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INDURENT PARK NEWPORT

240234

EXTERNAL LIGHTING REPORT UNITS 19, 20 & 21

240234-CPW-XX-EXT-RP-E-221003

Sustainability at our core.

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1.0 Introduction

This report details the proposed external lighting design and associated products for various areas of the Phase 6 & 7 development at Queensway, Llanwern

The proposed luminaires will utilise various forms to provide functional, amenity and security lighting to the service yard, car park 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. 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 01/21, BS EN 12464-2* and other institutional guides for exterior lighting.

This report should be read in conjunction with the included CPW external lighting drawing.

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2.0 Lighting Design Brief

The site is predominantly surrounded by other industrial units. Due to the site's location, it has been assessed against an environmental zone of E3, described as a Medium District Brightness, Well inhabited rural and urban settlements, small town centres of suburban locations.

The plot within the development is intended to be in use throughout the year.

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

- BS EN 12464-2:2014 Light and Lighting – Lighting of workplaces: Part 2 Outdoor Work Places.
- BS 5489-1:2013 Code of practice for the design of road lighting— Part 1: Lighting of roads and public amenity areas.
- BS EN 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 01/21.

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 in order to appraise the light trespass toward nearby stakeholders/future residential properties.

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

The following pages detail the external lighting proposal and calculations against the required performance criteria.

3.0 Luminaire Types

Type EX1A, EX1B, EX2 & EX3



The D-Series luminaire is part of the Holophane Range with 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. The luminaires also incorporate zero upward light spill and are provided as the main source of lighting to the estate roads, car park and loading bays.

Type EX4



The Denver iD Wall is part of the Holophane range that incorporates LEDs in addition to standard white light sources. The clear glass optic for LED, proves a high-performance narrow distribution, with wide spacing for high efficiency. These luminaires are wall mounted and provide security lighting to the units.

Type EX5



A LED low level Bollard lighting located at the main entrance to each of the units.

4.0 Illumination Levels

The scheme has been designed at concept stage in accordance with the following illumination levels.

Area	Maintained Illuminance (Lux)	Uniformity
Loading bays	50 lux	0.4
Roadways	20 lux	0.4
Main entrance plaza	50 lux	0.4
Service yard	20 lux	0.4
Car park	20 lux	0.4
Cycle shelters	20 lux	0.4
Rear building pedestrian access	5 lux	0.25

Average illumination levels achieved on are noted on the accompany drawings.

5.0 ILP Guidance Notes for the Reduction of Obtrusive Light, 2020

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 center's 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	2,500	0	<0.1
E2	2.5	5	1	7,500	500	5
E3	5	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	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, 2020

Lighting calculations have been undertaken as demonstrated on the CPW External Lighting drawings and the following values have been obtained which demonstrate compliance to ILP guidance table. Post curfew compliance will be achieved by either dimming the relevant luminaires down to 10% or switching off the estate's road lighting on the phase 5 development.

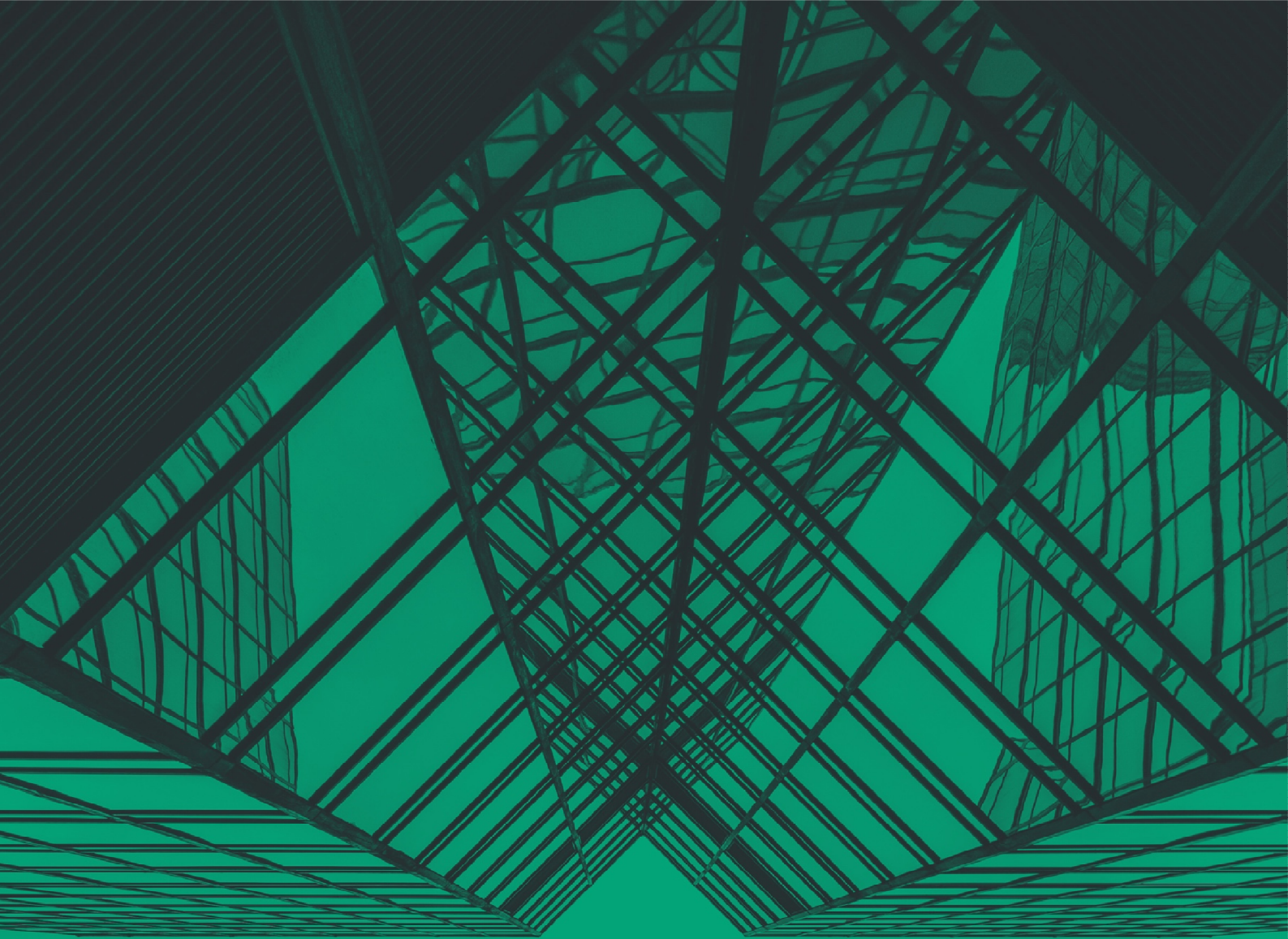
It should be noted that the below figures are calculated with no obstructions and are at the boundary of the future residential plots between the proposed development and the nearest residential property, however landscaping and other obstructions will reduce these values further.

	E3 Maximum	EV Calculated Figure
Sky Glow URL Max %	5%	0
Light intrusion (onto boundary) Ev Lux		
Pre-curfew	10	<10
Post Curfew	2	<2 Dimming/Off

7.0 Lighting Levels

The lighting scheme produced and indicated on CPW drawing is within the parameters specified within the ILP guidance notes for the reduction of obtrusive light, 2021. The luminaires have also been 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. (Final settings to be determined by Client).



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