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240907

External Lighting Report

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Document Revision History

Rev	Author	Verification By	Date	Suitability	Comments / Status
P01	V. Sadler	N. Foster	08/10/2024	53	PLANNING ISSUE
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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 three industrial units with ancillary office space alongside associated access, parking, landscaping and drainage at Oldlands Farm Phase 3, Newlands Road, Bognor Regis.

The proposed luminaires, mounted 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. Luminaires will have light 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 GN07/21*, BS EN 12464-2 and other institutional guides for exterior lighting.

This report should be read in conjunction with the included CPW drawing **240907-CPW-XX-DR-E-221001-33-P02**

Proposed External Lighting Layout



2.0 Lighting Design Brief

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 Workplaces.
- 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 GN07/21;
- 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, CIESE 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.

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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 (lx)	Uniformity
Access Road	20	0.40
Parking Areas	10	0.25
HGV Parking Areas	30	0.40
Service Yard	30	0.40
Loading Bays & Fueling	50	0.40
Staff Entrances	50	0.40
Footpaths	5	0.25



Average illumination levels achieved on CPW drawing drawings 240907-CPW-XX-XX-DR-E-221001-S3-P02 Proposed
External Lighting Layout:

Area	Average Level (lx)	Min/Lux	Uniformity
Access Road	21.58	8.8	0.41
Access Road Footpath	30.21	15.9	0.53
Access Road Footpath North	17.73	4.7	0.27
Unit 1 – Breakout Space	58.72	17.7	0.30
Unit 1 – Building Perimeter	26.11	8	0.31
Unit 1 – Car Park	14.55	4.3	0.30
Unit 1 – Cycle Racks	38.58	14.7	0.38
Unit 1 – Loading Bays	56.88	38.6	0.68
Unit 1 – Service Yard	38.21	15.2	0.40
Unit 2 – Breakout Space	33.16	5	0.15
Unit 2 – Building Perimeter	16.56	4.5	0.27
Unit 2 – Car Park	16.84	6.3	0.37
Unit 2 – Cycle Racks	8.6	5.7	0.66
Unit 2 – HGV Parking	43.05	26.8	0.62
Unit 2 – Loading Bays	50.79	31.3	0.62
Unit 2 – Service Yard	35.79	18.9	0.53
Unit 3 – Access Road	25.55	19.6	0.77
Unit 3 – Breakout Space	44.65	15.9	0.36
Unit 3 – Building Perimeter	15.6	4.6	0.29
Unit 3 – Car Park	15.2	5.5	0.36
Unit 3 – Loading Bays	54.50	38.7	0.71
Unit 3 – Service Yard	37.05	16.6	0.45

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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	Characteristics	Guidance
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 (lux/year %)	Light Spill into Windows (footcandle)		Indoor Intensity (foot)		Building Luminaire Prescription
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
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 **240507-CPW-XX-XX-DR-E-221001-S3-P02 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 receptors identified by the blue lines in Section 7, as follows:

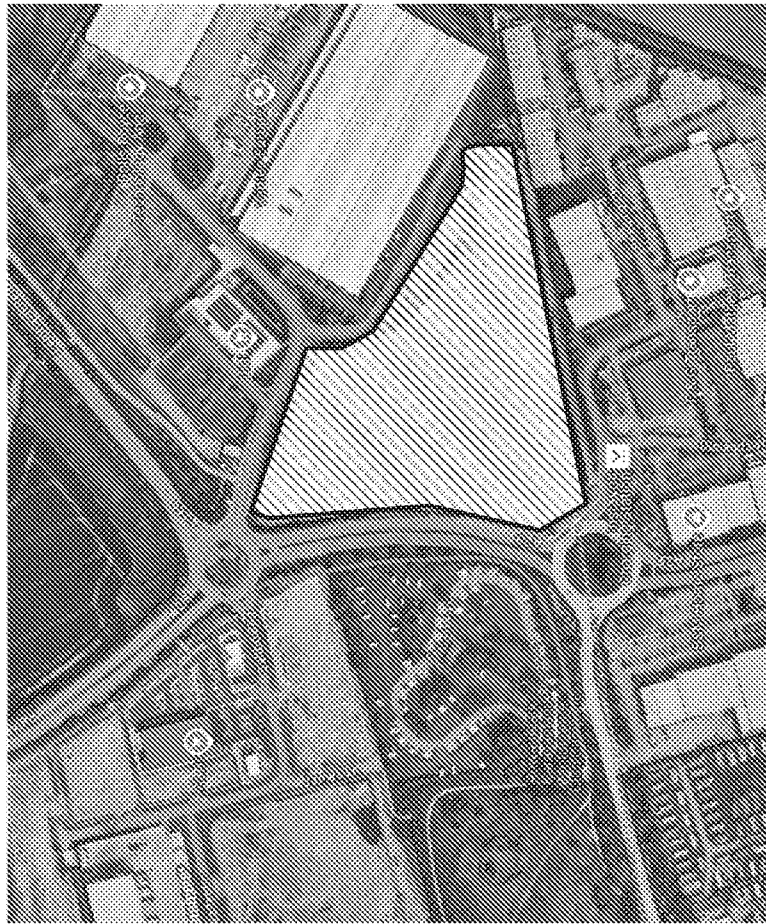
Criteria	ILP Guidance	Proposed
Sky Glow ULR Max %	5%	0%
Light intrusion (into windows) EV Lux		
Pre-curfew	10	0.3
Post-curfew	2	0.3
Luminaire Intensity I (candelas)		
Pre-curfew	10000	828
Post-curfew	1000	828

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7.0 Observer Reference Points

The red lines indicate observer reference points which are located at the nearest properties to the development. The calculation depicts the worst-case scenario as it does not account for any trees. The hatched area indicates the plot's location.



8.0 Lighting Levels

The minimum recommended levels targeted are 5 lux average for the building perimeter and pedestrian walkways, 10 lux is the average required levels for car parks and the access roads. Increased illuminance levels of 30 lux for service yards & HGV Parking Areas. The higher illuminance levels of 50 lux to the loading bays, fuelling area building entrance and the pedestrian route are required to ensure safe manoeuvring of HGVs and vans.

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

The lighting scheme produced and indicated on CPW drawings **240907-CPW-XX-XX-DR-E-221001-53-P02 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.

9.0 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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10.0 Appendix A: Lighting Plans





A black and white photograph of a snowy landscape. In the foreground, there is a dark, dense evergreen tree. Behind it, a snow-covered field leads to a line of trees and a small building or structure in the distance. The sky is overcast.

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All other regressions in Table 3 of 2 waves. Regressions of Child-Interviewer DQ, Age-standardized, National, 990-41-4