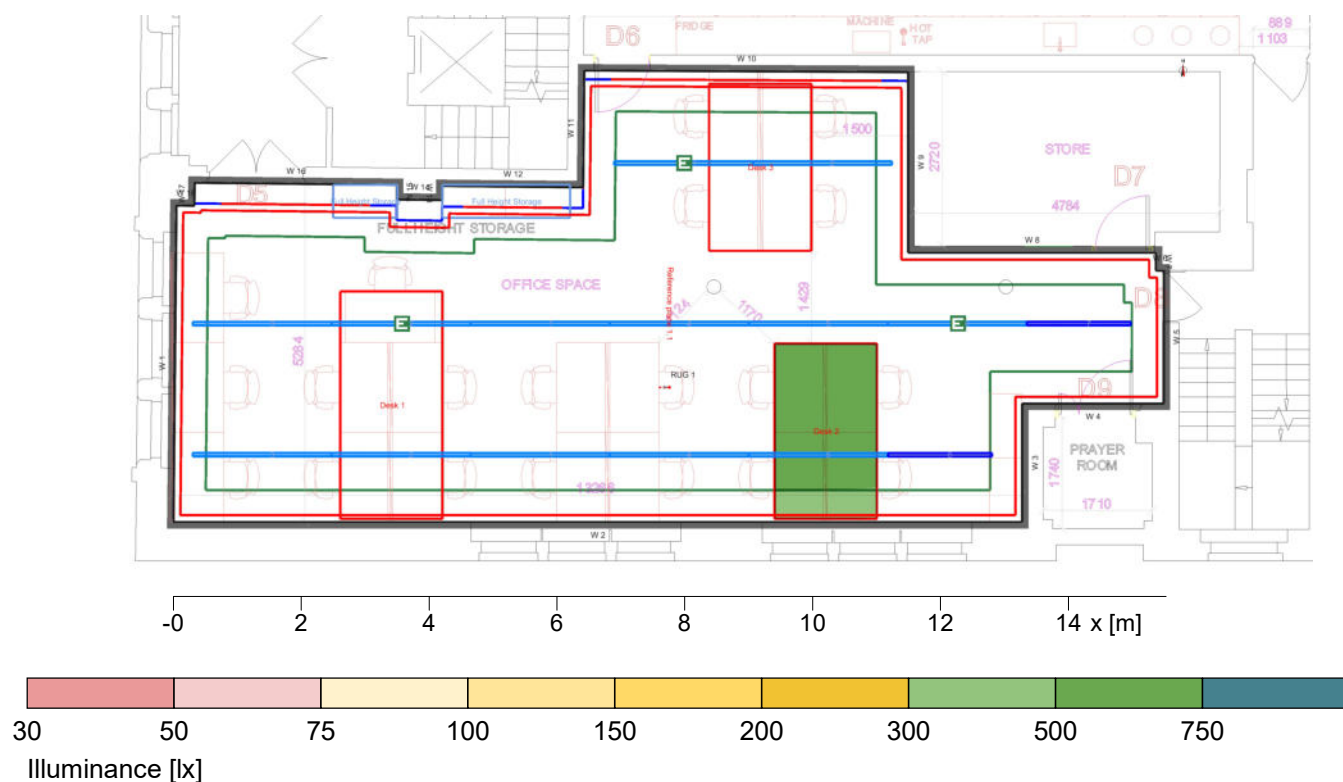
ZLISS

8	13E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	2 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	62010 lm
Total power	1059 W
Total power per area (81.78 m²)	12.95 W/m²

Illuminance

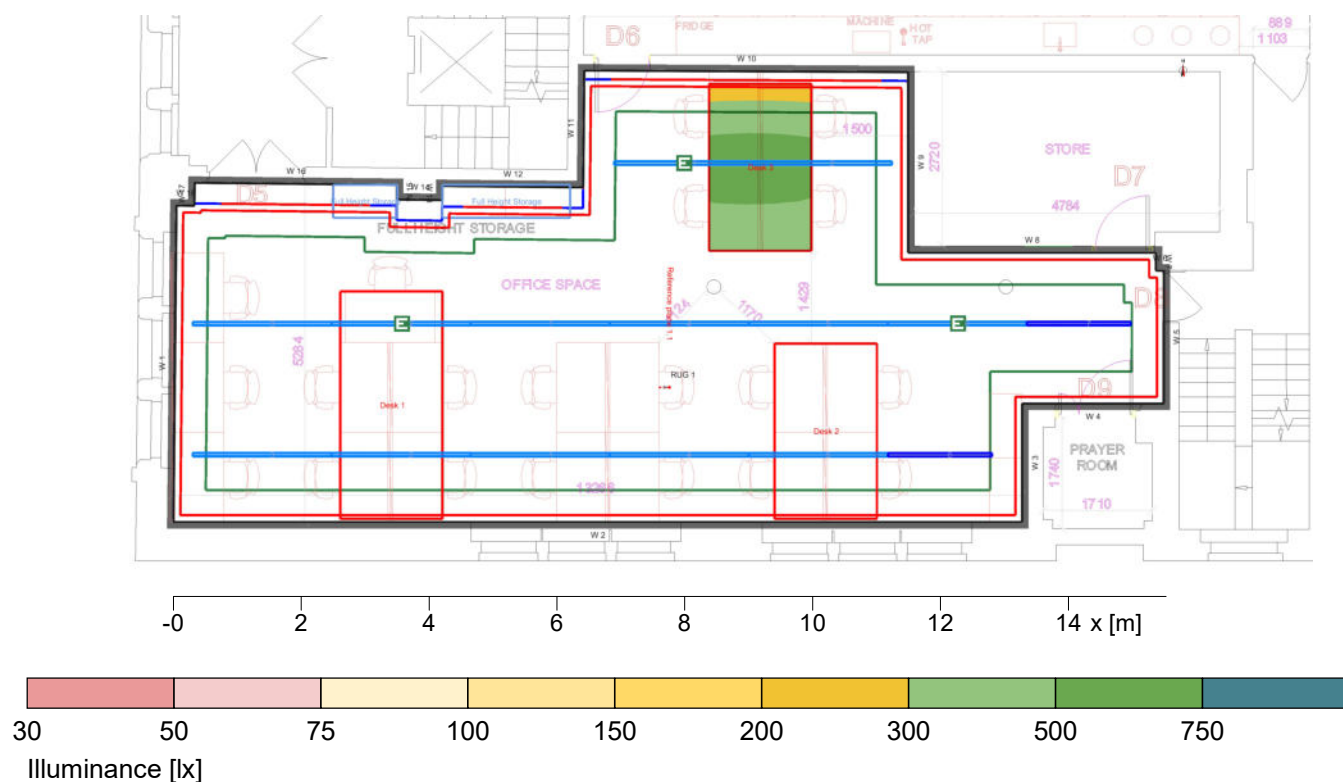
Average illuminance	$\bar{E}_m$	577 lx
Minimum illuminance	E_{min}	377 lx
Maximum illuminance	E_{max}	698 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.53 (0.65)
Diversity U_d	E_{min}/E_{max}	1:1.85 (0.54)

Type No.\Make

ZLISS			
8	13E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	2 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	62010 lm
Total power	1059 W
Total power per area (81.78 m²)	12.95 W/m²

Illuminance

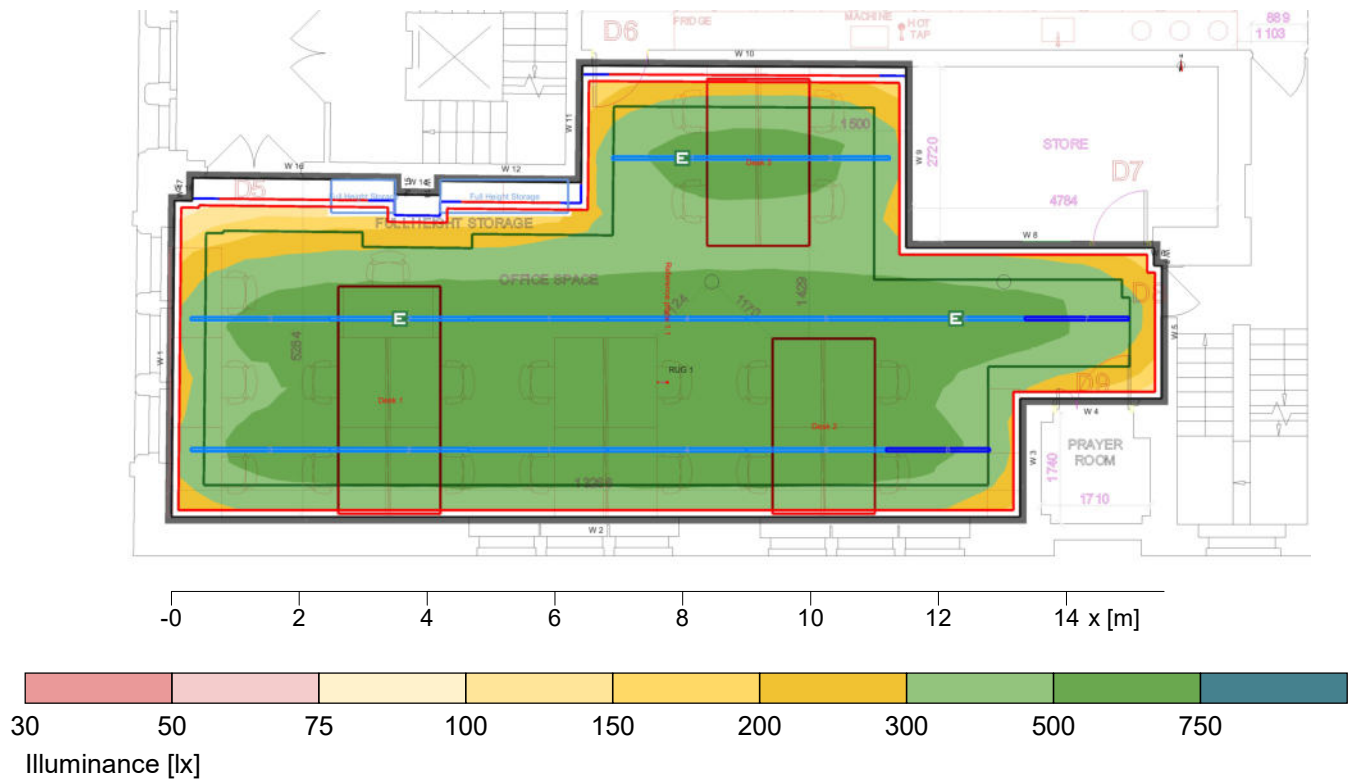
Average illuminance	$\bar{E}_m$	469 lx
Minimum illuminance	E_{min}	267 lx
Maximum illuminance	E_{max}	640 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.76 (0.57)
Diversity U_d	E_{min}/E_{max}	1:2.4 (0.42)

Type No. Make

ZLISS			
8	13E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	2 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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 (79.13 m²)

62010.00 lm
 1059.0 W
 13.38 W/m² (2.67 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	501 lx	cylindrical
E_{min}	189 lx	191 lx
$E_{min}/\bar{E}_m (U_o)$	0.38	99 lx
$E_{min}/E_{max} (U_d)$	0.27	0.51
E_z/E_h		0.36
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 1.353 (Ceiling)	335 lx	0.18
M 1.1 (Wall)	219 lx	0.40
M 1.2 (Wall)	228 lx	0.61
M 1.3 (Wall)	219 lx	0.57
M 1.4 (Wall)	138 lx	0.68
M 1.5 (Wall)	185 lx	0.56
M 1.347 (Wall)	188 lx	0.74

1.1 Summary, Office Space

1.1.4 Result overview, Evaluation area 1

M 1.348 (Wall)	223 lx	0.60
M 1.349 (Wall)	177 lx	0.66
M 1.350 (Wall)	193 lx	0.52
M 1.351 (Wall)	0 lx	0.25
M 1.352 (Wall)	133 lx	0.75

Type No.\Make

ZLISS

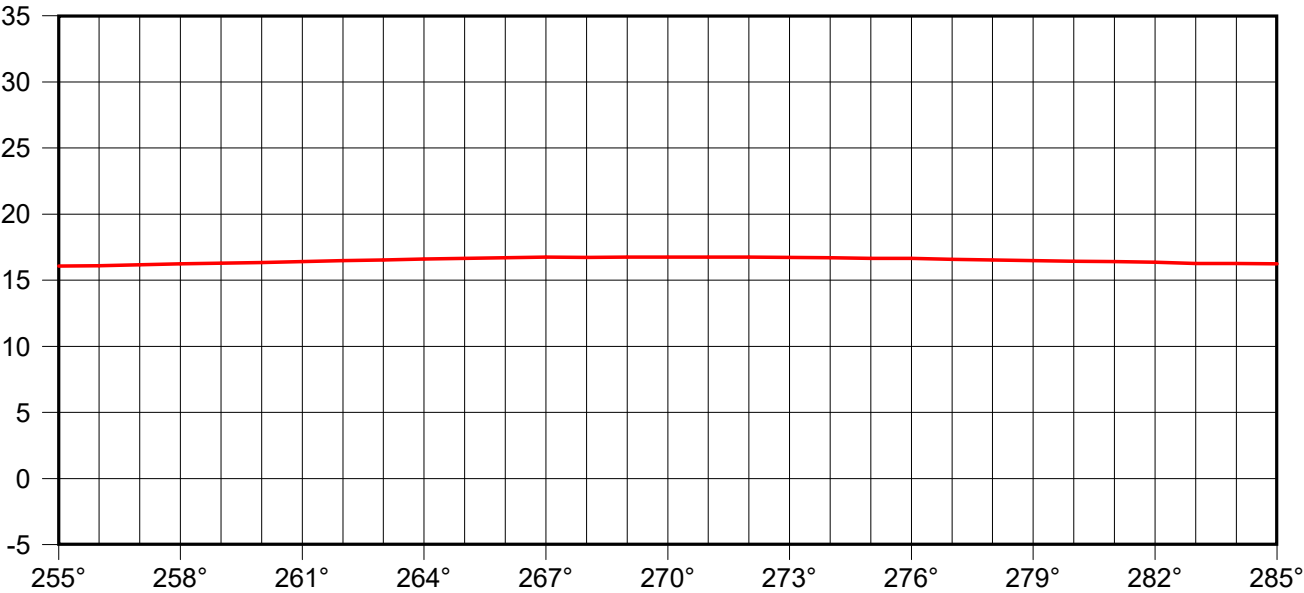
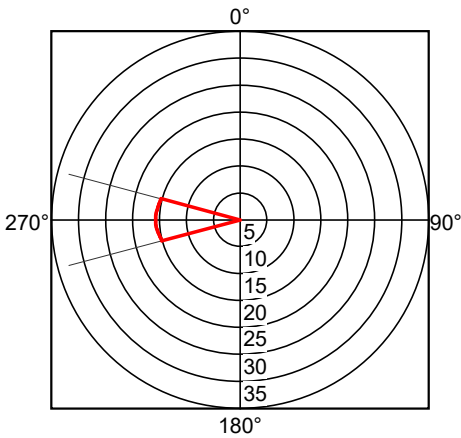
8	13E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	2 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

1 Office Space

1.2 Calculation results, Office Space

1.2.1 Glare Rating (RUG) - RUG 1

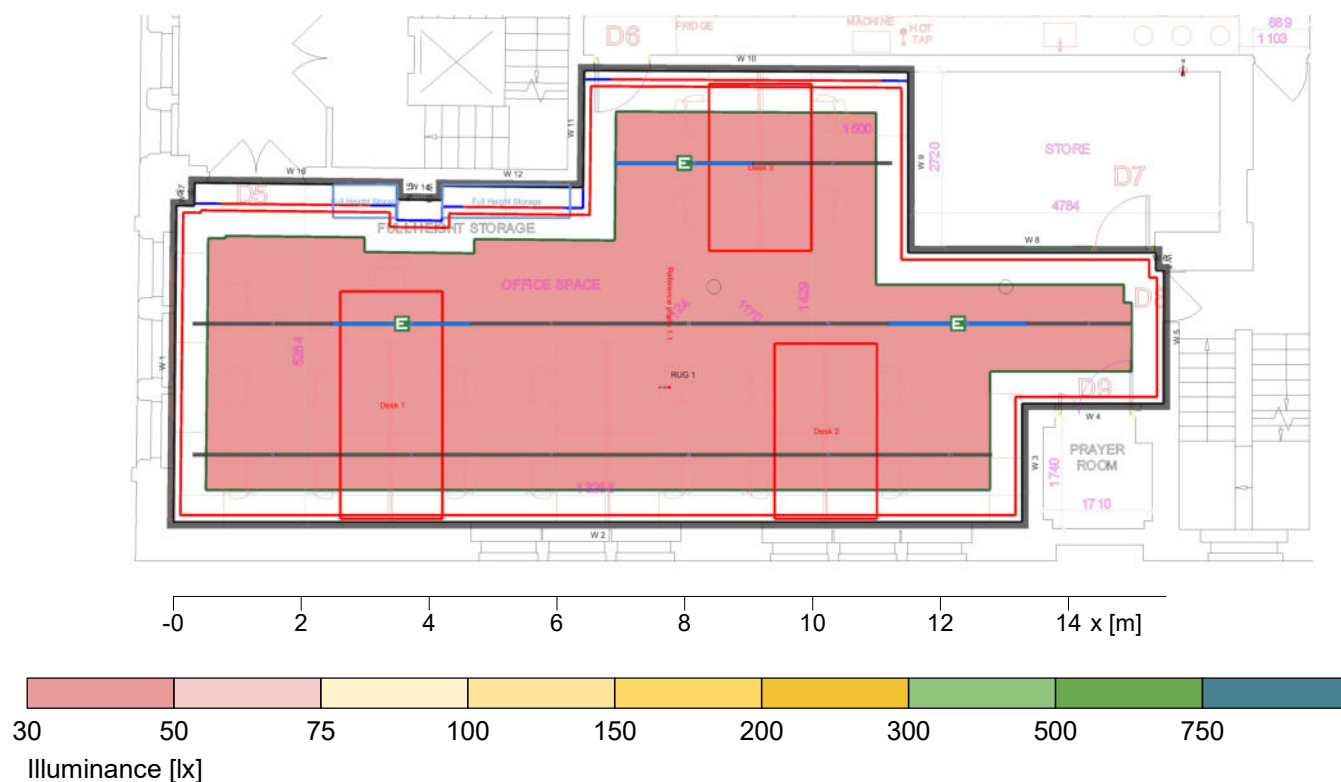


Observer location : x = 7.71 m, y = -2.84 m, z = 1.00 m
: 270.00° (-0.94, 0.00, -0.34)
Maximum degree of glare : 16.8

1 Office Space

1.3 Summary, Office Space

1.3.1.1 Result overview (emergency lighting)



General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	0.58 lx	27.74 lx	1: 48.09
		>= 0.5 lx		>= 1: 40

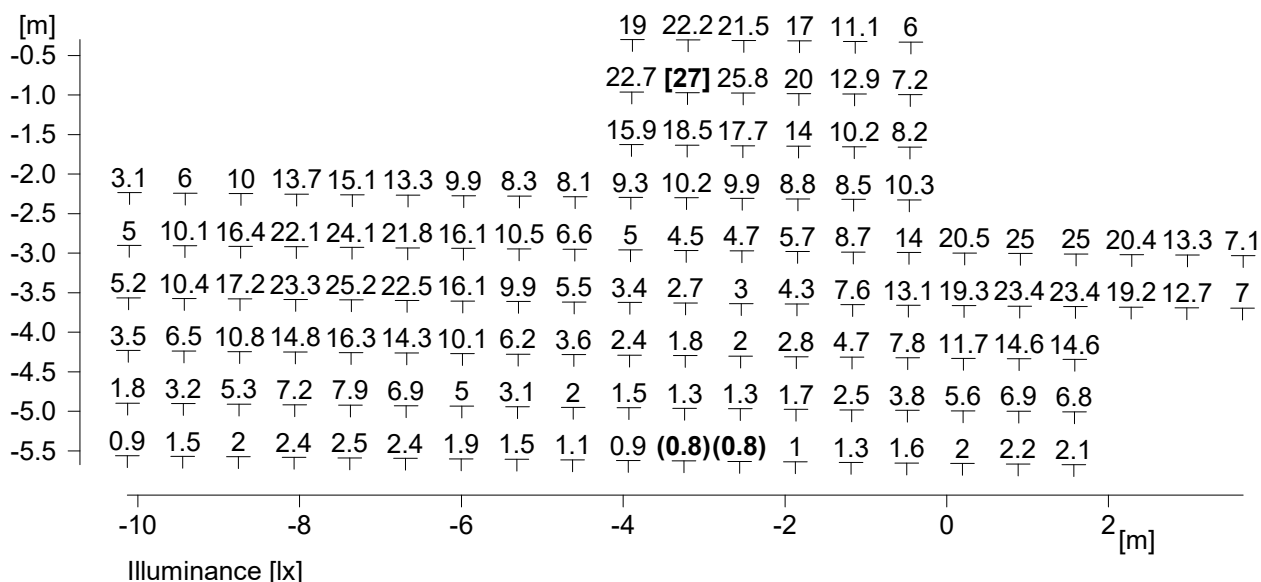


Type No./Make

8	3E x	ZLISS	
	Order No.	: INDX80-4K LO 39W	-- Emergency Lighting --
	Luminaire name	: INDI X 80 HEX 4000K LO 39W	
	Equipment	: 1 x LED 5630 77 W / 4280 lm	
	Emergency	: 590 lm (13.8 %)	

1.3 Calculation results, Office Space

1.3.2 Table, Anti panic area 1.1 (E)



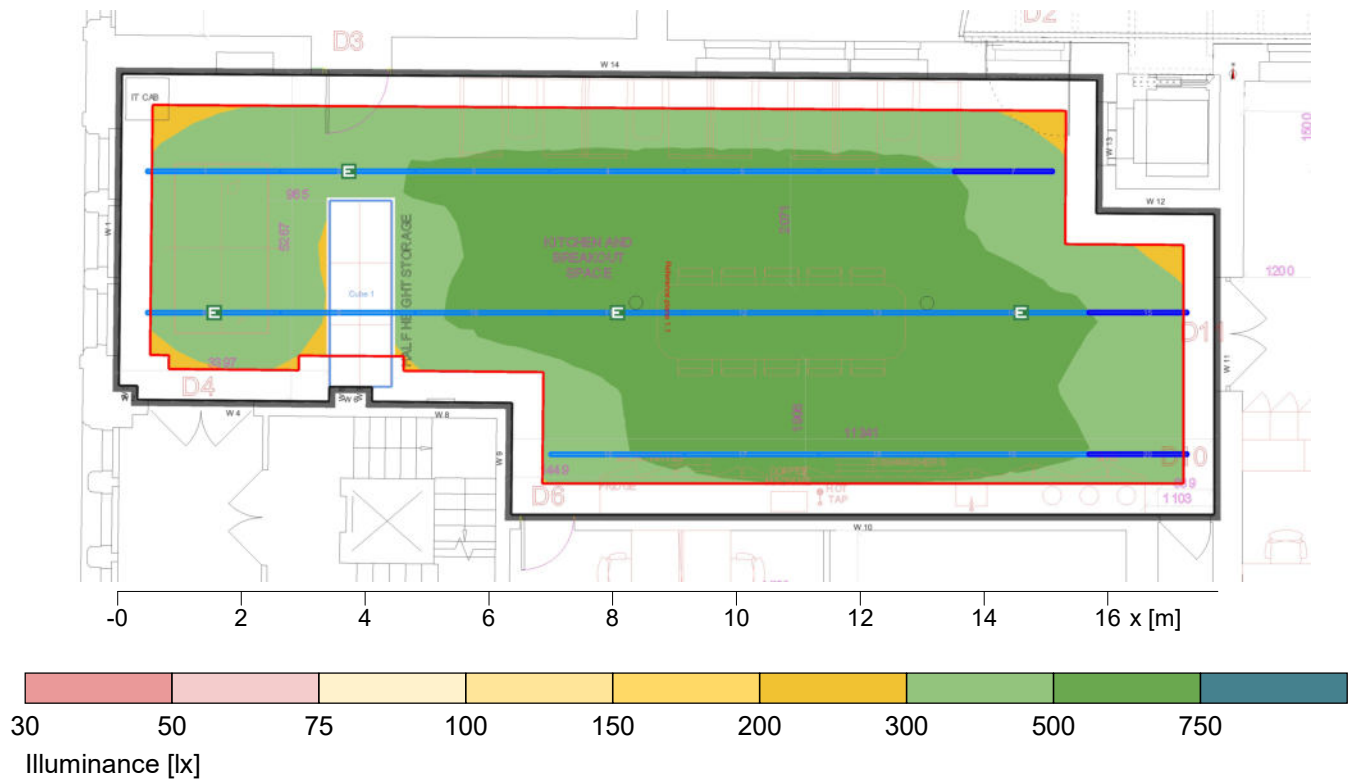
Required minimum illuminance : 0.5 lx (lower values are highlighted in red)
 Minimum illuminance Emin : 0.81 lx (* 0.6 lx)
 Maximum illuminance Emax : 27 lx (* 28 lx)
 Diversity Emin/Emax : 1 : 33.40 (0.03) (Threshold value 1:40) (* 1:48.10)
 Height : 0 m
 Calculation algorithm used : Direct component
 Maintenance factor : 0.8

*: Values on fine measuring grid (0.1m - 0.5m)!

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)

82315.00 lm
 1396.0 W
 12.84 W/m² (2.61 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 X 80 HEX 4000K LO 39W, INDX80-4K LO 39W)
 Hints:
 - At least one of the room dimensions has been limited to 12H.

Horizontal
 491 lx
 272 lx
 0.55
 0.45
 0.34
 0.45 m

Major surfaces

Major surfaces	$\bar{E}_m$	U_o
M 1.22 (Ceiling)	383 lx	0.21
M 1.1 (Wall)	204 lx	0.51
M 1.11 (Wall)	162 lx	0.72
M 1.15 (Wall)	183 lx	0.79
M 1.16 (Wall)	207 lx	0.61

2 Kitchen/Breakout Space

2.1 Summary, Kitchen/Breakout Space

2.1.1 Result overview, Evaluation area 1

M 1.17 (Wall)	239 lx	0.60
M 1.18 (Wall)	216 lx	0.49
M 1.19 (Wall)	134 lx	0.63
M 1.20 (Wall)	178 lx	0.54
M 1.21 (Wall)	179 lx	0.55

Type No.\Make

ZLISS

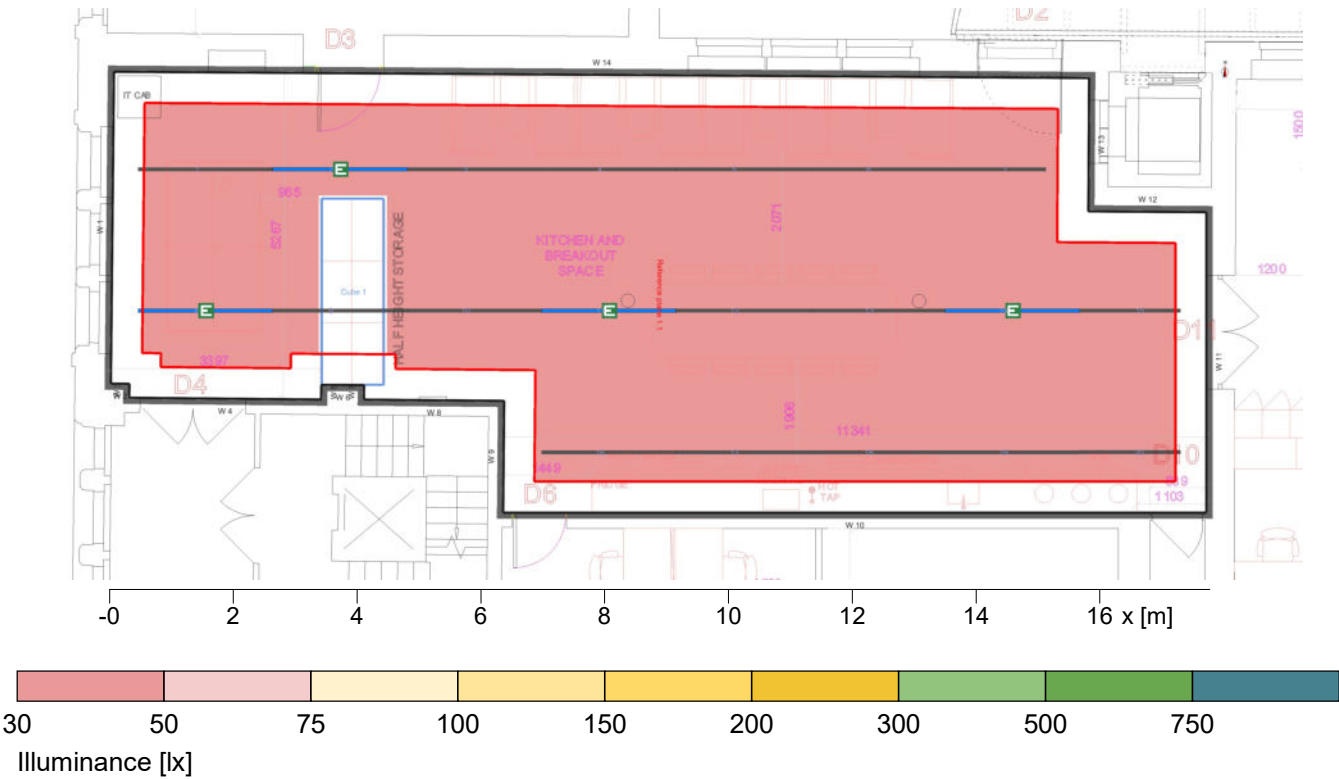
8	17E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	3 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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 : 250 cd <= 900 cd

Anti panic area:

No.	Surface		Ud
	Emin [lx]	Emax [lx]	
Anti panic area 1.1			
Calculation field: 6.1m x 16.7m (9 x 24 pts), Height = 0.00m			
1	0.65 lx	28.71 lx	1: 44.31
	>= 0.5 lx		>= 1 : 40

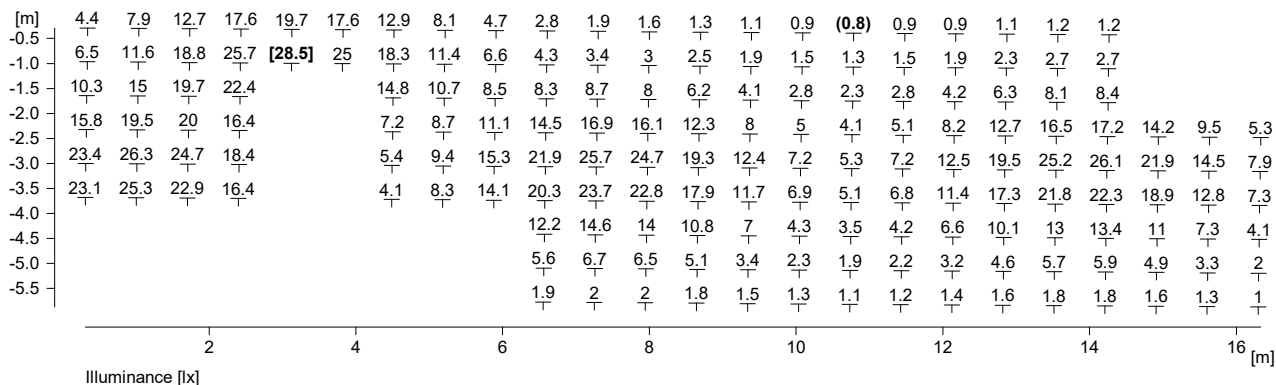


Type No.\Make

ZLISS			
8	4E x	Order No.	: INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

2.2 Calculation results, Kitchen/Breakout Space

2.2.2 Table, Anti panic area 1.1 (E)



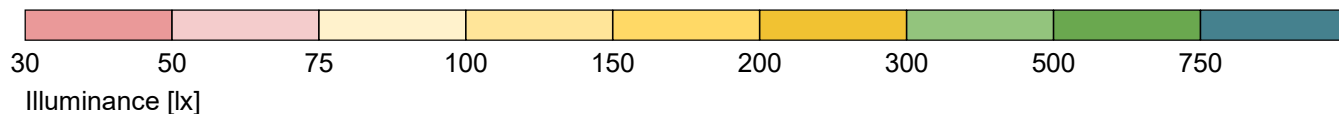
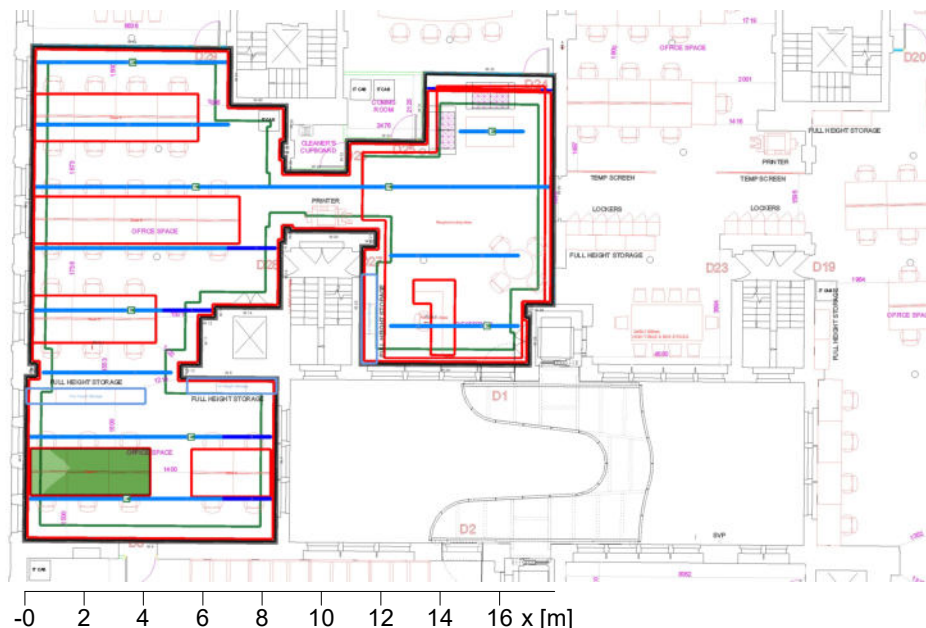
Required minimum illuminance : 0.5 lx (lower values are highlighted in red)
 Minimum illuminance Emin : 0.84 lx (* 0.6 lx)
 Maximum illuminance Emax : 29 lx (* 29 lx)
 Diversity Emin/Emax : 1 : 34.00 (0.03) (Threshold value 1:40) (* 1:44.30)
 Height : 0 m
 Calculation algorithm used : Direct component
 Maintenance factor : 0.8

*: Values on fine measuring grid (0.1m - 0.5m)!

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	546 lx
Minimum illuminance	E_{min}	355 lx
Maximum illuminance	E_{max}	672 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.54 (0.65)
Diversity U_d	E_{min}/E_{max}	1:1.89 (0.53)

Type No.\Make

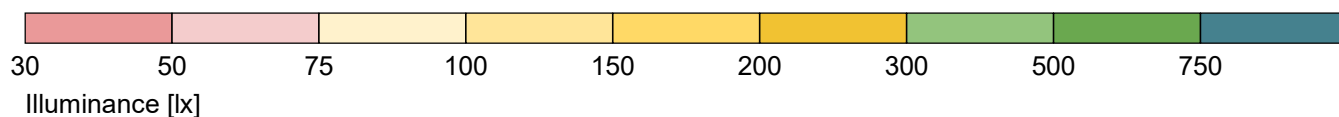
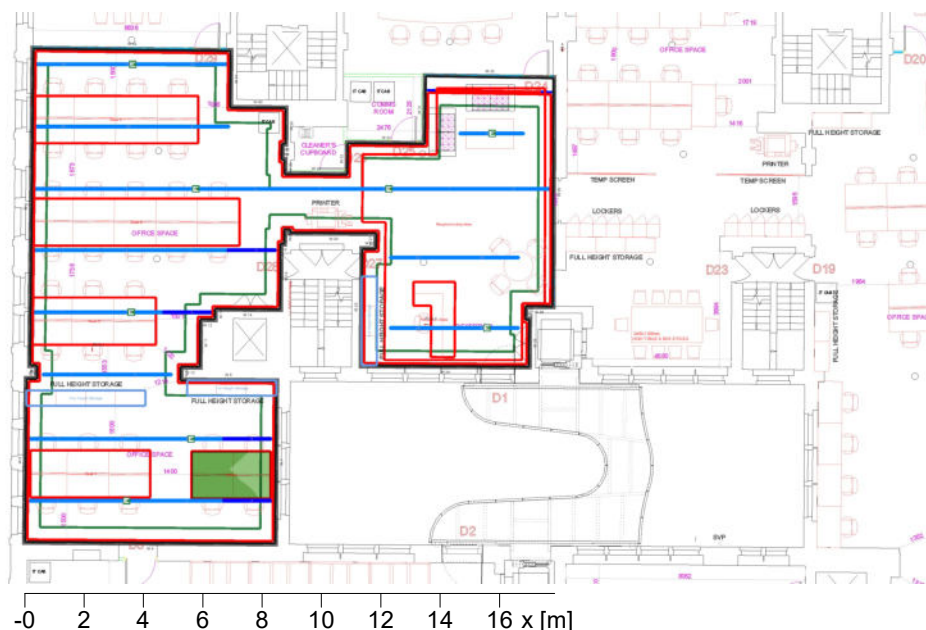
ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	519 lx
Minimum illuminance	E_{min}	358 lx
Maximum illuminance	E_{max}	656 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.45 (0.69)
Diversity U_d	E_{min}/E_{max}	1:1.83 (0.55)

Type No. Make

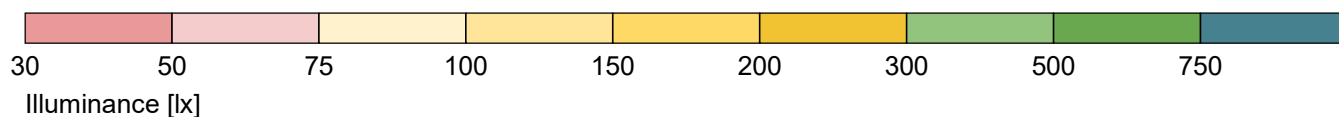
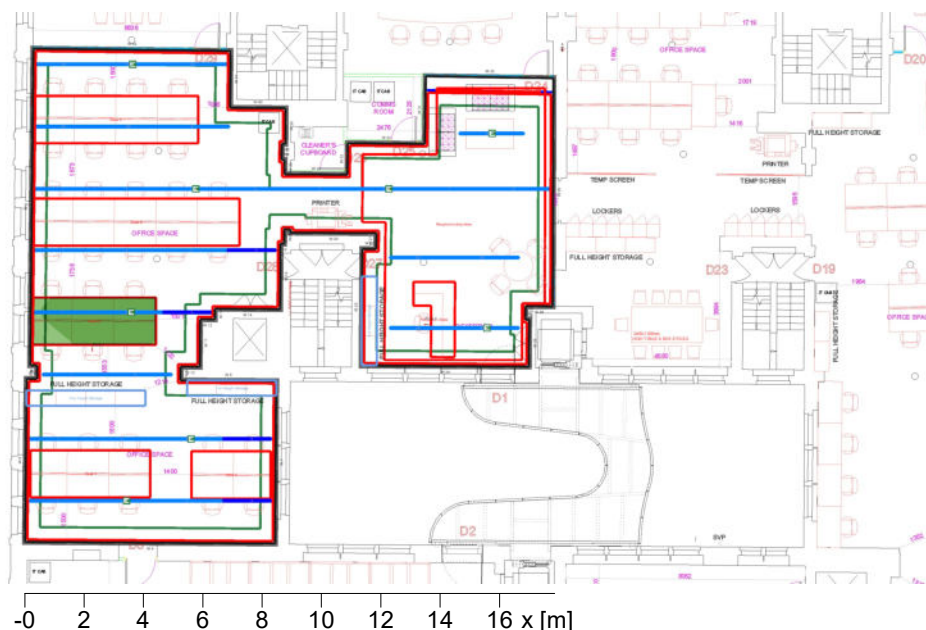
ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	602 lx
Minimum illuminance	E_{min}	330 lx
Maximum illuminance	E_{max}	750 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.82 (0.55)
Diversity U_d	E_{min}/E_{max}	1:2.27 (0.44)

Type No. Make

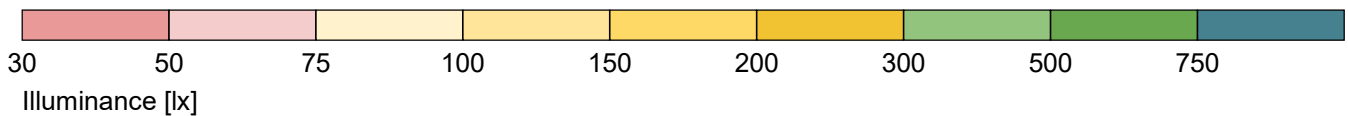
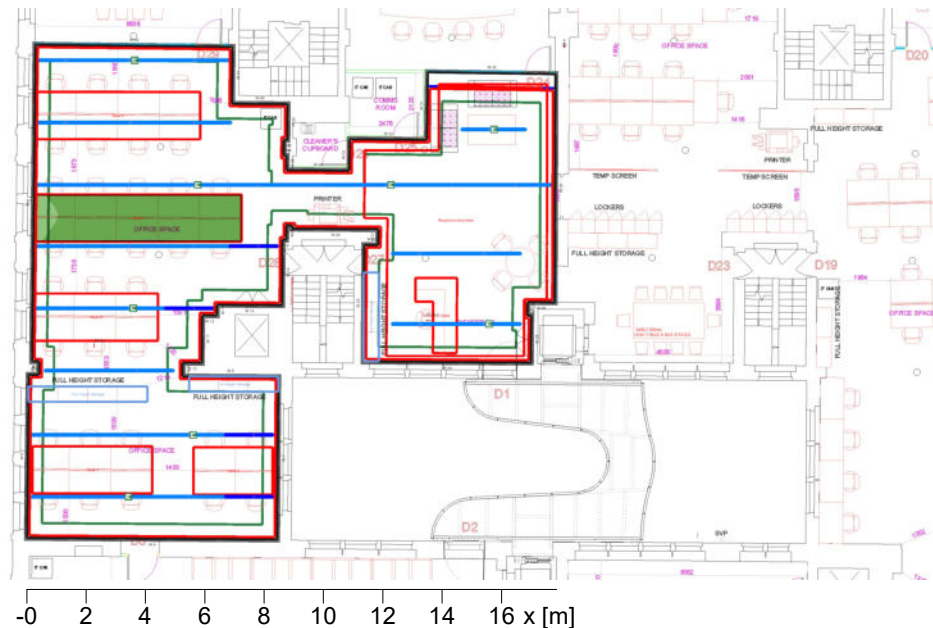
ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	615 lx
Minimum illuminance	E_{min}	387 lx
Maximum illuminance	E_{max}	732 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.59 (0.63)
Diversity U_d	E_{min}/E_{max}	1:1.89 (0.53)

Type No. Make

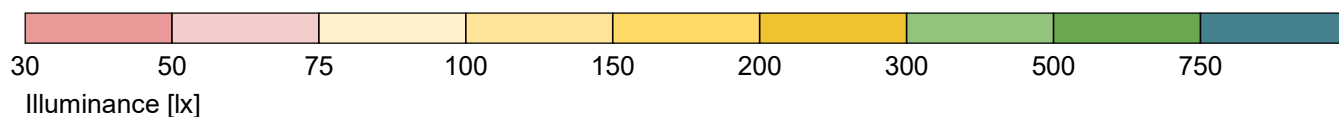
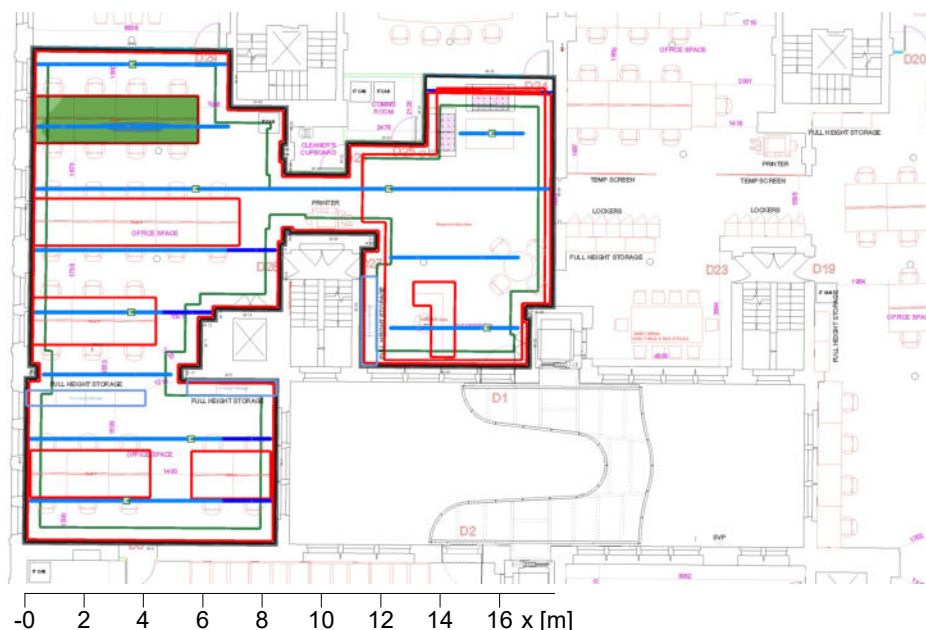
ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	633 lx
Minimum illuminance	E_{min}	363 lx
Maximum illuminance	E_{max}	764 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.74 (0.57)
Diversity U_d	E_{min}/E_{max}	1:2.1 (0.48)

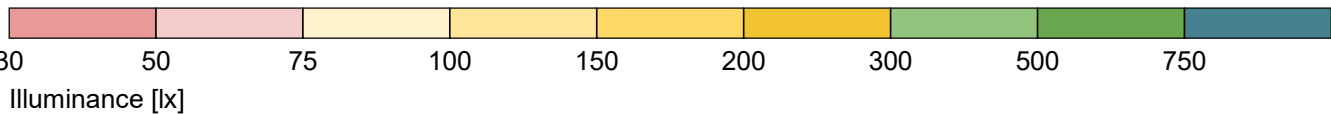
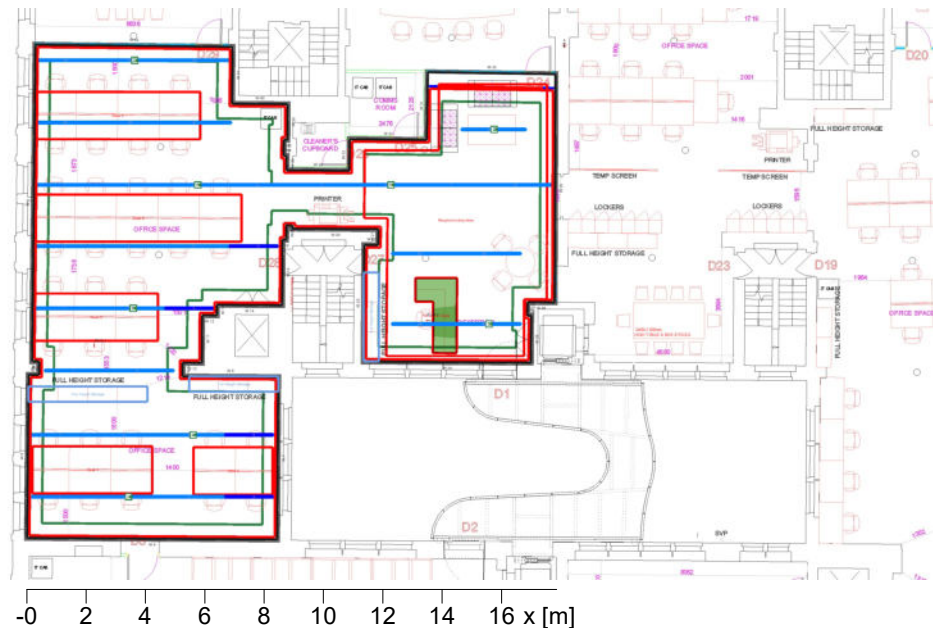
Type No. Make

ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	464 lx
Minimum illuminance	E_{min}	367 lx
Maximum illuminance	E_{max}	625 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.26 (0.79)
Diversity U_d	E_{min}/E_{max}	1:1.7 (0.59)

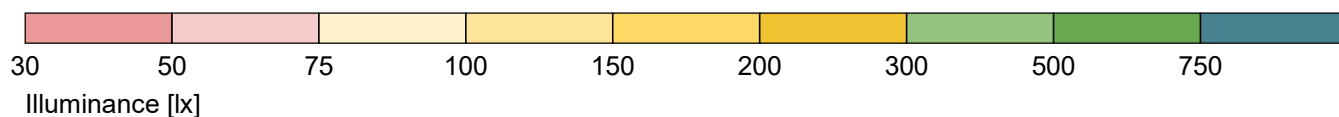
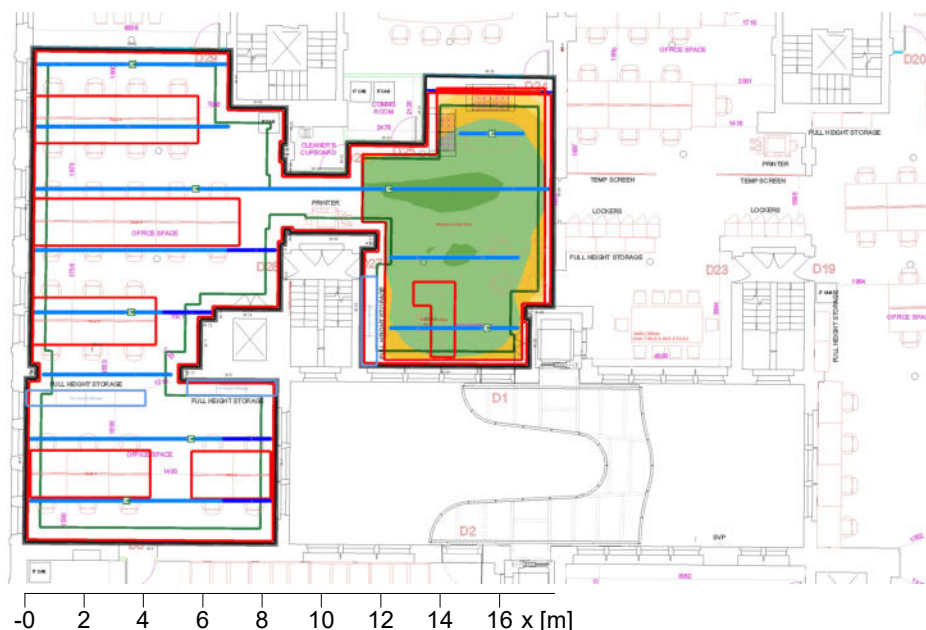
Type No. Make

ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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	149700 lm
Total power	2580 W
Total power per area (191.17 m²)	13.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	388 lx
Minimum illuminance	E_{min}	161 lx
Maximum illuminance	E_{max}	537 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:2.4 (0.42)
Diversity U_d	E_{min}/E_{max}	1:3.33 (0.3)

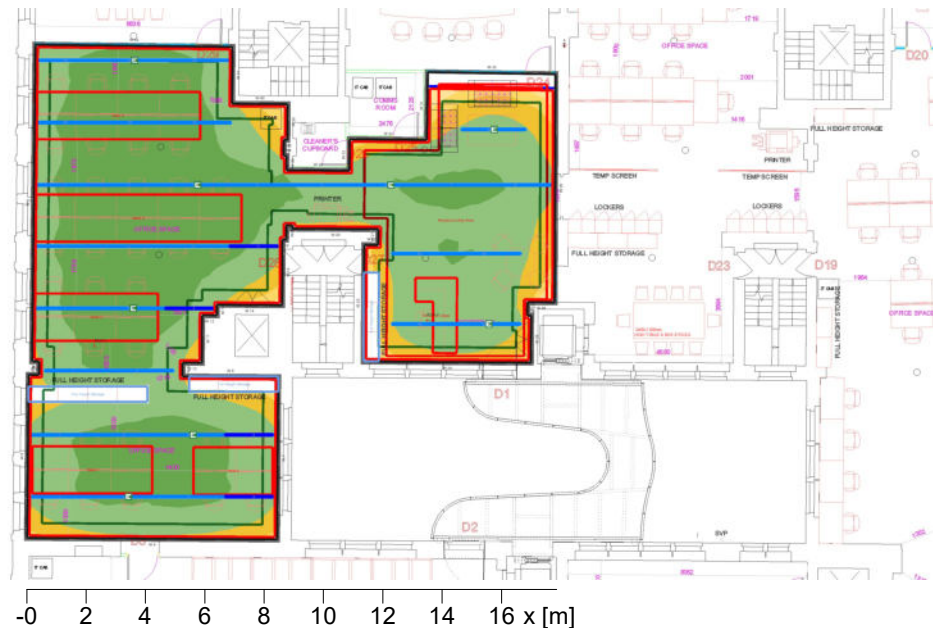
Type No.\Make

ZLISS

8	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

3.1 Summary, Office Space/Reception

3.1.8 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	149700.00 lm
Total power	2580.0 W
Total power per area (189.14 m²)	13.64 W/m² (2.98 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	457 lx	169 lx
$E_{min}/\bar{E}_m (U_o)$	187 lx	96 lx
$E_{min}/E_{max} (U_d)$	0.41	0.57
E_z/E_h	0.28	0.36
Position	0.00 m	0.45 m
RUG (--- ---)	---	

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

Major surfaces

	$\bar{E}_m$	U_o
M 1.541 (Ceiling)	311 lx	0.18
M 1.1 (Wall)	291 lx	0.58
M 1.502 (Wall)	235 lx	0.33
M 1.509 (Wall)	186 lx	0.67
M 1.512 (Wall)	227 lx	0.38
M 1.513 (Wall)	1 lx	0.49
M 1.520 (Wall)	194 lx	0.49

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 1.523 (Wall)	142 lx	0.65
M 1.524 (Wall)	196 lx	0.48
M 1.529 (Wall)	181 lx	0.77
M 1.530 (Wall)	133 lx	0.78
M 1.531 (Wall)	160 lx	0.52
M 1.532 (Wall)	178 lx	0.42
M 1.533 (Wall)	175 lx	0.46
M 1.534 (Wall)	124 lx	0.65
M 1.535 (Wall)	105 lx	0.55
M 1.536 (Wall)	152 lx	0.71
M 1.537 (Wall)	294 lx	0.69
M 1.538 (Wall)	129 lx	0.56
M 1.539 (Wall)	322 lx	0.54
M 1.540 (Wall)	336 lx	0.66

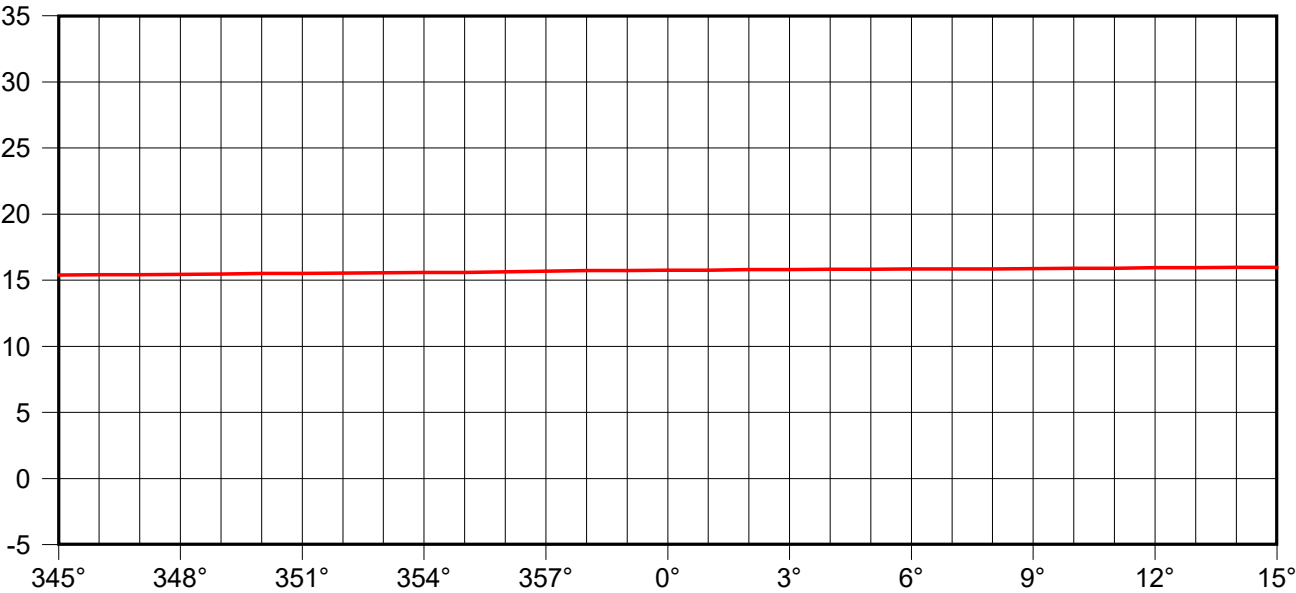
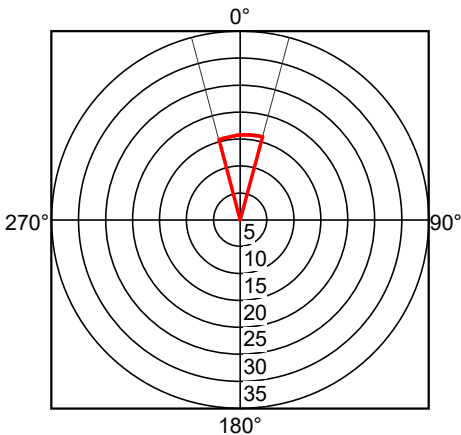
Type No.\Make

ZLISS			
<u>8</u>	32E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
<u>9</u>	4 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

3 Office Space/Reception

3.2 Calculation results, Office Space/Reception

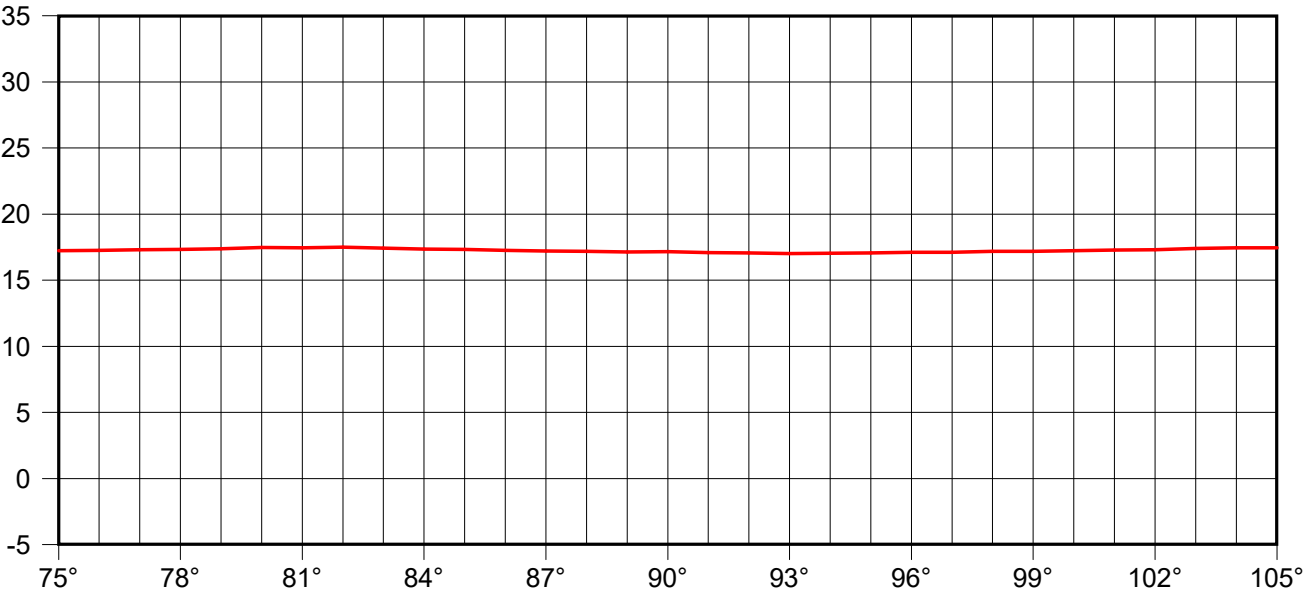
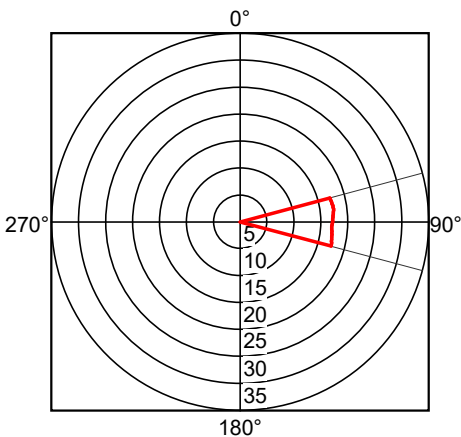
3.2.1 Glare Rating (RUG) - RUG 1



Observer location : x = 1.98 m, y = -10.16 m, z = 1.20 m
: 0.00° (-0.00, 1.00, 0.00)
Maximum degree of glare : 16.0

3.2 Calculation results, Office Space/Reception

3.2.2 Glare Rating (RUG) - RUG 2

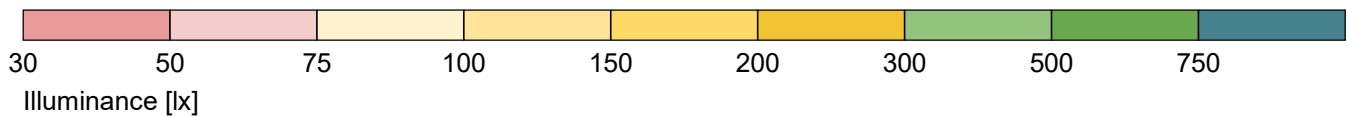
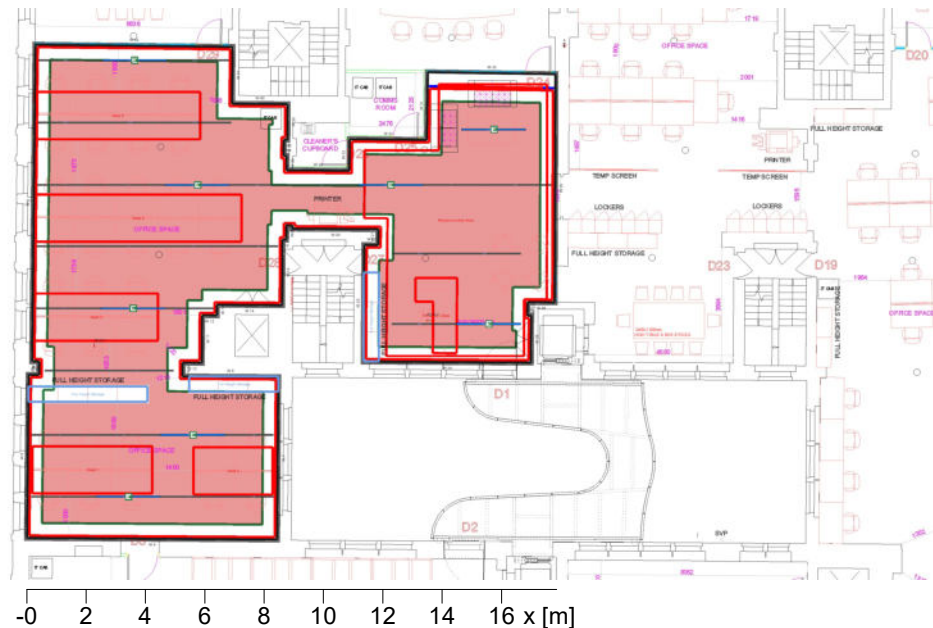


Observer location : x = 13.18 m, y = -9.28 m, z = 1.20 m
: 90.00° (1.00, 0.00, 0.00)
Maximum degree of glare : 17.5

3 Office Space/Reception

3.3 Summary, Office Space/Reception

3.3.1.1 Result overview (emergency lighting)

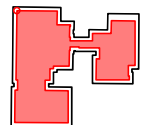


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot centre) : 2.56 m
 Maximum I : 250 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		0.74 lx	29.22 lx	1: 39.54
		>= 0.5 lx		>= 1 : 40

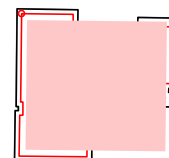
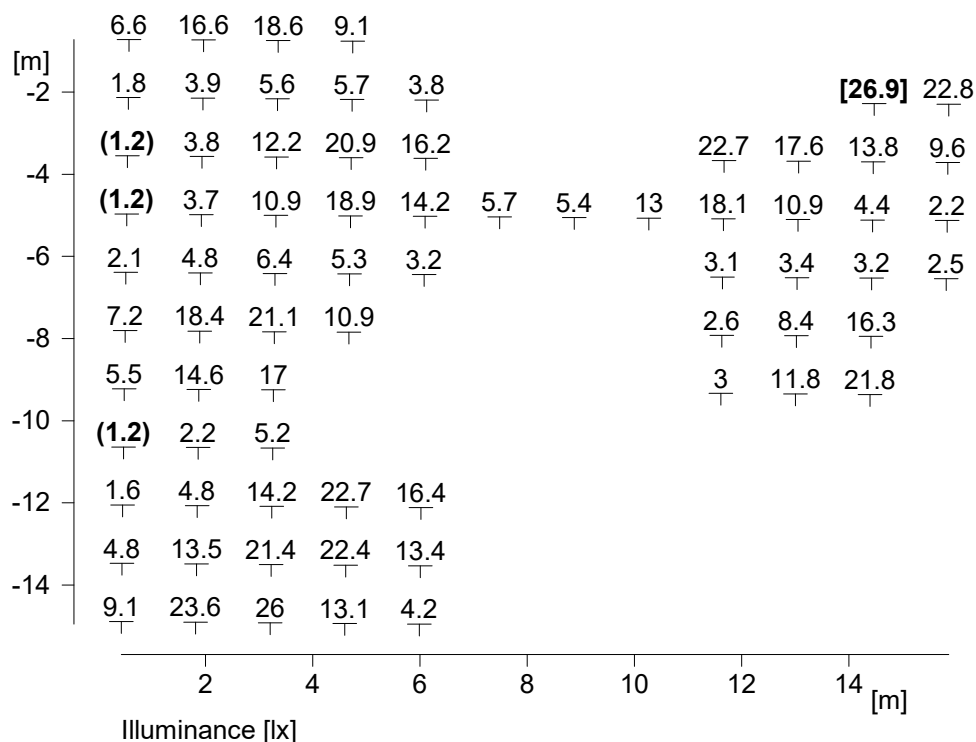


Type No.\Make

ZLISS		
8	8E x	Order No. : INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name : INDI X 80 HEX 4000K LO 39W
		Equipment : 1 x LED 5630 77 W / 4280 lm
		Emergency : 590 lm (13.8 %)

3.3 Calculation results, Office Space/Reception

3.3.2 Table, Anti panic area 1.1 (E)



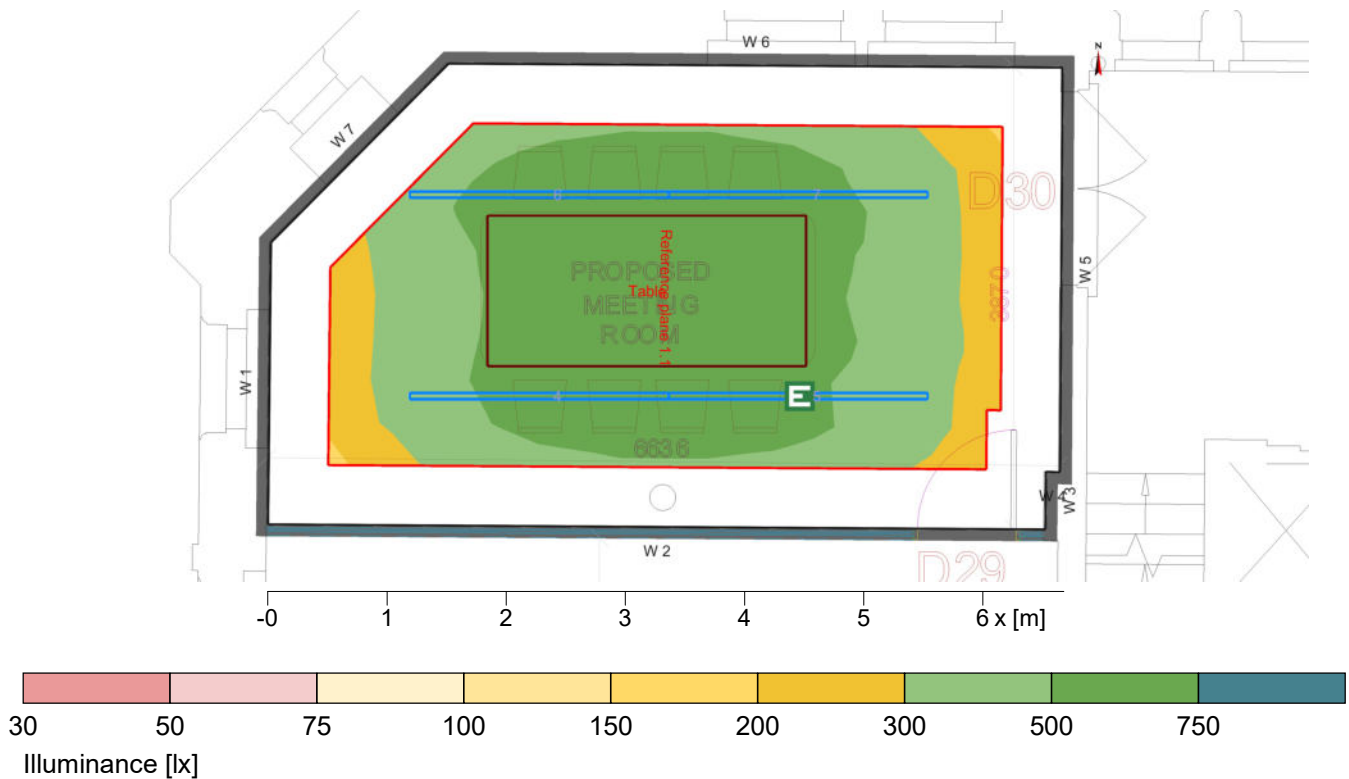
Required minimum illuminance : 0.5 lx (lower values are highlighted in red)
 Minimum illuminance Emin : 1.2 lx (* 0.7 lx)
 Maximum illuminance Emax : 27 lx (* 29 lx)
 Diversity Emin/Emax : 1 : 22.20 (0.05) (Threshold value 1:40) (* 1:39.50)
 Height : 0 m
 Calculation algorithm used : Direct component
 Maintenance factor : 0.8

*: Values on fine measuring grid (0.1m - 0.5m)!

4 Meeting Room

4.1 Summary, Meeting Room

4.1.1 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	17120.00 lm
Total power	308.0 W
Total power per area (24.50 m²)	12.57 W/m² (2.55 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	493 lx	168 lx
$E_{min}/\bar{E}_m (U_o)$	283 lx	123 lx
$E_{min}/E_{max} (U_d)$	0.57	0.74
E_z/E_h	0.44	0.30
Position	0.75 m	1.20 m
$R_{UG} (2.9H \text{ } 4.9H)$	≤ 17.2	
Luminaire :		
(INDI X 80 HEX 4000K LO 39W, INDX80-4K LO 39W)		

Major surfaces

	$\bar{E}_m$	U_o
M 1.14 (Ceiling)	276 lx	0.29
M 1.1 (Wall)	137 lx	0.63
M 1.2 (Wall)	169 lx	0.49
M 1.11 (Wall)	145 lx	0.68
M 1.12 (Wall)	178 lx	0.46
M 1.13 (Wall)	191 lx	0.62

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



4 Meeting Room

4.1 Summary, Meeting Room

4.1.1 Result overview, Evaluation area 1

Type No.\Make

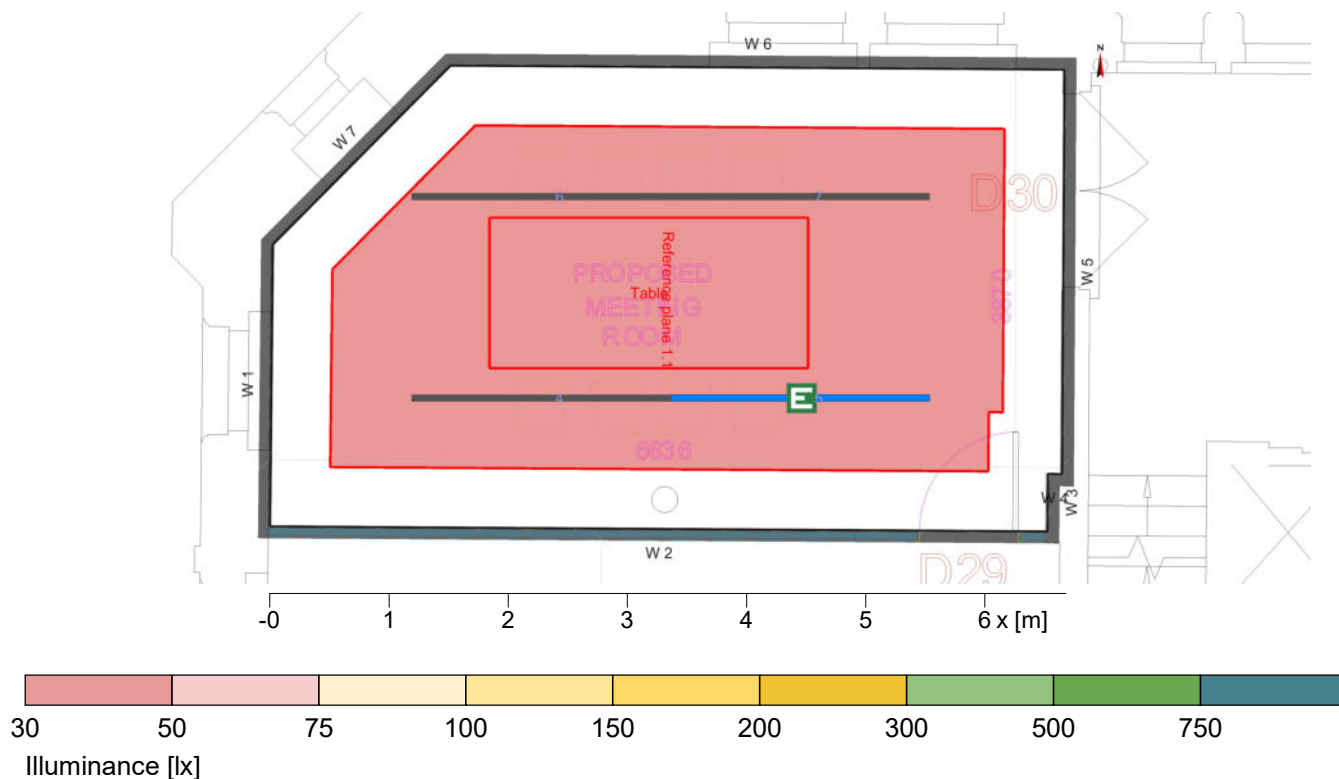
		ZLISS	
8	4E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

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

4 Meeting Room

4.2 Summary, Meeting Room

4.2.1.1 Result overview (emergency lighting)

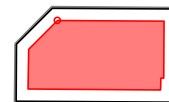


General

Calculation algorithm used : Direct component
Maintenance factor : 0.8
Height (phot centre) : 2.56 m
Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	0.88 lx	27.26 lx	1 : 30.91
		>= 0.5 lx		>= 1 : 40



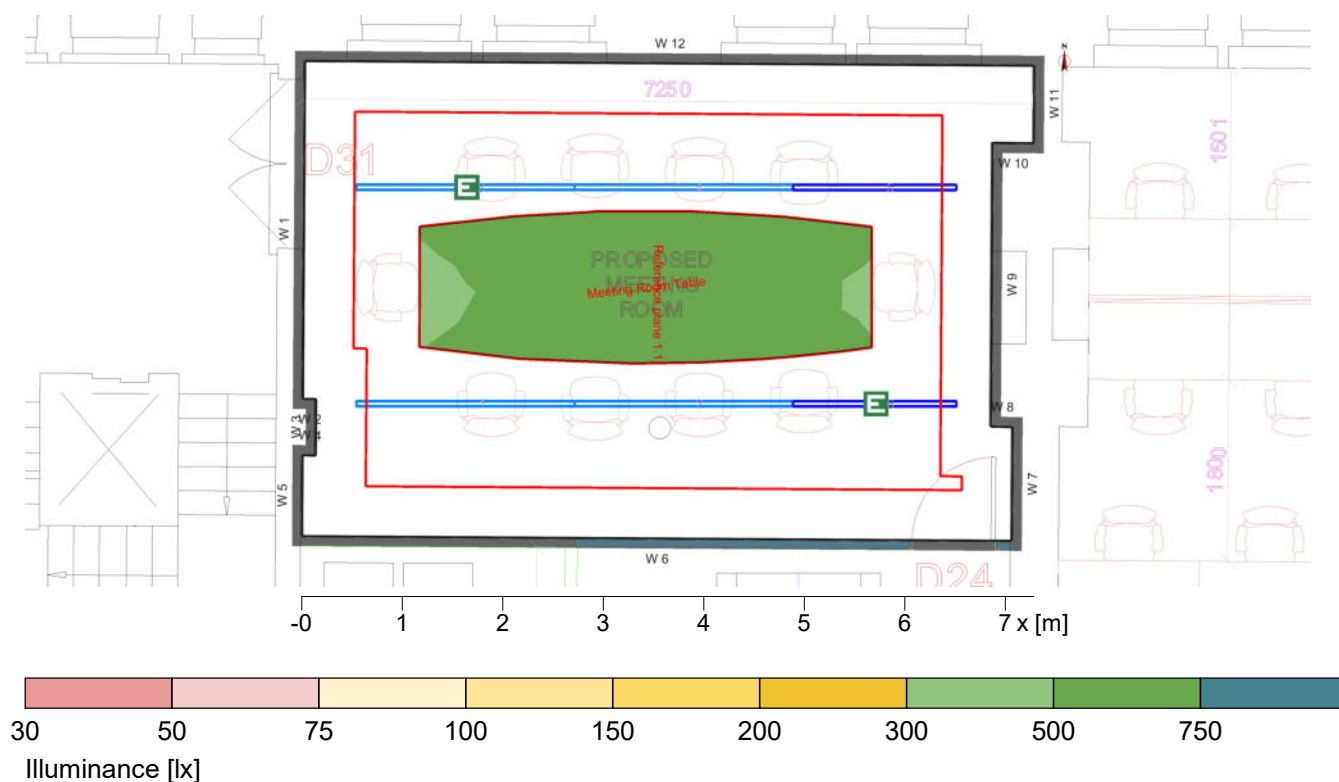
Type No.\Make

ZLISS			
8	1E x	Order No.	: INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

5 Meeting Room 2

5.1 Summary, Meeting Room 2

5.1.1 Result overview, Meeting Room Table



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.60 m
Maintenance factor	0.90

Total luminous flux	23490 lm
Total power	366 W
Total power per area (32.79 m²)	11.16 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	576 lx
Minimum illuminance	E_{min}	450 lx
Maximum illuminance	E_{max}	723 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.28 (0.78)
Diversity U_d	E_{min}/E_{max}	1:1.61 (0.62)

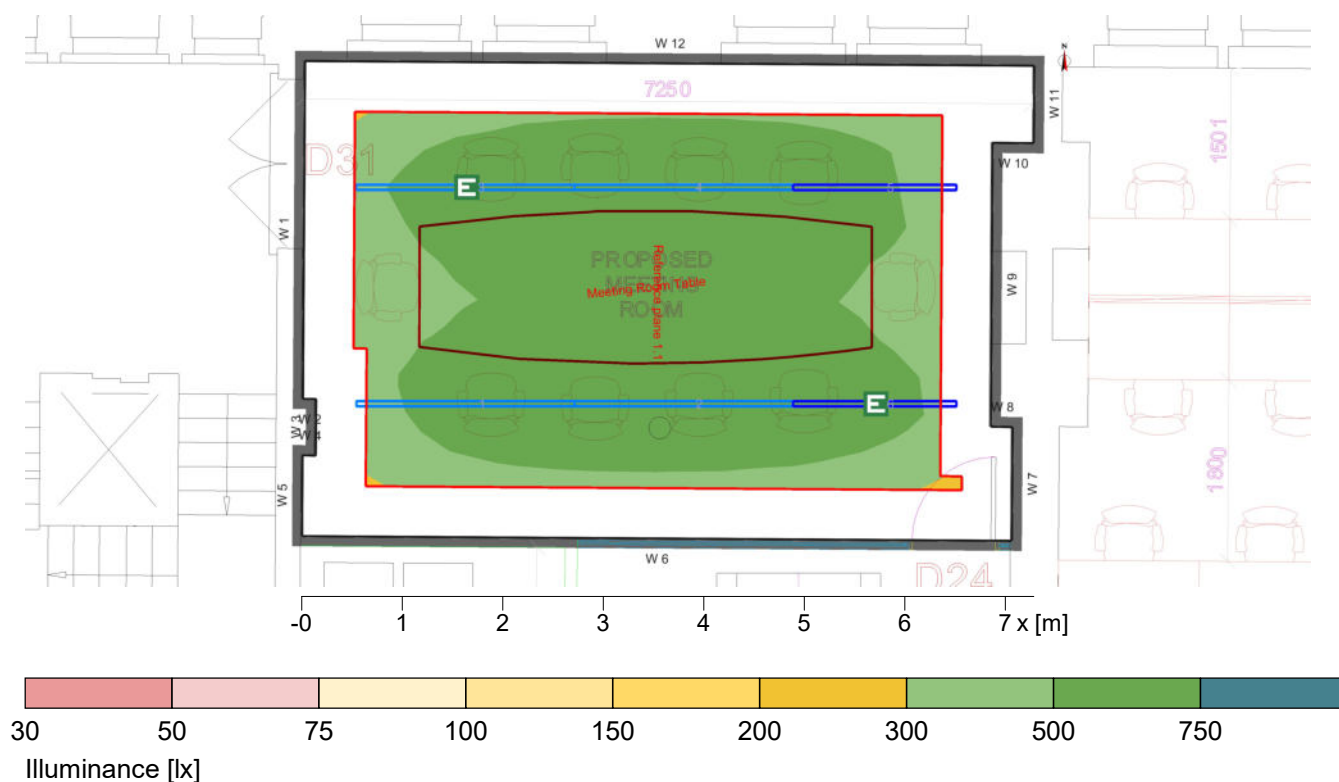
Type No. Make

ZLISS

8	4E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
9	2E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

5.1 Summary, Meeting Room 2

5.1.2 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.60 m
 0.90

Total luminous flux

23490.00 lm

Total power

366.0 W

Total power per area (32.79 m²)

11.16 W/m² (1.98 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$

Horizontal

cylindrical

E_{min}

563 lx

200 lx

E_{min}

382 lx

157 lx

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

0.68

0.79

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

0.54

E_z/E_h

0.32

Position

0.75 m

1.20 m

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

≤ 17.8

Luminaire :

(INDI X 80 HEX 4000K LO 39W, INDX80-4K LO 39W)

Major surfaces

$\bar{E}_m$

U_o

M 1.5 (Ceiling)

259 lx

0.36

M 1.1 (Wall)

210 lx

0.67

M 1.2 (Wall)

184 lx

0.61

M 1.3 (Wall)

232 lx

0.66

M 1.4 (Wall)

194 lx

0.52

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

5.1 Summary, Meeting Room 2

5.1.2 Result overview, Evaluation area 1

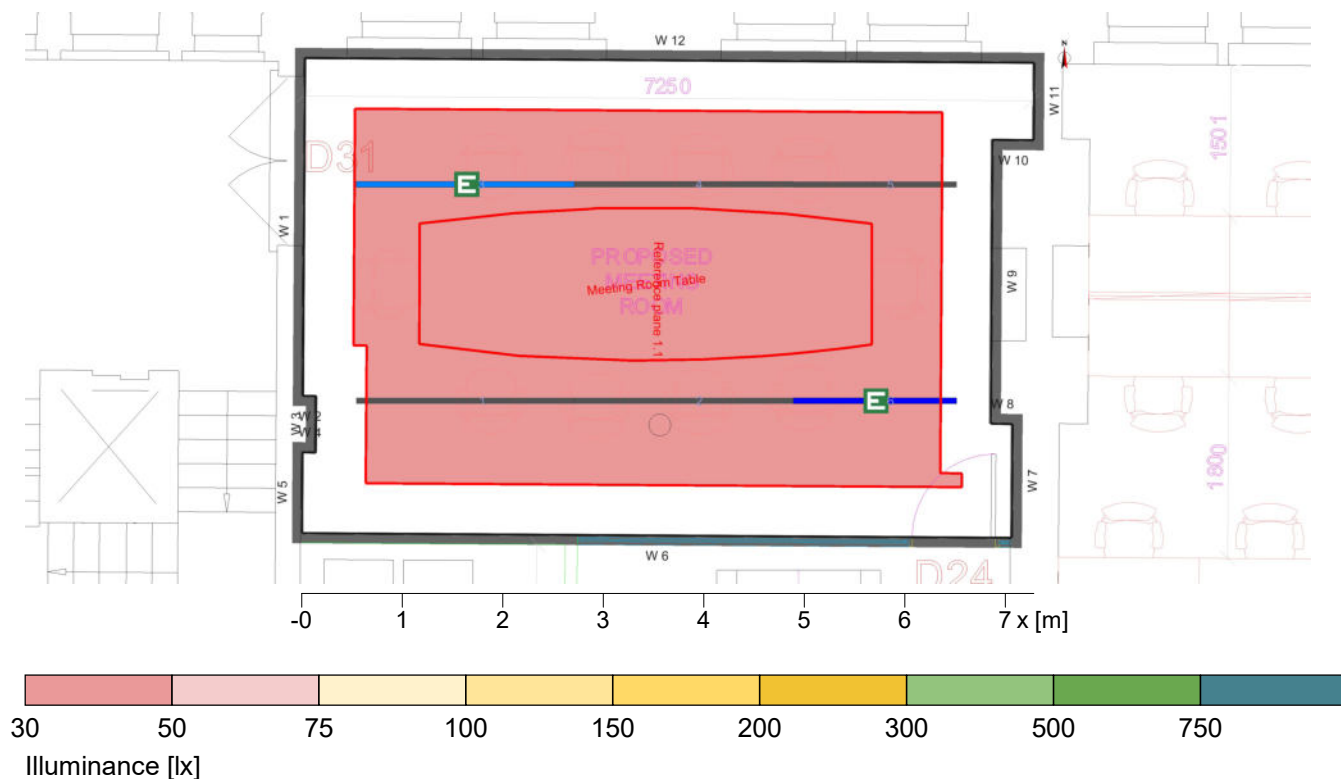
Type No.\Make

		ZLISS	
<u>8</u>	4E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)
<u>9</u>	2E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

5 Meeting Room 2

5.2 Summary, Meeting Room 2

5.2.1.1 Result overview (emergency lighting)

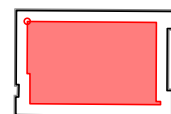


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 3.72m x 6.06m (5 x 9 pts), Height = 0.00m				
1		1.27 lx	29.07 lx	1: 22.97
		>= 0.5 lx		>= 1 : 40



Type No. Make

ZLISS				
8	1E x	Order No.	: INDX80-4K LO 39W	-- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W	
		Equipment	: 1 x LED 5630 77 W / 4280 lm	
		Emergency	: 590 lm (13.8 %)	
9	1E x	Order No.	: INDX60-4K LO 29W	-- Emergency Lighting --
		Luminaire name	: INDI X 60 HEX 4000K LO 29W	
		Equipment	: 1 x LED 5630 29 W / 3185 lm	
		Emergency	: 590 lm (18.5 %)	

6 Office Space 2

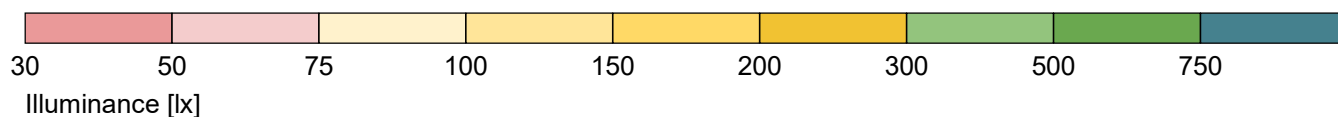
6.1 Summary, Office Space 2

6.1.1 Result overview, Desk 1



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	490 lx
Minimum illuminance	E_{min}	246 lx
Maximum illuminance	E_{max}	627 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.99 (0.5)
Diversity U_d	E_{min}/E_{max}	1:2.55 (0.39)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

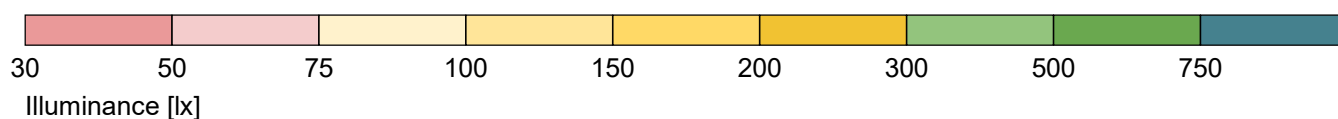
6.1 Summary, Office Space 2

6.1.2 Result overview, Desk 2



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	562 lx
Minimum illuminance	E_{min}	338 lx
Maximum illuminance	E_{max}	694 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.66 (0.6)
Diversity U_d	E_{min}/E_{max}	1:2.05 (0.49)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

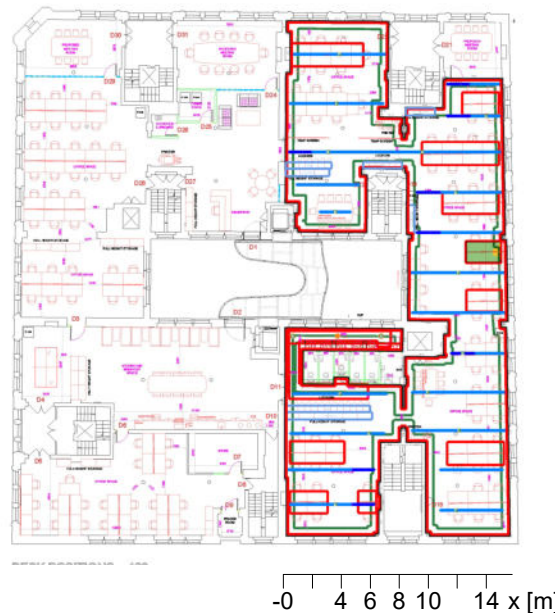
6.1 Summary, Office Space 2

6.1.2 Result overview, Desk 2

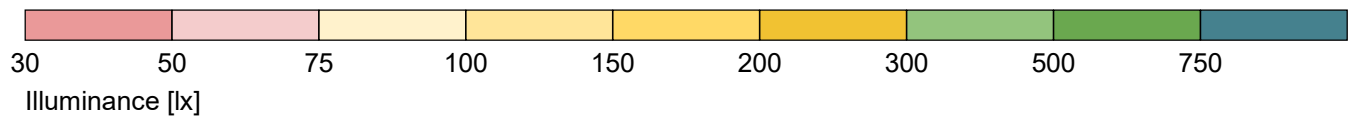
11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.3 Result overview, Desk 3



FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux	237835 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	365 lx
Minimum illuminance	E_{min}	262 lx
Maximum illuminance	E_{max}	454 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.39 (0.72)
Diversity U_d	E_{min}/E_{max}	1:1.73 (0.58)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

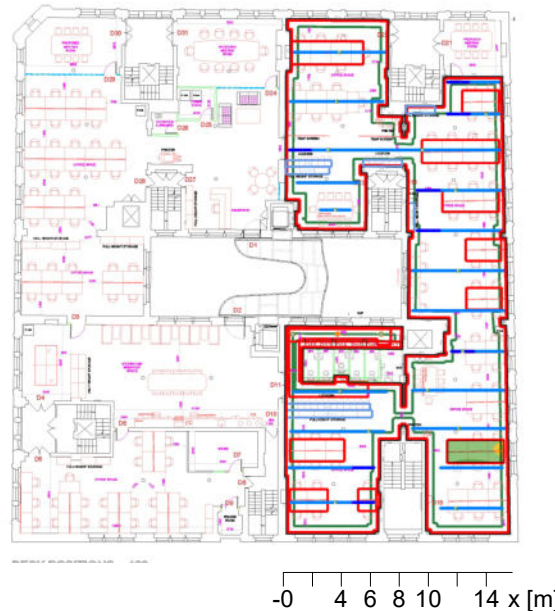
6.1 Summary, Office Space 2

6.1.3 Result overview, Desk 3

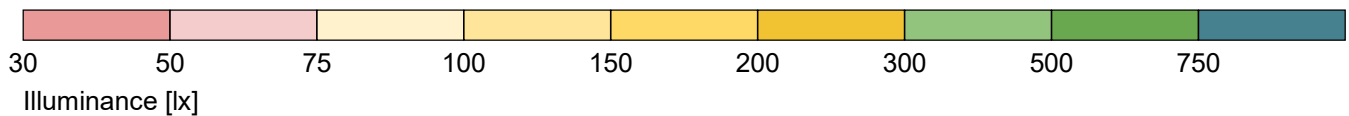
11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.4 Result overview, Desk 4



FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux	237835 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	383 lx
Minimum illuminance	E_{min}	230 lx
Maximum illuminance	E_{max}	547 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.66 (0.6)
Diversity U_d	E_{min}/E_{max}	1:2.37 (0.42)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

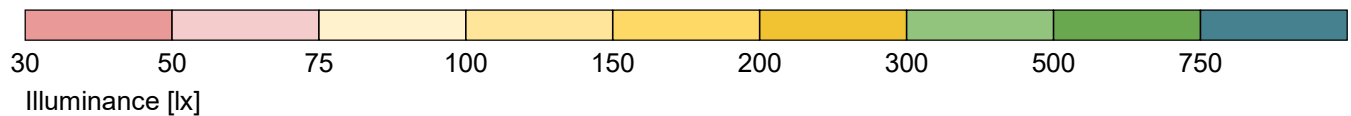
11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.5 Result overview, Desk 5



FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux	237835 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	428 lx
Minimum illuminance	E_{min}	279 lx
Maximum illuminance	E_{max}	551 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.53 (0.65)
Diversity U_d	E_{min}/E_{max}	1:1.97 (0.51)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

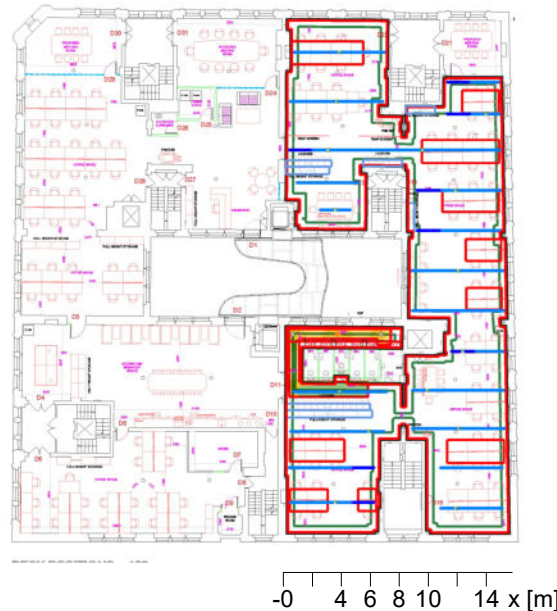
6.1 Summary, Office Space 2

6.1.5 Result overview, Desk 5

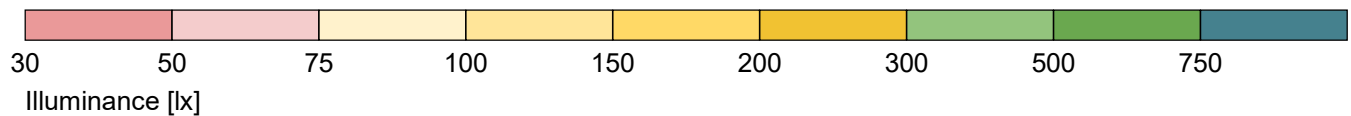
11	3E x		ANSELL	
			Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
			Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
			Equipment	: 1 x LED single 840 17.26 W / 2305 lm
			Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.6 Result overview, WC Circ



FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux	237835 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	254 lx
Minimum illuminance	E_{min}	1 lx
Maximum illuminance	E_{max}	461 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:345 (0)
Diversity U_d	E_{min}/E_{max}	1:626 (0)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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, WC Circ

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

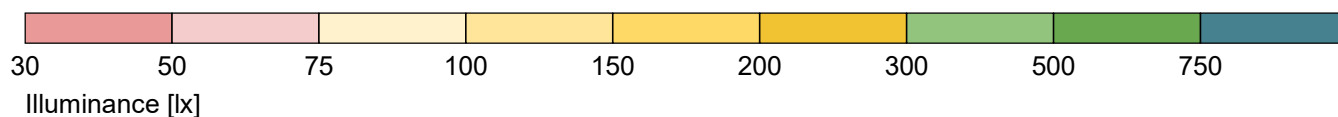
6.1 Summary, Office Space 2

6.1.7 Result overview, Desk 6



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	513 lx
Minimum illuminance	E_{min}	390 lx
Maximum illuminance	E_{max}	640 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.32 (0.76)
Diversity U_d	E_{min}/E_{max}	1:1.64 (0.61)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

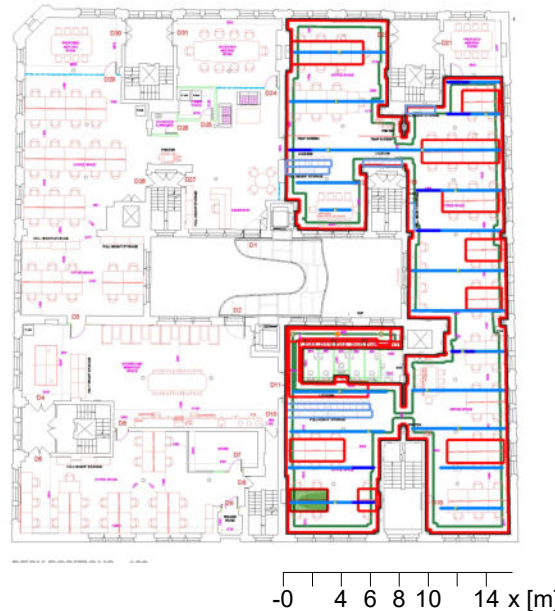
6.1 Summary, Office Space 2

6.1.7 Result overview, Desk 6

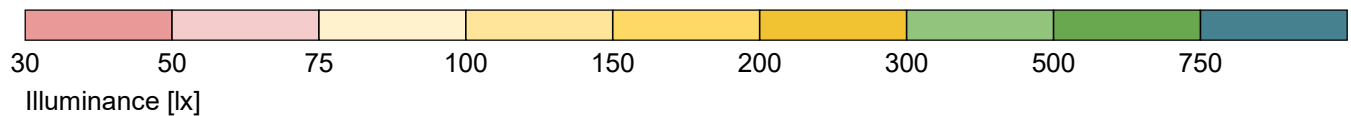
11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.8 Result overview, Desk 7



FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux	237835 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	512 lx
Minimum illuminance	E_{min}	332 lx
Maximum illuminance	E_{max}	655 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.54 (0.65)
Diversity U_d	E_{min}/E_{max}	1:1.98 (0.51)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

6.1 Summary, Office Space 2

6.1.8 Result overview, Desk 7

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

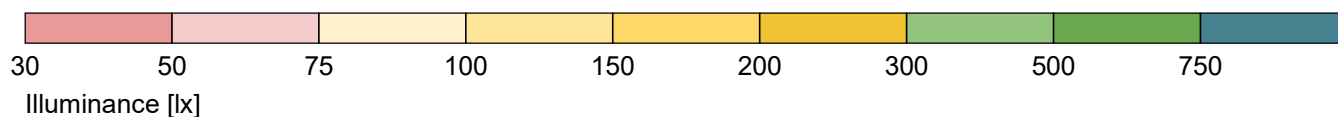
6.1 Summary, Office Space 2

6.1.9 Result overview, Desk 8



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	407 lx
Minimum illuminance	E_{min}	263 lx
Maximum illuminance	E_{max}	567 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.55 (0.65)
Diversity U_d	E_{min}/E_{max}	1:2.16 (0.46)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

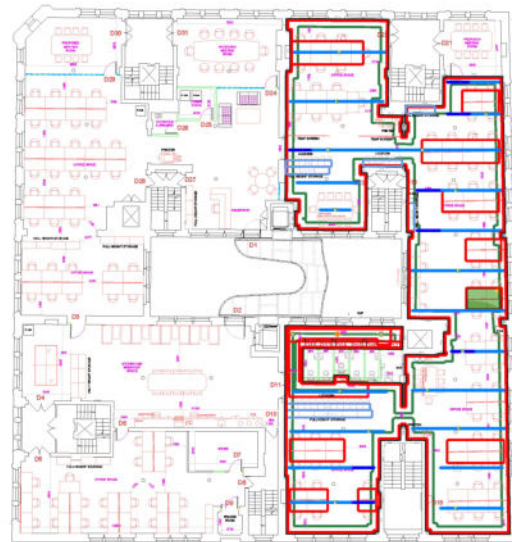
6.1 Summary, Office Space 2

6.1.9 Result overview, Desk 8

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

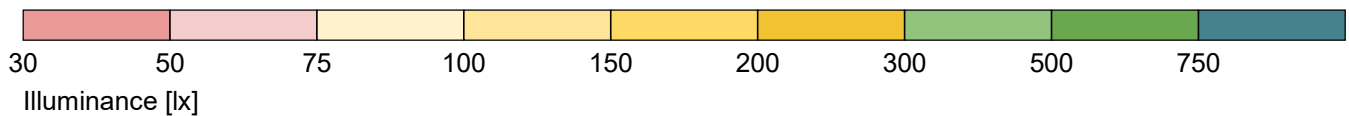
6.1 Summary, Office Space 2

6.1.10 Result overview, Desk 9



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	436 lx
Minimum illuminance	E_{min}	273 lx
Maximum illuminance	E_{max}	637 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.6 (0.63)
Diversity U_d	E_{min}/E_{max}	1:2.33 (0.43)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

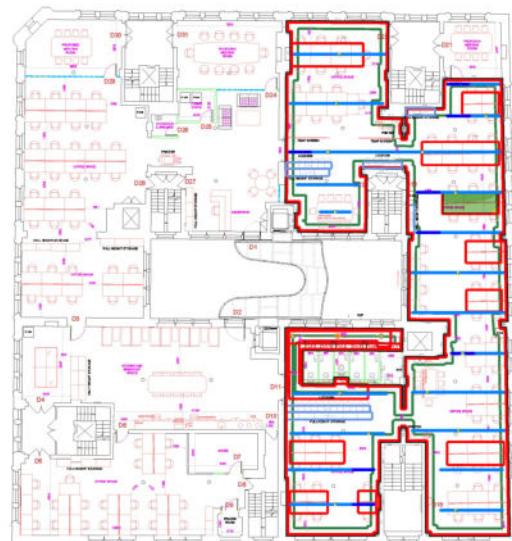
6.1 Summary, Office Space 2

6.1.10 Result overview, Desk 9

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

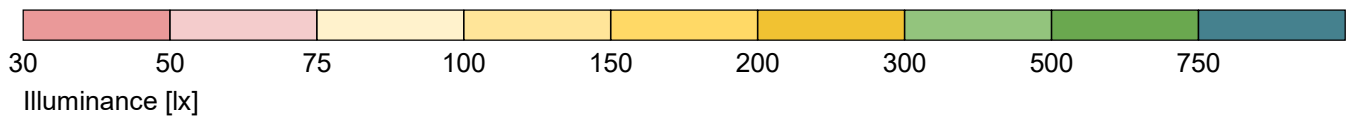
6.1 Summary, Office Space 2

6.1.11 Result overview, Desk 10



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 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)

237835 lm
 3979.8 W
 10.50 W/m²

Illuminance

Average illuminance	$\bar{E}_m$	474 lx
Minimum illuminance	E_{min}	273 lx
Maximum illuminance	E_{max}	683 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	1:1.74 (0.58)
Diversity U_d	E_{min}/E_{max}	1:2.5 (0.4)

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

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

6.1 Summary, Office Space 2

6.1.11 Result overview, Desk 10

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

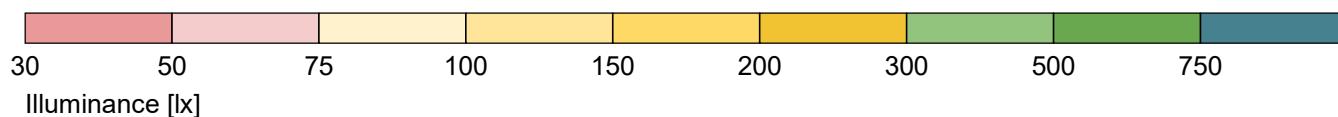
6.1 Summary, Office Space 2

6.1.12 Result overview, WC Circ



-0 4 6 8 10 14 x [m]

FOURWAYS HOUSE
 PROPOSED GA
 BH
 PRO-GA-LAY



General

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

Total luminous flux : 237835 lm
 Total power : 3979.8 W
 Total power per area (378.99 m²) : 10.50 W/m²

Illuminance

Average illuminance $\bar{E}_m$: 198 lx
 Minimum illuminance E_{min} : 131 lx
 Maximum illuminance E_{max} : 223 lx
 Uniformity U_o $E_{min}/\bar{E}_m$: 1:1.51 (0.66)
 Diversity U_d E_{min}/E_{max} : 1:1.7 (0.59)

Type No. Make

ZLISS

8 48E x Order No. : INDX80-4K LO 39W
 Luminaire name : INDI X 80 HEX 4000K LO 39W
 Equipment : 1 x LED 5630 77 W / 4280 lm
 Emergency : 590 lm (13.8 %)

9 8E x Order No. : INDX60-4K LO 29W
 Luminaire name : INDI X 60 HEX 4000K LO 29W
 Equipment : 1 x LED 5630 29 W / 3185 lm
 Emergency : 590 lm (18.5 %)

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

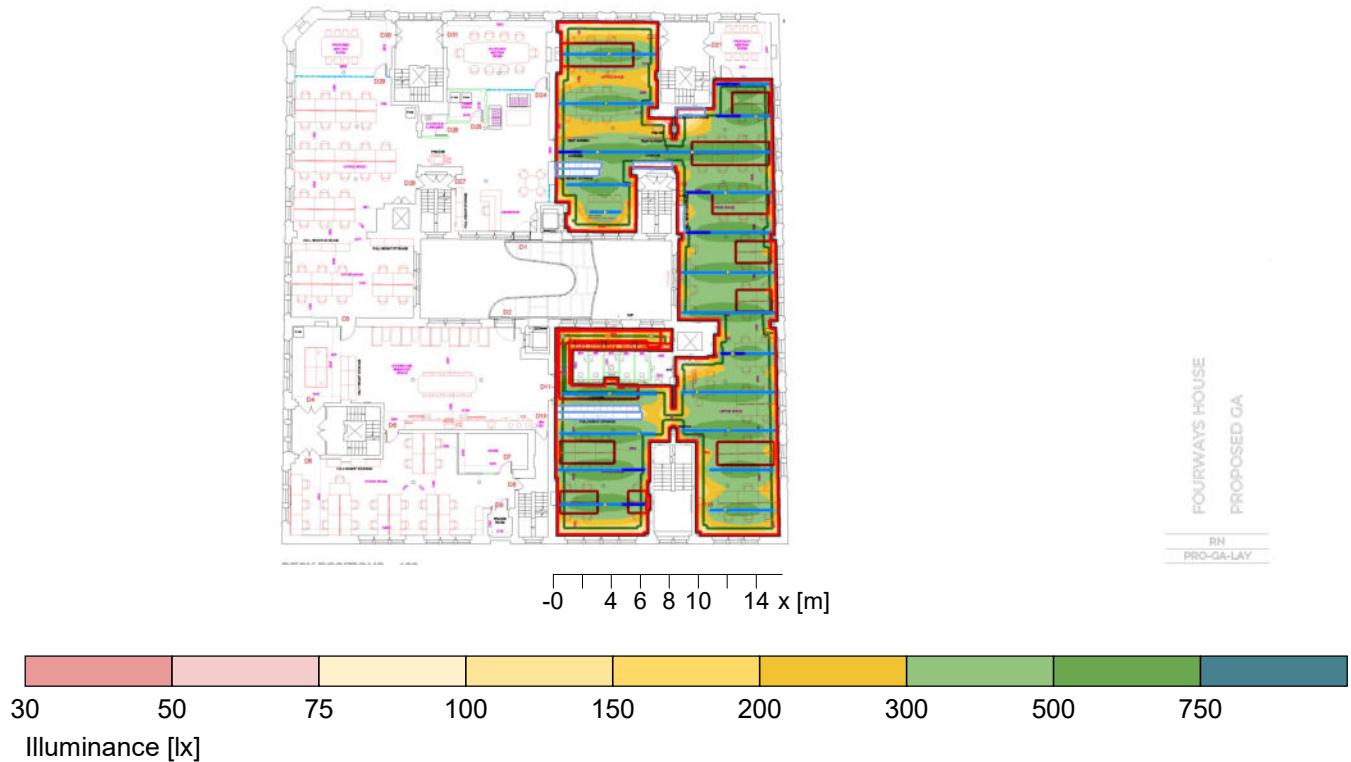
6.1 Summary, Office Space 2

6.1.12 Result overview, WC Circ

11		ANSELL	
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)

6.1 Summary, Office Space 2

6.1.13 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Maintenance factor	0.80
Total luminous flux	237835.00 lm
Total power	3979.8 W
Total power per area (378.99 m²)	10.50 W/m² (2.70 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	389 lx	153 lx
$E_{min}/\bar{E}_m (U_o)$	73 lx	48 lx
$E_{min}/E_{max} (U_d)$	0.19	0.32
E_z/E_h	0.11	
Position	0.75 m	0.39
RUG (--- ---)	---	1.20 m

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

Major surfaces

	$\bar{E}_m$	U_o
M 1.24587 (Ceiling)	306 lx	0.10
M 1.24515 (Wall)	213 lx	0.48
M 1.24519 (Wall)	172 lx	0.09
M 1.24540 (Wall)	118 lx	0.64
M 1.24541 (Wall)	153 lx	0.53
M 1.24544 (Wall)	1 lx	0.45
M 1.24549 (Wall)	183 lx	0.64
M 1.24553 (Wall)	216 lx	0.56

6.1 Summary, Office Space 2

6.1.13 Result overview, Evaluation area 1

M 1.24554 (Wall)	279 lx	0.65
M 1.24562 (Wall)	90 lx	0.62
M 1.24563 (Wall)	202 lx	0.49
M 1.24564 (Wall)	128 lx	0.54
M 1.24565 (Wall)	204 lx	0.46
M 1.24566 (Wall)	249 lx	0.66
M 1.24567 (Wall)	48 lx	0.76
M 1.24568 (Wall)	114 lx	0.55
M 1.24569 (Wall)	142 lx	0.37
M 1.24570 (Wall)	162 lx	0.23
M 1.24571 (Wall)	191 lx	0.41
M 1.24572 (Wall)	120 lx	0.65
M 1.24573 (Wall)	110 lx	0.48
M 1.24574 (Wall)	213 lx	0.62
M 1.24575 (Wall)	143 lx	0.58
M 1.24576 (Wall)	122 lx	0.65
M 1.24577 (Wall)	202 lx	0.39
M 1.24578 (Wall)	223 lx	0.53
M 1.24579 (Wall)	231 lx	0.53
M 1.24580 (Wall)	325 lx	0.59
M 1.24581 (Wall)	236 lx	0.67
M 1.24582 (Wall)	0 lx	0.39
M 1.24583 (Wall)	97 lx	0.57
M 1.24584 (Wall)	179 lx	0.52
M 1.24585 (Wall)	177 lx	0.36
M 1.24586 (Wall)	106 lx	0.59

Type No. Make

ZLISS

8	48E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

9	8E x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

ANSELL

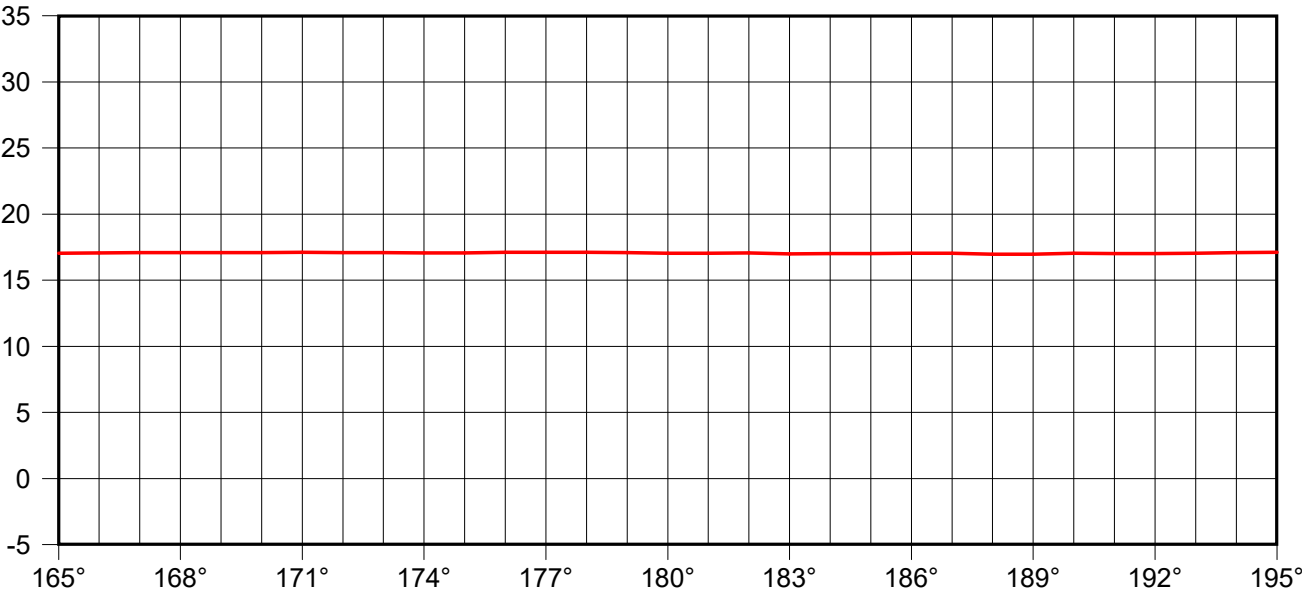
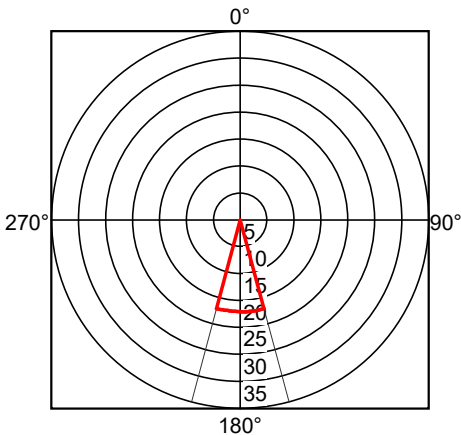
11	3E x	Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm
		Emergency	: 300 lm (13.0 %)



6 Office Space 2

6.2 Calculation results, Office Space 2

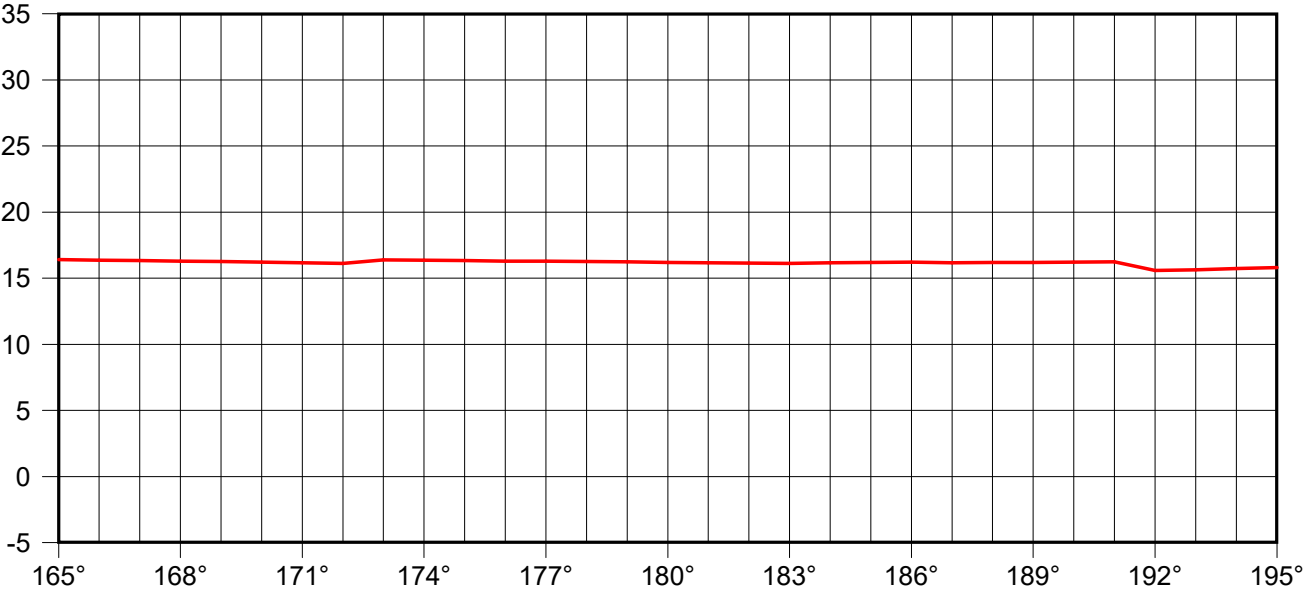
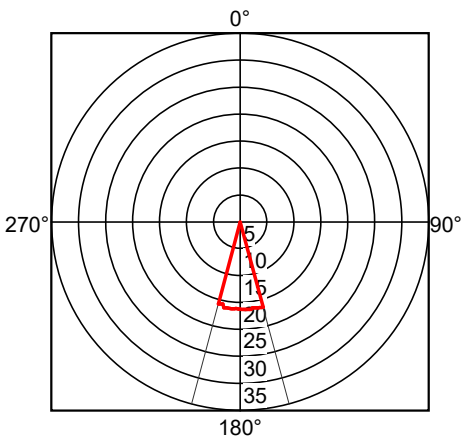
6.2.1 Glare Rating (RUG) - RUG 1



Observer location : x = 3.74 m, y = -1.29 m, z = 1.20 m
: 180.00° (0.00, -1.00, 0.00)
Maximum degree of glare : 17.1

6.2 Calculation results, Office Space 2

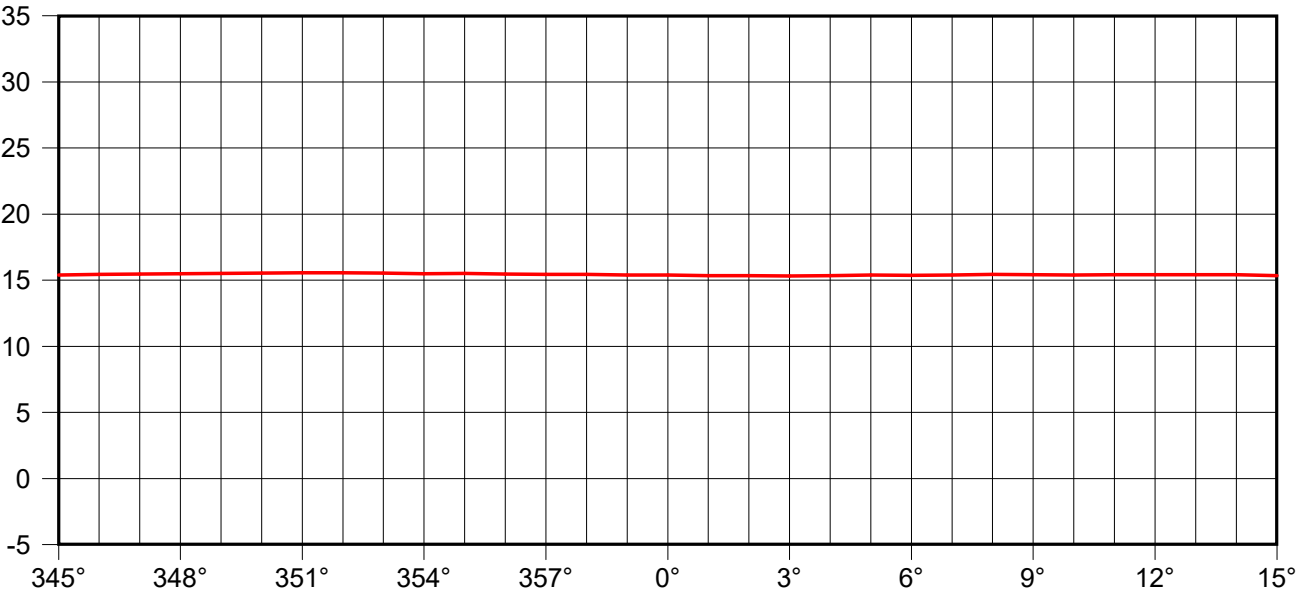
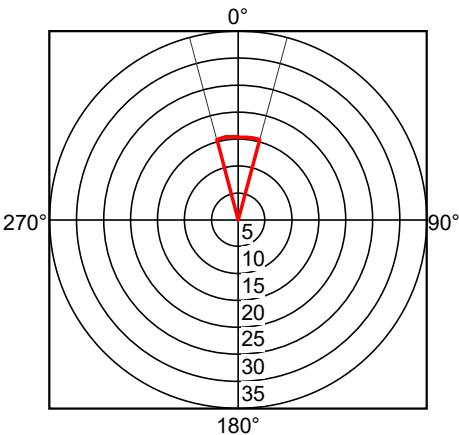
6.2.2 Glare Rating (RUG) - RUG 2



Observer location : x = 12.82 m, y = -8.11 m, z = 1.20 m
: 180.00° (0.00, -1.00, 0.00)
Maximum degree of glare : 16.4

6.2 Calculation results, Office Space 2

6.2.3 Glare Rating (RUG) - RUG 3



Observer location : x = 11.77 m, y = -30.76 m, z = 1.20 m
: 0.00° (-0.00, 1.00, 0.00)
Maximum degree of glare : 15.6

6 Office Space 2

6.3 Summary, Office Space 2

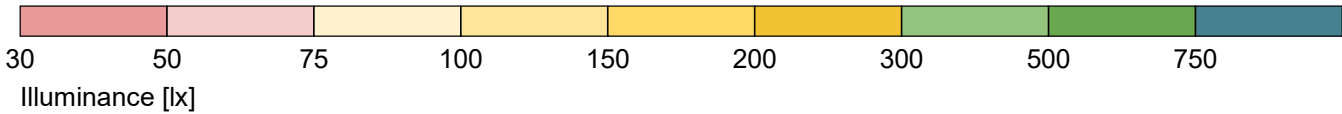
6.3.1.1 Result overview (emergency lighting)



FOURWAYS HOUSE
PROPOSED GA

RH
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 : 250 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 0.17 lx 29.76 lx 1:176.34
>= 0.5 lx >= 1 : 40



Type No. Make

ZLISS

8	14E x	Order No.	: INDX80-4K LO 39W	-- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W	
		Equipment	: 1 x LED 5630 77 W / 4280 lm	
		Emergency	: 590 lm (13.8 %)	
9	1E x	Order No.	: INDX60-4K LO 29W	-- Emergency Lighting --
		Luminaire name	: INDI X 60 HEX 4000K LO 29W	
		Equipment	: 1 x LED 5630 29 W / 3185 lm	
		Emergency	: 590 lm (18.5 %)	

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

6 Office Space 2

6.3 Summary, Office Space 2

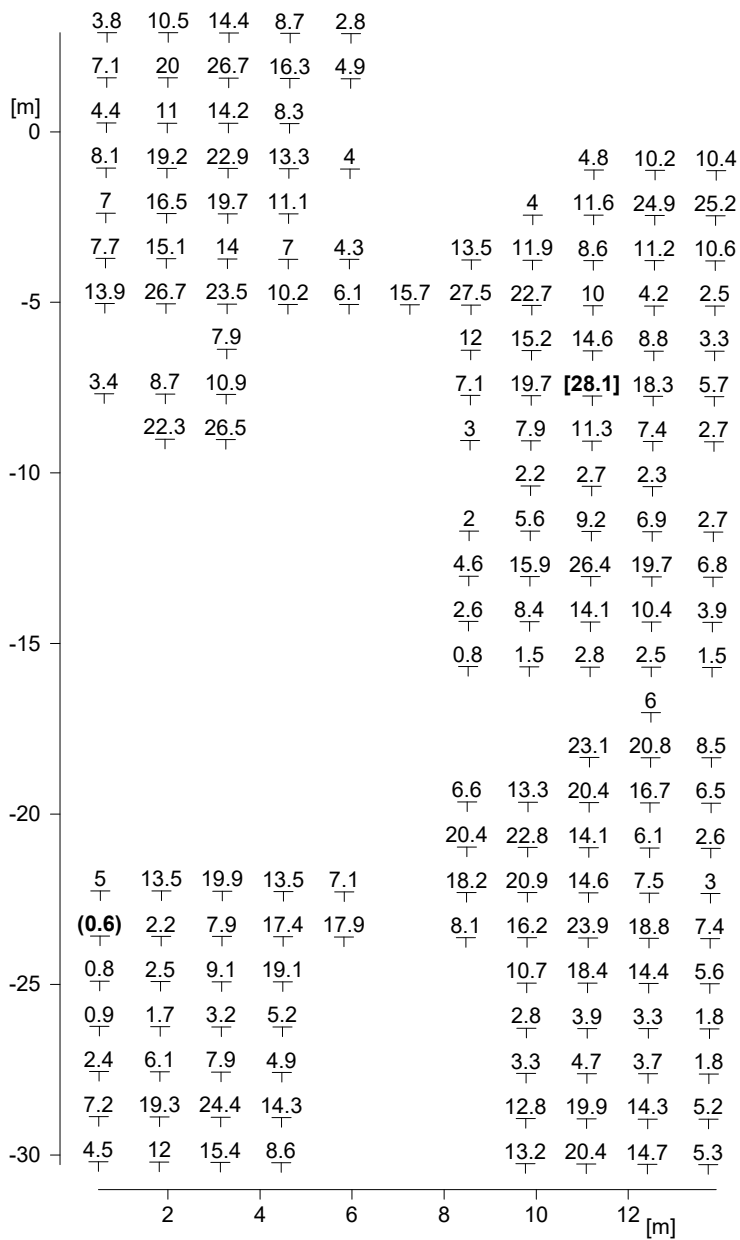
6.3.1.1 Result overview (emergency lighting)

11	2E x	ANSELL		-- Emergency Lighting --
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)	
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K	
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm	
		Emergency	: 300 lm (13.0 %)	



6.3 Calculation results, Office Space 2

6.3.2 Table, Anti panic area 1.1 (E)



Required minimum illuminance : 0.5 lx (lower values are highlighted in red)

Minimum illuminance Emin : 0.63 lx (* 0.2 lx)

Maximum illuminance Emax : 28 lx (* 30 lx)

Diversity Emin/Emax : 1 : 44.70 (0.02) (Threshold value 1:40) (* 1:176.00)

Height : 0 m

Calculation algorithm used : Direct component

Maintenance factor : 0.8

*: Values on fine measuring grid (0.1m - 0.5m)!

6.3 Calculation results, Office Space 2

6.3.3 Boundary line, Anti panic area 1.1 (E)

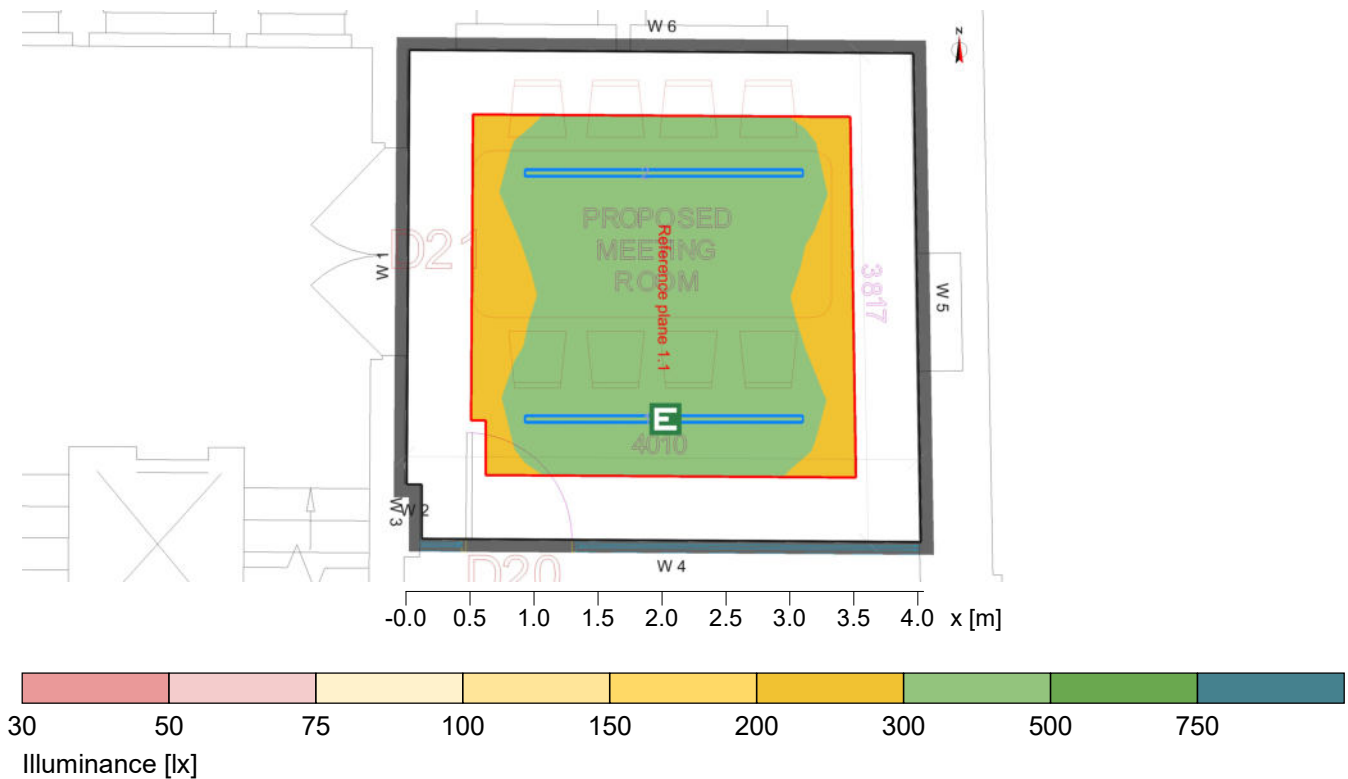


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.17 lx
Maximum illuminance	Emax	: 30 lx
Diversity	Emin/Emax	: 1 : 176.00 (0.01) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

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	8560.00 lm
Total power	154.0 W
Total power per area (15.12 m²)	10.18 W/m² (2.79 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	365 lx	121 lx
$E_{min}/\bar{E}_m (U_o)$	248 lx	104 lx
$E_{min}/E_{max} (U_d)$	0.68	0.86
E_z/E_h	0.51	0.28
Position	0.75 m	1.20 m
$R_{UG} (2.9H \ 2.8H)$	≤ 16.5	
Luminaire : (INDI X 80 HEX 4000K LO 39W, INDX80-4K LO 39W)		

Major surfaces

	$\bar{E}_m$	U_o
M 1.9 (Ceiling)	308 lx	0.19
M 1.1 (Wall)	131 lx	0.74
M 1.6 (Wall)	141 lx	0.66
M 1.7 (Wall)	132 lx	0.73
M 1.8 (Wall)	142 lx	0.68

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

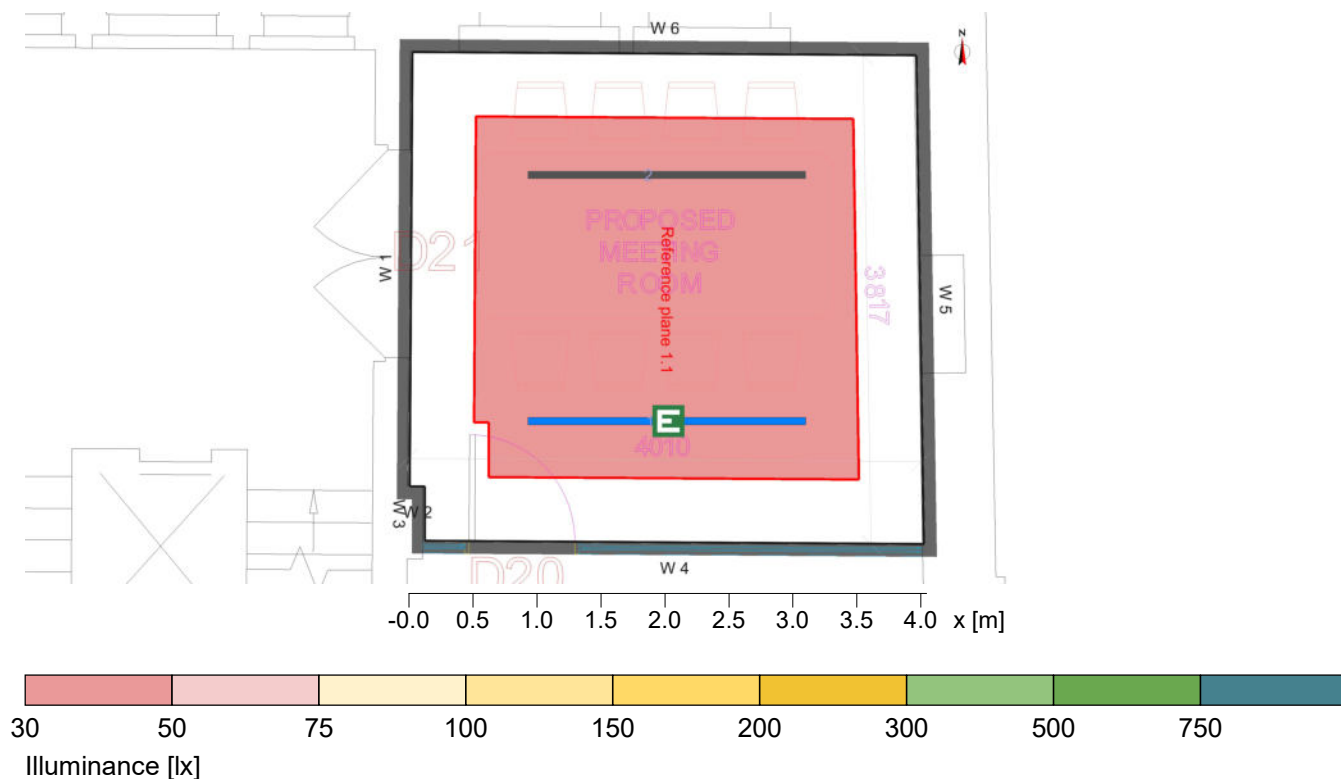
Type No.\Make

		ZLISS	
8	2E x	Order No.	: INDX80-4K LO 39W
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

7 Proposed Meeting Room

7.2 Summary, Proposed Meeting Room

7.2.1.1 Result overview (emergency lighting)

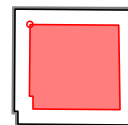


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	1.56 lx	27.24 lx	1 : 17.51
		>= 0.5 lx		>= 1 : 40



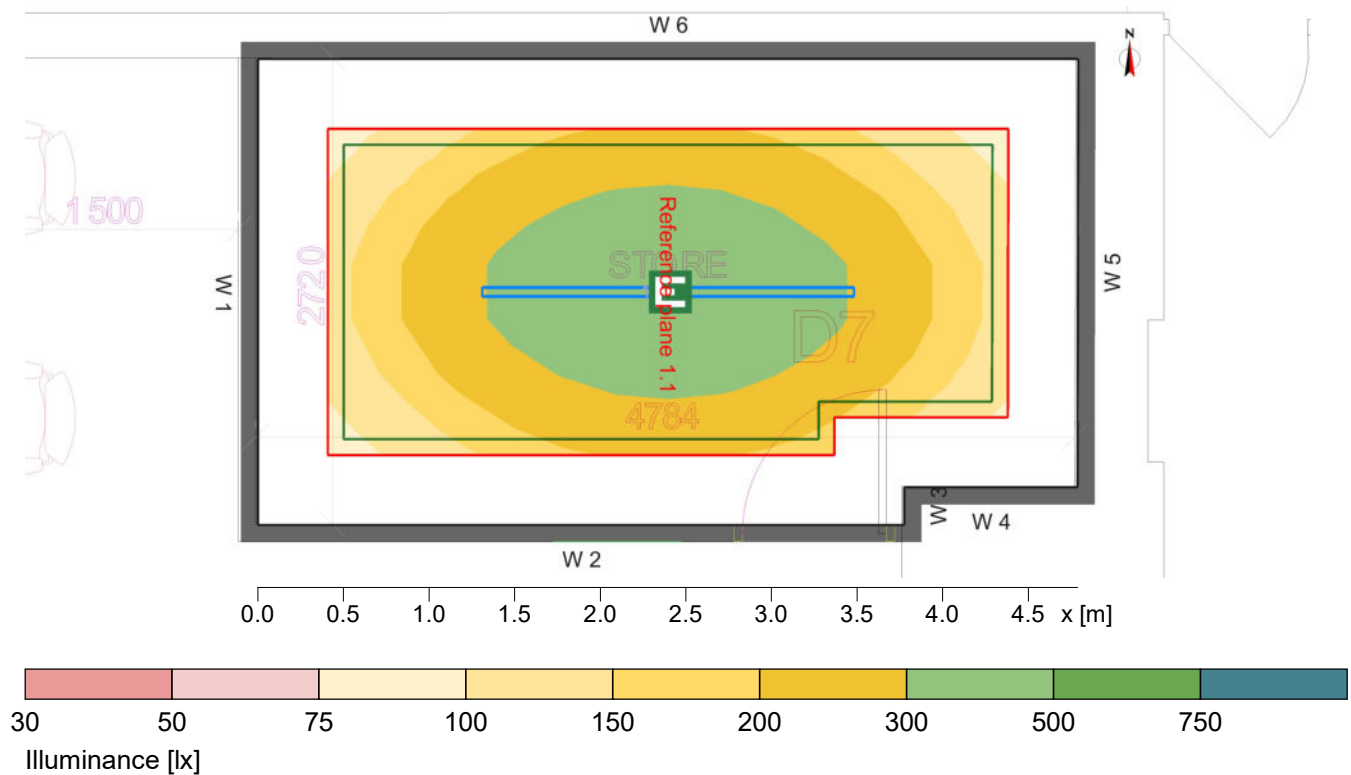
Type No. Make

ZLISS			
8	1E x	Order No.	: INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

8 Store

8.1 Summary, Store

8.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	High indirect fraction
Height of luminaire plane	2.60 m
Maintenance factor	0.80
Total luminous flux	4280.00 lm
Total power	77.0 W
Total power per area (12.79 m ²)	6.02 W/m ² (2.43 W/m ² /100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	248 lx	80 lx
$E_{min}/\bar{E}_m (U_o)$	100 lx	50 lx
$E_{min}/E_{max} (U_d)$	0.40	0.63
E_z/E_h	0.23	0.27
Position	0.75 m	1.20 m
$R_{UG} (2.0H \ 3.5H)$	≤ 16.7	
Luminaire : (INDI X 80 HEX 4000K LO 39W, INDX80-4K LO 39W)		

Major surfaces

	$\bar{E}_m$	U_o
M 1.9 (Ceiling)	196 lx	0.15
M 1.1 (Wall)	71 lx	0.66
M 1.2 (Wall)	81 lx	0.55
M 1.7 (Wall)	71 lx	0.63
M 1.8 (Wall)	76 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

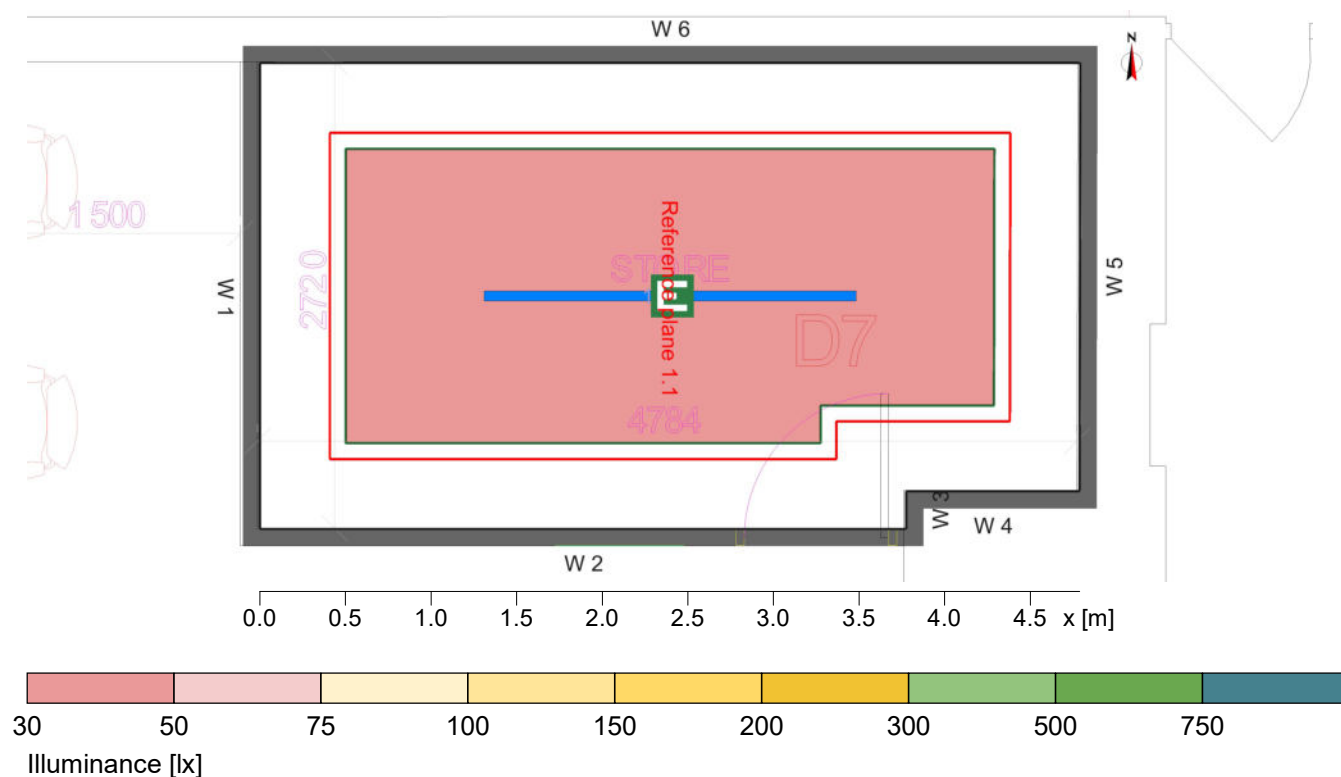
		ZLISS	
8	1E x	Order No.	: INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name	: INDI X 80 HEX 4000K LO 39W
		Equipment	: 1 x LED 5630 77 W / 4280 lm
		Emergency	: 590 lm (13.8 %)

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)

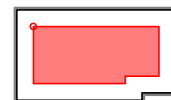


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	7.76 lx	27.23 lx	1: 3.51
		>= 0.5 lx		>= 1 : 40



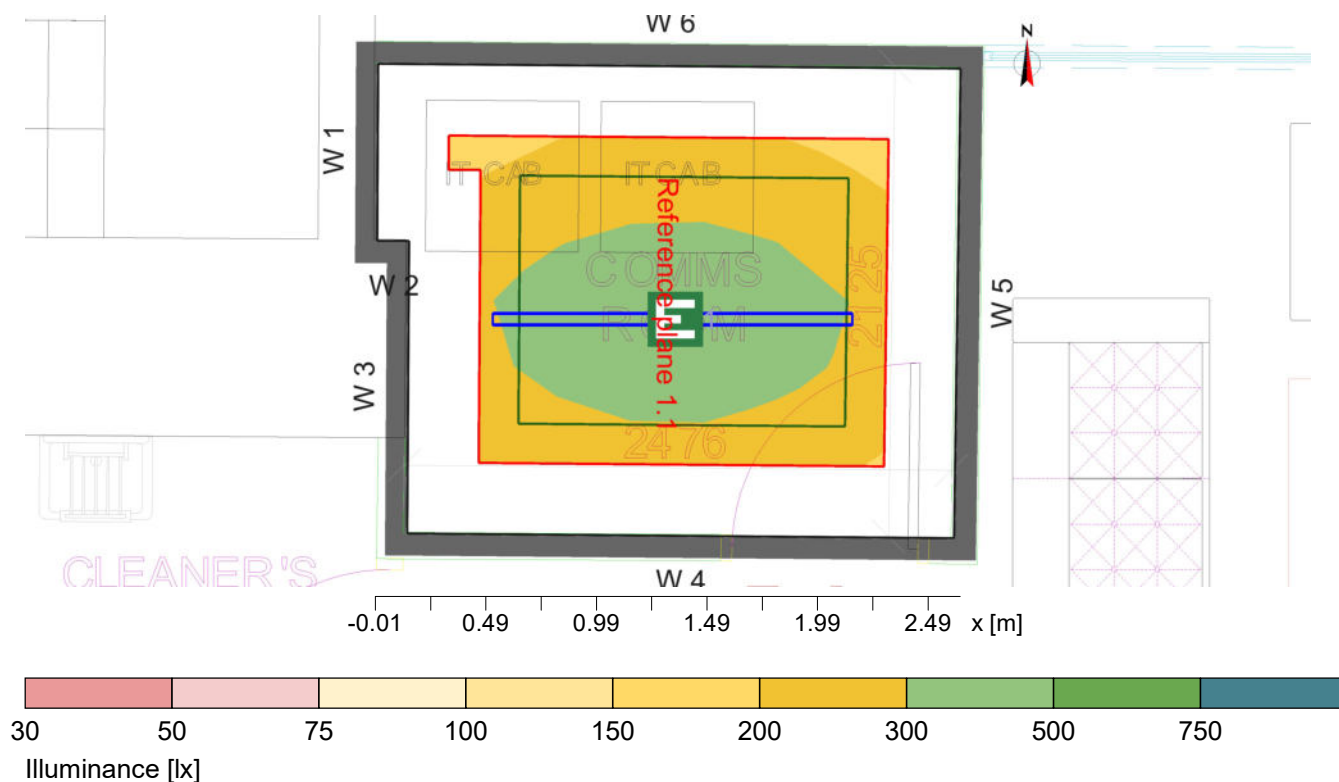
Type No.\Make

ZLISS		
8	1E x	Order No. : INDX80-4K LO 39W -- Emergency Lighting --
		Luminaire name : INDI X 80 HEX 4000K LO 39W
		Equipment : 1 x LED 5630 77 W / 4280 lm
		Emergency : 590 lm (13.8 %)

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)

3185.00 lm
 29.0 W
 5.39 W/m² (1.88 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	287 lx	94 lx
$E_{min}/\bar{E}_m (U_o)$	195 lx	79 lx
$E_{min}/E_{max} (U_d)$	0.68	0.84
E_z/E_h	0.52	
Position	0.75 m	0.25
$R_{UG} (1.9H \ 1.6H)$	10.0	1.20 m
Luminaire : (INDI X 60 HEX 4000K LO 29W, INDX60-4K LO 29W)		
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)	353 lx	0.15
M 1.7 (Wall)	117 lx	0.80
M 1.8 (Wall)	136 lx	0.64
M 1.9 (Wall)	104 lx	0.80

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

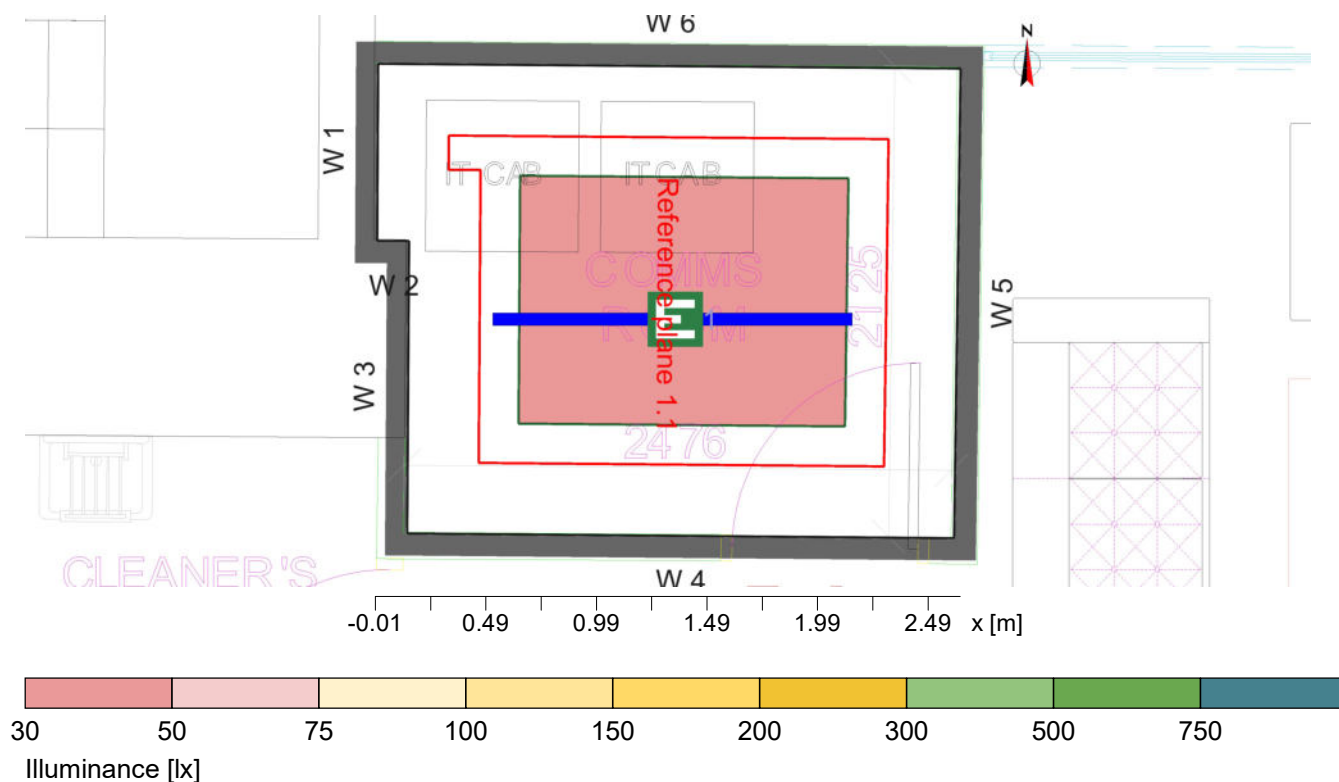
Type No.\Make

		ZLISS	
9	1E x	Order No.	: INDX60-4K LO 29W -- Emergency Lighting --
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)

9 Comms Room

9.2 Summary, Comms Room

9.2.1.1 Result overview (emergency lighting)

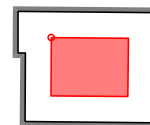


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.56 m
 Maximum I : 250 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1.1	17.99 lx	28.70 lx	1: 1.60
		>= 0.5 lx		>= 1 : 40



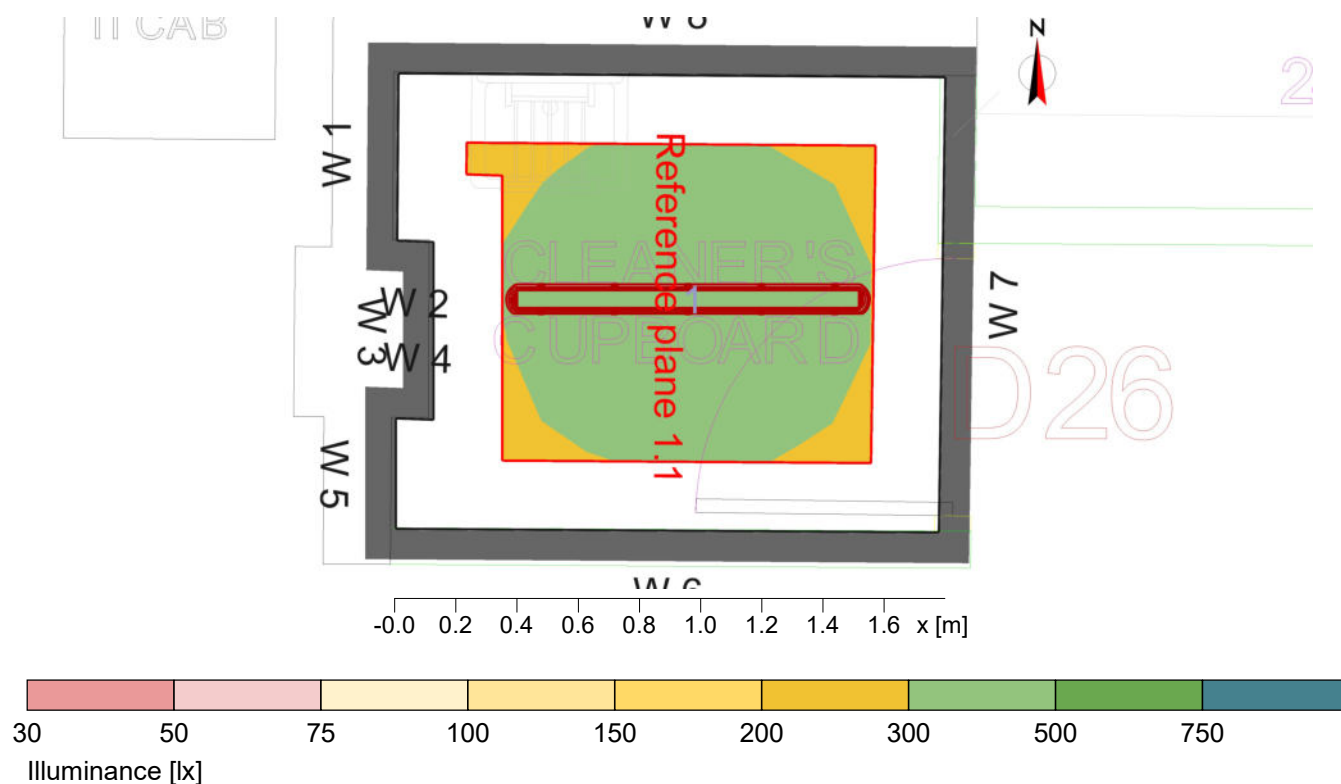
Type No.\Make

ZLISS		
9	1E x	Order No. : INDX60-4K LO 29W -- Emergency Lighting --
		Luminaire name : INDI X 60 HEX 4000K LO 29W
		Equipment : 1 x LED 5630 29 W / 3185 lm
		Emergency : 590 lm (18.5 %)

10 Cleaners Cupboard

10.1 Summary, Cleaners Cupboard

10.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.80 m
 0.80

Total luminous flux

6089.90 lm

Total power

39.4 W

Total power per area (2.58 m²)

15.29 W/m² (4.87 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	314 lx	111 lx
$E_{min}/\bar{E}_m (U_o)$	290 lx	109 lx
$E_{min}/E_{max} (U_d)$	0.92	0.98
E_z/E_h	0.87	
Position	0.00 m	0.27
$R_{UG} (1.2H \ 1.0H)$	10.0	0.45 m

Luminaire :
 (WEATHERPROOFS & BATTENS - Tornado EVO 4000K, ATORE4/1 (40W 4000K))

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)	447 lx	0.62
M 1.1 (Wall)	476 lx	0.35
M 1.2 (Wall)	469 lx	0.36

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

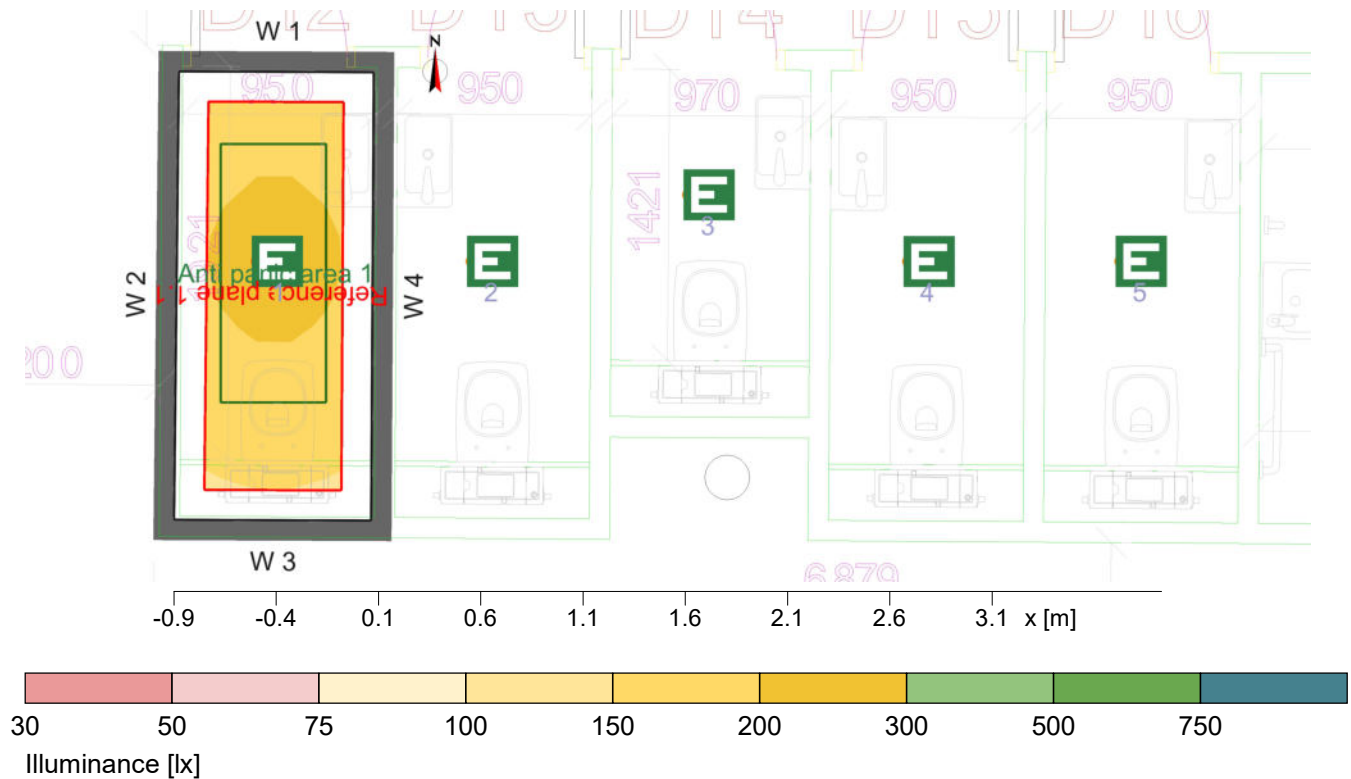
Type No.\Make

		ANSELL	
10	1 x	Order No.	: ATORE4/1 (40W 4000K)
		Luminaire name	: WEATHERPROOFS & BATTENS - Tornado EVO 4000K
		Equipment	: 1 x LED 39.4 W / 6089.9 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	2305.00 lm
Total power	17.3 W
Total power per area (2.10 m²)	8.24 W/m² (4.35 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	189 lx	57 lx
$E_{min}/\bar{E}_m (U_o)$	0.80	0.86
$E_{min}/E_{max} (U_d)$	0.72	
E_z/E_h		0.23
Position	0.00 m	0.45 m
$R_{UG} (0.6H \ 1.4H)$	10.0	

Luminaire :
 (DOWNLIGHTS - Comfort Evo 4000K, ACOM2/1 + ACOM/TR/W/1 (17W 4000K))
 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 1.150 (Ceiling)	90 lx	0.57
M 1.148 (Wall)	222 lx	0.37
M 1.149 (Wall)	222 lx	0.37

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

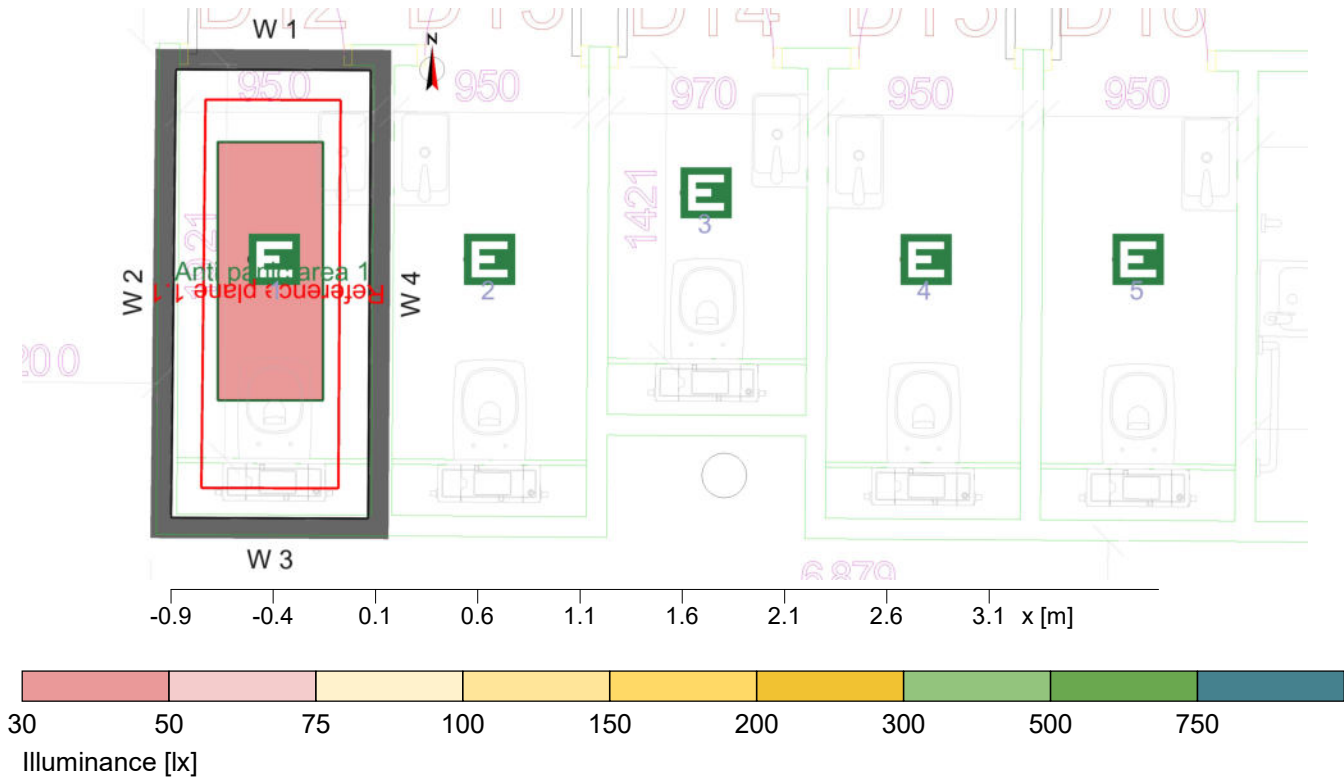
Type No.\Make

11	1E x	ANSELL		
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)	-- Emergency Lighting --
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K	
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm	
		Emergency	: 300 lm (13.0 %)	

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 : 190 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
1	Anti panic area 1	16.58 lx	19.89 lx	1: 1.20
		>= 0.5 lx		>= 1 : 40



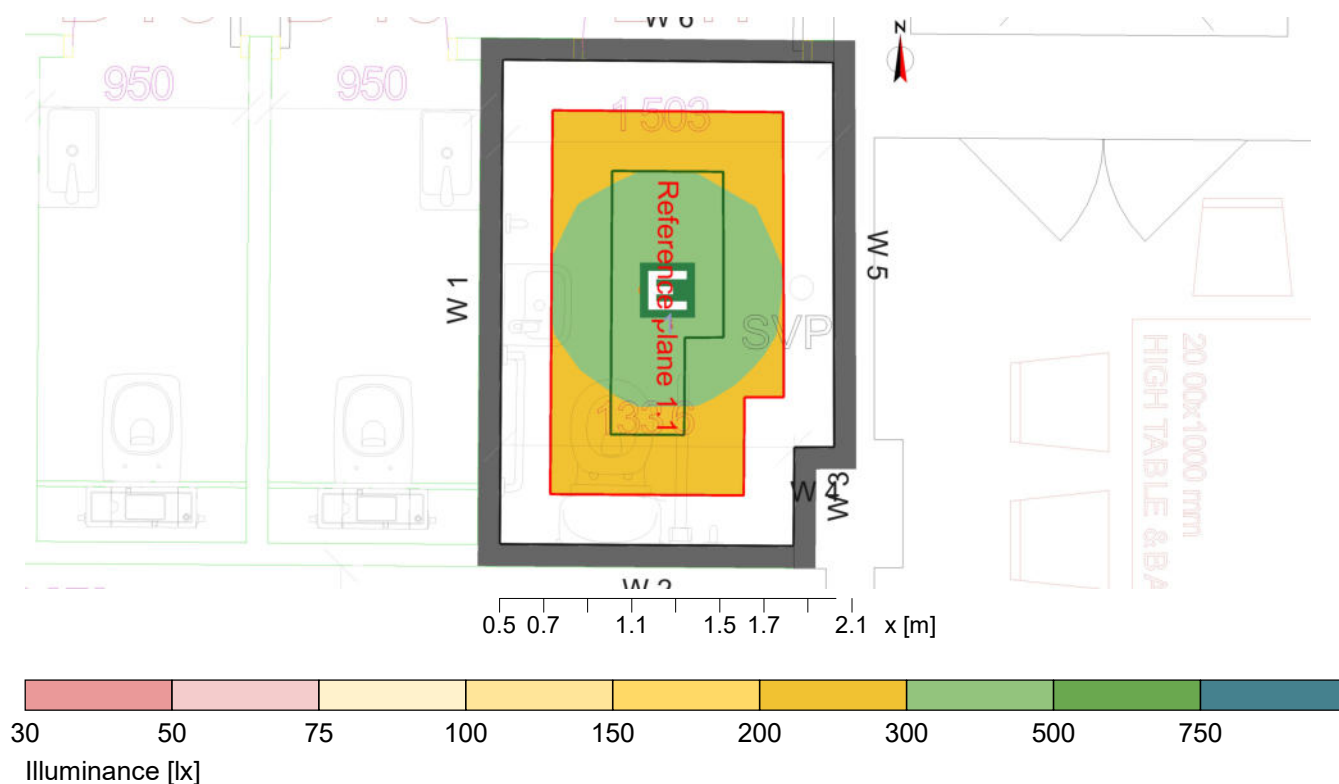
Type No. Make

11	5E x	ANSELL		
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)	-- Emergency Lighting --
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K	
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm	
		Emergency	: 300 lm (13.0 %)	

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	2305.00 lm
Total power	17.3 W
Total power per area (3.23 m²)	5.34 W/m² (1.77 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	302 lx	97 lx
$E_{min}/\bar{E}_m (U_o)$	241 lx	78 lx
$E_{min}/E_{max} (U_d)$	0.80	0.81
E_z/E_h	0.69	0.24
Position	0.75 m	1.20 m
$R_{UG} (0.9H \ 1.4H)$	10.0	

Luminaire :
 (DOWNLIGHTS - Comfort Evo 4000K, ACOM2/1 + ACOM/TR/W/1 (17W 4000K))
 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)	58 lx	0.83
M 1.1 (Wall)	164 lx	0.58
M 1.2 (Wall)	165 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

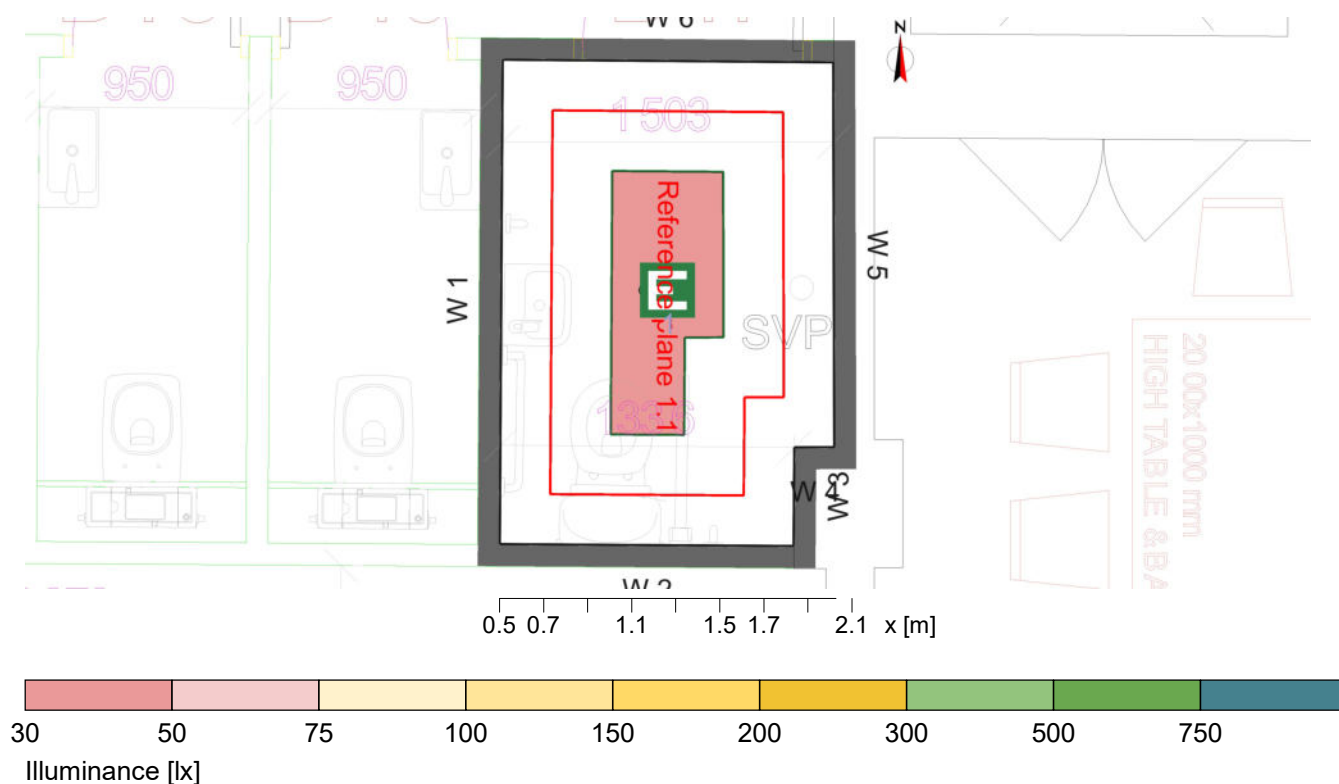
Type No.\Make

11	1E x	ANSELL		
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)	-- Emergency Lighting --
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K	
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm	
		Emergency	: 300 lm (13.0 %)	

12 Disabled WC

12.2 Summary, Disabled WC

12.2.1.1 Result overview (emergency lighting)

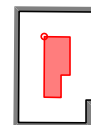


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot. centre) : 2.80 m
 Maximum I : 190 cd <= 900 cd

Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1.1				
Calculation field: 1.19m x 0.51m (10 x 4 pts), Height = 0.00m				
1		16.89 lx	19.87 lx	1: 1.18
		>= 0.5 lx		>= 1 : 40



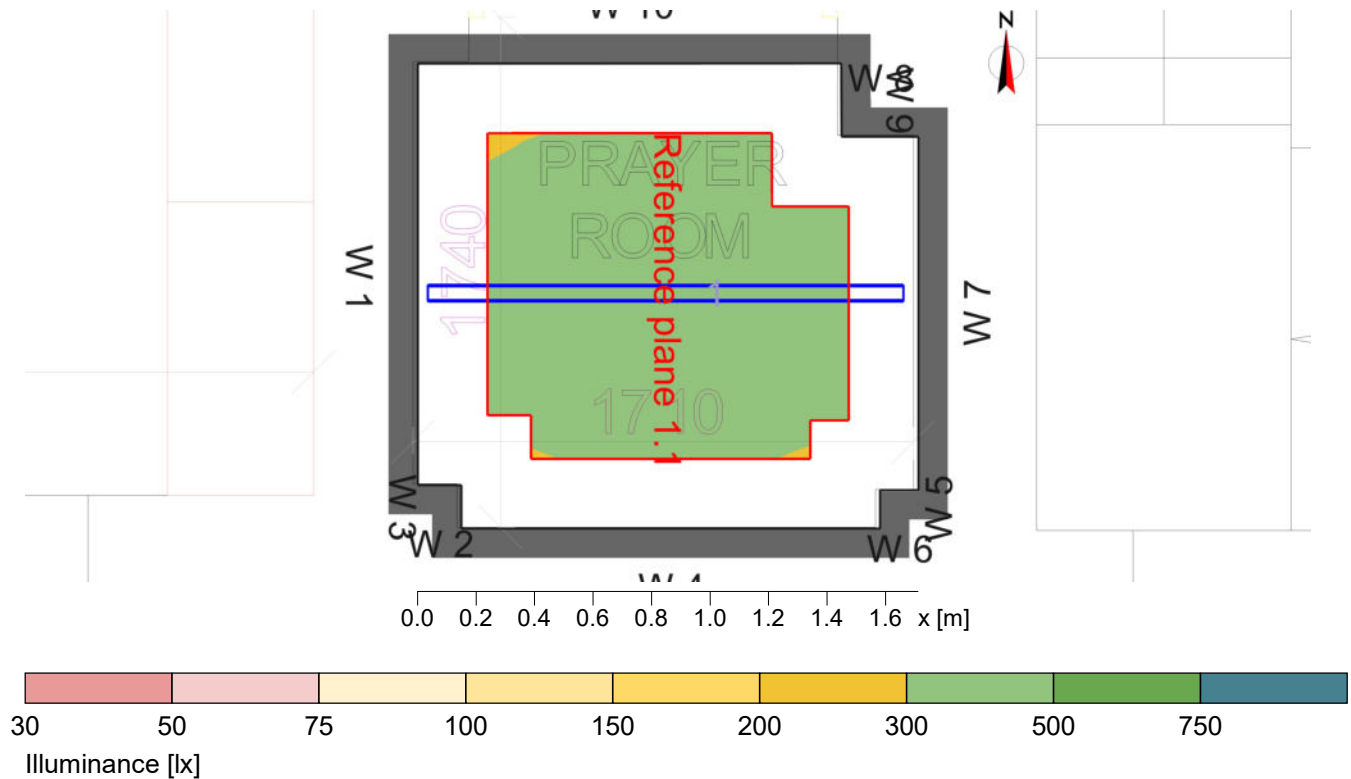
Type No. Make

11	1E x	ANSELL		
		Order No.	: ACOM2/1 + ACOM/TR/W/1 (17W 4000K)	-- Emergency Lighting --
		Luminaire name	: DOWNLIGHTS - Comfort Evo 4000K	
		Equipment	: 1 x LED single 840 17.26 W / 2305 lm	
		Emergency	: 300 lm (13.0 %)	

13 Prayer Room

13.1 Summary, Prayer Room

13.1.1 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	3185.00 lm
Total power	29.0 W
Total power per area (2.61 m ²)	11.11 W/m ² (2.98 W/m ² /100lx)

Evaluation area 1

Reference plane 1.1

$\bar{E}_m$	Horizontal	cylindrical
E_{min}	373 lx	128 lx
$E_{min}/\bar{E}_m (U_o)$	319 lx	124 lx
$E_{min}/E_{max} (U_d)$	0.85	0.97
E_z/E_h	0.75	0.25
Position	0.75 m	1.20 m
$R_{UG} (1.3H \ 1.2H)$	10.0	
Luminaire : (INDI X 60 HEX 4000K LO 29W, INDX60-4K LO 29W)		
Hints: - Encountered room dimensions less than 2H. RUG value has been set to 10 as lower limit.		

Major surfaces

M 1.1 (Ceiling)	$\bar{E}_m$ 669 lx	U_o 0.28
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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

		ZLISS	
9	1 x	Order No.	: INDX60-4K LO 29W
		Luminaire name	: INDI X 60 HEX 4000K LO 29W
		Equipment	: 1 x LED 5630 29 W / 3185 lm
		Emergency	: 590 lm (18.5 %)