



MELKSHAM HOSPITAL SITE ENTRANCE RECONFIGURATION

EXTERNAL LIGHTING DESIGN STATEMENT



Ref: HGA/7391/ELDS/SG
Date: SEPTEMBER 2025
Rev: V1

V1	05/09/2025	Preliminary Issue	SG	PW
Rev	Date	Description	By	Reviewed
Document Control				



Houghton Greenlees & Associates Ltd
 Lower Barn, East End Court, Tickenham Road, Clevedon, BS21 6QY
 Tel: 01275 866920
www.houghtongreenlees.co.uk

CONTENTS

1.	Introduction	4
2.	External Lighting Strategy	4
3.	Control of External Lighting	5
4.	Lux Levels	5
5.	Typical Luminaires	6
Appendix A – External Lighting Layout, Isoline Plot		7
Appendix B – External Lighting Calculations		8
Appendix C – External Lighting Luminaire Datasheets		9

1. **Introduction**

NHS Property Services have appointed Houghton Greenlees & Associates to produce an External Lighting Design Statement for the new Phase 1 Reconfigured Car Park situated at Melksham Community Hospital, Spa Road, Melksham SN12 7NZ for planning application stage.

2. **External Lighting Strategy**

The external lighting design intent scheme shall where applicable comply with the recommendations given below.

External lighting will be installed to provide adequate illumination for safe access / egress and provide security lighting around the hospitals building's main entrances. Light pollution (skyglow, glare, intrusion and presence) should be avoided through adherence to useful design practice and relevant British Standards. This will minimise the detrimental impact of light pollution on wildlife (Bats etc) and natural landscape following receipt of the Ecologist final reporting findings due to be submitted.

Energy efficient modern LED Luminaires with a 0% upward light output ratio shall be adopted or light spill reduced to an absolute minimum using cowls / hoods or shields with operational timers and colour temperature (K) for any identified bat roost activity with selected luminaire glare rating etc.

A minimal illuminance philosophy has been adopted to provide external lighting to the hospital main entrances reconfigured parking bays and existing building surrounds in accordance with mandatory, legislative and regulatory requirements, British Standards, Codes of Practice and Best Practice professional guidance publications. This is to minimise the impact to the local ecological receptors and to afford safe ingress and egress for the staff, public, natural landscape and wildlife. Best practice guidance documents listed below:

- CIBSE SLL LG06 The Exterior Environment
- Building Regulations Part L
- Ecological and Landscape assessment reports.
- ILP Guidance Notes for the Reduction of Obtrusive Light at night (GN01/21)

The selection and position of luminaires will be sympathetic to the building form and proposed natural landscape. All luminaires shall have good light output control and a 0% upward light ratio to minimise obtrusive light.

All luminaires shall have LED light source that emit negligible UV radiation with colour temperature and type selected to minimise glare and reflected light, in accordance with current ILP Guidance.

External luminaires shall have the following properties:

- 3000K CCT
- Colour Rendition Index (CRI) >80
- The use of directional lighting to reduce light spill vertically and horizontally i.e. Hoods or Shields, for downward light output only.
- Column mounted lighting shall be designed to reduce horizontal spill.
- Amenity Bollard lighting shall be designed for downward light output only.

The proposed luminaires shall comprise of LED light sources for maximum energy efficiency, sharp cut off, lower intensity, good colour rendition combined with reduced maintenance requirements.

Luminaires mounted on columns shall be used for general illumination of external pedestrian walkway / routes and parking bays. All luminaire columns shall be 6m height to minimise light spill and glare visibility.

Bollard route mounted luminaires shall be used to illuminate the entrances and exits from the building, external security lighting, mounting requirements shall be detailed as the design develops.

All parts of the electrical installation shall be selected to withstand the nature of the environment in which they are to be installed.

Cables between the lighting bollards and the external lighting columns will be installed in cable pipe ducts and draw pits below the ground, supplied from local existing external lighting distribution board load centre located within the outer house buildings areas adjacent the reconfigured car park areas, until the electrical distribution networks for the site have been further investigated with NHS PS and HGA.

Note: The outline external lighting layout appended in the back of this report does not form part of the final detailed design solution and is more a design statement for compliance rather than a full-blown impact assessment until planning approval has been granted.

3. **Control of External Lighting**

External lighting shall be controlled via a photocell and timeclock arrangement. It has been advised that the hospital operates 24/7 requiring external illumination throughout the evening and nighttime. The lighting controls will be preset to winter dusk / dawn settings with the daylight sensors (Photoelectric sensors) inhibiting operation during periods of extended daylight (spring through to autumn).

To modify the control strategy for the existing external lighting system for the hospital this will require the engagement of a controls specialist reducing the likelihood that any settings will be inadvertently modified.

Minimum lighting levels and lamp selection colour rendering shall be carefully considered to provide clear monitoring facilities for any proposed future Security CCTV coverage, once full details have been confirmed by NHS Property Services, as the design develops for final tender issue.

4. **Lux Levels**

Suitable luminaires shall be supplied and installed to provide recommended CIBSE lighting levels to all Building Entrances, Pedestrian Walkways, Ramped areas and steps etc.

The lux levels to be achieved will be as follows:

- Security perimeter - 20 Lux Average (max)
- Phase 2 Access Roadway, if applicable to this scheme - 10 Lux Average (max)
- Car Parking Bays - 20 Lux Average (max)
- Pedestrian walkways / access spaces - 5 Lux Average (max)

An environmental lighting impact assessment model has been conducted to cover the lighting needs within the Hospitals setting, including any residual impacts on the site boundaries landscape. Lighting distribution Isoline plots have been produced to indicate the predicted lux levels on the site as a whole.

The proposed external lighting illuminance performance can be observed in the Relux lighting design intent software output '7391 Melksham Hospital Site Entrance Reconfiguration – External Lighting Calculations Report V1', 3D Illuminance views and lux levels have been captured, including Isoline plot lighting layout of the proposed wall mounted and column mounted luminaire positions as part of the software output.

5. **Typical Luminaires**

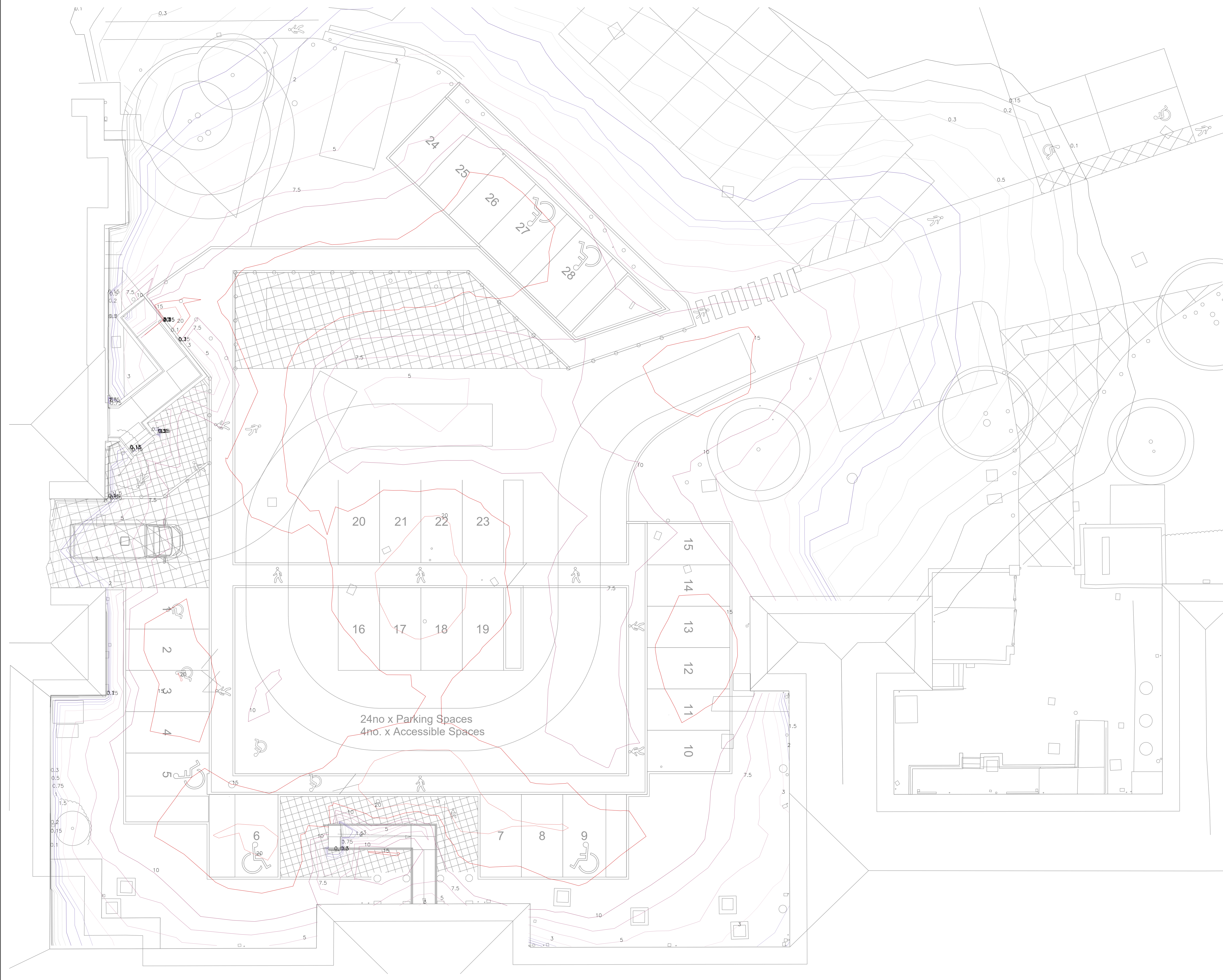
Type A - These luminaires are 6 metre column mounted and used to provide illuminations for the car parking bays.



Type B – These luminaires are rooted mounted bollard type used to provide illuminations for the access ramp at the main entrance of the hospital.



Appendix A – External Lighting Layout, Isoline Plot



HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS AND RISKS USUALLY ASSOCIATED WITH THE TYPE OF BUILDING SERVICES DETAILED ON THIS DRAWING, WHICH A COMPETENT CONTRACTOR CAN ADEQUATELY MITIGATE, PLEASE NOTE THE FOLLOWING SIGNIFICANT HAZARDS

ALL WORKS SHALL BE CARRIED OUT BY QUALIFIED AND COMPETENT CONTRACTOR. APPROVED RISK ASSESSMENTS AND METHOD STATEMENTS SHALL BE ISSUED PRIOR TO ANY WORKS COMMENCING

P1	PRELIMINARY ISSUE	-
ISSUE	MODIFICATIONS	DATE
STATUS	PRELIMINARY ISSUE	
TITLE	MELKSHAM HOSPITAL SITE ENTRANCE RECONFIGURATION PROPOSED EXTERNAL LIGHTING ISOLINE LAYOUT	
CLIENT	NHS PROPERTY SERVICES	
ARCHITECT	KENDALL KINGSCOTT	
Houghton Greenlees & Associates Ltd. Consulting Building Services Engineers Established 1963 HGA Lower Barn, East End Court, Tickenham Road, Clevedon, North Somerset, BS21 6QY 01275 866920 mail@houghtongreenlees.co.uk www.houghtongreenlees.co.uk		
DRN: WC	DRAWING NO:	
DATE: SEPT 25	7391/ES/SK1	
CAD: WC	SCALE: 1:100 @ A1	
REV: P1	DO NOT SCALE. USE FIGURED DIMENSIONS ONLY	

Appendix B – External Lighting Calculations



External Lighting Calculations

Installation : Melksham Hospital Car Park

Project number : OP-6928043

Customer : Houghton Greenlees & Associates Limited (HGA)

Processed by : NP

Date : 03.09.2025

Project description:

The lighting calculations contained herein are provided free of charge in the support of delivering projects where Glamox Ltd are to supply the lighting solution, this is based upon the information provided by to us by the client.

Whilst we will always endeavour to ensure accurate calculations, it is the responsibility of the client to thoroughly check these calculations prior to any order being placed.

Any discrepancies or non-compliances should be identified by the client and brought to the attention of Glamox Ltd, otherwise acceptance of these calculations is assumed.

Glamox Ltd does not accept any design responsibility unless previously agreed in writing.

Nominal values used in our calculations: -

Reflectances .20 for floor

Maintenance factor 1 (disregarded for worst case scenario)

The calculation results are based on the above values and on dimension details given, any inaccuracies in this information may have an effect on the actual illumination level. The information contained in this document is proprietary to Houghton Greenlees .Associates Ltd. This document is prepared for a specific site and incorporates calculations based on data available from the client at this time. By accepting and using this document, the recipient agrees to protect its contents from further dissemination, (other than that within the organization necessary to evaluate such specification) without the written permission of Houghton Greenlees .Associates Ltd
Ltd. The contents of this document are not to be reproduced or copied in whole or in part without the written permission of Houghton Greenlees _ Associates Ltd.

For external lighting calculations the calculation method used is direct fraction only, this prevents reflective light bouncing from the floor in an upward direction to prove that only downward light output is produced by the modelled luminaires.

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.

Object : External Lighting Calculations
 Installation : Melksham Hospital Car Park
 Project number : OP-6928043
 Date : 03.09.2025



Table of contents

First Page	1
Table of contents	2
1 Luminaire data	
1.1 Glamox, ELECTRA 1 3000 830 WBA (PIM418478)	
1.1.1 Data sheet	3
1.1.2 LDC	4
1.2 Glamox, O34 G2 (O34 G2 H970 700 722 180)	
1.2.1 Data sheet	5
1.2.2 LDC	6
2 Exterior	
2.1 Description, Exterior	
2.1.1 Floor plan	7
2.2 Calculation results, Exterior	
2.2.1 Pseudo colours, BAYS 24-28 (E)	8
2.2.2 Pseudo colours, BAYS 10-15 (E)	9
2.2.3 Pseudo colours, BAYS 7-9 (E)	10
2.2.4 Pseudo colours, BAY 6 ACCESSIBLE (E)	11
2.2.5 Pseudo colours, BAYS 1-5 (E)	12
2.2.6 Pseudo colours, BAYS 16-19 (E)	13
2.2.7 Pseudo colours, BAYS 20-23 (E)	14
2.2.8 Pseudo colours, ROAD (E)	15
2.2.9 Pseudo colours, CENTRE WALKWAY (E)	16
2.2.10 Pseudo colours, BAYS 10-15 WALKWAY (E)	17
2.2.11 Pseudo colours, BAYS 1-5 & MAIN ENTRANCE WALKWAY (E)	18
2.2.12 Pseudo colours, ACCESSIBLE BAY & BAYS 7-9 WALKWAY (E)	19
2.2.13 Pseudo colours, ZEBRA CROSSING (E)	20
2.2.14 Pseudo colours, UPPER WALKWAY (E)	21
2.2.15 Pseudo colours, UPPER WALKWAY (E)	22
2.2.16 Pseudo colours, UPPER WALKWAY (E)	23
2.2.17 Pseudo colours, RAMP (E)	24
2.2.18 Pseudo colours, RAMP (E)	25
2.2.19 Pseudo colours, RAMP (E)	26
2.2.20 Pseudo colours, S1 (E)	27
2.2.21 Pseudo colours, S2 (E)	28
2.2.22 Pseudo colours, MAIN ENTRANCE (E)	29
2.2.23 Pseudo colours, RAMP (E)	30
2.2.24 Pseudo colours, RAMP (E)	31
2.2.25 Pseudo colours, RAMP (E)	32
2.2.26 Pseudo colours, Measuring area 26 (E)	33

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



1 Luminaire data

1.1 Glamox, ELECTRA 1 3000 830 WBA (PIM418478)

1.1.1 Data sheet

Manufacturer: Glamox

PIM418478 ELECTRA 1 3000 830 WBA

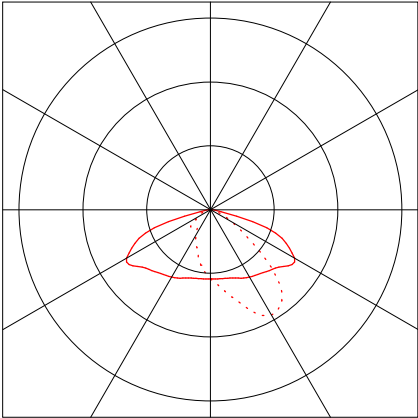
Luminaire data

Absolute Photometry
Luminaire efficacy : 145.34 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 38 75 98 100 100
UGR 4H 8H : 32.0 / 19.3
Power : 18.9 W
Luminous flux : 2747 lm

Equipped with

Quantity : 1
Designation : PIM418478
Colour : 3000
Colour reproduction : Null

Dimensions : 434 mm x 250 mm x 87 mm

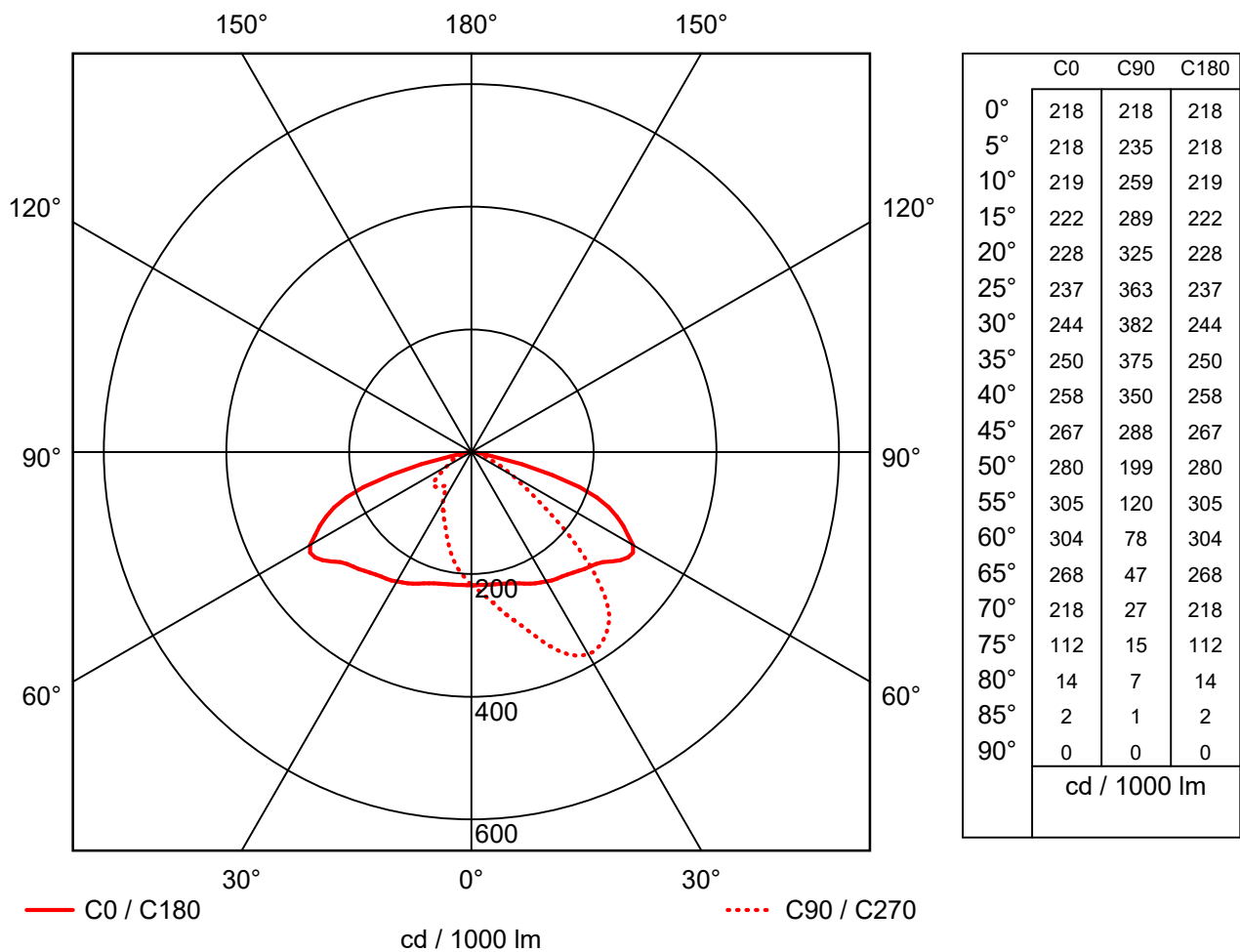


Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



1.1 Glamox, ELECTRA 1 3000 830 WBA (PIM418478)

1.1.2 LDC



Manufacturer : Glamox
Order number : PIM418478
Luminaire name : ELECTRA 1 3000 830 WBA
Equipment : 1 x PIM418478 18.9 W / 2747 lm
Dimensions : L 434 mm x W 250 mm x H 87 mm
File name : PIM418478

Luminaire efficacy : 145.34 lm/W (A30)
Light distribution : asymmetric
Beam Angle : 60.3° C0
44.0° C90
60.3° C180
-- C270

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



1 Luminaire data

1.2 Glamox, O34 G2 (O34 G2 H970 700 722 180)

1.2.1 Data sheet

Manufacturer: Glamox



O34 G2 H970 700 722 180 Outdoor - Park / road O34 G2
Light source: LED
Lumen out: 729
CRI: 70
Colour temperature: 2200
Total effect: 11
Lumen per watt: 68
Optic: 180
Driver: DALI;HF;ND1;ND2
Main body material: Aluminium
IP class: 66
IK class: 10

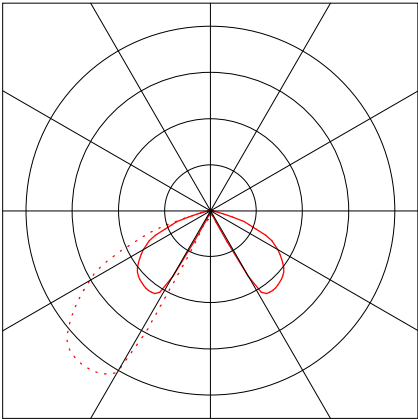
Luminaire data

Absolute Photometry
Luminaire efficacy : 66.27 lm/W
Classification : A30 ↓98.2% ↑1.8%
CIE Flux Codes : 30 76 98 98 100
UGR 4H 8H : 23.2 / 26.4
Power : 11 W
Luminous flux : 729 lm

Equipped with

Quantity : 1
Designation : LED 722
Colour : 2200K
Colour reproduction : >70

Dimensions : Ø177 mm x 184 mm

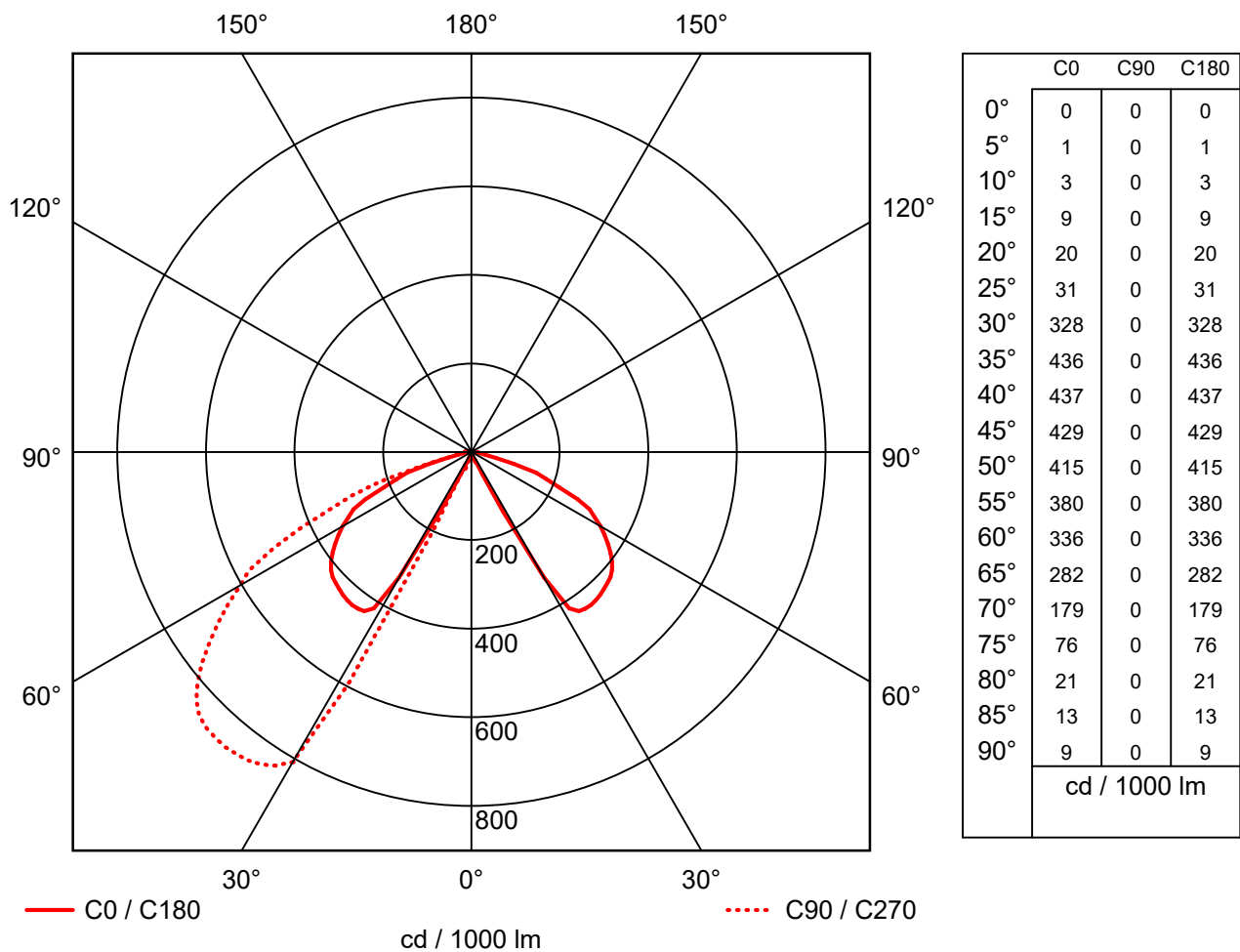


Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



1.2 Glamox, O34 G2 (O34 G2 H970 700 722 180)

1.2.2 LDC



Manufacturer : Glamox
Order number : O34 G2 H970 700 722 180
Luminaire name : O34 G2
Equipment : 1 x LED 722 11 W / 729 lm
Dimensions : D 177 mm x H 184 mm
File name : o34_g2_h970_700_722_180.ltd

Luminaire efficacy : 66.27 lm/W (A30)
Light distribution : asymmetric
Beam Angle : 39.5° C0
-- C90
39.5° C180
65.6° C270

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2 Exterior

2.1 Description, Exterior

2.1.1 Floor plan



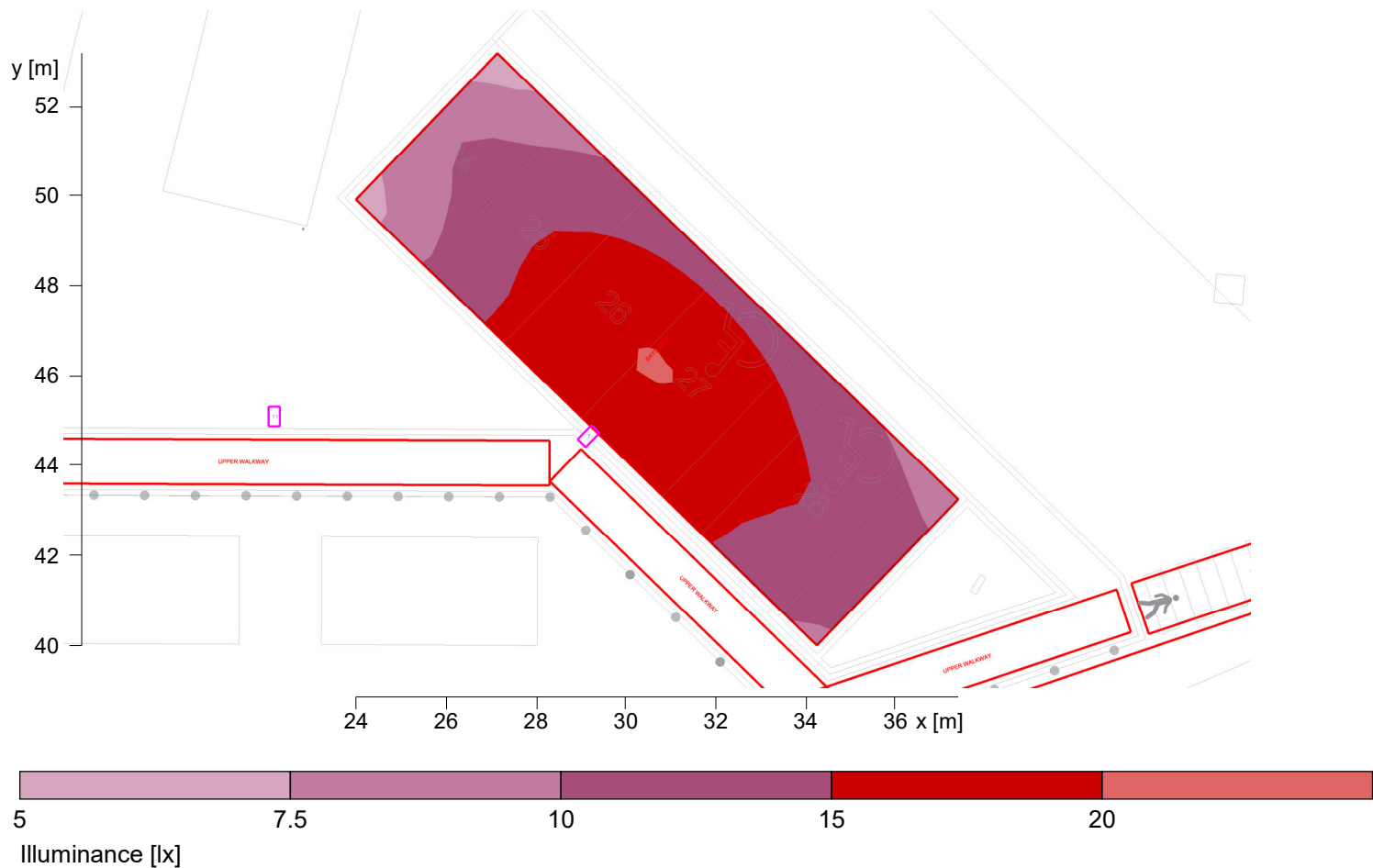
Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2 Exterior

2.2 Calculation results, Exterior

2.2.1 Pseudo colours, BAYS 24-28 (E)



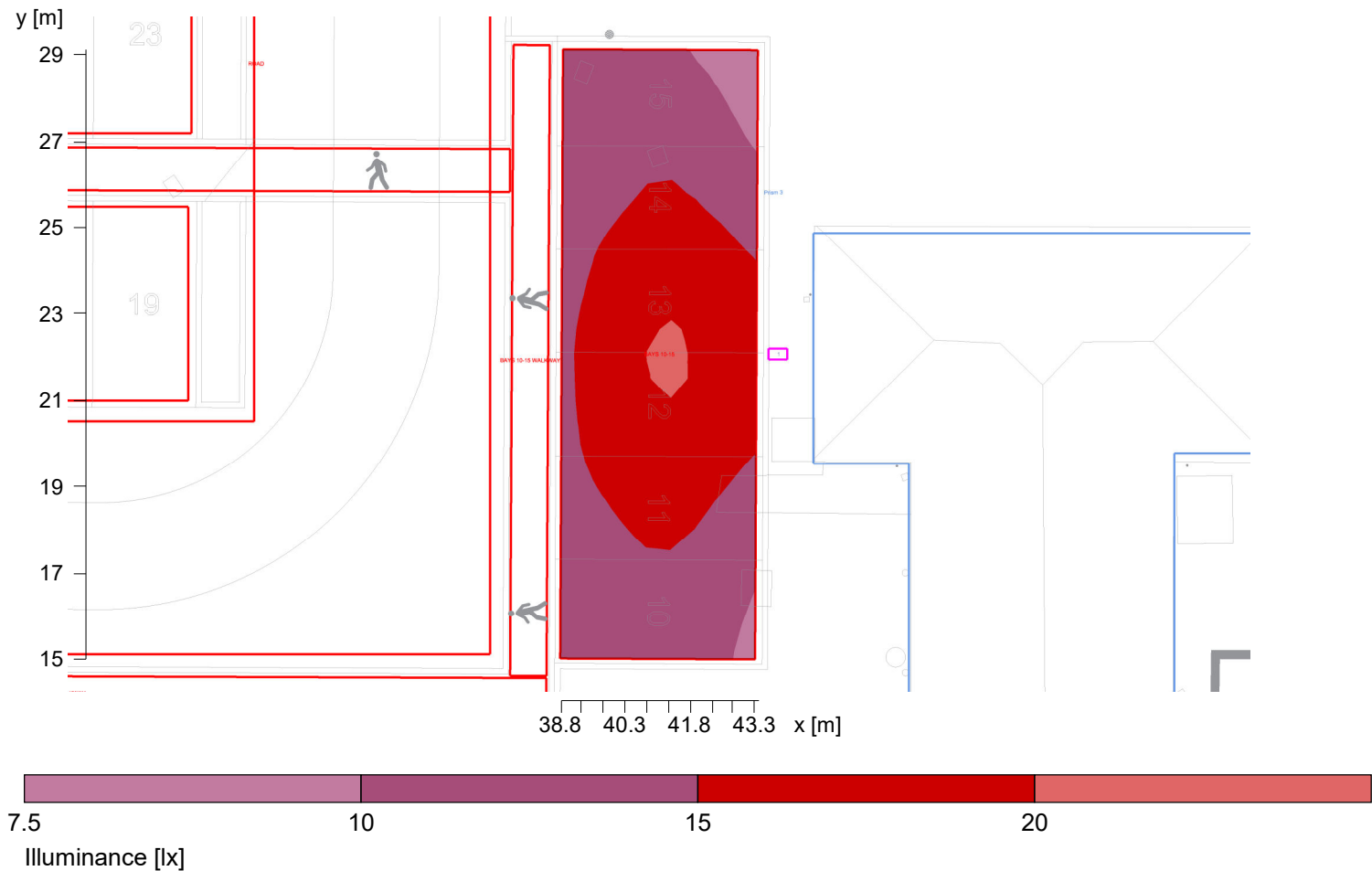
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 14.2 lx
Minimum illuminance	E_{min}	: 7 lx
Maximum illuminance	E_{max}	: 20.2 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 2.04 (0.49)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.2 Pseudo colours, BAYS 10-15 (E)



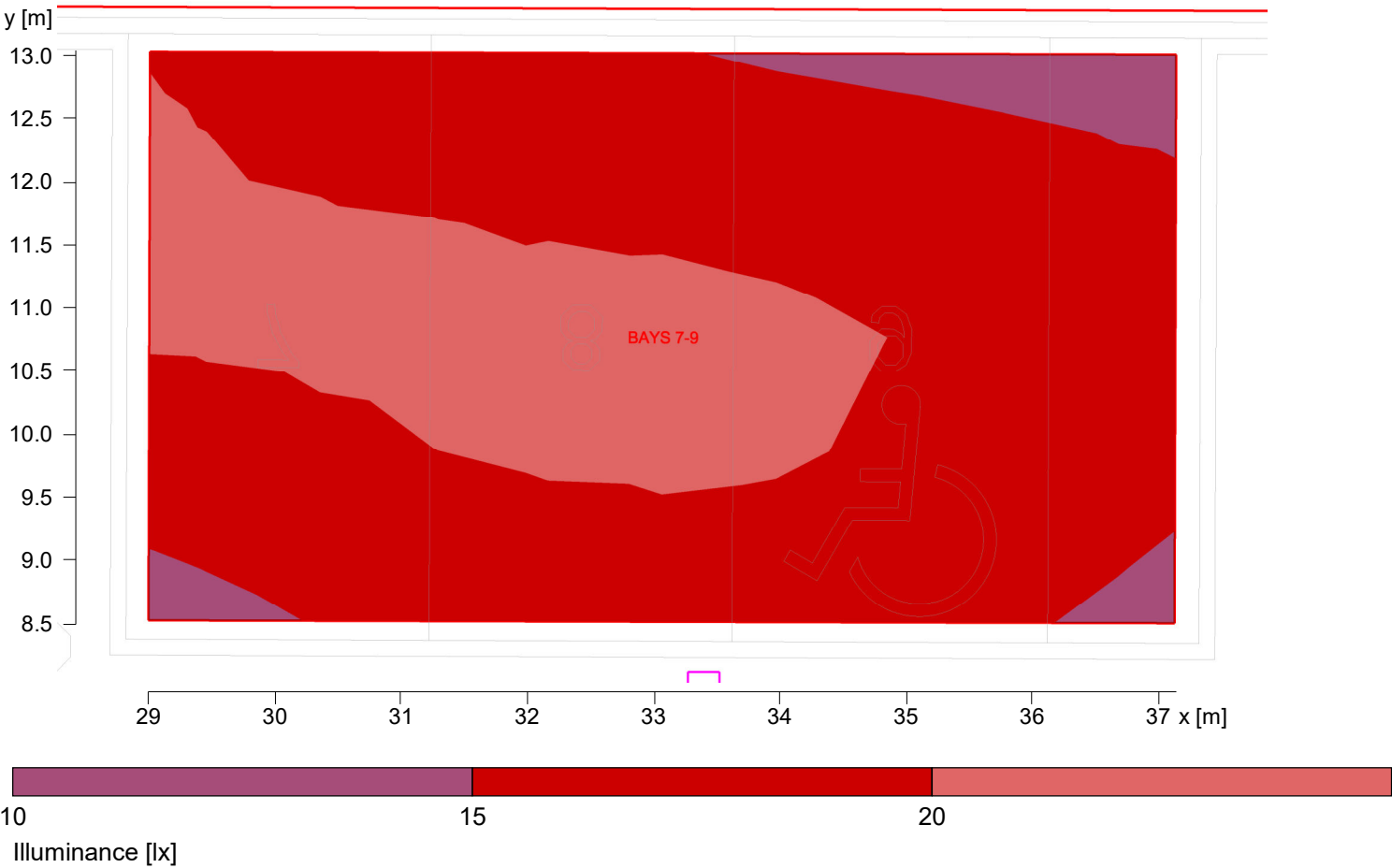
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 14.7 lx
Minimum illuminance	E_{min}	: 8.2 lx
Maximum illuminance	E_{max}	: 20.4 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.79 (0.56)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.3 Pseudo colours, BAYS 7-9 (E)



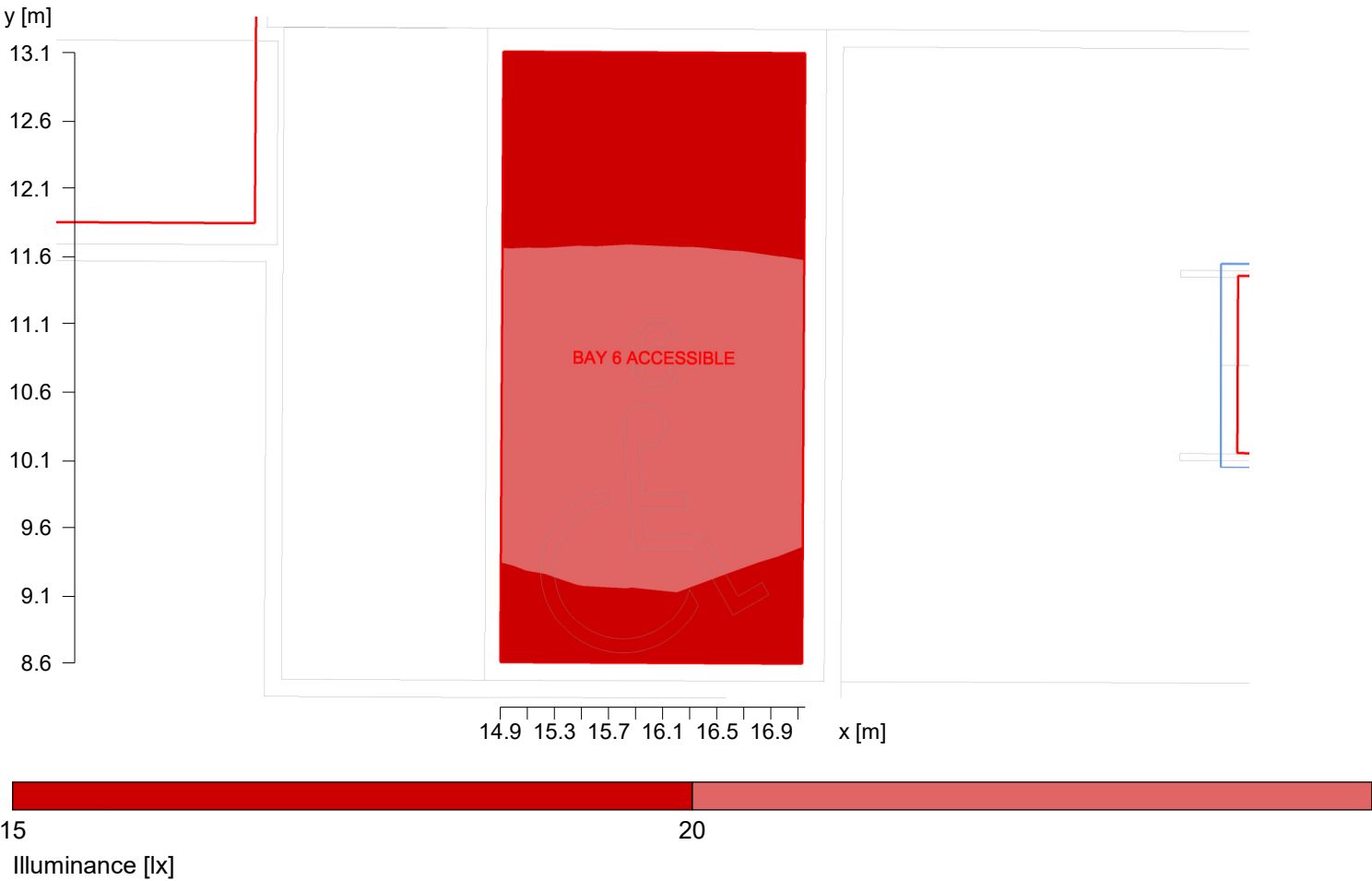
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 18.5 lx
Minimum illuminance	E_{min}	: 14.4 lx
Maximum illuminance	E_{max}	: 21.4 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: 1 : 1.28 (0.78)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.4 Pseudo colours, BAY 6 ACCESSIBLE (E)

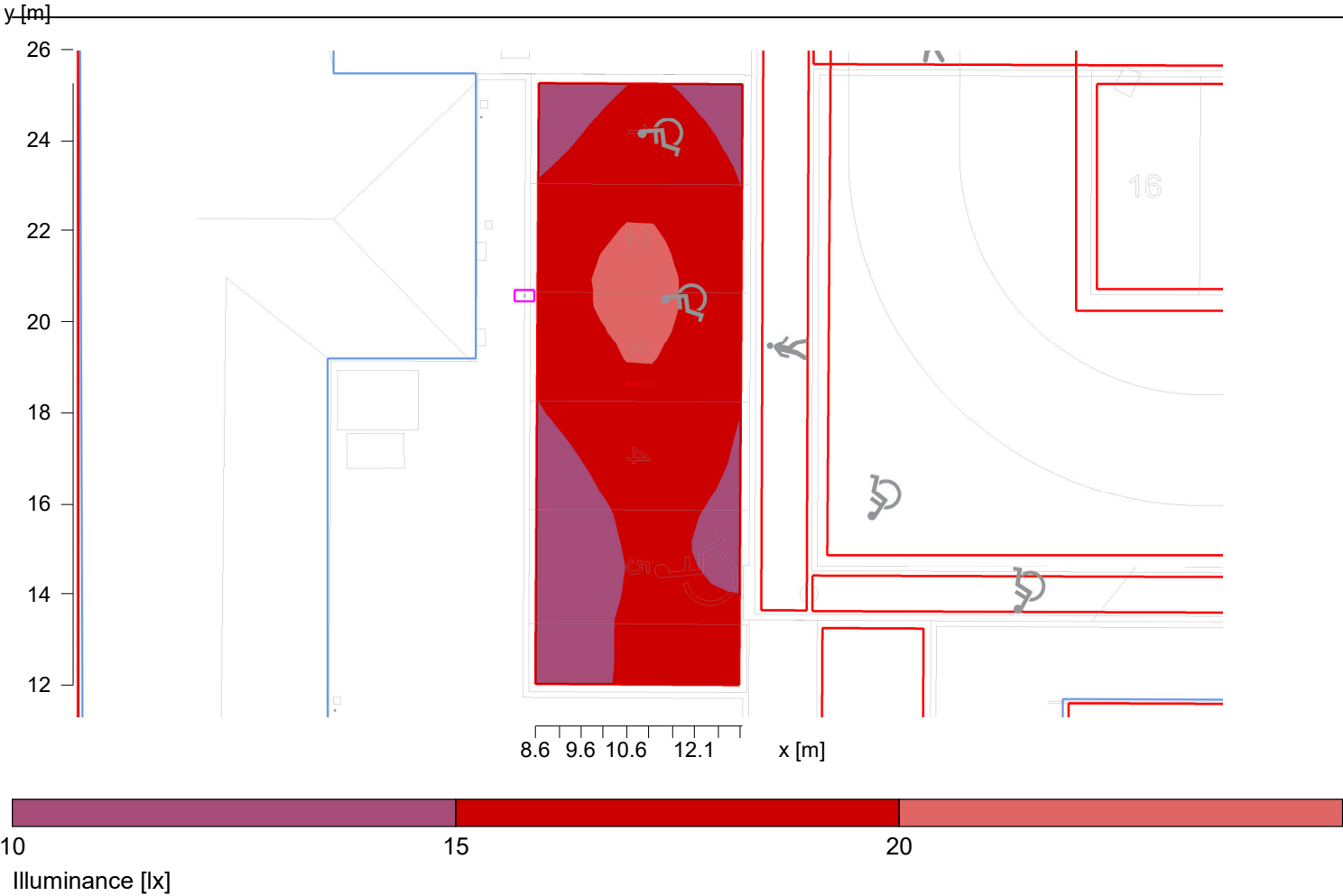


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 19.8 lx
Minimum illuminance	E_{min}	: 15.8 lx
Maximum illuminance	E_{max}	: 22.1 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.25 (0.80)



2.2 Calculation results, Exterior

2.2.5 Pseudo colours, BAYS 1-5 (E)

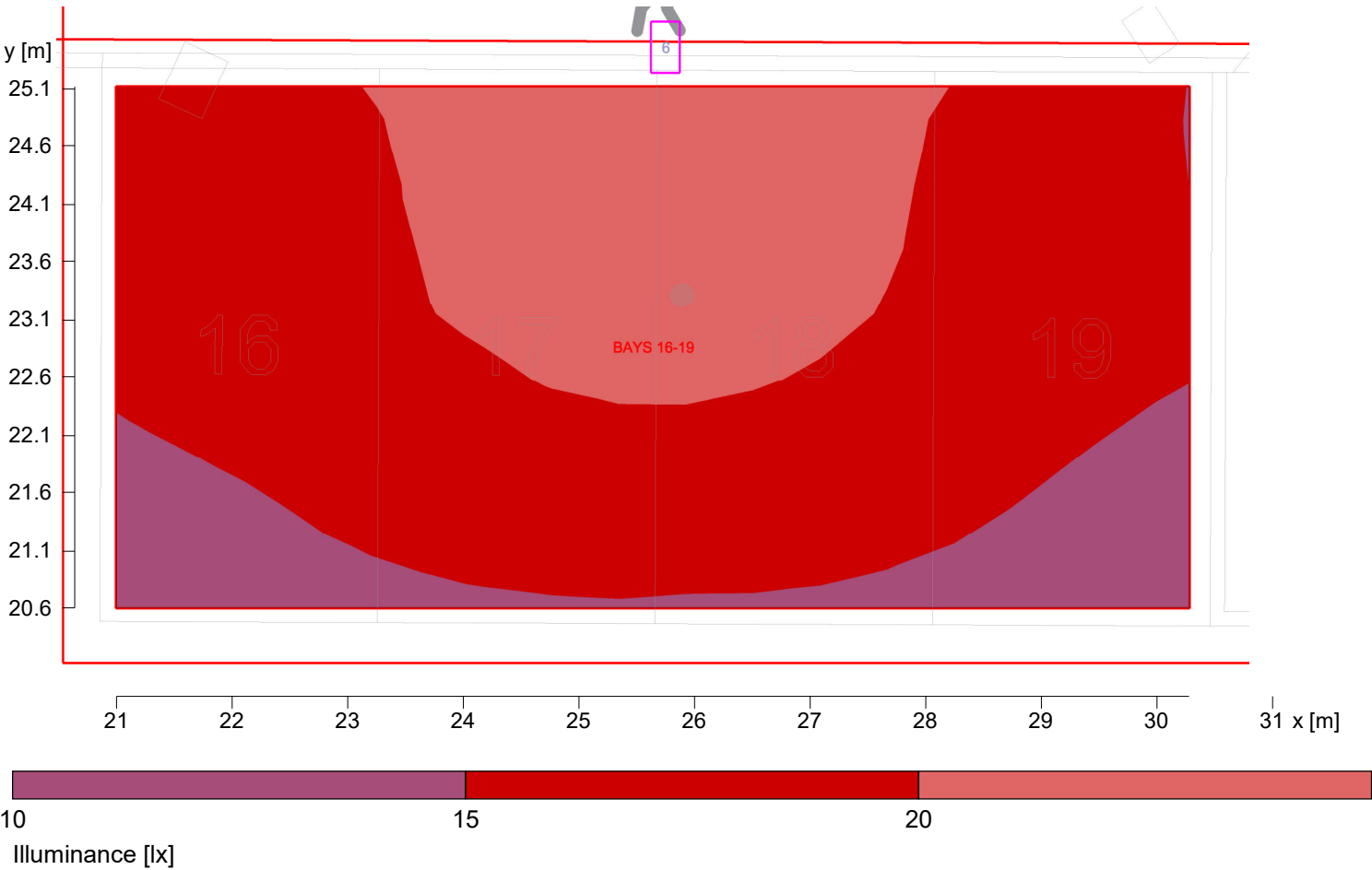


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 16.5 lx
Minimum illuminance	E_{min}	: 11.3 lx
Maximum illuminance	E_{max}	: 21.1 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.46 (0.68)



2.2 Calculation results, Exterior

2.2.6 Pseudo colours, BAYS 16-19 (E)

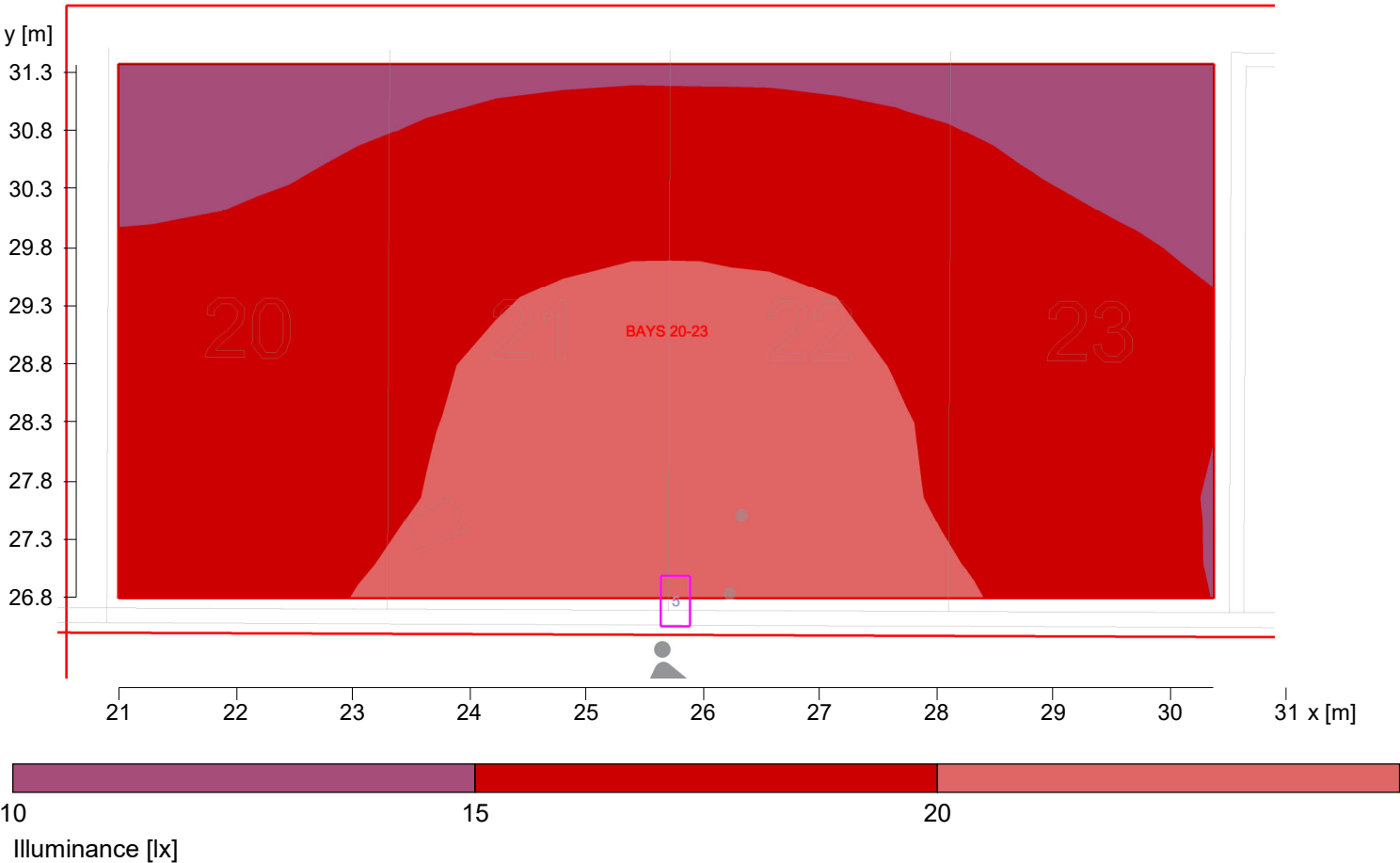


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 17.9 lx
Minimum illuminance	E_{min}	: 12.3 lx
Maximum illuminance	E_{max}	: 22.7 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.45 (0.69)



2.2 Calculation results, Exterior

2.2.7 Pseudo colours, BAYS 20-23 (E)



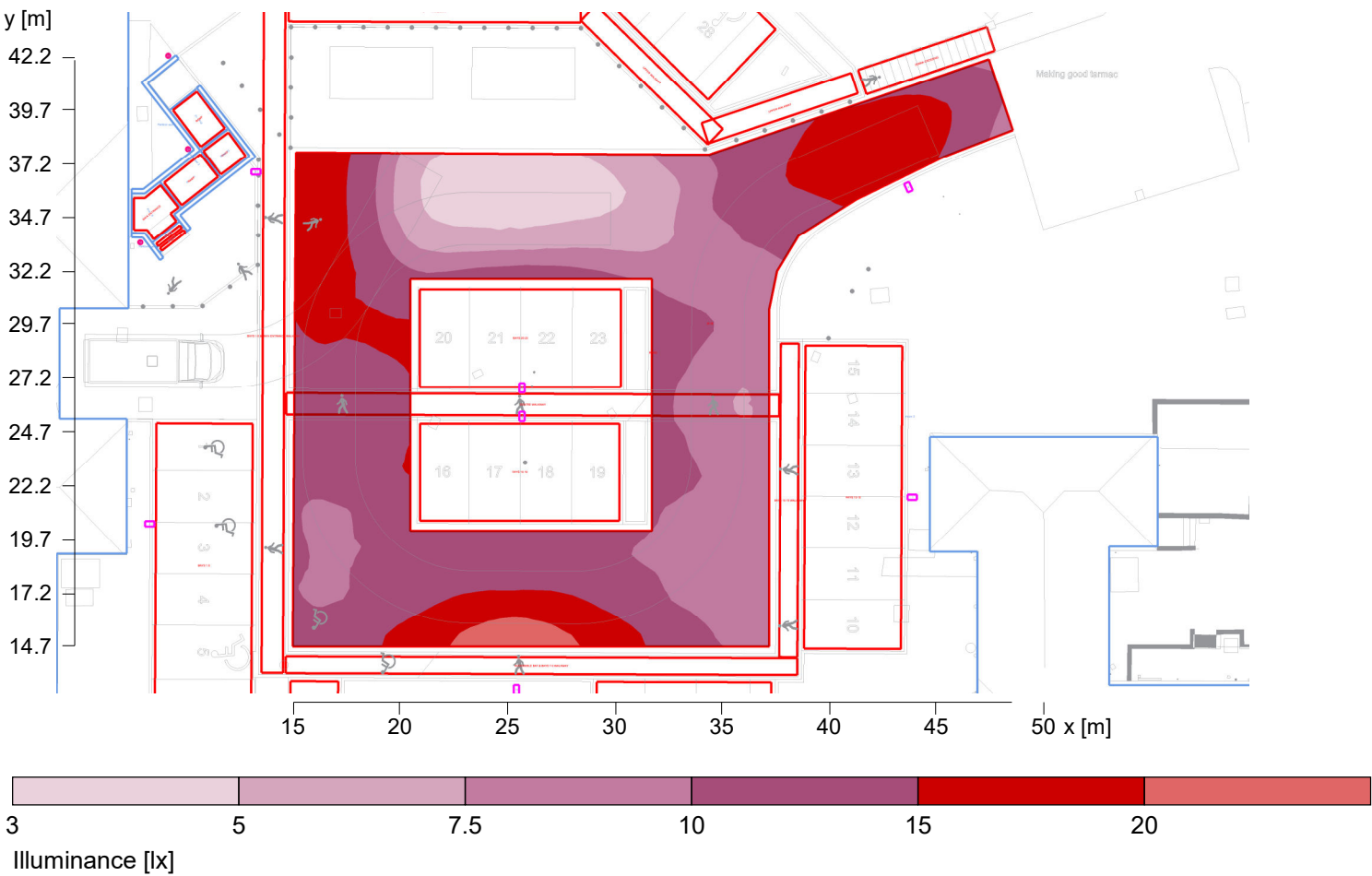
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 17.9 lx
Minimum illuminance	E_{min}	: 12.2 lx
Maximum illuminance	E_{max}	: 23.1 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.47 (0.68)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

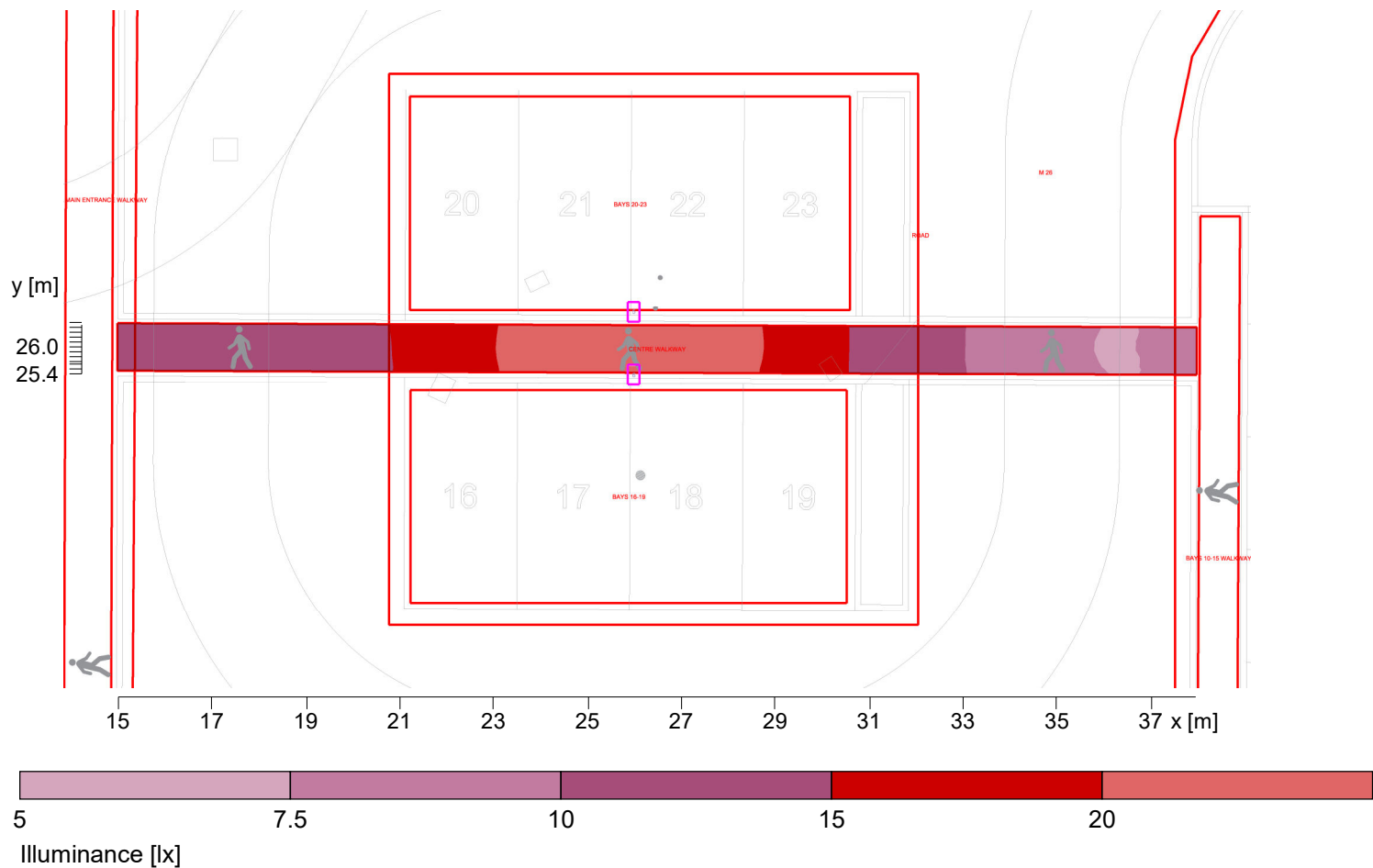
2.2.8 Pseudo colours, ROAD (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 11.3 lx
Minimum illuminance	E_{min}	: 3.8 lx
Maximum illuminance	E_{max}	: 22.6 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 2.97 (0.34)



2.2 Calculation results, Exterior
2.2.9 Pseudo colours, CENTRE WALKWAY (E)



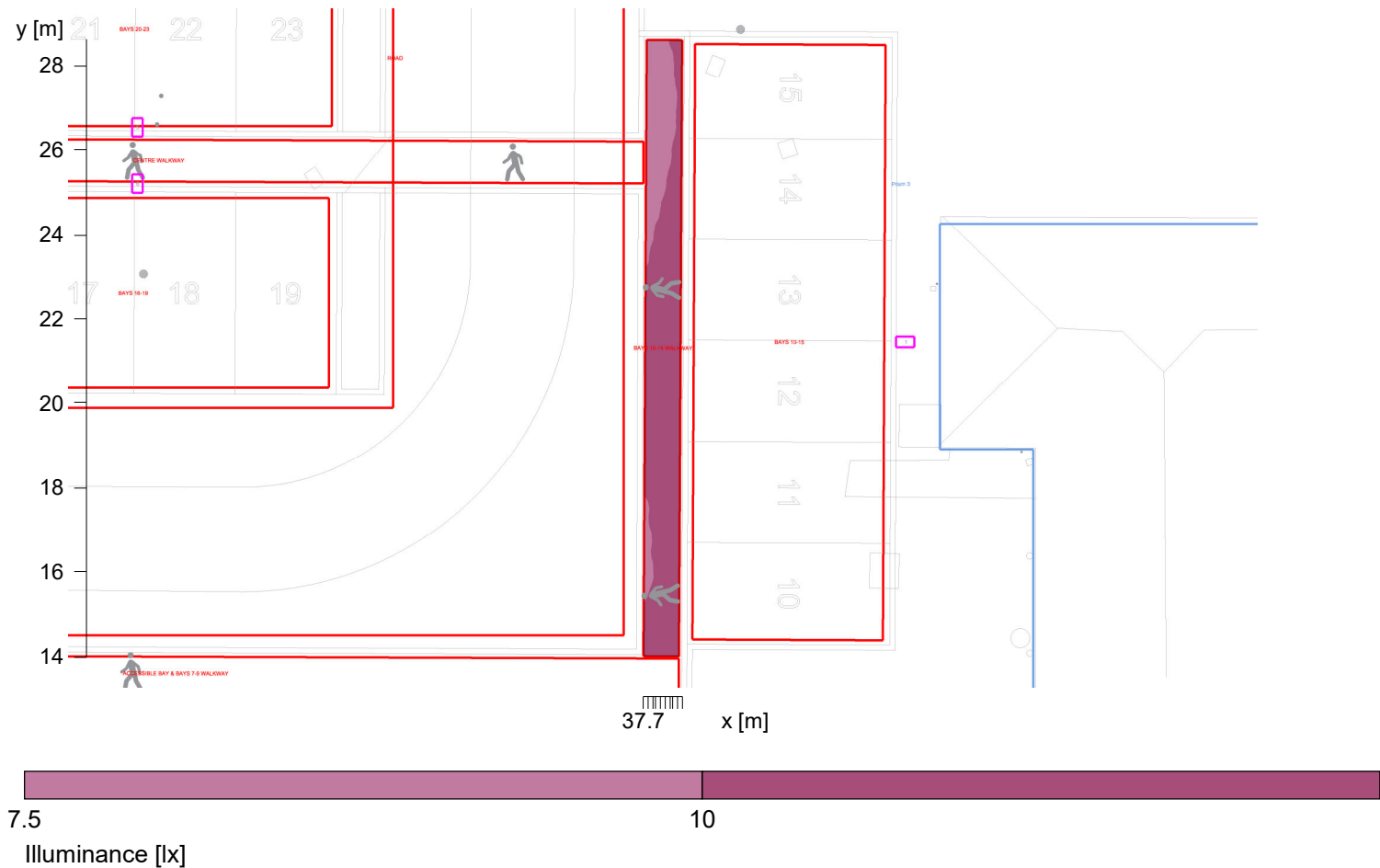
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 14.8 lx
Minimum illuminance	E_{min}	: 7.3 lx
Maximum illuminance	E_{max}	: 24.4 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 2.01 (0.50)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.10 Pseudo colours, BAYS 10-15 WALKWAY (E)



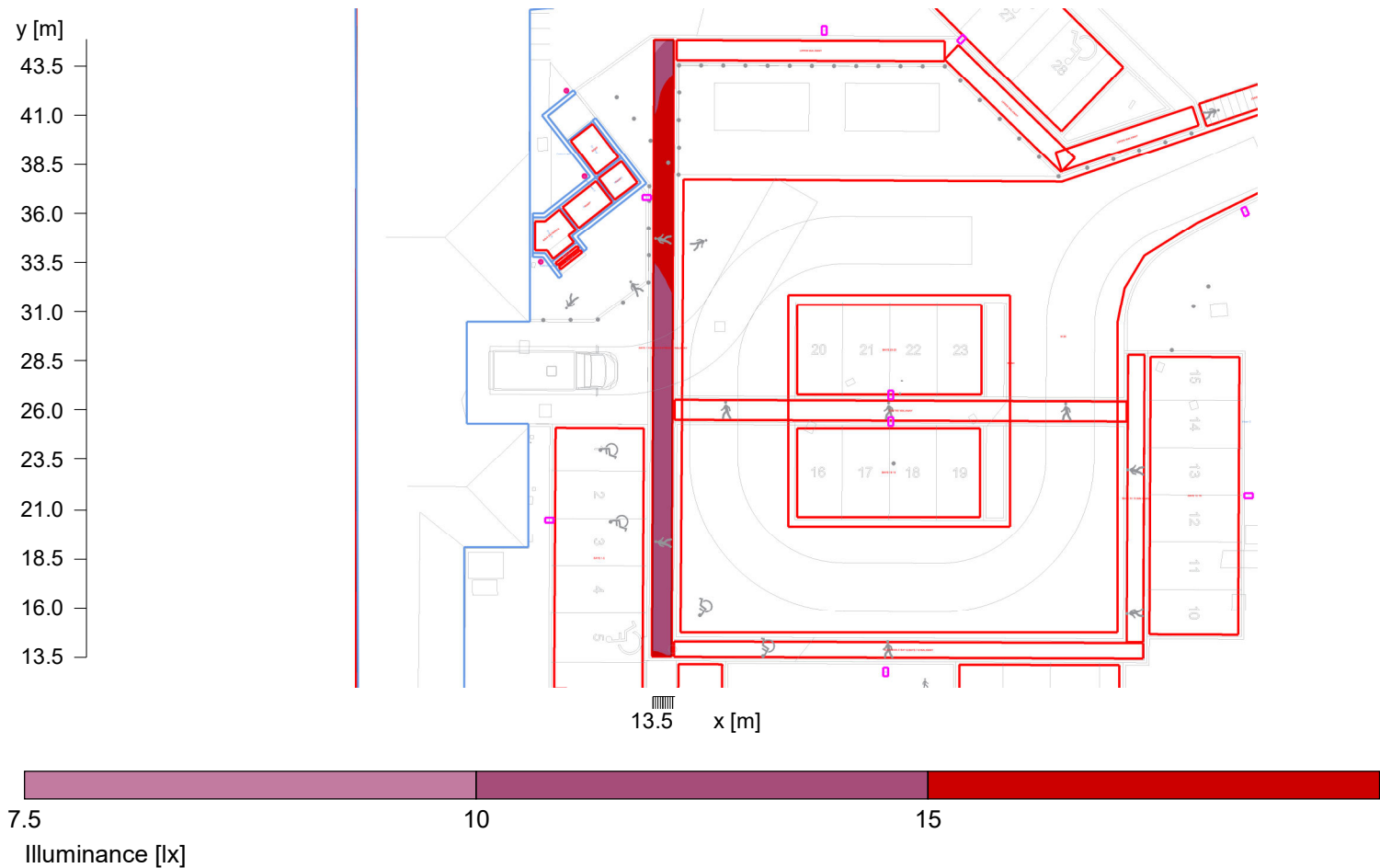
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 10.7 lx
Minimum illuminance	E_{min}	: 8.9 lx
Maximum illuminance	E_{max}	: 12.8 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: 1 : 1.21 (0.83)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.11 Pseudo colours, BAYS 1-5 & MAIN ENTRANCE WALKWAY (E)

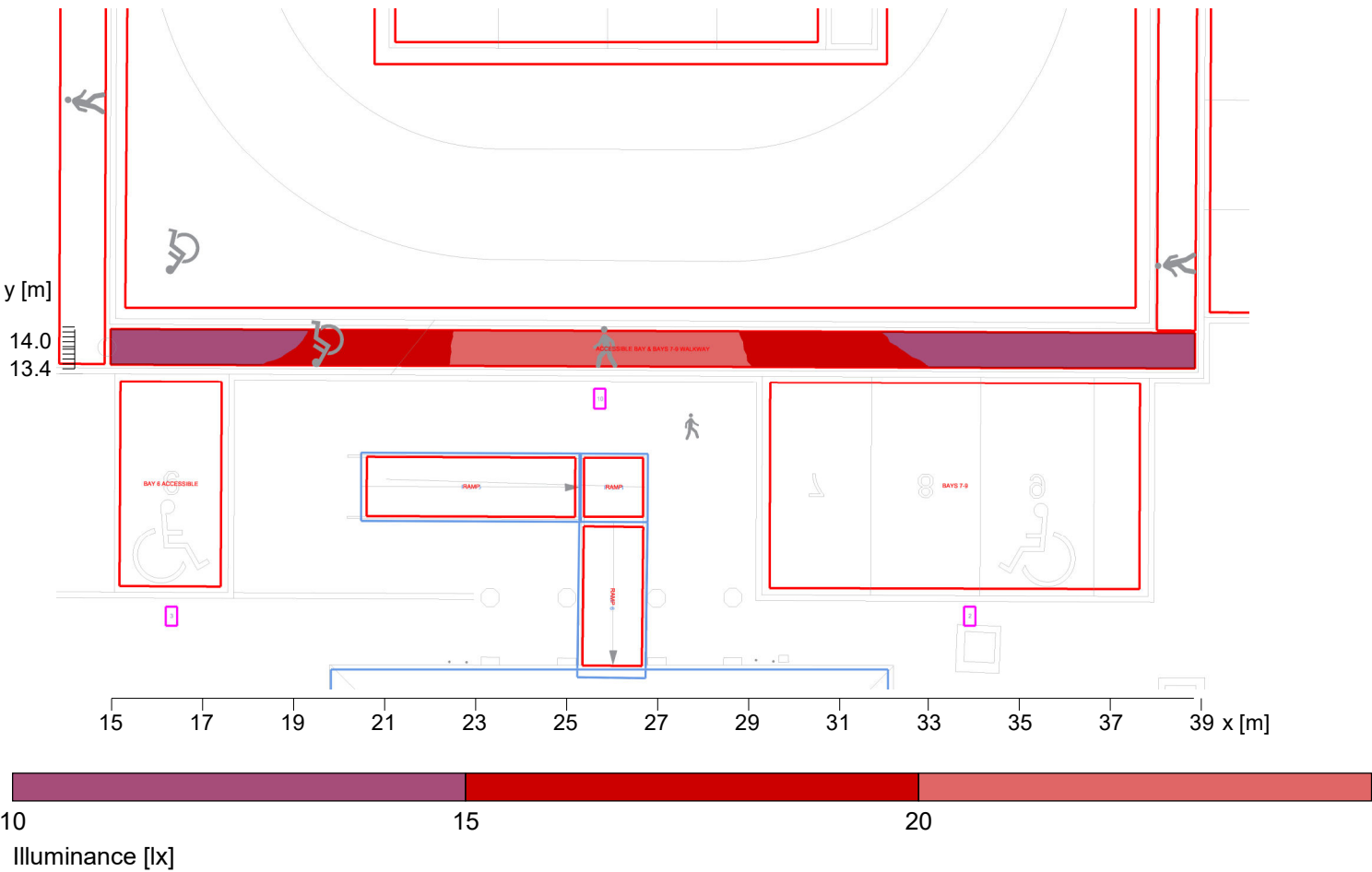


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 14 lx
Minimum illuminance	E_{min}	: 9 lx
Maximum illuminance	E_{max}	: 18.9 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.55 (0.65)



2.2 Calculation results, Exterior

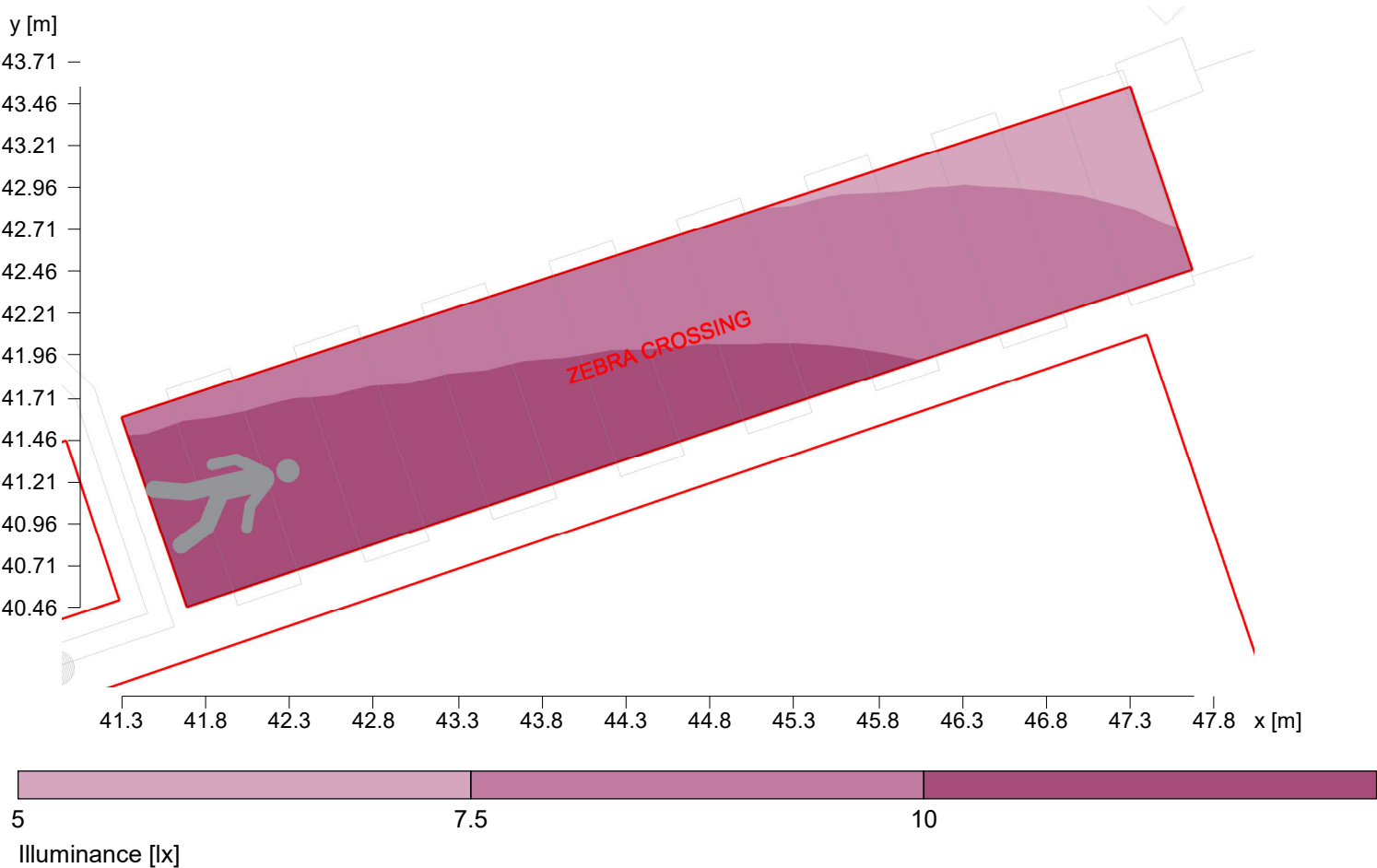
2.2.12 Pseudo colours, ACCESSIBLE BAY & BAYS 7-9 WALKWAY (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 16.8 lx
Minimum illuminance	E_{min}	: 10.7 lx
Maximum illuminance	E_{max}	: 23.8 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: 1 : 1.57 (0.64)



2.2 Calculation results, Exterior
2.2.13 Pseudo colours, ZEBRA CROSSING (E)

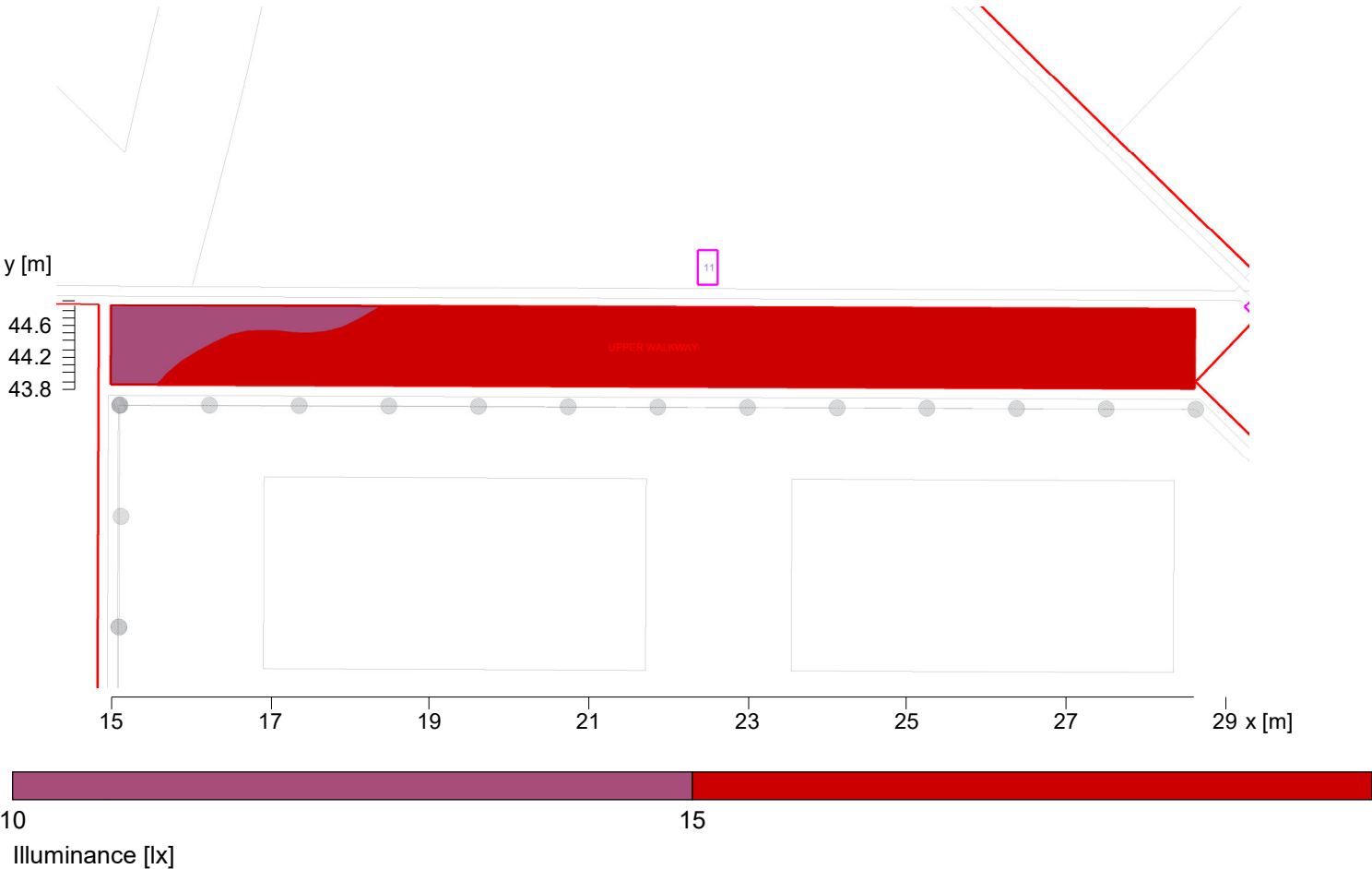


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 9.8 lx
Minimum illuminance	E_{min}	: 6.6 lx
Maximum illuminance	E_{max}	: 13.2 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.48 (0.67)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior
2.2.14 Pseudo colours, UPPER WALKWAY (E)

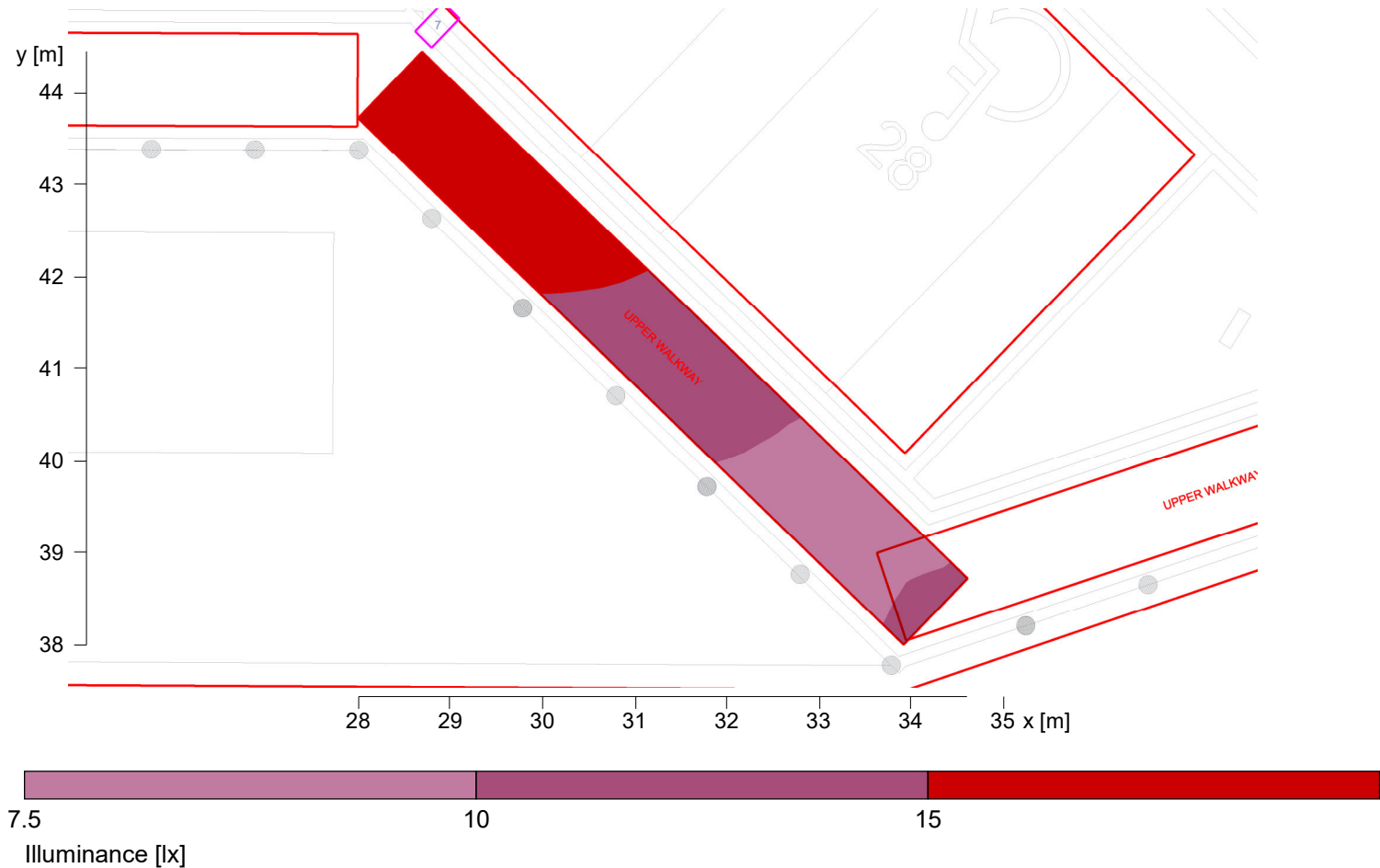


Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 16.4 lx
Minimum illuminance	E_{min}	: 11.3 lx
Maximum illuminance	E_{max}	: 18.1 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.45 (0.69)



2.2 Calculation results, Exterior

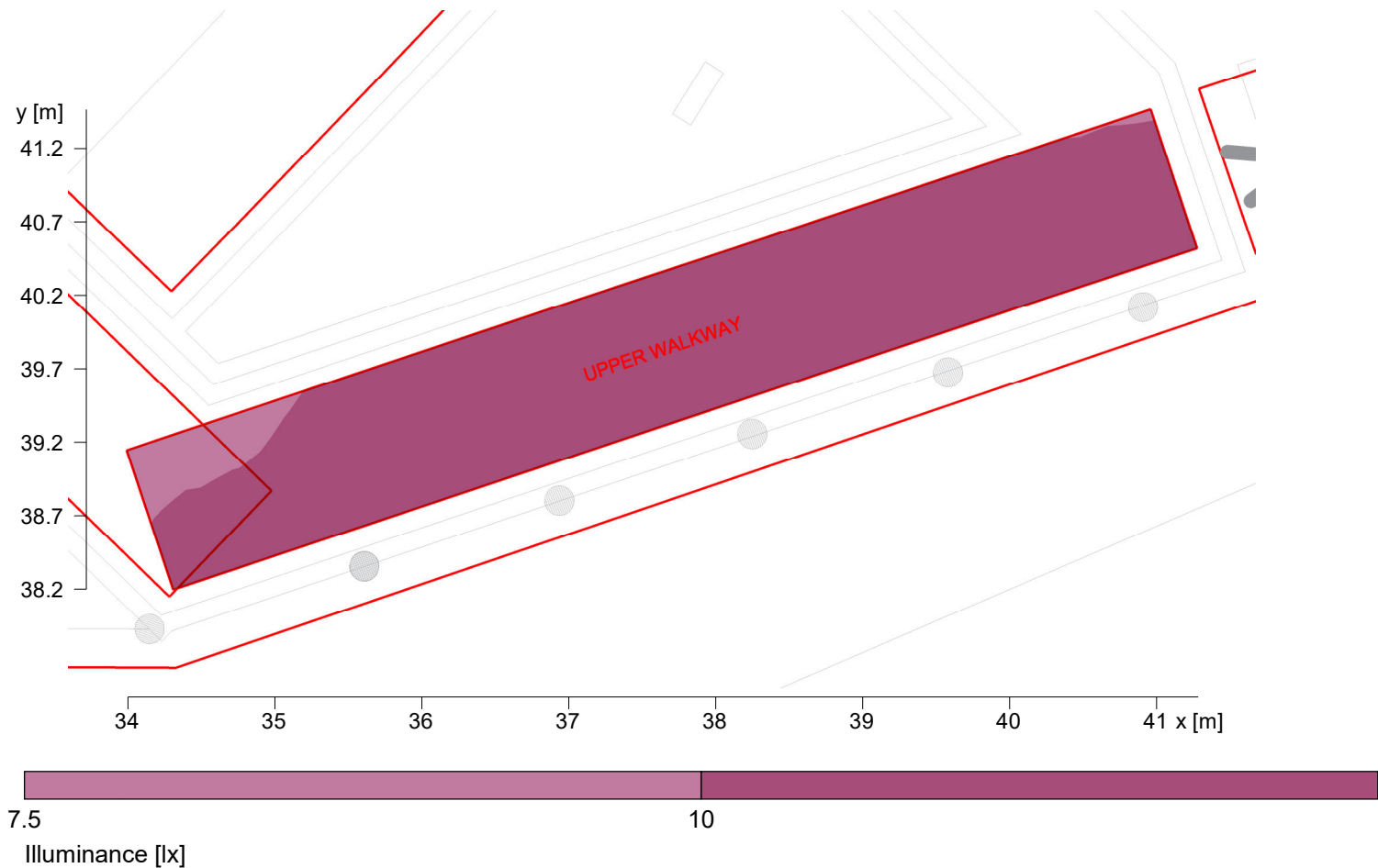
2.2.15 Pseudo colours, UPPER WALKWAY (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 13.3 lx
Minimum illuminance	E_{min}	: 9.4 lx
Maximum illuminance	E_{max}	: 19 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.42 (0.70)



2.2 Calculation results, Exterior
2.2.16 Pseudo colours, UPPER WALKWAY (E)



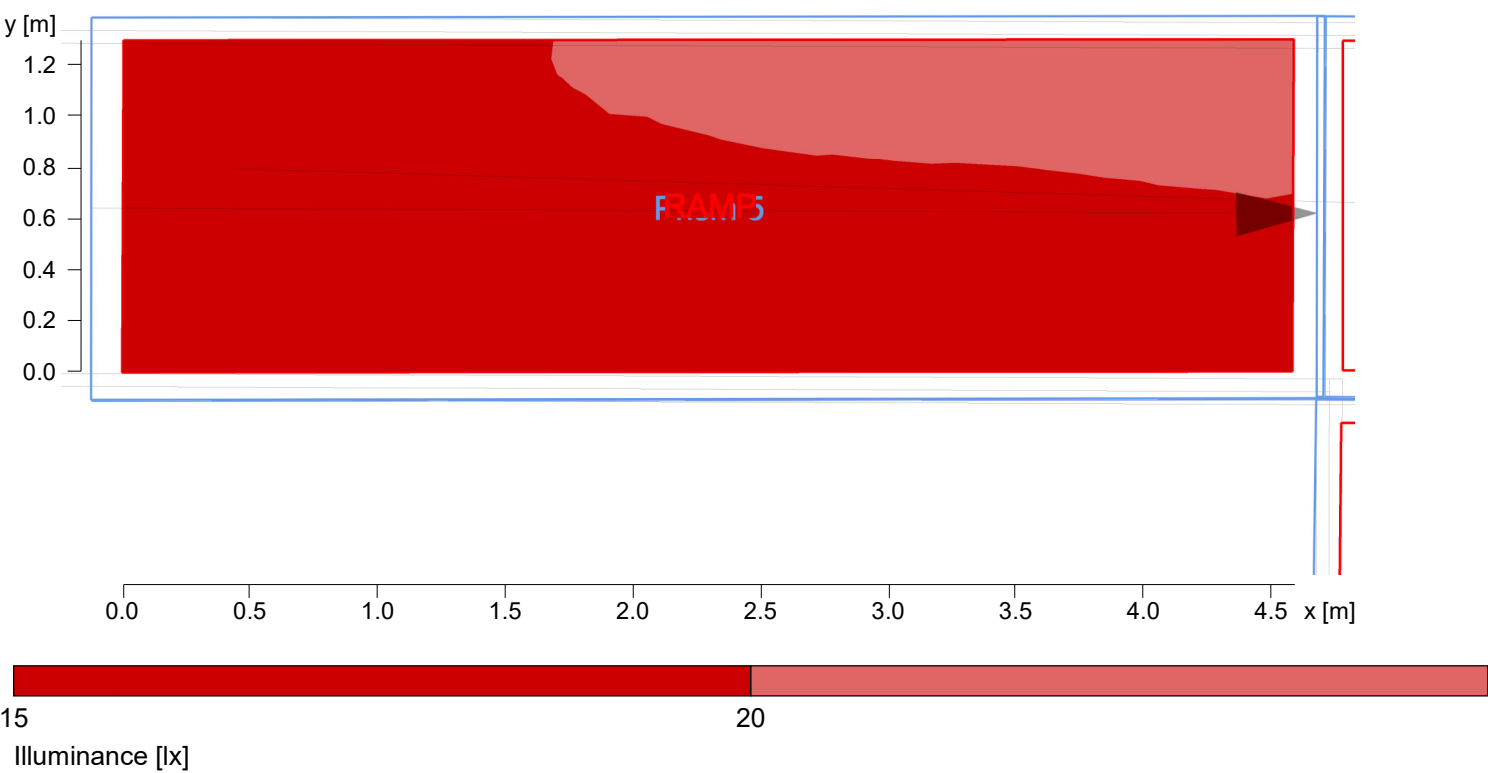
Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 11.4 lx
Minimum illuminance	E_{min}	: 9.6 lx
Maximum illuminance	E_{max}	: 13.3 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.18 (0.85)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.17 Pseudo colours, RAMP (E)

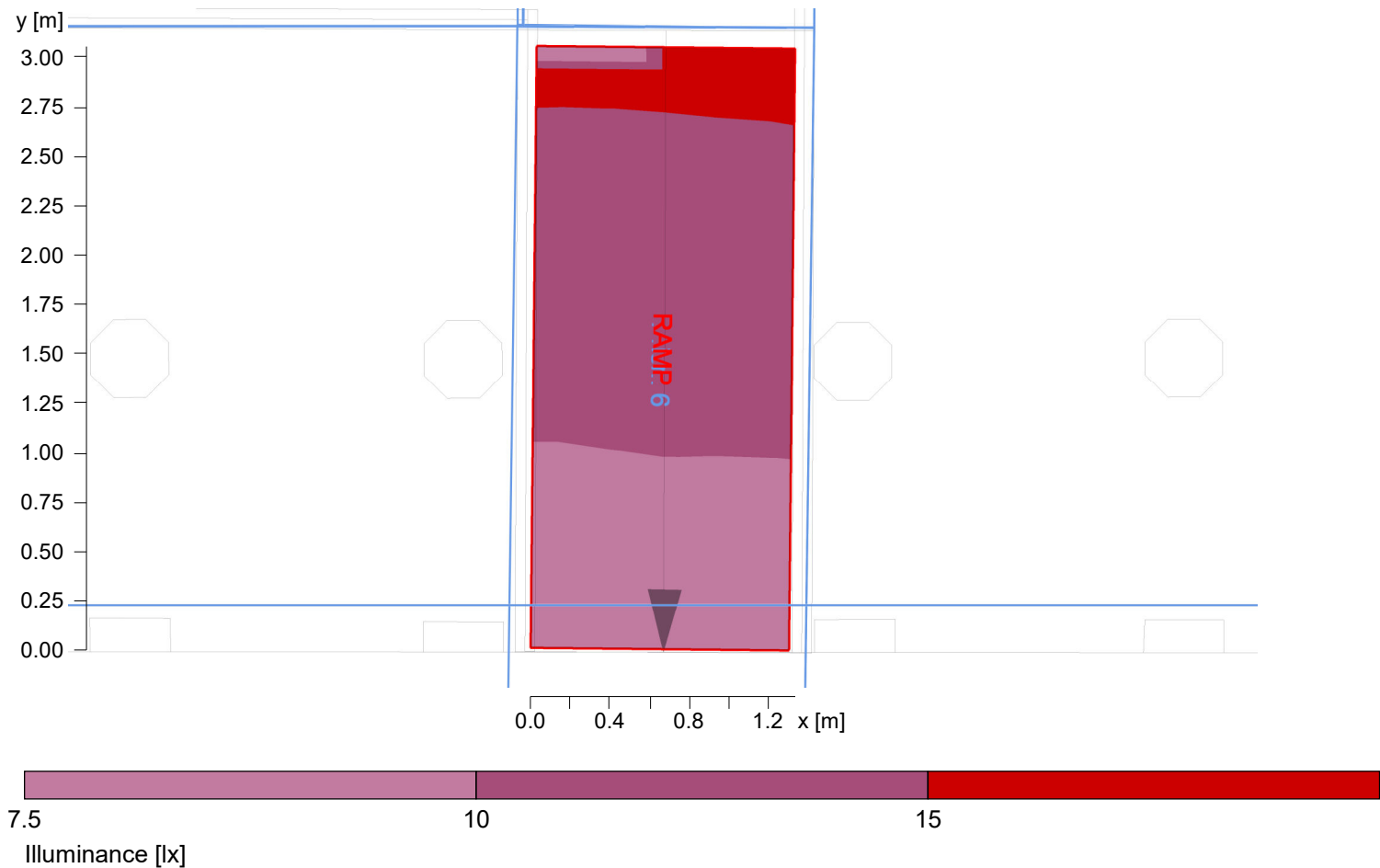


Average illuminance	$\bar{E}_m$	: 19.3 lx
Minimum illuminance	E_{min}	: 17.6 lx
Maximum illuminance	E_{max}	: 21.3 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.10 (0.91)



2.2 Calculation results, Exterior

2.2.18 Pseudo colours, RAMP (E)



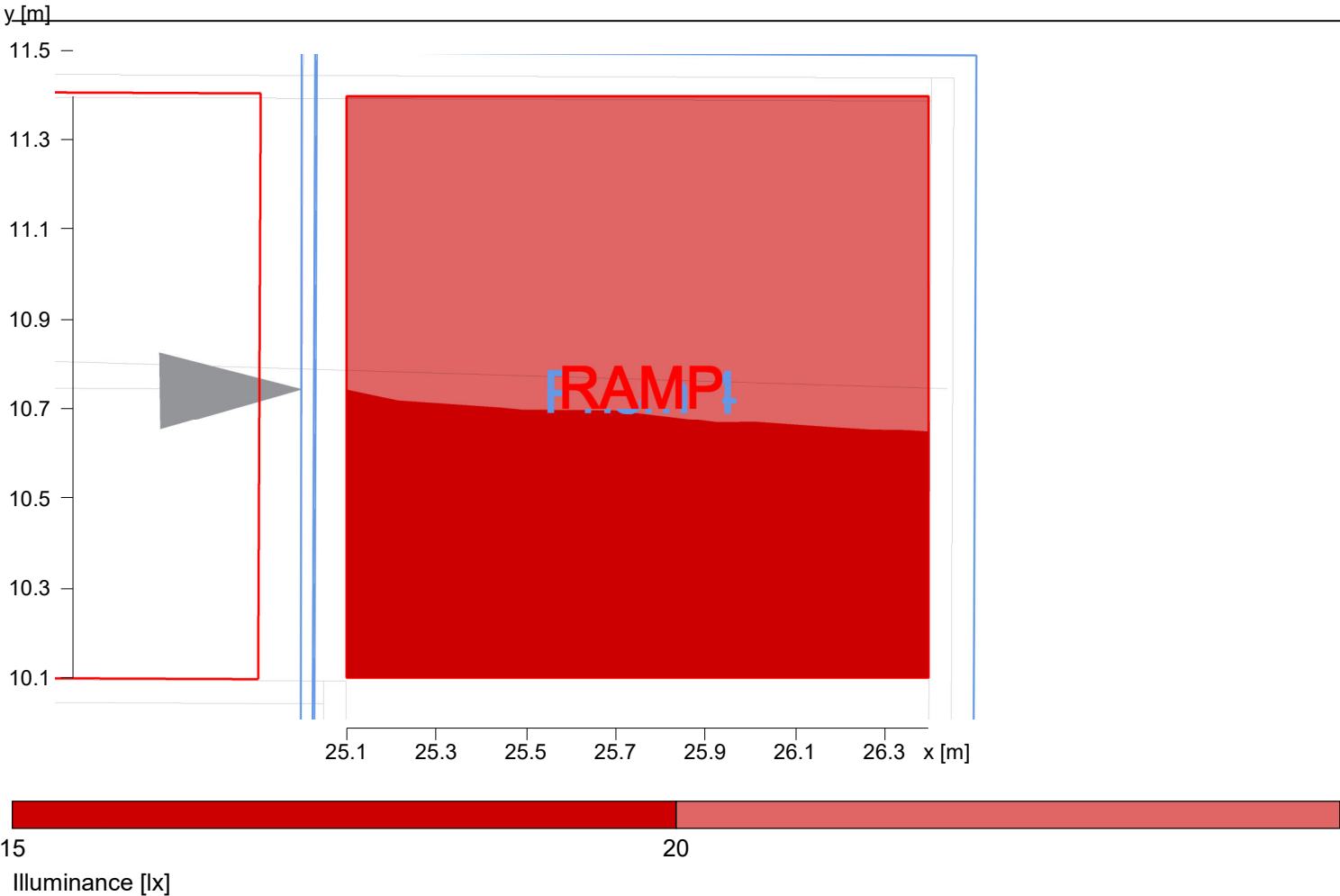
Average illuminance	$\bar{E}_m$	: 11.5 lx
Minimum illuminance	E_{min}	: 8.5 lx
Maximum illuminance	E_{max}	: 16.1 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.36 (0.73)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.19 Pseudo colours, RAMP (E)

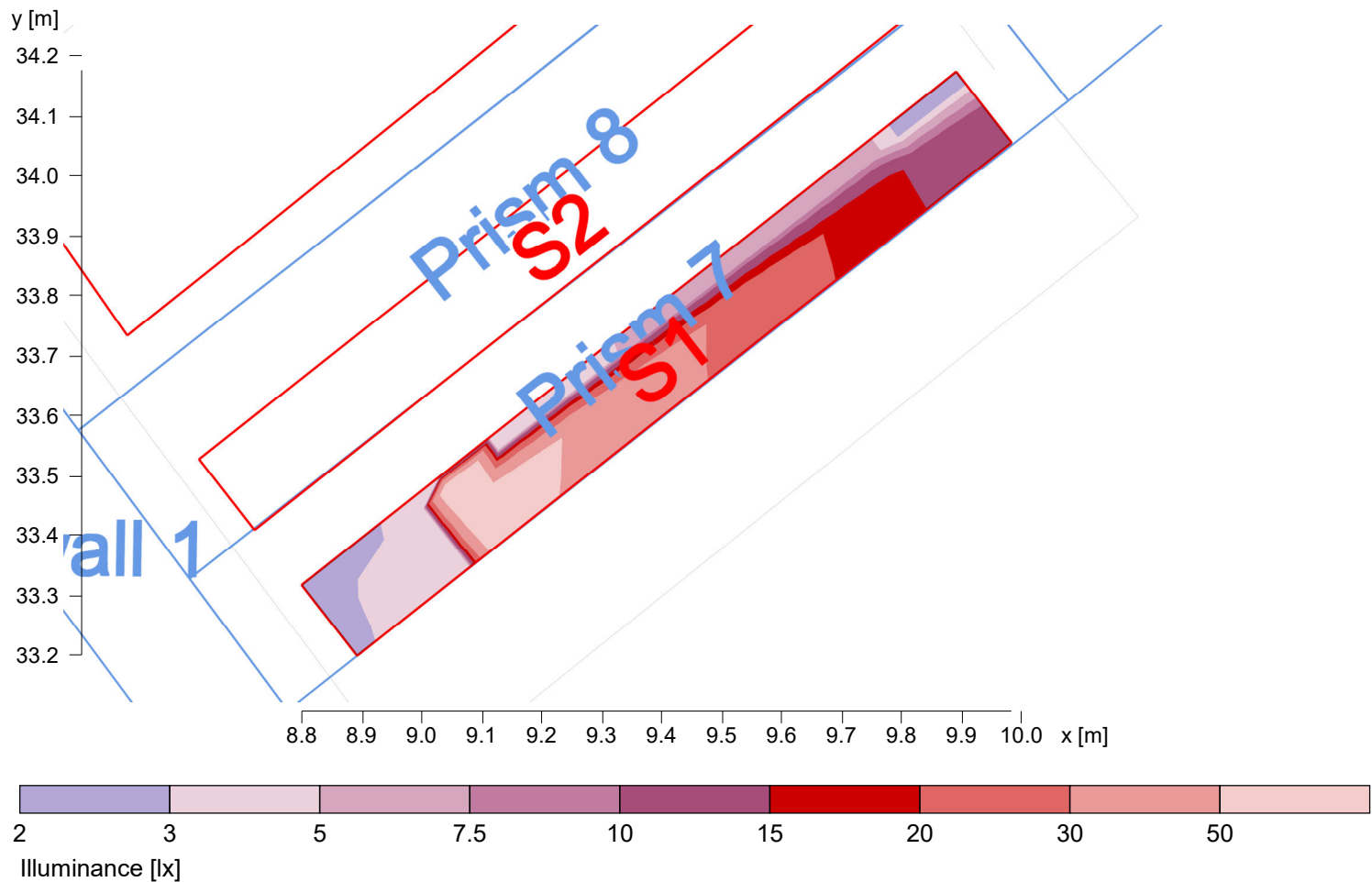


Height reference plane		: 0.35 m
Average illuminance	$\bar{E}_m$	: 20.1 lx
Minimum illuminance	E_{min}	: 18.1 lx
Maximum illuminance	E_{max}	: 21.7 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 1.11 (0.90)



2.2 Calculation results, Exterior

2.2.20 Pseudo colours, S1 (E)

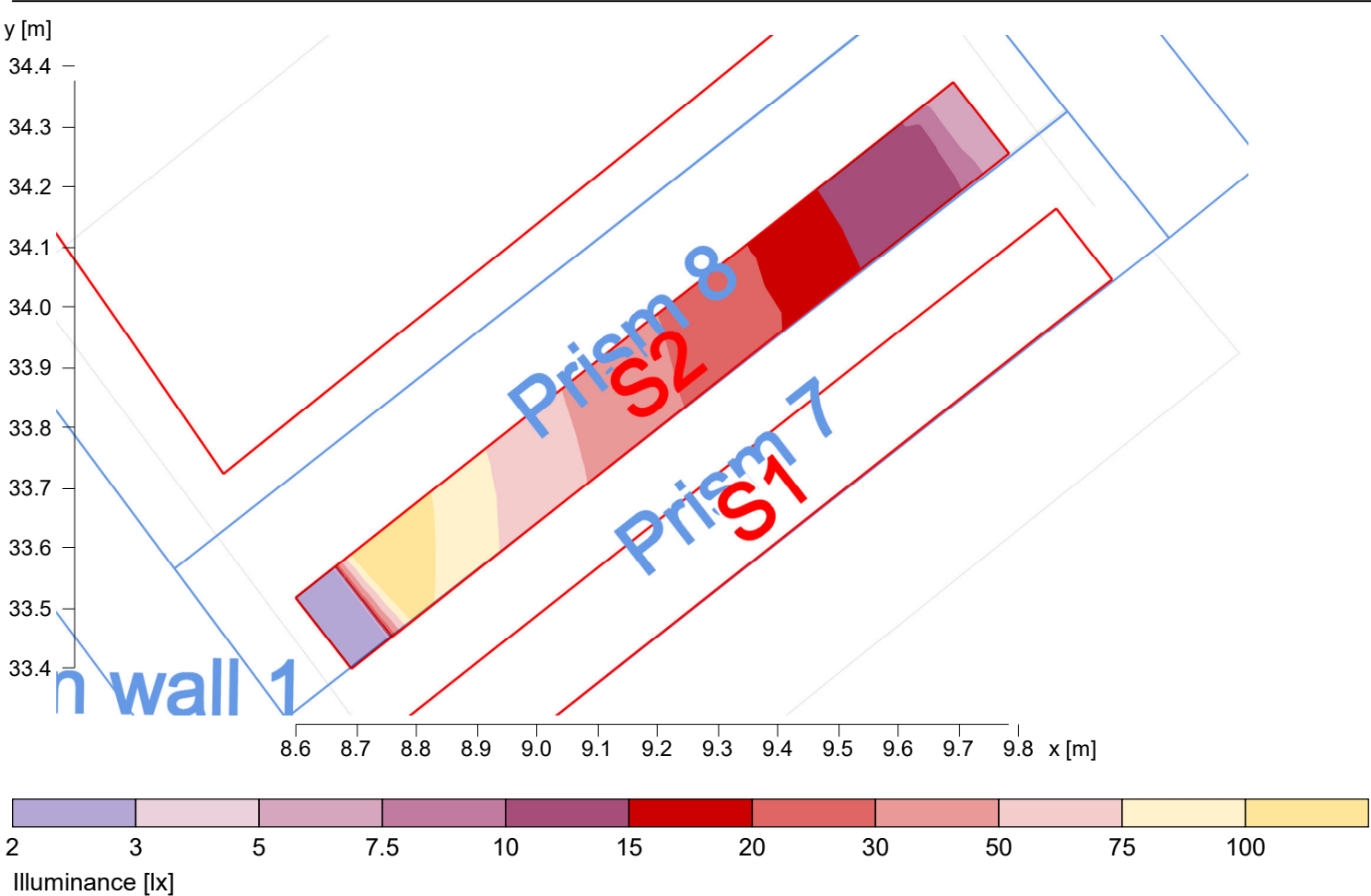


Height reference plane		: 0.16 m
Average illuminance	$\bar{E}_m$	: 20.9 lx
Minimum illuminance	E_{min}	: 2.8 lx
Maximum illuminance	E_{max}	: 73.7 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 7.58 (0.13)



2.2 Calculation results, Exterior

2.2.21 Pseudo colours, S2 (E)

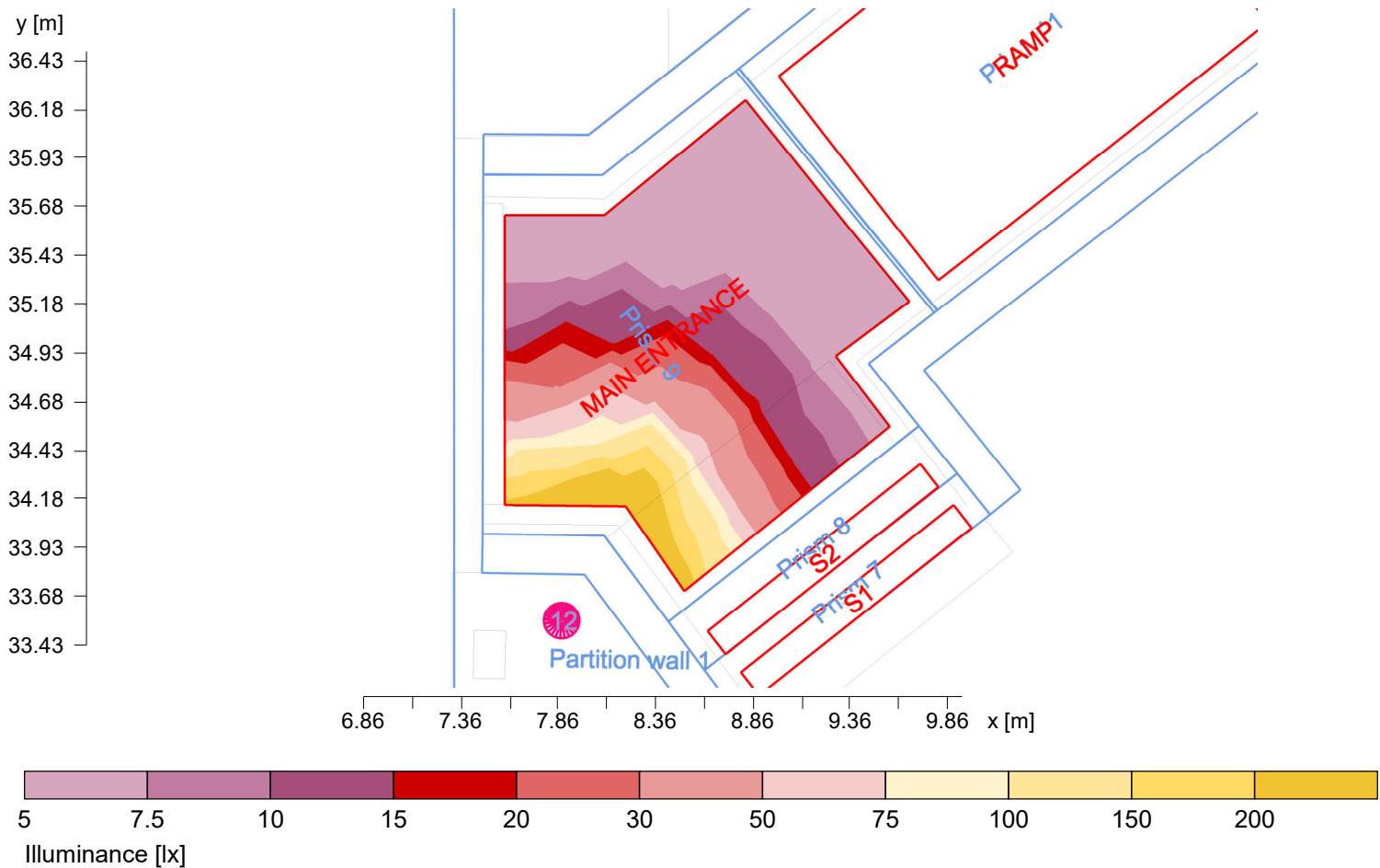


Height reference plane	$\bar{E}_m$	: 0.30 m
Average illuminance	E_{min}	: 40 lx
Minimum illuminance	E_{max}	: 3 lx
Maximum illuminance	$E_{min}/\bar{E}_m$	: 138 lx
Uniformity U_o		: 1 : 14.61 (0.07)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior
2.2.22 Pseudo colours, MAIN ENTRANCE (E)

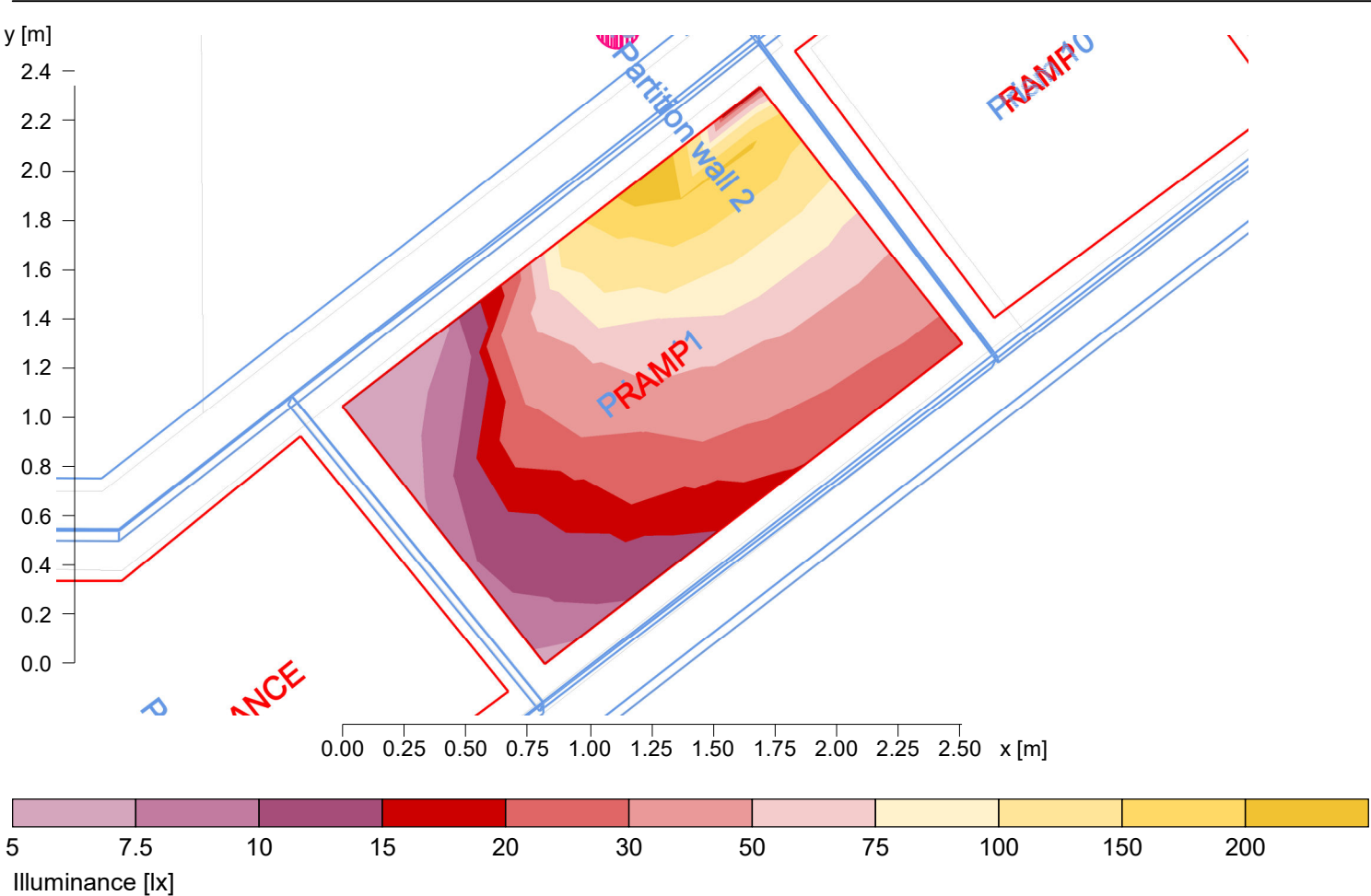


Height reference plane		: 0.46 m
Average illuminance	$\bar{E}_m$	: 41 lx
Minimum illuminance	E_{min}	: 5 lx
Maximum illuminance	E_{max}	: 264 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 7.79 (0.13)



2.2 Calculation results, Exterior

2.2.23 Pseudo colours, RAMP (E)



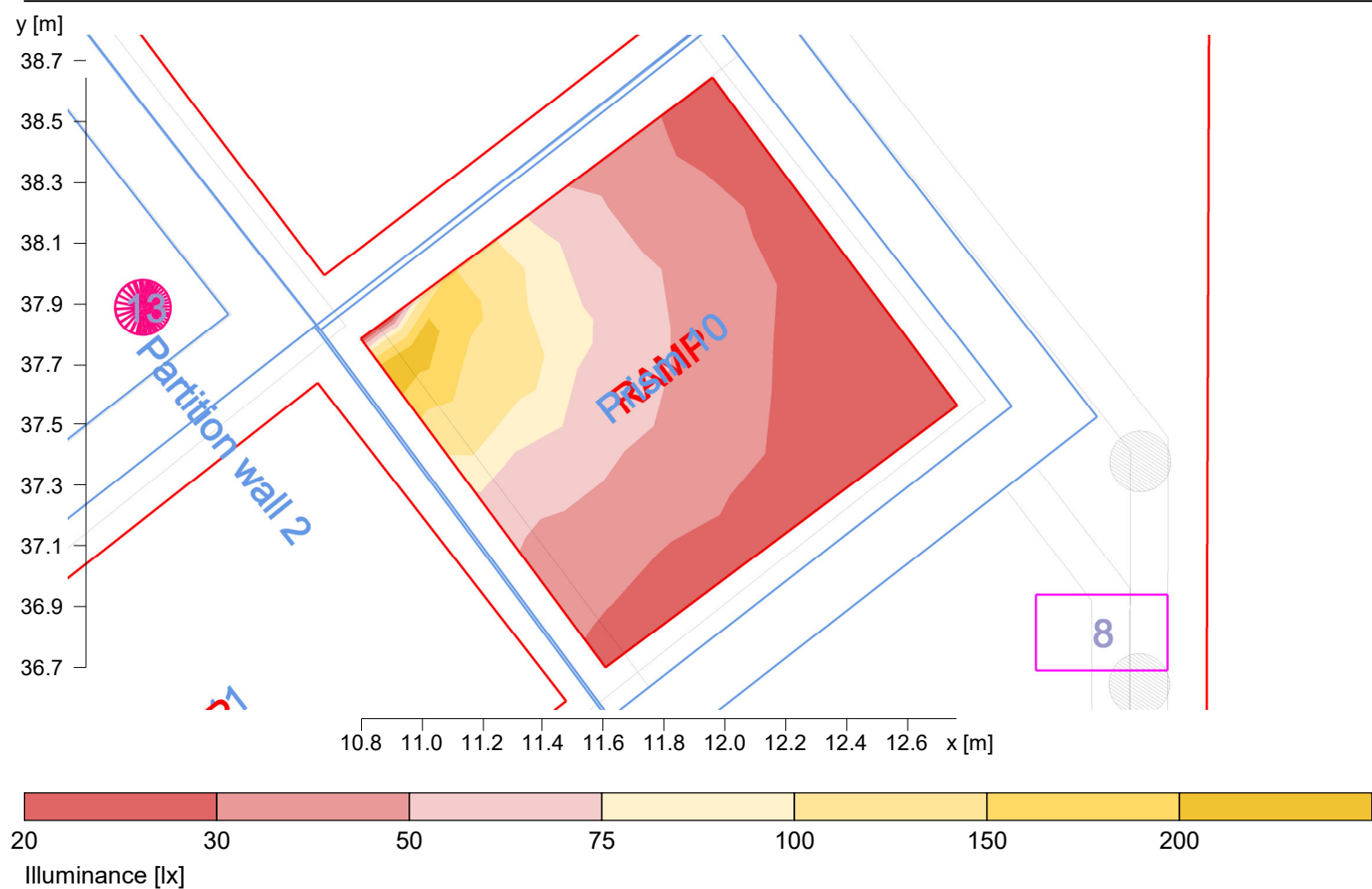
Average illuminance	$\bar{E}_m$	: 54 lx
Minimum illuminance	E_{min}	: 6 lx
Maximum illuminance	E_{max}	: 204 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 8.95 (0.11)

Object : External Lighting Calculations
Installation : Melksham Hospital Car Park
Project number : OP-6928043
Date : 03.09.2025



2.2 Calculation results, Exterior

2.2.24 Pseudo colours, RAMP (E)

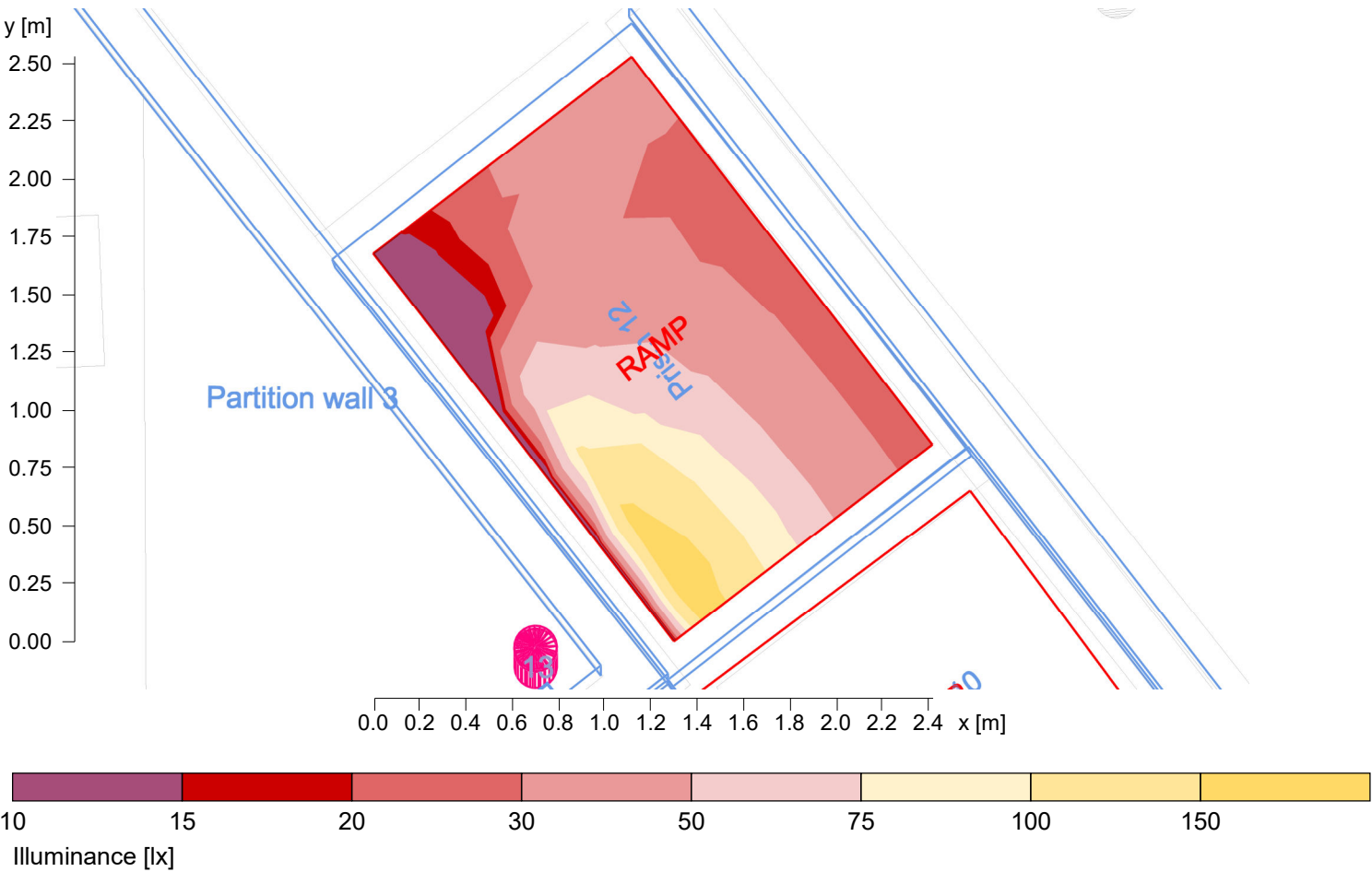


Height reference plane		: 0.23 m
Average illuminance	$\bar{E}_m$	: 56 lx
Minimum illuminance	E_{min}	: 20 lx
Maximum illuminance	E_{max}	: 229 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: 1 : 2.79 (0.36)



2.2 Calculation results, Exterior

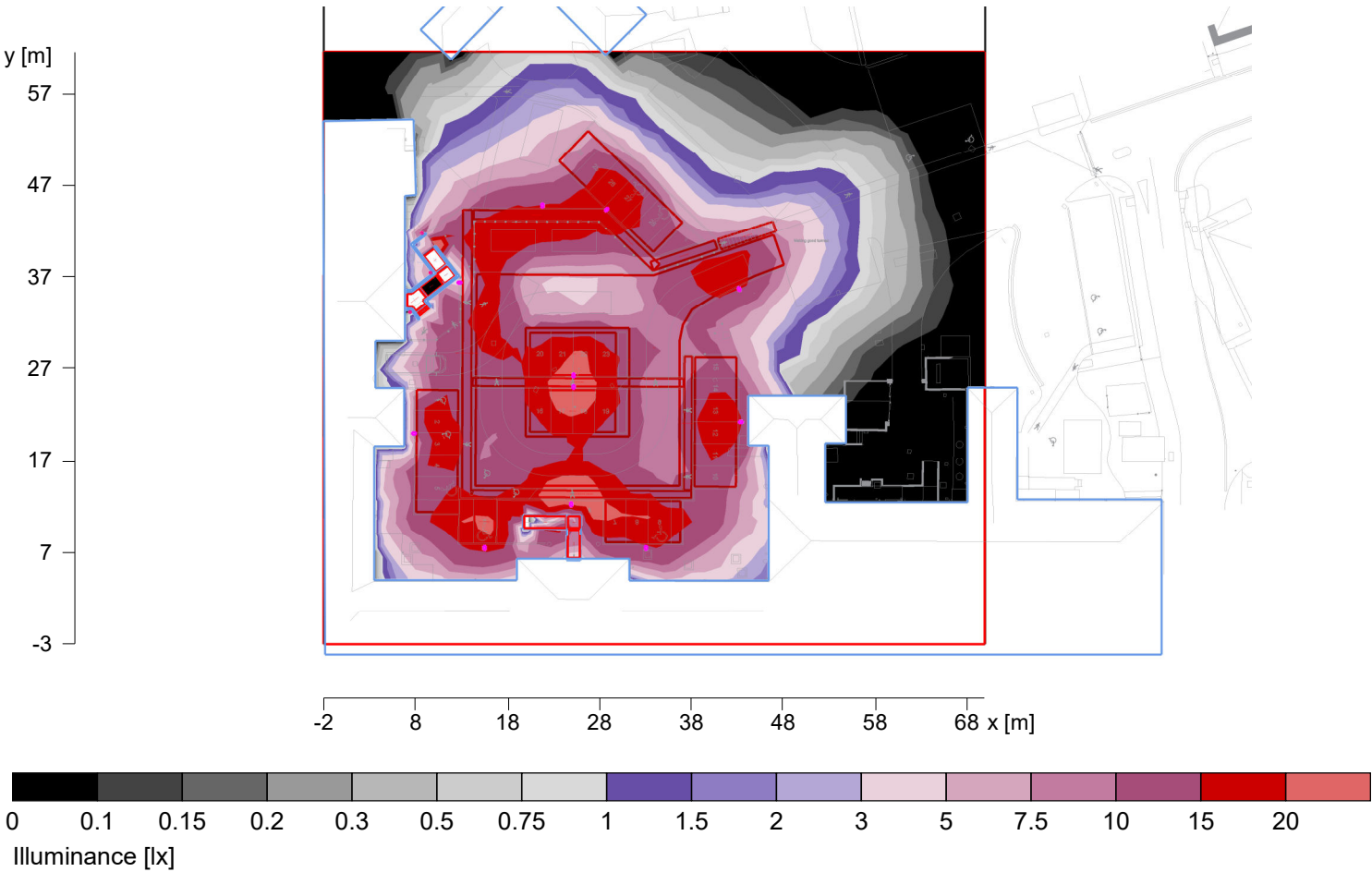
2.2.25 Pseudo colours, RAMP (E)



Average illuminance	$\bar{E}_m$	: 55 lx
Minimum illuminance	E_{min}	: 10 lx
Maximum illuminance	E_{max}	: 191 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 5.41 (0.18)



2.2 Calculation results, Exterior
2.2.26 Pseudo colours, Measuring area 26 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 6.3 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 21.5 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: ---

Appendix C – External Lighting Luminaire Datasheets



ELECTRA 1 3000 HF 830 WBA

Item No.	514033920
GTIN	8019455339209
Stock status	M



Technical specifications

Mounting	
Product mounting	Pole;Wall surface

General	
Product shape	Special
EPD (Environmental Product Declaration)	true

Electrical Data	
Leakage current (mA)	0.1
Voltage from (V)	220
Maximum voltage (V)	240
Minimum frequency (Hz)	50
Maximum frequency (Hz)	60
Total consumption (W)	18.9
Protection against surges (kV)	10
Number of luminaires on a 10A MCB type B	19
Number of luminaires on a 10A MCB type C	31
Number of luminaires on a 16A MCB type B	30
Number of luminaires on a 16A MCB type C	50
Number of luminaires on a 20A MCB type C	61
Number of luminaires on a 20A MCB type D	100
Number of luminaires on a 25A MCB type C	92
Number of luminaires on a 25A MCB type D	100

Optic	
Optic	WBA - Wide beam asymmetric
Material of diffuser	Tempered glass
Diffuser material design	Clear

Certificates	
Certification	ENEC;ENEC+

Technical Data	
Minimum ambient temperature (°C)	-40
Maximum ambient temperature (°C)	55
IK classification	09
IP classification	66
Corrosion class	C5

Light Technical Data	
Light source	LED
Lumen out (lm)	2747
Number of lamps	1
Lumen per Watt (lm/W)	145
Lamp colour temp (K)	3000
CRI Colour rendering index	>80
MacAdam step	3
Energy class light source	D

Driver / Ballast	
Type of LED Driver	HF: Non dimmable
Number of Driver	1

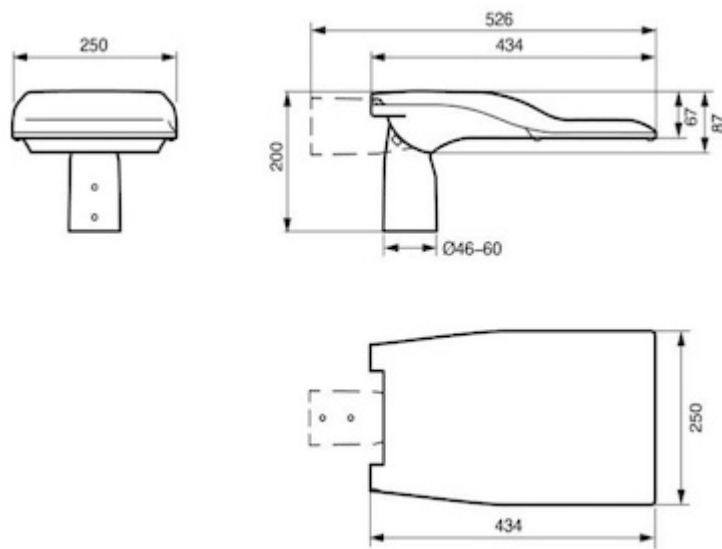
Lifetime	
L90 Median useful life LED Ta25 (hr)	>100 000
L80 Median useful life LED MaxTa (hr)	>100 000
Luminous flux decline (LLMF) 50.000h Ta25	0.95

Housing	
Main body material	Aluminium
Body colour	GR - Grey
Main body colour name	Silver grey

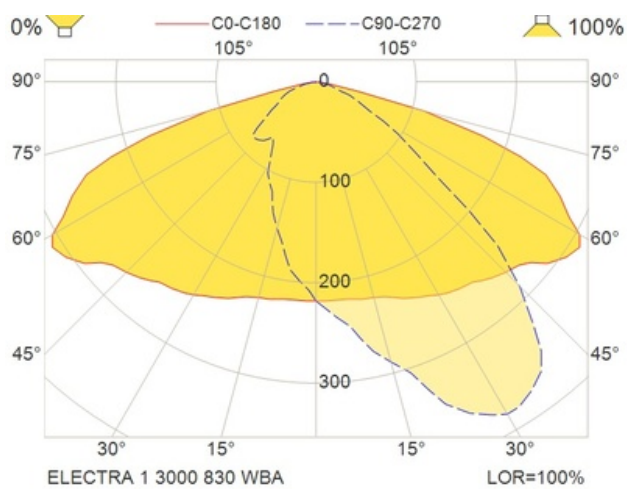
Dimensions	
Length (mm)	434
Width (mm)	250
Height (mm)	200
Net weight (kg)	4.094

Logistic Data	
Item gross weight (kg)	4.45

Illustrations



ELECTRA 1





O34 G2 H970 ANTHRACITE 800 HF 830 180°

Item No.	O3470228316
GTIN	8054378437304
Stock status	M



Technical specifications

Mounting

Product mounting	Ground surface
------------------	----------------

General

Product shape	Special;Round
---------------	---------------

Electrical Data

Voltage from (V)	220
Maximum voltage (V)	240
Minimum frequency (Hz)	50
Maximum frequency (Hz)	60
Main Feed DC (V) Min	186
Main Feed DC (V) Max	250
Total consumption (W)	10.7
IEC Protection Class	II
Protection against surges (kV)	6
Number of luminaires on a 10A MCB type B	30
Number of luminaires on a 10A MCB type C	49
Number of luminaires on a 16A MCB type B	48
Number of luminaires on a 16A MCB type C	81
Number of luminaires on a 20A MCB type C	99

Optic

Optic	180 - 180° radial light distribution
-------	--------------------------------------

Technical Data

Minimum ambient temperature (°C)	-40
Maximum ambient temperature (°C)	45
IK classification	10
IP classification	66
Corrosion class	C4

Light Technical Data

Light source	LED
Lumen out (lm)	759
Lumen per Watt (lm/W)	71
Lamp colour temp (K)	3000
CRI Colour rendering index	>80
MacAdam step	3
Energy class light source	D

Driver / Ballast

Type of LED Driver	HF: Non dimmable
Number of Driver	1

Lifetime

L90 Median useful life LED Ta25 (hr)	>100 000
L80 Median useful life LED MaxTa (hr)	100 000
Luminous flux decline (LLMF) 50.000h Ta25	0.95

Housing

Main body material	Aluminium
Body colour	GR - Grey
Main body colour name	Anthracite

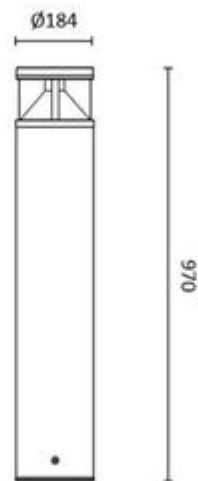
Dimensions

Height (mm)	970
Net weight (kg)	9.568

Logistic Data

Item gross weight (kg)	10.4
------------------------	------

Illustrations



O34 G2 H970

