

UNITED BY OUR DIFFERENCE

WSP

Worthing Hospital – Lighting Statement

Western Sussex Hospitals NHS Trust

14 July 2010

WSP

QM

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3
Remarks	Draft			
Date	14th July 2010			
Prepared by	Chris Rochfort			
Signature				
Checked by	Jessamy Funnell			
Signature				
Authorised by	Chris Rochfort			
Signature				
Project number	12260686-002			
File reference	M:\Environmental Planning\Projects \12260686 - Worthing Hospital\Technic al\Lighting Statement			

WSP Environmental Ltd
Mountbatten House
Basing View
Basingstoke
Hampshire
RG21 4HJ

Tel: +44 (0)1256 318800
Fax: +44 (0)1256 318700
http://www.wspgroup.com

Reg. No: 1152332

Contents

1 Introduction 5

2 Constraints 5

3 Lighting Design 6

4 Mitigation 6

5 Summary 7

Appendix 1 Indicative Lighting Design 8

1 Introduction

1.1 BACKGROUND

1.1.1 This Lighting Statement has been prepared by WSP Environment and Energy (WSP E&E) on behalf of Western Sussex Hospitals NHS Trust ("the Applicant"). It accompanies 2 planning applications for the redevelopment of the Worthing hospital site.

1.2 EXISTING SITE

1.2.1 The subject site is predominantly a working hospital comprising buildings of up to five storeys in elevation, with associated ancillary car parking and soft landscaped areas. There are approximately 8no. two storey residential properties within the southeast corner of the hospital site, 5no. two storey blocks of flats to the southeast known as Horton Court, along with 1no. two storey building (both with associated car parking and soft landscaping) and 16no. two storey semi-detached houses with private gardens (Park Avenue) to the north of the main hospital site that are also included within the hospital ownership boundary.

1.2.2 There is limited existing street lighting along Homefield Road (along the eastern site boundary), and along Park Avenue in the north of the site, comprising luminaries (probably high pressure sodium) mounted on c. 6m steel columns.

1.2.3 There are c. 6 wall mounted luminaires on the children's centre, which provides illumination to the staff car park during the hours of darkness.

1.3 PROPOSED DEVELOPMENT

1.3.1 A new breast clinic and temporary hospital car parking will be built in the northern part of the site. The residential properties on Park Avenue will be demolished to allow for this development.

1.3.2 In addition to the above it is proposed to develop a new ward block in the east of the site on an existing hardstanding car park.

1.3.3 Each of the above developments is subject to a separate planning application, although both developments are considered in this report.

2 Constraints

2.1.1 The key constraint posed by the proposed development of the site in relation to artificial lighting is the potential for increased artificial light intrusion on the following sensitive receptors:

- Patients in the hospital, who may find artificial light results in sleep deprivation;
- Residential receptors on Homefield Road close to the site, from the breast clinic car park lighting and temporary car park lighting, and potentially from the new ward block development; and
- The setting and ecological receptors on Homefield Park, from the breast clinic car park lighting and temporary car park lighting.

3 Lighting Design

3.1 OVERVIEW

3.1.1 The provision of artificial lighting on the site and detailed specification of lighting installations will be considered at the detailed design stage. The general objective will be to provide minimal lighting and only in those areas where it is required for security, health and safety purposes during the night time period.

3.2 BREAST CLINIC AND TEMPORARY CAR PARK

3.2.1 An indicative lighting design for the breast clinic's permanent car park, as well as the temporary car park, has been drawn up by Philips Lighting, which is included at Appendix 1. A summary of the indicative lighting design is as follows:

- There are 14 columns proposed in total, 5 of the 14 columns will provide light to the permanent car park and 10 of the 14 columns will provide light to the temporary car park (i.e. the design allows for some overlap).
- The 14 columns are proposed to be subject to a mounting height of 6m;
- Compact fluorescent lamps are proposed;
- The luminaires are proposed to be of shallow bowl design and subject to a 5 degree tilt.
- The temporary car park indicative lighting specification has been designed to provide an average surface illuminance of 6.80 lux.
- The permanent car park indicative lighting specification has been designed to provide an average surface illuminance of 11.1 lux.

3.3 NEW WARD BLOCK

3.3.1 No lighting design is yet available for the external areas of the new ward block. This will be drawn up at later detailed design stages.

4 Mitigation

4.1 GENERAL PRINCIPLES

4.1.1 The lighting designs will take into account the current baseline conditions on and in the immediate vicinity of the Site and the surrounding receptors. Such principles will include the following:

- The level of lighting will be retained to a minimum level to ensure on-site safety and security during the night-time period, whilst ensuring that the potential effects of light spill, galre and sky glow are mitigated in line with best available technology;
- Curfews or dimmer functions should be used, to avoid unnecessary light during quieter periods e.g. midnight to 5am; and
- Lighting should be directed to where it is needed with minimal light spillage onto adjacent areas. This can be achieved by limiting the height of lighting columns or the

height of wall-mounted lamps and by using as steep a downward angle as possible and/or a shield or hood that directs the light below the horizontal plane.

4.2 BREAST CLINIC AND TEMPORARY CAR PARK

4.2.1 The indicative lighting design produced for the breast clinic and temporary car park will ensure minimal light pollution but could be improved as follows:

- The luminaires could be of full horizontal cut-off design (rather than shallow bowl design) and could be subject to a 0 degree rather than a 5 degree tilt. This may result in additional lamps being needed to achieve the average surface illuminance requirements but will provide greater control of light spill;
- Shields or hoods could be fitted to the luminaires to avoid light outside of the car park area. The current design cannot preclude some light spill into Holmfield Park, which is also a reflection of the columns being located adjacent to the site boundary;
- An automatic or manual curfew could be installed such that the lights are switched off/dimmed during quieter periods.

4.3 LANDSCAPING

4.3.1 Secondary mitigation will be provided through the retention and enhancement of the boundary vegetation screening. Vegetative planting along the northern boundary will reduce the visual impact of lighting into Homefield Park. Landscape planting adjacent to the east of the new ward block will enhance existing landscaping along Homefield Road and provide an element of screening.

4.4 ORIENTATION OF BUILDINGS

4.4.1 In certain circumstances, proposed buildings (e.g. Breast Clinic) will provide screening (e.g. from Homefield Road), which will minimise any localised, residual light spill.

5 Summary

5.1.1 Overall, based on the above outline principles, new lighting which is carefully designed and installed as part of the 2 proposed developments, supplemented by boundary treatment (landscaping enhancements) will provide a safe and secure environment for staff, visitors and residents, whilst taking into account the need to avoid obtrusive light impact on patients and residents, as well as the townscape and ecological sensitivities.

Appendix 1 Indicative Lighting Design

Park Avenue Temporary Car PArk

6m FGS225 55w PL-L

Date:	15-06-2010
Customer:	HLM ARCHITECTS
Customer Representative:	JAMIE CRORKIN
Designer:	Steve Johnston
Description:	Designed to 5 lux ave, 0.25 Uo MF 0.81 6m Columns 5 Deg Tilt Seperate Calculation for Temporary & Permanent Car Pks

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

PHILIPS LIGHTING
GUILDFORD BUSINESS PARK
GUILDFORD
SURREY
GU2 8XH

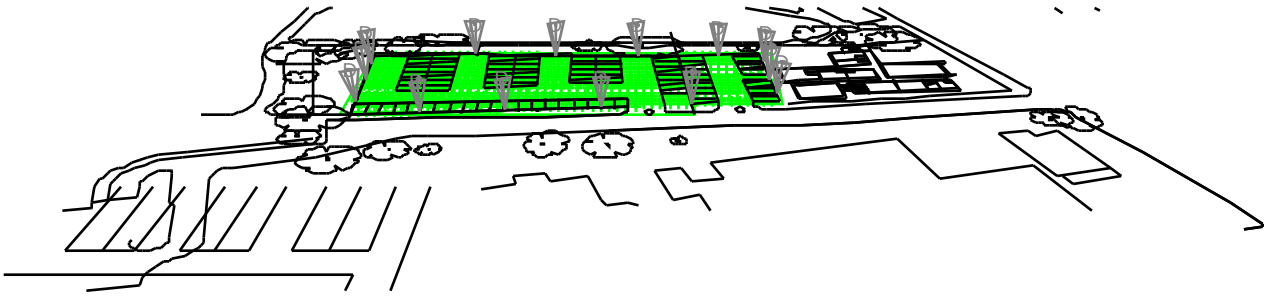
Telephone: 07979 301182
Fax: 01622 631069
Mobile Phone: 07979 301182
E-Mail: michael.mills@philips.com

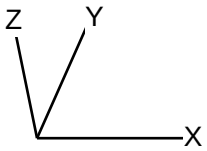
Table of Contents

1.	**Project Description**	**3**
1.1	3-D Project Overview	3
1.2	Top Project Overview	4
1.3	Front Project Overview	5
2.	**Summary**	**6**
2.1	General Information	6
2.2	Project Luminaires	6
2.3	Calculation Results	6
3.	**Calculation Results**	**7**
3.1	Temporary Car Park: Graphical Table	7
3.2	Temporary Car Park: Iso Contour	8
3.3	Temporary Car Park: Filled Iso Contour	9
3.4	Permanent Car Pk: Graphical Table	10
3.5	Permanent Car Pk: Iso Contour	11
3.6	Permanent Car Pk: Filled Iso Contour	12
4.	**Luminaire Details**	**13**
4.1	Project Luminaires	13
5.	**Installation Data**	**14**
5.1	Legends	14
5.2	Luminaire Positioning and Orientation	14

1. Project Description

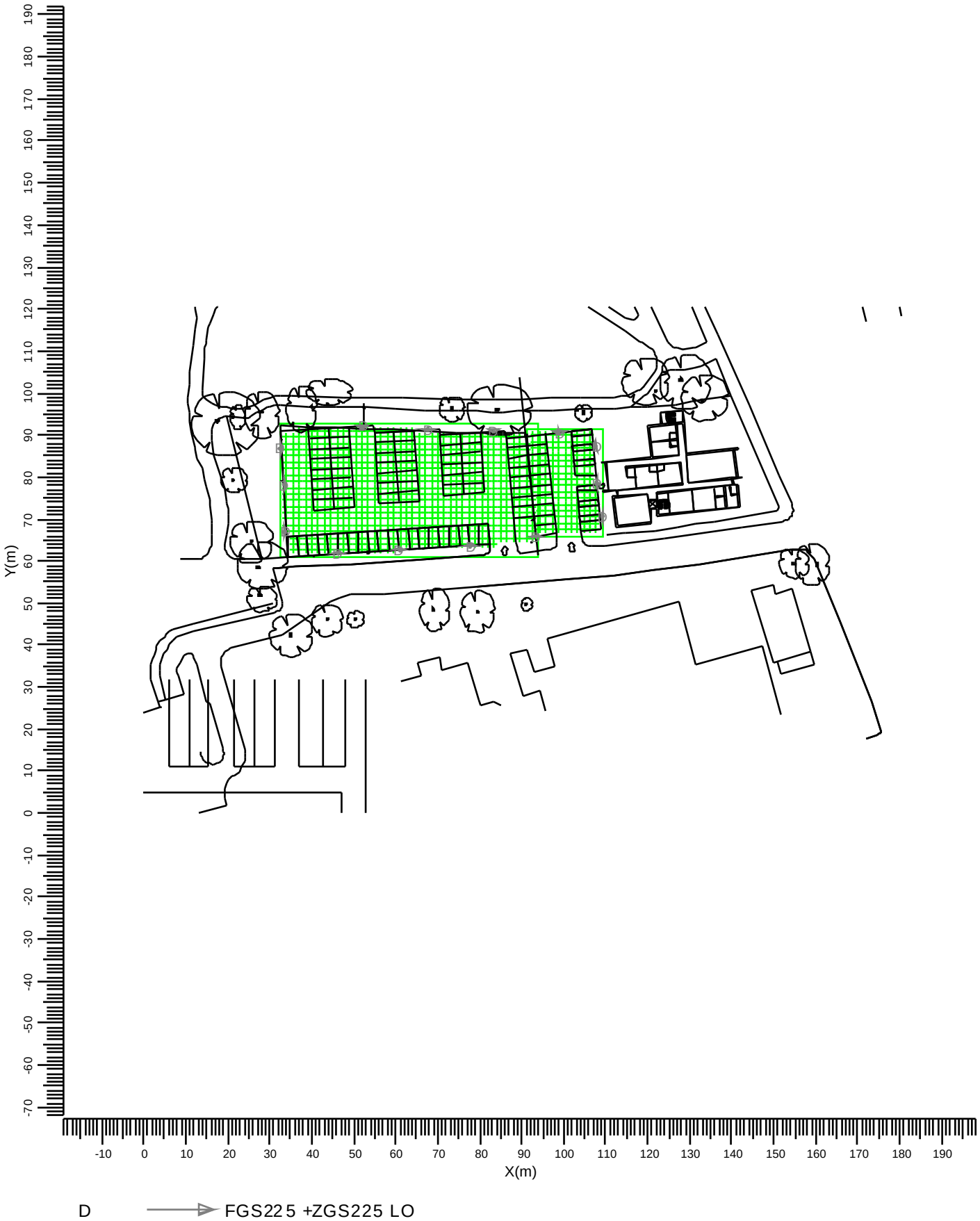
1.1 3-D Project Overview





D → FGS225 +ZGS225 LO

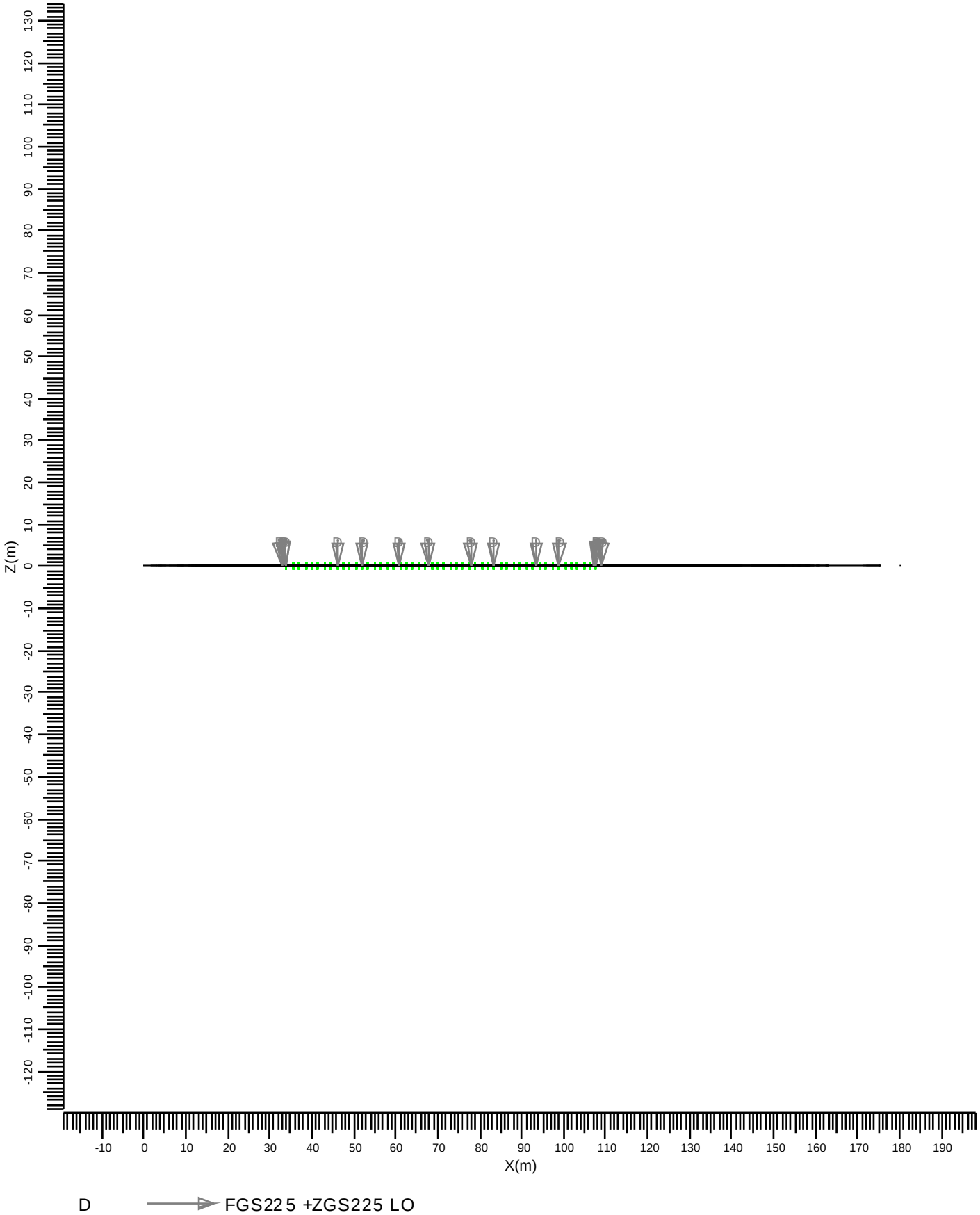
1.2 Top Project Overview



D → FGS225 +ZGS225 LO

Scale
1:1250

1.3 Front Project Overview



Scale
1:1250

2. Summary

2.1 General Information

The overall maintenance factor used for this project is 0.81.

2.2 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
D	14	FGS225 +ZGS225 LO	1 * PL-L55W	58.0	1 * 4800

The total installed power: 0.81 (kWatt)

2.3 Calculation Results

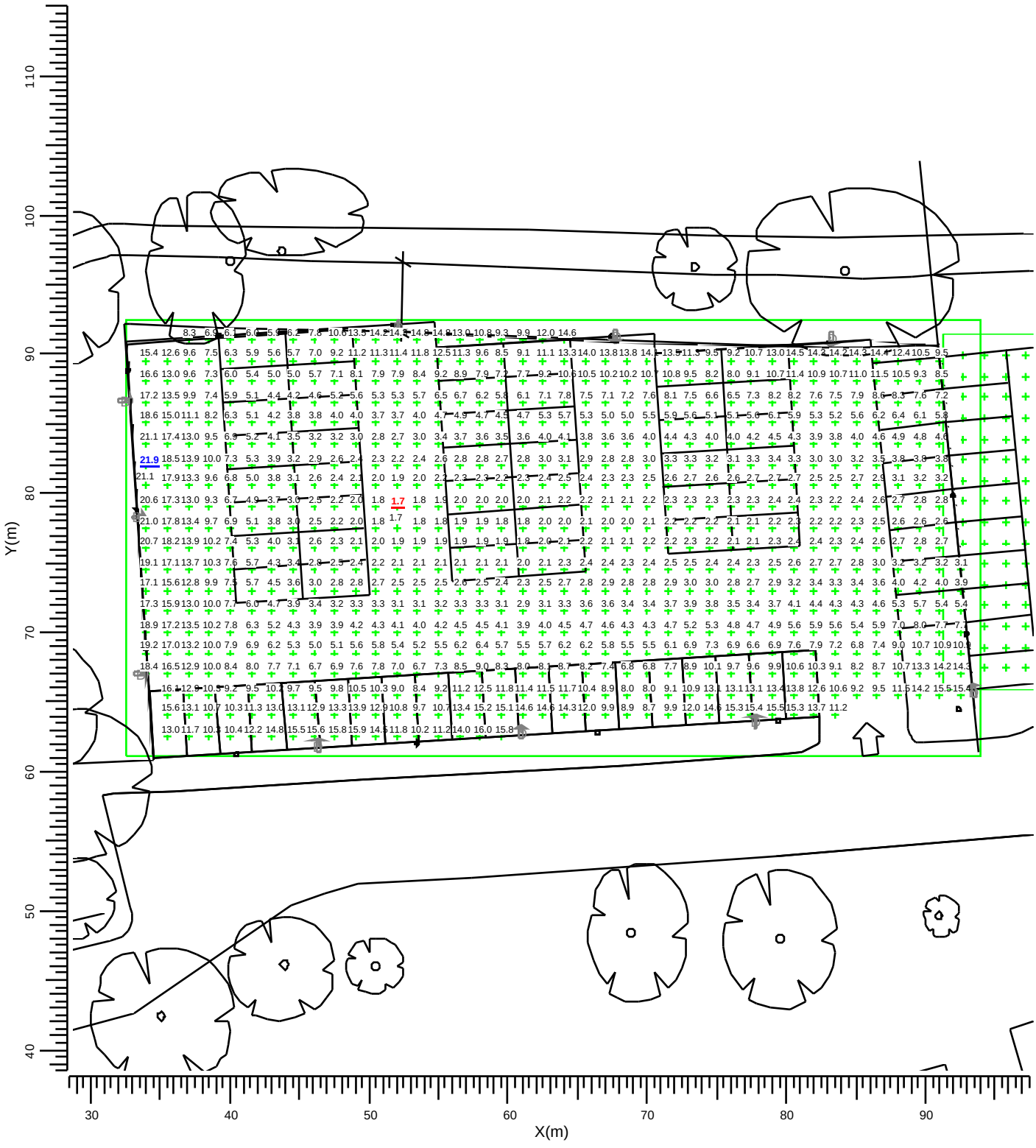
(Il)luminance Calculations:

Calculation	Type	Unit	Ave	Min	Max	Min/Ave
Temporary Car Park	Surface Illuminance	lux	6.80	1.72	21.94	0.25
Permanent Car Pk	Surface Illuminance	lux	11.1	2.7	25.0	0.25

3. Calculation Results

3.1 Temporary Car Park: Graphical Table

Grid : Temporary Car Park at Z = -0.00 m
Calculation : Surface Illuminance (lux)

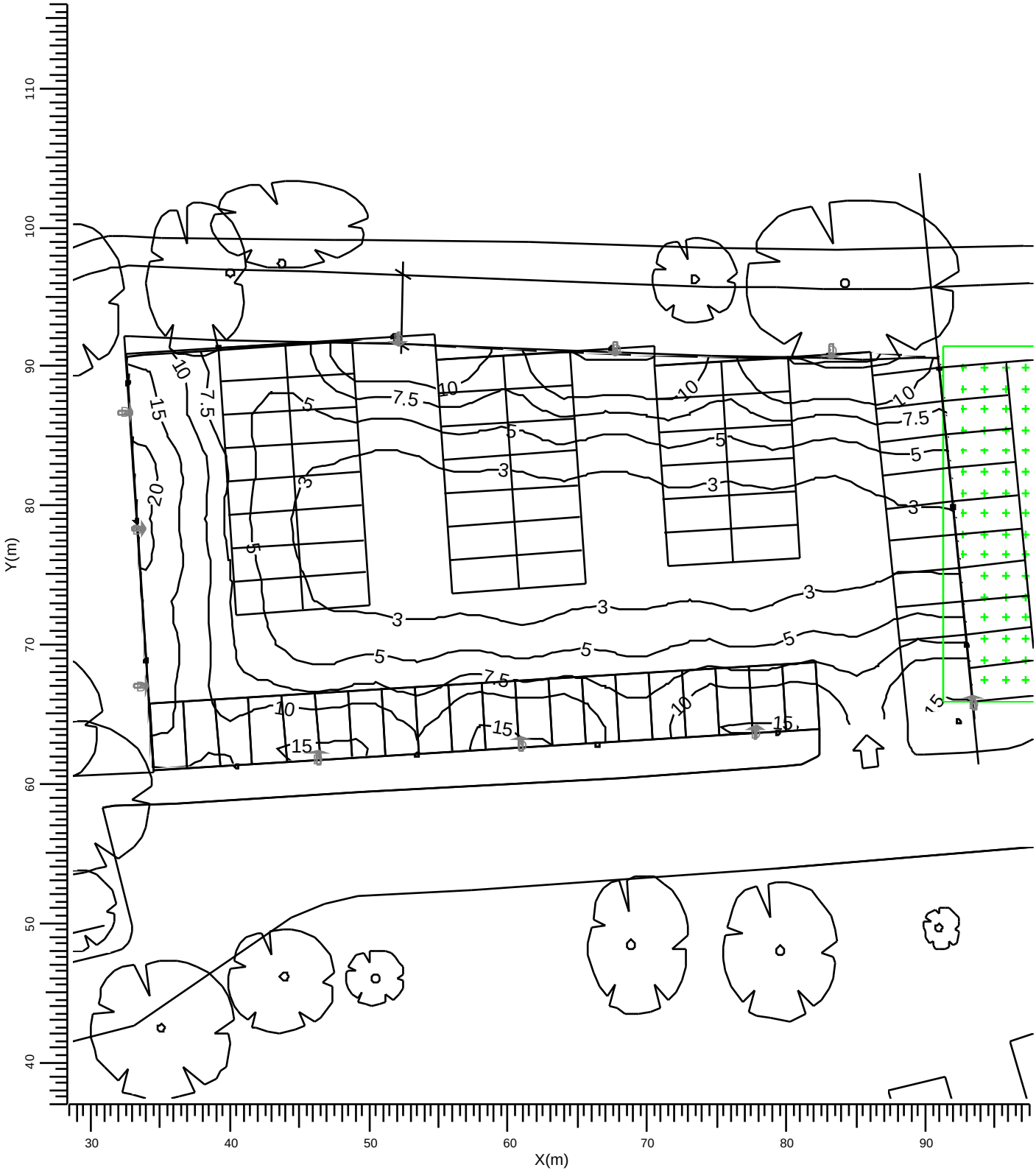


D → FGS225 +ZGS225 LO

Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
6.80	1.72	21.94	0.25	0.81	1:400

3.2 Temporary Car Park Iso Contour

Grid : Temporary Car Park at Z = -0.00 m
Calculation : Surface Illuminance (lux)

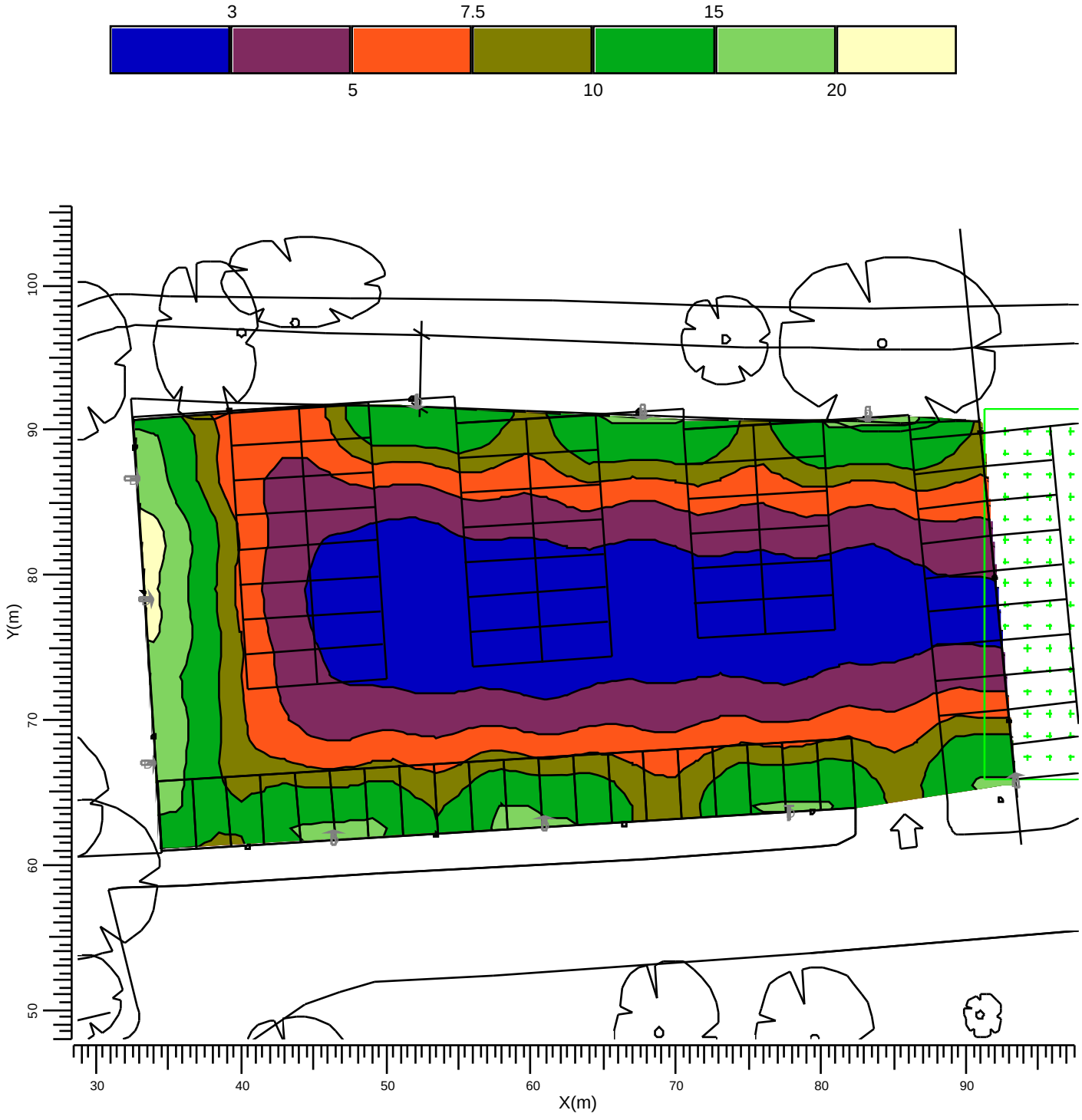


D → FGS225 +ZGS225 LO

Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
6.80	1.72	21.94	0.25	0.81	1:400

3.3 Temporary Car Park: Filled Iso Contour

Grid : Temporary Car Park at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D → FGS225 +ZGS225 LO

Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
6.80	1.72	21.94	0.25	0.81	1:400

3.4 Permanent Car Pk: Graphical Table

Grid : Permanent Car Pk at Z = -0.00 m
Calculation : Surface Illuminance (lux)



Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
11.1	2.7	25.0	0.25	0.81	1:150

3.5 Permanent Car Pk: Iso Contour

Grid : Permanent Car Pk at Z = -0.00 m
Calculation : Surface Illuminance (lux)

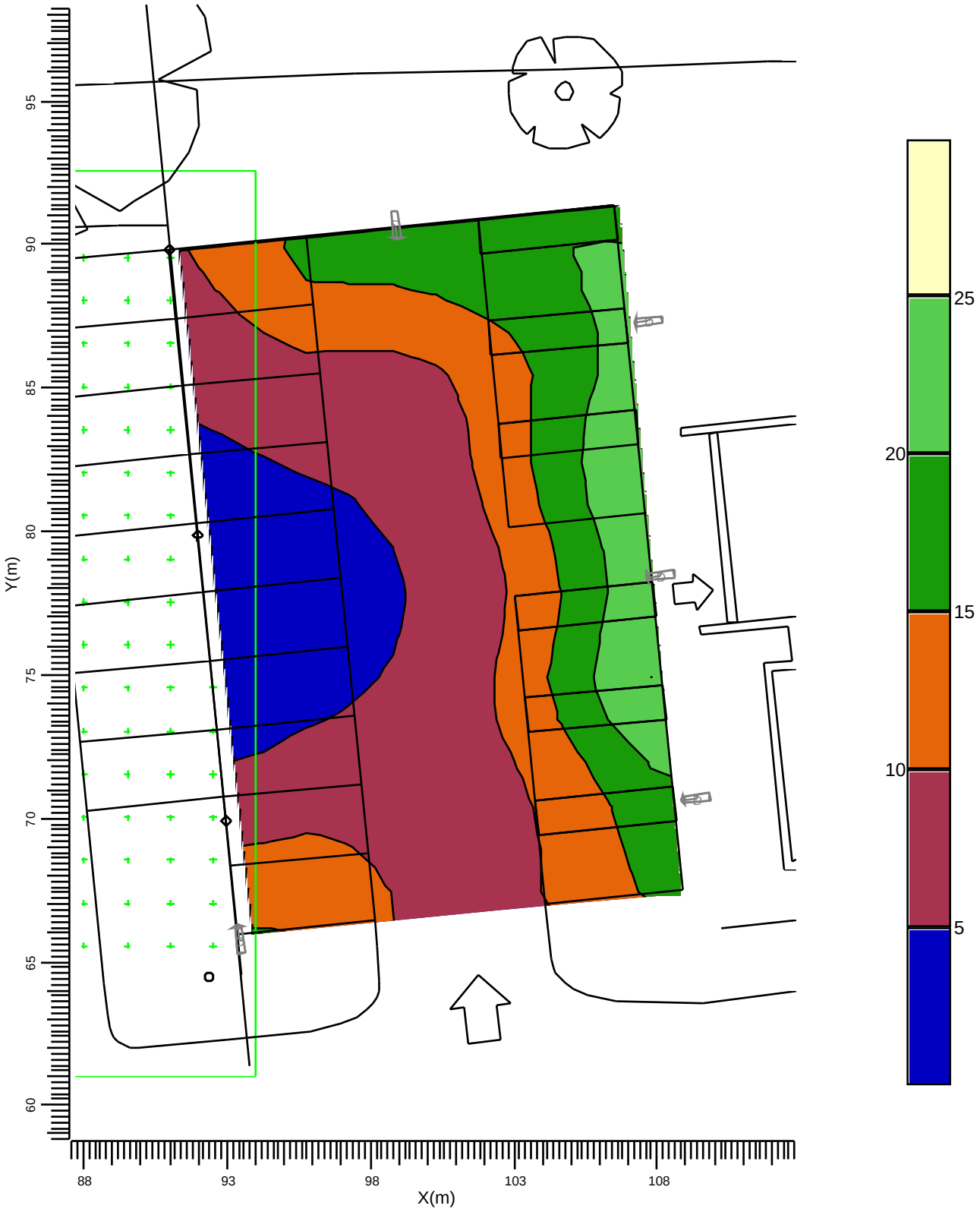


D → FGS225 +ZGS225 LO

Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
11.1	2.7	25.0	0.25	0.81	1:150

3.6 Permanent Car Pk: Filled Iso Contour

Grid : Permanent Car Pk at Z = -0.00 m
Calculation : Surface Illuminance (lux)



D → FGS225 +ZGS225 LO

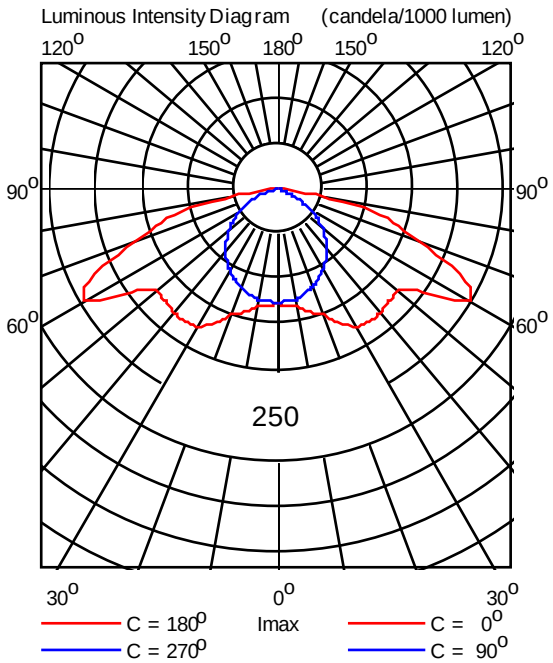
Average	Minimum	Maximum	Min/Ave	Project maintenance factor	Scale
11.1	2.7	25.0	0.25	0.81	1:200

4. Luminaire Details

4.1 Project Luminaires

Residium FGS225
FGS225 1xPL-L55W HFP +ZGS225 LO





Light output ratios

DLOR	: 0.67
ULOR	: 0.00
TLOR	: 0.67
Ballast	: HF Performer
Lamp flux	: 4800 lm
Luminaire wattage	: 58.0 W
Measurement code	: LVMA829600

5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
D	14	FGS225 +ZGS225 LO	1 * PL-L55W	1 * 4800

5.2 Luminaire Positioning and Orientation

Qty and Code	Position			Aiming Angles		
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0
1 * D	32.48	86.69	6.00	0.0	5.0	0.0
1 * D	33.38	78.29	6.00	2.9	5.0	0.0
1 * D	33.56	67.00	6.00	0.0	5.0	0.0
1 * D	46.36	61.82	6.00	90.0	5.0	0.0
1 * D	52.12	92.02	6.00	-90.0	5.0	0.0
1 * D	60.93	62.80	6.00	90.0	5.0	0.0
1 * D	67.74	91.30	6.00	-90.0	5.0	0.0
1 * D	77.83	63.61	6.00	90.0	5.0	0.0
1 * D	83.26	91.12	6.00	-90.0	5.0	0.0
1 * D	93.45	65.75	6.00	96.7	5.0	0.0
1 * D	98.90	90.68	6.00	-83.9	5.0	0.0
1 * D	107.71	87.33	6.00	-172.6	5.0	0.0
1 * D	108.12	78.46	6.00	-175.2	5.0	0.0
1 * D	109.39	70.69	6.00	-173.7	5.0	0.0