



External Lighting Report

Low Secure Unit, Mold Road, Wrexham

Issue 1

PR10133

Date: 16/03/2023



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Issue Register

Issue	Description	Issued by	Date
1	Preliminary Issue	MH	16/03/23

1.0 Introduction

The scheme is for the construction of a new Low Secure Unit with individual gardens to each unit.

The external lighting will be designed to provide adequate lighting for safe movement of staff around the maintenance road at the rear and for the car parking area to the front of the building.

Lighting levels have been designed to comply with CIBSE recommendations.

2.0 Lighting Installation

Based on the usage of the building there is limited provision of external lighting to the rear of each of the actual residential units.

The only provision is for mains/emergency lighting above each of the escape doors from the communal areas of the building.

There are no proposals to provide any escape lighting on any routes leaving from these exits.

Lighting installations will be installed to provide staff with adequate lighting for moving around the car park and the rear access road,

The recommended lighting levels in CIBSE guides are 5 lux for car parks and minor roads.

The scheme proposed provides the following average levels.

Car park. 6.31 lux

Maintenance Road 5.7 lux

In addition there will be extra lighting provided for the bin area to provide an average level of around 12 lux.

LED lighting will be utilised for all luminaires with colour temperatures of 3000/4000K (where possible)

The proposed external lighting scheme for the site will be based on the following:

- Bollard LED lanterns for car park area. These will provide downward lighting only and have been designed to avoid light spillage onto adjacent areas. These will be controlled by photocell and timeclock that will be programmed to suit the actual usage of the area.
- Bollard LED lanterns for maintenance road.. These will provide downward lighting only and have been designed to avoid light spillage onto adjacent areas. These will be controlled by photocell and timeclock that will be programmed to suit the actual usage of the area
- Wall mounted LED luminaires (anti ligature) with shield on upper half to prevent upward light spillage. These will have ULOR of less than 2%. These luminaires will be mounted above final exit doors from communal areas and will include emergency packs to illuminate dedicated escape doors. Mounting height will be approx. 2.5m AFFL and this will be agreed on site. These will be controlled by photocell/timeclock.

- Recessed LED luminaires (anti-ligature) below the main entrance canopy one of which include.
These will be controlled by photocell/timeclock
- Wall mounted LED luminaires (anti ligature) with shield on upper half to prevent upward light spillage.
These will have ULOR of less than 2%.
These luminaires will be mounted at high level in bin store area to provide extra illumination for people working in this area.
Mounting height will be approx. 4.0 m AFFL and this will be agreed on site.
These will be controlled by photocell and presence detection.

3.0 Proposed Luminaires

Refer to indicative layout for references

Ref	Description	Picture
A	Design Plan Basilica Wall mounted LED anti-ligature luminaire 3000K 1229 lumens with white body and opal diffuser and integral emergency pack BA35/1400WW/XC31	 IP 66 250 JOULES = IK 20
B	Design Plan RDL AL G2 Recessed LED anti-ligature downlight IP65 with 4000K/1668 lumens and frosted glass and white body ALRDL-G2-2000N-X-SW	 IP 65 100 JOULES = IK 14
BE	As type B with emergency pack	 IP 65 100 JOULES = IK 14

C	Design Plan Zelos wall max. Wall mounted IP65 with 4000K/2911 lumens with black body and frosted diffuser TLSWM.4500NW/FC49	 IP 65 150 JOULES = IK 16
D	Ansell Lighting Aaries range Bollard luminaire 900mm high with black body and 4000K/1246 lumens AAries/900/BL/CW	

Installation :

Project number : Wrexham planning

Customer :

Processed by :

Date : 13.03.2023

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 Luminaire data

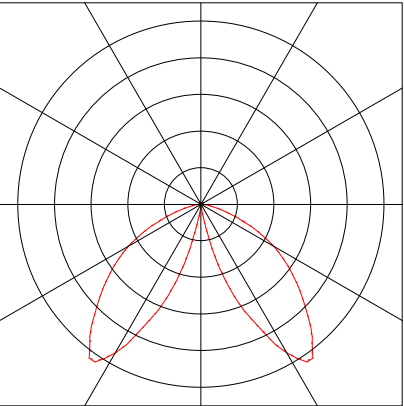
1.1 Ansell, AMENITY - Aries LED Bol... (AARIES/900/BL/CW)

1.1.1 Data sheet

Manufacturer: Ansell

AARIES/900/BL/CW AMENITY - Aries LED Bollard 4000K

Luminaire data		Equipped with	
Luminaire efficiency	: 100.1%	Quantity	: 1
Luminaire efficacy	: 58.92 lm/W	Designation	: 1236 lm, 21 W
Classification	: A40 ↓98.1% ↑1.9%	Colour	:
CIE Flux Codes	: 44 82 98 98 100	Luminous flux	: 1236 lm
UGR 4H 8H	: 26.6 / 26.6		
Power	: 21 W		
Luminous flux	: 1237.2 lm		
Dimensions	: 130 mm x 130 mm x 1 mm		



1

Luminaire data

1.2

not a Relux Member, Product (*D8D29*)

1.2.1

Data sheet

Manufacturer: not a Relux Member

D8D29

Product

not licensed

Luminaire data

Luminaire efficiency

Luminaire efficacy

Classification

CIE Flux Codes

UGR 4H 8H

Power

Luminous flux

: 102.8%

: 80.88 lm/W

: A20 ↓99.2% ↑0.8%

: 28 57 84 99 103

: 33.1 / 35.5

: 37 W

: 2992.5 lm

Equipped with

Quantity

Designation

Colour

Luminous flux

: 1

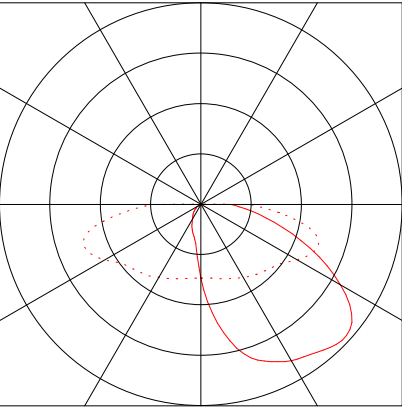
: LED

:

: 2911 lm

Dimensions

: 300 mm x 120 mm x 10 mm



1 Luminaire data

1.3 not a Relux Member, Product (*B985C*)

1.3.1 Data sheet

Manufacturer: not a Relux Member

***B985C* Product**
not licensed

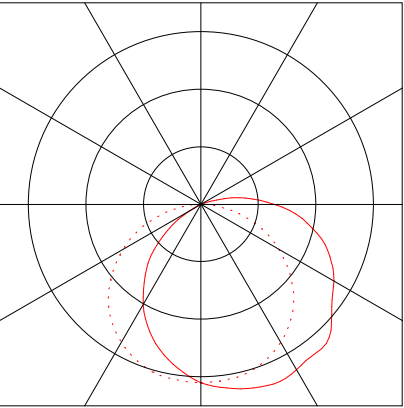
Luminaire data

Luminaire efficiency : 105.4%
Luminaire efficacy : 163.9 lm/W
Classification : A31 ↓96.6% ↑3.4%
CIE Flux Codes : 42 72 90 97 105
UGR 4H 8H : 30.9 / 25.4
Power : 8 W
Luminous flux : 1311.2 lm

Dimensions : 300 mm x 120 mm x 10 mm

Equipped with

Quantity : 1
Designation : LED
Colour :
Luminous flux : 1244 lm



Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

1 Luminaire data

1.4 not a Relux Member, Product (*D9A9A*)

1.4.1 Data sheet

Manufacturer: not a Relux Member

***D9A9A* Product**
not licensed

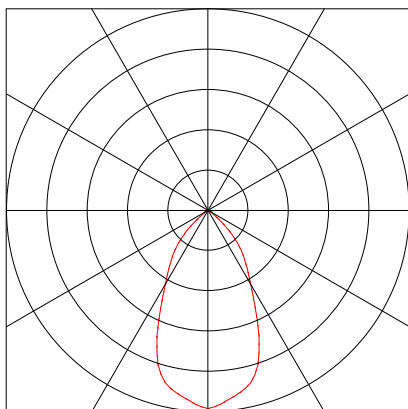
Luminaire data

Luminaire efficiency : 98.5%
Luminaire efficacy : 92.79 lm/W
Classification : A60 ↓100.0% ↑0.0%
CIE Flux Codes : 84 97 99 100 98
UGR 4H 8H : 17.4 / 17.4
Power : 15 W
Luminous flux : 1391.8 lm

Equipped with

Quantity : 1
Designation : LED
Colour :
Luminous flux : 1413 lm

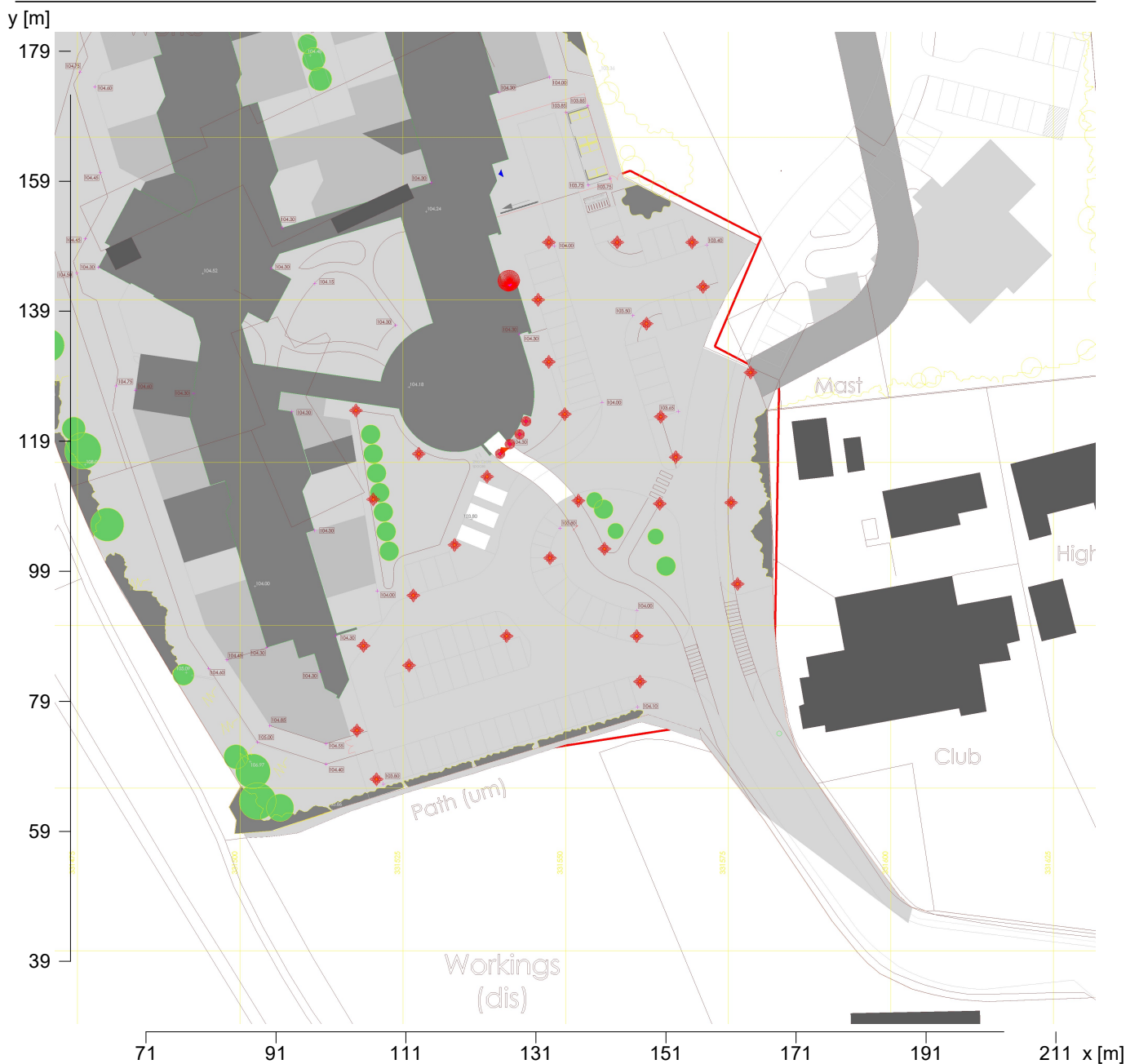
Dimensions : Ø180 mm x 1 mm



2 Car Park

2.1 Description, Car Park

2.1.1 Floor plan

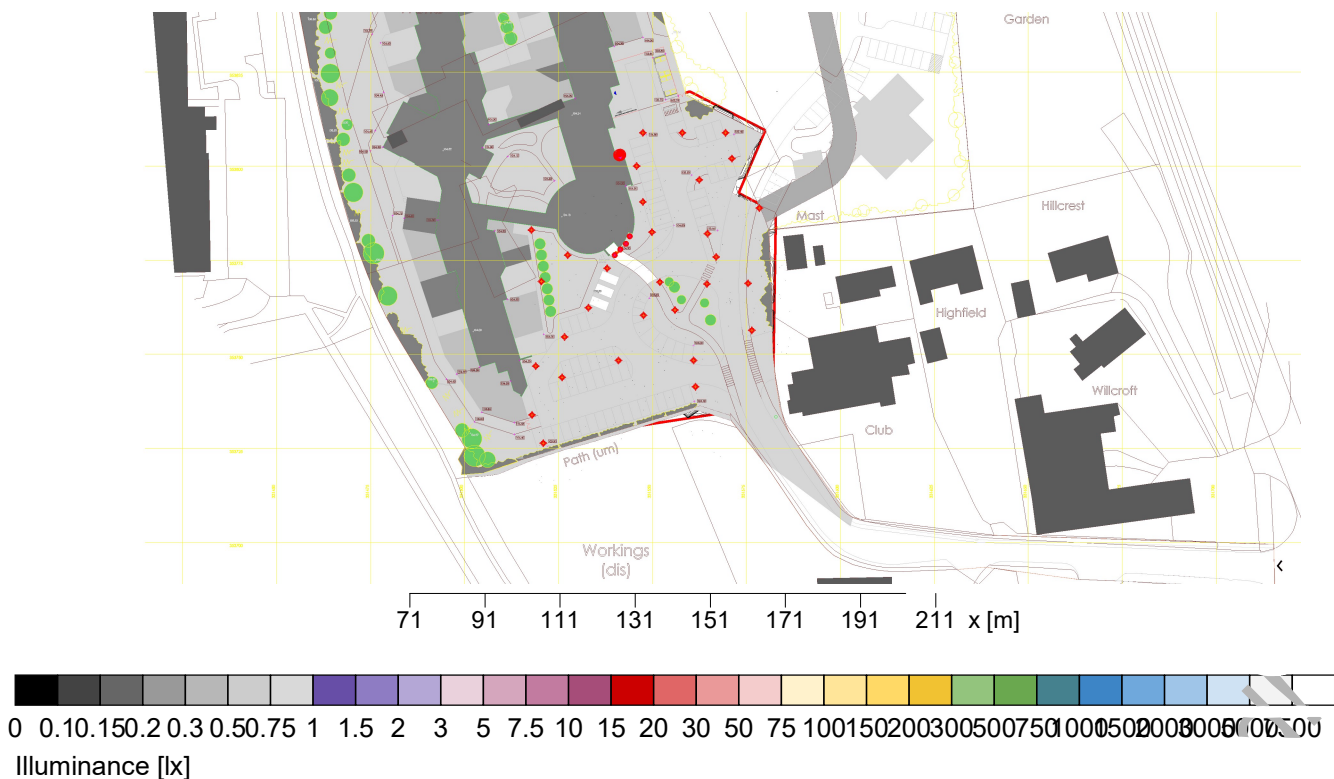


Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

2 Car Park

2.2 Summary, Car Park

2.2.1 Result overview, Evaluation area 1



General

Calculation algorithm used
Maintenance factor

Average indirect fraction
0.80

Total luminous flux
Total power
Total power per area (5207.63 m²)

42740.00 lm
677.0 W
0.13 W/m² (2.23 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

Em	5.83 lx
Emin	0.01 lx
Emin/Em (Uo)	0.00
Emin/Emax (Ud)	0.00
Position	0.00 m

Type No.\Make

Ansell

1 29 x Order No. : AARIES/900/BL/CW
Luminaire name : AMENTTY - Aries LED Bollard 4000K
Equipment : 1 x 1236 lm, 21 W 21 W / 1236 lm

not a Relux Member

3	1 x	Order No.	: *B985C*
		Luminaire name	: Product
		Equipment	: 1 x LED 8 W / 1244 lm

Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

2 Car Park

2.2 Summary, Car Park

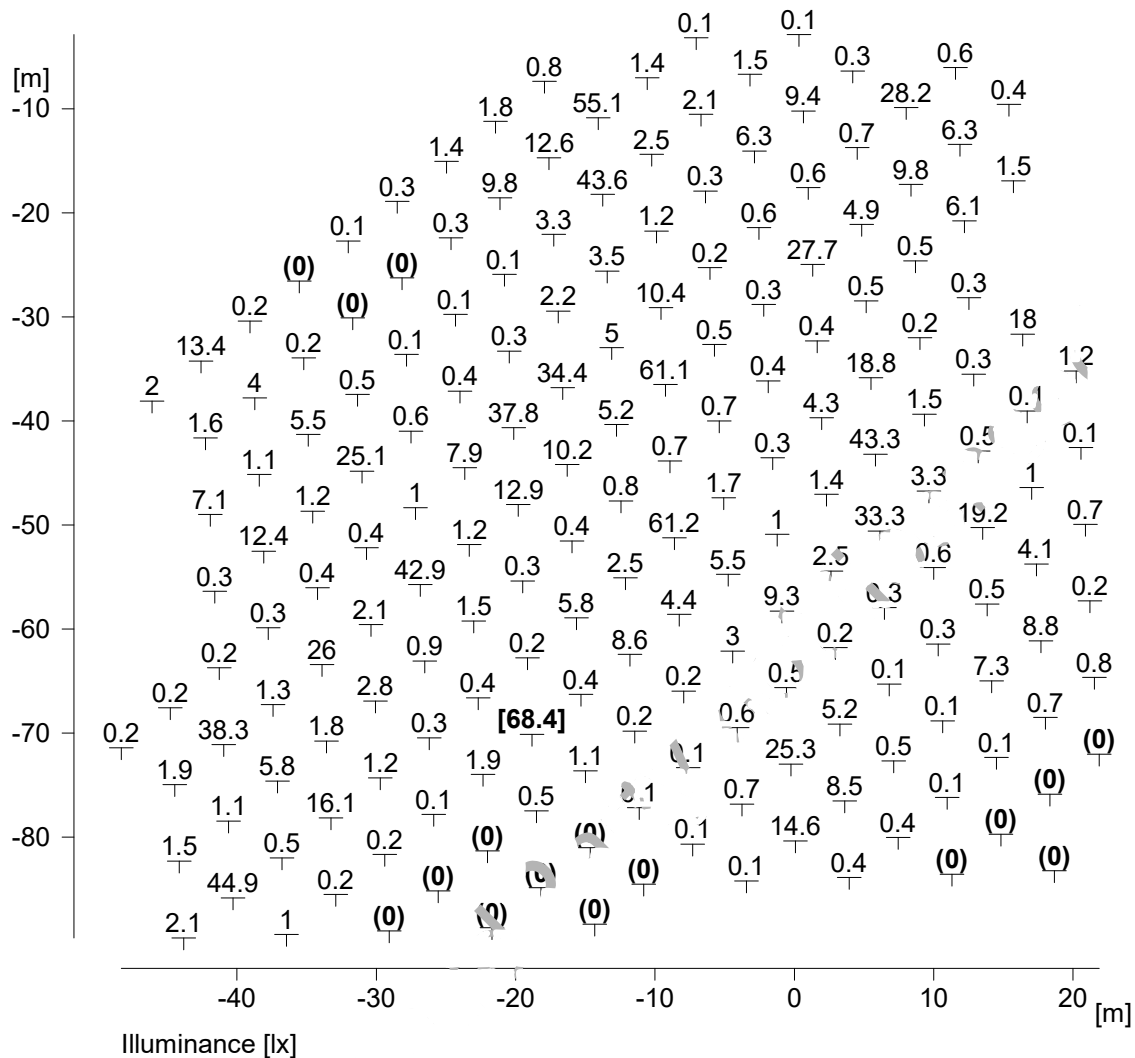
2.2.1 Result overview, Evaluation area 1

4	4 x	Order No.	: *D9A9A*
		Luminaire name	: Product
		Equipment	: 1 x LED 15 W / 1413 lm

2 Car Park

2.3 Calculation results, Car Park

2.3.1 Table, Reference plane 1.1 (E)

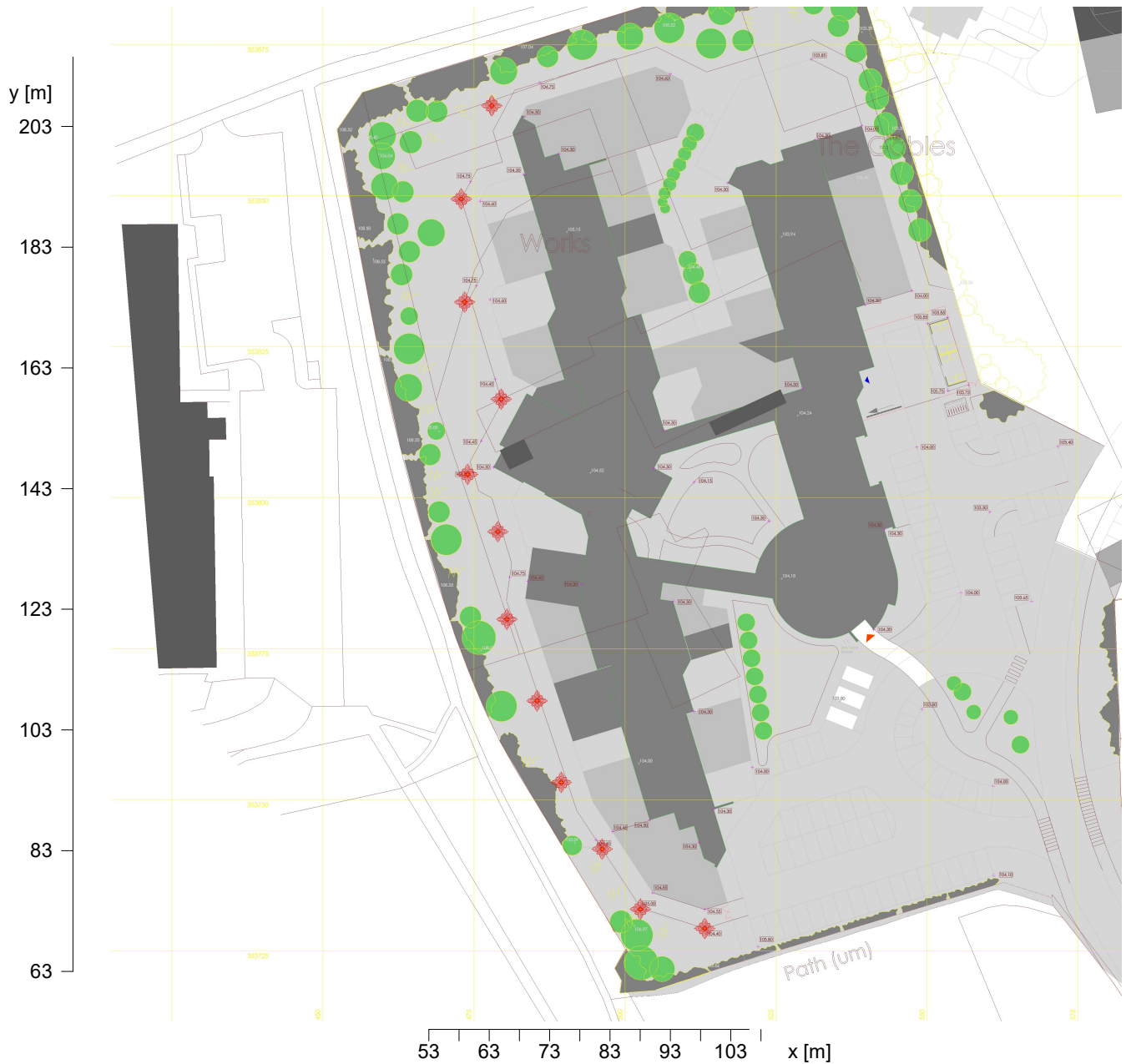


Height reference plane	: 0.00 m
Average illuminance	Em : 5.8 lx
Minimum illuminance	Emin : 0 lx
Maximum illuminance	Emax : 68.4 lx
Uniformity Uo	Emin/Em : 1 : 955.21 (0.00)
Diversity Ud	Emin/Emax : 1 : 11193.01 (0.00)

3 Maintenance Road

3.1 Description, Maintenance Road

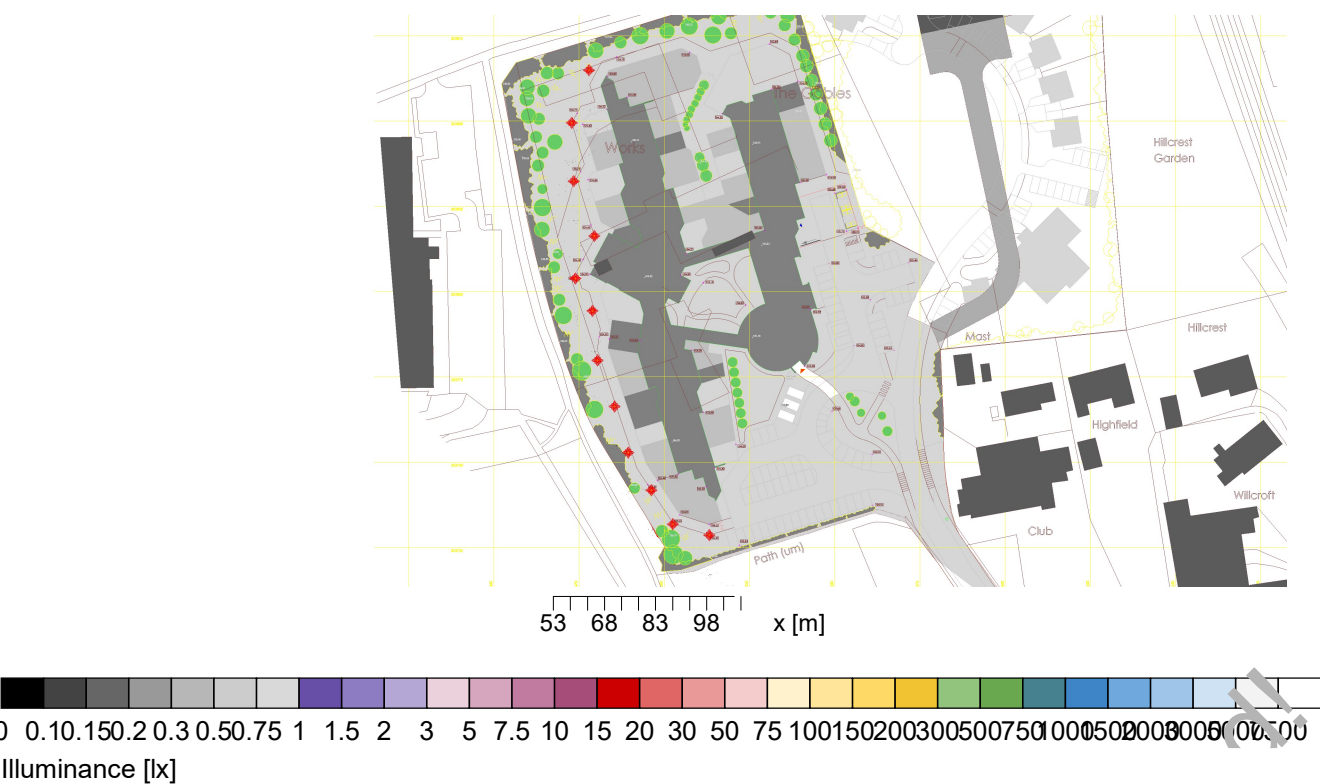
3.1.1 Floor plan



3 Maintenance Road

3.2 Summary, Maintenance Road

3.2.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height (phot centre)	3.00 m
Maintenance factor	0.80
Total luminous flux	14832.00 lm
Total power	252.0 W
Total power per area (1937.47 m²)	0.13 W/m² (2.41 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	5.41 lx
Emin	0.03 lx
Emin/Em (Uo)	0.01
Emin/Emax (Ud)	0.00
Position	0.00 m

Type No. Make

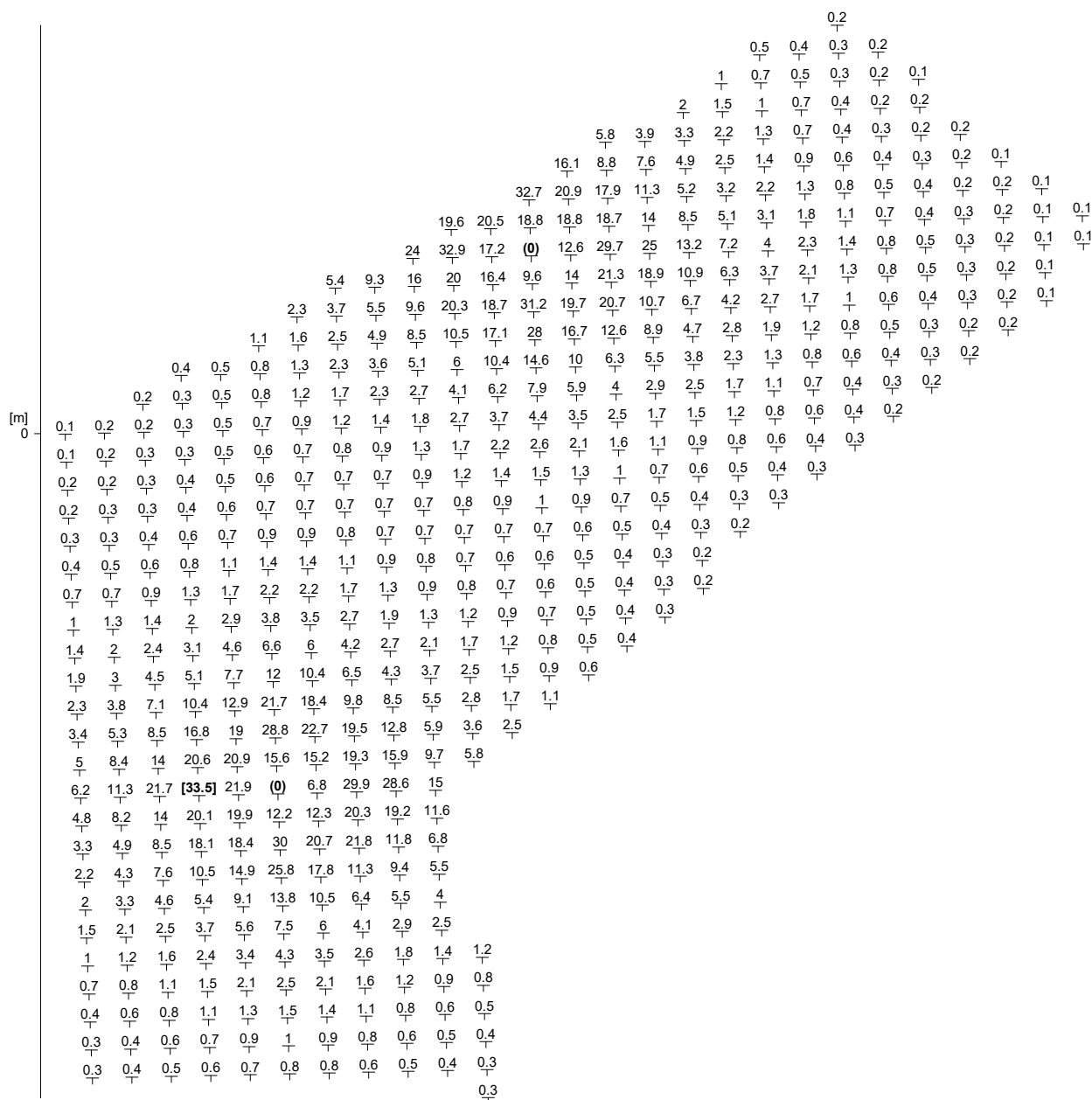
1	12 x	Ansell
		Order No. : AARIT S/900/BL/CW
		Luminaire name : AMENITY - Aries LED Bollard 4000K
		Equipment : 1 x 1236 lm, 21 W 21 W / 1236 lm

Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Part1

Height reference plane		: 0.00 m
Average illuminance	Em	: 5.4 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 33.5 lx
Uniformity Uo	Emin/Em	: 1 : 164.14 (0.01)
Diversity Ud	Emin/Emax	: 1 : 1016.63 (0.00)

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Part2

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

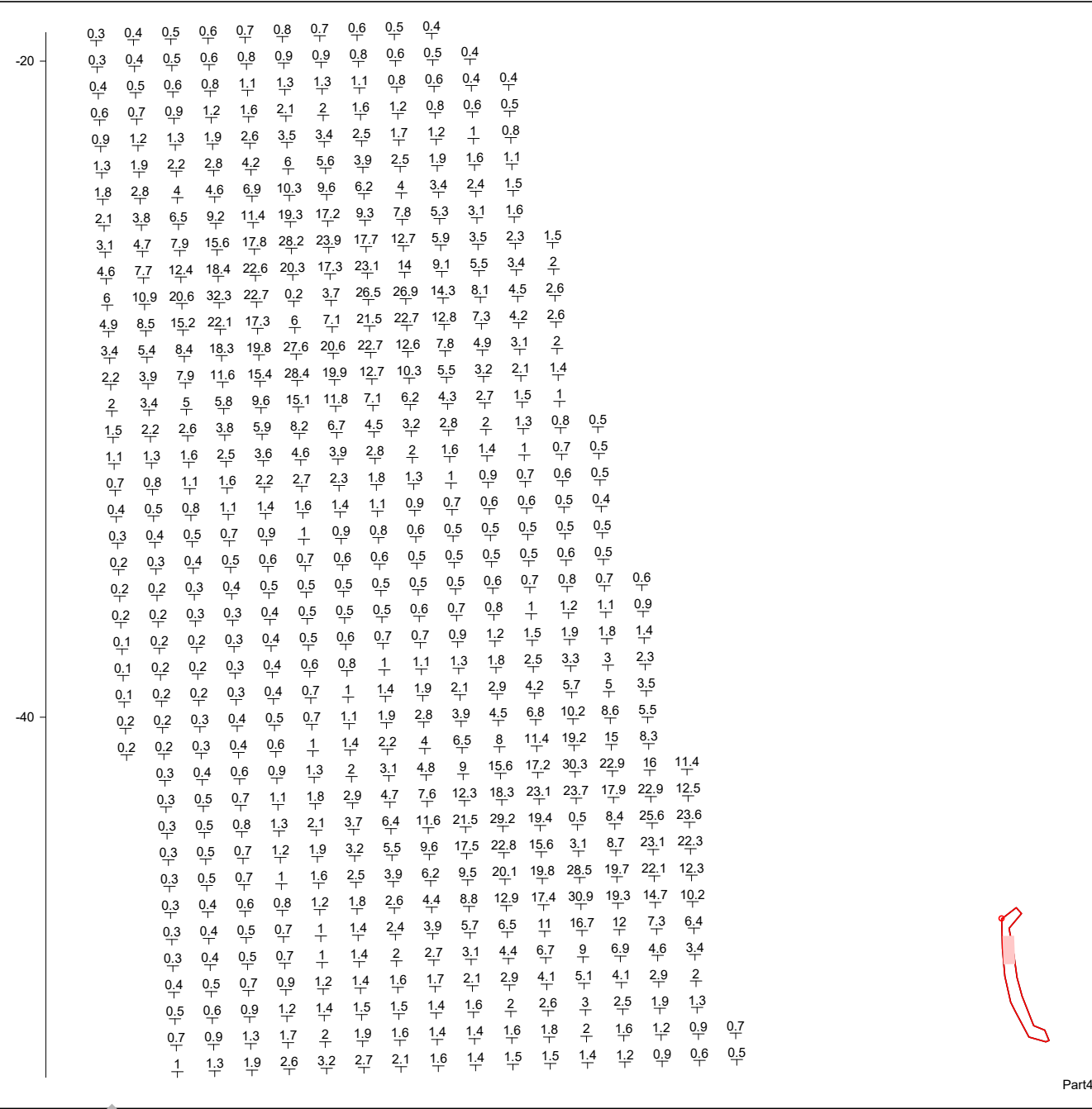


Part3

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Part5

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



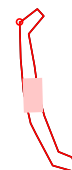
Part6

Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

[illegible]

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Part8

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Part9

Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

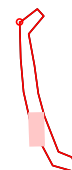
3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

[illegible]

Part10



Object :
Installation :
Project number :
Date :

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

[illegible]

Part11

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

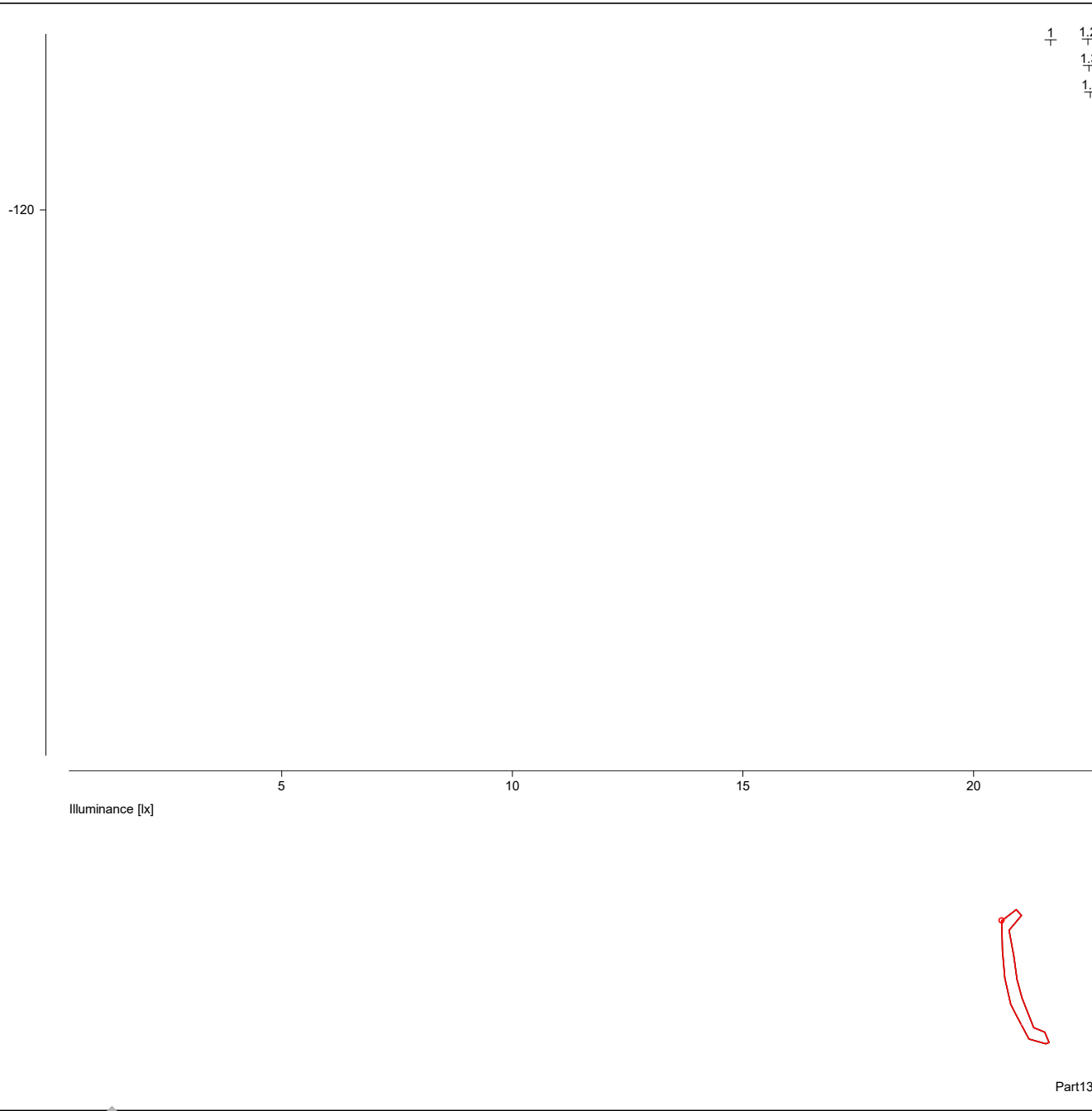


Part12

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)

[illegible]

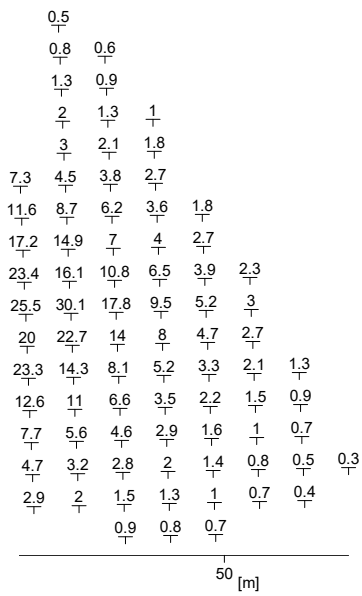
Part14

Object :
Installation :
Project number :
Date :

3 Maintenance Road

3.3 Calculation results, Maintenance Road

3.3.1 Table, Reference plane 1.1 (E)



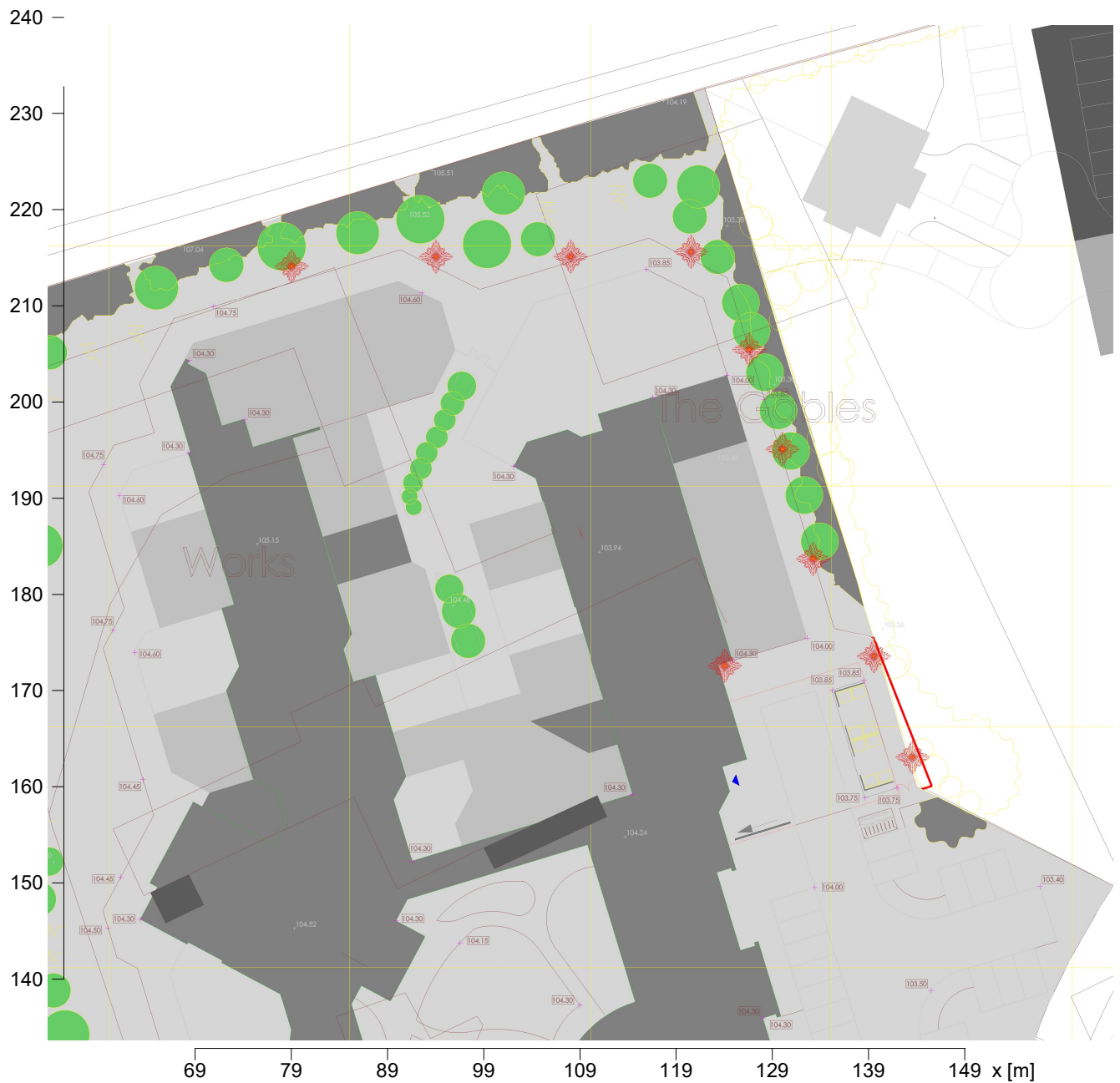
Part15

4 Maintenance Road 1

4.1 Description, Maintenance Road 1

4.1.1 Floor plan

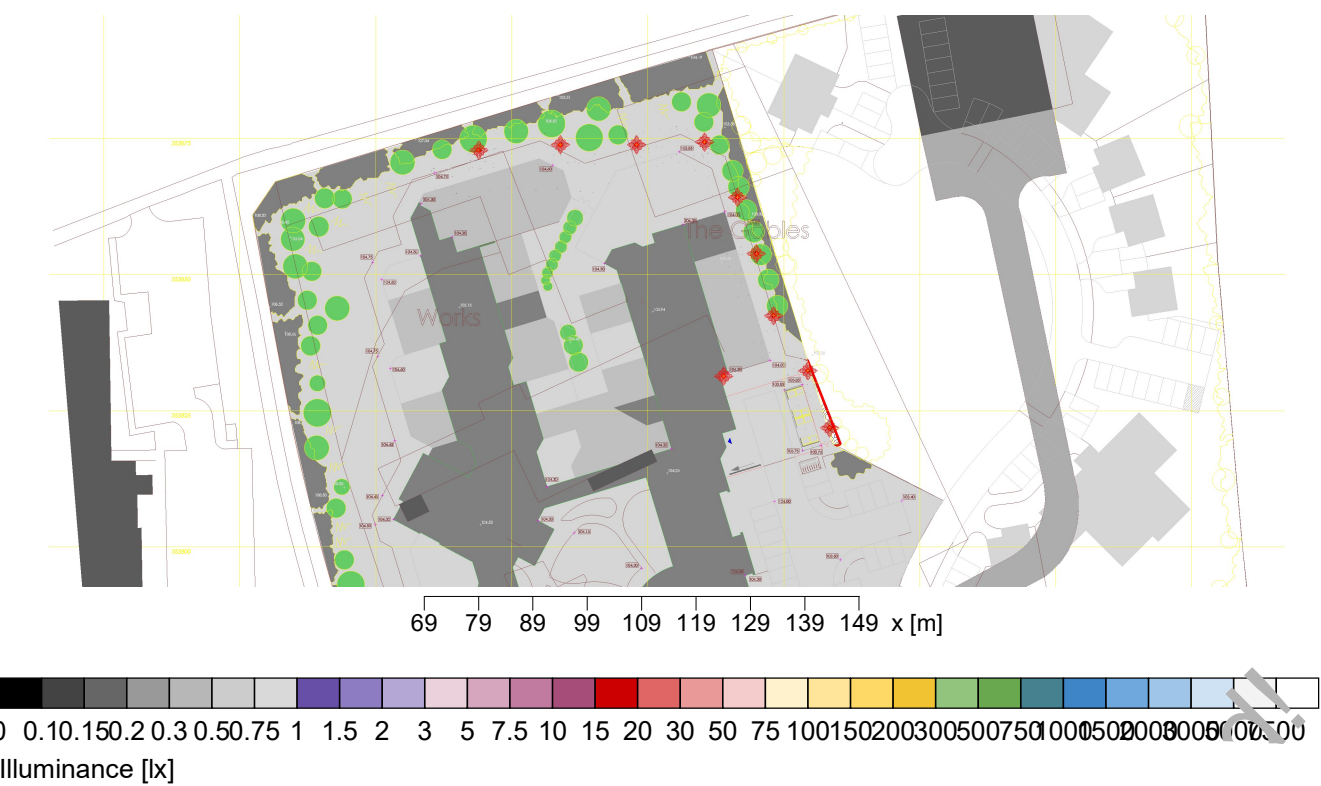
y [m]



4 Maintenance Road 1

4.2 Summary, Maintenance Road 1

4.2.1 Result overview, Evaluation area 1



General

Calculation algorithm used	Average indirect fraction
Height (phot centre)	3.00 m
Maintenance factor	0.80
Total luminous flux	11124.00 lm
Total power	189.0 W
Total power per area (814.82 m²)	0.23 W/m² (3.88 W/m²/100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
Em	5.98 lx
Emin	0.04 lx
Emin/Em (Uo)	0.01
Emin/Emax (Ud)	0.00
Position	0.00 m

Type No. Make

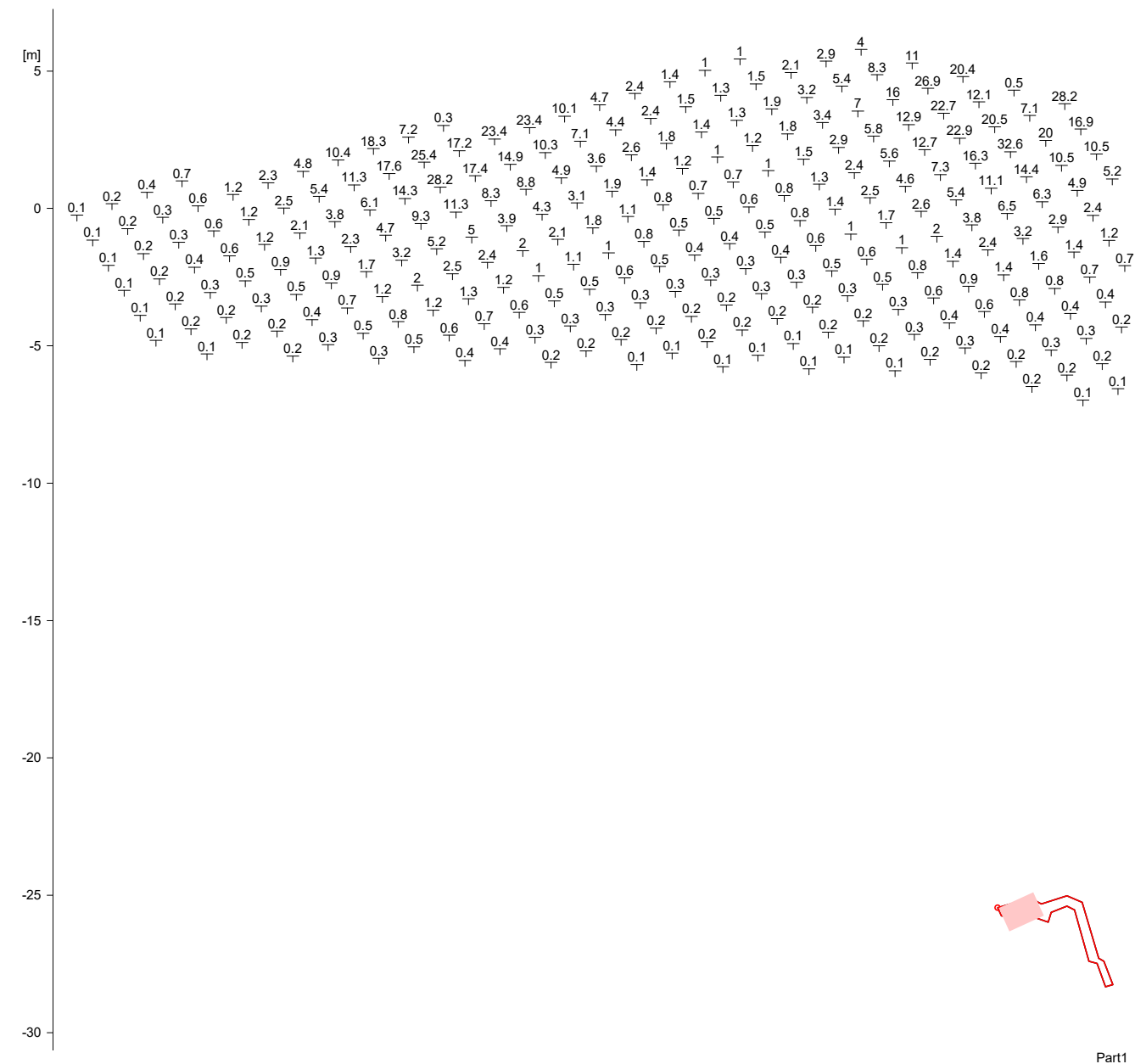
1	9 x	Ansell
		Order No. : AARIT S/900/BL/CW
		Luminaire name : AMENITY - Aries LED Bollard 4000K
		Equipment : 1 x 1236 lm, 21 W 21 W / 1236 lm

Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

4 Maintenance Road 1

4.3 Calculation results, Maintenance Road 1

4.3.1 Table, Reference plane 1.1 (E)



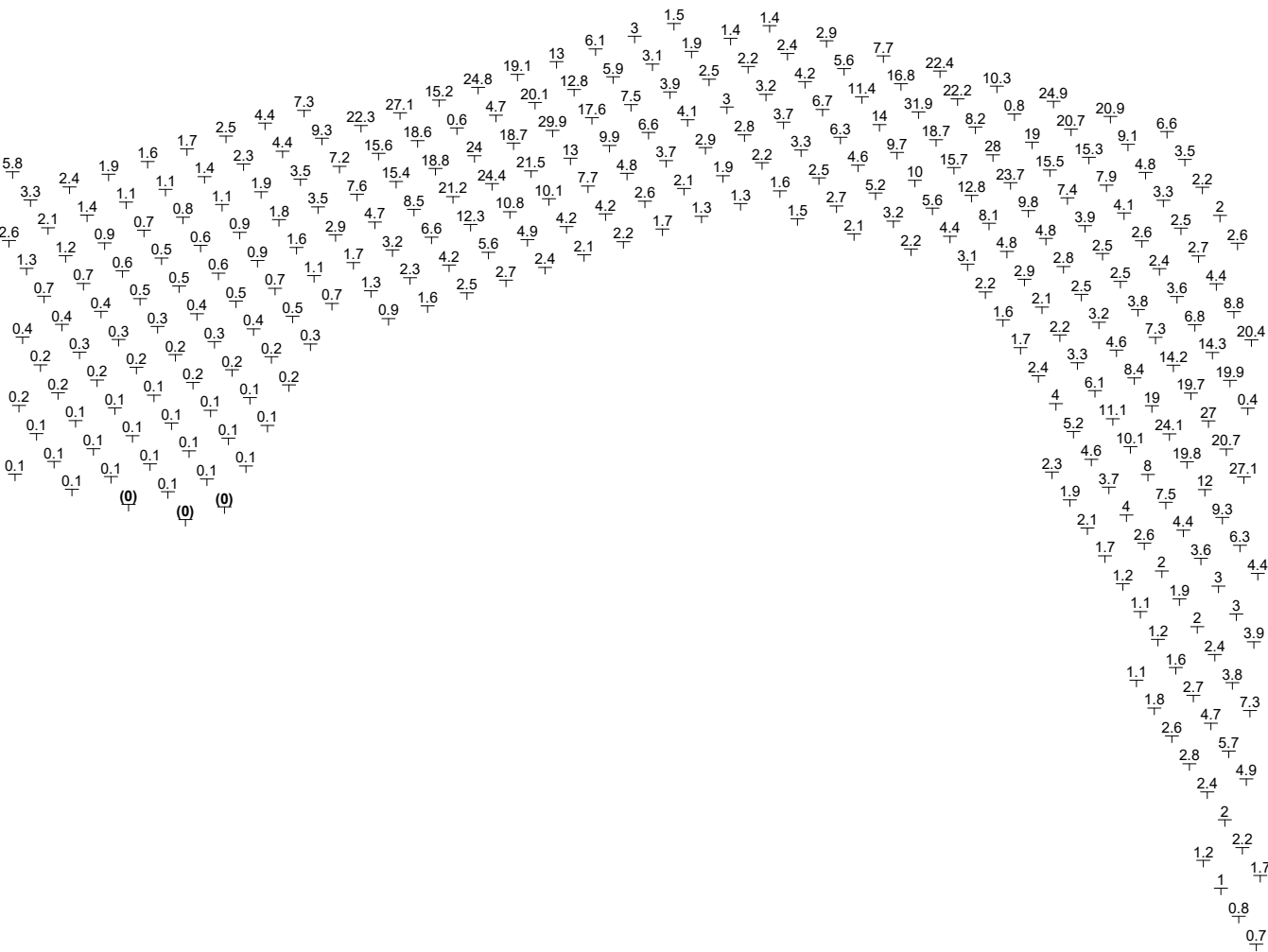
Part1

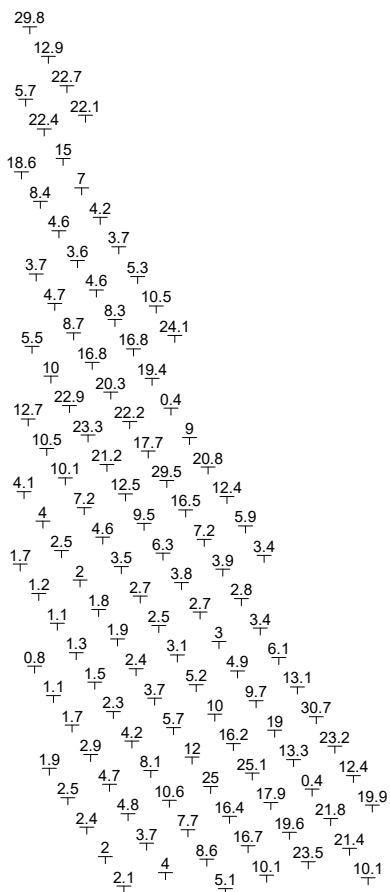
Height reference plane	: 0.00 m
Average illuminance	Em : 6 lx
Minimum illuminance	Emin : 0 lx
Maximum illuminance	Emax : 32.9 lx
Uniformity Uo	Emin/Em : 1 : 142.73 (0.01)
Diversity Ud	Emin/Emax : 1 : 785.91 (0.00)

4 Maintenance Road 1

4.3 Calculation results, Maintenance Road 1

4.3.1 Table, Reference plane 1.1 (E)

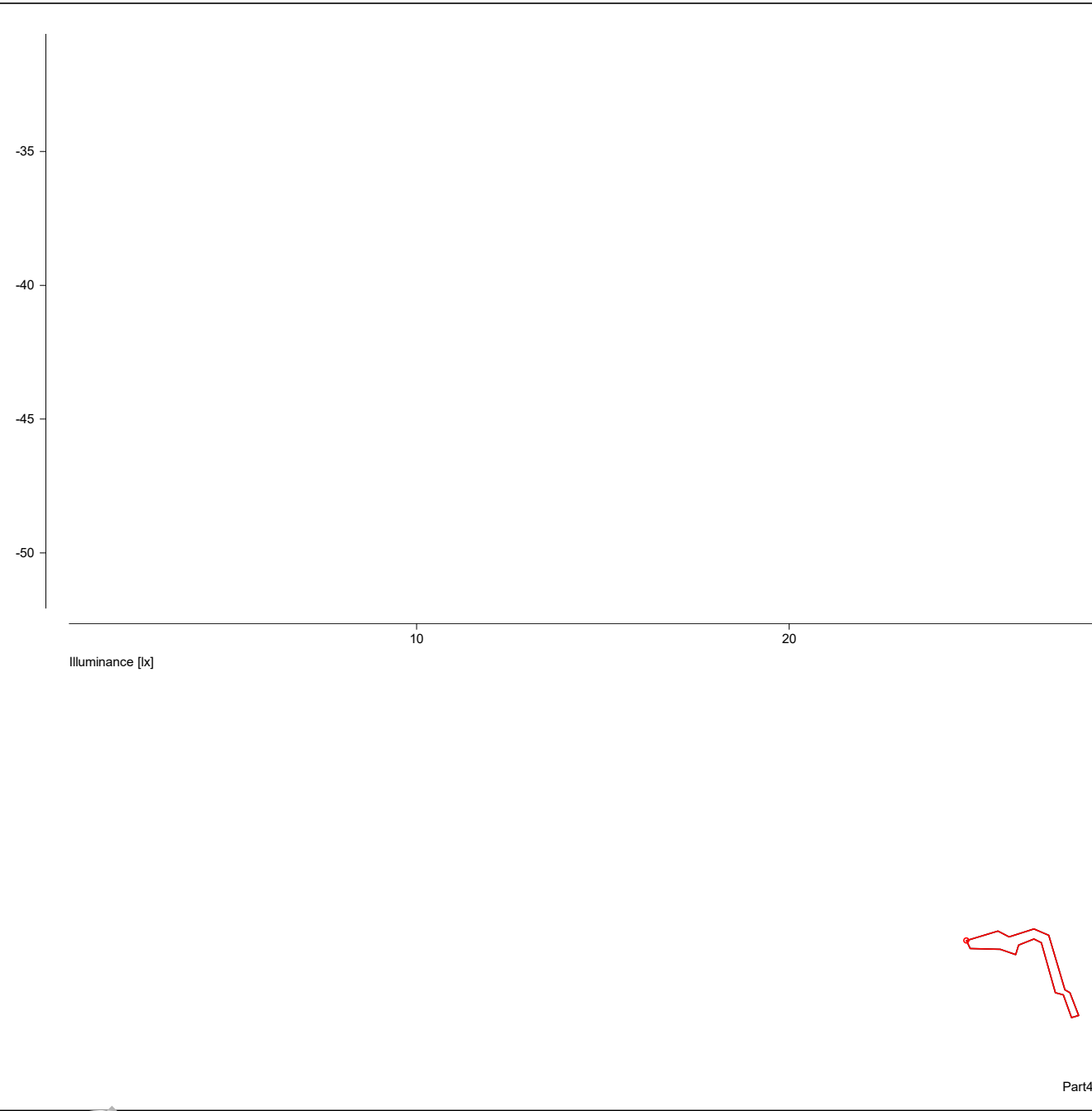




4 Maintenance Road 1

4.3 Calculation results, Maintenance Road 1

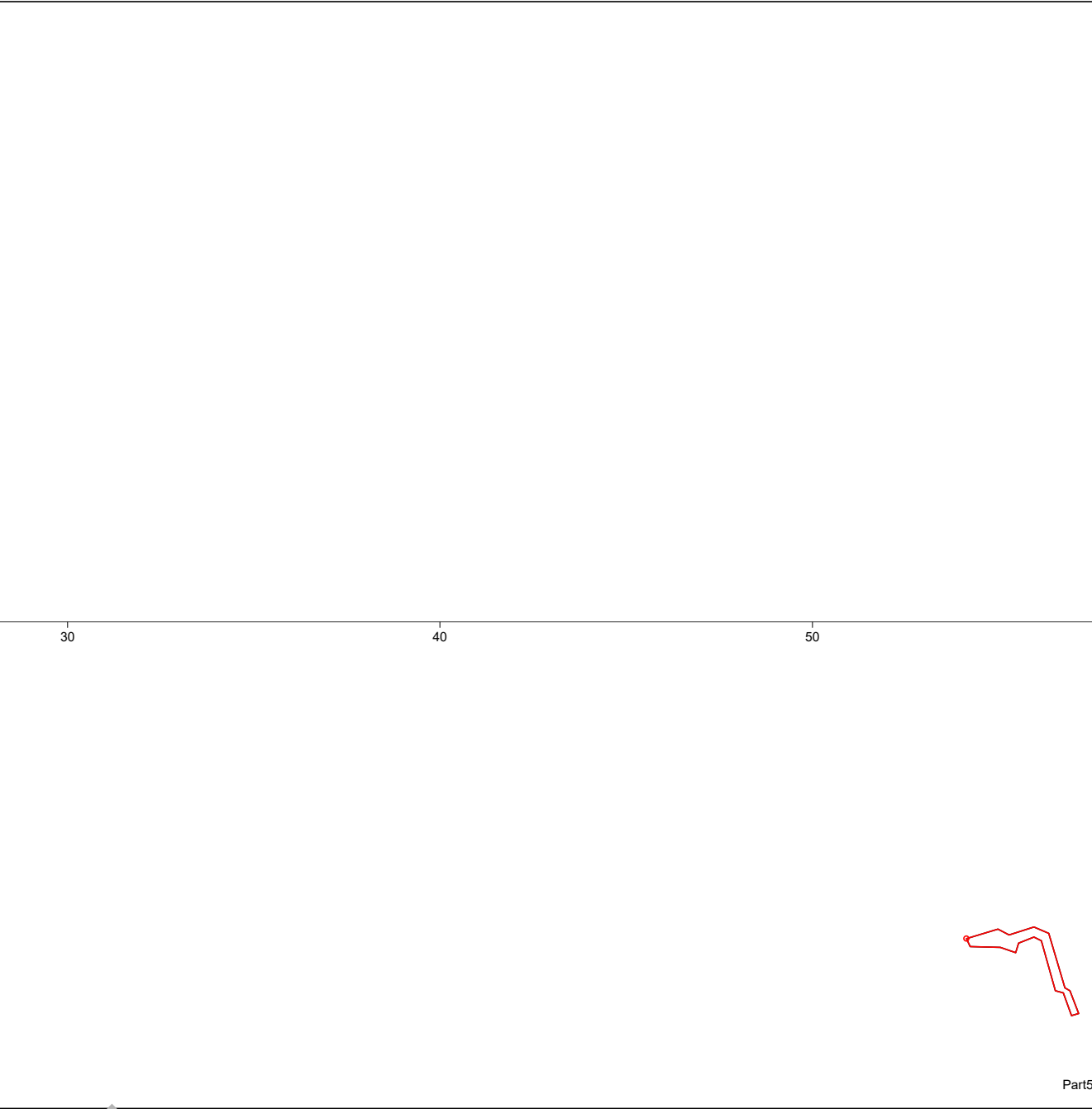
4.3.1 Table, Reference plane 1.1 (E)



4 Maintenance Road 1

4.3 Calculation results, Maintenance Road 1

4.3.1 Table, Reference plane 1.1 (E)

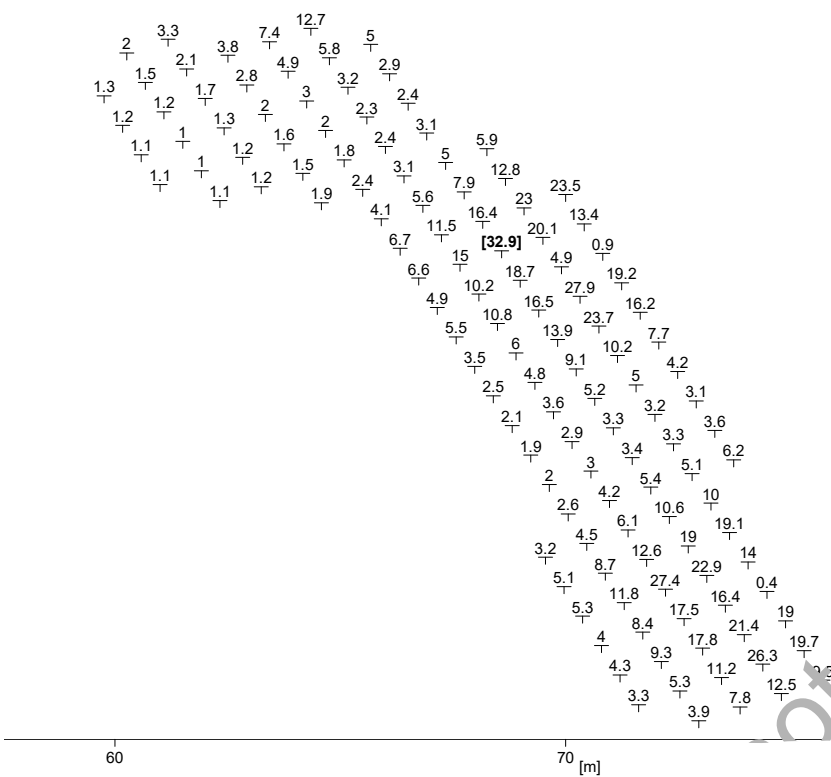


Object :
Installation :
Project number : Wrexham planning
Date : 13.03.2023

4 Maintenance Road 1

4.3 Calculation results, Maintenance Road 1

4.3.1 Table, Reference plane 1.1 (E)

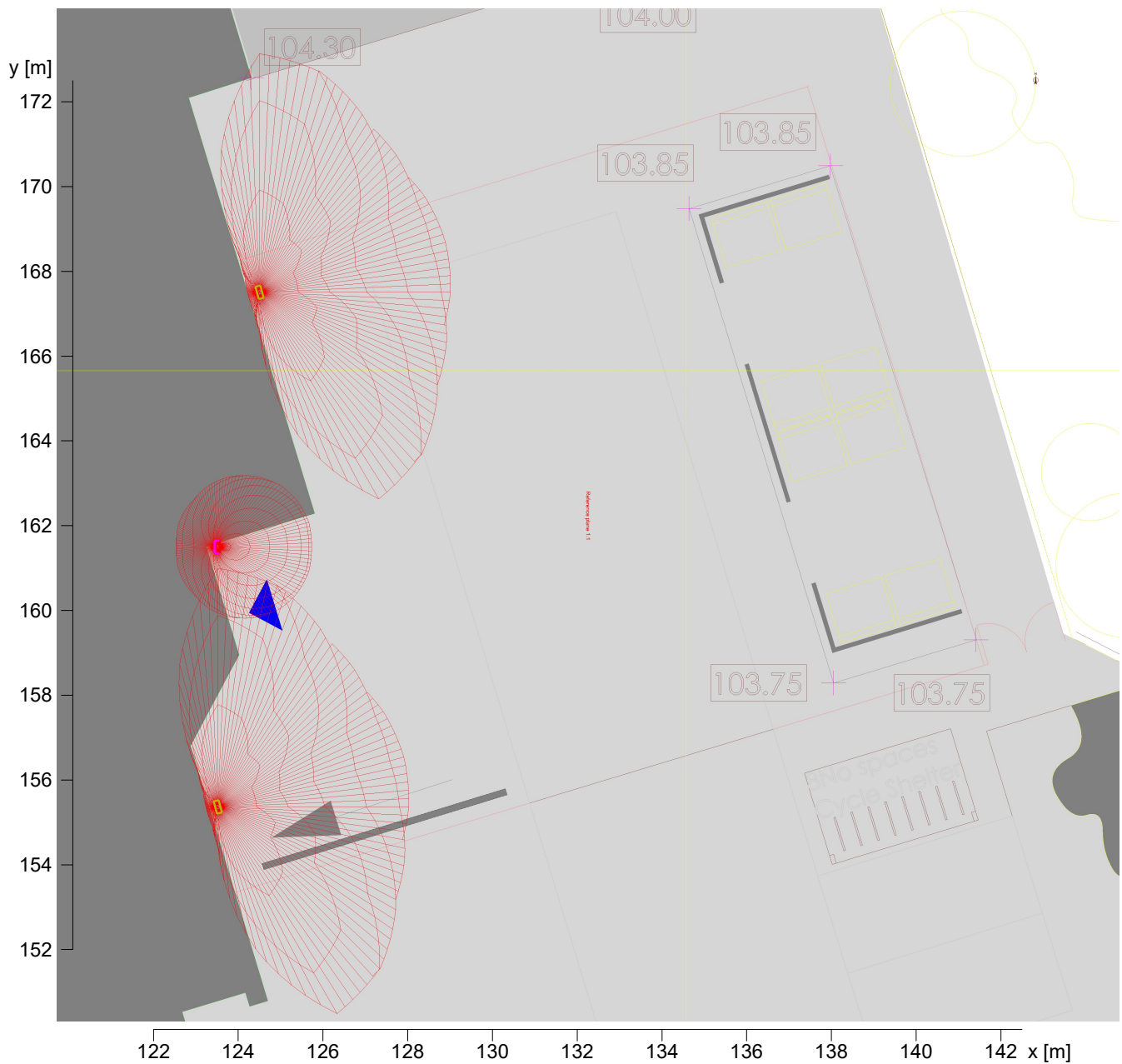


Part6

5 Bin Store

5.1 Description, Bin Store

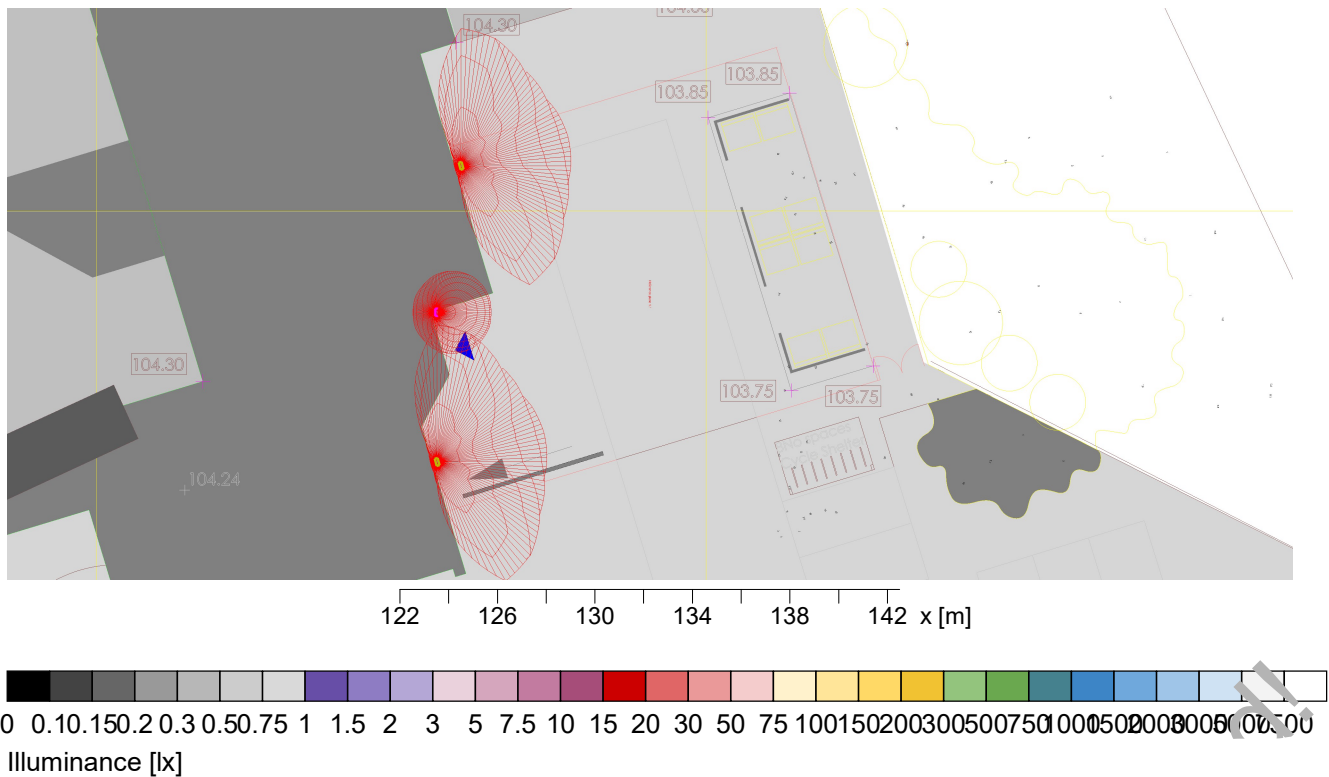
5.1.1 Floor plan



5 Bin Store

5.2 Summary, Bin Store

5.2.1 Result overview, Evaluation area 1



General

Calculation algorithm used
Maintenance factor

Average indirect fraction
0.80

Total luminous flux
Total power
Total power per area (287.63 m²)

7066.00 lm
82.0 W
0.29 W/m² (2.46 N/m²/100lx)

Evaluation area 1

Reference plane 1.1

Em	Horizon
Emin	11.6 lx
Emin/Em (Uo)	0.5 lx
Emin/Emax (Ud)	0.05
Position	0.01
	0.00 m

Type No.\Make

not a Relux Member

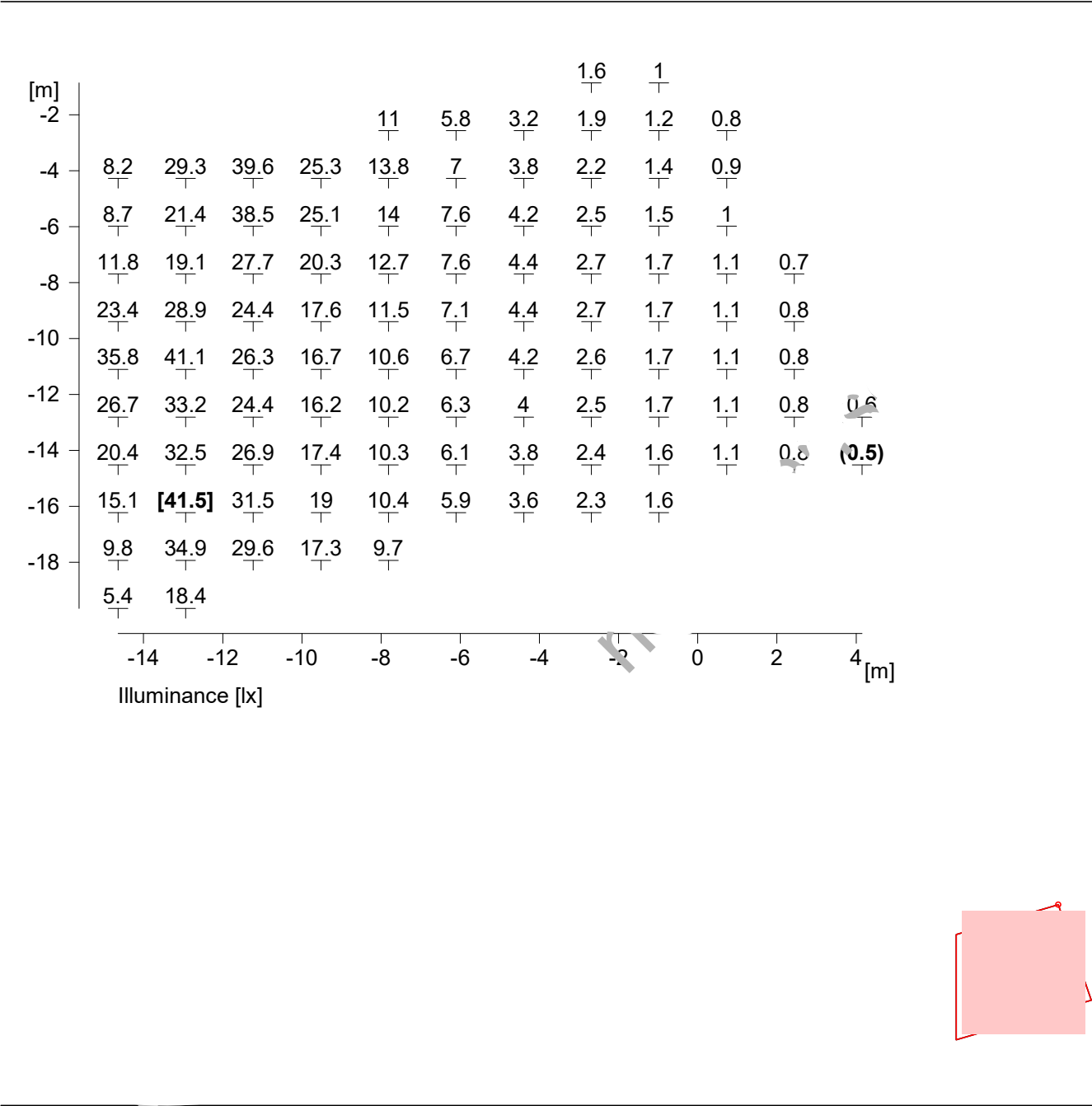
2	2 x	Order No.	: *D8D29*
		Luminaire name	: Product
		Equipment	: 1 x LED 37 W / 2911 lm

3 1 x Order No. : *B985C*
 Luminaire name : Product
 Equipment : 1 x LED 8 W / 1244 lm

5 Bin Store

5.3 Calculation results, Bin Store

5.3.1 Table, Reference plane 1.1 (E)



Height reference plane	: 0.00 m
Average illuminance	Em : 11.6 lx
Minimum illuminance	Emin : 0.5 lx
Maximum illuminance	Emax : 41.5 lx
Uniformity Uo	Emin/Em : 1 : 21.20 (0.05)
Diversity Ud	Emin/Emax : 1 : 75.86 (0.01)

SITE PLAN - AS PROPOSED

