

Lightable was commissioned to carry out Phase 1 external lighting modelling to illustrate and quantify the predicted on and off-site illuminance distribution, and to assess levels of light spill at the identified sensitive receptor locations. The lighting modelling was informed by the All Ecology Preliminary Ecological Appraisal and Bat Emergence Surveys.

Luminaire types and positions have been modelled based on the project luminaire schedule, Document Reference: 22013-670-ExternalLightingSchedule, and Lighting Plan Reference: 260401_UH Standen House - 501 - Lighting Plan - Phase 1.

In cases where the specified luminaires do not include integrated lamps, appropriate, low impact lamp types have been selected by Lightable. Details of the selected lamp types are provided in **Appendix 1** of this Note.

The following mitigation is embedded in the overall lighting strategy. All selected luminaires and lamps:

- avoid upward light emissions
- are warm white colour temperature
- are low intensity
- will be installed at no higher than 1.8 m above ground level.

Extracts from the lighting model have been provided in **Appendix 2** of this Note to aid in visualising the proposed light distribution.

A lux plot layout drawing has been prepared by Lightable and is provided in **Appendix 3** of this Note.

The lighting modelling has been undertaken under worst-case conditions, with all luminaires switched on and operating at their Day 1 maximum output, to illustrate a worst-case scenario.

As can be seen, light is predicted to be reasonably contained within the intended area and away from ecological features. Individual light measurements were carried out at the bat mitigation locations and assessed against the maximum threshold of 0.5 lux. A summary of the results is included in the following table.

Reference	Illuminance (lux)		PASS / FAIL
	Threshold	Calculated	
ECO-1	0.50	0.06	PASS
ECO-2	0.50	0.03	PASS
ECO-3	0.50	0.15	PASS
ECO-4	0.50	0.15	PASS
ECO-5	0.50	0.16	PASS
ECO-6	0.50	0.17	PASS
ECO-7	0.50	0.20	PASS
ECO-8	0.50	0.12	PASS

Conclusion

External lighting is proposed in accordance with relevant policy and guidance, including the recommendations of the project ecologist, All Ecology.

If external lighting is installed in accordance with the information presented, the overall adverse lighting impact is anticipated to be negligible.

Kind regards



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APPENDIX 1 – LAMP TYPES



MASTER VALUE LED spot MV



MASTER LED spot VLE D 3.7-35W GU10 927 36D

MASTER Value, LED, PAR16, Only with specific dimmers, GU10, 2700 K, 270 lm, CRI 90, 25000 h

Delivering a warm, halogen-like accent beam, the MASTER VALUE is a perfect fit for spot lighting. Thanks to its high CRI, it achieves more natural colours, creating cosy and comfortable ambience for residential and hospitality projects, and emphasising the beauty of merchandise in retail. These LED spots MV GU10 have the familiar look and feel of spot lamps, keeping the classic beauty of glass spots and adding the strong performance of LED technology. The dimming function enables you to create the atmosphere you desire, and it works with broad selection of dimmers. The MASTER VALUE also offers more energy savings than normal LED spots.

Warnings and Safety

- Operating temperature range is between -20° C and 45° C ambient
- Only to apply in dry or damp locations and most of open fixtures with lamp-holders that offer sufficient space (10 mm free air space)
- Not intended for use with emergency light fixtures or exit lights

Product data

General Information		Warranty period	
Cap base	GU10	5 years	
Nominal lifetime	25,000 h	Light Technical	
Switching Cycle	50,000	Colour Code	927 [CCT of 2700K]
Lighting Technology	LED	Beam angle (nom.)	36 degree(s)
Flux measurement reference	Narrow Cone	Luminous Flux	270 lm
		Luminous intensity (nom.)	500 cd

MASTER VALUE LED spot MV

Colour designation	Warm White (WW)
Correlated Colour Temperature (Nom)	2700 K
Luminous efficacy (rated) (nom.)	72 lm/W
Colour consistency	<6
Colour rendering index (CRI)	90
LLMF at end of nominal lifetime (nom.)	70 %
Luminous flux in 90° cone (rated)	270 lm
Photobiological safety according to EN 62471	RG1

Operating and Electrical

Line Frequency	50 to 60 Hz
Input frequency	50 to 60 Hz
Power Consumption	3.7 W
Lamp current (nom.)	18 mA
Wattage equivalent	35 W
Starting time (nom.)	0.5 s
Warm-up time to 60% light	0.5 s
Power Factor (Fraction)	0.9
Voltage (nom.)	220-240 V

Temperature

T-Case maximum (nom.)	70 °C
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Controls and Dimming

Dimmable	Only with specific dimmers
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Mechanical and Housing

Bulb shape	PAR16
Net Weight (Piece)	0.038 kg

Approval and Application

Energy Efficiency Class	F
Suitable for accent lighting	Yes
Energy consumption kWh/1,000 hours	4 kWh
EPREL Registration Number	1825228
CE mark	Yes
EU RoHS compliant	Yes
EyeComfort	Yes
Flickering value (PstLM)	1
Stroboscopic effect	0.4

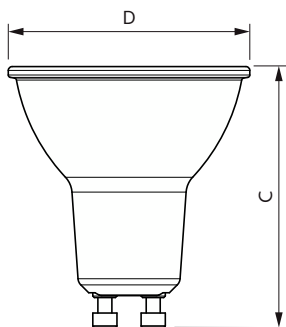
Application Conditions

Can it be used in closed luminaires	No
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Product Data

Order product name	MAS LED spot VLE D 3.7-35W GU10 927 36D
Full product name	MASTER LED spot VLE D 3.7-35W GU10 927 36D
Full EOC	871951430811400
Order code	30811400
Material no. (12 NC)	929002979402
Numerator – quantity per pack	1
EAN/UPC – Product/Case	8719514308114
Numerator – packs per outer box	10
EAN/UPC – Case	8719514308121

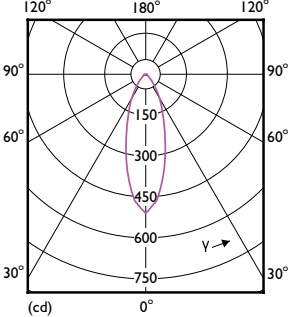
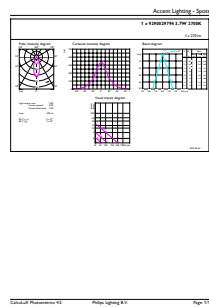
Dimensional drawing



Product	D	C
MAS LED spot VLE D 3.7-35W GU10 927 36D	50 mm	54 mm

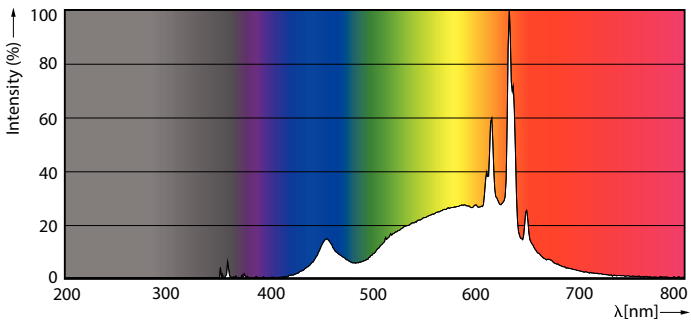
MASTER VALUE LED spot MV

Photometric data



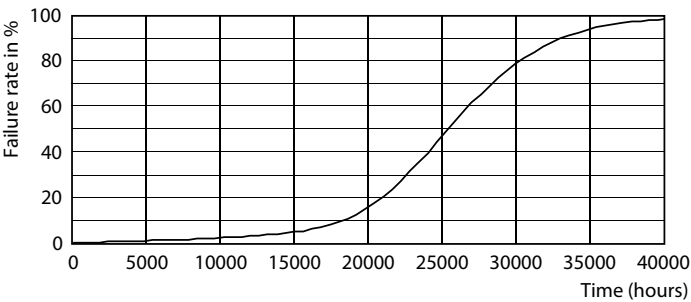
Accent Lighting Spots - MAS LED spot VLE D 3.7-35W GU10 927 36D

Light Distribution Diagram - MAS LED spot VLE D 3.7-35W GU10 927 36D

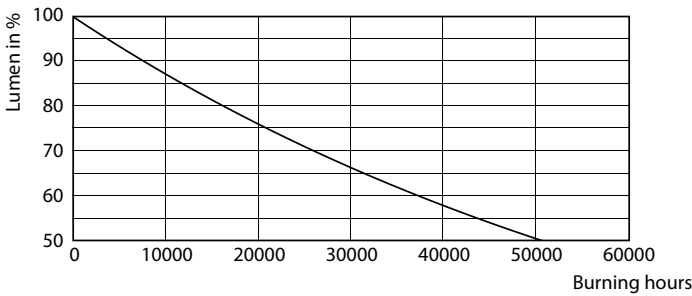


Spectral Power Distribution Colour - MAS LED spot VLE D 3.7-35W GU10 927 36D

Lifetime



Life Expectancy Diagram



Lumen Maintenance Diagram - MAS LED spot VLE D 3.7-35W GU10 927 36D

MASTER VALUE LED spot MV





CorePro LED capsule LV



CorePro LEDcapsuleLV 2.1-20W G4 827 D

CorePro, LEDspot, Capsule, 20 W, G4, 2700 K, 210 lm, CRI 80, 15000 h, Plastic

The CorePro LEDcapsule is a true alternative to the halogen capsule. It is particularly suitable for task lighting and decorative applications in homes, shops, hotels and restaurants. Compatible with existing fixtures with G4 holders and designed for retrofit replacement of halogen capsules, CorePro LEDcapsule delivers significant energy savings and minimises maintenance costs without any compromise on light quality.

Product data

General Information	
Cap base	G4
Nominal lifetime	15,000 h
Switching Cycle	50,000
Lighting Technology	LEDspot
Flux measurement reference	Sphere
Warranty period	2 years
Light Technical	
Colour Code	827 [CCT of 2700K]
Beam angle (nom.)	300 degree(s)
Luminous Flux	210 lm
Colour designation	Warm White (WW)
Correlated Colour Temperature (Nom)	2700 K
Luminous efficacy (rated) (nom.)	100 lm/W

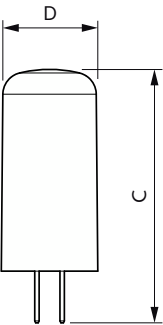
Colour consistency	<6
Colour rendering index (CRI)	80
LLMF at end of nominal lifetime (nom.)	70 %
Photobiological safety according to EN 62471	RG0
Operating and Electrical	
Input frequency	- Hz
Power Consumption	2.1 W
Lamp current (nom.)	190 mA
Wattage equivalent	20 W
Starting time (nom.)	0.5 s
Warm-up time to 60% light	0.5 s
Power Factor (Fraction)	0.9
Voltage (nom.)	ac electronic 12 V

CorePro LED capsule LV

Temperature	
T-Case maximum (nom.)	64 °C
Controls and Dimming	
Dimmable	Only with specific dimmers
Mechanical and Housing	
Lamp Finish	Frosted
Bulb material	Plastic
Bulb shape	Capsule
Net Weight (Piece)	0.006 kg
Approval and Application	
Energy Efficiency Class	F
Suitable for accent lighting	No
Energy consumption kWh/1,000 hours	3 kWh
EPREL Registration Number	1879162
CE mark	Yes
EU RoHS compliant	Yes
EyeComfort	Yes

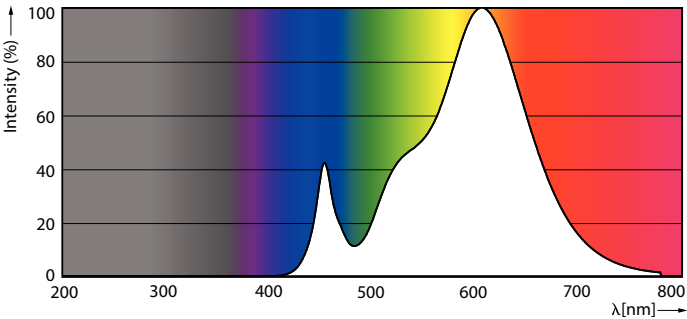
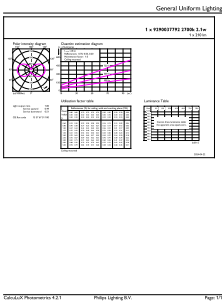
Flickering value (PstLM)	1
Stroboscopic effect	0.4
Ambient temperature range	-20 to +45 °C
Application Conditions	
Can it be used in closed luminaires	No
Product Data	
Order product name	CorePro LEDcapsuleLV 2.1-20W G4 827 D
Full product name	CorePro LEDcapsuleLV 2.1-20W G4 827 D
Full EOC	872016930055200
Order code	929003779202
Material no. (12 NC)	929003779202
Numerator – quantity per pack	1
EAN/UPC – Product/Case	8720169300552
Numerator – packs per outer box	12
EAN/UPC – Case	8720169300569

Dimensional drawing



Product	D	C
CorePro LEDcapsuleLV 2.1-20W G4 827 D	15 mm	40 mm

Photometric data

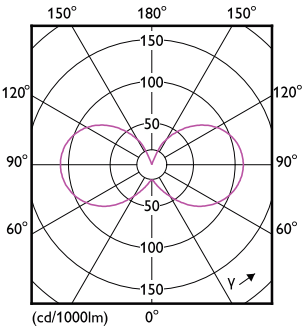


General uniform lighting - CorePro LEDcapsuleLV 2.1-20W G4 827 D

Spectral Power Distribution Colour - CorePro LEDcapsuleLV 2.1-20W G4 827 D

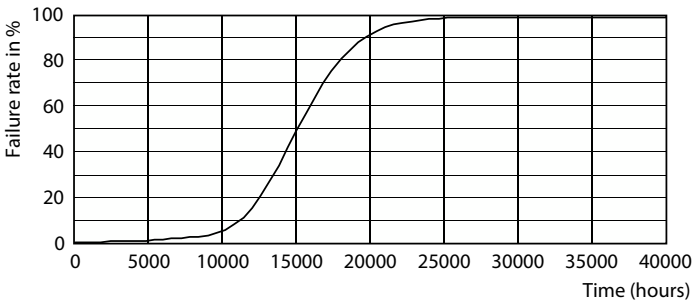
CorePro LED capsule LV

Photometric data

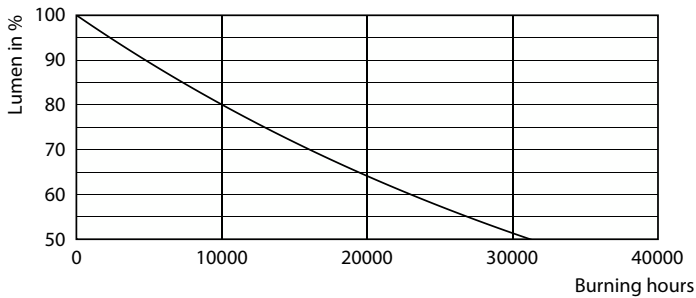


Light Distribution Diagram - CorePro LEDcapsuleLV 2.1-20W G4 827 D

Lifetime



Life Expectancy Diagram



Lumen Maintenance Diagram - CorePro LEDcapsuleLV 2.1-20W G4 827 D



LED Filament Rounds

LED 3.3W Clear Filament Round - ES - 2700K

Part Code: 60732

The LED Filament Range combines LED technology with the elegance of Incandescent Lamps. Creating a welcoming atmosphere with a retro feel, our LED Filament Range offers smooth dimming on rotary and digital dimming systems. The Filament Round is ideal for all bedside decorative lighting along with all other similar applications.

- LED Technology with the elegance of Incandescent Lamps
- Creates a welcoming atmosphere with retro feel
- Argon gas filled to improve life
- Smooth dimming on rotary and digital dimming systems
- Full glass envelope (exc SBC & SES)



3 Year
Guarantee



15,000
Life Hours



300°
Beam Angle



240
Volts



LED Filament Rounds



Product Category	Lamps / LED
Application	LED Filament Round
Product Warranty	3 Years
EAN	5013588607320
Commodity Code	8539520000
Country of Origin	CN

Technical Specification

Wattage (W)	3.3
Volts (V)	240
Colour Temperature (K)	2700
Lumen Output (lm)	470
Lumens per Watt (lm/W)	142
CRI (ra)	85
Frequency (Hz)	50/60
LED Drive Current	22mA
Energy Consumption (kWh/1000h)	4
Life Hours	15000
Switching Cycles	8000
Energy Rating	D
Lumen Maintenance Ratio	80

Packaging Information

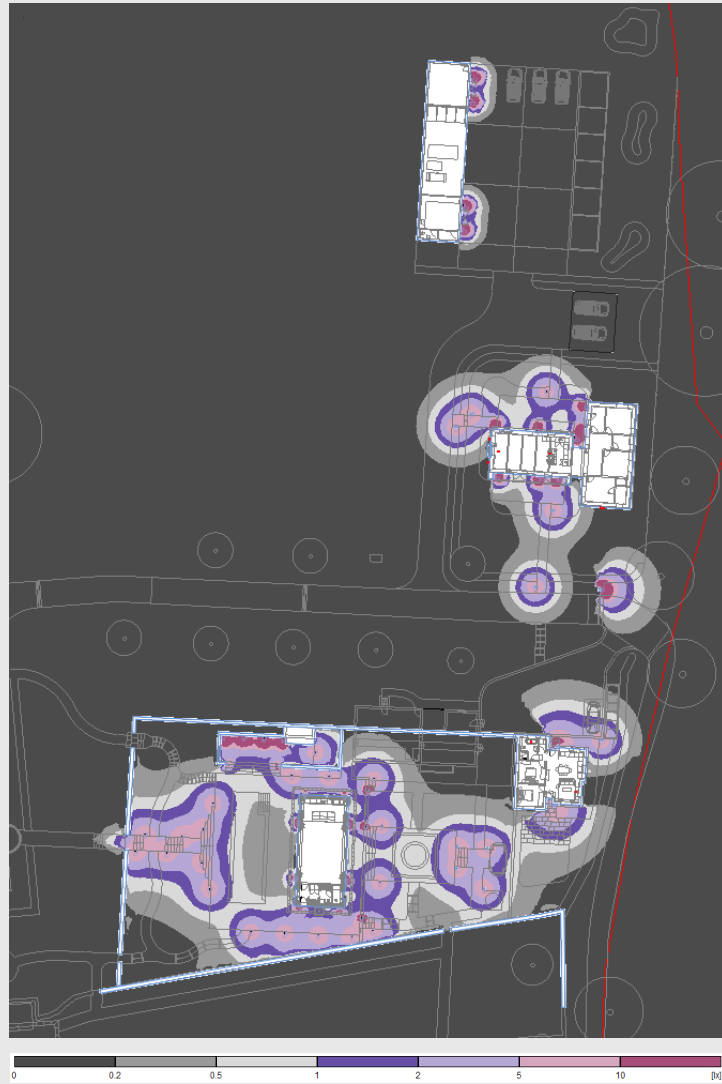
Minimum Order Quantity	1
Height (mm)	78
Diameter (mm)	45
Individual Product Weight (kg)	0.019
Single Box Weight (kg)	0.028
Single Box Height (mm)	90
Single Box Width (mm)	50
Single Box Depth (mm)	50
Single Box Volume	0.00023
Inner Box Qty	10
Inner Box Barcode	6073200000010
Inner Box Weight (kg)	0.41
Inner Box Height (mm)	100
Inner Box Width (mm)	270
Inner Box Depth (mm)	110
Inner Box Volume	0.00297
Outer Box Qty	100
Outer Box Barcode	6073200000100
Outer Box Weight (kg)	3.58
Outer Box Height (mm)	220
Outer Box Width (mm)	580
Outer Box Depth (mm)	290
Outer Box Volume	0.037
UNSPSC Code	39101628

LED Filament Rounds

Additional Information	
Beam Angle	300°
Cap	ES

APPENDIX 2 – LIGHTING MODEL EXTRACTS

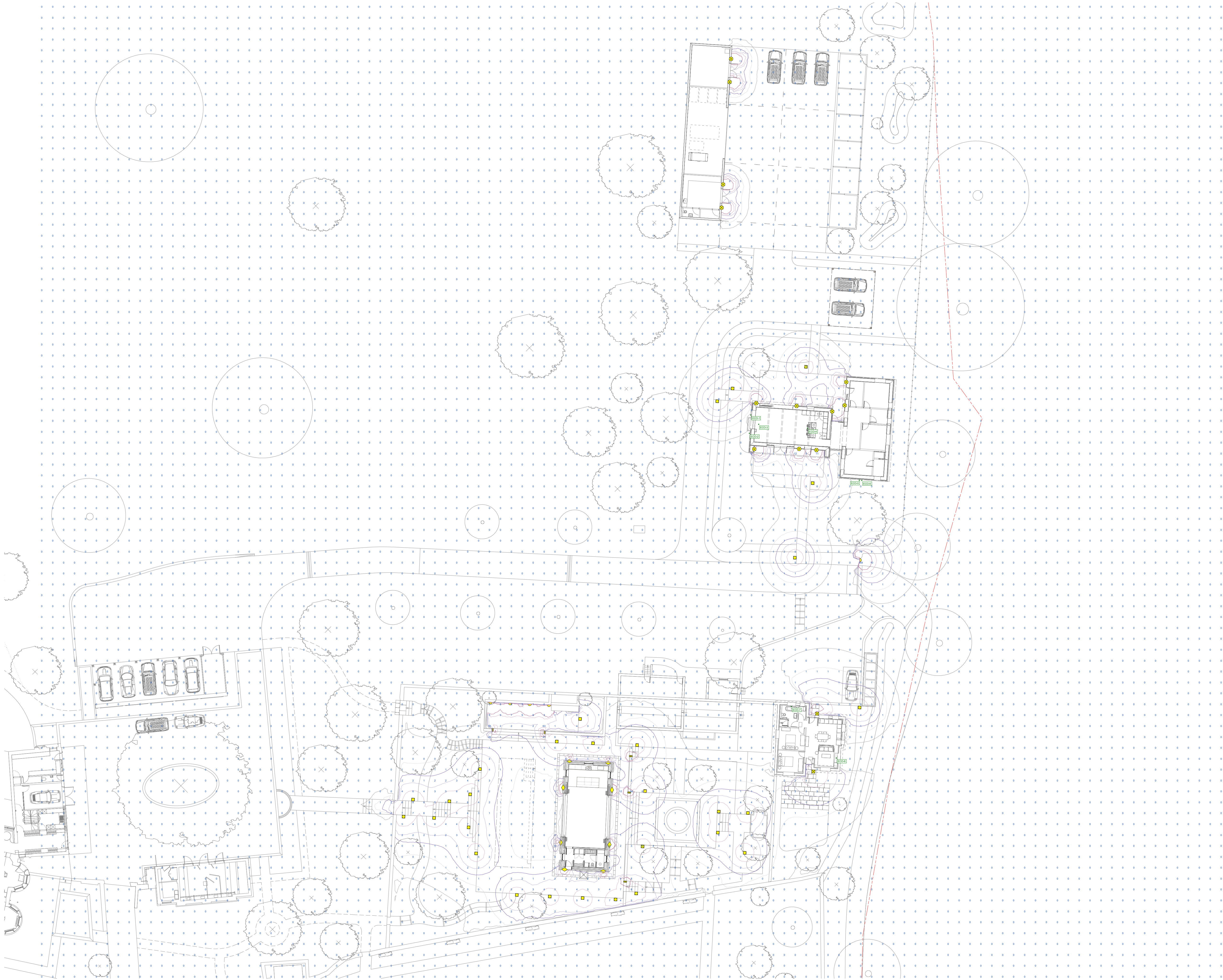
Illuminance view (lux)



Luminance view



APPENDIX 3 – LUX PLOT LAYOUT



NOTES

- THIS IS NOT A CONSTRUCTION DRAWING.
- DO NOT SCALE FROM THIS DRAWING.
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER PROJECT DOCUMENTS.
- THIS LUX PLOT IS UNDER WORST CASE CONDITIONS, I.E., WHEN ALL LIGHTS ARE OPERATING AT "DAY 1" MAXIMUM OUTPUT.
- FOR LUMINAIRE SCHEDULE, REFER TO MICHAELIS BOYD DOCUMENT REFERENCE: 22013-670-ExternalLightingSchedule

KEY

ILLUMINANCE (LUX)				
ISOLUX CONTOURS		ISOLUX GRID		
	10			
	5	0	0	1
	2			
	1	0	1	1
	0.5	0	1	1
	0.2			

BAT MITIGATION SUMMARY		
REF	HEIGHT AFFL.	E _{MAX} (LUX)
ECO-1	3.4 m	0.06
ECO-2	3.4 m	0.03
ECO-3	5.0 m	0.15
ECO-4	5.0 m	0.15
ECO-5	4.0 m	0.16
ECO-6	4.0 m	0.17
ECO-7	4.0 m	0.20
ECO-8	3.8 m	0.12



P1	17.04.26	FOR INFORMATION
REV	DATE	DESCRIPTION

Lightable

PROJECT
PHASE 1
STANDEN HOUSE
CHUTE STANDEN

DRAWING TITLE
EXTERNAL LIGHTING
LUX PLOT LAYOUT

DRAWING NUMBER
L0224-LTBL-DWG-001

DAN ALASFAR MEng IEng MILP dan@lightable.co.uk 07877 912379	SCALE 1:250 @ A1	DATE 17.04.2026	REV P1
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