

PORTSMOUTH WATER

EXTERNAL IMPACT LIGHTING ASSESSMENT

SOLENT ROAD, HAVANT

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RECORD OF REVISIONS.

Date.	Revision.	Description of change.
22/03/2023	P01	First Issue

1 INTRODUCTION

This report has been provided on behalf of Portsmouth Water, to review the proposed external lighting scheme at Solent Road, Havant, PO9 1DQ.

In support of the development Planning Application, the intent of this report is to provide an External Lighting Assessment of the potential obtrusive light impact to surrounding building's and the environment within the vicinity.

Where applicable, this document will outline the requirements of mitigation measures to be implemented at design and operational stages to reduce or remove any potential impact.

The potential impact of obtrusive lighting is categorised below:

- Light Spill: The spilling of light beyond the boundary of a property which may cause nuisance to others.
- Glare: The uncomfortable brightness of the light source against a dark background which results in dazzling the observer, which may cause residents and a hazard to road users.
- Sky Glow: The upwards spill of light into the sky which can cause a glowing effect and is often seen above cities when viewed from a dark area.

Table 2 — Maximum obtrusive light permitted for exterior lighting installations

Environmental zone	Light on properties		Luminaire intensity		Upward light ratio	Luminance	
	E_v lx		I cd		R_{UL} %	L_b cd·m ⁻²	L_s cd·m ⁻²
	Pre-curfew ^a	Post-curfew	Pre-curfew	Post-curfew		Building facade	Signs
E1	2	0	2 500	0	0	0	50
E2	5	1	7 500	500	5	5	400
E3	10	2	10 000	1 000	15	10	800
E4	25	5	25 000	2 500	25	25	1 000

where

E1 represents intrinsically dark areas, such as national parks or protected sites;
E2 represents low district brightness areas, such as industrial or residential rural areas;
E3 represents medium district brightness areas, such as industrial or residential suburbs;
E4 represents high district brightness areas, such as town centres and commercial areas;
 E_v is the maximum value of vertical illuminance on properties in lx;
 I is the light intensity of each source in the potentially obtrusive direction in cd;
 R_{UL} is the proportion of the flux of the luminaire(s) that is emitted above the horizontal, when the luminaire(s) is (are) mounted in its (their) installed position and attitude, and given in %;
 L_b is the maximum average luminance of the facade of a building in cd·m⁻²;
 L_s is the maximum average luminance of signs in cd·m⁻².

^a In case no curfew regulations are available, the higher values shall not be exceeded and the lower values should be taken as preferable limits.

The luminaires selected will be a combination of column and wall mounted LED fittings, which are to comply with BREEAM requirements; Pol 04 (Reduction of night time light pollution), ENE 03 (External lighting) & Part L2A of the building regulations.

The site has been classified as an E3 Environmental zone according to BS EN 12464-2:2014, Lighting of Work Places, Part 2. The table below is taken from BS 12464-2:2014, Table 2 and summarises the classifications of Environmental Zones.

2 TERMINOLOGY

Luminaire

Electrical device used to create artificial light, also known as a light or light fitting.

Luminous intensity

Power emitted by a light source in a particular direction, measured in candelas [cd].

Luminous flux

Measure of the amount of visible light from a source, measured in lumens [lm].

Note: one lumen is defined as the luminous flux produced by a light source that emits one candela of luminous intensity over a solid angle of one steradian [$\text{lm} = \text{cd} \cdot \text{sr}$]

Illuminance

The total luminous flux incident on a surface, per unit area, measured in lux [lx] or lumens per square metre [$\text{lm} \cdot \text{m}^{-2}$] or [$\text{cd} \cdot \text{sr} \cdot \text{m}^{-2}$].

Luminance

The luminous flux emitted per unit area, also measured in lux [lx] or [$\text{lm} \cdot \text{m}^{-2}$] or [$\text{cd} \cdot \text{sr} \cdot \text{m}^{-2}$].

Photometric diagrams

The diagrams display luminous intensity of the luminaire as a function of direction. An example of a photometric diagram is given in the figure below. The distance from the centre of the diagram to the line corresponds to a luminous intensity value, in this case, measured in candelas per kilo-lumen [$\text{cd} \cdot \text{klm}^{-1}$]. The angles on the diagram are the elevation angle, usually denoted as gamma (γ). This angle is shown graphically in figure 2. The red and blue lines on the photometric diagram refer to the luminous intensity of the luminaire in the $C = 0^\circ$ & 180° planes and the $C = 90^\circ$ & 270° planes respectively. These C planes are also shown graphically in figure 2.

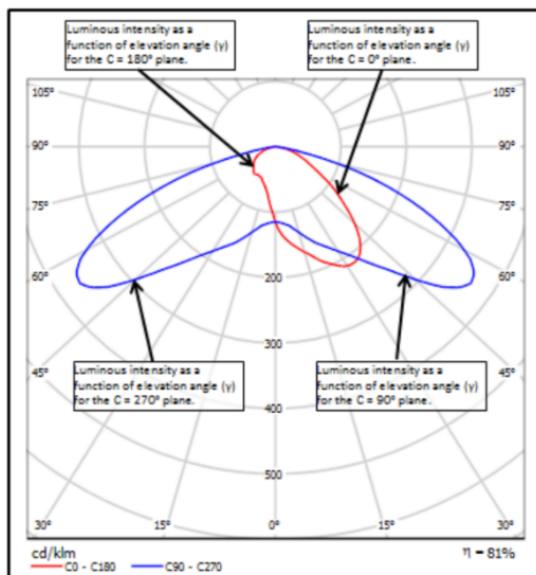


Figure 2

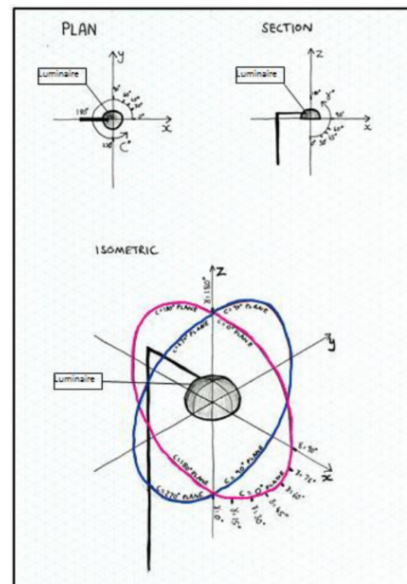


Figure 3

3 RELEVANT POLICY AND GUIDANCE

Legislations

Clean Neighbourhoods and Environment Act (CNEA) 2005

The Clean Neighbourhoods and Environment Act (CNEA) 2005 gives Local Authorities additional powers to deal with artificial lighting by classifying artificial light emitted from defined premises as a statutory nuisance (from April 2006). Guidance produced on Sections 101 to 103 of the CNEA extends the duty on local authorities to ensure their areas are checked periodically for existing and potential sources of statutory nuisances including nuisances arising from artificial lighting. Local authorities must take reasonable steps to investigate complaints of such nuisances from artificial light.

Empowerment to Light Roads - The Highways Act 1980

Section 97 empowers a Highway Authority to provide lighting for any highway or proposed highway for which they are or will be the Highway Authority. District Councils and many Parish or Town Councils also have the power to provide lighting as local lighting authorities.

National Planning Policy

The National Planning Policy Framework 2021

The National Planning Policy Framework (NPPF) encourages good design with planning policies and decisions limiting the effect of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

Artificial lighting needs to be considered when a development may increase levels of lighting or would be sensitive to prevailing levels of artificial lighting. Artificial light provides a valuable benefits to society, including opportunities for sport and recreation grounds, and can be essential to a new development. However, for maximum benefit, it is important to get the right light, in the right place and for it to be used at the right time.

Artificial light is not always necessary. It has the potential to produce 'light pollution' or 'obtrusive light', and not all modern lighting is suitable in all locations. It can be a source of annoyance to people, harmful to wildlife and undermine enjoyment of the countryside or the night sky, especially in areas with intrinsically dark landscapes. Intrinsically dark landscapes are those entirely, or largely, uninterrupted by artificial light. National parks and nature reserves can serve as good examples, particularly where they support habitats for native nocturnal animals. The following National Planning Practice Guidance (NPPG) further details the factors relevant to the control of obtrusive light.

Light pollution – (<https://www.gov.uk/guidance/light-pollution>)

The National Planning Guidance (NPPG) advise on how to consider light within the planning systems, focusing mainly on the following:

- When light pollution is relevant to planning
- What factors should be considered when assessing whether a development proposal might have implication for light pollution
- What factor are relevant when considering where, when and how much light shines
- What factors are relevant when considering possible ecological effects.

Obtrusive Light and Design Guidance

Institute of Lighting Professionals – Guidance Notes for the Reduction of Obtrusive Light GN01:2020

This guidance provides measurable design guidance limits and recommendations to ascertain acceptability of obtrusive light levels at night time.

CIE – 150:2017 – Guidance on the Limitation of the effects of Obtrusive Light from Outdoor Lighting Installations

The purpose of this guide is to help formulate guidelines for assessing the environmental effects of outdoor lighting. This guide will also recommend limits for relevant lighting parameters to contain the obtrusive effects of outdoor lighting within tolerable levels. Obtrusive effects of outdoor lighting are best controlled initially by appropriate design, the guidance given is primarily applicable to new installations; however, some advice is also provided on remedial measures which may be taken for existing installations. This guide refers to the potential adverse effects of outdoor lighting on both natural and man-made environments for people in most aspects of daily life, from residence, sightseers, transport users to environmentalists and astronomers.

BS5489-1: 2020 – Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity area

This part of BS 5489 gives recommendations on the general principles of road lighting, and its aesthetic and technical aspects, and advises on operation and maintenance.

BS EN 13201-2: 2015 – Road lighting – Part 2: Performance requirements

This part of this European Standard defines, according to photometric requirements, lighting classes for road lighting aiming at the visual needs of road users, and it considers environmental aspects of road lighting.

BS EN 12464-2: 2014 – Lighting of Work Places – Part 2: Outdoor Work Places

This European standard specifies lighting requirements for outdoor work places, which meet the needs for visual comfort and performance. All usual visual tasks are considered.

Campaign to Protect Rural England (CPRE) – Night Blight 2017

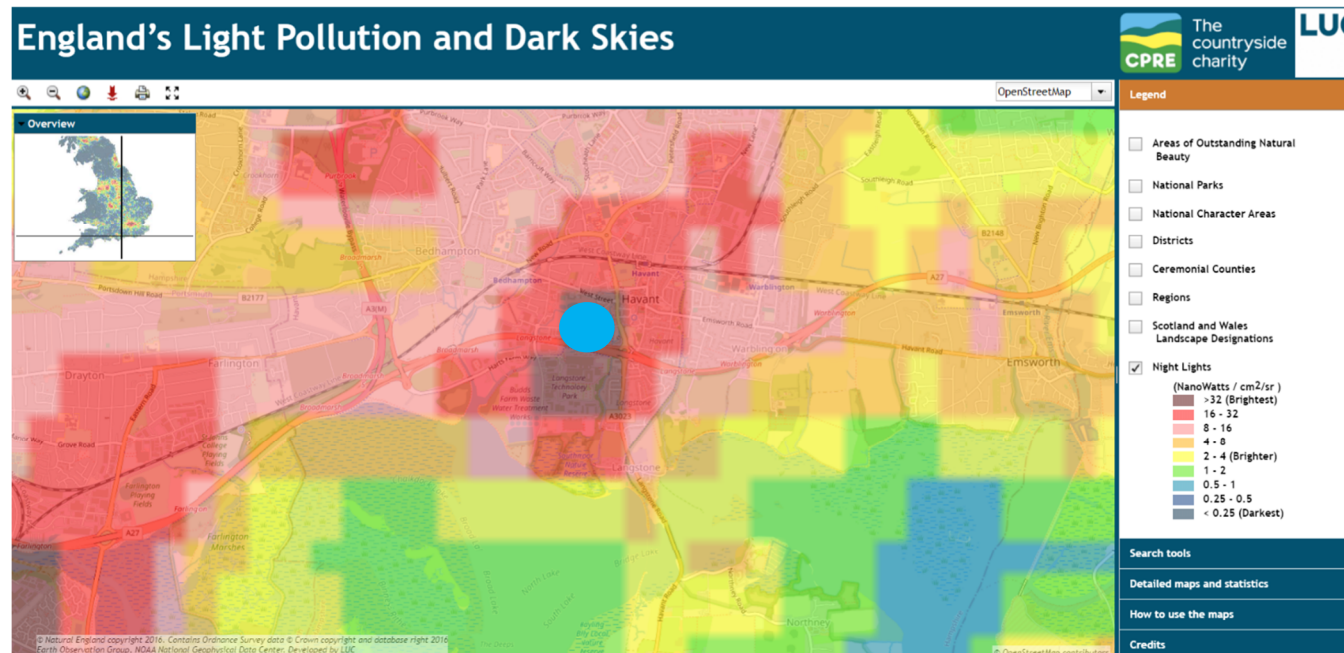
CPRE – Night Blight data (2017) gives a broad-brush indication of upwards light (sky glow) experienced within the UK. The interactive mapping tool allows specific areas and locations to be assessed with regards to a baseline condition.

4 DARK SKY

The image below shows the satellite Sky Glow overview of Havant (<http://www.nightblight.cpre.org.uk/maps/>). The blue circle on the image below is the approximate location of the existing site. As shown below the brown and red shading around the blue circle identifies the current level of Sky Glow within the development areas.

It can be seen that current levels are at the upper end of the indicated Night Light levels. The external lighting strategy to be employed will ensure recommended Sky Glow limits are not exceeded.

The external lighting strategy to be employed will ensure recommended Sky Glow limits are not exceeded, or where existing local area Sky Glow levels already exceed recommended limits, then the proposed lighting solution will not produce an exacerbation or worsening of these levels.



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5 LUMINAIRE SELECTION AND TYPE

The following luminaires have been selected:

Qty	Range	Mounting Height (m)	Mounting Type	Lamp	Lm/W	LOR %	RA	L2A Compliant	BREEAM Compliant
2	Italo 1	8m	Column	93w	111.61	100%	70	Yes	Yes
5	Italo 1	8m	Column	76w	123.95	100%	70	Yes	Yes
8	Quarto LED	3m	Wall	8w	99.07	100%	70	Yes	Yes
9	Italo 1	4m	Wall	40w	118.00	100%	70	Yes	Yes

6 LUMINAIRE CONTROL PHILOSOPHY

A combination of photocells & timeclocks shall be installed to control all external lighting. The time clocks will act as a master control and be set to switch off at times when the development is not in operation. Outside of these hours photocells will control the site external lighting according to day light levels. This will prevent night time lighting pollution and to comply with POL 04/L2A.

7 ASSESSMENT SUMMARY MATRIX

Effect/Description	Mitigation	Calculation Results
Light Intrusion: Light intrusion from the site to surrounding residential areas.	All luminaires will be fitted with suitable optics to limit excessive emissions on the horizontal plane.	The Light Trespass at the site has been calculated.* This is below the maximum permitted level of Light Intrusion for an Environmental Zone deemed to be E3.
Sky Glow: Brightening of the night sky	All Luminaires will be fitted with horizontal cut off optics to minimise upward light spill.	The sky glow achieved at the site is 0.00%. This is below the maximum permitted level of sky glow for an Environmental Zone deemed to be E3.
Luminaire Intensity: Glare, the uncomfortable brightness of light against a dark back ground	Lighting design will comply with the relevant limits on lighting intensity.	Luminaire Intensity (Pre and Post curfew) at the site has been assessed but not calculated.* This is below the maximum permitted level of luminaire intensity for an Environmental Zone deemed to be E3.

*Light intrusion have been taken into consideration, but not calculated. This is based on the assumption that no luminaire fittings will be left on, post curfew.

8 CONCLUSION

Relevant polices have highlighted that it is necessary to both ensure sufficient lighting is provided for security and working purposes, and also to ensure that light spillage from the site is minimised.

Guidance from relevant institutions has been used to set design lux levels at the levels for the scheme. As the site is classified as an E3 environmental zone, external lighting calculations have been carried out to achieve the correct lux levels for this site, taking into consideration, light pollution, surrounding the premises and other aspects.

The proposed lighting will be switched via a combinations of photocells & timeclocks. The time clocks will act as a master control and be set to set off at times when the development is not in operation. In addition, for security purposes, some lighting may be required to stay on throughout the night although this would be kept to a minimum.

The proposed luminaires used to carry out external lighting calculations are LED. Utilising LED luminaires helps reduce light pollution and can reduce the overall power consumption by 40-60%.

Criteria set by the Institute of Lighting Professionals regarding limiting obtrusive light will be met, these criteria are:

	ILP Guideline	Calculated Achieved
Sky Glow	< 15%	0.00%
Light Intrusion	< 5 Lux	0 Lux
Luminaire Intensity	< 2,500 candelas.	101 candelas

In summary, it has been ensured that the entire proposed lighting scheme meets the minimum levels for security and working purposes while also meeting the post curfew requirements for a relatively dark urban area.

9 APPENDICES

9.1 LIGHTING DESIGN

BREEAM New Construction 2018 (UK)

D41166F - Chancerygate Havant, Solent Road

Qty	Range	Light Source	Lamp Lumens	Circuit Watts	Le/W	LOR	Luminaire Lumens	ULOR	Upward Lum.	RA	AST Req Per Day	CO2 Calculation for year
2	Ratio 1	800 - 8500K 4 Module	20000	15	111.61	100.0%	20000	0.0%	0	90	12	0.39
5	Ratio 1	8000 - 8500K 4 Module	40000	30	111.61	100.0%	40000	0.0%	0	90	12	0.39
8	Ratio 1	7.5w LED 4000K	240	8	69.07	100.0%	240	0.0%	0	90	12	0.06
9	Ratio 1	5000 - 7000K 3 Module	47000	40	118.26	100.0%	47000	0.0%	0	90	12	0.39

Total Installation Lumens 116200.00 Total ULR 8.20%

Table 1 compliance			
Environmental zone	E1		
Day Glow	Target 5.00%	Achieved 0.00%	Pass
Source intensity (containing)	10,000	305	Pass
Peak carter	1,000	305	Pass
Light trespass into windows (LTI)	30	0	Pass
Peak carter	2	0	Pass
Building Luminance (cd/m²)	30		

Compliance Status:	Reduction of night time light pollution	Pass
Day 02	Energy efficient external lighting	Pass
Day 03	Internal and external lighting levels	Pass

Note - BREEAM in this report only applies to exterior lighting

Total CO2 per year (tonnes)	5.99
Total Electrical consumption (kWh)	4,314.68
Average luminaire lumens per circuit Watt	127.06

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Mansfield, Nottinghamshire
NG19 9PS
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E: sales@kingfisherlighting.com
W: www.kingfisherlighting.com
VAT No. 50945848 Company No. 2236337

Luminaire Schedule	Qty	Label	Arrangement	LLF	Description
Symbol	2	A (Spill Shield)	SINGLE	0.900	95w (4 module) 850mA Ratio 1 with 505 Optic column mounted at 8m
	5	D	SINGLE	0.900	75w (3 module) 700mA Ratio 1 with 515M Optic column mounted at 8m
	8	EW	SINGLE	0.900	7.5w LED 4000K Quartz 2.0 2500mA ballast with optic optic wall mounted at 3m
	9	F (Spill Shield)	SINGLE	0.900	40w LED 4000K (2 module) 700mA Ratio 1 with 505 Optic column mounted at 4m

Calculation Summary		CalcType	Units	Avg	Max	Min	MiniAvg	MiniMax
Label								
ObtrusiveLight_1_Cd_Seg1	Obtrusive - Cd	N/A	41.55	101	2	0.05	0.02	
ObtrusiveLight_1_L_Seg1	Obtrusive - ll	Lux	0.00	0	0	N/A	N/A	
ObtrusiveLight_2_Cd_Seg1	Obtrusive - Cd	N/A	1.17	3	0	0.00	0.00	
ObtrusiveLight_2_L_Seg1	Obtrusive - ll	Lux	0.00	0	0	N/A	N/A	
ObtrusiveLight_3_Cd_Seg1	Obtrusive - Cd	N/A	1.00	2	0	0.00	0.00	
ObtrusiveLight_3_L_Seg1	Obtrusive - ll	Lux	0.00	0	0	N/A	N/A	
Office Car Park	Illuminance	Lux	17.51	64	5	0.29	0.08	
Office Cycle Store	Illuminance	Lux	7.20	11	4	0.37	0.16	
Office Perimeter	Illuminance	Lux	14.51	41	4	0.28	0.10	
Roadway	Illuminance	Lux	22.03	48	8	0.36	0.17	



Ref EW

Ref A, D & F (SS)

REV	DESCRIPTION	IN	BY	IN	BY	DATE
Final	Final	Drawn By	Engineer	Approved	Date	



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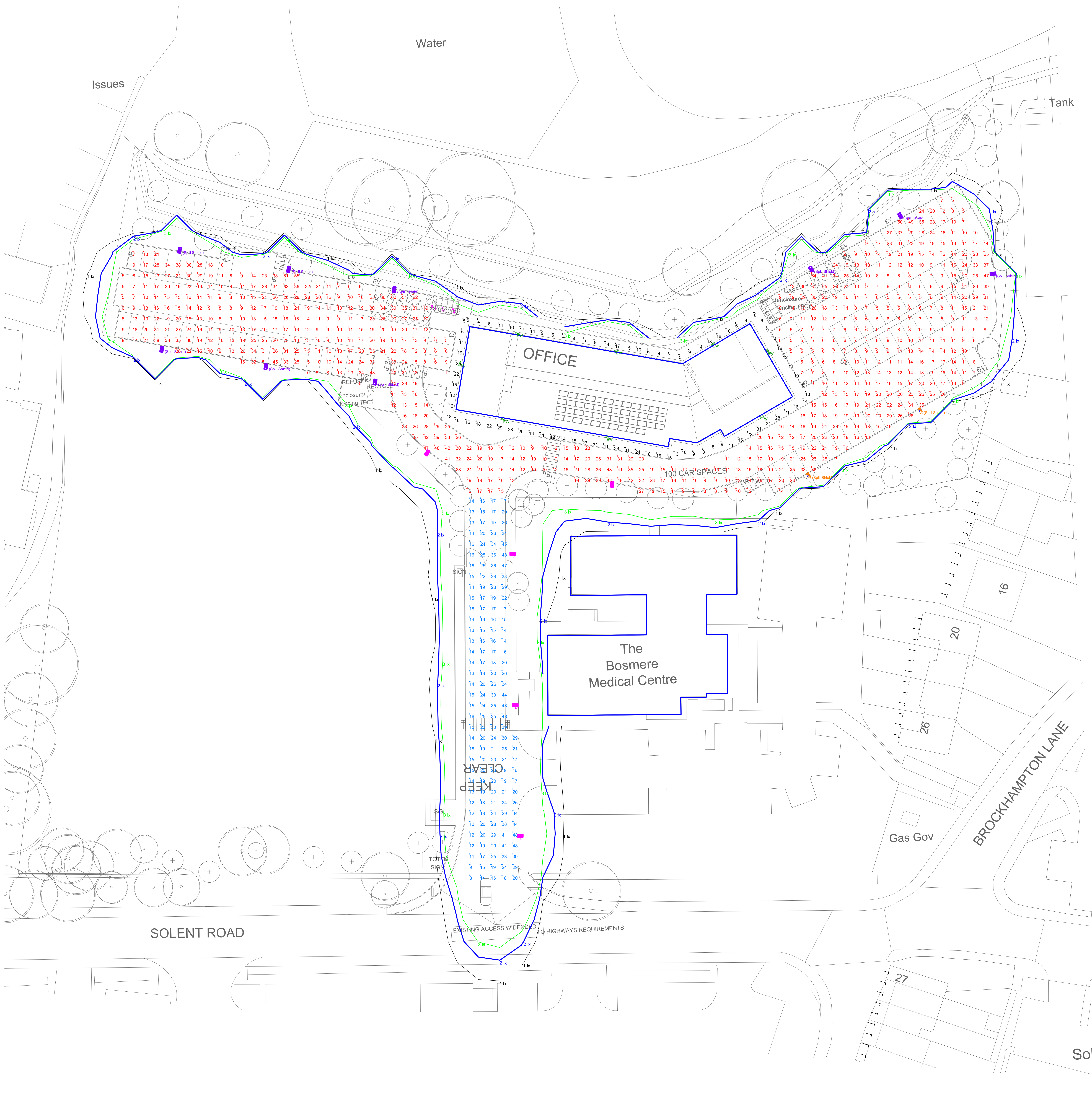
PLANNING

Client: PORTSMOUTH WATER
Project/Site Location: SOLENT ROAD, HAVANT

Drawing Title: EXTERNAL LIGHTING DESIGN

Scale	Size	Drawn By	Engineer	Approved	Date
1:250	A3	OR	OR	RD	MAR23
Drawing Reference: 6549-CBC-XX-XX-SK-E-63001					Revision: P01

Scale 1:250
0 5 10 15 20 m



9.2 LUMINAIRE TYPE 1 – ITALO

**Kingfisher Lighting**
Part of the LUCECO group of companies



Datasheet

Italo 1

Product Description

Boasting efficiency and high performance, Italo X was manufactured with advanced technology systems to create the best possible illumination for street, pathway and car park applications.

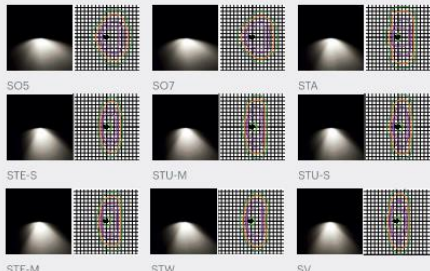
Specification Text

The Italo 1 shall be manufactured from high-pressure die-cast aluminium with a semi-gloss satin grey marine grade finish. It shall have Zhaga D4i Certification, with a power output ranging between 11.9W – 132.0W, with an efficacy from 132.8 – 163.8 lm/W. It shall produce 1,580 - 19,280 luminaire lumens. The Italo 1 shall utilise reflector-based optics to create a comfortable low glare illumination with distributions to suit pathways, roadways, carparks and asymmetric flood lighting optics to suit industrial applications. It shall have a fully programmable DALI driver. The luminaire shall come in 2700K, 3000K and 4000K and be IK09 and IP66 rated. It shall come with post top and side entry options.

Specification

Weight: 7.0kg
Windage: 0.06 – 0.18m²
Material: Die-cast Aluminium
Paint finish: Semi-Gloss Satin Grey

Optics



SO5 SO7 STA
STE-S STU-M STU-S
STE-M STW SV

Key Features

- 11.9W – 132.0W
- 1,580 – 19,280 Luminaire Lumens
- Efficacy up to 163.8lm/W
- 2700K, 3000K, 4000K, CRI > 70
- IP66, IK09
- Lifetime > 100,000hrs, L90
- Toolless Entry



DIM

IP66

IK09

EM

PEC



Control Compatible

DALI



Mounting Options

- 76mm Advised for Side Entry Fixing
- 76mm for Post Top as well as Side Entry

Other Options

- Photocell Options
- Emergency Options
- Paint Finish Options
- Colour Temperature Options
- Marine + Finish

kingfisherlighting.com | 01623 415900 | sales@kingfisherlighting.com

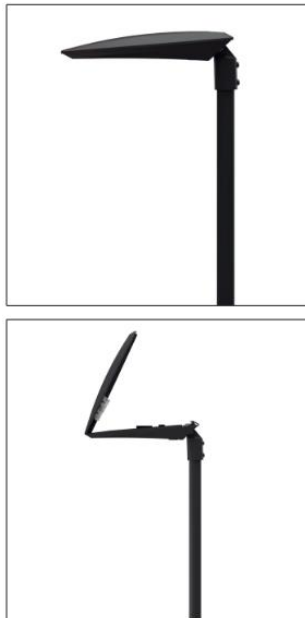
KF ITALO 1

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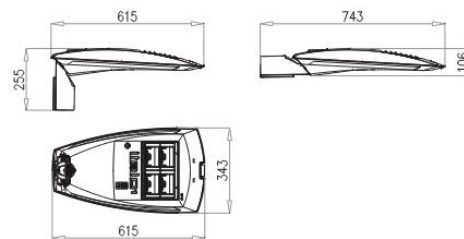
Code	Power	Luminaire Lumens	Drive Current	Optic	CCT(K)	IP	IK	Weight kg	Paint Finish	Driver Included
IT1-PEN-STE-M-4.060-1M1F	11.9	1,710	60	Suburban Street Optic (STE-M)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.060-2M1F	23.0	3,450	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.060-3M1F	33.8	5,180	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.060-4M1F	43.4	6,960	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.180-1M1F	34.8	4,840	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.180-2M1F	67.7	9,590	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.180-3M1F	100.0	14,320	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-M-4.180-4M1F	132.0	18,850	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.060-1M1F	11.9	1,710	60	Urban Street Optic (STU-M)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.060-2M1F	23.0	3,450	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.060-3M1F	33.8	5,180	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.060-4M1F	43.4	6,960	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.180-1M1F	34.8	4,840	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.180-2M1F	67.7	9,590	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.180-3M1F	100.0	14,320	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-M-4.180-4M1F	132.0	18,850	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.060-1M1F	11.9	1,710	60	Urban Street Optic (STA)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.060-2M1F	23.0	3,450	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.060-3M1F	33.8	5,180	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.060-4M1F	43.4	6,960	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.180-1M1F	34.8	4,840	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.180-2M1F	67.7	9,590	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.180-3M1F	100.0	14,320	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STA-4.180-4M1F	132.0	18,850	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.060-1M1F	11.9	1,710	60	Urban Street Optic (SV)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.060-2M1F	23.0	3,450	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.060-3M1F	33.8	5,180	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.060-4M1F	43.4	6,960	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.180-1M1F	34.8	4,840	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.180-2M1F	67.7	9,590	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.180-3M1F	100.0	14,320	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SV-4.180-4M1F	132.0	18,850	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y

Code	Power	Luminaire Lumens	Drive Current	Optic	CCT(K)	IP	IK	Weight kg	Paint Finish	Driver Included
IT1-PEN-SO5-4.060-1M1F	11.9	1,680	60	Suburban Street Optic (SO5)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.060-2M1F	23.0	3,370	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.060-3M1F	33.8	5,060	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.060-4M1F	43.4	6,800	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.180-1M1F	34.8	4,730	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.180-2M1F	67.7	9,380	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.180-3M1F	100.0	14,000	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO5-4.180-4M1F	132.0	18,430	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.060-1M1F	11.9	1,680	60	Suburban Street Optic (SO7)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.060-2M1F	23.0	3,370	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.060-3M1F	33.8	5,060	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.060-4M1F	43.4	6,800	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.180-1M1F	34.8	4,730	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.180-2M1F	67.7	9,380	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.180-3M1F	100.0	14,000	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-SO7-4.180-4M1F	132.0	18,430	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.060-1M1F	11.9	1,680	60	Suburban Street Optic (STE-S)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.060-2M1F	23.0	3,370	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.060-3M1F	33.8	5,060	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.060-4M1F	43.4	6,800	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.180-1M1F	34.8	4,730	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.180-2M1F	67.7	9,380	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.180-3M1F	100.0	14,000	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STE-S-4.180-4M1F	132.0	18,430	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.060-1M1F	11.9	1,680	60	Urban Street Optic (STU-S)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.060-2M1F	23.0	3,370	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.060-3M1F	33.8	5,060	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.060-4M1F	43.4	6,800	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.180-1M1F	34.8	4,730	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.180-2M1F	67.7	9,380	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.180-3M1F	100.0	14,000	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STU-S-4.180-4M1F	132.0	18,430	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y

Code	Power	Luminaire Lumens	Drive Current	Optic	CCT(K)	IP	IK	Weight kg	Paint Finish	Driver Included
ITIX-STW-4.060-1M1F	11.9	1760.0	60	Suburban Street Optic (STW)	4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.060-1M1F	11.9	1,760	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.060-2M1F	23.0	3,520	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.060-3M1F	33.8	5,280	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.060-4M1F	43.4	7,110	60		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.180-1M1F	34.8	4,950	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.180-2M1F	67.7	9,800	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.180-3M1F	100.0	14,640	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y
IT1-PEN-STW-4.180-4M1F	132.0	19,280	180		4000	IP66	IK09	7.0	Semi-Gloss Satin Grey	Y



Dimensions



All measurements in mm

9.3 LUMINAIRE TYPE 2 – QUARTO LED



Part of the LUCESCO group of companies

Datasheet

Quarto 2.0



Product Description

A stylish, modern bulkhead available with LED emergency and photocell. Quarto 2.0 is suited to building and perimeter lighting.

Specification Text

The luminaire shall be manufactured from high-pressure die-cast aluminium. It shall have an LED efficacy of up to 114.0 lm/W and will be capable of producing up to 1,453 luminaire lumens at 4000K with a CRI >70. It shall have an asymmetric forward throw optic and is rated at IP65 and IK10.

Specification

Weight: 4.0kg
Material: Die-cast Aluminium
Paint finish: RAL7016 Anthracite
Grey Marine Grade Finish

Key Features

- 7.5 - 14.2W
- 806 - 1,453 Luminaire Lumens
- Efficacy up to 114.0 lm/W
- 4000K, CRI >70
- Lifetime >100,000hr, L80

LED

IP65

IK10

DIM



 Control
Compatible

Other Options

- Colour Temperature Options
- Photocell Option
- Emergency Option
[Contact for details](#)

Optics



Flood Optic



Path Optic



Street Optic

kingfisherlighting.com | 01623 415900 | sales@kingfisherlighting.com

KF QUARTO 2.0

DESIGNED & ENGINEERED IN THE UK

PAGE 1 OF 2

Code	Power	Luminaire Lumens	Drive Current	Optic	CCT(K)	IP	IK	Weight kg	Paint Finish	Driver Included
QUAFL08D	7.5	857	250	Asymmetrical Flood Optic FL	4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc
QUAFL15D	14.2	1,542	500		4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc
QUAOC08D	7.5	825	250	Asymmetrical Path Optic OC	4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc
QUAOC15D	14.2	1,485	500		4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc
QUAST08D	7.5	806	250	Asymmetrical Street Optic ST	4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc
QUAST15D	14.2	1,453	500		4000	IP65	IK10	4.0	RAL7016 Anthracite Grey Marine Grade	Driver Inc



Dimensions

