

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 (DFL), 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 strategy is to outline a minimally obtrusive approach to lighting, which is necessary to ensure safety for the occupiers and sensitivity to nearby ecological receptors.
- 1.1.3 The 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 lighting design strategy. This outlines the lighting design approach, as well as imposing limits on the technical specification of the luminaires.
- 1.1.4 Lighting for the Development will comply with ILP Guidance Note 01/21 The Reduction of Obtrusive Light and Bat Conservation Trust and ILP Guidance Note 08/18 Bats and artificial lighting in the UK.
- 1.1.5 This report outlines the following:
 - Relevant obtrusive light policies in direct relation to the Development;
 - Relevant national and local policies;
 - Why the Development requires artificial lighting; and
 - Necessary mitigation measures to reduce the potential for spill light to adversely affect the surrounding landscape and the sensitive receptors.



Figure 1: Approximate Application Site Boundary (Shown in Red)

2 Legislative Frameworks and Local Policies

2.1 Relevant National Policies

Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 2.1.1 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:

“... the following matters constitute “statutory nuisances” for the purposes of this Part, that is to say ... (fb) artificial light emitted from premises so as to be prejudicial to health or a 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.”

National Planning Policy Framework 2021

- 2.1.2 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 impact 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.”*

Planning Practice Guidance

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

- *“Does an existing lighting installation make the proposed location for a development unsuitable, or suitable only with appropriate mitigation? For example, this might be because:*
 - *the artificial light has a significant effect on the locality; and/or*
 - *users of the Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*
- *Where necessary, development proposed in the vicinity of existing activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme, reflecting the agent of change principle. Additional guidance on applying this principle is set out in the planning practice guidance on noise.*
- *Will a new development, or a proposed change to an existing site, be likely to materially alter light levels in the environment around the site and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?*

- *Will the impact of new lighting conflict with the needs of specialist facilities requiring low levels of surrounding light (such as observatories, airports, and general aviation facilities)? Impacts on other activities that rely on low levels of light such as astronomy may also be a consideration but will need to be considered in terms of both their severity and alongside the wider benefits of the development.*
- *Is the development in or near a protected area of dark sky or an intrinsically dark landscape where new lighting would be conspicuously out of keeping with local nocturnal light levels, making it desirable to minimise or avoid new lighting?*
- *Would new lighting have any safety impacts, for example in creating a hazard for road users?*
- *Is a proposal likely to have a significant impact on a protected site or species? This could be a particular concern where forms of artificial light with a potentially high impact on wildlife and ecosystems (e.g. white or ultraviolet light) are being proposed close to protected sites, sensitive wildlife receptors or areas, including where the light is likely to shine on water where bats feed.*
- *Does the Development include smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies? (As it may change natural light, creating polarised light pollution that can affect wildlife behaviour.)"*

2.2 Local policies

- 2.2.1 This lighting strategy is informed by relevant policies as detailed in Havant Borough Council adopted policy documents. The following policy documents are most relevant to the Application Site: *Havant Borough Council Core Strategy 2011-2022.*

DM10 Pollution

- 2.2.2 *'Development that may cause pollution of water, air or soil or pollution through noise, smell, smoke, fumes, gases, steam, dust, vibration, light, heat, electromagnetic radiation and other pollutants will only be permitted where all of the following relevant criteria can be met':*
- 2.2.3 *1. The health and safety of existing and future users of the site, or nearby occupiers and residents is not at risk. 2. National air quality standards or objectives would not be breached. 3. The water environment would not be detrimentally affected. 4. It would not lead to an unacceptable deterioration in the quality or potential yield of coastal, surface and ground water resources. 5 External lighting is of the minimum level of illumination and duration required for security and operations purposes. 6. External lighting would not interfere with safe navigation in either Chichester or Langstone Harbours and other coastal locations.*

3 British Standards and Guidance

3.1 Guidance Notes for the Reduction of Obtrusive Light (GN01:2021)

- 3.1.1 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. Notably, the updated guidance has been specifically aimed at systems of flood lighting, as such some sections relating to luminaire source intensity are not applicable to this Lighting Strategy.
- 3.1.2 The Environmental Zone criteria detailed within **Table 1** and **Table 2** will form the basis for the Lighting Strategy.

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.

Environment al 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.*

3.2 GN08/18 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals

3.2.1 Guidance for artificial lighting and bats was updated in Autumn 2018, the guidance states the following:

“It is acknowledged that, especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate ‘complete darkness’ or a ‘complete absence of illumination’ on vertical planes where some form of lighting is proposed on site despite efforts to reduce them as far as possible and where horizontal plane illuminance levels are zero. Consequently, where ‘complete darkness’ on a feature or buffer is required, it may be appropriate to consider this to be where illuminance is below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane. These figures are still lower than what may be expected on a moonlit night and are in line with research findings for the illuminance found at hedgerows used by lesser horseshoe bats, a species well known for its light adverse behaviour (Stone, 2012).”

Example of illuminance limit zonation

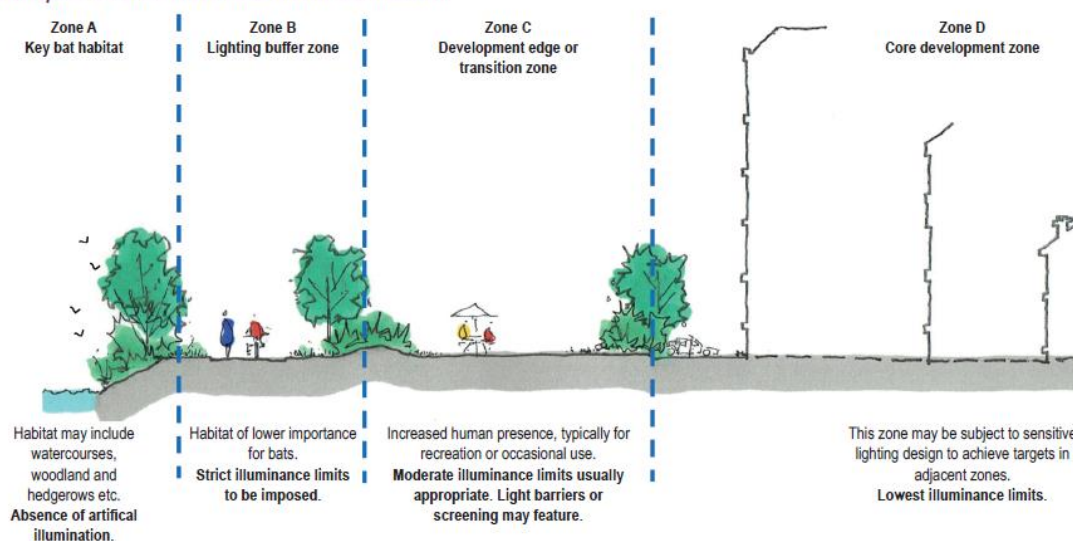


Figure 2: Illuminance Limit Zonation Extract from GN08/18

4 Exterior Lighting Strategy

4.1 Brief

- 4.1.1 The 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 sensitive human and ecological receptors.
- 4.1.2 Lighting of amenity areas is vital for providing a safe and hospitable living environment. Lighting will be limited to enable way finding purposes, and to effectively illuminate the property frontages and rears.
- 4.1.3 Street lighting will be provided through the provision of 500mm illuminated bollards.
- 4.1.4 Amenity lighting for the proposed dwellings will be provided through the provision of wall mounted downlights mounted at a height no greater than 2m.
- 4.1.5 Luminaires will be used with integral LED's and 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.
- 4.1.6 Luminaire correlated colour temperature (CCT) will be limited to 4000K maximum. This will ensure the impact of the proposed lighting on the identified sensitive ecology and the identified human receptors will be minimised.
- 4.1.7 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 areas requiring illumination.
- 4.1.8 Lighting will be required in the following application areas:
 - Roadways and Footpaths throughout the Development
 - Dwelling frontages and rears.
 - Office façade.
 - Decked Areas

4.2 Roadways Throughout the Development

- 4.2.1 Light spill onto boundary features will be restricted by orienting luminaires appropriately such that they focus light where needed during the hours of darkness.
- 4.2.2 Lighting is to be provided to the roadways within the development.
- 4.2.3 Luminaire performance parameters for the roadways through the Development are outlined in **Tables 3:**

<u>Equipment Specification</u>	<u>Description</u>
Location	Roadways and Footpaths of the Development
Correlated Colour Temperature (Kelvin)	4000K (maximum)
Luminaire Manufacturer	JCC Lighting (or similar approved)
Luminaire Model	JC17080 (or similar approved)
Light Source	LED (Light Emitting Diode)
Height	500mm (Maximum)
Mounting Arrangement	Illuminated Bollard
Luminaire Tilt	0 degrees from horizontal
Upward Light Output Ratio (ULOR)	0% (Fully Shielded)
Example Luminaire Image	
<u>Design Guidance</u>	
Controls	Photocell controlled from dusk until dawn.

Table 3: Performance and Installation Requirements

4.3 Dwelling Frontages, Rears and Decking

- 4.3.1 The frontages and rears of residential dwellings throughout the site will be illuminated for safety, amenity, and security during the hours of darkness. The lighting for these areas will be owned and maintained privately by the owners of each residential dwelling.
- 4.3.2 Lighting will be applied sensitively, with a single luminaire to the front and to the rear of each property.
- 4.3.3 Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the building and upwards towards the sky.
- 4.3.4 Luminaires will not be mounted above 2.0m in height to ensure that light is maintained at a low level.
- 4.3.5 Luminaires will be located adjacent to doorways, and under porches where relevant, focused downwards. Luminaires are to be of a low lumen output, to ensure light spill onto the Application Site boundaries is minimised.
- 4.3.6 Luminaire performance parameters for the lighting to property frontages and rears are outlined in **Table 4-5**:

<u>Equipment Specification</u>	<u>Description</u>
Location	Dwelling Frontages and Rears Plot 1,2,3,4
Correlated Colour Temperature (Kelvin)	3000K (maximum)
Luminaire Manufacturer	Ligman (or similar approved)
Luminaire Model	Gino 4 (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	
<u>Design Guidance</u>	
Controls	Motion controlled Dusk- Dawn: On upon detection of movement, switching OFF after 5 minutes

Table 4: Performance and Installation Requirements

<u>Equipment Specification</u>	<u>Description</u>
Location	Dwelling Frontages and Rears Plot 5 and 6
Correlated Colour Temperature (Kelvin)	3000K (maximum)
Luminaire Manufacturer	JCC Lighting (or similar approved)
Luminaire Model	JC17017 (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	
<u>Design Guidance</u>	
Controls	Motion controlled Dusk- Dawn: On upon detection of movement, switching OFF after 5 minutes

Table 5: Performance and Installation Requirements

- 4.3.7 The decking of the dwellings throughout the site will be illuminated for safety, amenity, and security during the hours of darkness. The lighting for these areas will be owned and maintained privately by the owners of each residential dwelling.
- 4.3.8 Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the building and upwards towards the sky.
- 4.3.9 Luminaires will not be mounted above 10cm in height to ensure that light is maintained at a low level.
- 4.3.10 Luminaire performance for the Decking lights is outline in **Table 6**.

<u>Equipment Specification</u>	<u>Description</u>
Location	Dwelling decking lighting
Correlated Colour Temperature (Kelvin)	4000K (maximum)
Luminaire Manufacturer	JCC Lighting (or similar approved)
Luminaire Model	JC17052 (or similar approved)
Light Source	LED (Light Emitting Diode)
Height	30cm (Maximum)
Mounting Arrangement	Wall mounted
Luminaire Tilt	0 degrees from horizontal
Upward Light Output Ratio (ULOR)	0% (Fully Shielded)
Example Luminaire Image	
<u>Design Guidance</u>	
Controls	Motion controlled Dusk- Dawn: On upon detection of movement, switching OFF after 5 minutes

Table 6: Performance and Installation Requirements

4.4 Office Façade Lighting

- 4.4.1 The Office on the site will be illuminated for safety, amenity, and security during the hours of darkness. The lighting for these areas will be owned and maintained privately by the owners of the office building.
- 4.4.2 Luminaires will distribute light downwards only to reduce the potential for light spill onto the boundaries surrounding the building and upwards towards the sky.
- 4.4.3 Luminaires will not be mounted above 2.0m in height to ensure that light is maintained at a low level.
- 4.4.4 Luminaires will be located adjacent to doorways, and under signs where relevant, focused downwards. Luminaires are to be of a reasonably low lumen output, to ensure light spill onto the Application Site boundaries is minimised.

- 4.4.5 Luminaire performance parameters for the lighting to property frontages and rears are outlined in **Table 7-8**.

<u>Equipment Specification</u>	<u>Description</u>
Location	Office Façade
Correlated Colour Temperature (Kelvin)	4000K (maximum)
Luminaire Manufacturer	JCC Lighting (or similar approved)
Luminaire Model	JC17005 (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	
<u>Design Guidance</u>	
Controls	Motion controlled Dusk- Dawn: On upon detection of movement, switching OFF after 5 minutes

Table 7: Performance and Installation Requirements

<u>Equipment Specification</u>	<u>Description</u>
Location	Office Façade
Correlated Colour Temperature (Kelvin)	4000K (maximum)
Luminaire Manufacturer	JCC Lighting (or similar approved)
Luminaire Model	JC17006 (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	
<u>Design Guidance</u>	
Controls	Motion controlled Dusk- Dawn: On upon detection of movement, switching OFF after 5 minutes

Table 8: Performance and Installation Requirements

5 Conclusion

5.1 Brief

- 5.1.1 Lighting associated with the Development shall be designed in accordance with the lighting strategy to ensure it is unlikely to give rise to obtrusive light with the potential to affect residential and ecology receptors. This has been achieved through ensuring the relevant British Standards and industry guidance and local policies have informed the proposed approach to lighting.
- 5.1.2 Due to the implementation of the lighting strategy outlined, the proposed lighting is unlikely to contribute to detrimental levels of light spill falling outside the boundaries of the Application Site, which typically consists of roadway and private residential amenity lighting.
- 5.1.3 Horizontal light spill is contained within the Application Site, as can be seen in the drawing presented in **Appendix 1**. 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.

Appendix 1 – Indicative Light Spill Diagram

See separate file: 2331-DFL-ELG-XX-CA-EO-13003-S3-P01

