Building Services
Consulting Engineers

ELECTRICAL SERVICES
LIGHTING STRATEGY REPORT

AT

BIRDWORLD & HASKINS FOREST LODGE GARDEN CENTRE

FOR

BIRDWORLD & HASKINS GARDEN CENTRES

JANUARY 2024

DOCUMENT REVISION RECORD

Original Document

Compiled by	James Hicks	Date	January 2024
Checked by:	Peter Sheppard	Date:	January 2024

Issue Record

Reason for Issue	Revision	Date	Chkd
Planning Submission	P1	19.01.2024	PS

Contents

1 EXECUTIVE SUMMARY

This Lighting Strategy document discusses the type and level of lighting requirements of the proposed Birdworld Ltd and Haskins Garden Centres Ltd.

It is concluded that the Indicative Lighting Strategy provides an appropriate outline of the lighting requirements for the Proposed Development as part of the Application, and identifies potential measures to adequately provide full compliance with the following guidance documents:

- South Downs National Park, Dark Skies Technical Advice Note – Version 2 (May 2021)
- The Institute for Lighting Processionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21
- The Institute for Lighting Processionals Guidance Note 08 - Bats and Artificial Lighting at Night (2023) GN 08/23

2 PROJECT DESCRIPTION

ION Consulting Engineers have been commissioned by Birdworld Ltd and Haskins Garden Centres Ltd to undertake a pre-development Lighting Strategy Report for the proposed redevelopment of the Birdworld & Haskins Forest Lodge Garden Centre sites.

Within this report the land areas will be referred to as the 'site'.

2.1 OBJECTIVE

The objective of this report is to assess the scope of the legislation, policy, guidance, standards and planning conditions relating to the installation and operation of suitable lighting across the site, and to establish a robust lighting strategy that demonstrates full compliance with these conditions.

The proposed scheme will provide full compliance with the following guidance documents:

- South Downs National Park, Dark Skies Technical Advice Note – Version 2 (May 2021).
- The Institute for Lighting Processionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21.
- The Institute for Lighting Processionals Guidance Note 08 - Bats and Artificial Lighting at Night (2023) GN 08/23.

The project teams have been advised that a detailed lighting design will not be required for the initial planning application. As such, the final luminaire selection, positions of luminaires and lighting calculations are not included within this report.

The report will define the technical strategy from which a future detailed lighting design will be developed. At the detailed design stage, a computational light modelling exercise will be undertaken.

2.2 SITE ADDRESS

The site comprises the following two adjacent proposed developments:

Development	Address
Haskins Garden Centres Ltd	Haskins Forest Lodge Garden Centre, Holt Pound, Farnham, GU10 4LD.
Birdworld Ltd	Birdworld, Holt Pound, Farnham GU10 4LD

3 ILP GN01/21 - THE REDUCTION OF OBTRUSTIVE LIGHT

3.1 ILP GUIDANCE INTRODUCTION

ILP GN01/21 provides guidance for limiting the effect of obtrusive light and minimising the impact of skyglow by outdoor lighting installations. The publication is closely aligned with the following CIE (International Commission on Illumination) technical documents:

- CIE 150 (2017) Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations.
- CIE 126 (1997) Guidelines for minimizing Sky Glow.

The guidance note firstly describes the various types of lighting pollution:

- Sky Glow - Light that contributes to the brightening of the night sky.
- Glare – The uncomfortable brightness of a light source when viewed against a darker background.
- Light Intrusion – The spilling of light beyond the boundary of the property or area being lit.

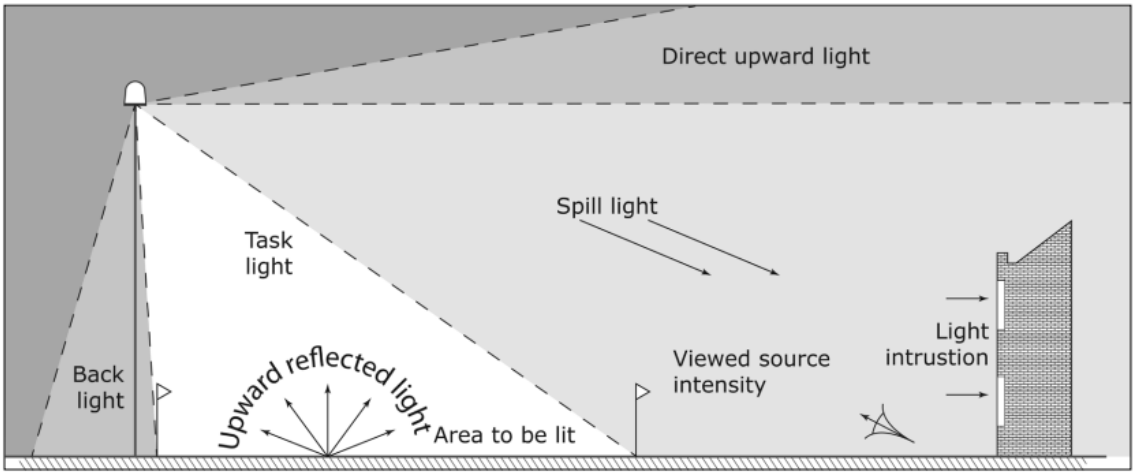


Figure 1: ILP GN01/21 Types of Obtrusive Light

The guidance then defines a series of environmental zones that must be assigned to areas within the project site. See section 'ILP Environmental Zone Classification' below for further details.

A range of technical lighting criteria is then provided within the guidance that is specific to both the environmental zone and the time of day. The time-based criteria are defined by 'pre-curfew' and 'post-curfew' periods. The 'curfew' is the time after which stricter requirements for the control of obtrusive light will apply. Curfew times often commence between 21:00 to 23:00 and may run until 07:00.

Whilst the guidance note is generally intended for the control of obtrusive light affecting residential receptors it can be considered equally relevant to non-residential human receptors i.e. for the preservation of night-time views from vantage points. See section 'Obtrusive Light Receptors' below for further details.

The internal and external lighting scheme for the Birdworld and Haskins Forest Lodge Garden Centre development will be designed, installed and comissioned to provide a solution that is compliant with all relevant design criteria included within the ILP GN01/21 guidance document.

3.2 ILP ENVIRONMENTAL ZONE CLASSIFICATION

The environmental zones defined with GN01/21 have been established to categorise a set of technical lighting parameters that are proportional to the environment within which the site is located. The environmental zones range from protected rural (E0), through to urban environments (E4). Where an area to be lit lies within visual distance of the boundary between two zones then the obtrusive light values applicable to the most rigorous zone shall apply.

It is considered appropriate to categorise the Site as being within an Environmental Zone 2 'Rural' (see Appendix A).

The Birdworld and Haskins Forest Lodge Garden Centre developments are located immediately adjacent to the South Downs National Park.

The South Downs National Park has adopted these ILP environment zone classifications within the SDNP Dary Skies TAN and has assigned them across the South Downs National Park. The zone classification map is not reproduced within this document but is available for the reader within Figure 2 of the 'South Downs National Park – Dark Skies Technical Advice Note Version 2 May 2021'.

SDNPA have classified the areas immediately adjacent to the site as being within an Environmental Zone E1(b) 'Transition' (see appendix A).

Location	ILP GN01/21 Environmental Zone Classification (Development Site)	SDNP Dark Skies TAN Environmental Zone Classification (Adjacent to Development Site)
Haskins Forest Lodge Garden Centre	E2 Rural	E1(b) Transition
Birdworld	E2 Rural	E1(b) Transition
Residential Properties	E2 Rural	E1(b) Transition

3.3 OBTRUSTIVE LIGHT RECEPTORS

Residential Receptors:

Residential light-sensitive receptor locations have been identified at the following locations:

Haskins Forest Lodge:

- Kookaura House
- South Lodge
- Summerfield Barn
- 1 Alice Holt Cottages

Birdworld:

- Holt Grange – East of site.

Road Receptors:

Road Receptor locations have been identified at the following locations:

- A325 along east side of the Birdworld and Haskins Forest Lodge Garden Centre development.

3.4 ILP DESIGN CRITERIA AND MITIGATION RESPONSE

The following ILP GN01/21 technical lighting guidance criteria are relevant to the design of the lighting scheme at Birdworld and Haskins Forest Lodge Garden Centre. A summary of the guidance, limiting values, and project specific response are provided. For further details refer to the External Lighting Strategy section of this report.

Guidance 1: Limitation of illumination of surrounding properties	
Summary	This guidance imposes limits to the maximum values of vertical illuminance at windows of nearby existing or potential dwellings / premises. The values are the summation of all lighting installations within the proposed site.
Limiting Values	Environmental Zone E2: ▪ The pre-curfew limit on vertical illuminance = 5 lux @ surrounding property windows. ▪ The post-curfew limit on the vertical illuminance <1 lux @ surrounding property windows.

Project Response	The residential properties are located a significant distance from the areas that are proposed to be illuminated within the site. All luminaires will be specified as LED type with flat modern optics and an upward lighting ratio (ULR) of 0. The selection, placement and optical design of the luminaires will prevent vertical illumination of the surrounding property windows. The control of the luminaires will prevent the operation of luminaires close to the residential boundaries outside of curfew hours. As such, the post-curfew limit will automatically be satisfied. The detailed lighting design will include desktop calculation of the vertical illuminance of lighting at surrounding properties to ensure compliance with the guidance. The lighting calculation will include screening via permanent structures (i.e. buildings and fences) however natural landscaping will not be included in the calculation as the screening effect may vary over time.
Guidance 2: Limitation of bright luminaires in the field of view	
Summary	This guidance imposes limits to the maximum values for the luminous intensity of luminaires in designated directions where views of bright surfaces of luminaires are likely to be a nuisance to occupants of premises, or from positions where such views are likely to be maintained. i.e. not for momentary or short-term viewing. The limits for the luminous intensity of bright luminaires are dependent on the viewing distance (d) between the observer and the luminaire(s), and the projected area (A_p), (bright part of the luminaire) of the light source seen from the observer position.
Limiting Values	Environmental Zone E2: ▪ The pre-curfew limit on the maximum luminous intensity emitted by luminaire (candela) = see table in Appendix. ▪ The post-curfew limit on the maximum luminous intensity emitted by luminaire (candela) = see table in Appendix.
Project Response	Where required, additional shields will be installed on the rear of the luminaires to mask the apparent surface (bright part of the luminaire) from the observer position during pre-curfew periods. The control of the luminaires will prevent their operation of luminaires close to the residential boundaries outside of curfew hours. As such, the post-curfew limit will automatically be satisfied. The observer positions are considered to be the windows of the residential properties. No other maintained viewing positions are anticipated.
Criteria 3: Limitation on the effects of transport systems	
Summary	This guidance imposes limits where users of road networks are subject to a reduction in the ability to see essential information. CIE 150 2017; Table 4 gives values that are for relevant positions and for viewing directions in the path of travel.
Limiting Values	Environmental Zone E2: ▪ Veiling luminance (L_v) 0.23 cd/m^2 ▪ Threshold Increment (TI) 15% based on adaption luminance of 1.0 cd/m^2
Project Response	A325 roadway illumination by local authority. The constraints criteria will be confirmed during the detailed design stage.

Guidance 4: Limitation of skyglow	
Summary	This guidance imposes limits on the proportion of light that is emitted at or above the horizontal when a luminaire is mounted in its installed position. This is defined as the Upwards Lighting Ratio (ULR) of a luminaire. It should be noted that this metric does not take into account the effect of light reflected upwards from the ground that also contributes to skyglow. Due to light pollution, the night sky over many of our cities is hundreds of times brighter than a natural starlit sky. Skyglow is the diffuse luminance of the night sky arising from artificial lighting.
Limiting Values	Environmental Zone E1: ▪ The limit on Upward Lighting Ratio (ULR) % = 2.5
Project Response	All luminaires will be specified as LED type with flat modern optics, an upward lighting ratio (ULR) of 0 and installed at a tilt of 0 degrees from the horizontal. The detailed lighting design will include calculation of the upwards lighting ratio (ULR) of the complete installation to ensure compliance with the guidance.
Criteria 5: Limitation of the effect of over-lit building facades and signs	
Summary	This guidance imposes limits on the luminance values that provide visibility in order that a balanced urban lighting master plan can be considered. This lighting does not cause negative impacts such as a continuous increase in the lighting levels (or ratcheting) between buildings and within areas creating light pollution.
Limiting Values	Environmental Zone E2: ▪ Pre-curfew Building façade luminance (L_b) < 5 cd/m^2 ▪ Pre-curfew Building façade luminance (L_b) < 5 cd/m^2 ▪ Pre-curfew Sign luminance (L_s) 400 cd/m^2 ▪ Post-curfew Sign luminance (L_s) 400 cd/m^2
Project Response	The ‘limitation of skyglow’ imposes limits on the maximum values of upward light ratio (ULR) Residential properties are located a significant distance from the areas that are proposed to be illuminated within the site. The specification of LED luminaires with modern optics and ULR=0 and will allow beam control to prevent illumination of surrounding properties. The control of the luminaires via a centralised BMS system will prevent the normal operation of luminaires close to the residential boundary outside of curfew hours. The detailed lighting design will include calculation of the vertical illuminance of lighting at surrounding properties to ensure compliance with the guidance.

4 SDNP - DARK SKIES TECHNICAL ADVICE NOTE

4.1 SDNP GUIDANCE INTRODUCTION

Although the application site is located outside of the National Park, the Council has a statutory duty to consider the Purposes of the National Park when making its determination.

The South Down National Park Authority Neighbouring Authority Consultation letter 12th December 2023 (SDNP/23/04974/ADJAUS) notes the following:

"The South Downs National Park is a designated International Dark Sky Reserve and dark skies and tranquillity are two of the National Park's Special Qualities that need to be protected from harmful development. Paragraph 185(c) of the NPPF 2021 outlines that development should limit the impact of light pollution on intrinsically dark landscapes and nature conservation….

….Given the proximity to the SDNP/IDSR boundary and the inclusion of glazed structures in the garden centre and areas of external lighting including car parks, the proposals will need to demonstrate a sensitive approach to lighting which conforms the Institute of Lighting Professionals for lighting in environmental zones, and tries to achieve zero upwards light spill in all respects….

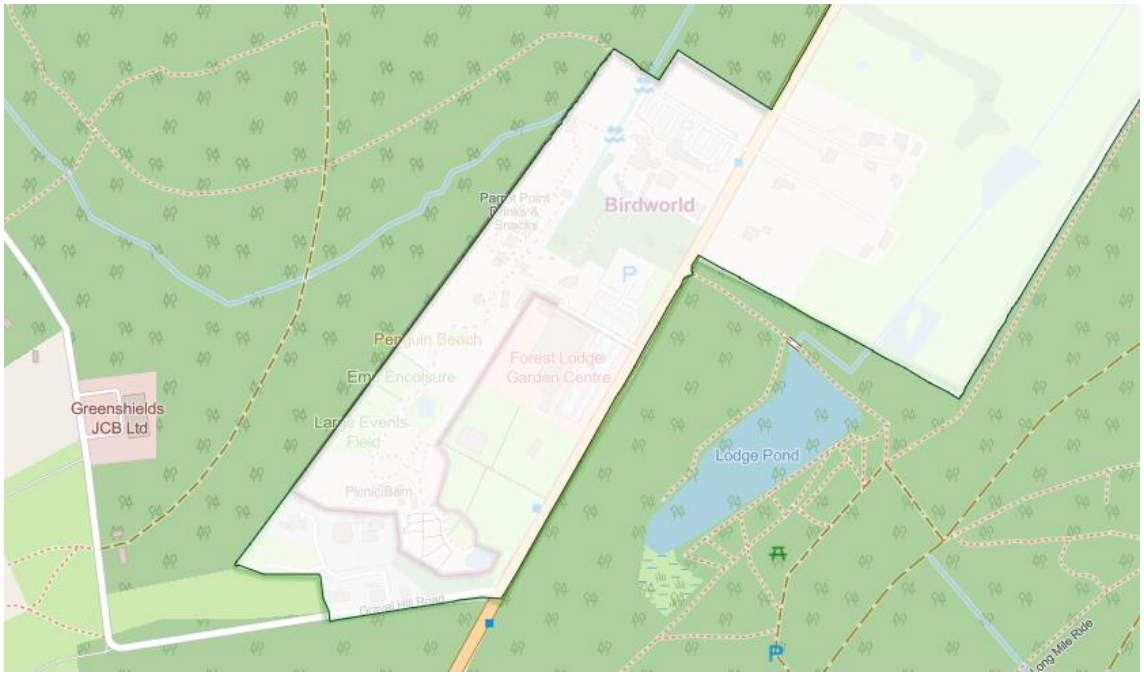
….An external lighting scheme should also take into account the biodiversity sensitivities of the site and not disturb or harm wildlife. Further information/advice on sensitive lighting can be found in the SDNPA's Dark Skies Technical Advice Note."

4.2 SDNP ENVIRONMENTAL ZONE CLASSIFICATION

The requirement to comply with each specific policy area within the SDNP Dark Skies TAN is dependent on the environmental zone within which the development is located. A matrix table of the SDNP Dark Skies TAN policy areas applicable to each environmental zone is provided within Appendix A of this report.

The SDNP Dark Skies TAN policy compliance is required for an observer located within or at the boundary of a more rigorous zone. As such the guidance is relevant to an observer within the SDNP and not within the Birdworld Ltd and Haskins Garden Centres Ltd site.

Figure 1 illustrates the South Downs National Park boundary. Areas outside the South Downs National Park are shown in grey.



The perimeter of the South Downs National Park is classified as a E1(b) 'Transitional Zone'.

Location	Within SDNP	Adjacent SDNP Environmental Zone
Haskins Garden Centre	No	E1(b)
Birdworld	No	E1(b)
Residential Properties	No	E1(b)

4.3 SDNP DESIGN CRITERIA AND MITIGATION RESPONSE

The following ILP GN01/21 technical lighting criteria are relevant to the design of the lighting scheme at Haskins Garden Centre & Birdworld. A summary of the criteria, limiting values, and project specific response are provided. For further details refer to the External Lighting Strategy section of this report.

Section 9.1 – ILP Guidance	
Summary	This guidance requires developments with external lighting meet or exceed ILP guidance for the environmental zone in which the development is set to take place. The guidance sets out recommended limits for the main sources of light pollution; sky glow, glare and spill.
Criteria	As per Section 3 of this report.
Response	Refer to Section 3 of this report to commentary on compliance with ILP GN01/21 for developments within E1 environmental zone.
Section 9.2 – Design Impact	
Summary	This guidance requires considerations to ecology, technical lighting specification (lumen output, lux level, colour temperature and UV components), controls and shielding with respect to minimising impact.
Criteria	Compliance with site ecological assessment. Upward Lighting Ratio UGR = 0
Project Response	The lighting design will be compliant with the ecological requirements for the site, as per the wildlife and habitats site appraisal undertaken by the project ecologist. Refer to Section 3 of this report to commentary on compliance with ILP GN01/21 Bats and Artificial Lighting.
Section 9.3 – Max Lux	
Summary	It is important that any lighting scheme is designed with the correct levels of light. In some cases the level of required lux will be so great that the inherent surface illuminance will pose a significant threat to the dark skies landscape no matter how well the design meets all other criteria. Designs requiring an illuminance greater than 10 lux in most E1, E0 zones will produce this threat.
Criteria	Maintained average illuminance <10 lux within the dark skes landscape, except within urban landscape.

Project Response	The project lighting levels and the source guidance documents are stated within Section 6 of this report. Within the SDNP the maintained average illuminance form artificial lighting will be <10 lux within the dark skies landscape, i.e. within the South Downs National Park. Lux levels will exceed 10 lux within the Birdworld and Haskins Forest Lodge Garden Centre.
Section 9.4 - Preferred Night Usage Curfew	
Summary	To prevent waste and excessive areas of light pollution, curfews should be considered as significant lighting controls; the best light to protect dark skies, is a light that isn't on. All lighting schemes should include a curfew, preferably using the most beneficial to dark skies.
Criteria	Lights should still be extinguished when no longer required or at the end of business hours.
Project Response	The lighting will comprise the installation of smart lighting controls comprising timeclock, photocells and BMS, ensuring that lighting is turned off at the end of business hours.
Section 9.6 - Preferred Evening Curfew	
Summary	This guidance is not applicable to SDNP Environmental Zone E1(b)
Criteria	This guidance is not applicable to SDNP Environmental Zone E1(b)
Project Response	This guidance is not applicable to SDNP Environmental Zone E1(b)
Section 9.6 - Preferred Astronomical Curfew	
Summary	This guidance is not applicable to SDNP Environmental Zone E1(b)
Criteria	This guidance is not applicable to SDNP Environmental Zone E1(b)
Project Response	This guidance is not applicable to SDNP Environmental Zone E1(b)

5 ILP GN08/23 – BATS AND ARTIFICIAL LIGHTING AT NIGHT

5.1 ILP GUIDANCE INTRODUCTION

The ILP has proposed bats and artificial lighting at night guidance to raise awareness of the impacts of artificial lighting on bats but also the potential solutions to avoid and reduce this harm.

The internal and external lighting scheme for Haskins Garden Centre & Birdworld development will be designed, installed and comissioned to provide a solution compliant with all relevant design criteria included within ILP GN08/23

5.2 ILP DESIGN CRITERIA AND MITIGATION RESPONSE

The following ILP GN01/21 technical lighting criteria are relevant to the design of the lighting scheme at Haskins Garden Centre & Birdworld. A summary of the criteria, limiting values, and project specific response are provided. For further details refer to the External Lighting Strategy section of this report.

ILP GN01/3 Appropriate luminaire specification	Response
All luminaires should lack UV elements when manufactured.	All luminaires to be LED warm white type, with low intensity in the 100-400 wavelength range (UV).
LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability	
A warm white light source (2700Kelvin or lower) should be adopted to reduce blue light component.	
Light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.	
Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.	The lighting design will comply with all necessary glare and light spill requirements as defined within ILP GN01/21 and SDNP Dark Skies TAN. The detailed lighting design will include desktop calculation that includes internal lighting installed in close proximity to windows to confirm compliance.
Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path.	Not applicable to scheme.
Column heights should be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards.	The lighting design will comply with all necessary glare and light spill requirements as defined within ILP GN01/21 and SDNP Dark Skies TAN.
Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.	All luminaire to comprise flat optics
Luminaires should always be mounted horizontally, with no light output above 90° and/or no upward tilt.	

Where appropriate, external security lighting should be set on motion-sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate.	The control of the luminaires via a centralised BMS system will prevent the normal operation of luminaires close to the residential boundary outside of curfew hours. Luminaires adjacent to staff entrance doors will be PIR controlled on short duration timer and will turn on outside of business operating hours if a person approaches.
Use of a Central Management System (CMS) with additional web-enabled devices to light on demand.	Luminaires will be interfaced to building BMS systems to ensure lighting is turned off outside of business hours.
Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.	Detailed lighting design will seek to provide a lighting design without these options, however they will considered if necessary.

6 EXTERNAL LIGHTING STRATEGY

6.1 INTRODUCTION

The lighting scheme outlined in this report is to be viewed as a lighting design strategy rather than a detailed design solution.

Careful consideration has been given to the production of an external lighting strategy which satisfies the applicable external lighting policies, whilst also maintaining an adequate level of illuminance for the activities with the site.

6.2 TECHNICAL SPECIFICATION

Illuminance & Uniformity

The following table summarises the design illuminance and uniformity targets for the external lighting installation across the site. The targets are sourced for ILP and SLL recognised publications to ensure both the visual comfort and safety of users.

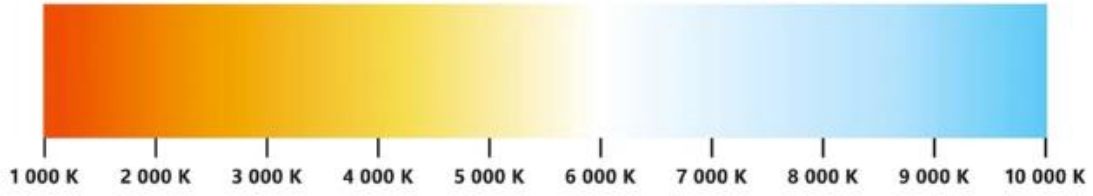
The calculation plane for the illuminance and uniformity targets stated below is ground level.

Location	Source Guidance Document	Average illuminance E_m – lux	Uniformity U_O
Pedestrian Routes	BS EN 12464-2:2014 Table 5.1 Walkways exclusively for pedestrians.	5	0.25
Car Park	BS EN 12464-2:2014 Table 5.9 Parking Areas - 5.9.2 Medium Traffic	10	0.25
Heavy Goods Vehicle Routes	BS EN 12464-2:2014 Table 5.1 General requirements for areas – 5.1.3 Regular vehicle traffic	20	0.4
Loads Bays and Manoeuvring Areas	BS EN 12464-2:2014 Table 5.1 Pedestrian passages, vehicle turning, loading and unloading points	50	0.4
External Sales Areas (Covered)	SLL Code for Lighting 2018	400	0.6
External storage areas without heavy goods vehicle access	SLL Code for Lighting 2018	20	0.25

Colour Temperature

Colour temperature is conventionally expressed in kelvins, using the symbol K, the unit for absolute temperature. Colour temperatures in the <3000K range (yellow colour spectrum) have a warm white colour temperature whilst colours in the 4000K range have a natural white appearance. Temperatures >4000K (blue colour spectrum) have a cool white appearance.

Guidance from the ILP GN08/23 states that luminaires with a warm white spectrum are preferential as bats are more affected by the blue light component.



Location	Source Guidance Document	Colour Temperature K
Pedestrian Routes	GN08/23 Bats and Artificial Lighting at Night	2700
Car Park	GN08/23 Bats and Artificial Lighting at Night	2700
Heavy Goods Vehicle Routes	GN08/23 Bats and Artificial Lighting at Night	2700
Loads Bays and Manoeuvring Areas	GN08/23 Bats and Artificial Lighting at Night	2700
External Sales Areas (Covered)	SLL Code for Lighting 2018	4000
External storage areas without heavy goods vehicle access	GN08/23 Bats and Artificial Lighting at Night	2700

Colour Rendering

Colour rendering qualities of light refers to their ability to reproduce the colour of objects being illuminated. A colour rendering of greater than 60 Ra allows lower levels of illuminance to be specified and promotes a feeling of safety for pedestrians. Lighting that is being provided for safety, security and for fear of crime reducing purposes should have good colour rendering qualities i.e. a rating of 70 or above on the colour rendering index.

The CRI value of the LED's for external luminaires will not be less than CRI70.

Calibration:

External luminaires will comprise Digital Addressable Lighting Interface (DALI) dimmable control gear to provide increased lighting control. The system will allow for external lighting to be accurately calibrated on-site to design lux levels during commissioning. Additionally, rather than over-lighting the spaces initially to compensate for lumen output depreciation over the lifetime of the luminaires (maintenance factor) the luminaires output can be re-calibrated over their lifetime accordingly.

Controls:

Centralised automatic lighting controls will generally be provided for external luminaires comprising a combination of timeclock, photocell and BMS system input. The system will allow the lighting to operate with minimal user intervention thus ensuring luminaires are not unintentionally operated outside of their intended operating parameters.

The BMS trigger for 'close of-business' will be the arming of the security alarm system for the respective site. A run-on-timer of approximately 10 minutes will ensure the user has sufficient time to exit the site prior to the deactivation of the associated luminaires.

Override / isolation switches will be provided to provide routine maintenance and testing of the lighting.

Location	Control
Car Park	Luminaires switched on automatically via timeclock and photocell control. Installation zoned to allow different areas of the car park to be controlled independently.

Car Park Entrance Pergola	Socket mounted to pergola to allow connection of temporary festive lighting as required. Socket switched on automatically via timeclock and photocell control. Luminaires to switch off at close of business via centralised BMS link trigger from the arming of the building security alarm. Manual over-ride switch to turn off lighting.
External Signage (building mounted).	Luminaires switched on automatically via timeclock and photocell control. Luminaires to switch off at close of business via centralised BMS link trigger from the arming of the building security alarm.
External Goods-in Yard	Luminaires switched on automatically via timeclock and photocell control. Luminaires typically dimmed to 10 lux during store opening hours. Local sensors to temporarily increase all service yard lighting to 50 lux upon occupancy to provide safe lighting for movement of heavy good vehicles. Lighting returns to nominal levels after period of 10 mins of no detection. Luminaires to switch off at close of business via centralised BMS link trigger from the arming of the building security alarm.
External Storage Area	Luminaires switched on
External Restaurant Area	Luminaires switched on automatically via timeclock and photocell control. Luminaires to switch off at close of business via centralised BMS link trigger from the arming of the building security alarm. Manual over-ride switch to turn off lighting.
External Sales Area	Luminaires switched on automatically via timeclock and photocell control. Luminaires to switch off at close of business via centralised BMS link trigger from the arming of the building security alarm. Manual over-ride switch to turn off lighting.

Luminaire Selection

Dark Sky International (DSI) provides a Fixture Seal of Approval programme that certifies outdoor lighting fixtures as being Dark Sky Friendly, meaning that they minimise glare while reducing light trespass, sky glow and the amount of blue light in in the night-time environment. The programme is endorsed by SDNPA as providing 'good examples' of lighting products. It should be noted that it is not necessary for a luminaire to be approved via this scheme if all technical parameters are otherwise satisfied for the chosen product.

The following table show example luminaires awarded the DSI Fixture Seal of Approval, and which satisfy all requirements of the planning requirements. Whist the selection of luminaires will be confirmed during detailed design the products the images provide an example of the luminaire types suitable for installation at the site.

Luminaire Type	Location	Example Luminaire Images

Post top Luminaires (Functional)	Car Parks and Service Yards		
Post Top Luminaires (Decorative)	Bridworld external publc areas		
Wall Mounted Luminaires	Generally at buildings		

Luminaire selection (Illuminated advertisements)

Luminaire Type	Location	Example Luminaire Images
Entrance Signage	Garden Centre Entrance	
Advertising board	Bridworld external publc areas	

Entrance signage	Roadway entrance	

Luminaire selection (External Sales

Luminaire Type	Location	Example Luminaire Images
Linear Luminaire	Garden Centre External Sales Areas	

Individual luminaires located at main staff entrance / exit points will be controlled via local PIR control, thus allowing the user to

Installation strategy:

Luminaires should be used that have good optical control and an option for installing shields as this can be an effective method of shielding the source intensity and reducing both horizontal and vertical spill light.

All luminaires will be provided with a tilt of 0 degrees from the horizontal.

Luminaire installed close to the development boundary will be positioned and orientated such that the optics are facing away from the boundary.

Security lighting requires some vertical illuminance in order to help CCTV cameras reproduce detail to a good standard. Security lighting should be carefully designed to ensure that vertical illuminance does not fall outside of the required areas.

The site shall typically be lit using luminaries mounted on 5m columns, complemented by wall mounted luminaries where appropriate.

APPENDIX A: ILP GN01/21 ENVIRONMENTAL ZONES

The following table summarises the Environmental Zone Classification within ILP GN01/21.

1 ILP GN01/21 Table 2: Environmental Zones

ILP Guidance Note 1 – Reduction of Obtrusive Light (2021)			
Zone	Surrounding	Light Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO Starlight Reserves, IDA dark sky places...
E1	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding 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.

APPENDIX B: SOUTH DOWNS NATIONAL PARK – ZONAL LIGHTING POLICIES

The following table summarises the application of policies within the SDNP Dark Skies TAN with respect each Environmental Zone Classification.

Note: Environmental Zone E2 is not used within the SDNP Dark Skies TAN.

2 SDNP Dark Skies TAN Version 2 May 2021 - Table 1 Zonal Lighting Policies

ILP Guidance Note 1 – Reduction of Obtrusive Light (2021)				South Downs National Park Dark Skies TAN (2021)					
Zone	Surrounding	Light Environment	Examples	Section 9.1 ILP Guidance	Section 9.2 Design Impact	Section 9.3 Max Lux	Section 9.4 Preferred Night Usage Curfew	Section 9.4 Preferred Evening Curfew	Section 9.4 Preferred Astronomical Curfew
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO Starlight Reserves, IDA dark sky places...	X	X	X			X
E1(a)	Natural	Intrinsically dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Beauty, IDA buffer zones etc..	X	X	X		X	
E1(b)	Natural	Transition (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Beauty, IDA buffer zones etc..	X	X	X	X		
E2	Rural	Low district brightness (SQM ~ 15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations.	N/A	N/A	N/A	N/A	N/A	N/A
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations.	X	X		X		
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity.	X	X		X		