



• LIGHTING DESIGN • ELECTRICAL • SMART CITIES •
ENERGY REDUCTION • LIGHTING IMPACT

ICKLEFORD MILL

DESIGN SUMMARY REPORT

DFL-UK

17 City Business Centre, Hyde Street, Winchester, SO23 7TA
+44(0)1962 855080 | info@df1-uk.com | www.df1-uk.com



PROJECT NUMBER: 4460			DOCUMENT REF: 4460-DFL-HLG-XX-RP-EO-13001			
P02	S3	Updated design in line with client comments	CM	AE	AE	04/06/2026
P01	S3	First Issue	AC	CM	CM	03/03/2026
Revision	Suitability	Purpose Description	Originated	Checked	Approved	Date

Designs for Lighting (DFL) is a business built on successfully collaborating with our clients. We have over 20 years proven experience in our industry, listening to the challenges our clients face, developing the best solutions and being innovators in our specialism. Our role is to find the most effective and sustainable outcome to enhance and support your projects. We proudly work with recognised industry bodies to promote and shape the future of the industry and ensure our staff are trained to exceed the required competency levels of our industries. Above all, we ensure each project delivers against our values.



Quality



Knowledgeable



Dependable



Clear Advice

Table of Contents

1. Introduction	5
1.1. Scope of Works	5
2. Consultation.....	6
2.1. Introduction.....	6
3. British Standards.....	6
3.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice.....	6
3.2. BS EN 13201-2:2015 - Road lighting. Performance requirements.....	6
4. Guidance	7
4.1. Guidance Notes for the Reduction of Obtrusive Light (Institution of Lighting Professionals GN01:2021)	7
4.2. GN08:2023 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals	8
5. Desktop Assessment	9
5.1. Site Description and Context.....	9
5.2. Environmental Zone Classification	9
6. Lighting Strategy.....	10
6.1. Summary.....	10
6.2. Residential Road(s)	11
7. Summary of Results.....	12
7.1. Design.....	12
7.2. Ecology	13
7.3. Obtrusive Light.....	14
8. Lighting Design	16
8.1. Overview	16
8.2. Colour Temperature.....	17
8.3. Column Locations (setbacks, clearances and clear zones)	17
8.4. Supply.....	17
8.5. Maintenance Factors.....	17
9. Assumptions	18
9.1. Overview	18
10. Risk Assessment.....	18
10.1. Overview.....	18
Appendix 1 – Lighting Class Map.....	19
Appendix 2 – Sensitive Receptors	20
Technical Description, Definitions & Abbreviations	21

Table of Figures

Figure 1: Site Plan	5
Figure 2: Example of Lighting Zonation near Sensitive Boundaries and Known Ecological Habitat 8	
Figure 4: Lighting Class Map	19
Figure 5: Sensitive Receptors.....	20

Table of Tables

Table 1: Environmental Zone Descriptions.....	7
Table 2: Obtrusive Light Criteria.....	7
Table 3: Limitations of the Environmental Zone.....	9
Table 4: Lighting Class for Residential Roads	11
Table 5: Lighting Class Compliance.....	12
Table 6: PSER Results Table, Maximum Illuminance	13
Table 7: PHAR Results Table, Maximum Illuminance	14
Table 8: Maintenance Factor Calculations	17
Table 9: Lighting Class Colour Coding	19

1. INTRODUCTION

1.1. Scope of Works

- 1.1.1. DFL have been commissioned to design site wide wildlife sensitive lighting to satisfy planning conditions and gain approval by the local planning authority. The lighting is to be privately owned and not adopted by the local authority.
- 1.1.2. Please refer to **Figure 1** for an overview of the site.

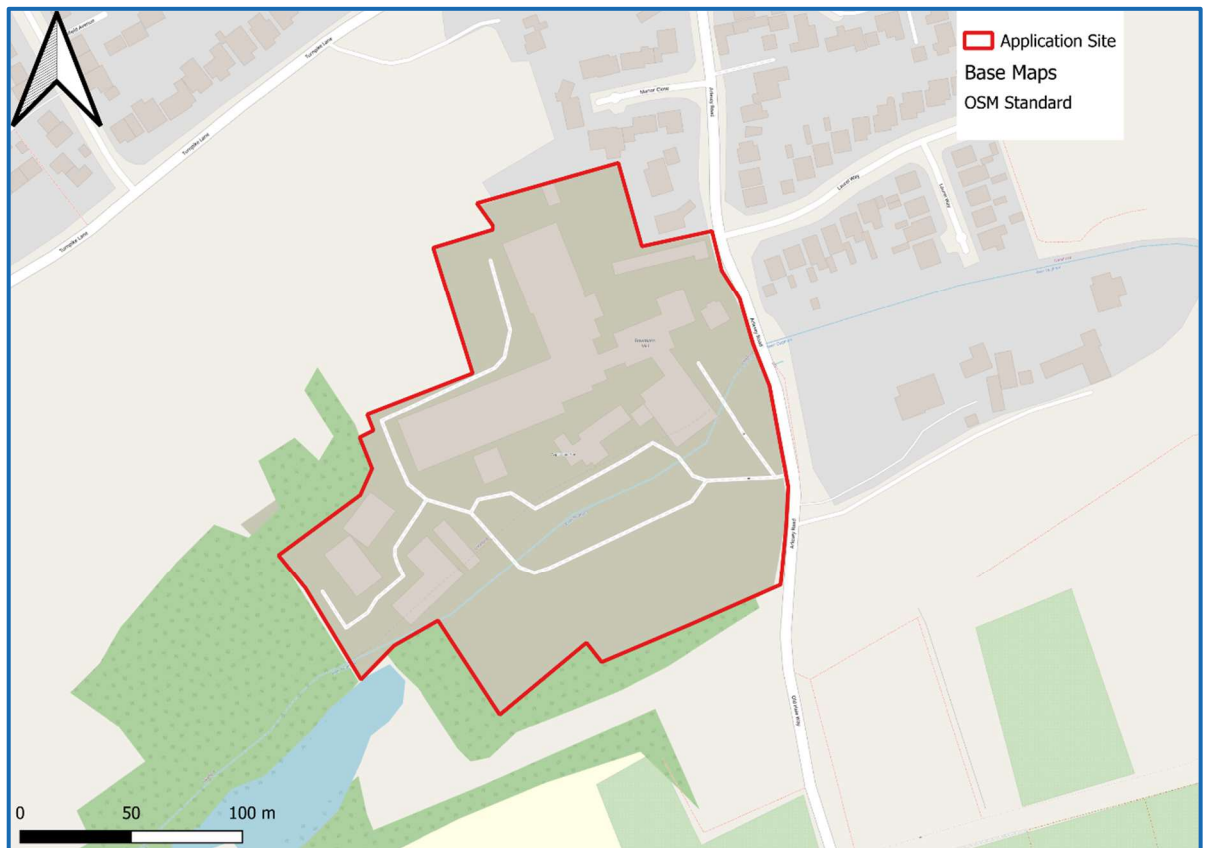


Figure 1: Site Plan

2. CONSULTATION

2.1. Introduction

- 2.1.1. There has been consultation with Hill Residential LTD and MKA Ecology to discuss the specification of equipment to be used as well as the areas proposed to have lighting.

All roads are to be lit with functional luminaires and pathways are to have bollard lighting for safety and wayfinding purposes only. Property downlights will also be included on the lighting calculations. Property downlighters will be located on all entrances / exits to properties.

3. BRITISH STANDARDS

3.1. BS 5489-1:2020 - Lighting of Roads and Public Amenity Areas - Code of practice.

- 3.1.1. This standard gives recommendations on the general principles of road lighting, its aesthetics and technical aspects and provides guidance on operational maintenance. It also provides guidance on means of minimizing energy consumption and limiting the impacts on the environment and adjacent properties.

3.2. BS EN 13201-2:2015 - Road lighting. Performance requirements.

- 3.2.1. This British and European standard defines the performance requirements specified as lighting classes for road lighting aiming at the visual needs of the road users, as well as the consideration of the environmental aspects of the road lighting to be applied.

4. GUIDANCE

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

- 4.1.1. This DESIGN SUMMARY REPORT is informed by industry guidance notes, which aim to reduce the potential for obtrusive light to occur, which is typically caused by poorly designed and installed exterior artificial lighting. This DESIGN SUMMARY REPORT is informed by the most relevant sections of GN01:2021 that has recently been published to reduce the potential for obtrusive light from a wide range of exterior lighting applications.

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

Environmental Zones	Sky Glow ULR ¹ (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre-Curfew	Post-Curfew ²	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

¹ ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

² 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

4.2. GN08:2023 Bats and Artificial Lighting in the UK – Bat Conservation Trust and Institution of Lighting Professionals

4.2.1. This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios. However, it is not meant to replace site-specific ecological and lighting assessments, which 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)."

"A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component."

*"A buffer zone subdivided to into smaller zones of increasing illuminance limit further away from the Supporting Habitat would ensure light levels (illuminance - measured in lux) do not exceed certain defined limits. This has the effect of a gradual decrease in lighting from the developed zone, rather than a distinct cut-off, which may provide useable area for the project which also limits lighting impacts on less sensitive species, or less well-used habitat." (see **Figure 2**).*

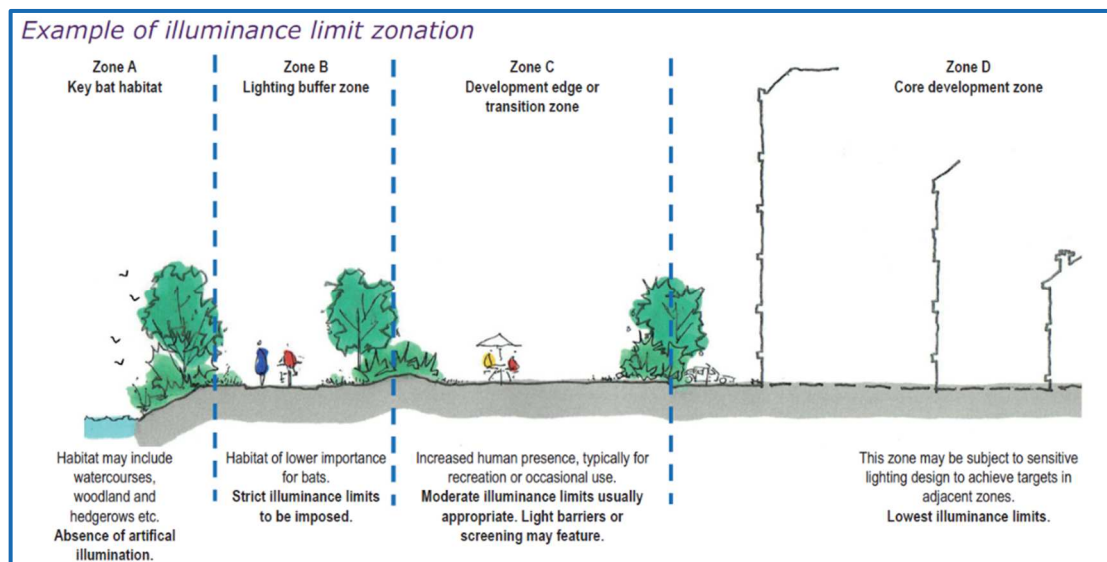


Figure 2: Example of Lighting Zonation near Sensitive Boundaries and Known Ecological Habitat

5. DESKTOP ASSESSMENT

5.1. Site Description and Context

- 5.1.1. The proposed development is located within the South of Ickleford. Ickleford is a quiet village with relatively dark outer suburban areas. The Application Site currently is currently home to a former Flour Mill that closed in 2016.

5.2. Environmental Zone Classification

- 5.2.1. The Environmental Zone criteria detailed within **Table 1** and **Table 2** informs the basis of the Lighting Impact Assessment.
- 5.2.2. The Application Site is considered to be located within an E2 environmental zone. This is because of the Application Sites location within a village with relatively dark outer suburban locations.
- 5.2.3. The lighting classes used within the Proposed Development, and the limitation placed on the lighting in terms of its environmental effect, is informed by the requirements for an E2 environmental zone (**Table 3**).

Zone	Surrounding	Examples	Limitations		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E2	Rural	Sparsely inhabited rural areas, Village or relatively dark outer suburban locations	5 lux	1 lux	2.5%

Table 3: Limitations of the Environmental Zone

6. LIGHTING STRATEGY

6.1. Summary

- 6.1.1. 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.
- 6.1.2. Lighting will be of an appropriate specification and designed in accordance with British Standards.
- 6.1.3. Lighting in unadopted areas will be required in the following task areas:
- -Residential Roads
 - -Residential Pathways
- 6.1.4. Ecologically sensitive areas will have vertical illuminance calculations to ensure that vertical light spill levels are within GN01/2021 Guidance. A warmer colour temperature will be specified to further minimise disruption to ecological receptors.
- 6.1.5. All areas as mentioned in **Figure 3** will have vertical light calculations as per GN01/2021.

39. No development shall commence (other than demolition works) until full details of the following have been submitted to and approved in writing by the local planning authority:
- (i) a site wide wildlife-sensitive lighting scheme;
 - (ii) hedgehog friendly boundary treatments;
 - (iii) the provision of 20 bat boxes.

Thereafter, the development shall be implemented in accordance with the approved details and retained in perpetuity.

Reason: in the interests of wildlife and habitat protection and enhancement.

Herts Ecology

The site wide lighting scheme should be minimised by the use of lights with warm white light sources, UV filters, movement sensors, and directional downlights - illuminating below the horizontal plane which avoid light trespass into the environment. The use of light directional accessories such as baffles, hoods and louvres can assist with this. Particular attention should be made to avoid lighting of the trees, hedgerows and the river. Lighting types to be avoided include any blue-white light sources, metal halide and mercury lamps, and any form of uplighting, which lights above the horizontal plane, illuminating trees and foraging habitat.

A bat mitigation licence will be required from Natural England to proceed lawfully with demolition of B6 and satisfy the Conservation of Habitats and Species Regulations 2017 (as amended).

Figure 3: Ecological Receptors

6.2. Residential Road(s)

6.2.1. The lighting class can be seen within **Table 4** below. This is derived from BS5489-1:2020 Table A.5, the performance requirements for which are based on BS EN 13201-2:2015.

Road	Environmental Zone	Traffic Flow	Speed Limit / Pedestrianised	Standard Lighting Class	Risk Assessment	Design Class
Residential Roads	E2	Normal	≤30 mph	P5	No Change	P5
Residential Paths	E2	Quiet	Pedestrian and cyclists only	P6	Decrease	For safety and wayfinding purposes only

Table 4: Lighting Class for Residential Roads

6.2.2. The client has requested that the residential paths are to be lit for safety and wayfinding purposes only.

7. SUMMARY OF RESULTS

7.1. Design

- 7.1.1. As demonstrated in lighting calculation **4460-DFL-HLG-XX-CA-EO-13001**, the following results have been achieved (**Table 5**). Where grids are non-compliant, the reason for non-compliance/departure from standard has been given.

Calculation Grid Ref	Compliant?	Non-compliance / Departures from Standards
Grid 1 – Class P5	×	Please see 7.1.2
Grid 2 – Class P5	✓	
Grid 3 – Class P5	×	Please see 7.1.3
Grid 4 – Class P5	✓	
Grid 5 – Class P5	✓	
Grid 6 - For Safety & Wayfinding	✓	
Grid 7 - For Safety & Wayfinding	✓	

Table 5: Lighting Class Compliance

- 7.1.2. Due to the conflicts of trees and a pumping station, column 15 has had to be positioned within the turning head outside of Plot 1 – 7 which has caused a slight drop in levels at the end of the road. The drop in levels falls short of the requirement 4m before the private drive boundary, however in real terms the light will fade and this drop for 4m would not be directly noticeable or impactful to the human eye and so the drop in levels can be seen as negligible.
- 7.1.3. The final 5 meters of road outside plot 20 has not been lit to a lighting class standard to help minimise vertical light spill onto nearby sensitive ecological receptors. With this section of road only serving access to four residential parking bays, the drop in lighting class is seen as negligible.

7.2. Ecology

- 7.2.1. Where ecological receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in Appendix 2 – Sensitive Receptors. The light levels based on the modelling do not exceed 0.4 Lux, keeping the light levels within the guidance given within GN08/2023.
- 7.2.2. In line with section 4.56 of GN08/2023, the vertical grids will be mounted at a height of 1.5 metres above the ground level to simulate the likely flight path of a light sensitive bat.

Receptor No	Compliant?	Notes
PSER 001 - Boundary Trees	✓	
PSER 002 - Boundary Trees	✓	
PSER 003 - Boundary Trees	✓	
PSER 004 - Boundary Trees	✓	
PSER 005 - Boundary Trees	✓	
PSER 006 - Boundary Trees	✓	
PSER 007 - River Oughton	✓	
PSER 008 - Trees Beside River Oughton	✓	

Table 6: PSER Results Table, Maximum Illuminance

7.3. Obtrusive Light

- 7.3.1. Where human receptors are potentially sensitive to vertical light spill, a vertical illumination grid has been modelled, as shown in Appendix 2 – Sensitive Receptors. The light levels based on the modelling do not exceed 1 Lux, keeping the light levels within the guidance given within GN01/2021 for an area identified as an E2 environmental zone. All grids are modelled at 0.8 meters in height, the average height for the lower windowsill.

Receptor No	Compliant?	Notes
PHAR 001 - O/S Plot 22	×	Please see note 7.3.2
PHAR 002 - O/S Plot 17	✓	
PHAR 003 - O/S Plot 16	✓	
PHAR 004 - O/S Plot 15	✓	
PHAR 005 - O/S Plot 26	×	Please see note 7.3.2
PHAR 006 - O/S Plot 14	×	Please see note 7.3.2
PHAR 007 - O/S Plot 10	✓	
PHAR 008 - O/S Plot 09	×	Please see note 7.3.2
PHAR 009 - O/S Plot 30	×	Please see note 7.3.2
PHAR 0010 - O/S Plot 46	×	Please see note 7.3.2
PHAR 011 - O/S Plot 45	×	Please see note 7.3.2
PHAR 012 - O/S Plot 51	×	Please see note 7.3.2
PHAR 013 - O/S Plot 52/53	×	Please see note 7.3.2

Table 7: PHAR Results Table, Maximum Illuminance

- 7.3.2. Due to a lack of suitable column locations, it is not possible to relocate LC03, LC04, LC05, LC07, LC09, LC11, LC13 & LC14 away from the sensitive receptors. This results in the vertical illuminance levels exceeding GN01/2201 guidance for an E2 environmental zone. A rear louvre is already installed onto LC03, LC04, LC05, LC07, LC09, LC11, LC13 & LC14, a rear shield is also recommended and expected to bring vertical illuminance levels to a more acceptable level.
- 7.3.3. Whilst levels within this vertical illuminance calculation are exceeding GN01/2021 guidance, the only area exceeding 1.00 Lux is the lower 0.25m – 0.50m of the vertical illuminance grid. Therefore, this result is negligible.

8. LIGHTING DESIGN

8.1. Overview

- 8.1.1. There has been consultation with Hill Residential LTD and MKA Ecology to discuss the specification of equipment to be used as well as the areas proposed to have lighting.
- 8.1.2. All luminaires are proposed to have rear louvres installed to help minimise light spill onto sensitive ecological and human receptors.
- 8.1.3. All bollards are proposed to have rear shields installed to help minimise light spill onto sensitive ecological receptors.
- 8.1.4. All bollards proposed are Dark Skies bollards, having a 0% upward light ratio, not only helping to protect the night sky but also helping to minimise light spill onto sensitive ecological receptors.
- 8.1.5. Column LC02 and bollards B02 and B03 have been proposed near to the entrance road bridge. Confirmation will be needed to confirm that the column does not affect the foundations of the bridge and further consultation would be required if the bridge foundation is conflicting with the column.
- 8.1.6. Where possible, bollards have been proposed 15m apart, providing lighting for wayfinding and safety purposes whilst also minimising the volume of bollards required.
- 8.1.7. All wall mounted luminaires are proposed to be controlled via a PIR sensor, minimising the time that they are on and reducing unnecessary light spill.

8.2. Colour Temperature

- 8.2.1. A colour temperature of 2700K has been chosen to help mitigate any effect on ecological receptors.

8.3. Column Locations (setbacks, clearances and clear zones)

- 8.3.1. Where possible, proposed columns have been designed at the rear of the footway at a minimum of 800mm from the face of the kerb to the leading edge of the column. In areas where columns cannot be placed at the rear of footways, they have been placed in other suitable locations.

8.4. Supply

All new columns will be connected via the PCN (Private Cable Network) designed by others.

8.5. Maintenance Factors

- 8.5.1. Maintenance factors have been based on LM80/TM21 depreciation curves, in line with BS5489-1:2020 and ILP GN11 – Determination of Maintenance Factors (**Table 8**). The maintenance factors are calculated as follows:

$$OMF = LLMF * LSF * LMF$$

Where:

LLMF is lamp or LED lumen maintenance factor, representing the proportion of initial light output remaining at the median useful life,

LSF is lamp or LED survival factor representing the proportion of LEDs in a luminaire that are expected to remain working at the median useful life,

LMF is luminaire maintenance factor representing the dirt build-up and other deterioration of the optic surfaces/materials as per BS5489-1:2020 Annex C, Table C.1,

OMF is the overall maintenance factor.

Type	LLMF	LSF	LMF	OMF
A	0.90	1.00	0.84	0.76
B	0.70	1.00	0.84	0.59
C	0.80	1.00	0.84	0.67

Table 8: Maintenance Factor Calculations

9. ASSUMPTIONS

9.1. Overview

- 9.1.1. It is assumed that Column LC02 & Bollards B02 & B03 are proposed in locations which do not affect the bridges foundation.
- 9.1.2. It is assumed that the addition of rear shields as mentioned within **0** will reduce the vertical light spill to a more acceptable level.
- 9.1.3. It is assumed that the electricity cables mentioned on the topographical survey are high voltage.
- 9.1.4. Reference to column / bollard positions in relation to the utilities has been assumed using the received "UTILITIES AND DRAINAGE SURVEY" document. Positions of the utilities in relation to the columns / bollards may not be accurate.

10. RISK ASSESSMENT

10.1. Overview

- 10.1.1. Refer to **4460-DFL-HLG-XX-RA-EO-13001** for the full risk assessment.

APPENDIX 1 – LIGHTING CLASS MAP



Figure 4: Lighting Class Map

Lighting Colours	Colour Coding
P5	
For Safety & Wayfinding	

Table 9: Lighting Class Colour Coding

APPENDIX 2 – SENSITIVE RECEPTORS



Figure 5: Sensitive Receptors

TECHNICAL DESCRIPTION, DEFINITIONS & ABBREVIATIONS

PHAR: is an abbreviation for a potential human amenity receptor, a location where an observer could have the potential to be affected by the proposed lighting to be installed [Abbreviation used by DFL LI&P.](#)

PSER: is an abbreviation for an area identified as or treated as a location that may host a potentially sensitive ecological receptor. This is generally used where light sensitive bats have the potential to live, forage or use as a flight path, other ecologically sensitive receptors such as (but not limited to) the Great Crested Newt may also be identified by this term. [Abbreviation used by DFL LI&P.](#)

PSR: is an abbreviation for an area where an individual maybe susceptible to light brightness (Light intensity) which may have the potential to cause a hazardous situation. [Abbreviation used by DFL LI&P.](#)

Obtrusive Light: refers to excessive or bothersome artificial light that goes where it shouldn't, causing discomfort and disruption. *Spill light which because of quantitative, directional or spectral attributes in a given context gives rise to annoyance, discomfort, distraction or reduction in the ability to see essential information.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Sky glow: When lights are directed upwards or light is scattered by particles in the air, like dust or water droplets, it creates a glow that makes it hard to see stars. *The increase in diffuse illuminance of the night sky above that produced by natural sources such as the moon and visible star.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Vertical Illuminance: is how much light lands on upright surfaces like walls. It's measured in lux or footcandles and matters for places where the view from a vertical angle is important. *Lighting of vertical surfaces such as walls, windows, statues, sculptures and people's faces.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Correlated colour temperature (CCT): the appearance of light emitted by a light source measured in Kelvin (K), Lower CCT values such as 2700K represent warmer, more yellowish light, *similar to the light from older incandescent lamps. (Tcp)The temperature of the Planckian radiator whose perceived colour most closely resembles that of a given stimulus at the same brightness and under specified viewing conditions, measured in absolute temperature on the kelvin (K) scale.* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Lux: measures the brightness of light as perceived by the human eye at a specific point on a surface. *The SI derived unit of illuminance, measuring luminous flux per unit area (1 lux = 1 lumen/m²).* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Lumens: measure how bright a light appears to our eyes. *The SI derived unit of luminous flux; a measure of the total quantity of visible light emitted by a source or received by a surface (unit: lumen).* [CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.](#)

Glare: refers to an excess of bright light that makes you uncomfortable or hinders your vision. It happens when there's a big difference between a bright light and the rest of the surroundings. *Glare: condition of vision in which there is discomfort or a reduction in the ability to see details or objects, caused by an unsuitable distribution or range of luminance, or by extreme contrasts.* [BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.1.8](#)

Luminous intensity: is light brightness or how intense the light source is. light intensity is how intense a light source is emitted or received in a particular direction, this is measured candelas and is termed as luminous intensity I_v <of a source, in a given direction> quotient of the luminous flux, $d\Phi_v$, leaving the source and propagated in the element of solid angle $d\Omega$ containing the given direction, by the element of solid angle (unit: $cd = lm \cdot sr^{-1}$. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.2.

Candela: is a measurement for the brightness of a light source, taking into account the direction in which the light is emitted. Base unit of luminous intensity in the International System of Units (SI); the luminous power per unit solid angle emitted by a point light source in a particular direction. CIBSE LG21 Lighting Guide 21: Protecting the night-time environment.

Uniformity (Uo): is an explanation for the even distribution of light across an area or surface. The overall uniformity shall be calculated as the ratio of the lowest luminance, occurring at any grid point in the field of calculation, to the average luminance. BS EN 13201-3-2015, Calculation of Performance Section 8.3.

Luminance: is how bright a surface appears to our eyes. It considers the light coming from or reflected by an object. L_v <in a given direction, at a given point of a real or imaginary surface> quantity defined by the formula (unit: $cd \cdot m^{-2} = lm \cdot m^{-2} \cdot sr^{-1}$) BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.3.

Illuminance is how much light lands on a surface per square meter. It's measured in lux. More lux means a brighter area. E_v (unit: $lx = lm \cdot m^{-2}$) 1. <at a point of a surface> quotient of the luminous flux $d\Phi_v$ incident on an element of the surface containing the point, by the area dA of that element 2. <at a point of a surface> equivalent definition: integral, taken over the hemisphere visible from the given point, of the expression. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.2.10.

Luminaire: a light fixture, this is also sometimes referred to as a lantern or a light fitting, is a product that produces artificial light. apparatus which distributes, filters or transforms the light transmitted from one or more lamps and which includes, except the lamps themselves, all the parts necessary for fixing and protecting the lamps and, where necessary, circuit auxiliaries together with the means for connecting them to the electric supply BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.3

ULOR: upward light output ratio or ULOR refers to the amount of light the light fixture will produce upwards as a percentage of its total light output. $RULO$ <of a luminaire> ratio of the upward luminous flux of the luminaire, measured under specified practical conditions with its own lamp(s) and equipment, to the sum of the individual luminous fluxes of the same lamp(s) when operated outside the luminaire with the same equipment, under specified conditions BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.3.12.

Maintenance factor (MF): is an allowance for how well the lights keep working overtime. It considers things like dirt on the light fittings and "wear and tear". DEPRECATED: light loss factor ratio of illuminance produced by the lighting installation after a certain period to the illuminance produced by the installation when new Note 1 to entry: The term depreciation factor has been formerly used to designate the reciprocal of the above ratio. Note 2 to entry: The maintenance factor takes into account light losses caused by dirt accumulation on luminaires and room surfaces (in interiors) or other relevant surfaces (in exteriors, where appropriate), and the decrease of the luminous flux of lamps. BS EN 12665-2018, Light and lighting - Basic terms and criteria for specifying lighting requirements, Section 3.5.18.

Tilt: is how much the luminaire is lifted based on the fitting facing flat to the ground.

Outreach: how far away the fitting is from the column/wall its mounted on to the light source.

This isn't the end...

We don't just have the solution for what you need today. We also have the solutions you might need for the future. We have dedicated teams that deliver.

- **Lighting Impact and Planning** teams that focus on delivering the most effective and sensitive lighting solutions to support planning.
- **Residential** teams that cover all aspects of new development and redevelopment spanning private, section 38 and section 278 design packages.
- **Public Realm** teams that are experts in enhancing night-time public spaces to create inviting spaces and opportunity for local economies to thrive during the hours of darkness.
- **Electrical** teams – we don't just put a light in the ground, we can help you get power to it as well! Additionally, we also offer design services for EV charging. As this market rapidly expands, make sure you have the experts managing the load, otherwise your EV charging solutions might not live up to expectations.
- **Strategic Infrastructure** teams that offer Lighting and Electrical expertise for complex transport networks and interchanges.
- **Consultancy Services** teams that help when you know what you want but you need someone to help you turn the idea into a project.

Finally, as innovators, you might be facing something bespoke or niche. Don't worry – we might have the answer you need. Feel free to get in touch!

THE POWER TO MAKE LIGHT WORK



Aaron Cockram
Lighting Technician



+44 (0)1962 855080



Aaron.cockram@dfi-uk.com



www.dfi-uk.com/



17/18 City Business Centre, Hyde
Street, Winchester, Hampshire,
SO23 7TA