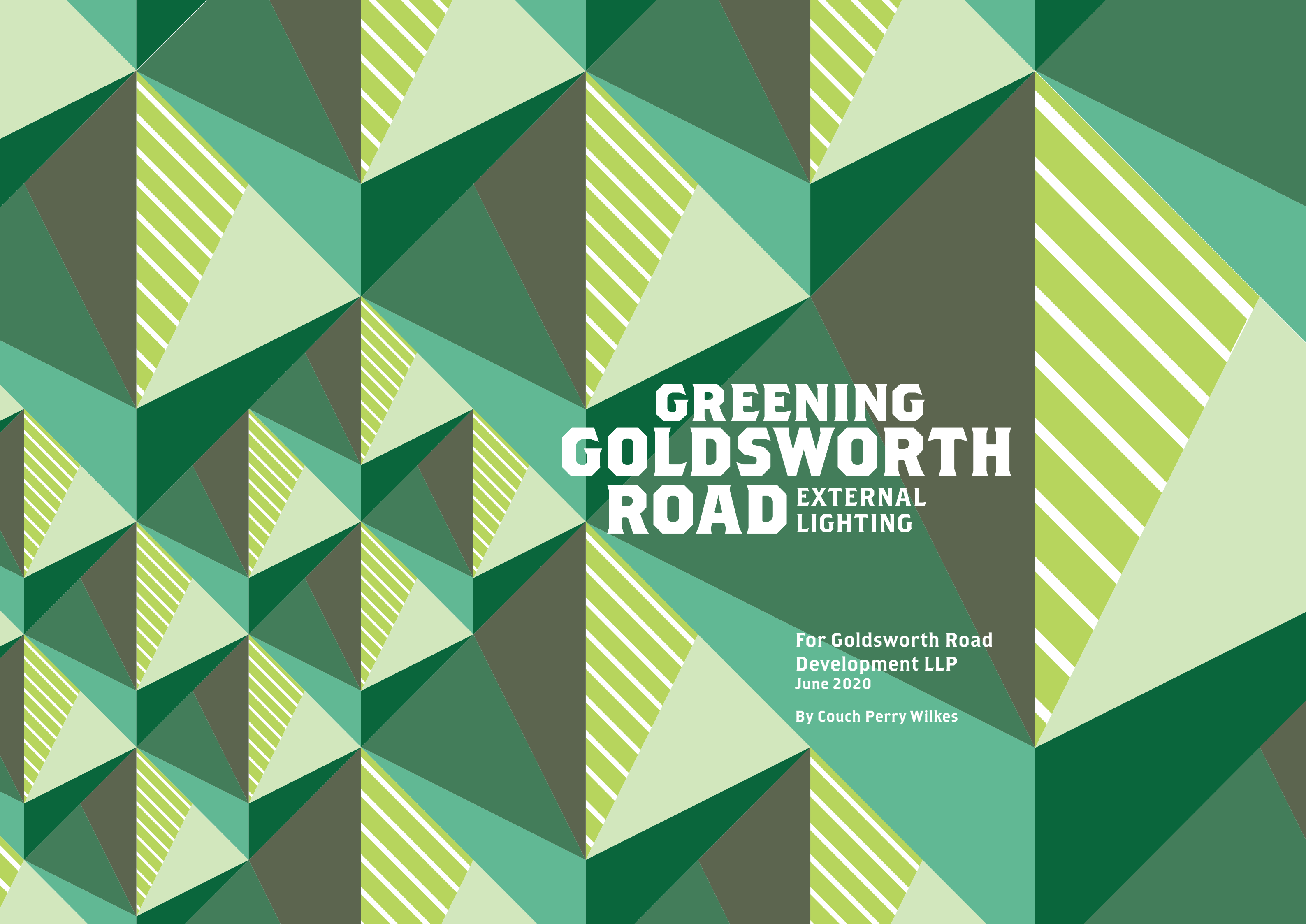




GREENING GOLDSWORTH ROAD

**EXTERNAL
LIGHTING**

For Goldsworth Road
Development LLP
June 2020

By Couch Perry Wilkes

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External Lighting Proposals: 1.0 Introduction

Couch Perry & Wilkes LLP have written this report to summarise the external lighting design and calculations for the proposed new residential development along Goldsworth Road, Woking, Surrey. Areas on the site that require external lighting are street level, two podiums and two roof terraces.

It is important that the scheme is produced with care to avoid light spill outside the site and onto the adjacent railway line.

The site comprises of a number of high-rise structures and at this stage of design it is assumed that buildings T2 T3 and BA are likely to require aviation obstacle lighting which should be designed in accordance with the CAA guidance and, where possible and relevant, feedback from the surrounding stakeholders.

When carrying out a design it is important to consult the relevant standards and guides, the following documents were used to aide the design.

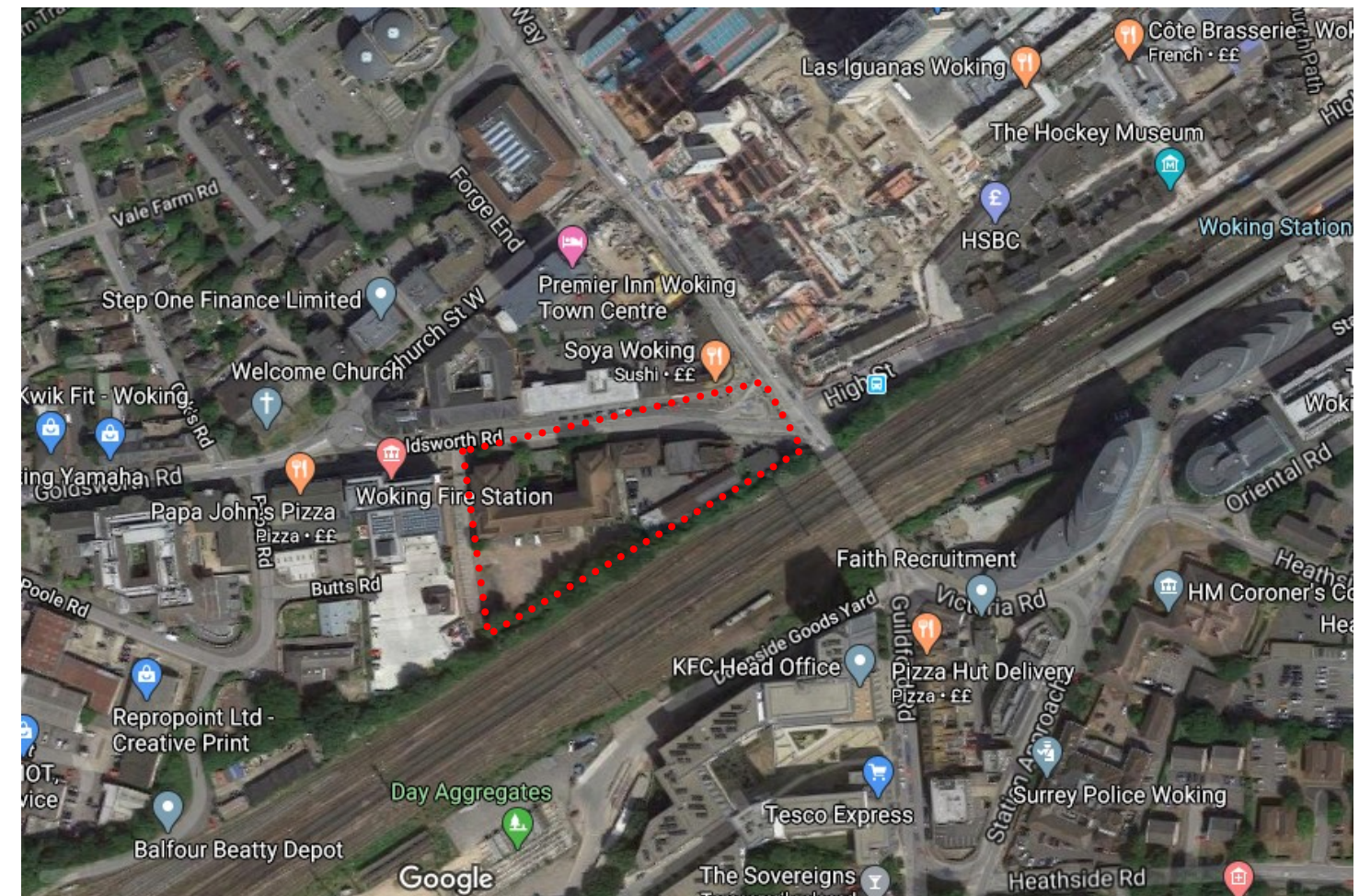
- BS 5489-1:2013 Code of practice for the design of road lighting Part 1: Lighting of roads and public amenity areas
- BS EN 12464-2:2014 Light and lighting—Lighting of work places Part 2: Outdoor work places
- CEN/TR 13201 (all parts) Road Lighting
- ILP Guidance Notes on the Reduction of Obtrusive Light, Guidance Note 01/20;
- Lighting Guide 6 - The Outdoor Environment
- Bats and Lighting Overview of current evidence and mitigation, Emma L Stone
- Landscape and Urban Design for Bats and Biodiversity, Bat Conservation Trust

Calculations have been made in the form of horizontal illuminance on various grid planes around the site in order to inform of compliance with this guidance.

In summary the main design criteria used to meet the general illuminance requirements are:

- Street level to P1 Lighting Classification, 15 lux average and a 3 lux minimum.
- Podium and roof terraces to P6 Lighting Classification, 2lux average and a 0.4 lux minimum.

The following sections of this report detail a proposal which aims to fulfil the above performance criteria whilst using careful design to reduce/minimise light pollution impacts. This report should be read in conjunction with the CPW external lighting drawings CPW-191084-E-EXT-STREET-XX-01 and CPW-191084-E-EXT-POD-XX-01 .



Approximate site boundary shown.

External Lighting Proposal: 2.0 Proposed Installation Street Level

The proposed external lighting scheme at street level is shown in the adjacent layout. This can be viewed in detail with the lighting calculation results on drawing CPW-191084-E-EXT-STREET-XX-01.

The site required a design that provides sufficient lighting levels for the safe movement of people whilst also providing an inviting ambience. It is also important to be sensitive to the environment and the visual aspect of the site.

During the detailed design once the landscape plan has been finalised the lighting positions may differ and the lighting levels achieved may therefore change accordingly, however the proposed drawing aims to indicate the general design intent and likely impact of this on the local environment. The final lighting details will be confirmed by way of a planning condition.

The proposal is to adopt a mix of column mounted and building mounted luminaires to achieve this.

Lighting along throughout the site is generally of a downward only direction to minimise any spill out of the site, towards the railway line or into the residential windows. The only uplighting within the proposed scheme are tree uplights which will be carefully aimed into the tree canopy, festoon lighting which provides a low level 'glow' and up/down lights between the retail units which are narrow beams of lighting grazing the building.

Proposed luminaire details are shown on page six.



External Lighting Proposal: 2.1 Proposed Installation Podium and Roof Level

The proposed external lighting scheme at podium and roof level is shown in the adjacent layout. This can be viewed in detail with the lighting calculation results on drawing CPW-191084-E-EXT-POD-XX-01.

On the podium and roof levels we were able to design to a lower illuminance level to provide a more domestic feel of lighting and create 'garden' spaces for the residents.

During the detailed design once the landscape plan has been finalised the lighting positions may differ and the lighting levels achieved may therefore change accordingly, however the proposed drawing aims to indicate the general design intent and likely impact of this on the local environment. The final lighting details will be confirmed by way of a planning condition.

The proposal is to use low level bollards and building mounted luminaires to achieve this with some catenary lighting to the pergolas.

Proposed luminaire details are shown on the next page.



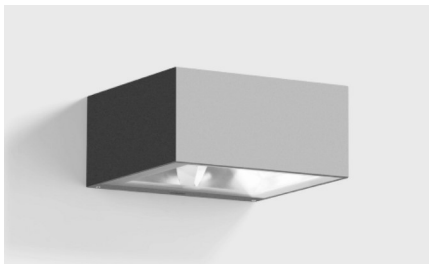
External Lighting Proposal: 3.0 Proposed Luminaires



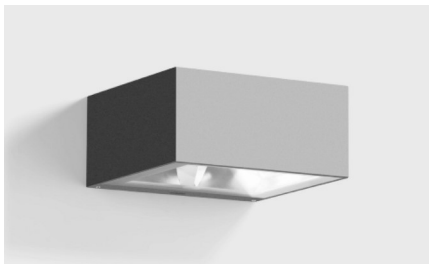
EX1
MANUFACTURER: IGUZZINI
LANTERN: TWO MAXIWOODY SPOTS
COLOUR TEMPERATURE: 4000K
OPTIC: ST1
POWER: 36.6W LED
FIXING: 9M TUBULAR STEEL ROOT MOUNT-
ED SPECIALIST COLUMN REFER TO DRAW-
INGS FOR DETAILS.
TILT APPLIED: 10°
MAINTENANCE FACTOR: 1
CONTROL: DALI DRIVER



EX2
MANUFACTURER: VIBIA
LANTERN: JUNE 4750
COLOUR TEMPERATURE: 2700K
OPTIC: SPHERE
POWER: 1W LED PER SPHERE
FIXING: 4M CATENARY FIXED FROM COL-
UMNS AND BUILDING ANCHORS
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
CONTROL: CONSTANT CURRENT DRIVER



EX3
MANUFACTURER: BEGA
LANTERN: 22 386
COLOUR TEMPERATURE: 4000K
OPTIC: ASYMMETRICAL
POWER: 19.8W LED
FIXING: 5M WALL MOUNTED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
FITTED WITH DALI DRIVER



EX4
MANUFACTURER: BEGA
LANTERN: 22 383
COLOUR TEMPERATURE: 4000K
OPTIC: FLAT BEAM
POWER: 17.8 W LED
FIXING: 5M WALL MOUNTED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
FITTED WITH DALI DRIVER



EX5
MANUFACTURER: IGUZZINI
LANTERN: LIGHT UP EARTH
COLOUR TEMPERATURE: 3000K
OPTIC: MEDIUM
POWER: 8.3W LED
FIXING: GROUND RECESSED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
FITTED WITH DALI DRIVER



EX6
MANUFACTURER: IGUZZINI
LANTERN: INOUT SIDE BEND 10MM
COLOUR TEMPERATURE: 2900K
OPTIC: GENERAL
POWER: 8.5W LED PER M
FIXING: TO BE INTEGRATED WITH SEATING.
TO BE DETAILED.
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
DIMMABLE ELECTRONIC CONTROL GEAR



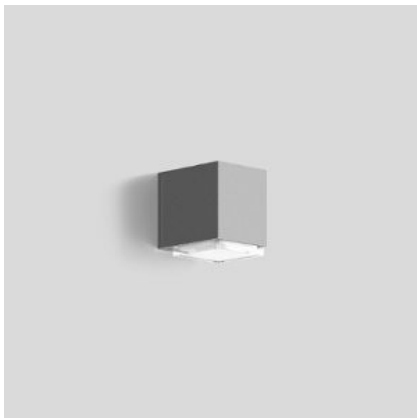
EX7
MANUFACTURER: BEGA
LANTERN: 66512A
COLOUR TEMPERATURE: 3000K
OPTIC: UP/DOWN
POWER: 4.9W LED
FIXING: 6.5M WALL MOUNTED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
ELECTRONIC CONTROL GEAR



EX8
MANUFACTURER: IGUZZINI
LANTERN: IPOINT
COLOUR TEMPERATURE: 2900K
OPTIC: DIFFUSED LIGHT
POWER: 14.4W LED PER M
FIXING: 1M ROOT MOUNTED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
ELECTRONIC CONTROL GEAR



EX9
MANUFACTURER: IGUZZINI
LANTERN: PALCO INOUT 30MM
COLOUR TEMPERATURE: 3000K
OPTIC: SPOT
POWER: 2.5W LED
FIXING: GROUND SPIKE
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
ELECTRONIC CONTROL GEAR



EX10
MANUFACTURER: BEGA LANTERN: 33
405 COLOUR TEMPERATURE: 3000K
OPTIC: DOWNWARD LIGHT
POWER: 5W LED
FIXING: 3M WALL MOUNTED
TILT APPLIED: 0°
MAINTENANCE FACTOR: 1
ELECTRONIC CONTROL GEAR

External Lighting Proposal: 4.0 General Illumination Results

Calculations were carried out utilising computer simulation software. This allows us to use true photometric data from the manufacturer and calculate the results to a high degree of accuracy. Point values can be viewed on CPW external lighting drawings CPW-191084-E-EXT-STREET-XX-01 and CPW-191084-E-EXT-POD-XX-01.

<u>STREET LEVEL</u>	<u>PODIUM AND ROOF LEVEL</u>
<u>COMMERICAL UNIT ACCESS</u>	<u>LEFT HAND SIDE PODIUM</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=21.44 MAXIMUM=34.3 MINIMUM=6.4 MIN/AVG=0.30	AVERAGE=2.71 MAXIMUM=7.5 MINIMUM=0.4 MIN/AVG=0.15
<u>MAIN PEDESTRIAN THOROUGHFARE</u>	<u>RIGHT HAND SIDE PODIUM</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=20.87 MAXIMUM=43.5 MINIMUM=3.3 MIN/AVG=0.16	AVERAGE=2.10 MAXIMUM=7.3 MINIMUM=0.4 MIN/AVG=0.19
<u>SOUTHERN EDGE FOOTPATH</u>	<u>LEFT HAND SIDE WALKWAY</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=18.60 MAXIMUM=32.4 MINIMUM=7.8 MIN/AVG=0.42	AVERAGE=4.14 MAXIMUM=7.5 MINIMUM=0.5 MIN/AVG=0.12
<u>WESTERN EDGE FOOTPATH</u>	<u>RIGHT HAND SIDE WALKWAY</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=20.16 MAXIMUM=35.0 MINIMUM=4.4 MIN/AVG=0.22	AVERAGE=4.00 MAXIMUM=7.7 MINIMUM=0.5 MIN/AVG=0.13
<u>ROAD</u>	<u>LEFT HAND SIDE ROOF TERRACE</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=16.06 MAXIMUM=36.9 MINIMUM=3.8 MIN/AVG=0.24	AVERAGE=17.48 MAXIMUM=43.1 MINIMUM=1.5 MIN/AVG=0.09
<u>SERVICE AREA</u>	<u>RIGHT HAND SIDE ROOF TERRACE</u>
ILLUMINANCE (LUX)	ILLUMINANCE (LUX)
AVERAGE=32.12 MAXIMUM=49.9 MINIMUM=13.8 MIN/AVG=0.43	AVERAGE=13.60 MAXIMUM=45.5 MINIMUM=2.6 MIN/AVG=0.19
<u>OUTDOOR SEATING AREA</u>	
ILLUMINANCE (LUX)	
AVERAGE=23.60 MAXIMUM=37.2 MINIMUM=10.2 MIN/AVG=0.43	

External Lighting Proposal: 5.0 Summary

The scheme has been developed to provide an attractive scheme to site whilst also reduce the impact that the external lighting would have on the surrounding areas. The lighting scheme is based around a low pollution, low energy and low maintenance strategy. Considerations were also given to low energy products which have excellent light control optics such that their efficiencies are maximised, and carbon footprint minimised.

The results shown on page 8 were compiled using the computer software allowing us to provide highly accurate calculations based on true photometric data from the luminaire manufacturers.

Alternative luminaires may develop and be introduced into the market during the detailed design stage, however the philosophy of this scheme should be retained and implemented into the finalised design.