Francis Gardner House

External Lighting Report

February 2020

MWL (Mendick Waring Ltd)
1st Floor Edelman House
1238 High Road,
Whetstone
London, N20 0LH
T: 020 8446 9696
www.mwl-group.com

Issue Details

Project ..... Francis Gardner House

MWL Reference J2595

Report Scope ..... External Lighting Report

Revision ..... First Issue

Date 14/02/2020

Author ..... Luca Marras

Checked By ..... Jon Harris

Rev	Date	Description	By	Approved
1	14/02/20	First Issue	LM	JH

Directors
Fergus Traynor IEng ACIBSE
Suresh Patel BEng (Hons) AMIMechE
Andrew Steels BEng (Hons)
Jon Harris HND

Registered Office: Edelman House, 1238 High Road, N20 0LH. Registered in England No. 4700822

MWL
Edelman House
1238 High Road, Whetstone
London, N20 0LH

Telephone: 020 8446 9696
E-mail: enquiries@mwl-group.com
Website: www.mwl-group.com

Contents

1 Scope, Standards and Regulations

This report describes the external lighting strategy proposed for the Francis Gardner House student accommodation located in West Hampstead, London Borough of Camden.

Scope of this document is to demonstrate compliance of the external lighting with the relevant British Standards and Regulations. In detail:

- BS 5489-1:2013. Code of practice for the design of road lighting. Lighting of roads and public amenity areas;
- Guidance Notes for the Reduction of Obtrusive Light GN01.

The site consists of a new 7 above ground storey building plus basement.

2 External Lighting Design Requirements

2.1 Lighting Requirements - BS 5489:2013

The BS 5489 classifies all public areas in "Lighting Classes" (refer to "*PD CEN/TR 13201-1:2004, Road lighting – Part 1: Selection of lighting classes*" for further details), with each class subject to different lighting requirements. In this specific case, the areas in the development fall under the "P" Class (Pedestrian and low speed areas) and can be classified as Class P3;

Lighting requirements for the selected lighting Class is shown in the following table:

LIGHTING REQUIREMENTS	LIGHTING CLASS P3
AVERAGE MAINTAINED ILLUMINANCE (E_m)	7.5 lux
MINIMUM MAINTAINED ILLUMINANCE (E_{min})	1.5 lux

Table 1: BS 5489:2013 requirements for S5 lighting class

2.2 Lighting Requirements – Guidance Notes for the Reduction of Obtrusive Light GN01

The Guidance Note (GN) aims to reduce the obtrusive light which may cause nuisance to others and waste money and energy, without detriment to the lighting task. In detail, aspects to consider are:

- Sky glow (the brightening of the night sky).
- Glare (the uncomfortable brightness of a light source when viewed against a darker background).
- Light Intrusion into windows ("Trespass").
- Light from the blue end of the spectrum.

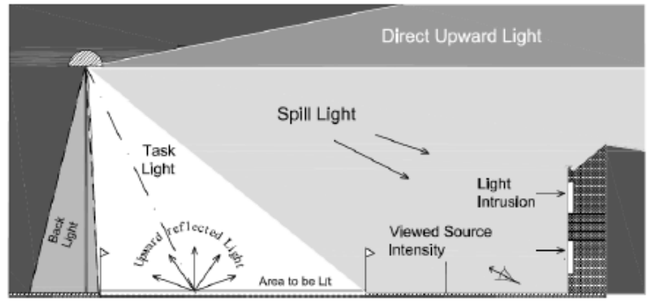


Figure 1: Types of obtrusive light

To avoid/reduce the light pollution and the obtrusive light, the GN sets a series of general requirements to meet, depending on the Environmental Zone. For this statement, an urban zone (Zone E4) has been considered, and the parameters showing in Table 2 generally need to be met:

Environmental Zone	Sky Glow URL (Max %) (1)	Light Intrusion (Into windows) E_v [lux]		Luminaire Intensity I [cd]		Average Building Luminance Pre-Curfew L [cd/m²] (2)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E4	15	25	5	25,000	2,500	25

Table 2: Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

NOTES TO TABLE 2:

1 Upward Light Ratio: Only applicable in case of deliberate use of upward lights. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.

2 Light Intrusion (into Windows): These values are suggested maxima and need to take account of existing light intrusion at the point of measurement.

3 Luminaire Intensity: This applies to each luminaire in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only.

4 Building Luminance: Only applicable to buildings directly illuminated as a night-time feature.

2.3 Lighting Requirements - Other

Additional requirements for the external lighting can be set from local authorities or deriving from specific ecological and environmental conditions.

No additional requirements are applicable for this specific project.

3 External Lighting Strategy

External lighting is to be provided to the building envelop and surrounding roads/areas and landscape. The external lighting strategy has been developed by the Landscape Architect for this scheme, and can be summarised as follows:

- Lighting in footpaths and pedestrian areas: a combination of 3300mm height column lights and wall mounted lights.

The external lighting to the building shall be provided to illuminate all entrances and exits.

Lighting will be provided via the use of asymmetrical optic low energy LED fittings, with fittings selected to light the areas intended and to mitigate/avoid light pollution. Controls shall be daylight sensor.

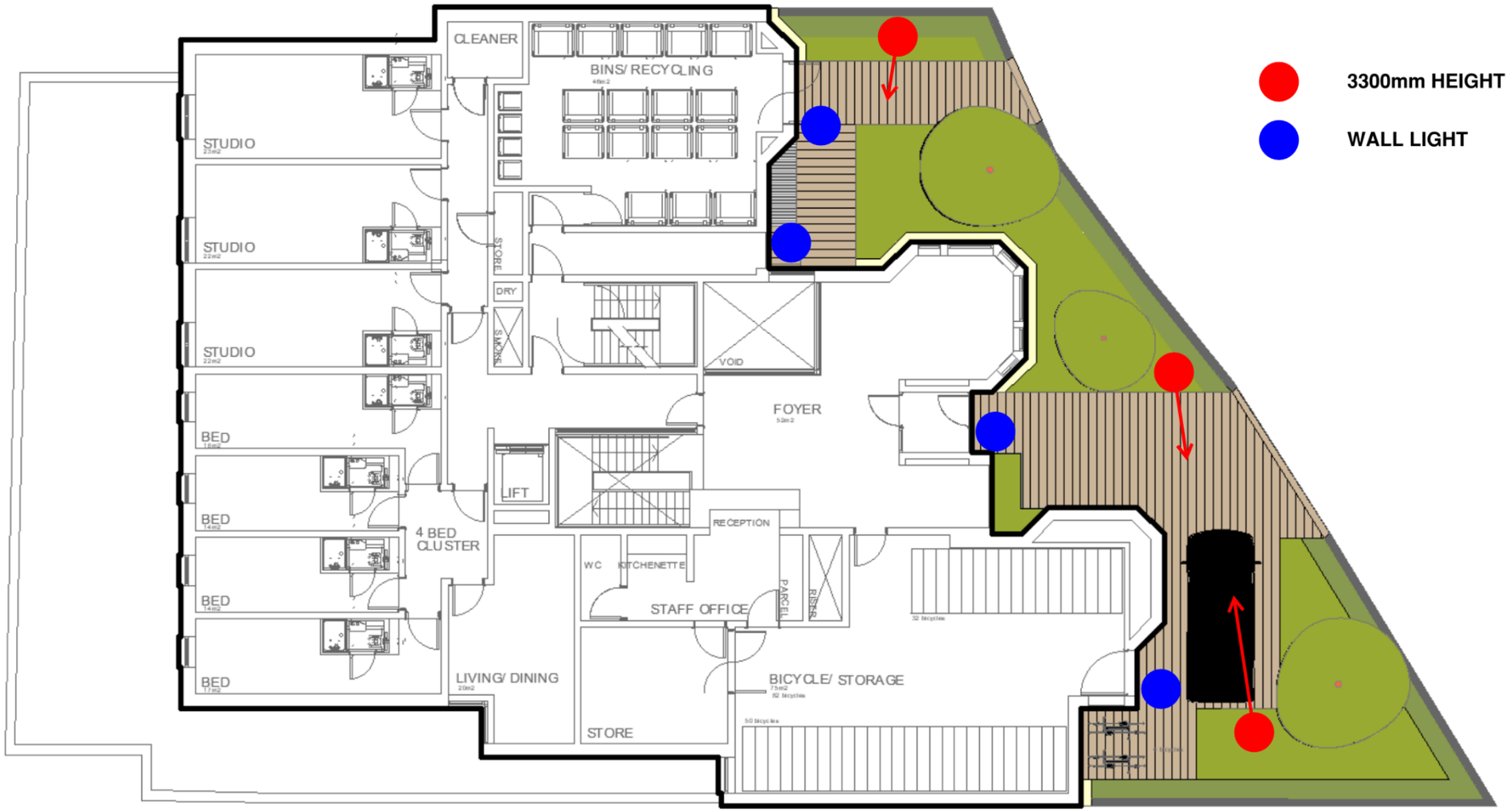
4 Lighting Study and Conclusions

During the design process, lighting calculation have been performed in order to prove that the external lighting system complies with all the applicable Standards.

Calculations have been carried out in line with the strategy above for an indicative selection of fittings with the purpose of demonstrating that the proposed lighting strategy is capable of delivering an average maintained illuminance level and a minimum maintained illuminance in line with the applicable regulations and requirements.

Please refer to the Appendix B attached for further details regarding the external illuminance levels and to Appendix C for further details regarding an indicative selection of light fittings.

Appendix A – External Lighting (Concept Design)


CLEANER
BINS/ RECYCLING
STUDIO
STUDIO
STUDIO
BED
BED
BED
BED
STORE
DRY
SHOWER
VOID
FOYER
LIFT
4 BED CLUSTER
RECEPTION
WC
KITCHENETTE
STAFF OFFICE
PARCELS
RISERS
LIVING/ DINING
STORE
BICYCLE/ STORAGE
3300mm HEIGHT COLUMN LIGHT
WALL LIGHT

Appendix B – External lighting calculations

Francis Gardener House

Installation :

Project number	:	17222
Customer	:	Camlins
Processed by	:	GS
Date	:	29.01.2020

Project description:

Option 1

Saturn 2 Asymmetric

Option 2

Lanova

Option 3

Elo Lightstack

The following values are based on exact calculations on calibrated lamps, luminaires and their arrangement. In practice, gradual divergences can occur.

Guarantee claims for luminaire data are excluded.

Relux and the luminaire manufacturers accept no liability for consequential damage and damage which is occasioned to the user or to third parties.

1 Luminaire data

1.1 selux, Saturn 2 (SX 480 77-9)

1.1.1 Data sheet

Manufacturer: selux

SX 480 77-9 EXTERIOR - Lantern Saturn 2
Lantern
asymmetric
electronic converter
housing made of die-cast aluminium, aluminium, stainless steel, screws stainless steel, stainless steel threaded inserts for regularly used fixing positions, for spigot Ø: 90mm
impact resistant polycarbonate diffuser, clear
Optical system: Tritec Optic, combination of prism optics and reflector optics, for optimum glare control and precise light distribution
colour: Selux graphite or choice of colours, Weight: 15,0 kg, IP65

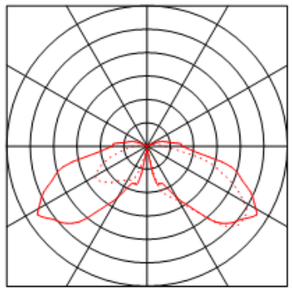
Luminaire data

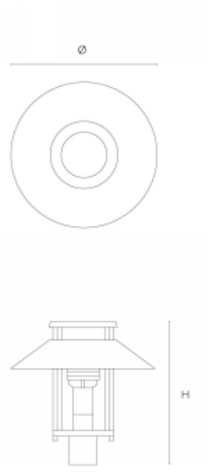
Absolute Photometry		
Luminaire efficacy	:	96 lm/W
Classification	:	A21 ↓91.0% ↑9.0%
CIE Flux Codes	:	19 55 86 91 100
UGR 4H 8H	:	30.9 / 25.9
Control gear	:	unknown
Power	:	25 W
Luminous flux	:	2400 lm

Equipped with

Quantity	:	1
Designation	:	LED
Colour	:	3000K (CRI 80)

Dimensions : Ø670 mm x 625 mm

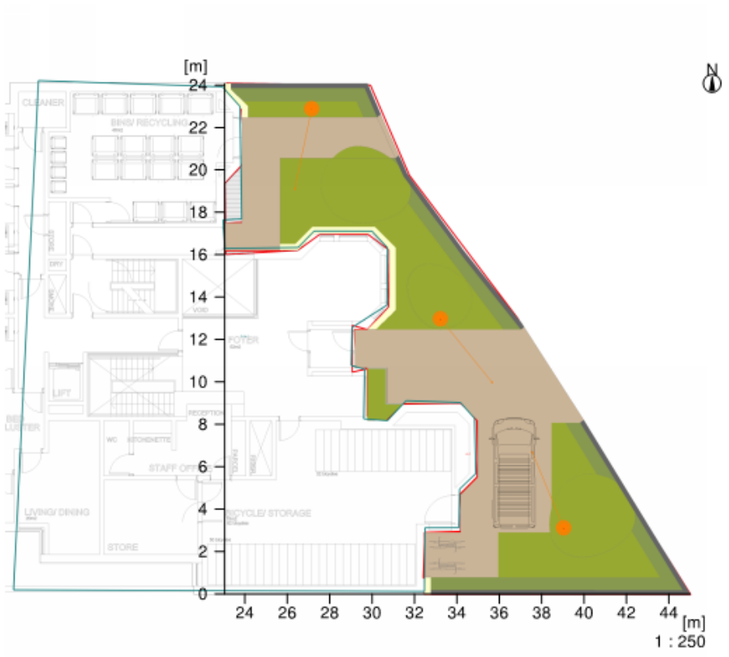




2 Saturn 2

2.1 Description, Saturn 2

2.1.1 Floor plan



2 Saturn 2

2.2 Summary, Saturn 2

2.2.1 Result overview, Measuring area 1

General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
photometric centre height. [m]:	3.30 m
Maintenance factor	0.80
Total luminous flux of all lamps	7200 lm
Total power	75 W
Total power per area (188.95 m²)	0.40 W/m²

Illuminance

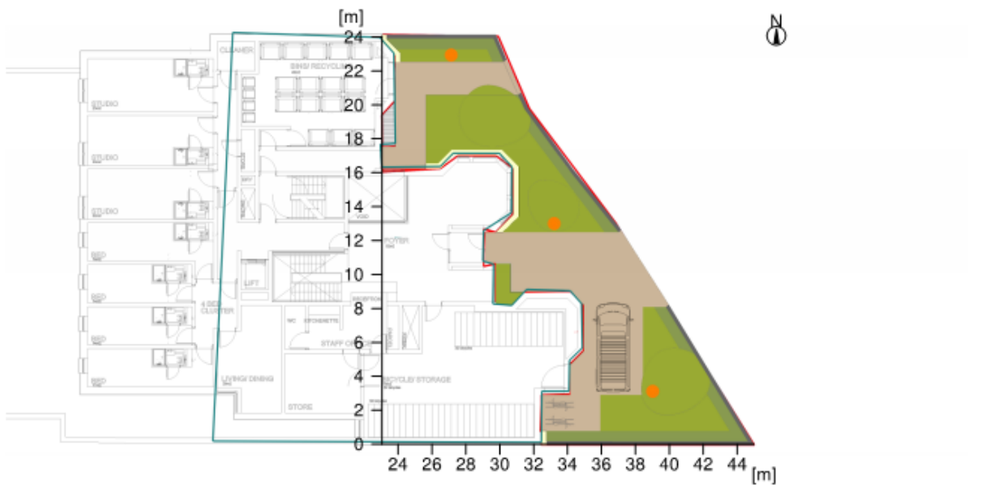
Average illuminance	Eav	12.5 lx
Minimum illuminance	Emin	1.9 lx
Maximum illuminance	Emax	18.9 lx
Uniformity Uo	Emin/Em	1:6.64 (0.15)
Diversity Ud	Emin/Emax	1:10.1 (0.1)

Type No.\Make

3	3	**selux**	
		Order No.	: SX 480 77-9
		Luminaire name	: Saturn 2
		Equipment	: 1 x LED 25 W / 2400 lm

2.2 Summary, Saturn 2

2.2.2 Result overview, Measuring area 2



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
photometric centre height. [m]:	3.30 m
Maintenance factor	0.80
Total luminous flux of all lamps	7200 lm
Total power	75 W
Total power per area (188.95 m²)	0.40 W/m²

Illuminance

Average illuminance	Eav	13.2 lx
Minimum illuminance	Emin	3.6 lx
Maximum illuminance	Emax	19.5 lx
Uniformity Uo	Emin/Em	1:3.63 (0.28)
Diversity Ud	Emin/Emax	1:5.35 (0.19)

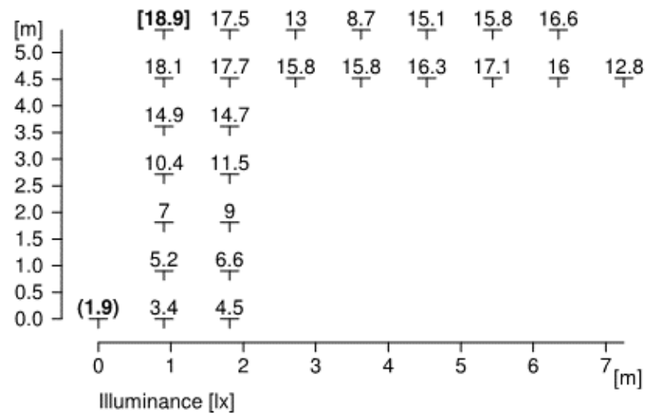
Type No.\Make

3 3 **selux**
Order No. : SX 480 77-9
Luminaire name : Saturn 2
Equipment : 1 x LED 25 W / 2400 lm

2 Saturn 2

2.3 Calculation results, Saturn 2

2.3.1 Table, Measuring area 1 (E)

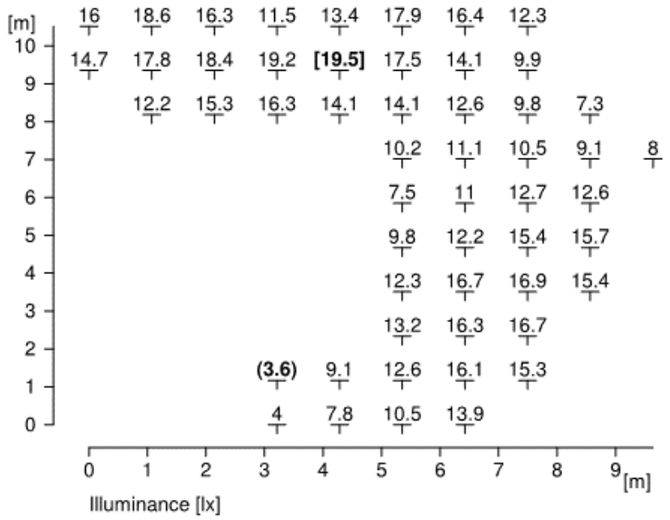


Height of the reference plane : 0.00 m

Average illuminance	Eav	: 12.5 lx
Minimum illuminance	Emin	: 1.9 lx
Maximum illuminance	Emax	: 18.9 lx
Uniformity Uo	Emin/Eav	: 1 : 6.64 (0.15)
Diversity Ud	Emin/Emax	: 1 : 10.08 (0.10)

2.3 Calculation results, Saturn 2

2.3.2 Table, Measuring area 2 (E)

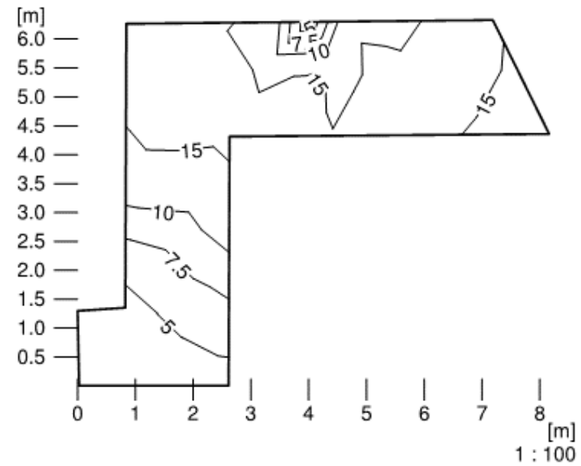


Height of the reference plane : 0.00 m

Average illuminance	Eav	: 13.2 lx
Minimum illuminance	Emin	: 3.6 lx
Maximum illuminance	Emax	: 19.5 lx
Uniformity Uo	Emin/Eav	: 1 : 3.63 (0.28)
Diversity Ud	Emin/Emax	: 1 : 5.35 (0.19)

2.3 Calculation results, Saturn 2

2.3.3 Isolines representation, Measuring area 1 (E)



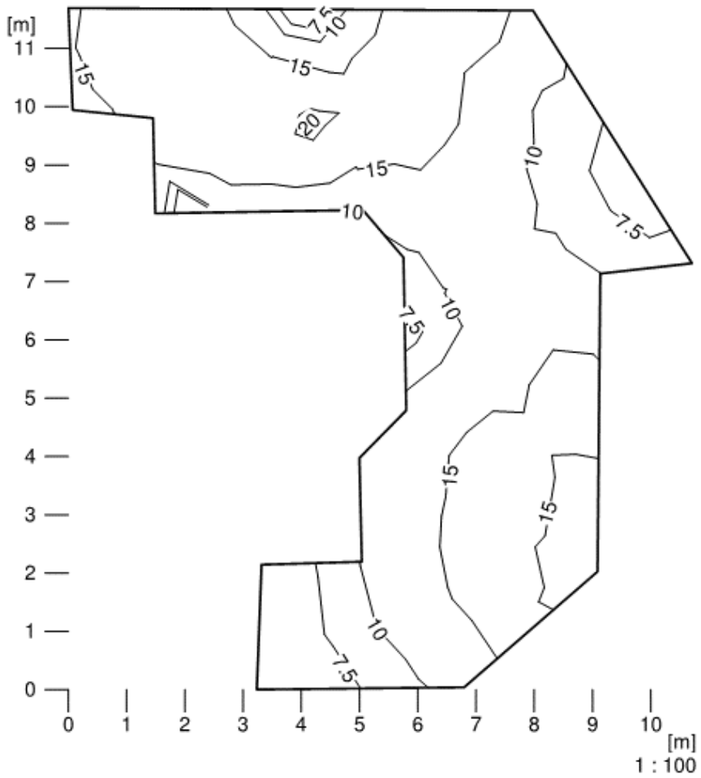
Illuminance [lx]

Height of the reference plane : 0.00 m

Average illuminance	Eav	: 12.5 lx
Minimum illuminance	Emin	: 1.9 lx
Maximum illuminance	Emax	: 18.9 lx
Uniformity Uo	Emin/Eav	: 1 : 6.64 (0.15)
Diversity Ud	Emin/Emax	: 1 : 10.08 (0.10)

2.3 Calculation results, Saturn 2

2.3.4 Isolines representation, Measuring area 2 (E)



Illuminance [lx]

Height of the reference plane : 0.00 m

Average illuminance	Eav	: 13.2 lx
Minimum illuminance	Emin	: 3.6 lx
Maximum illuminance	Emax	: 19.5 lx
Uniformity Uo	Emin/Eav	: 1 : 3.63 (0.28)
Diversity Ud	Emin/Emax	: 1 : 5.35 (0.19)

Appendix C – Luminaire Schedule

LUMINAIRE SPECIFICATION

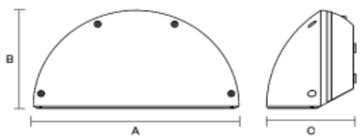
Mendick Waring Limited

PROJECT:	Francis Gardner House	**LUMINAIRE REF:**
PROJECT NO:	J2595	–
REVISION:	Preliminary Issue	
DATE:	03.02.20	

DESCRIPTION:
Wall mounted light IP66 IK10 CE Aluminium

LOCATION:
Façade

ILLUSTRATION, DETAILS, PHOTOMETRIC DATA



MANUFACTURER/CONTACT:	**LUMINAIRE DATA**	
DW WINDSOR	**LUMINAIRE REF:**	SEW 30 A5F -- -- EM
Pindar Road, Hoddesdon Herts, EN11 0DX, UK	**WIDTH (A):**	380 mm
T: 01992 474600 info@dwwindsor.co.uk	**HEIGHT (B):**	195 mm
www.dwwindsor.com	**DEPTH (C):**	165 mm
	FINISH:	Graphite grey finish
	ACCESSORIES:	

ELECTRICAL/LIGHTING DATA:			
LAMP TYPE:	LED 3771lm	**COLOUR TEMPERATURE:**	3000K
LAMP REFERENCE:		**SUPPLY:**	240V
MANUFACTURER:	Sunlike Led	**LUMINAIRE EFFICACY:**	122lm/w
LAMP BASE:	N/A	**L.O.R.**	
LAMP LIFE:		**CONTROL GEAR:**	

NOTES / MAINTENANCE REQUIREMENTS
Medium distribution. Glazing frosted.
3 hours of emergency included.

SIGN OFF APPROVAL:	
ARCHITECT:	**CLIENT:**

LUMINAIRE SPECIFICATION

Mendick Waring Limited

PROJECT:	Francis Gardner House	**LUMINAIRE REF:**
PROJECT NO:	J2595	–
REVISION:	Preliminary Issue	
DATE:	03.02.20	

DESCRIPTION:
Exterior lantern Saturn 2. IP65

LOCATION:
Footpaths and carpath

ILLUSTRATION, DETAILS, PHOTOMETRIC DATA

MANUFACTURER/CONTACT:	**LUMINAIRE DATA**	
Selux UK Ltd,	**LUMINAIRE REF:**	SX 480 77-9
Harwoods House,	**DIAMETER:**	670mm
Banbury Road, Ashorne, Warwickshire, CV35 0AA	**HEIGHT:**	625 mm
	FINISH:	Graphite
	ACCESSORIES:	

ELECTRICAL/LIGHTING DATA:			
LAMP TYPE:	LED 2400 lm 25W	**COLOUR TEMPERATURE:**	3000K
LAMP REFERENCE:		**SUPPLY:**	240V
MANUFACTURER:		**LUMINAIRE EFFICACY:**	96 lm/w
LAMP BASE:		**L.O.R.**	
LAMP LIFE:		**CONTROL GEAR:**	

NOTES / MAINTENANCE REQUIREMENTS

SIGN OFF APPROVAL:	
ARCHITECT:	**CLIENT:**