

Installation :

Project number : Beccles Quay Toilets

Customer :

Processed by : Kristie Donachie

Date : 14.10.2021

This project has been designed in accordance with British Standards and relevant lighting guides that were current at the time of the design/quote being proposed.

It is essential that all aspects relating to this proposal are checked and all aspects of the criteria used to compile the proposal are correct. If there are any deviations from the criteria Dextra Group need to be informed and proposals amended to suit. If there are assumptions or deviations that the Dextra design engineers have made and these are not in line with the specification or design intentions, then Dextra Group need to be informed and amendments advised.

All calculations within the Dextra Group proposal are based upon an open area without obstructions above the working plane. Ceiling/ Wall and floor reflectance's have been assumed unless stated. Any daylight from windows have not been factored into the calculations and all calculations are based around the specification supplied to Dextra before the lighting design is carried out.

All illuminance levels /unified glare ratios/ ceiling, wall and floor ratios have been made clear in order for the level of compliance to relevant Lighting guides/ British standards to be clear and obvious. These results should be checked and all aspects of compliance approved prior to an order.

If we have proposed an Emergency lighting scheme then it needs be checked and confirmed in order that it will satisfy the requirements of the person responsible for the building and or any local building control/fire officer. It is the responsibility of the building owner to ensure that a fully compliant emergency anti panic lighting scheme is installed. Emergency lighting scheme has been done in line with current British standards. If there are any high risks areas or areas that require specific illumination that are not made clear and not allowed for within the Dextra Group proposal, then these need to be highlighted and considered in order to achieve compliance.

The Dextra proposal will include exit signs by final exits and an emergency light outside final exits. Unless stated there has been no provision for emergency lighting to a safe place away from the building or to an assembly point.

Unless stated there will be no provision for fire tents on any of the products proposed, if however it is necessary for a fire barrier in line with current building regulations then Dextra Group offer a comprehensive range of fire tents that can be quoted upon request.

If there are any areas that need a ligature resistant luminaire then Dextra Group need to be notified so that an appropriate product can be proposed.

Any 'Protected zones' that are not obvious and clearly marked will need to be identified and changes will need to be made to the proposals as these areas require specialist lighting. Areas like firefighters stairwells and lifts are examples of these type of areas.

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, Floor 1

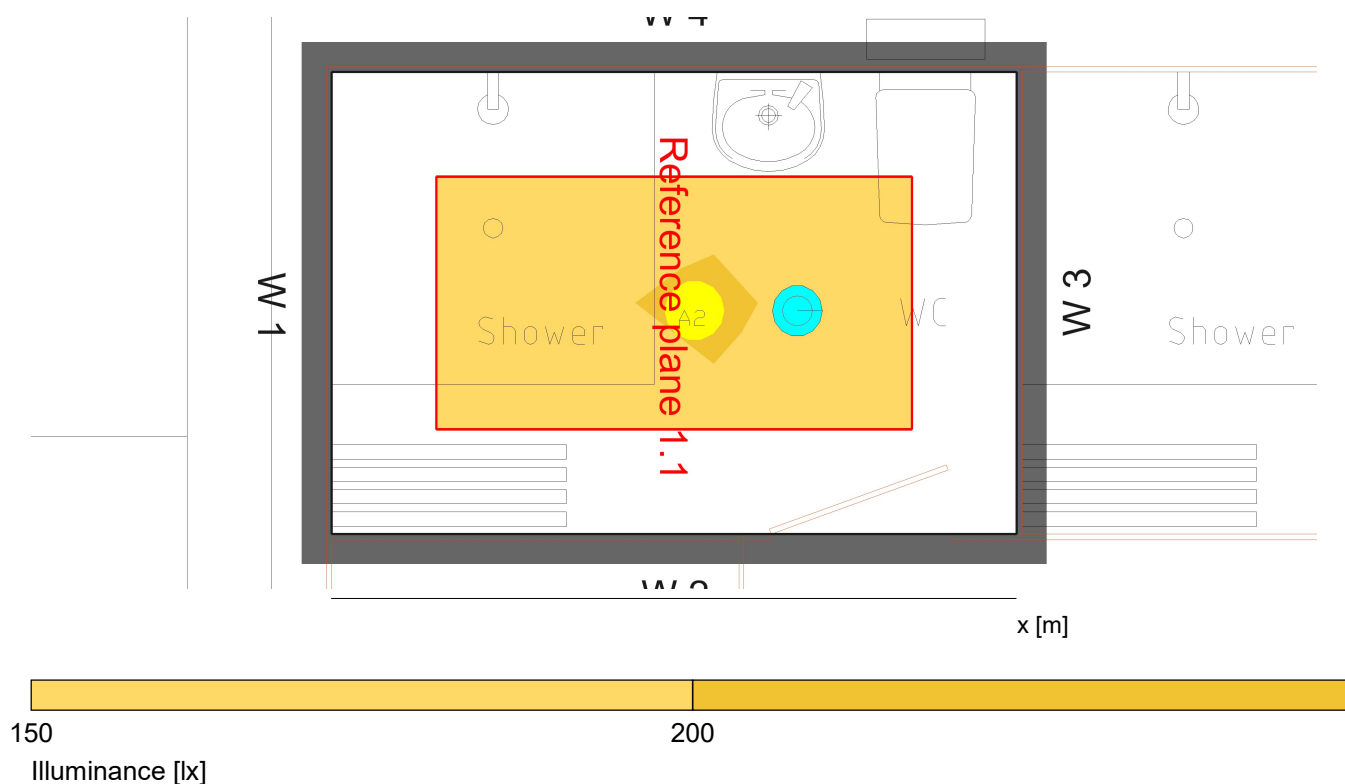
.1 Floor plan



1 Quay Shower 1

1.1 Summary, Quay Shower 1

1.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.35 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (3.54 m²)

1885.00 lm
 17.0 W
 4.81 W/m² (2.68 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (2.0H 2.0H)
 Position

179 lx
 164 lx
 0.91
 0.84
 <=24.6
 0.00 m

Major surfaces

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

Em
 56 lx
 123 lx
 169 lx
 140 lx
 162 lx

Uo
 0.87
 0.61
 0.53
 0.67
 0.52

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1 Quay Shower 1

1.1 Summary, Quay Shower 1

1.1.1 Result overview, Evaluation area 1

Type No.\Make

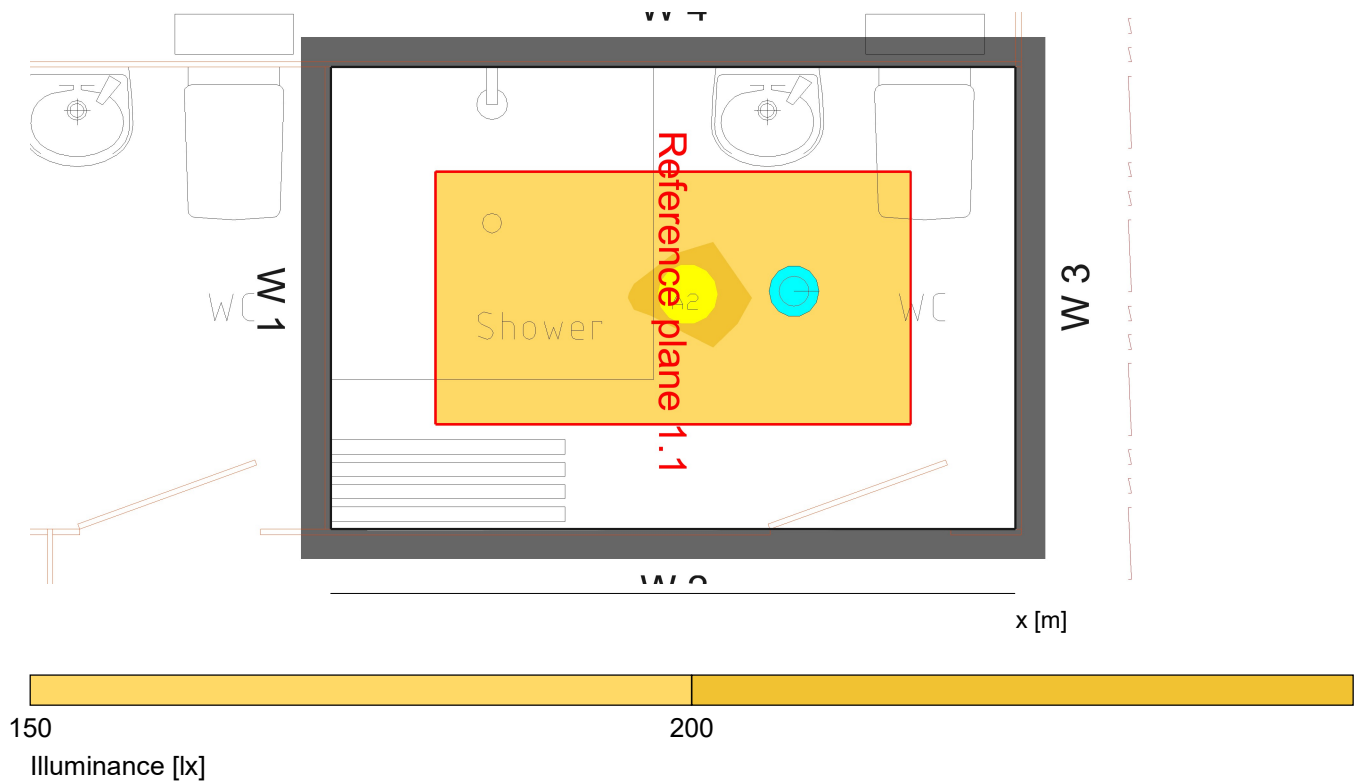
3	1	Dextra Group PLC
		Order No. : !BTECM L22 IP65
		Luminaire name : A2
		Equipment : 1 x Dextra 17 W / 1885 lm



2 Quay Shower 2

2.1 Summary, Quay Shower 2

2.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.35 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (3.53 m²)

1885.00 lm
 17.0 W
 4.81 W/m² (2.68 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (2.0H 2.0H)
 Position

180 lx
 165 lx
 0.92
 0.85
 <=24.6
 0.00 m

Major surfaces

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

Em
 56 lx
 125 lx
 164 lx
 137 lx
 167 lx

Uo
 0.89
 0.62
 0.55
 0.67
 0.55

Object :
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2 Quay Shower 2

2.1 Summary, Quay Shower 2

2.1.1 Result overview, Evaluation area 1

Type No.\Make

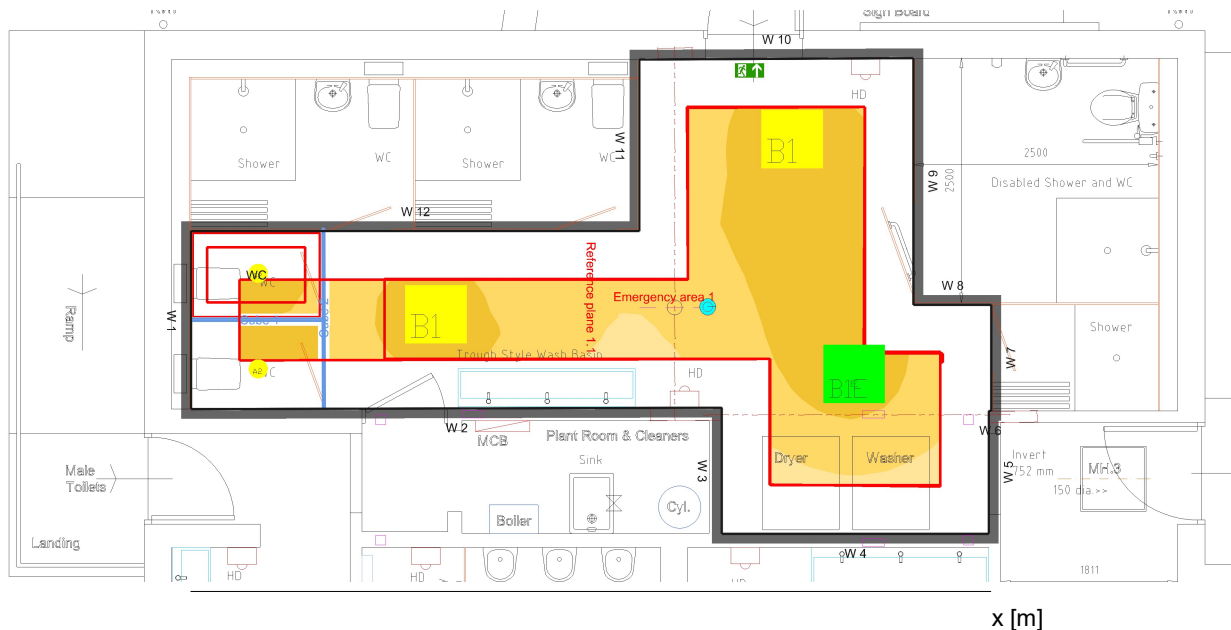
3	1	Dextra Group PLC
		Order No. : !BTECM L22 IP65
		Luminaire name : A2
		Equipment : 1 x Dextra 17 W / 1885 lm



3 Quay Toilets

3.1 Summary, Quay Toilets

3.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Maintenance factor

Average indirect fraction
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (22.98 m²)

11246.00 lm
 98.1 W
 4.27 W/m² (2.29 W/m²/100lx)

Workplace	Task area	Surrounding	Background
WC			
Em	206 lx	188 lx	186 lx
Emin	197 lx	176 lx	128 lx
Emin/Em (Uo)	0.96	0.93	0.69
Position	0.00 m		0.00 m

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	187 lx
Emin	128 lx
Emin/Em (Uo)	0.68
Emin/Emax (Ud)	0.56
Position	0.00 m

Major surfaces

	Em	Uo
M 1.8 (Ceiling)	57 lx	0.62
M 1.1 (Wall)	275 lx	0.56
M 1.2 (Wall)	168 lx	0.35
M 1.3 (Wall)	104 lx	0.76

3 Quay Toilets

3.1 Summary, Quay Toilets

3.1.1 Result overview, Evaluation area 1

M 1.4 (Wall)	154 lx	0.81
M 1.5 (Wall)	189 lx	0.58
M 1.6 (Wall)	130 lx	0.90
M 1.7 (Wall)	194 lx	0.37

Type No.\Make

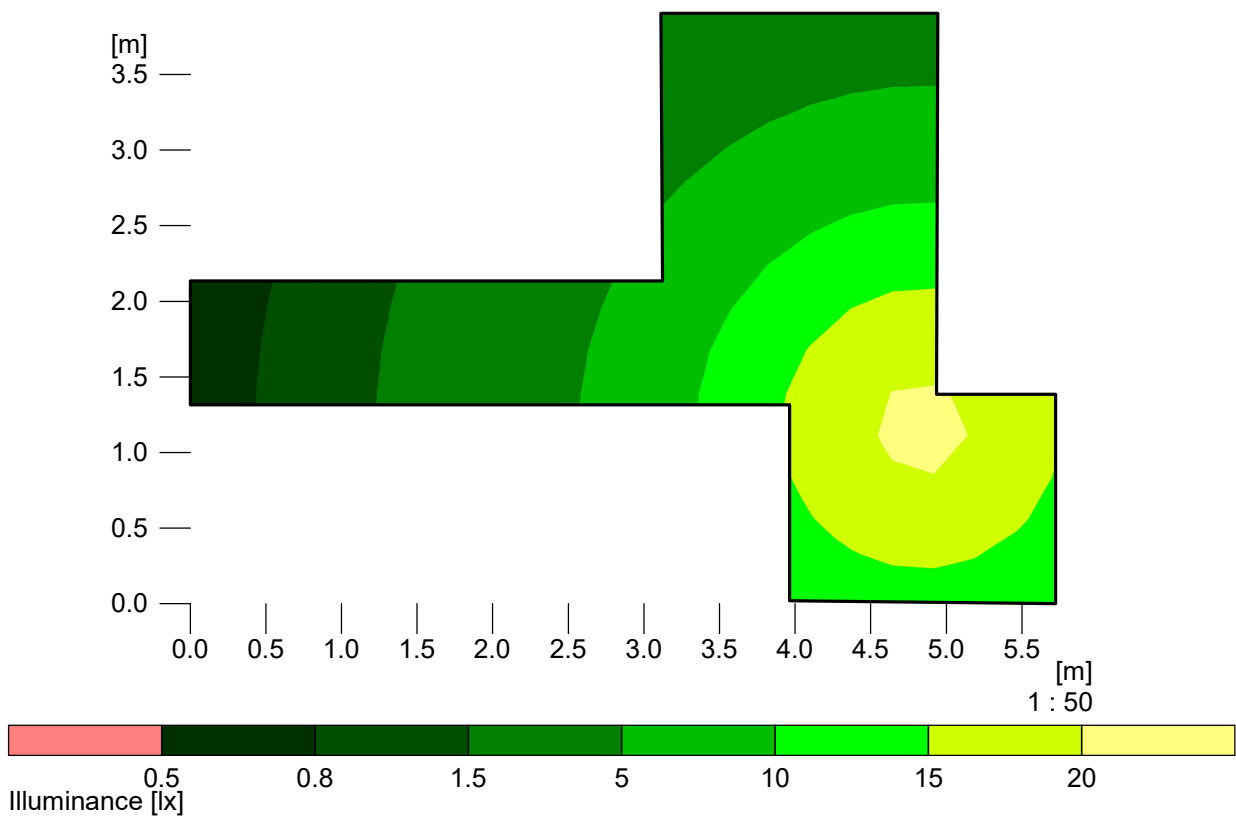
Dextra Group PLC

3	2	Order No.	: !BTECM L22 IP65
		Luminaire name	: A2
		Equipment	: 1 x Dextra 17 W / 1885 lm
5	2	Order No.	: !IMPR65 L35
		Luminaire name	: B1
		Equipment	: 1 x Dextra 20.2 W / 2474 lm
6	1	Order No.	: !IMPR65 L35 LE3
		Luminaire name	: B1E
		Equipment	: 1 x Dextra 20.2 W / 2474 lm
7	1	Order No.	: !EXI2 LED M3
		Luminaire name	: EXIT
		Equipment	: 1 x Dextra 3.5 W / 54 lm

3 Quay Toilets

3.2 Calculation results, Quay Toilets

3.2.1 Boundary line, Emergency area 1 (E)

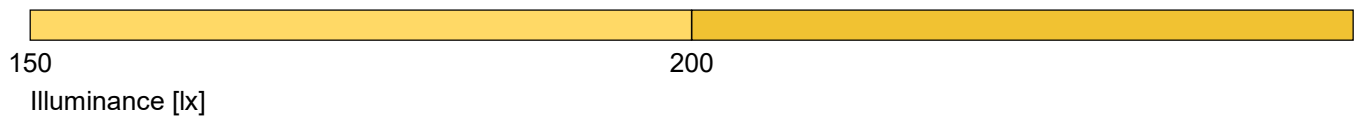
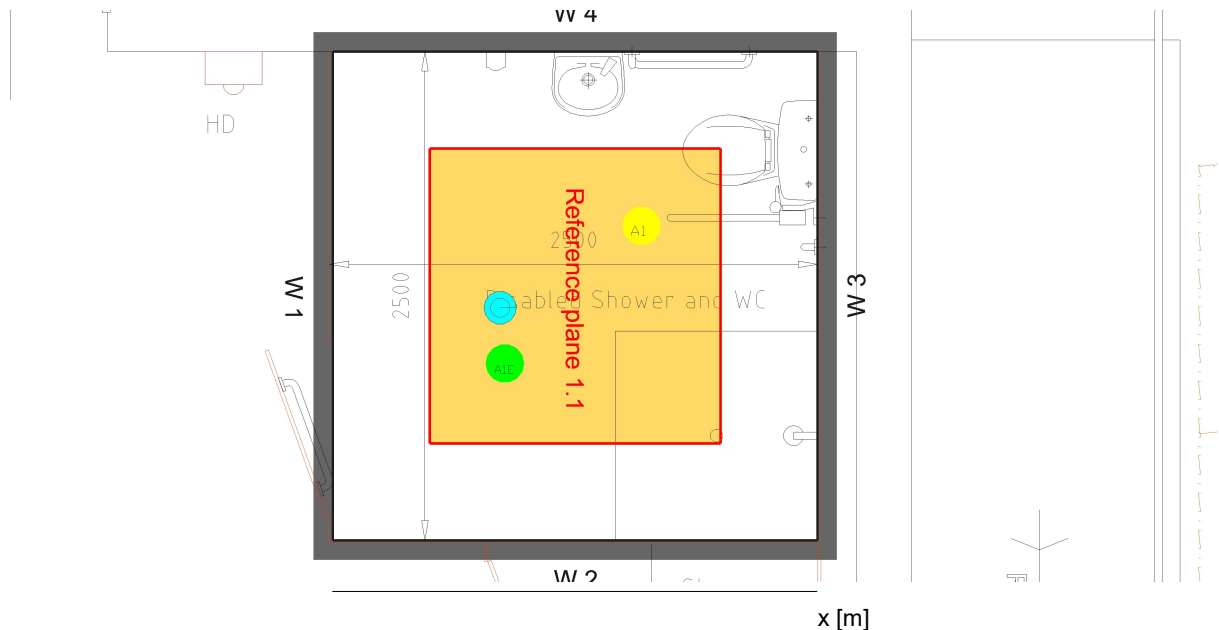


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0.5 lx
Maximum illuminance	Emax	: 21 lx
Diversity	Emin/Emax	: 1 : 39.10 (0.03) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

4 Quay Dis Shower & WC 3

4.1 Summary, Quay Dis Shower & WC 3

4.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.35 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (6.30 m²)

2206.00 lm
 16.7 W
 2.65 W/m² (1.54 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (2.2H 2.2H)
 Position

172 lx
 153 lx
 0.89
 0.82
 <=22.8
 0.00 m

Major surfaces

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

Em
 40 lx
 118 lx
 115 lx
 115 lx
 117 lx

Uo
 0.89
 0.50
 0.50
 0.50
 0.51

4 Quay Dis Shower & WC 3

4.1 Summary, Quay Dis Shower & WC 3

4.1.1 Result overview, Evaluation area 1

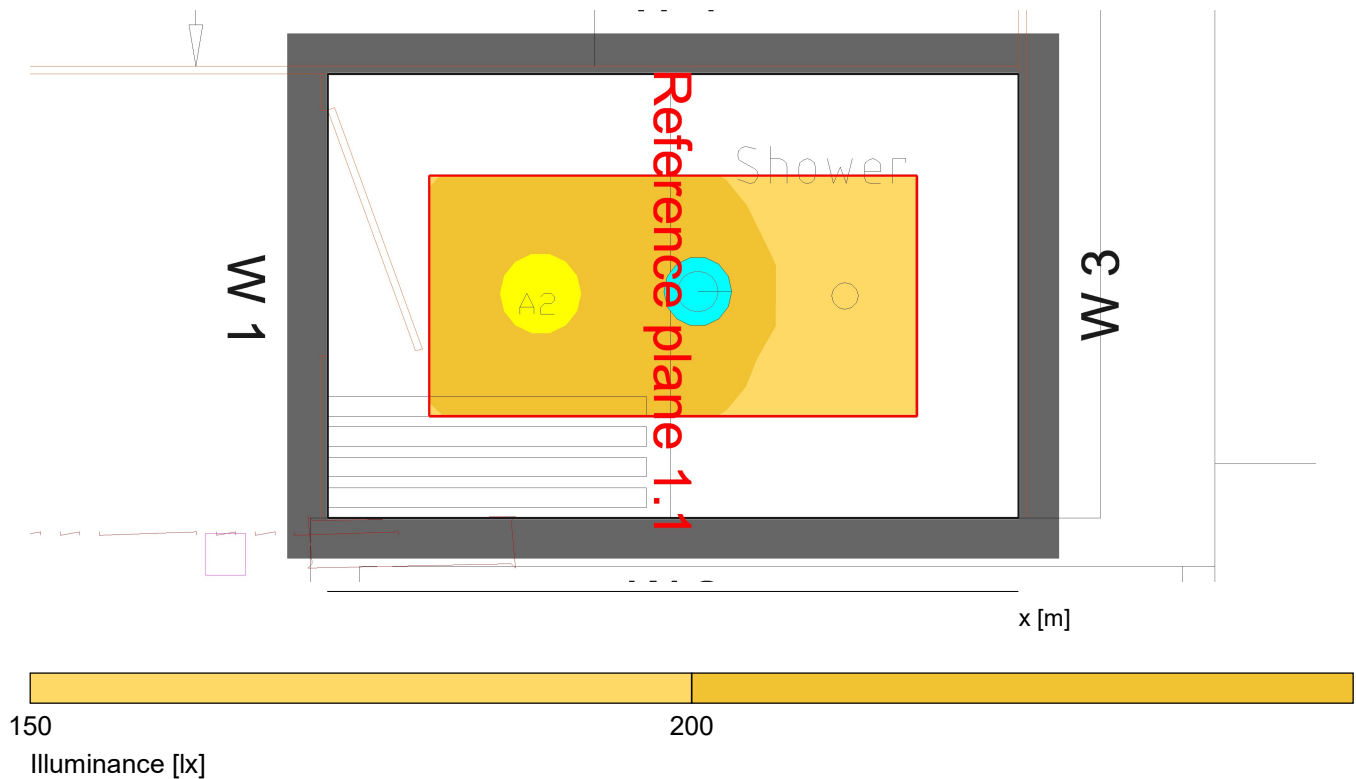
Type No.\Make

		Dextra Group PLC	
1	1	Order No.	: !BTECM L13 IP65
		Luminaire name	: A1
		Equipment	: 1 x Dextra 8.34 W / 1103 lm
2	1	Order No.	: !BTECM L13 IP65 LE3
		Luminaire name	: A1E
		Equipment	: 1 x Dextra 8.34 W / 1103 lm

5 Quey Shower 4

5.1 Summary, Quey Shower 4

5.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.35 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (1.86 m²)

1885.00 lm
 17.0 W
 9.15 W/m² (4.72 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (2.0H 2.0H)
 Position

194 lx
 170 lx
 0.88
 0.81
 <=24.6
 0.00 m

Major surfaces

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

Em
 105 lx
 296 lx
 231 lx
 152 lx
 234 lx

Uo
 0.66
 0.32
 0.40
 0.63
 0.39

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5 Quey Shower 4

5.1 Summary, Quey Shower 4

5.1.1 Result overview, Evaluation area 1

Type No.\Make

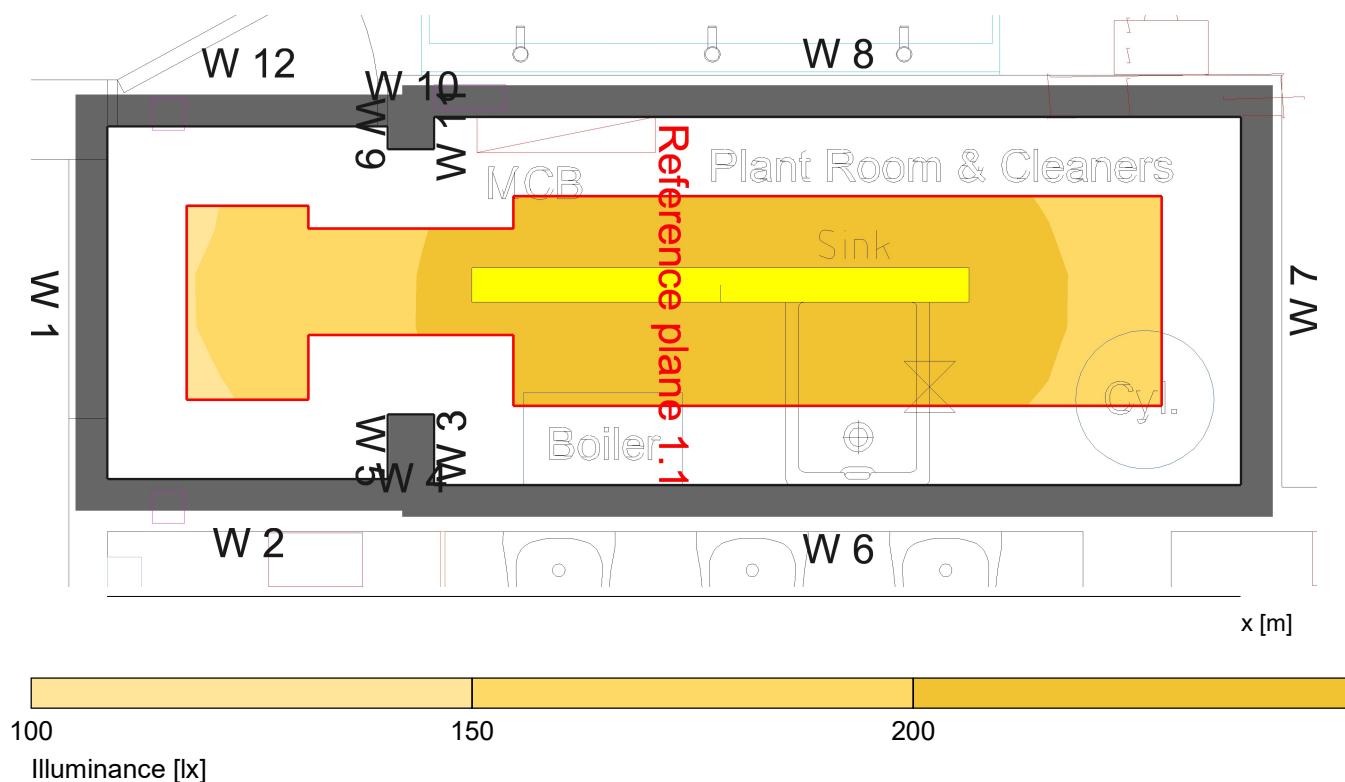
3	1	Dextra Group PLC
		Order No. : !BTECM L22 IP65
		Luminaire name : A2
		Equipment : 1 x Dextra 17 W / 1885 lm



6 Plant Room & Cleaners

6.1 Summary, Plant Room & Cleaners

6.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 3.00 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (4.06 m²)

5418.00 lm
 37.6 W
 9.27 W/m² (4.68 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (0.7H 2.1H)
 Position

198 lx
 140 lx
 0.71
 0.62
 <=18.5
 0.00 m

Major surfaces

M 1.7 (Ceiling)
 M 1.1 (Wall)
 M 1.2 (Wall)
 M 1.3 (Wall)
 M 1.4 (Wall)
 M 1.5 (Wall)
 M 1.6 (Wall)

Em
 284 lx
 152 lx
 113 lx
 337 lx
 214 lx
 348 lx
 124 lx

Uo
 0.22
 0.65
 0.47
 0.28
 0.53
 0.26
 0.51

Object :
Installation :
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6 Plant Room & Cleaners

6.1 Summary, Plant Room & Cleaners

6.1.1 Result overview, Evaluation area 1

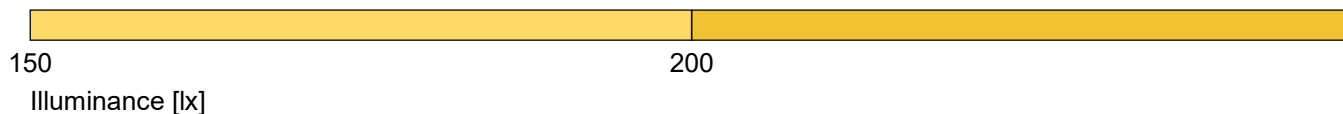
Type No.\Make

8	1	Dextra Group PLC
		Order No. : !TYP L63 PC 5S LE3
		Luminaire name : CE
		Equipment : 1 x Dextra 37.6 W / 5418 lm

7 Male Toilets

7.1 Summary, Male Toilets

7.1.1 Result overview, Task area 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	-0.00 m
Height of luminaire plane	2.35 m
Maintenance factor	0.85

Total luminous flux of all lamps	14962 lm
Total power	128.6 W
Total power per area (20.24 m²)	6.36 W/m²

Illuminance

Task area		Horizontal (0.00 m)
Average value	Em	178 lx
Minimum	Emin	154 lx
Uniformity Uo	Emin/Em	1:1.15 (0.87)

Type No.\Make

Dextra Group PLC		
3	3	Order No. : !BTECM L22 IP65
		Luminaire name : A2
		Equipment : 1 x Dextra 17 W / 1885 lm
4	1	Order No. : !BTECM L22 IP65 LE3
		Luminaire name : A2E
		Equipment : 1 x Dextra 17 W / 1885 lm

7 Male Toilets

7.1 Summary, Male Toilets

7.1.1 Result overview, Task area 2

5	1	Order No.	: !IMPR65 L35
		Luminaire name	: B1
		Equipment	: 1 x Dextra 20.2 W / 2474 lm
6	2	Order No.	: !IMPR65 L35 LE3
		Luminaire name	: B1E
		Equipment	: 1 x Dextra 20.2 W / 2474 lm

7.1 Summary, Male Toilets

7.1.2 Result overview, Evaluation area 1

UGR (4.6H 4.2H) <=25.3
 Position 0.00 m

Major surfaces	Em	Uo
M 1.11 (Ceiling)	85 lx	0.50
M 1.1 (Wall)	198 lx	0.57
M 1.2 (Wall)	216 lx	0.39
M 1.3 (Wall)	160 lx	0.63
M 1.4 (Wall)	166 lx	0.55
M 1.5 (Wall)	160 lx	0.44
M 1.6 (Wall)	174 lx	0.50
M 1.7 (Wall)	113 lx	0.30
M 1.8 (Wall)	93 lx	0.57
M 1.9 (Wall)	237 lx	0.61
M 1.10 (Wall)	288 lx	0.33

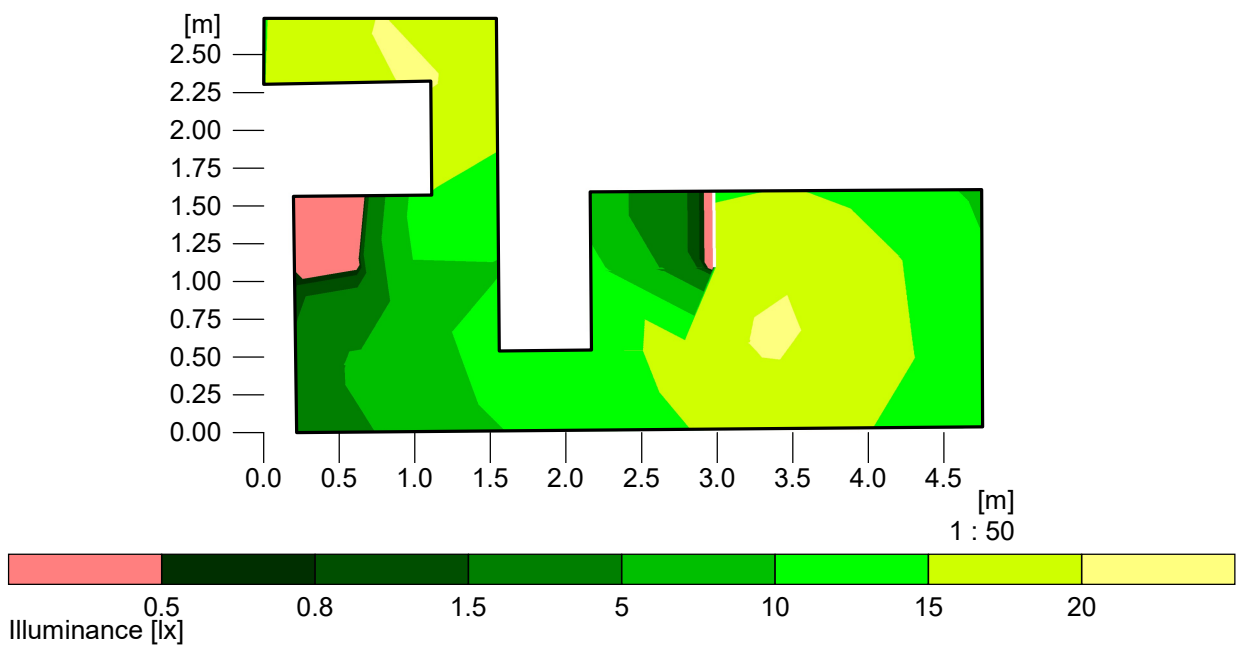
Type No.\Make

Dextra Group PLC		
3	3	Order No. : !BTECM L22 IP65
		Luminaire name : A2
		Equipment : 1 x Dextra 17 W / 1885 lm
4	1	Order No. : !BTECM L22 IP65 LE3
		Luminaire name : A2E
		Equipment : 1 x Dextra 17 W / 1885 lm
5	1	Order No. : !IMPR65 L35
		Luminaire name : B1
		Equipment : 1 x Dextra 20.2 W / 2474 lm
6	2	Order No. : !IMPR65 L35 LE3
		Luminaire name : B1E
		Equipment : 1 x Dextra 20.2 W / 2474 lm

7 Male Toilets

7.2 Calculation results, Male Toilets

7.2.1 Boundary line, Emergency area 1 (E)

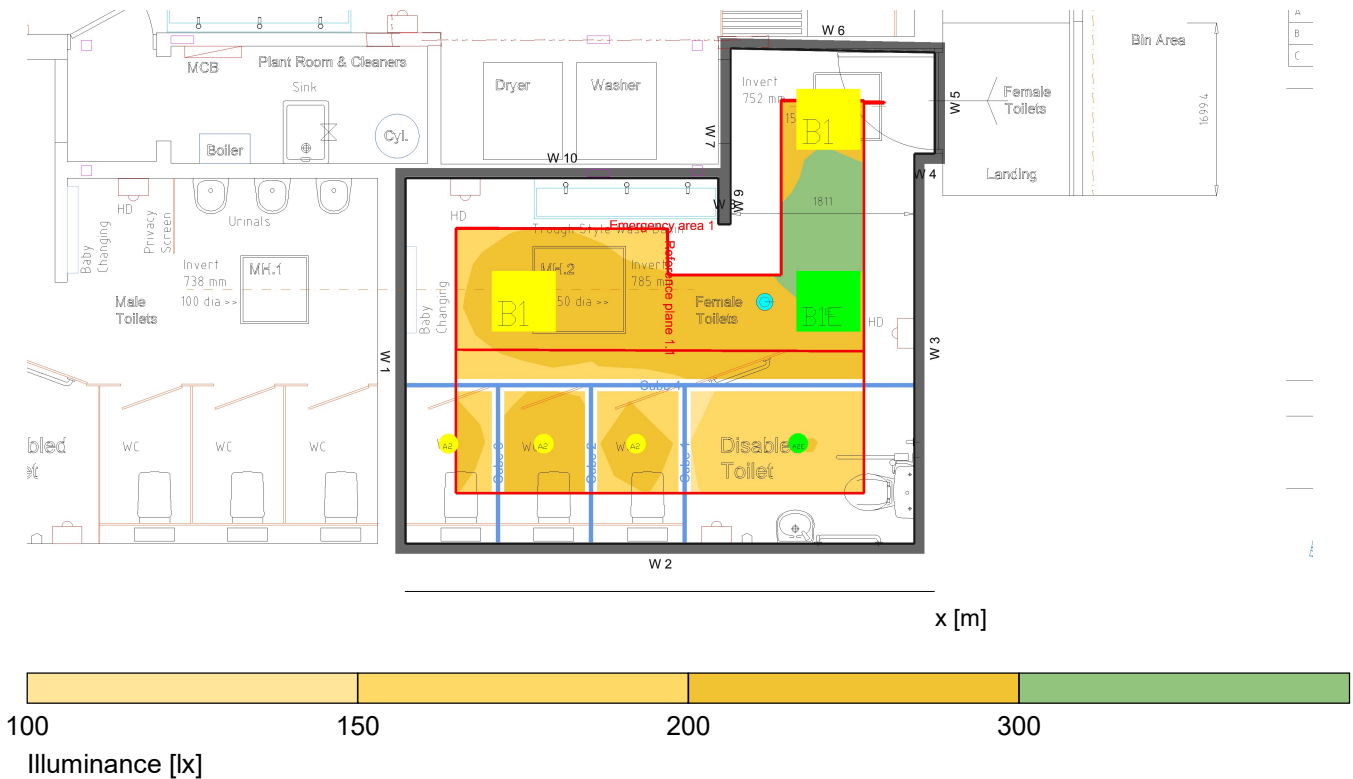


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 21 lx
Diversity	Emin/Emax	: --- (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

8 Female Toilets

8.1 Summary, Female Toilets

8.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.35 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (20.72 m²)

14962.00 lm
 128.6 W
 6.21 W/m² (2.90 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em
 Emin
 Emin/Em (Uo)
 Emin/Emax (Ud)
 UGR (4.6H 4.3H)
 Position

214 lx
 135 lx
 0.63
 0.44
 <=25.4
 0.00 m

Major surfaces

M 1.7 (Ceiling)
 M 1.1 (Wall)
 M 1.2 (Wall)
 M 1.3 (Wall)
 M 1.4 (Wall)
 M 1.5 (Wall)
 M 1.6 (Wall)

Em
 86 lx
 223 lx
 177 lx
 201 lx
 287 lx
 255 lx
 158 lx

Uo
 0.64
 0.60
 0.50
 0.42
 0.60
 0.71
 0.69

8 Female Toilets

8.1 Summary, Female Toilets

8.1.1 Result overview, Evaluation area 1

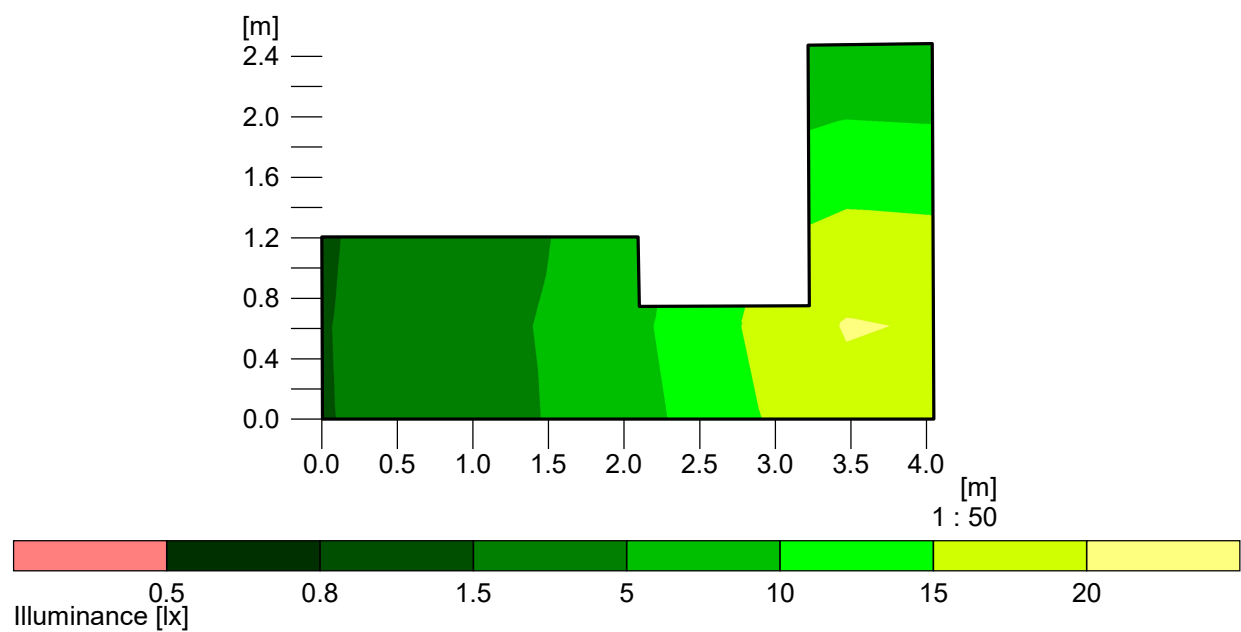
Type No.\Make

		Dextra Group PLC	
3	3	Order No.	: !BTECM L22 IP65
		Luminaire name	: A2
		Equipment	: 1 x Dextra 17 W / 1885 lm
4	1	Order No.	: !BTECM L22 IP65 LE3
		Luminaire name	: A2E
		Equipment	: 1 x Dextra 17 W / 1885 lm
5	2	Order No.	: !IMPR65 L35
		Luminaire name	: B1
		Equipment	: 1 x Dextra 20.2 W / 2474 lm
6	1	Order No.	: !IMPR65 L35 LE3
		Luminaire name	: B1E
		Equipment	: 1 x Dextra 20.2 W / 2474 lm

8 Female Toilets

8.2 Calculation results, Female Toilets

8.2.1 Boundary line, Emergency area 1 (E)

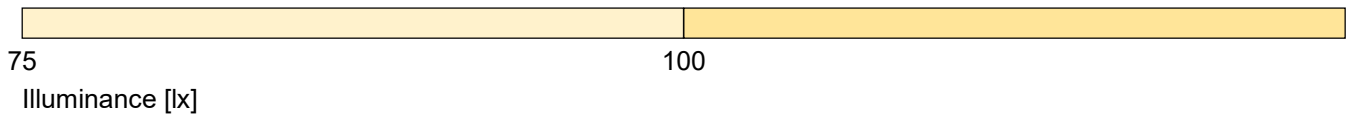
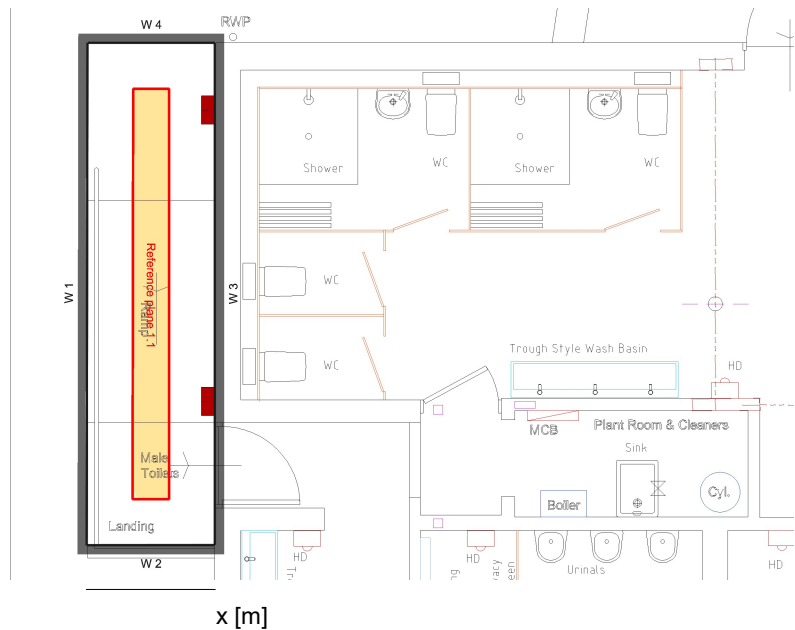


Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 1.3 lx
Maximum illuminance	Emax	: 20 lx
Diversity	Emin/Emax	: 1 : 15.50 (0.06) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

9 Outside Male

9.1 Summary, Outside Male

9.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.00 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (7.64 m²)

2426.00 lm
 21.6 W
 2.83 W/m² (2.27 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 Em 125 lx
 Emin 96 lx
 Emin/Em (Uo) 0.77
 Emin/Emax (Ud) 0.67
 UGR (1.7H 6.8H) <=31.4
 Position 0.00 m

Major surfaces

	Em	Uo
M 1.3 (Ceiling)	9 lx	0.82
M 1.1 (Wall)	27 lx	0.23
M 1.2 (Wall)	26 lx	0.21

Type No./Make

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9 Outside Male

9.1 Summary, Outside Male

9.1.1 Result overview, Evaluation area 1

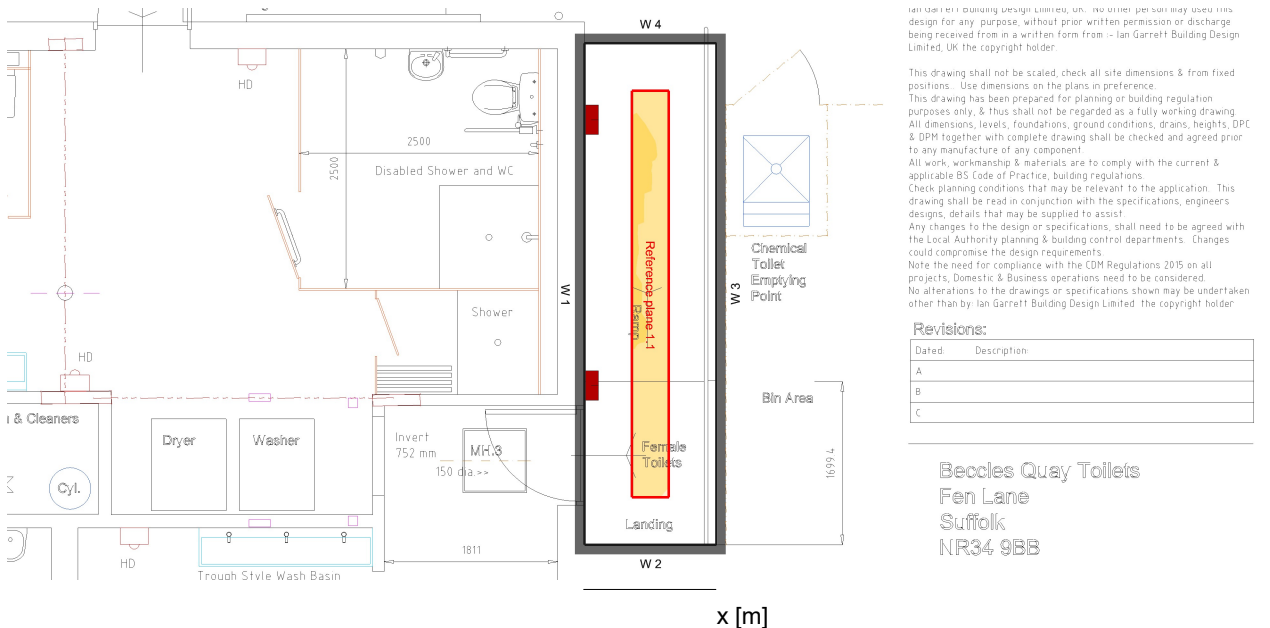
10	2	Dextra Group PLC
		Order No. : !OPUWP L15 AS LE3 PH
		Luminaire name : DE
		Equipment : 1 x Dextra 10.8 W / 1213 lm

Object :
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10 Female External

10.1 Summary, Female External

10.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
Height of luminaire plane
Maintenance factor

Average indirect fraction
2.00 m
0.85

Total luminous flux of all lamps
Total power
Total power per area (7.31 m²)

2426.00 lm
21.6 W
2.96 W/m² (2.24 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
Em
132 lx
Emin
95 lx
Emin/Em (Uo)
0.72
Emin/Emax (Ud)
0.62
UGR (1.7H 6.6H)
<=31.4
Position
0.00 m

Major surfaces

M 1.3 (Ceiling)	Em	9 lx	Uo	0.82
M 1.1 (Wall)	28 lx		0.21	
M 1.2 (Wall)	29 lx		0.22	

Type No./Make

Object :
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10 Female External

10.1 Summary, Female External

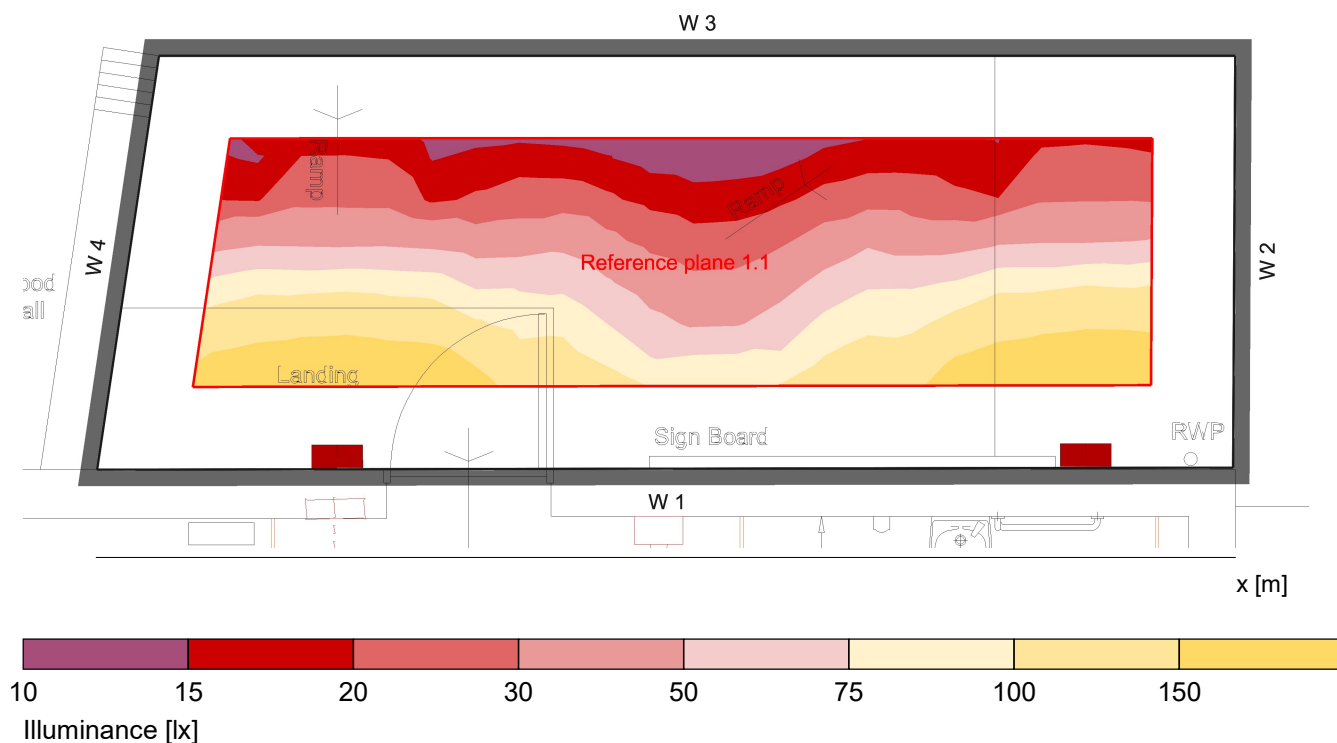
10.1.1 Result overview, Evaluation area 1

10	2	Dextra Group PLC
		Order No. : !OPUWP L15 AS LE3 PH
		Luminaire name : DE
		Equipment : 1 x Dextra 10.8 W / 1213 lm

11 Quey Toilets External

11.1 Summary, Quey Toilets External

11.1.1 Result overview, Evaluation area 1



General

Calculation algorithm used
 Height of luminaire plane
 Maintenance factor

Average indirect fraction
 2.00 m
 0.85

Total luminous flux of all lamps
 Total power
 Total power per area (16.76 m²)

2426.00 lm
 21.6 W
 1.29 W/m² (2.01 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Horizontal
 E_m 64.1 lx
 E_{min} 12.4 lx
 E_{min}/E_m (U_o) 0.19
 E_{min}/E_{max} (U_d) 0.06
 UGR (3.1H 8.6H) ≤31.3
 Position 0.75 m

Major surfaces

Major surfaces	E _m	U _o
M 1.5 (Ceiling)	7.9 lx	0.79
M 1.1 (Wall)	25.2 lx	0.18
M 1.2 (Wall)	23.4 lx	0.23
M 1.3 (Wall)	13.8 lx	0.51
M 1.4 (Wall)	22.6 lx	0.24

Object :
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11 Quey Toilets External

11.1 Summary, Quey Toilets External

11.1.1 Result overview, Evaluation area 1

Type No.\Make

10	2	Dextra Group PLC
		Order No. : !OPUWP L15 AS LE3 PH
		Luminaire name : DE
		Equipment : 1 x Dextra 10.8 W / 1213 lm