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MTP3 LIMITED



MIRA TECHNOLOGY PARK

Plot 8

241172

External Lighting Report

Sustainability
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Document Revision History

Rev	Author	Verification By	Date	Suitability	Comments / Status
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External Lighting Report



1.0 Introduction

This report details the proposed external lighting design and associated products in support of a planning application for the erection of an industrial building with ancillary office space alongside associated access, parking, landscaping and drainage at Plot 8 Mira Technology Park.

The proposed luminaires mounted the building & on steel columns will utilise various forms to provide functional, amenity and security lighting to the service yards, car parks and all other associated areas as detailed later in this report.

In general, only high colour rendering lamps are proposed to aid the visual tasks required such as parking. LED luminaires which exhibit a white light colour of 4000°K will be used to minimise disturbance of local ecology. Luminaires will have tight optical control and emit light in the downwards direction only to meet the requirements of Environmental Zone E3.

The lighting design will be sensitive and compliant with the principles set out within the ILP (Institute of Lighting Professionals) *Guidance Notes for the Reduction of Obtrusive Light, Guidance Note GN01/21*, BS EN 12464-2 and other institutional guides for exterior lighting.

This report should be read in conjunction with the included CPW drawing **241172-CPW-XX-XX-DR-E-307001 – Proposed External Lighting Layout**

2.0 Lighting Design Brief

The external lighting concept design has been developed with reference to:

- BS EN 12464-2:2024 Light and Lighting – Lighting of workplaces: Part 2 Outdoor Workplaces.
- BS 5489-1:2013 Code of practice for the design of road lighting — Part 1: Lighting of roads and public amenity areas;
- PD CEN/TR 13201-1:2015 Road Lighting, Part 1 Guidelines on selection of lighting classes
- BS EN 13201-2:2015 Road Lighting, Part 2 Performance Requirements
- ILP Guidance Notes on the Reduction of Obtrusive Light, Guidance Note GN01/21
- ILP Guidance Notes on Bats and Artificial Lighting at Night, Guidance Note 08/23
- Lighting Guide 6 - The Outdoor Environment
- Developers Specification

Due to the site's location, it has been assessed against an environmental zone of E3, described as Well inhabited rural and urban settlements, small town centres of suburban locations.

Calculations have been made to assess the horizontal and vertical illuminance produced by the lighting design, as well as light pollution intensities on various grid planes around the site to apprise the light trespass toward nearby stakeholders.

The following sections of this report detail the proposed external lighting installation and the calculation results produced.

The external lighting within the site has been designed to meet illumination levels set out within the client specification, CIBSE Lighting Guide 6 and the British Standards on a horizontal calculation grid.

The following pages detail the external lighting proposal and calculations against the required performance criteria. The required lighting levels are baseline targets which can be increased upon in areas as dictated by the landscaping and client's requirements.

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3.0 Product Types

Type EX1-EX3 Holophane D-Series

The D-Series luminaire is part of the Holophane range. It is ideal for open spaced areas with its asymmetric, symmetric, and forward throw light distribution options. Precisely controlled light distribution offers maximum efficiency keeping light pollution along with spillage and glare to a minimum. Sealed to IP65.



- Reference EX1** - Single headed 16,000lm LED modules, building mounted.
Reference EX2 - Single headed 13,000lm LED modules, column mounted.
Reference EX3-A - Single headed 6,000lm LED modules, column mounted.
Reference EX3-B - Single headed 6,000lm LED modules, building mounted.

Type EX4 Holophane ID Bollard

The Denver ID Bollard is part of the Holophane range. It is a modern aesthetic design to coordinate with the matching wall mounted luminaire. The luminaire consists of an extruded aluminium body, housing high performance, high efficiency, LED technology.

- Reference EX4** – 1,000lm package LED, symmetric single lens 1m bollard.



Type EX5 DW Windsor Kirium Pro 2

Kirium Pro 2 street luminaire with 64 LED light engine. Constant light output enabled fully programmable DALI driver operating up to 1050mA. 3,000K colour temperature using Diamond+ A1 optic technology. LM6 high pressure die-cast aluminium body in RAL 7046 mid grey with a polyester powder coat finish and flat toughened glass glazing. With lift-off head, automatic electrical disconnection block and toolless entry for easy maintenance. Cool Zone™ thermal technology for improved performance. IP66 and IK10 protection. 100,000-hour (L90 B10) lifetime.

- Reference EX5** - Single headed 8,648lm LED modules, to be mounted on 'Gina – Side entry' column.



Type EX6 IGuzzini Underscore InOut

Luminaire for indoor and outdoor architectural linear lighting – with warm white monochrome Leds – on a 24Vdc flexible white circuit, length L=2004mm. The led circuit is completely IP68 encapsulated with a white (outside) and milky finish (over light emission) high performance polymer sheath.

- Reference EX6** – 790lm Package LED modules are to be housed within IP68 enclosures and are to be soffit mounted.



- 'FWE'** Denotes forward throw extensive distribution.
'AY' Denotes asymmetric optic.
'BLC' Denotes extreme back light cut-off.
'BLS' Denotes back light shield.
'NR' Denotes long and narrow optic.
'LCCO' Denotes left corner cut-off optic.
'RCCO' Denotes right corner cut-off optic.

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4.0 Illumination Levels

In accordance with the clients briefing and specification, CIBSE Lighting Guide 6 (LG6) and BS EN 12464-2:2014, the following illumination levels are to be achieved:

Area	Maintained Illuminance (Lux)	Uniformity
Building Perimeter	5	1Lux (min)
Parking Areas	10	0.25
EV Car Parking	20	0.25
HGV Parking Areas	30	0.40
Service Yard	30	0.40
Dock Doors	50	0.40
Building Entrances	50	0.40
Road Lighting (C4)	10	0.40

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Average illumination levels achieved on CPW drawing drawings **241172-CPW-XX-XX-DR-E-307001 - Proposed External Lighting Layout:**

Infrastructure	Average Level Achieved (Lux)	Uniformity
Access Road		
Road Lighting	14.86	0.40
Road Footpath	16.76	0.30
Plot 8A		
8A - Car Park	18.23	0.49
8A - Car Park - Accessible EV	20.07	0.75
8A - Car Park - Active & Future EV	21.60	0.69
8A - Car Park - Future EV	20.62	0.82
8A - Car Park Access	15.38	0.91
8A - Footpath	20.01	0.25
8A - Footpath Perimeter	25.79	0.16 (4Lux min)
8A - Loading	53.45	0.65
8A - Service Yard	40.15	0.40
8A - Building Entrance	66.08	0.79
Plot 8B		
8B - Car Park Accessible EV	24.43	0.57
8B - Car Park Active EV	20.00	0.65
8B - Car Park Future EV	21.98	0.45
8B - Car Park	19.34	0.41
8B - Footpath	19.04	0.32
8B - Footpath Perimeter	23.27	0.13 (3Lux min)
8B - Loading	52.53	0.61
8B - Service Yard	39.24	0.41
8B - Yard & Car Park Access	24.91	0.52
8B - Building Entrance	65.92	0.80

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5.0 ILP Guidance Notes for the Reduction of Obtrusive Light, 2021

In accordance with the Institute of Lighting Professionals (ILP) ‘Guidance Notes for the Reduction of Obtrusive Light, 2021’. The development has been classed with having an environmental zone of E3.

Zone	Surrounding	Examples
E0:	Protected – Dark	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1:	Natural - Dark	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc
E2:	Rural – Low district brightness	Sparsely inhabited rural areas, village, or relatively dark outer suburban locations
E3:	Suburban – Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4:	Urban - High district brightness areas	Town/city centres with high levels of night-time activity

Having an environmental zone of E3 indicated that the design shall need to comply with the table below:

Environmental Zone	Sky Glow ULR (Max %)	Light Trespass (into windows) Ev (Lux)		Source Intensity I (cd)		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L
E0:	0	n/a	n/a	0	0	<0.1
E1:	0	2	<0.1	2500	0	<0.1
E2:	2.5	5	1	7500	500	5
E3:	5	10	2	10000	1000	10
E4:	15	25	5	25000	2500	25

- ULR

Upward light ratio of the installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.
- EV

Vertical illuminance in lux and is measured flat on the glazing at the centre of the window.
- I

Light intensity in Cd.
- L

Luminance in Cd/m².
- Curfew

Time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of lighting applied by the local authority. If not stated—23:00h is suggested.

6.0 Comparison to ILP Guidance Notes for the Reduction of Obtrusive Light, 2021

Lighting calculations have been undertaken as demonstrated on the CPW External Lighting drawings ‘**241172-CPW-XX-XX-DR-E-307001 – Proposed External Lighting Layout**’ and the following values have been obtained which demonstrate compliance to the ILP guidance table for environmental zone E3 and the sensitive receptors residential receptions (ref 1) identified by the blue lines in Section 7, as follows:

Unit	E3 Maximum	Ref 1	Ref 2	Ref 3	Ref 4
Sky Glow ULR Max %	5%	0.002%	0.002%	0.002%	0.002%
Light intrusion (into windows) EV Lux					
Pre-curfew	10	0.0	0.0	0.0	0.0
Post-curfew	2	0.0	0.0	0.0	0.0
Luminaire Intensity I (candelas)					
Pre-curfew	10000	0	29	0	272
Post-curfew	1000	0	29	0	272

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7.0 Observer Reference Points

The blue lines indicate observer reference points which are located at the nearest properties to the development. The calculation is a worst-case calculation as it does not account for any trees or fencing. The red line indicates the plot's location.



8.0 The CPRE Sky Glow Map

The CPRE Sky Glow Map identifies that the existing light pollution levels surrounding the Site (outlined in red below) fall under a high brightness designation, which is confirmed by the orange colouration (4 – 8 NanoWatts / cm² / sr) in the extract provided below. The main area of high brightness surrounding the Application Site are nearby industrial developments & residential areas further to the south.



The Application Site is located in an area containing several industrial, commercial, and residential developments. Accordingly, an environmental zone of E3 has been selected to inform the lighting strategy of the Proposed Development due to the spare rural areas adjacent to the site. An E3 environmental zones comprises one described as a Well inhabited rural and urban settlements, small town centres of suburban locations.

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9.0 Lighting Levels

The minimum recommended levels targeted are 5 lux average for the building perimeter with 10 lux in car park and road areas. Increased illuminance levels of 30 lux for service yards & 50 lux to the dock doors are required to ensure safe manoeuvring and handling of goods.

These lighting levels are baseline targets which meet the minimum levels within current British Standards (BS EN 12464-2:2014), Lighting Guide LG6 and the developer's specification.

The lighting scheme produced and indicated on CPW drawings '**241172-CPW-XX-XX-DR-E-307001 - Proposed External Lighting Layout**' is within the parameters specified within the ILP guidance notes for the reduction of obtrusive light, 2021. The luminaires have been carefully selected to minimise upward light spill, glare, and backwards light spillage.

All external lighting is to be controlled with a photocell and time clock such that the lighting will be energised at low ambient lighting and will switch off during daylight hours. Perimeter walkway track & bin store lighting to be controlled via PIR detection. (Final settings to be determined by Client).

10.0 Summary

The scheme has been developed to reduce the impact that the external lighting would have on the surrounding areas. The scheme produced shows that the illuminance spillage towards the nearest residential properties to the development are within the parameters of environmental zone E3.

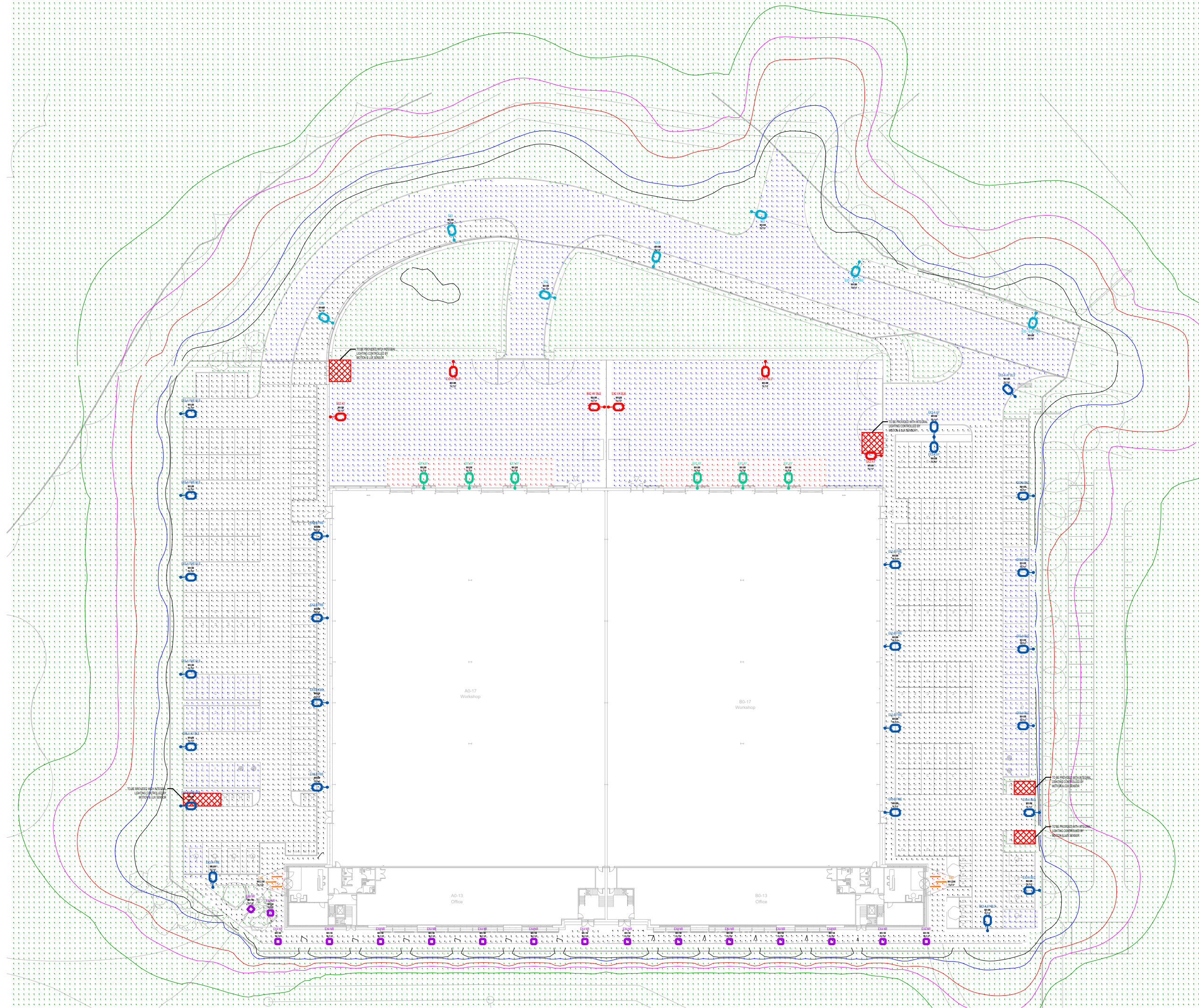
The lighting scheme is based around a low pollution, low energy, and low maintenance strategy. Considerations were also given to low energy products which have excellent light control optics such that their efficiencies are maximised, carbon footprint minimised and impact on the local ecology reduced.

Alternative luminaires may develop and be introduced into the market during the detailed design stage, however the philosophy of downward light only should always be retained and implemented into the finalised design.

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11.0 Appendix A: Lighting Plans



REFERENCE EX1-EX2
LUMINAIRE AS OF HOLOPHANE
D-SERIES TO BE BUILDING & COLUMN
MOUNTED



REFERENCE EX3
LUMINAIRE AS OF HOLOPHANE ID
BOLLARD



REFERENCE EX4
LUMINAIRE AS OF DW WINDSOR
XORUM PRO 2 TO BE MOUNTED ON
SIGNA - SIDE ENTRY COLUMN



REFERENCE EX5
LUMINAIRE AS OF IGLOZZINI
UNDERSCORE WOUT 6422 TO BE
SOFFIT MOUNTED

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www.cpw.com for conditions with our plans and copyright issues.
All issued drawings taken from this drawing are to be verified on site.

1. ELECTRICAL CONTRACTOR TO VERIFY LIGHTING DESIGN PRIOR TO INSTALLATION. THIS IS ONLY A CONCEPTUAL DESIGN.
2. ELECTRICAL CONTRACTOR TO READ THIS DRAWING IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS.
3. ELECTRICAL CONTRACTOR TO ENSURE CABLES AND LIGHTING COLUMNS ARE LOCATED SUCH THAT THEY WILL NOT BE AFFECTED BY THE FUTURE GROWTH OF THE TREE ROOT.
4. FOR PLANNING PURPOSES ASSUME ALL EXTERNAL LIGHTING WILL COME ON AT DUSK AND REMAIN ON UNTIL DAWN, EXACT HOURS TO BE CONFIRMED BY THE OCCUPIER.
5. THE LIGHTING DESIGN TO COMPLY WITH THE CIBSE GUIDE LOGS THE OUTDOOR ENVIRONMENT, AND THE ILP GUIDANCE NOTES FOR REDUCTION OF OUTDOOR LIGHT, 2021 AND ALL LATEST ADDITIONS.
6. LUMINAIRE COLOURS TO MATCH COLUMN/CLADDING COLOURS.
7. ALL LUMINAIRES TO HAVE 0° TILT TO MINIMISE UPWARD LIGHT SPILL AND OUTDOOR LIGHT.
8. EYS TO BE MOUNTED ON SIGNA - SIDE ENTRY COLUMNS, AND COLOURS TO BE MATCHED TO EXISTING FOR CONTINUITY ON THE ROAD THROUGHOUT THE SITE.
9. ALL EXTERNAL LIGHTING IS TO BE CONTROLLED WITH A PHOTOCELL AND TIME CLOCK SUCH THAT THE LIGHTING WILL BE EMERGED AT LOW AMBIENT LIGHTING AND WILL SWITCH OFF DURING DAYLIGHT HOURS. BIN STORE & CYCLE SHELTER TO BE PROVIDED WITH INTEGRAL LIGHTING CONTROLLED BY MOTION & LUX SENSOR. (FINAL SETTINGS TO BE DETERMINED BY CLIENT).

LEGEND

- EX1 BUILDING MOUNTED D-SERIES, 4000K, 16,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 114, MOUNTING HEIGHT = AS DETAILED
- EX2 COLUMN MOUNTED D-SERIES, 4000K, 13,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 90, MOUNTING HEIGHT = AS DETAILED
- EX3A COLUMN MOUNTED D-SERIES, 4000K, 6,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 45, MOUNTING HEIGHT = AS DETAILED
- EX3B BUILDING MOUNTED D-SERIES, 4000K, 6,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 45, MOUNTING HEIGHT = AS DETAILED
- EX4 GROUND MOUNTED SINGLE SIDED ID BOLLARD, 4000K, 1,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 12
- EX5 COLUMN MOUNTED XORUM PRO 2, 4000K, 8,000 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 48, MOUNTING HEIGHT = AS DETAILED
- EX6 SOFFIT MOUNTED UNDERSCORE INOUT, 2700K, 700 INITIAL LUMENS PER LAMP, MAINTENANCE FACTOR = 1, WATTS PER LUMINAIRE = 9.8, MOUNTING HEIGHT = AS DETAILED
- FWE' DENOTES FORWARD THROW EXTENSIVE OPTIC
- AW' DENOTES ASYMMETRIC OPTIC
- BLC' DENOTES EXTREME BACKLIGHT CUT-OFF OPTIC
- BLS' DENOTES FITTED WITH BACKWARDS LIGHT SHIELD
- NR' DENOTES LONG AND NARROW OPTIC
- LCCO' DENOTES LEFT CORNER CUT-OFF OPTIC
- RCO' DENOTES RIGHT CORNER CUT-OFF OPTIC

- 5 LUX CONTOUR LINE
- 3 LUX CONTOUR LINE
- 1 LUX CONTOUR LINE
- 0.5 LUX CONTOUR LINE
- 0.2 LUX CONTOUR LINE

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STAGE 2
PLANNING

Client: MTP3 LIMITED

Project: PLOT 8
MBA NORTH
NUNEATON

Drawing Title: PLOT 8 & ACCESS ROAD
PROPOSED EXTERNAL LIGHTING LAYOUT

Scale (A3): 1:250 Date: MARCH 26 By: DW ST

241172-CPW-ZZ-ZZ-DR-E-307001 S3 P01



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