

Ground Floor

Installation : Bregenz House Bangor

Project number : N/A
Customer : Graham + Sibbald
Processed by : J Worsley
Date : 09.09.2019

Project description:
Parameters:
Maintenance Factor - 0.8
Reflectances - 70/50/20, Except Plant 50/30/10

CDM 2015 - Designers Risk Assessment:

Throughout the design process, consideration has been made for the installation, maintenance, use and decommissioning phases of the project. By adopting a best practice approach, it is judged that any inherent risks associated with the design of lighting systems are suitably mitigated. Through this process, no unusual or significant risks have been identified.

However, it should still be noted that:

- Installation of lighting and any associated systems may involve working at height. Contractor to prepare appropriate Risk assessment and method statements to establish safe method of works.
- Installation of electrical services to lighting. Contractor to prepare appropriate Risk assessment and method statements to establish safe method of works. Only demonstrably competent and qualified personnel to undertake electrical installation and testing.
- Installation of lighting equipment should adhere to the product specific installation details provided in order to ensure compliance with the requirements of BS EN 60598.

Lighting Design Calculations:

The information contained within this document may not necessarily convey all the required details, as such should be read in conjunction with all other documentation and/or drawings provided as part of Whitecroft Lighting's design submissions.

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

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

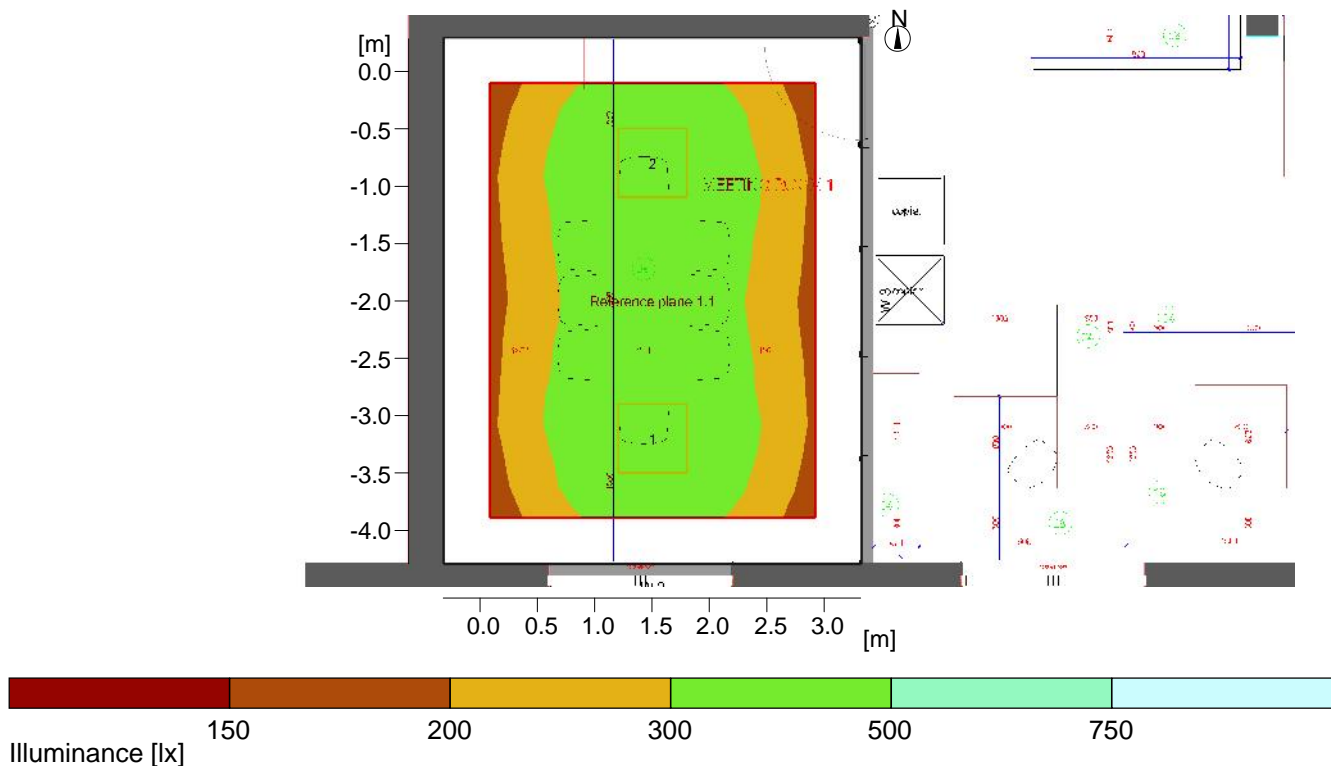
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1 Meeting Room 1

1.1 Summary, Meeting Room 1

1.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.40 m
Maintenance factor	0.80
Total luminous flux of all lamps	6642.00 lm
Total power	48.0 W
Total power per area (16.66 m ²)	2.88 W/m ² (0.91 W/m ² /100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	317 lx
Emin	202 lx
Emin/Em (Uo)	0.64
Emin/Emax (Ud)	0.45
UGR (3.0H 3.8H)	<=17.1
Position	0.75 m

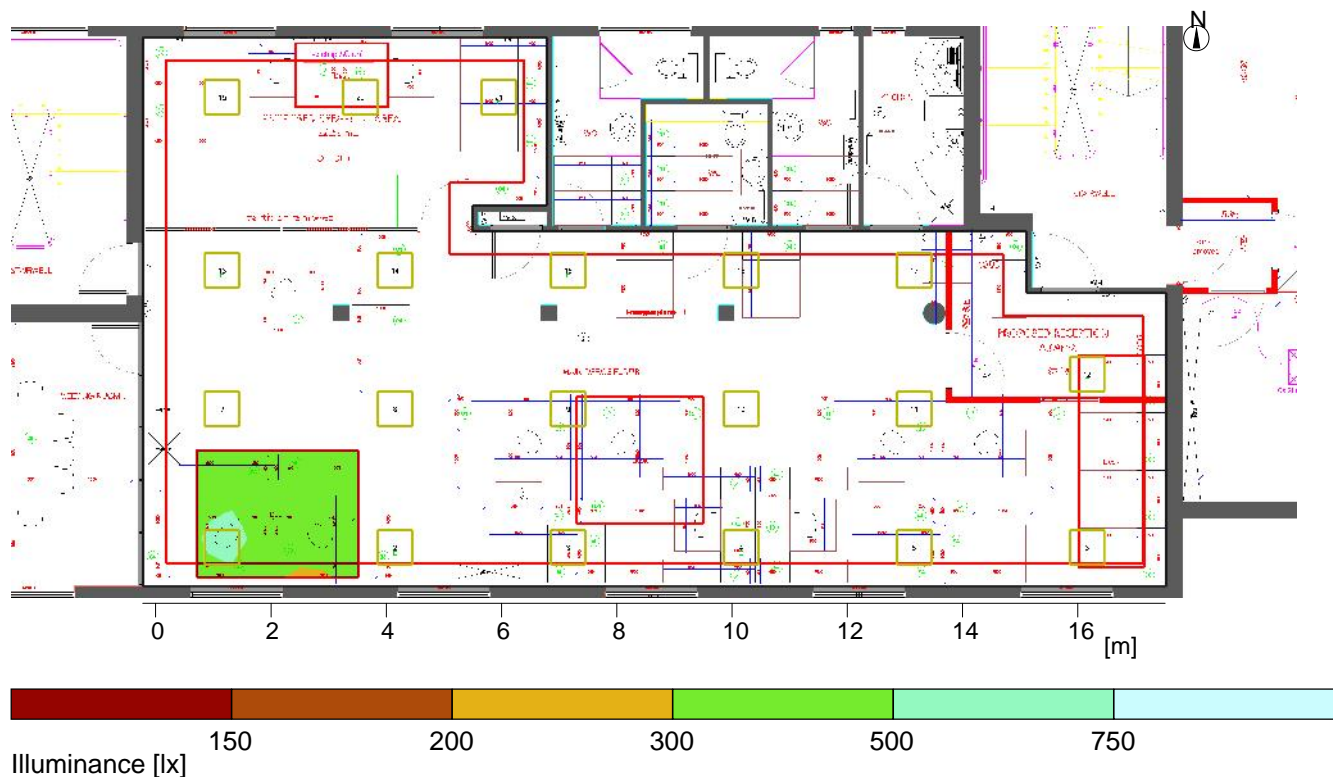
Type No./Make

1	2	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

2 Main Office Floor

2.1 Summary, Main Office Floor

2.1.1 Result overview, Desk



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80

Total luminous flux of all lamps	66420 lm
Total power	480 W
Total power per area (129.39 m²)	3.71 W/m²

Illuminance

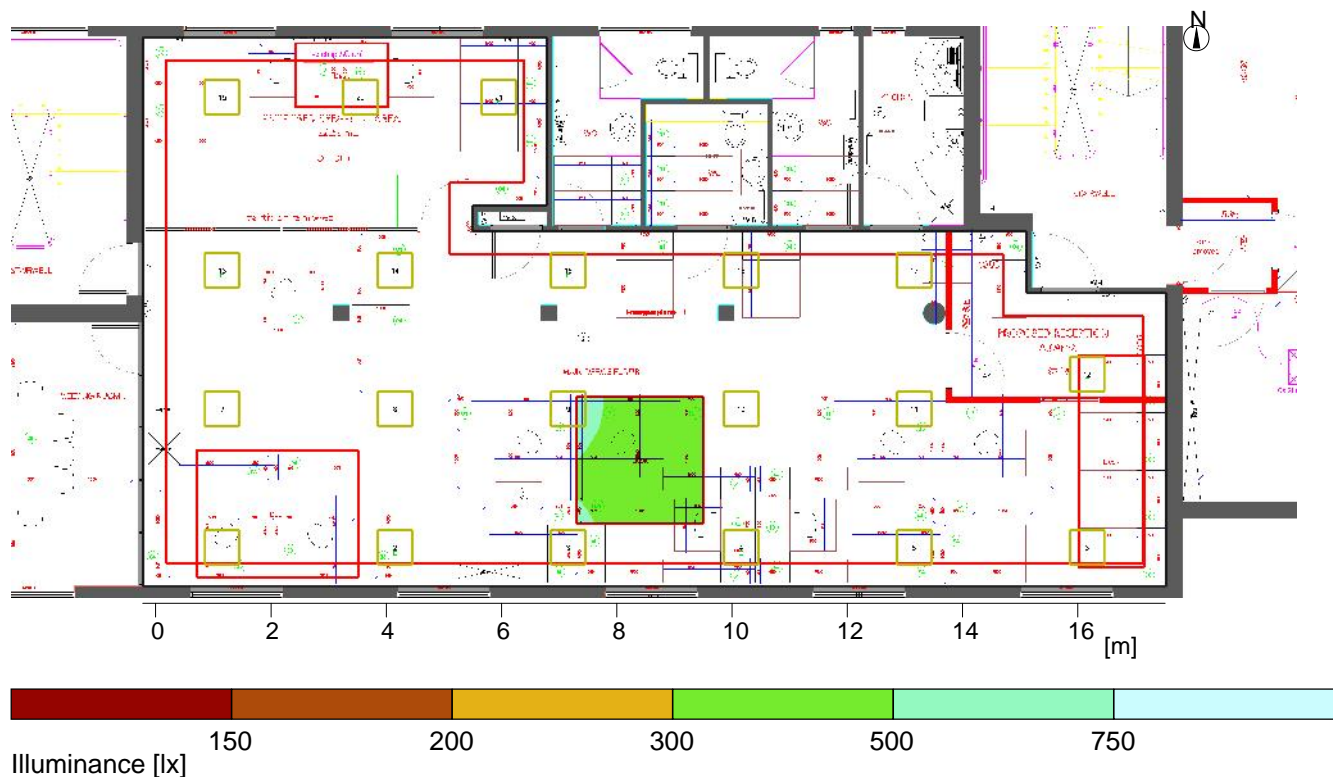
Average illuminance	Em	387 lx
Minimum illuminance	Emin	293 lx
Maximum illuminance	Emax	517 lx
Uniformity Uo	Emin/Em	1:1.32 (0.76)
Diversity Ud	Emin/Emax	1:1.77 (0.57)

Type No.Make

1	20	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

2.1 Summary, Main Office Floor

2.1.2 Result overview, Desk



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80

Total luminous flux of all lamps	66420 lm
Total power	480 W
Total power per area (129.39 m²)	3.71 W/m²

Illuminance

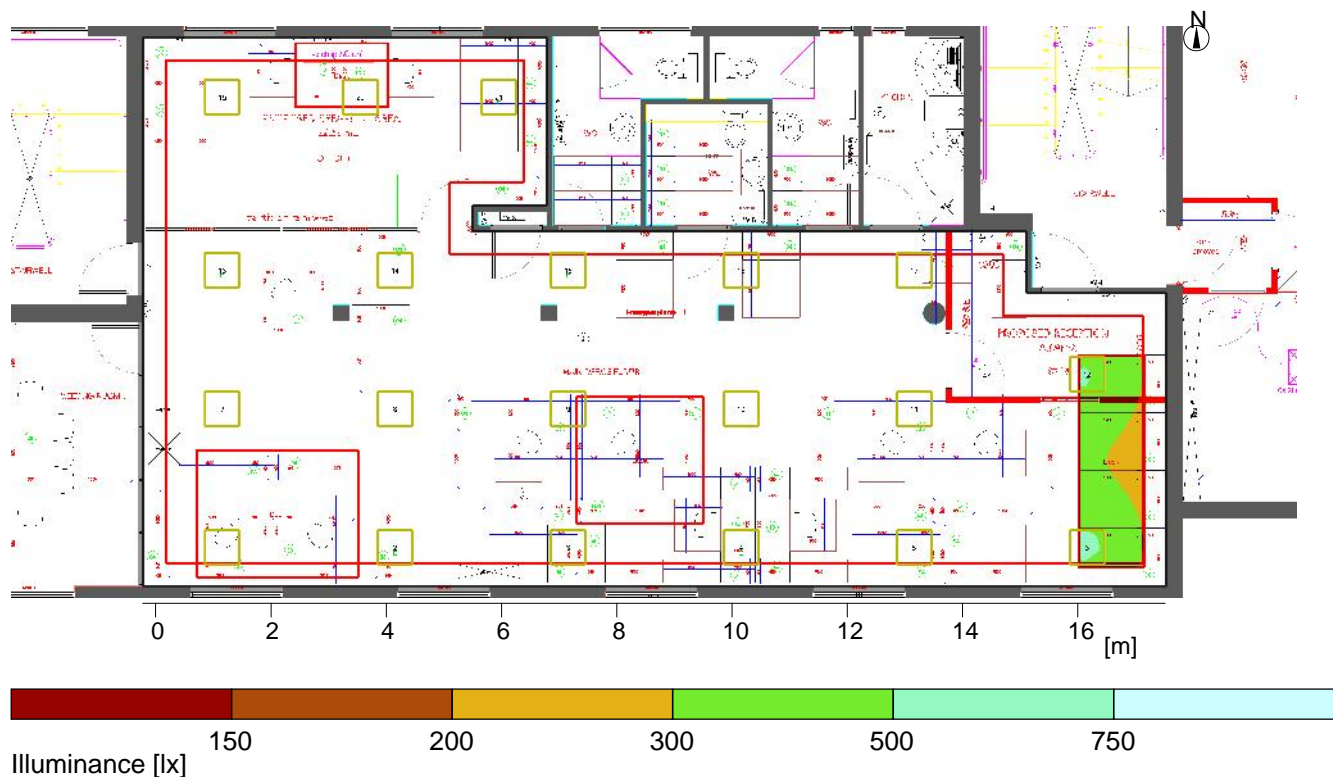
Average illuminance	Em	389 lx
Minimum illuminance	Emin	314 lx
Maximum illuminance	Emax	535 lx
Uniformity Uo	Emin/Em	1:1.24 (0.81)
Diversity Ud	Emin/Emax	1:1.7 (0.59)

Type No.Make

1	20	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

2.1 Summary, Main Office Floor

2.1.3 Result overview, Desk



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80

Total luminous flux of all lamps	66420 lm
Total power	480 W
Total power per area (129.39 m²)	3.71 W/m²

Illuminance

Average illuminance	Em	355 lx
Minimum illuminance	Emin	222 lx
Maximum illuminance	Emax	495 lx
Uniformity Uo	Emin/Em	1:1.6 (0.63)
Diversity Ud	Emin/Emax	1:2.23 (0.45)

Type No.Make

1 20

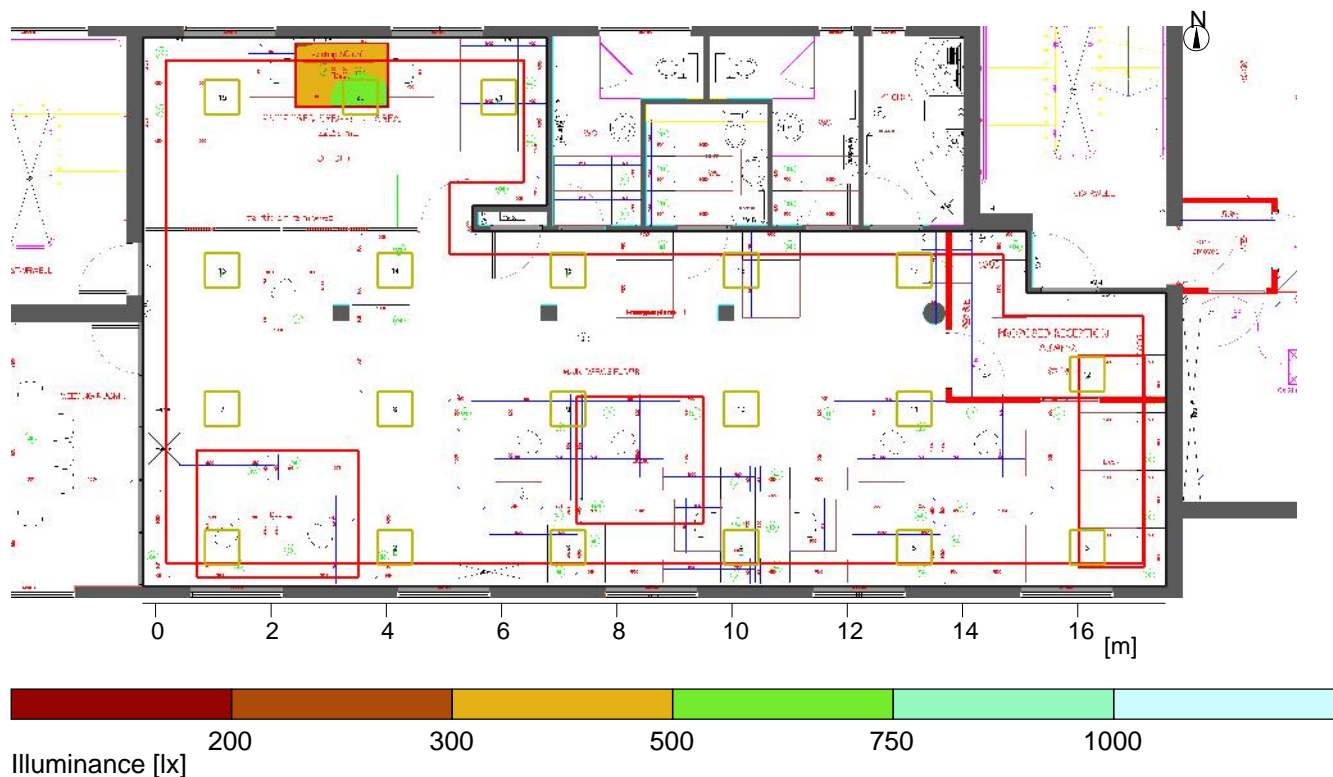


Whitecroft Lighting

Order No.	: TMELH24KXT
Luminaire name	: TEGAN SLIM
Equipment	: 1 x LED 24 W / 3321 lm

2.1 Summary, Main Office Floor

2.1.4 Result overview, Desk



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80

Total luminous flux of all lamps	66420 lm
Total power	480 W
Total power per area (129.39 m²)	3.71 W/m²

Illuminance

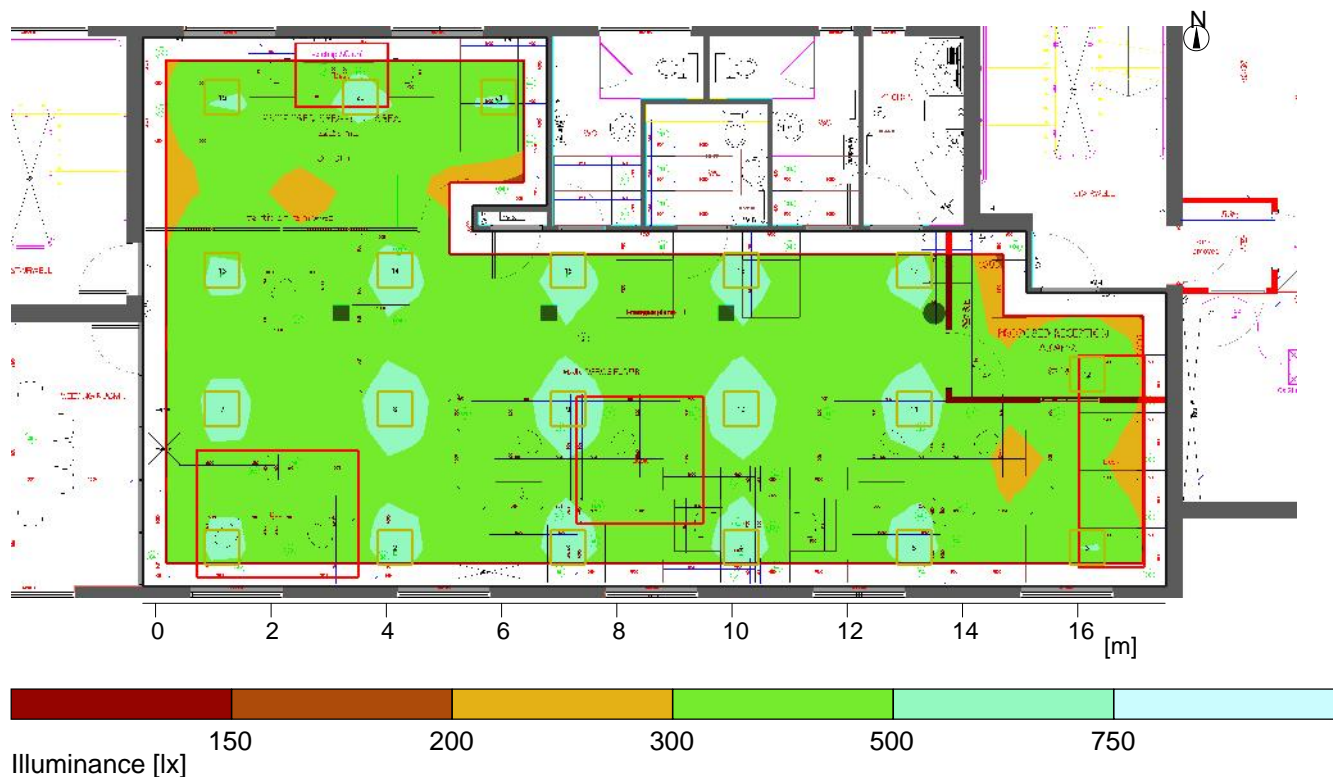
Average illuminance	Em	428 lx
Minimum illuminance	Emin	307 lx
Maximum illuminance	Emax	526 lx
Uniformity Uo	Emin/Em	1:1.4 (0.72)
Diversity Ud	Emin/Emax	1:1.72 (0.58)

Type No. Make

1	20	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

2.1 Summary, Main Office Floor

2.1.5 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.40 m
Maintenance factor	0.80
Total luminous flux of all lamps	66420.00 lm
Total power	480.0 W
Total power per area (129.39 m²)	3.71 W/m² (0.94 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	396 lx
Emin	244 lx
Emin/Em (Uo)	0.62
Emin/Emax (Ud)	0.44
UGR (7.9H 14.8H)	<=18.6
Position	0.75 m

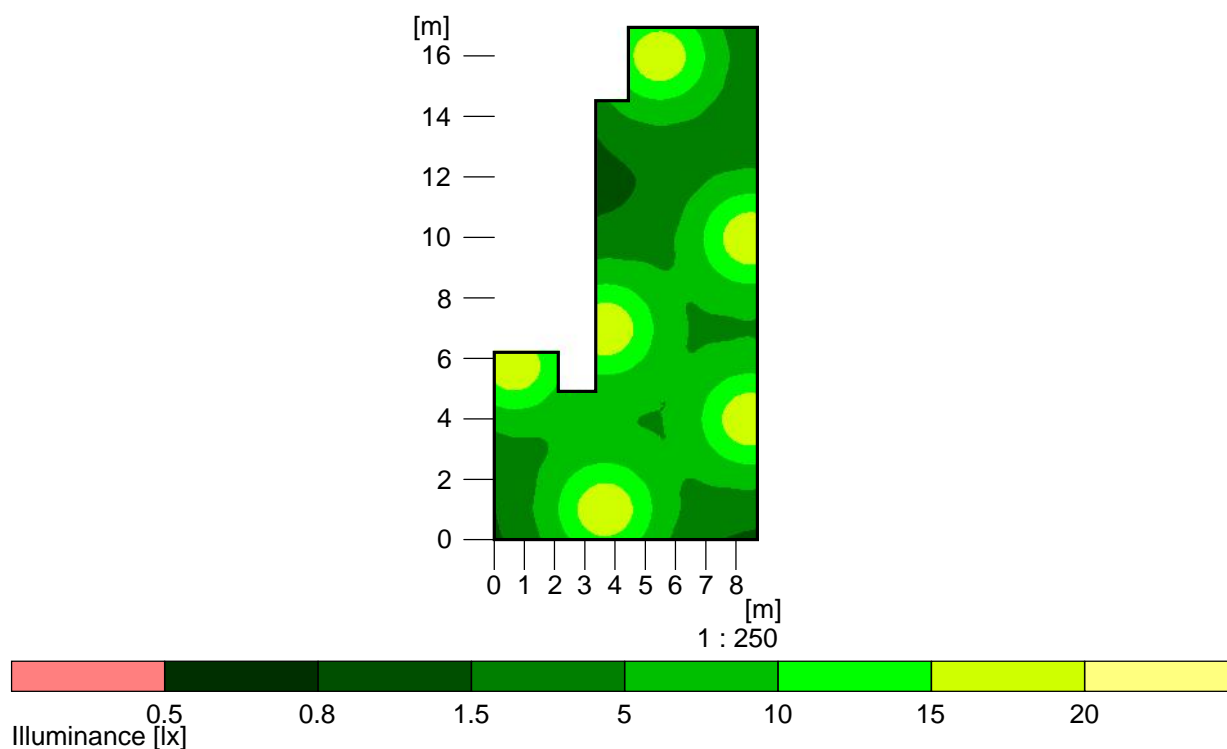
Type No. Make

1	20	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

2 Main Office Floor

2.2 Calculation results, Main Office Floor

2.2.1 Boundary line, Emergency area 1 (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.9 lx
Maximum illuminance	Emax	: 19 lx
Diversity	Emin/Emax	: 1 : 20.30 (0.05) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8


Object : Ground Floor
 Installation : Bregenz House Bangor
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 Date : 09.09.2019



2.2 Summary, Main Office Floor

2.2.2 Result overview (emergency lighting)

Type No.\Make

		Whitecroft Lighting	
1	6	Order No.	: TMELH24KXT
		Luminaire name	: TEGAN SLIM
		Equipment	: 1 x LED 24 W / 3321 lm (9.7 %)

Result evaluation area

Calculation algorithm used: Direct component
 Maintenance factor: 0.8

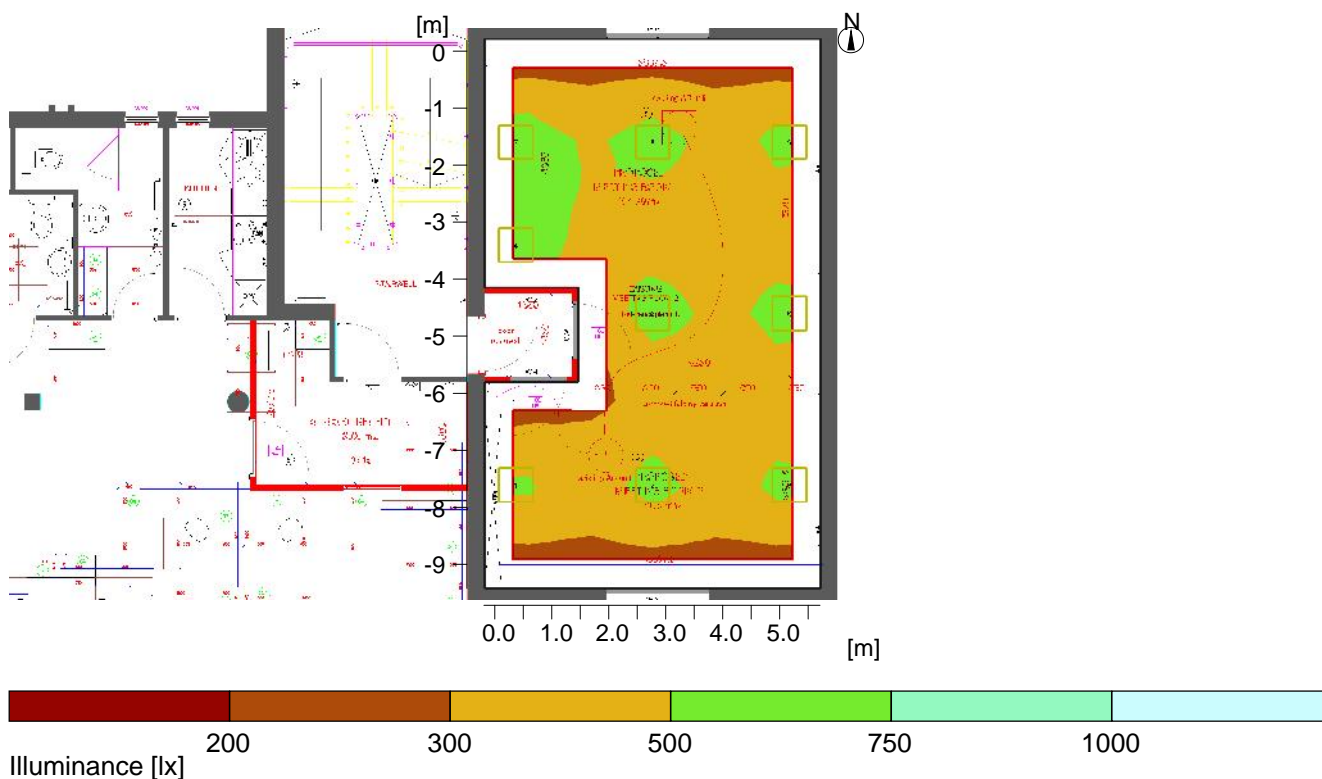
Emergency area:

No.	Default[lx]	Emin[lx]	Surface Emax[lx]	Diversity	Height
Emergency area 1					
1	0.5	0.9	19.1	1: 20.31	0.00

3 Proposed Meeting Room 1 and 2 (Open)

3.1 Summary, Proposed Meeting Room 1 and 2 (Open)

3.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height of luminaire plane	2.40 m
Maintenance factor	0.80
Total luminous flux of all lamps	29889.00 lm
Total power	216.0 W
Total power per area (53.91 m²)	4.01 W/m² (0.99 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	403 lx
Emin	252 lx
Emin/Em (Uo)	0.63
Emin/Emax (Ud)	0.41
UGR (4.9H 8.0H)	<=17.9
Position	0.75 m

Type No. Make

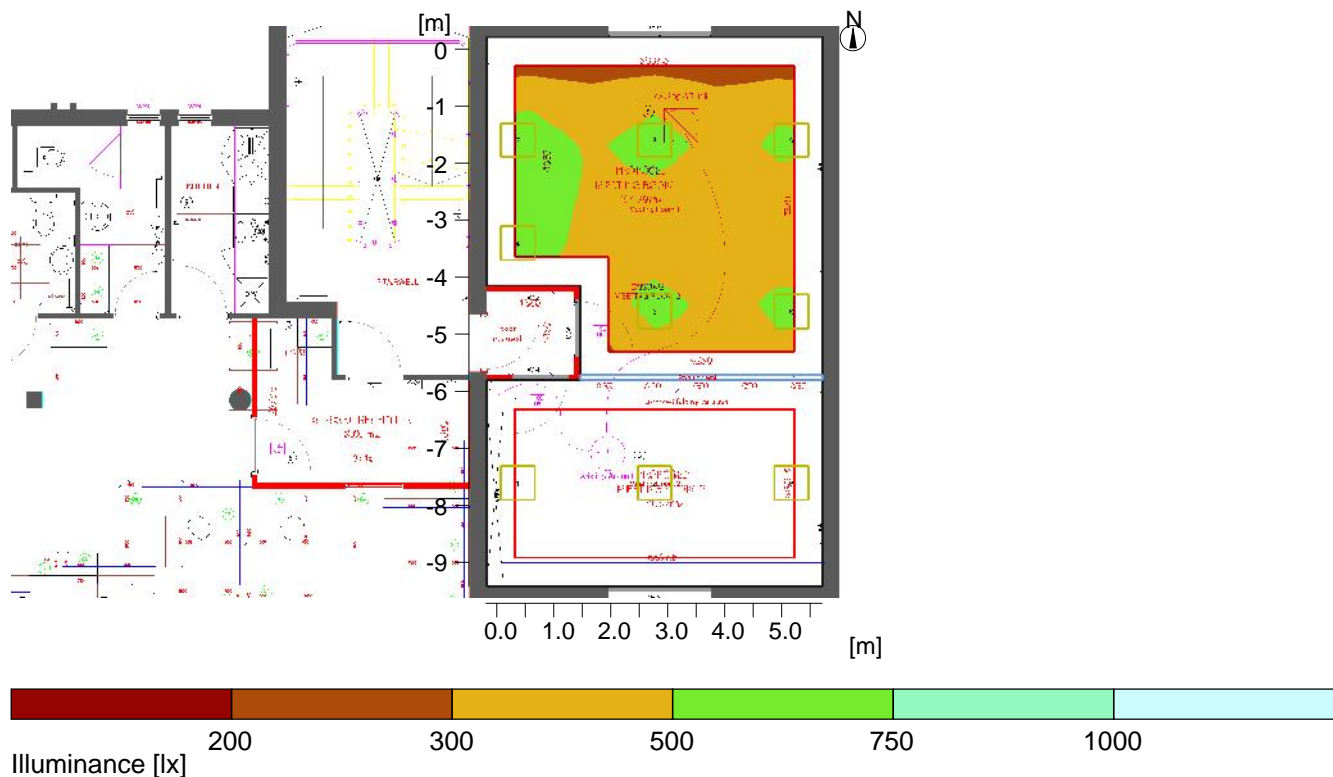
Whitecroft Lighting

1	9	Order No.	: TMELH24KXT
		Luminaire name	: TEGAN SLIM
		Equipment	: 1 x LED 24 W / 3321 lm

4 Proposed Meeting Room 1 and 2 (Closed)

4.1 Summary, Proposed Meeting Room 1 and 2 (Closed)

4.1.1 Result overview, Meeting Room 1



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80
Total luminous flux of all lamps	29889 lm
Total power	216 W
Total power per area (53.91 m²)	4.01 W/m² (0.95 W/m²/100lx)

Illuminance

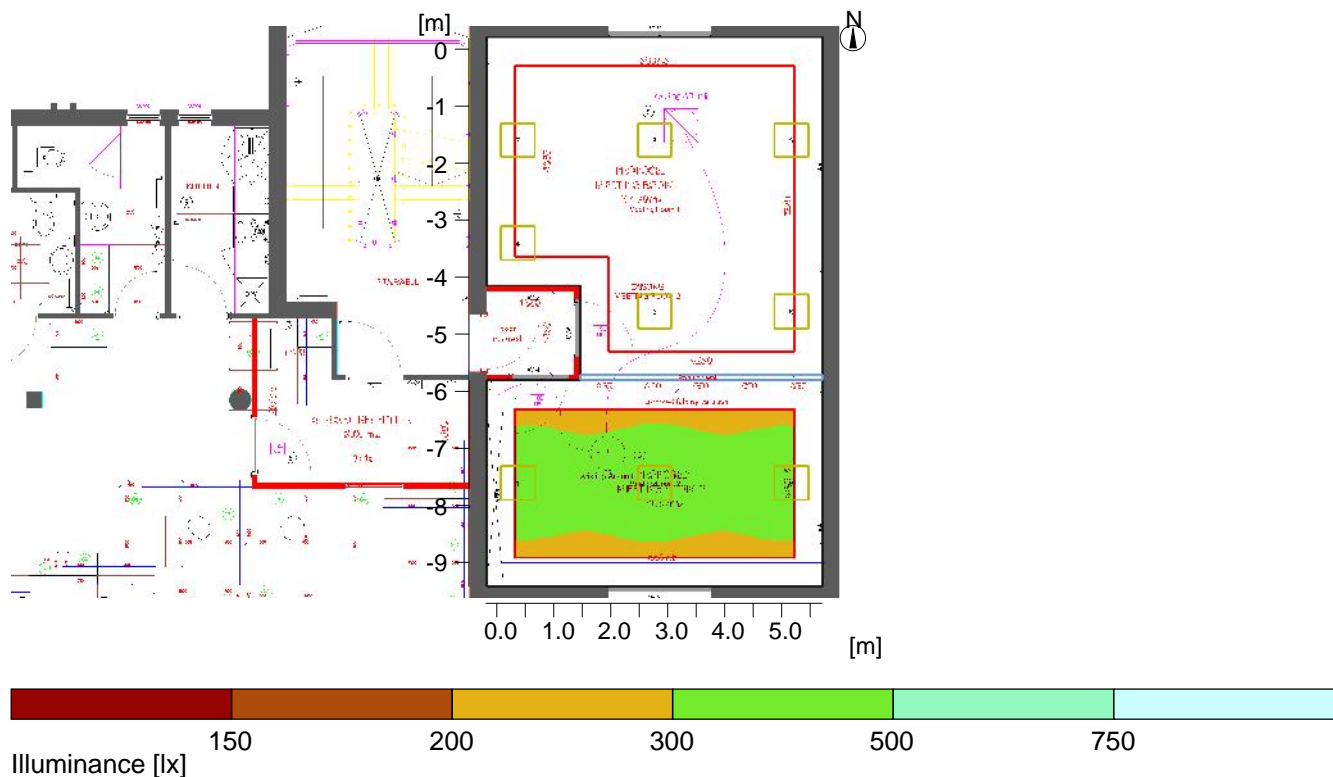
Average illuminance	Em	420 lx
Minimum illuminance	Emin	267 lx
Maximum illuminance	Emax	609 lx
Uniformity Uo	Emin/Em	1:1.58 (0.63)
Diversity Ud	Emin/Emax	1:2.29 (0.44)

Type No. Make

1	9	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm

4.1 Summary, Proposed Meeting Room 1 and 2 (Closed)

4.1.2 Result overview, Meeting Room 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.75 m
Height of luminaire plane	2.40 m
Maintenance factor	0.80

Total luminous flux of all lamps	29889 lm
Total power	216 W
Total power per area (53.91 m²)	4.01 W/m²

Illuminance

Average illuminance	Em	346 lx
Minimum illuminance	Emin	232 lx
Maximum illuminance	Emax	472 lx
Uniformity Uo	Emin/Em	1:1.49 (0.67)
Diversity Ud	Emin/Emax	1:2.04 (0.49)

Type No. Make

1	9	Whitecroft Lighting
		Order No. : TMELH24KXT
		Luminaire name : TEGAN SLIM
		Equipment : 1 x LED 24 W / 3321 lm