

Horton Business Park

LIGHTING STRATEGY

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1. Introduction

1.1. General

- 1.1.1. This Lighting Strategy has been written by Designs for Lighting Ltd, a lighting design consultancy with experience and knowledge in Lighting Impact Assessments, obtrusive light mitigation, and detailed lighting design.
- 1.1.2. The Lighting Strategy proposes good practice and outlines a suitable approach to apply to the installation of the proposed lighting. The aim of the Lighting Strategy is to outline a minimally obtrusive approach to lighting, which is necessary to ensure safety and sensitivity to both the environmental and nearby ecological receptors.
- 1.1.3. The Application Site is Horton Business Park, Fair Oak. which is for the creation of a 12-unit business park. An indicative boundary of the site and proposed layout can be seen in **Figure 1** and **Figure 2**.
- 1.1.4. The Proposed Development requires artificial lighting for safety, security, and amenity, which can be applied sensitively to ensure that the potential for obtrusive light is suitably minimised to comply with the predetermined obtrusive light limits for the Environmental Zone in which the Application Site is located. This can be achieved through the implementation of a carefully planned and implemented lighting design strategy. This outlines the lighting design approach, as well as imposing limits on the technical specification of the luminaires.
- 1.1.5. Lighting associated with the Proposed Development will comply with Guidance Notes for the Reduction of Obtrusive Light outlined by the Institution of Lighting Professionals (ILP), as well as Guidance for the protection of ecology.
- 1.1.6. This report outlines the following:
 - Relevant obtrusive light policies in direct relation to the Proposed Development;
 - Relevant National and Local Policies;
 - Why the Proposed Development requires artificial lighting; and
 - Details as to how lighting will be implemented for the Proposed Development.



Figure 1: The Application Site location and boundary



Figure 2: Preliminary Application Site layout

2. Legislative and Policy Framework

2.1. National Policy and Legislation

2.1.1. Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

2.1.1.1. Since 2005, artificial light has been incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states:

"Artificial light emitted from premises so as to be prejudicial to health and nuisance constitutes a 'Statutory Nuisance' and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint".

2.1.2. National Planning Policy Framework 2021

2.1.2.1. The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how they are expected to be applied and provides a framework for local plans. With regard to light pollution, the NPPF was updated in July 2021 and states that the following elements are to be considered:

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."

2.1.3. Planning Practice Guidance

2.1.3.1. Guidance for assessing the effects of proposed artificial lighting is outlined in the planning practice guidance (PPG). The guidance states:

"Does a new development proposal, or a major change to an existing one, materially alter light levels outside the development and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?

Does an existing lighting installation make the proposed location for a development unsuitable? For example, this might be because:

- the artificial light has a significant effect on the locality;*
- users of the Proposed Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*

Does a proposal have a significant impact on a protected site or species e.g., located on, or adjacent to, a designated European site or where there are designated European protected species that may be affected?

Is the development in or near a protected area of dark sky or an intrinsically dark landscape where it may be desirable to minimise new light sources?

Are forms of artificial light with a potentially high impact on wildlife (e.g., white or ultraviolet light) being proposed close to sensitive wildlife receptors or areas, including where the light shines on water?

Does the Proposed Development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies (because it may change natural light, creating polarised light pollution that can affect wildlife behaviour)?"

2.2. Local Policy

- 2.2.1. The relevant local authority to the Proposed Development is Eastleigh borough council, with the most planning guidance prepared by Eastleigh borough Council being the Local Plan (Adopted 2016). The most relevant policies to lighting the Proposed Development are as follows. Policy DM8

2.2.1.1. Policy DM8 – Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through 1) Air pollution 2) pollution of surface, underground, coastal waters or other water courses 3) noise or vibration 4) light intrusion or 5) Land contamination. Development susceptible to particular forms of pollution will not be permitted: a) where it will be affected by such pollution, unless measures can be taken that adequately mitigate the polluting effects or b) where it would inhabit existing economic or other activities giving rise to acceptable polluting effects. Where a development site is known or suspected to be contaminated, before the site is development the Borough Council will require the contamination to be remediated to a standard whereas minimum it cannot be defined as ‘contaminated land’ under Part IIA of the Environment Protection Act 1990.

3. British Standards

- 3.1.1. The most applicable British Standards for lighting that relate to the Proposed Development are:

- **BS 5489-1: 2020** – *Lighting of Roads and Public Amenity Areas - Code of practice* – This guidance is applicable to the internal roads that help to facilitate movement of vehicular and pedestrian traffic about the development, and car parking areas.
- **BS EN 12464-2:2014** – *Light and Lighting – Lighting of Workplaces – Part 2 Outdoor Workplaces* - This guidance is applicable to the exterior areas where working activities or other activity necessary to facilitate the functioning of commercial activities takes place. This can include but is not limited to parking areas, amenity areas within commercial spaces, fuel filling stations, and tasks necessary to facilitate construction projects.

- 3.1.2 The application of these standards and the selected lighting classes are detailed within **Appendix 1.**

4. Guidance

4.1. Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals GN01:2021)

- 4.1.1. The Lighting Strategy shall be informed by industry guidance notes which aim to reduce the potential for obtrusive light to occur, caused by poorly designed and installed exterior artificial lighting. The Lighting Strategy is informed by the most relevant sections of GN01/21 that has recently been published to reduce the potential for obtrusive light from a wide range of exterior lighting applications.
- 4.1.2. The Environmental Zone criteria detailed within **Table 1** and **Table 2** will form the basis for the Lighting Strategy. The Application Site is considered to be an **E2** zone, **because** The areas are classed as a village or relatively dark suburban locations as stated in **Table 1**.

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA Dark Sky Parks.
E1	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, 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 or suburban locations.
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity.

Table 1 – Environmental Zone Descriptions

Notes:

- Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.
- Rural zones under protected designations should use a higher standard of policy.
- Zone E0 must always be surrounded by an E1 Zone.
- Zoning should be agreed with the local planning authority and due to local requirements a more stringent zone classification may be applied to protect special/specific areas.
- SQM (Sky Quality Measurements) referenced by the International Dark-Sky Association (IDA), the criteria for E0 being revised in mid-2019 but not retrospective.
- Astronomical observable dark skies will offer clearer views of the Milky Way and of other objects such as the Andromeda galaxy and the Orion Nebula.
- Although values of SQM 20 to 20.5 may not offer clear views of astronomical dark sky objects such as the Milky Way, these skies will have their own relative intrinsic value in the UK.

Environmental Zones	Sky Glow ULR (Max %)	Light Trespass (Into Windows) E_v (lux)		Building Luminance Average, Pre-curfew
		Pre- Curfew	Post-Curfew	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	0 (1*)	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2 - Obtrusive Light Criteria

- > ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.
- > E_v is Vertical Illuminance in Lux.
- > L is Luminance in Candelas per square metre; and
- > Curfew refers to a time when the local planning authority has agreed that the lighting installation should be switched off; this typically refers to 23h00 – 07h00.
- > (*) Permitted only from public road lighting installations up to a maximum of 1.0 lux.

- 4.1.3. Guidance notes produced by the Institution of Lighting Professional (ILP) are among the most commonly referenced guidance notes for good practice within the lighting design industry.
- 4.1.4. Obtrusive light (or sometimes referred to as light pollution) refers to any light emitted in a direction in which it is not required or wanted and as such is detrimental to other users.
- 4.1.5. Consideration is given to light intrusion, direct upward light (sky glow) and glare within the context of varying Environmental Zones.
- 4.1.6. Light intrusion refers to the spilling of light beyond the boundary of the area to be lit. This includes the intrusion of light into bedroom windows.
- 4.1.7. Sky glow refers to the brightening of the sky above towns caused by direct or reflected upward light.
- 4.1.8. Glare refers to the uncomfortable brightness of a light source when viewed against a dark background. **Figure 2** illustrates the different types of obtrusive light.

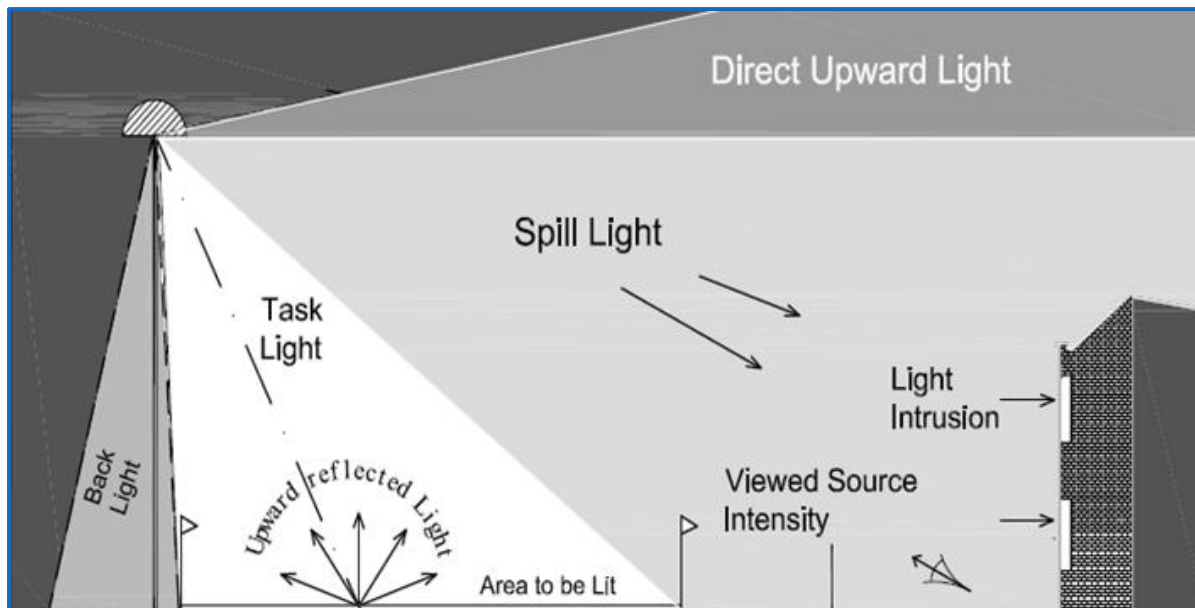


Figure 3: Obtrusive Light Diagram

5. Exterior Lighting Strategy

5.1. Brief

- 5.1.1. The Proposed Development will require lighting for safety and amenity at limited times during the hours of darkness. Lighting will be fit for purpose and sensitive to nearby human and ecological receptors.
- 5.1.2. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 5.1.3. Amenity lighting for the Proposed Development will be applied sensitively to account for the receptors identified bounding the Application Site and within the Proposed Development.
- 5.1.4. Luminaires will be used with integral LED's and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.
- 5.1.5. The following criteria seeks to ensure that the lighting is not outside of the obtrusive light limits for the Environmental Zone in which the Application Site is located, is sensitive to the area, and provides a recognised standard level of lighting for all adoptable areas requiring illumination.
- 5.1.6. All lighting unless otherwise stated is to emit a neutral colour temperature light (4000 Kelvin or less) to reduce the potential for adverse effects onto potentially sensitive receptors.

5.1.7. All lighting has been specified by the Client to ensure a continuation of the lighting from other sections of the Business Park.

5.1.8. Lighting will be required in the following application areas:

- > Parking areas
- > Unit Amenity Lighting

5.2. Parking Areas

5.2.1. The parking areas throughout the Application Site will be illuminated in accordance with BS 5489-1:2020 & BS EN 12464-2:2014. Illumination will be focused on the road and pavement area, highlighting any changes in the road the user may need to be aware of during a night-time setting.

5.2.2. Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the building and upwards towards the sky.

5.2.3. Luminaire performance parameters for the Parking Areas through the Application Site are outlined in **Table 3**.

<u>Equipment Specification</u>	<u>Description</u>
Location	Parking Areas
Correlated Colour Temperature (Kelvin)	4000K (Maximum)
Luminaire Manufacturer	Ansell Lighting (or similar approved)
Luminaire Model	Onix (or similar approved)
Light Source	LED (Light Emitting Diode)
Height	6m (Maximum)
Mounting Arrangement	Post Top
Luminaire Tilt	0 degrees from horizontal
Upward Light Output Ratio (ULOR)	0% (Fully Shielded)

Example Luminaire Image	
<u>Design Guidance</u>	
Lighting Design Criteria	
Controls	Photocell controlled: Dusk to Dawn.

Table 3- Parking Area performance parameters

5.2.4. Unit Amenity Lighting

- 5.2.5. Units throughout the development will be illuminated for safety, amenity, and security during the hours of darkness.
- 5.2.6. Property Frontage and Rear luminaires use warm white LEDs with a sensitive correlated colour temperature (CCT), no greater than 2700 Kelvin.
- 5.2.7. The luminaires to the rear of the units are for Emergency purposes only so will be subject to PIR control to ensure that lighting is only on when needs to ensure it is not creating any adverse effects.

<u>Equipment Specification</u>	<u>Description</u>
Location	Unit Frontages and Rears
Correlated Colour Temperature (Kelvin)	2700K (Maximum)
Luminaire Manufacturer	DW Windsor (or similar approved)
Luminaire Model	Kirium Bulkhead (or similar approved)
Light Source	LED (Light Emitting Diode)
Height	2m (Maximum)
Mounting Arrangement	Wall Mounted
Luminaire Tilt	0 degrees from horizontal
Upward Light Output Ratio (ULOR)	0% (Fully Shielded)
Example Luminaire Image	

Design Guidance

Controls

Front- Photocell Dusk to Dawn
Rear- PIR Sensor (ON upon detection of movement, OFF after 5 mins)

Table – Unit Amenity Lighting Parameters

5.3. Control Methods

- 5.3.1. Lighting is to be provided for safety, security, and amenity of the Application Site. Parking areas are to be controlled using a photocell. Unit Lighting is to be controlled through PIR movement sensors.

Light fitting control method table

Area	Suggested average light level	Control	Pre-Curfew Status	Post-curfew status
Parking Areas	5 Lux, 25% Uniformity	Photocell (Dusk to Dawn)	N/A	N/A
Unit Amenity	Wayfinding	PIR movement	N/A	N/A

Table 5 - Performance and installation requirements

6. Conclusion

6.1. General

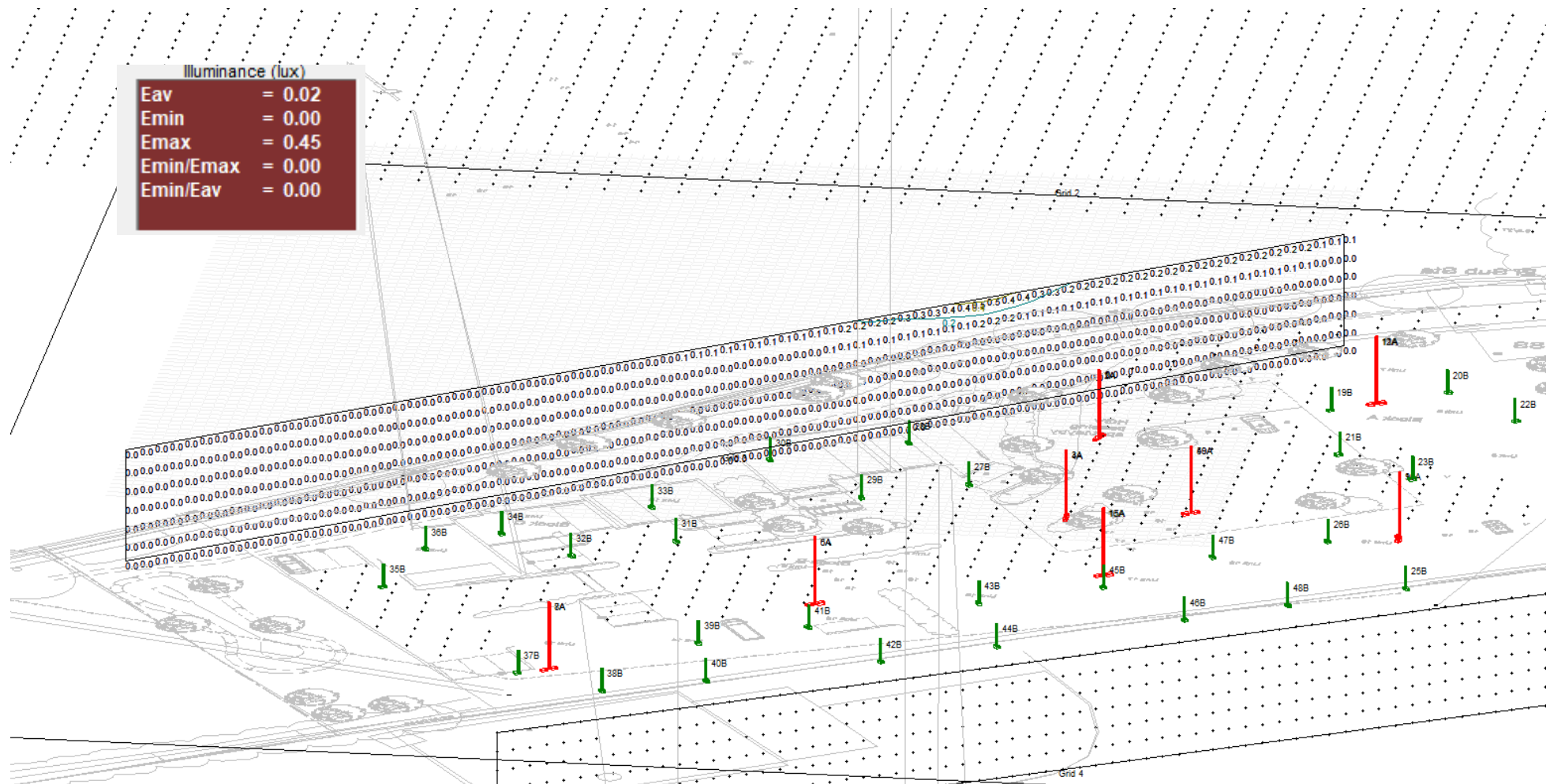
- 6.1.1. Lighting associated with the Proposed Development shall be designed in accordance with the Lighting Strategy for the Application Site outlined in **Section 4** to ensure it is unlikely to give rise to obtrusive light with the potential to affect residential and ecological receptors. This has been achieved through ensuring the relevant British Standards, industry guidance and local policies have informed the Lighting Strategy.
- 6.1.2. Using mitigation methods such as light spill shields as outlined in **Section 4**, will not be affected due to the containment of horizontal illumination as shown in **Appendix 1**.
- 6.1.3. To provide the absolute adverse scenario, the screening has not been modelled, thus the Isolux contours presented are typical of the worst-case on-site scenario at start of life.
- 6.1.4. Along the Southern boundary behind the units a vertical grid has been added. The Light levels based on the modelling do not exceed 0.19 Lux, keeping the light levels within the guidance given within GN01:2021 and GN08:18.
- 6.1.5. Where a Potentially Sensitive Human Receptor has been identified as shown in **Appendix 2**, a vertical illumination grid has been modelled. The light levels based on the modelling do not exceed 0.71 Lux, keeping the light levels within the guidance given within GN01:2021 for an area identified as an E2 environment.

Appendix 1 – Indicative Light Spill Diagram

See separate file- 2888-DFL-ELG-XX-LD-EO-13001-S3-P01

Appendix 2 – Vertical Illuminance Calculations

Vertical grids have been positioned along the northern boundary of the site.



Vertical Grids have been added along the southern boundary of the Application Site

