

ENVIRONMENTAL STATEMENT – EXTERNAL LIGHTING REPORT

CANMOOR



DOWNLEY ROAD, HAVANT

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1. INTRODUCTION

INTRODUCTION

- 1.1 This Environmental Report details the proposed methodology and design standards considered in respect of the external lighting installation. It will also describe and demonstrate the methods used to mitigate the effect of the external lighting on the surrounding areas.
- 1.2 In addition to the above, the assessment details the mitigating measures taken to prevent and minimise the potential impact of the external lighting scheme on the local environment. Particular attention has been paid to the existing nearby land and lighting spill to nearby developments.
- 1.3 All lighting will be designed to meet the specific minimum environmental design criteria from BS5489-1, BS EN 12464.
- 1.4 This statement has been produced to describe the proposed external lighting strategy for the project known as Downley Road, Havant.
- 1.5 This report shall be read in conjunction with the external lighting drawing 0000-ESC-00-ZZ-DR-E-2100 Rev P2.
- 1.6 The site has been classified as E3 for the environmental zone and obtrusive light limitation for exterior lighting installation for the purposes of this statement.
- 1.7 The site will comprise 3No. industrial units of varying sizes, total GIA of 101,430 square foot, as per the extract below: -



- 1.8 As topography, vegetation and fencing is extremely difficult to incorporate into the design calculation, it should be noted that the lighting levels and spill contours indicated are at floor level and based on a completely flat site with no features. As such, the design represents the worst-case scenario. A 1 lux spill line has also been highlighted around the entire site to show at which point the light spill drops below 1 lux.

2. LIGHTING PERFORMANCE OBJECTIVES

2.1 OVERVIEW

The section summarises the key documents, design criteria and technical input taken into account during the design and production of this external lighting design and associated statement. A specific emphasis has been applied for the functional purpose of the development/integration of lighting to comply with specific standards and to limit the effects of obtrusive light on the ecology of the surrounding area.

2.2 DESIGN STANDARDS

The proposed lighting installation has been designed to meet specific minimum environmental design criteria in accordance with the current versions of the following documents and British Standards:

- Lighting Guide LG6: The Outdoor Environment
- BS5489-1: Code of Practice for the Design of Road Lighting. Lighting of Roads and Public Amenity Areas
- BS EN 12464-1: Light and Lighting of Work Places
- ILP Guidance Note 01/21 for the Reduction of Obtrusive Light 2021.

2.3 SITE SPECIFIC PERFORMANCE OBJECTIVES

The external lighting design and statement of this scheme shall comply with the following performance objectives.

- Provide high quality and efficient lighting, which creates a safe environment for building occupants while limiting obtrusive light, and the effects of artificial lighting on the surrounding area and ecology.
- Fittings have been selected which include high quality drivers and lamp technology to provide high lighting efficacy with sufficient spread of light to reduce the number of luminaires required through an accurate lighting design.
- Luminaires provided shall only utilise LED lamp technology and a timeclock / photocell control philosophy to limit lighting illumination to the hours the building is operational.
- Particular attention has been paid towards sensitive areas of the site close to site boundaries and possible ecology to minimise the environmental impact of the development.
- Consideration has been applied to minimise sky glow, lighting spill and the luminous intensity of all luminaires.
- Specific mitigation of lighting spill has been applied via factory fitted back shield optics in specific areas on this development.

2.4 DESIGN CRITERIA – LIGHTING LEVELS

The external lighting design for this development has been designed in accordance with BS5489-1, BS EN 12464-2 and CIBSE LG6. The below table highlights details of the proposed illumination levels:

Table 2.2 Excerpt from BS EN 12464-2:2014 (reproduced by permission of BSI)

Ref. no.	Type of area, task or activity	$\bar{E}_m$ (lux)	U_o (–)	R_{GL} (–)	R_a (–)	Remarks
5.1.1	Walkways exclusively for pedestrians	5	0.25	50	20	
5.1.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0.40	50	20	
5.1.3	Regular vehicle traffic (max. 40 km/h)	20	0.40	45	20	At shipyards and in docks, R_{GL} may be 50
5.1.4	Pedestrian passage, vehicle turning, loading and unloading points	50	0.40	50	20	

**Table replicated from CIBSE LG6: The Exterior Environment and information detailed within BS EN 12464-2.*

The minimum lighting requirements have been designed where possible to ensure no areas are over lit or higher than required uniformity more than the guidance.

2.5 DESIGN CRITERIA – OBTRUSIVE LIGHT

The guidance levels contained within the ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2021 have been utilised. This splits the surroundings into five environmental zones which are recommended to Local Planning Authorities in order to specify an approach and applicable zone to a particular location.

For the purposes of this development, the site has been classified an E3 (environmental zone) for obtrusive light limitation for exterior lighting installations.

ENVIRONMENTAL ZONES

Table 2: Environmental zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	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	Town / City centres with high levels of night-time activity

OBTRUSIVE LIGHT LIMITATIONS

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

Environment al Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Intrusion (into Windows) E_v [lux] ⁽²⁾		Luminaire Intensity I [candelas] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre- curfew	Post- curfew	Pre- curfew	Post- curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	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 that goes directly into the sky.

E_v = **Vertical Illuminance in Lux** - measured flat on the glazing at the centre of the window.

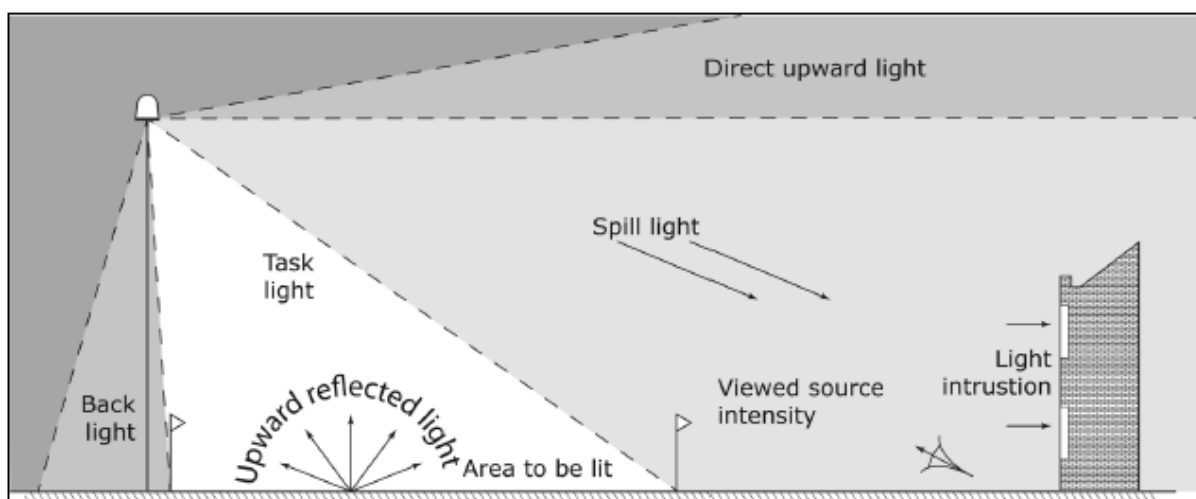
I = **Light Intensity in Candelas (cd)**

L = **Luminance in Candelas per Square Metre (cd/m²)**

Curfew = **the time after which stricter requirements (for the control of obtrusive light) will apply**; often a condition of use of lighting applied by the local planning authority. If not otherwise stated - 23.00hrs is suggested.

***** = **Permitted only from** Public road lighting installations

CLASSIFICATION OF OBTRUSIVE LIGHT DIAGRAM



2.6 DESIGN CRITERIA – OBTRUSIVE LIGHT OVERVIEW

The Proposed Development has been designed in accordance with ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2021 and categorised under Environmental Zone E3: Medium district brightness areas.

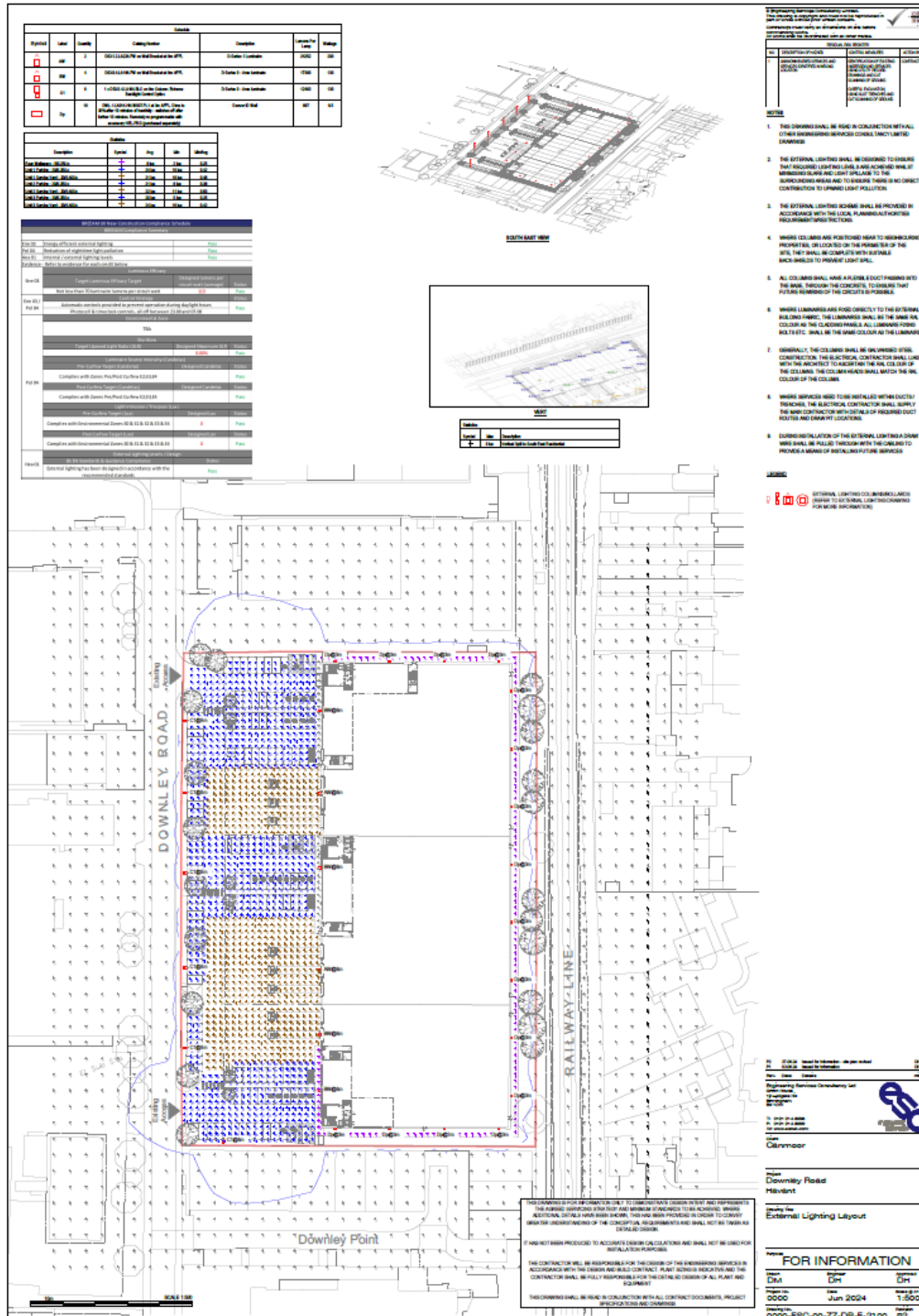
A design has been detailed on ESC's external lighting drawing 0000-ESC-00-ZZ-DR-E-2100 Rev P2 issued in conjunction with this report.

At the time of the design, no nearby sensitive receptors have been identified as requiring additional measures to limit source intensity or light intrusion.

3. EXTERNAL LIGHTING SCHEME

3.1 OVERVIEW

The external lighting drawing number 0000-ESC-00-ZZ-DR-E-2100 Rev P2 as shown below, represents the lighting installation at Downley Road, Havant. (This report should be read in conjunction with the full-size version of this drawing for clarity).



The above represents the typical information that would be required for planning and demonstrates the lighting lux levels within the site boundary and the overspill lux levels in the surrounding areas. A 1 lux spill line around the development in blue demonstrates the point at which the surrounding lighting level drops below 1 lux.

The external lighting scheme adopts a policy of limiting and controlling external upward light pollution to a minimum and to use the minimum energy necessary to provide a safe and secure premises. Therefore, the lighting will not make a direct contribution to “upward light pollution”.

The lighting has been designed in accordance with the technical lighting guides published by CIBSE (Chartered Institution of Building Services Engineers) and the Guidance Notes for the reduction of obtrusive light published by ILP (Institution of Lighting Professionals).

The lighting is designed utilising LED low energy lighting sources, using a combination of building mounted luminaires and lighting columns to provide a minimum maintained illuminance.

The control of the lighting solution is via a timeclock and photocell control. This will enable the lighting to be controlled during the operating hours of the premises. Further, this will adjust in line with summer and winter seasons, thereby preventing the unnecessary operation of the lighting installation. The lighting will also be turned off via the timeclock between the hours of 11pm and 7am, subject to the operating hours of each industrial unit.

The lighting is designed taking great care to ensure that the required lighting levels are achieved, incorporating optic control to limit the light pollution to the surrounding areas whilst ensuring adequate lighting is provided for public and staff safety.

Specific migration of lighting spill has been applied via tilt brackets and backlight optics in specific areas on this development.

NOTE - As topography, vegetation and fencing is extremely difficult to incorporate into the design calculation, it should be noted that the lighting levels and spill contours indicated are at floor level and based on a completely flat site with no features. As such, the design represents the worst-case scenario.

3.2 CAR PARK, WALKWAYS, AND SERVICE YARDS

The external lighting to the development shall consist of LED lamps wall mounted and mounted on columns centred at the maximum possible distances to maintain the lighting levels and uniformity requirements. Column heights have been considered to provide the highest luminaire efficacy while minimising offsite spill while applying back shields and tilt brackets as required as an additional supporting measure.

Schedule						
Symbol	Label	Quantity	Catalog Number	Description	Lumens Per Lamp	Wattage
	AW	2	DSX1.2.LA224.FW on Wall Bracket at 8m AFFL	D-Series 1 Luminaire	24252	200
	BW	4	DSX0.4.LA184.FW on Wall Bracket at 8m AFFL	D-Series 0 - Area luminaire	17390	130
	C1	6	1 x DSX0.4.LA184.BLC on 8m Column. Extreme Backlight Control Optics	D-Series 0 - Area luminaire	12463	130
	Dp	16	DWL.1.LA014.HN.W007.PL1 at 3m AFFL. Dims to 30% after 10 minutes of inactivity - switches off after further 10 minutes. Remotely re-programmable with accessory HELPRG (purchased separately)	Denver iD Wall	897	6.5

Refs	Light Source Type	Manufacturer / Model	Image
AW	LED	Holophane – D-Series 1 Luminaire	
BW C1	LED	Holophane – D-Series 0 Luminaire	
Dp	LED	Holophane – Denver iD Wall Luminaire	

3.3 EVALUATION

The proposed external lighting has been evaluated against the requirements of all local planning policy considerations; British Standards & design guidance documents as detailed within this report.

The designed results are highlighted below:

Statistics				
Description	Symbol	Avg	Min	Min/Avg
Rear Walkways - 5/0.25Uo	+	8 lux	2 lux	0.25
Unit 1 Parking - 20/0.25Uo	+	24 lux	10 lux	0.42
Unit 1 Service Yard - 20/0.40Uo	+	21 lux	10 lux	0.48
Unit 2 Parking - 20/0.25Uo	+	21 lux	8 lux	0.38
Unit 2 Service Yard - 20/0.40Uo	+	22 lux	11 lux	0.50
Unit 3 Parking - 20/0.25Uo	+	20 lux	5 lux	0.25
Unit 3 Service Yard - 20/0.40Uo	+	24 lux	10 lux	0.42

Overall, maintained lux level compliance with BS5489-1 & BS EN 12464 has been provided throughout the external lighting design. Additional measures have been applied via tilt brackets and backshield optics on selected luminaires which has reduced the overall lux spill.

The control of the lighting solution is also via a timeclock and photocell control. This will enable the lighting to be controlled during the operating hours of the premises. Further, this will adjust in line with summer and winter seasons, thereby preventing the unnecessary operation of the lighting installation.

4. CONCLUSION

The proposed external lighting scheme which has been developed supports local planning policy, British Standards and design guidance documents as detailed within this report.

Lighting proposals have been specifically designed to meet all relevant performance standards, ILP guidelines towards obtrusive light and associated British and European regulations towards external lighting.

The following specific requirements have been carried out as part of this design strategy:

- Ensuring all designed lighting across this development is lit adequately to correct guidelines and British/European regulations.
- All luminaires selected and applied into the design with performance factors, ecology and the nearby surroundings considered as part of the design.
- Minimise obtrusive light to existing adjacent areas including neighbouring properties where applicable and areas highlighted.
- Lighting controls considered to ensure occupants of the site are safe but also controlled to ensure lighting is not within hours of non-building operation.

Engineering Services Consultancy Ltd

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