

Lighting Calculations

Installation : HIWAA Southampton Airport

Project number : 635520

Customer :

Processed by :

Date : 04.09.2025

Project description:
Externals REVC

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

It is essential that all aspects relating to this proposal is checked and all aspects of the criteria used to compile the proposal is confirmed as being correct. If there are any deviations from the criteria the Dextra engineers 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 engineers need to be informed and amendments advised.

All calculations within the Dextra proposal is based upon an open area without obstructions above the working plane, assumed reflectance's unless stated, no windows and subsequent daylight contribution and in line with written or verbal customer specification. 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 acceptance.

If we have proposed an Emergency lighting scheme then it is to 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 however if there are any areas of high risks that are not made clear to the designer then these will not be catered for in the design and therefore amendments need to be carried out. The Dextra proposal will include exit signs by final exits and an emergency light outside it. 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 offer a comprehensive range of fire tents that can be quoted upon request. If there are any areas that need any type of anti-ligature luminaires then the Dextra design department need to be made aware otherwise these type of products will not be proposed and a luminaire not suitable for the application may be part of the Dextra offer.

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.

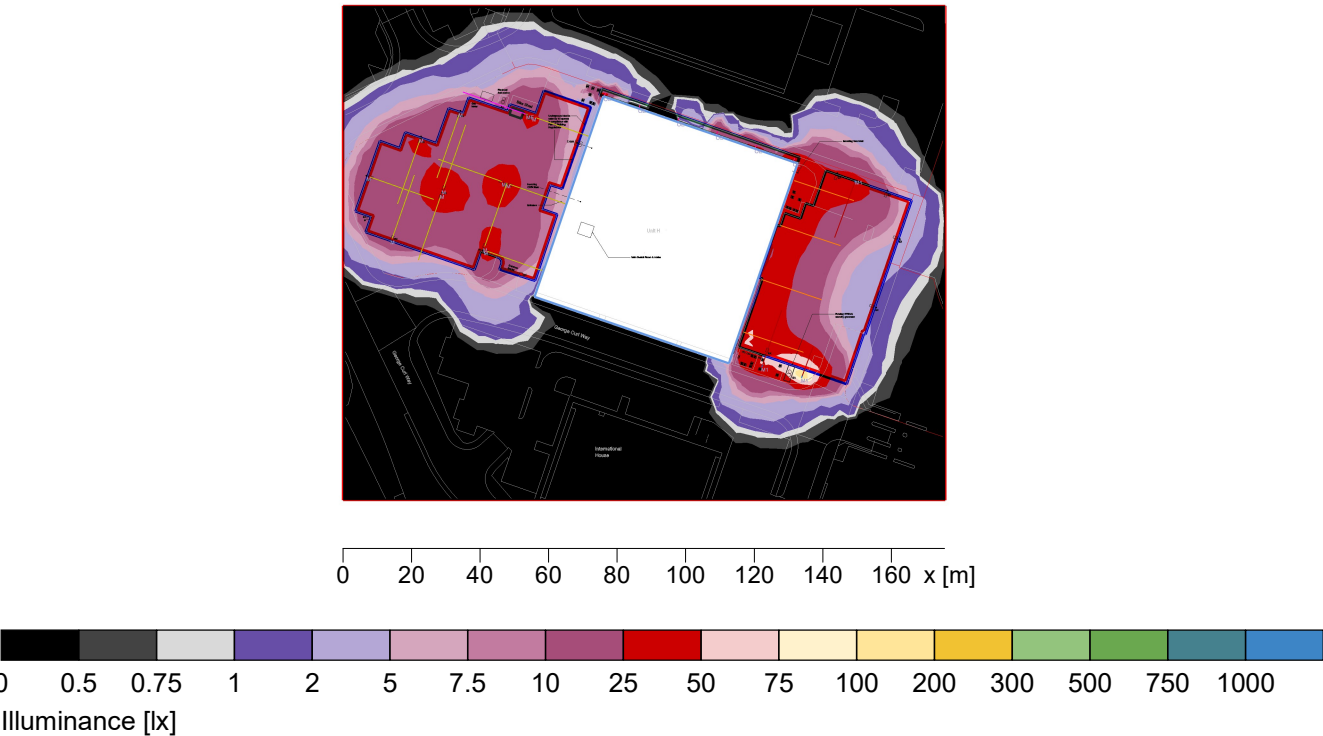
The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

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

1 Exterior 1

1.1 Summary, Exterior 1

1.1.1 Result overview, Site Plan



General	
Calculation algorithm used	High indirect fraction
Height of evaluation surface	0.00 m
Maintenance factor	0.85
Total luminous flux	159399 lm
Total power	1090 W
Total power per area (25262.54 m²)	0.04 W/m²

Illuminance			
Average illuminance	$\bar{E}_m$		5.6 lx
Minimum illuminance	E_{min}		0 lx
Maximum illuminance	E_{max}		63.7 lx
Uniformity U_o	$E_{min}/\bar{E}_m$		1:--- (---)
Diversity U_d	E_{min}/E_{max}		1:--- (---)

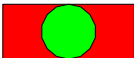
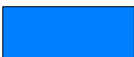
Type No.\Make

		Dextra Group PLC	
1	11 x	Order No.	: OPUCE L70 R11 OA + S50
		Luminaire name	: M
		Equipment	: 1 x Dextra 41.1 W / 6046 lm
		Emergency	: 1014 lm (16.8 %)
M			

1 Exterior 1

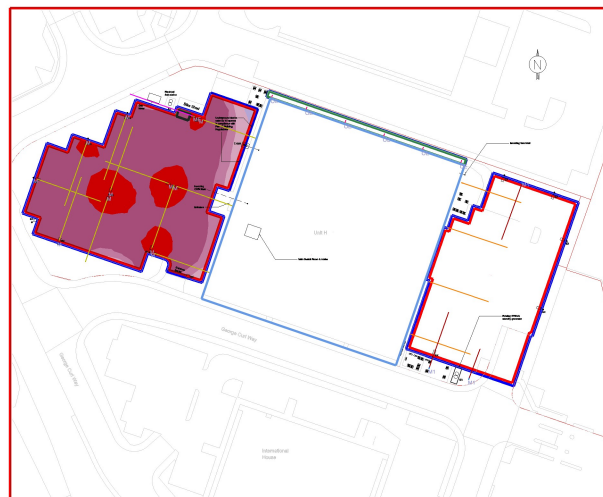
1.1 Summary, Exterior 1

1.1.1 Result overview, Site Plan

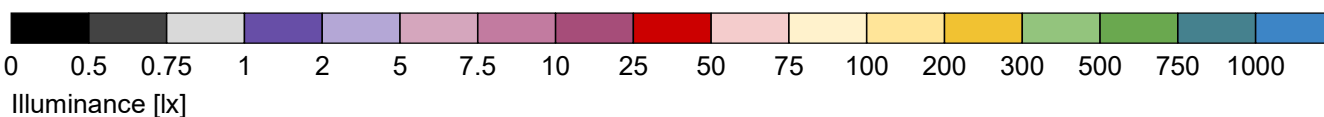
2	1E x	Order No.	: OPUCE L70 R11 LE3 OA + S50	-- Emergency Lighting --
		Luminaire name	: ME	
		Equipment	: 1 x Dextra 41.1 W / 6046 lm	
		Emergency	: 1014 lm (16.8 %)	
		ME		
3	3 x	Order No.	: OPUCE L133 R11 OA + OPUS WB	
		Luminaire name	: M1	
		Equipment	: 1 x Dextra 76 W / 11367 lm	
		Emergency	: 1014 lm (8.9 %)	
		M1		
4	4 x	Order No.	: OPUCE L133 R11 OA + OPUS WB	
		Luminaire name	: N	
		Equipment	: 1 x Dextra 76 W / 11367 lm	
		Emergency	: 1014 lm (8.9 %)	
5	6E x	Order No.	: OPUWP L15 AS R25E LS3	-- Emergency Lighting --
		Luminaire name	: OE	
		Equipment	: 1 x Dextra 10.8 W / 1213 lm	
		Emergency	: 647 lm (53.3 %)	
		OE		

1.1 Summary, Exterior 1

1.1.2 Result overview, Car Park



0 20 40 60 80 100 120 140 160 x [m]



General

Calculation algorithm used	High indirect fraction
Maintenance factor	0.85
Total lamp luminous flux	72552 lm
Luminaire luminous flux	72519 lm
Total power	493.2 W
Total power per area (2330.56 m ²)	0.21 W/m ² (1.11 W/m ² /100lx)

Car Park

User profile	Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes
	5.9.2 (EN 12464-2, 05.2014) (R _a >20.00)
	Horizontal
$\bar{E}_m$	19.1 lx (≥ 10 lx)
E_{min}	5.3 lx
$E_{min}/\bar{E}_m (U_o)$	0.28 (≥ 0.25)
$E_{min}/E_{max} (U_d)$	0.14
Position	0.00 m

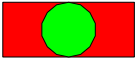
Type No. Make

1	11 x	Dextra Group PLC
		Order No. : OPUCE L70 R11 OA + S50
		Luminaire name : M
		Equipment : 1 x Dextra 41.1 W / 6046 lm
		Emergency : 1014 lm (16.8 %)
M		

Object : Lighting Calculations
Installation : HIWAA Southampton Airport
Project number : 635520
Date : 04.09.2025

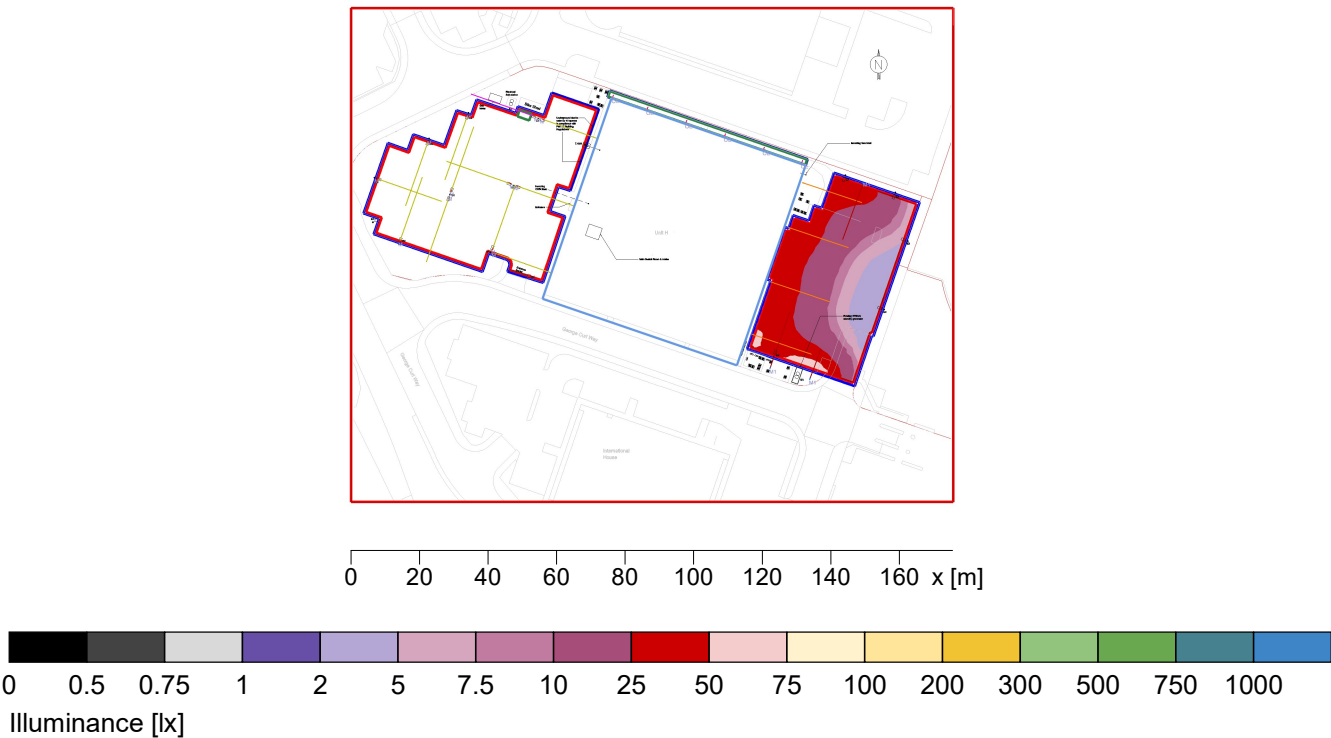
1.1 Summary, Exterior 1

1.1.2 Result overview, Car Park

2	1E x	Order No.	: OPUCE L70 R11 LE3 OA + S50	-- Emergency Lighting --
		Luminaire name	: ME	
		Equipment	: 1 x Dextra 41.1 W / 6046 lm	
		Emergency	: 1014 lm (16.8 %)	
ME				

1.1 Summary, Exterior 1

1.1.3 Result overview, Airport Apron



General

Calculation algorithm used	High indirect fraction
Maintenance factor	0.85
Total lamp luminous flux	45468 lm
Luminaire luminous flux	45452 lm
Total power	304.0 W
Total power per area (1821.89 m²)	0.17 W/m² (0.82 W/m²/100lx)

Airport Apron

User profile	Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes
	5.9.2 (EN 12464-2, 05.2014) (Ra >20.00)
	Horizontal
$\bar{E}_m$	20.4 lx (≥ 10 lx)
E_{min}	2.4 lx
$E_{min}/\bar{E}_m (U_o)$	0.12 (≥ 0.25)
$E_{min}/E_{max} (U_d)$	0.04
Position	0.00 m

Type No. Make

3 1 x M1	Dextra Group PLC	
	Order No.	: OPUCE L133 R11 OA + OPUS WB
	Luminaire name	: M1
	Equipment	: 1 x Dextra 76 W / 11367 lm
	Emergency	: 1014 lm (8.9 %)

Object : Lighting Calculations
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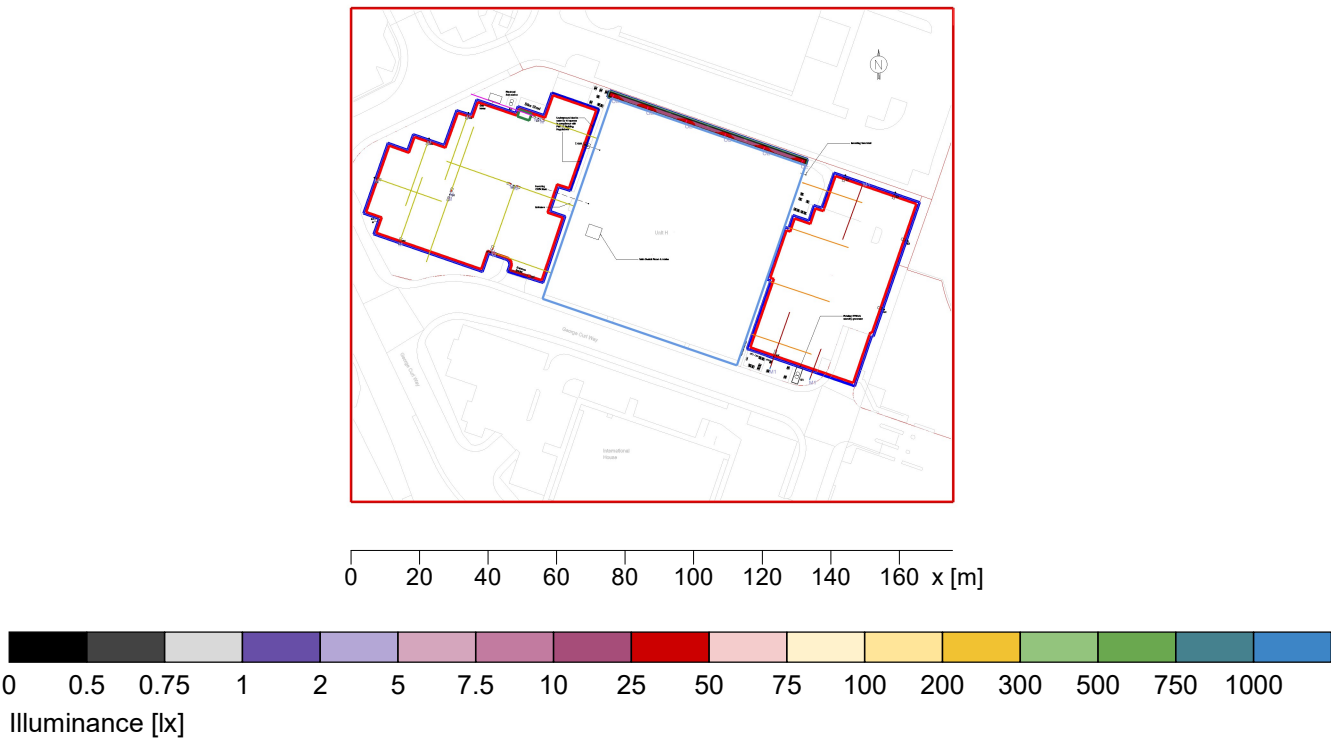
1.1 Summary, Exterior 1

1.1.3 Result overview, Airport Apron

4	3 x	Order No.	: OPUCE L133 R11 OA + OPUS WB
		Luminaire name	: N
		Equipment	: 1 x Dextra 76 W / 11367 lm
		Emergency	: 1014 lm (8.9 %)

1.1 Summary, Exterior 1

1.1.4 Result overview, Escape Route



General	
Calculation algorithm used	High indirect fraction
Maintenance factor	0.85
Luminaire luminous flux	7278 lm
Total power	64.8 W
Total power per area (119.31 m²)	0.54 W/m² (2.43 W/m²/100lx)

Escape Route	
User profile	Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes
	5.9.2 (EN 12464-2, 05.2014) (Ra >20.00)
	Horizontal
$\bar{E}_m$	22.4 lx (≥ 10 lx)
E_{min}	6.3 lx
$E_{min}/\bar{E}_m$ (Uo)	0.28 (≥ 0.25)
E_{min}/E_{max} (Ud)	0.16
Position	0.00 m

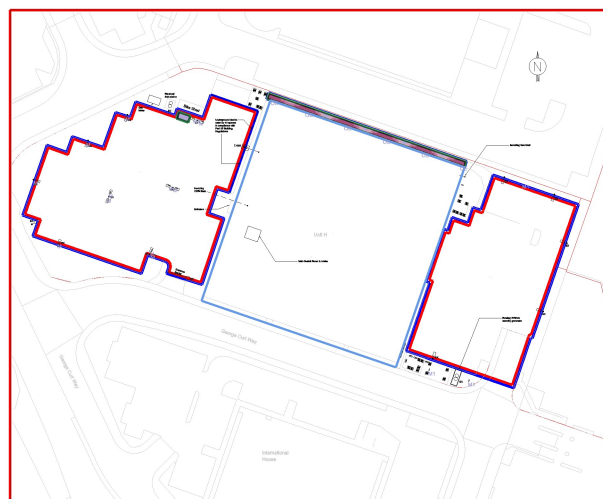
Type No. Make

5 6E x OE	Dextra Group PLC	
	Order No.	: OPUWP L15 AS R25E LS3 -- Emergency Lighting --
	Luminaire name	: OE
	Equipment	: 1 x Dextra 10.8 W / 1213 lm
	Emergency	: 647 lm (53.3 %)

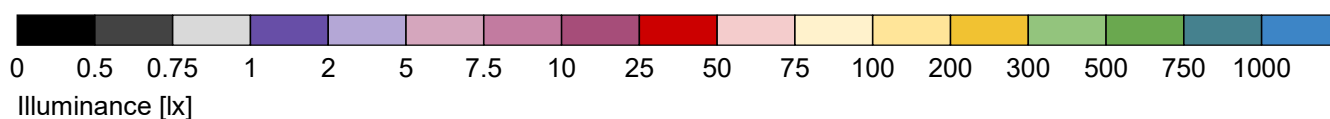
1 Exterior 1

1.2 Summary, Exterior 1

1.2.1.1 Result overview (emergency lighting)



0 20 40 60 80 100 120 140 160 x [m]

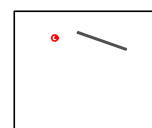


General

Calculation algorithm used : Direct component
 Maintenance factor : 0.8
 Height (phot centre) : -variable-
 Maximum I : 490 cd

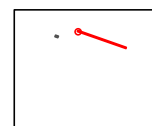
Anti panic area:

No.	Surface	Emin [lx]	Emax [lx]	Ud
Anti panic area 1				
Calculation field: 3.64m x 2.01m (7 x 4 pts), Height = 0.00m				
1		1.76 lx	2.74 lx	1: 1.56
		>= 0.5 lx		>= 1 : 40

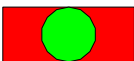


1 Escape Route

Calculation field: 1.68m x 60.82m (8 x 21 pts), Height = 0.00m				
2		2.31 lx	17.82 lx	1: 7.73
		>= 0.5 lx		>= 1 : 40



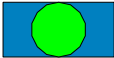
Type No. Make

Dextra Group PLC				
2	1E x	Order No.	: OPUCE L70 R11 LE3 OA + S50	-- Emergency Lighting --
		Luminaire name	: ME	
		Equipment	: 1 x Dextra 41.1 W / 6046 lm	
		Emergency	: 1014 lm (16.8 %)	
ME				

1 Exterior 1

1.2 Summary, Exterior 1

1.2.1.1 Result overview (emergency lighting)

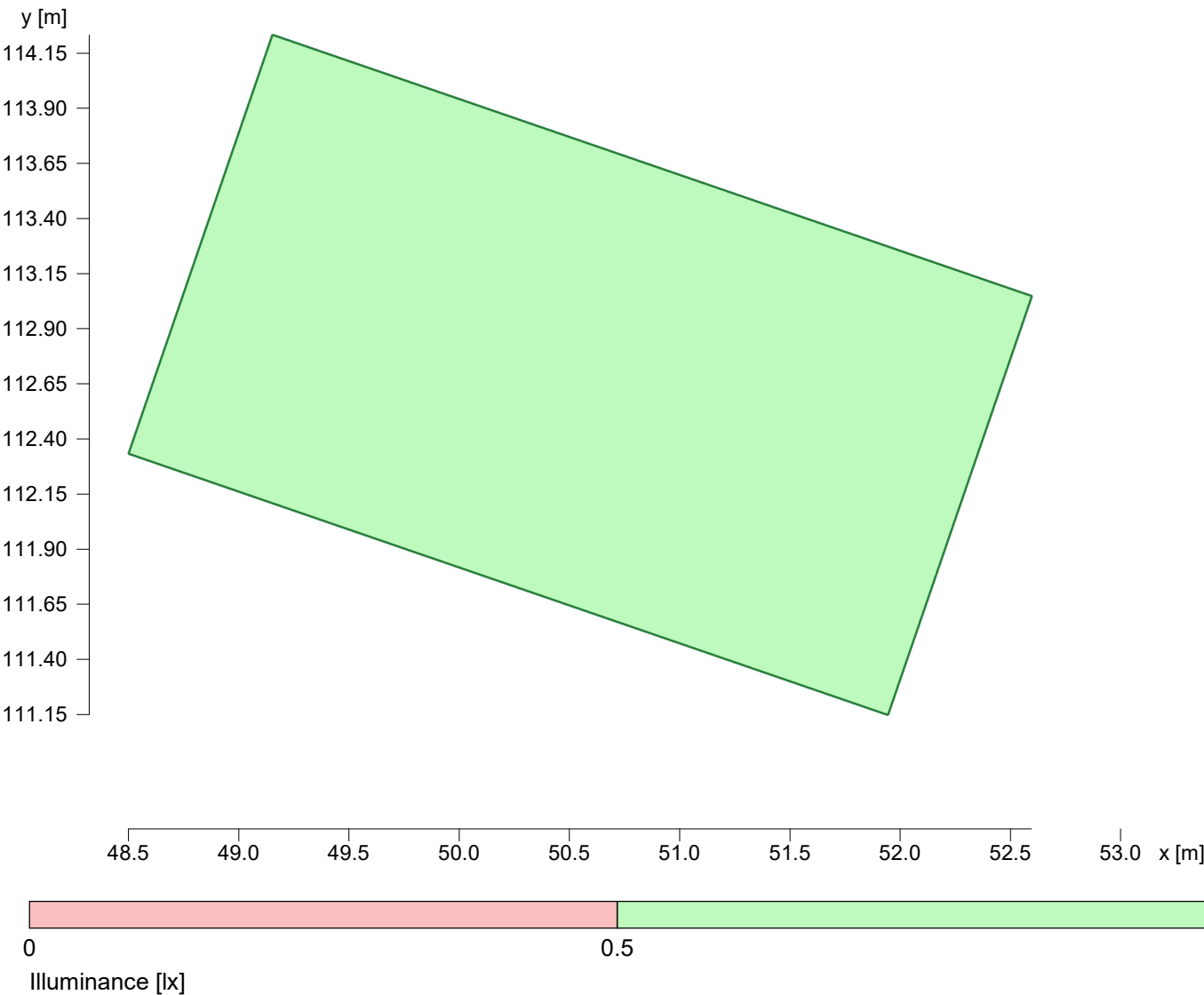
5 6E x Order No. : OPUWP L15 AS R25E LS3
 Luminaire name : OE
Equipment : 1 x Dextra 10.8 W / 1213 lm
Emergency : 647 lm (53.3 %)

-- Emergency Lighting --

OE

1.2 Calculation results, Exterior 1

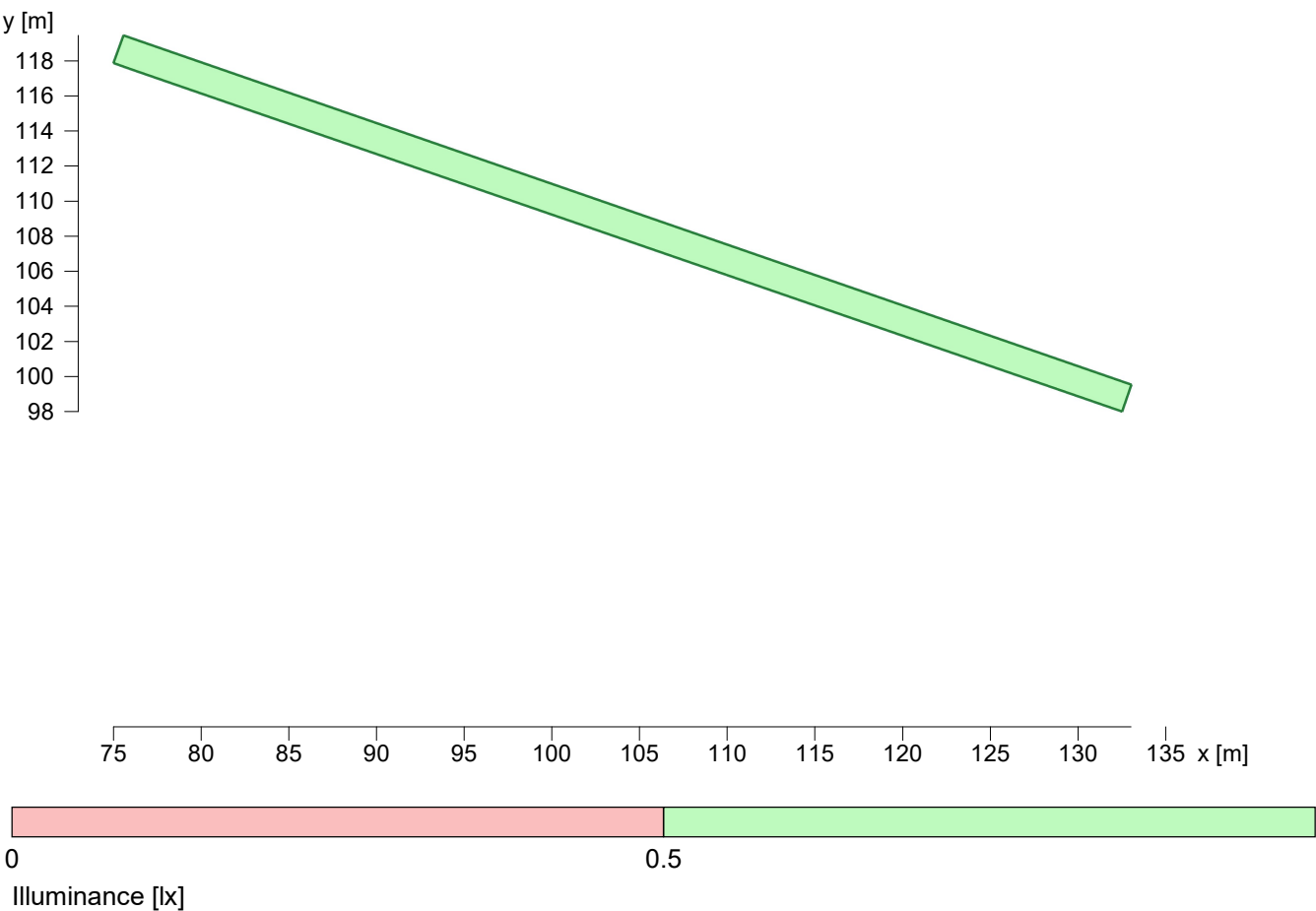
1.2.2 Boundary line, Anti panic area 1 (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 1.8 lx
Maximum illuminance	Emax	: 2.7 lx
Diversity	Emin/Emax	: 1 : 1.56 (0.64) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8

1.2 Calculation results, Exterior 1

1.2.3 Boundary line, Escape Route (E)



Required minimum illuminance		: 0.5 lx
Minimum illuminance	Emin	: 2.3 lx
Maximum illuminance	Emax	: 18 lx
Diversity	Emin/Emax	: 1 : 7.73 (0.13) (Threshold value 1:40)
Height		: 0 m
Calculation algorithm used		: Direct component
Maintenance factor		: 0.8