



**Building Services
Consulting Engineers**

ELECTRICAL SERVICES

AT

THE LYDHURST ESTATE

FOR

GRANT & DELPHINE HORSFIELD

LIGHTING STRATEGY REPORT



DOCUMENT REVISION RECORD

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1 LIGHTING STRATEGY COMPLIANCE STATEMENT

This Lighting Strategy document discusses the type and level of lighting requirements of the proposed replacement dwelling at Lydhurst Estate, Warninglid, Haywards Heath, West Sussex, RH17 5TG.

Within this document we outline the lighting intention for the proposed development and the measures that will be adopted in compliance with the following guidance documents:

- Mid Sussex District Plan 2021–2039: DPN8 Light Impacts and Dark Skies.
- High Weald National Landscape ANOB Management Plan 2024-2029: Character Components - Dark Skies DS2
- Planning Technical Advice Note: Dark Skies in the High Weald
- The Institute for Lighting Professionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21
- The Institute for Lighting Professionals Guidance Note 08 - Bats and Artificial Lighting at Night (2023) GN 08/23

The report defines 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.

The site is located in an E1(Natural) environmental zone as per the 'Planning Technical Advice Note: Dark Skies in the High Weald'. A Landscape and Visual Appraisal (LVA) as identified no Obtrusive Lighting or Roadway Receptors are present outside the site boundary.

To minimize the potential impacts of artificial lighting, the detailed lighting design will approach lighting with careful planning and appropriate performance and technology,

The scheme will use LED luminaires with precise optics and 0% Upwards Lighting Ratio (ULR) with zero tilt, to ensure light is directed only where needed. The luminaires will incorporate appropriate illuminance levels, colour temperature, colour spectrum and colour rendering index in compliance with the above guidance documents.

Lighting controls will ensure lighting is not provided to unoccupied areas during curfew hours.

Final luminaire selection, positions of luminaires and lighting calculations are not included within this report.

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2 PROJECT DESCRIPTION

ION Consulting Engineers have been commissioned by Grant and Delphine Yip-Horsfield to undertake a pre-development Lighting Strategy Report for the proposed replacement dwelling at Lydhurst Estate.

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 compliance with the following guidance documents:

- Planning Technical Advice Note: Dark Skies in the High Weald.
- The Institute for Lighting Professionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21.
- The Institute for Lighting Professionals Guidance Note 08 - Bats and Artificial Lighting at Night (2023) GN 08/23.

A lighting design will be completed as the detailed design stage, post planning. Luminaire selection, positions of luminaires and lighting calculations are therefore 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 proposed development:

Development	Address
The Lydhurst Estate Main Dwelling	Warninglid, Haywards Heath, West Sussex RH17 5TG

3 **ILP GN01/21 - THE REDUCTION OF OBTRUSIVE 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.

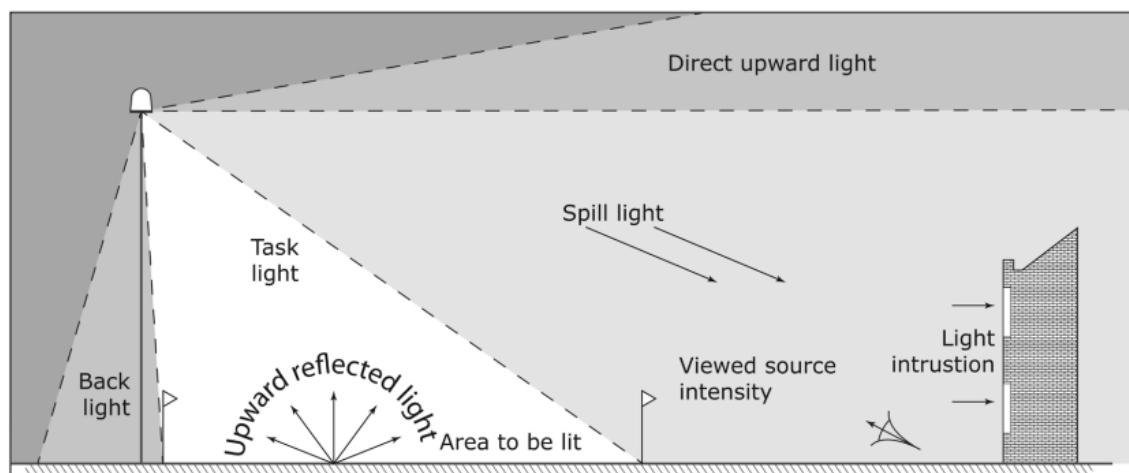


Figure 1: ILP GN01/21 Types of Obtrusive Light

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. Within the guidance curfew times are stated to 'often commence between 21:00 to 23:00 and may run until 07:00'. It should be noted that alternative curfew times may also be imposed by other guidance and so the most onerous curfew times should be observed.

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 and roadways. See section 'Obtrusive Light Receptors' below for further details.

The internal and external lighting scheme for The Lydhurst Estate will be designed, installed and commissioned 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.

ILP Guidance Note 1 – Reduction of Obtrusive Light (2021) - Table 2			
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.

The Lydhurst Estate development is located the High Weald ANOB. The High Weald National Landscape Partnership has adopted these ILP environment zone classifications within the 'Planning Technical Advice Note: Dark Skies in the High Weald' document. Under this document the High Weald ANOB falls within the following zone:

Location	Environmental Zone Classification
The Lydhurst Estate	E1 (Natural) ¹

3.3 OBTRUSTIVE LIGHT & ROADWAY RECEPTORS

A Landscape and Visual Appraisal (LVA) has been prepared for The Lydhurst Estate by Nicholas Dexter Landscape Design ². The appraisal provides an overview of the landscape and visual context of the proposed new dwelling.

The analysis firstly identified all areas with theoretical visibility of the development within a 2km radius via a 'bareground' Zone of Theoretical Visibility (ZTV) analysis using GOV Lidar data. The initial analysis does not account for the screening effects of local vegetation.

From this analysis 6no vantage points were identified where these ZTV's coincided with the location of other dwellings, roadways and public rights of way (footpaths / bridleways) outside the site boundary.

On-site assessments were undertaken at each of the 6no vantage points, reviewing the views of the proposed development from each location. The site survey concluded that there are no obtrusive lighting receptors with visibility of the proposed development due to the screening effect of local features, including trees, hedgerows and embankments. A detailed appraisal of each vantage point, including photographic evidence can be found in the separate LVA report by Nicholas Dexter Landscape Design.

Receptors	Locations
Obtrusive Lighting	None identified
Roadway	None identified

¹ Planning Technical Advice Note: Dark Skies in the High Weald – Page 11 'Dark Skies Zoning'.

² Lydhurst Estate Landscape Strategy Rev 01 – Nicholas Dexter Landscape Design

3.4 ILP DESIGN CRITERIA AND MITIGATION RESPONSE

The guidance, project specific limiting values and responses to 'The Institute for Lighting Professionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21' document is provided below:

ILP GN01/21 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 ³	For Environmental Zone E1 the limiting values are: ▪ The pre-curfew limit on vertical illuminance = 2 lux @ surrounding property windows. ▪ The post-curfew limit on the vertical illuminance <0.1 lux @ surrounding property windows.
Project Response	<i>The landscape and visual appraisal (LVA) identified no Obtrusive Lighting Receptors requiring detailed illuminance analysis.</i>

ILP GN01/21 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 ⁴	For Environmental Zone E1 the limiting values are: ▪ The pre-curfew limit on the maximum luminous intensity emitted by luminaire (candela) = see table 4 of ILPGN01/21. ▪ The post-curfew limit on the maximum luminous intensity emitted by luminaire (candela) = see table 4 of ILPGN01/21.
Project Response	<i>The landscape and visual appraisal (LVA) identified no Obtrusive Lighting Receptors requiring detailed pre-curfew and post-curfew luminous intensity analysis.</i>

ILP GN01/21 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.

³ ILP Guidance Note 1 – Reduction of Obtrusive light (2021) – Table 3

⁴ ILP Guidance Note 1 – Reduction of Obtrusive light (2021) – Table 4

Limiting Values ⁵	Road Classification M6/M6 - Spronkett's Lane: - Veiling luminance (L_v) 0.37 cd/m² - Threshold Increment (TI) 15% based on adaption luminance of 1.0 cd/m²
Project Response	<i>The landscape and visual appraisal (LVA) identified no Roadway Receptors requiring illuminance analysis.</i>

ILP GN01/21 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 ⁶	For Environmental Zone E1 the limiting values is: The limit on Upward Lighting Ratio (ULR) % = 0
Project Response	<i>All external 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.</i> <i>The detailed lighting design will include calculation of the upwards lighting ratio (ULR) of the complete installation to ensure compliance with the guidance.</i>

ILP GN01/21 Criteria 5: Limitation of the effect of over-lit building facades and signs	
Summary	This guidance imposes limits on the average luminance values on building facades and signs to eliminate negative impacts of over-lit building facades and signs.
Limiting Values ⁷	Environmental Zone E1: - Pre-curfew Building façade luminance (L_b) < 0.1 cd/m² - Post-curfew Building façade luminance (L_b) < 0 cd/m² - Pre-curfew Sign luminance (L_s) 50 cd/m² - Post-curfew Sign luminance (L_s) 0 cd/m²
Project Response	<i>No illuminated signage will be installed on the site.</i>

⁵ ILP Guidance Note 1 – Reduction of Obtrusive light (2021) – Table 5

⁶ ILP Guidance Note 1 – Reduction of Obtrusive light (2021) – Table 6

⁷ ILP Guidance Note 1 – Reduction of Obtrusive light (2021) – Table 8

4 **LOCAL PLANING POLICY**

4.1 **HIGH WEALD GUIDANCE INTRODUCTION**

The Council has a legal duty in carrying out their functions to seek to further the purpose of conserving and enhancing the natural beauty of the High Weald National Landscape AONB.

To preserve the dark skies of the High Weald AONB by minimising light pollution, obtrusive external lighting and internal light spill from domestic, commercial and public premises in both existing and new developments within the High Weald, and from highways

4.2 **HIGH WEALD DESIGN CRITERIA AND MITIGATION RESPONSE**

The 'Planning Technical Advice Note: Dark Skies in the High Weald' provides detailed guidance to provide developers and planners with the necessary information to assess lighting schemes which are appropriate to the landscape.

Within this guidance a 'Planners Checklist' is provided to help assess the impact of the external lighting proposals. For convenience these criteria are listed below with specific project response:

Checklist Criteria	Project Response
Useful	
Is the light needed? - Has the design fully justified the use of external lighting? (The reasons should be clear and evident, and critical to the development, e.g. access, safety and business needs)	<i>Lighting is to be provided to the social spaces immediately adjacent to the building on the southern side of the dwelling.</i> <i>Lighting is to be provided to the external pathways immediately around the building perimeter to provide safe access.</i> <i>Lighting is to be provided to the vehicular access route at the approach to the dwelling only.</i>
Has unjustified aesthetic and decorative lighting been avoided?	<i>There will be no architectural lighting applied to for the dedicated purpose of illuminating and enhancing the vertical façade of the building.</i>
Targeted	
Do the designs shows that all luminaires achieve zero upward light (0% ULR)	<i>Luminaire selection will be in compliance with the technical performance specification stated in Section 6 of this report.</i>
Does the luminaire schedule show compliant fittings with image or photometry?	<i>Luminaire selection will be in compliance with the technical performance specification stated in Section 6 of this report.</i>
Does the design show that light does not intrude into neighbouring areas?	<i>Landscape and Visual Appraisal (LVA) confirms no Roadway or Obtrusive Lighting Receptors.</i>
Colour	
Has colour temperature for each luminaire has been provided? And CRI where appropriate?	<i>The colour temperature and CRI of all luminaires will be compliant with the technical performance specification stated in Section 6 of this report.</i>
Colour temperature should be less than 3000K, ideally 2700K	<i>The colour temperature and CRI of all luminaires will be compliant with the technical performance specification stated in Section 6 of this report.</i>

Luminaires should avoid 500nm wavelengths - lighting which emits an ultraviolet component or that has a blue spectral content can be particularly harmful to wildlife	<i>The colour spectrum of all luminaires will be compliant with the technical performance specification stated in Section 6 of this report.</i>
Designed	
Has Environmental Zone E1 been referenced and used in the lighting calculations?	<i>All lighting will be provided in compliance with Environmental Zone E1</i>
Has the local and wider landscape setting been considered in visibility and impacts of lighting? - Topography, existing vegetation - Nearby sensitive wildlife sites or ancient woodland	<i>A Landscape and Visual Appraisal (LVA) has been prepared for The Lydhurst Estate. See section 3.3 of this report for details.</i>
Has an obtrusive lighting compliance statement been submitted using ILP guidance	<i>An obtrusive lighting compliance statement has been prepared for The Lydhurst Estate. See section 1 of this report for details.</i>
Low Light	
Do designs should use lowest light levels to achieve illuminance (lux) for the task, and reference appropriate and relevant standards, e.g. Sports England, BS Standards?	<i>The lux will be in compliance with section 6 of this report.</i>
Are the fixings "cut-off" (i.e. with the glass set flat to the horizontal), or are baffles or shields provided if necessary to control ULR?	<i>Luminaires will comply with ULR requirements.</i>
Controls	
Has information regarding the proposed timing / curfew for proposed lighting been submitted?	<i>The curfew times will be in compliance with section 6 of this report.</i>
Do the controls reflect summer to winter variations, and have they been chosen to minimise adverse impact on dark night skies and on nocturnal wildlife?	<i>The curfew times will be in compliance with section 6 of this report.</i>
What are the proposed methods of control, e.g. automated timer or PIR?	<i>The lighting controls will be in compliance with section 6 of this report.</i>
Location of the Development	
Has a site been chosen away from wildlife sensitive locations/habitats, including ancient woodland or bat foraging routes?	<i>The new dwelling is in the location of the existing dwelling that is to be demolished.</i>

If the proposed development type has greater inherent lighting demands or light spill, has a site been chosen away from intrinsically dark rural skies?	<i>The development is located in Environmental Zone E1 'Intrinsically dark' in the location of the existing dwelling that is to be demolished.</i>
Have floodlit sports pitches been sited in built-up areas where there is already a higher level of ambient sky glow?	<i>There are no sports pitches in the development.</i>
Have highly visually exposed or topographically prominent sites, such as those on ridge-tops, been avoided, so as to not introduce light development into areas characterised by dark skies?	<i>The building is set into the landscape, see architectural elevations.</i>
Design of Scheme	
Has the layout of the scheme (for example the location and orientation of buildings, roads and amenity space) been designed to minimise likely lighting impacts by way of light spill and visibility of light source in the specific landscape context? (consider visibility in wider landscape views e.g. across valleys)	<i>A Landscape and Visual Appraisal (LVA) has been prepared for The Lydhurst Estate by Nicholas Dexter Landscape Design. the appraisal has identified no Obtrusive Lighting or Roadway receptors.</i>
Has the scheme sought to avoid suburbanisation of the night-time landscape character by avoiding lighting of driveway entrances on rural roads and minimising unnecessary lighting clutter?	<i>There is no lighting to the driveway entrances except at the immediate approach to the building.</i>
Are there implications on the character of the night-time landscape from any highways lighting requirements associated with the development, e.g. new junctions, pedestrian crossings etc? Can these impacts be avoided/minimised through alternative design approaches?	<i>A Landscape and Visual Appraisal (LVA) has been prepared for The Lydhurst Estate by Nicholas Dexter Landscape Design. the appraisal has identified no Obtrusive Lighting or Roadway receptors.</i>
Design of Buildings	
Has light spill been minimised by avoiding large areas of elevational glazing and rooflights in the building design?	<i>The building does include large areas of elevational glazing, with a VLT < 0.7.</i>
Is the glazing specified to be less than 0.7 VLT (visible light transmission) to minimise light spill? However, it should be noted that even with meeting this VLT there could still be an adverse landscape impact on the AONB.	<i>The building does include large areas of elevational glazing, with a VLT < 0.7.</i>
Does the quantum of v) mean the proposed location/design of development is not appropriate, with regard to the character and context of the setting?	<i>The detailed lighting design complete with lux plots will be provided during detailed design.</i> <i>The new dwelling is in the location of the existing dwelling that is to be demolished.</i>

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 The Lydhurst Estate development will be designed, installed and commissioned 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 The Lydhurst Estate. 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 Criteria	Response
All luminaires should lack UV elements when manufactured.	<i>All luminaires to be LED warm white type, with low intensity in the 100-400 wavelength range (UV).</i>
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.	<i>The lighting design will comply with all necessary glare and light spill requirements as defined within ILP GN01/21 and the 'Planning Technical Advice Note: Dark Skies in the High Weald'.</i> <i>The detailed lighting design will include desktop calculation that includes internal lighting installed in close proximity to windows to confirm compliance.</i>
Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path.	<i>Not applicable to scheme.</i>
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.	<i>The scheme will not include lighting columns.</i>
Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered.	<i>All luminaire to comprise flat optics</i>
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.	<i>Motion sensors PIR timers will be set automatically switch off luminaires after a maximum duration of 2 minutes</i>
Use of a Central Management System (CMS) with additional web-enabled devices to light on demand.	<i>A Central Management System (CMS) for lighting is not considered appropriate for the installation.</i>
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.	<i>Detailed lighting design will seek to provide a lighting design without these options, however they will considered if necessary.</i>

6 **LIGHTING DESIGN STRATEGY**

To minimize the potential impacts of artificial lighting it is essential to approach lighting with careful planning and appropriate technology. The sections below provide guidance on proposed practices for implementing artificial lighting.

External Lighting will be restricted to the following areas of activity and access around the building (See 'Proposed Dwelling - External Lighting Plan' section of this report).

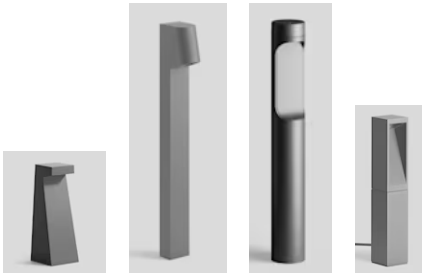
- Building Perimeter and Pedestrian Access.
- Vehicle Access.

There will be no additional lighting level requirements for the CCTV system as these work on Infra-red during the hours of darkness.

Luminaires

Luminaires will 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.

The following table show example luminaires which satisfy all requirements of the planning requirements. Alternative luminaires with the same characteristics may be adopted in the final design).

Luminaire Type	Example Luminaire Images
Wall Mounted Luminaires	
Recessed Wall Luminaires	
Ground Mounted Luminaires	

Lighting Curfew

Lighting controls will be utilised to ensure areas of the site are switched off / down as predefined pre- and post- curfew hours in line with the ILE Guidance Notes

The following curfew times and lighting controls are relevant to the design of the lighting scheme at The Lydhurst Estate:

Curfew Times:	
Summary:	A lighting curfew is a designated time period during which artificial lighting is restricted, typically by switching off or dimming lights, to reduce obtrusive light.

Response:	The Institute for Lighting Professionals Guidance Note 01 - The Reduction of Obtrusive Light (2021) GN 01/21: 'Depending upon application curfew times often commence between 21:00 to 23:00 and may run until 07:00'. Planning Technical Advice Note: Dark Skies in the High Weald: 'Curfew times should be set as early as possible as and no later than 8pm, except in summer.'
Project Response	<i>The project lighting curfew times shall set as 20:00 – 07:00 and are applicable when sundown occurs before 20:00 and sunrise occurs before 07:00.</i> <i>Lighting will be activated during the curfew hours only on a temporary basis to allow safe use of the space.</i>

Lighting 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.

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

Location	Control
External Terrace / Covered Veranda	<i>External luminaires normally PIR controlled, with temporary manual override switch to a pre-set level up to curfew time. Post-curfew luminaire control automatically reverts to PIR control.</i>
Entrance Canopy Roof & Porte Cochere	<i>External luminaires normally PIR controlled, with temporary manual override switch to a pre-set level up to curfew time. Post-curfew luminaire control automatically reverts to PIR control.</i>
Podium Driveway & Guest Parking	<i>External luminaires time and photocell controlled with manual override switch.</i>
Delivery / Staff Entrance	<i>External luminaires time and photocell controlled with manual override switch.</i>

Spill from Interiors

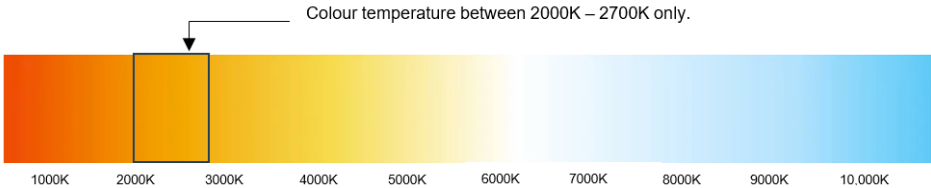
It is acknowledged that the new dwelling contains large continuous areas of glazing > 50% of the total elevation area. To control the transmission of visible light through the glass it shall be selected with <0.7 VLT.

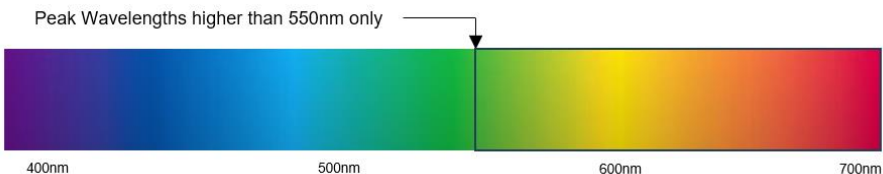
6.1 PERFORMANCE SPECIFICATION

The following Illuminance, colour temperature, colour spectrum and colour rendering index are relevant to the design of the lighting scheme at The Lydhurst Estate:

Illuminance	
Summary	Artificial lighting will be required as per of amenity, security and safety during periods of darkness.
Limiting Values	Specific lux levels are not provided in British Standard and SLL guidance for external residential spaces. Lighting levels should consider the location of the premises with respect to the environmental zone and ambient lighting in the vicinity. Some of these external spaces may form part of the external emergency escape route.

Project Response	Pathway areas will be lit to 5 lux. Steps will be lit to 10 lux. Veranda and pergola areas will be lit to 20 lux. Roadway areas will be lit to 20 lux.
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Colour Temperature	
Summary	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.
Limiting Values	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, Specifically a warm white light source (2700 kelvin or lower) should be adopted. ⁸ Guidance from the 'Planning Technical Advice Note: Dark Skies in the High Weald' states that no installations be designed with a solar temperature in excess of 3,000K.
Project Response	All luminaires will be designed with a colour temperature of between 2000-2700K. 

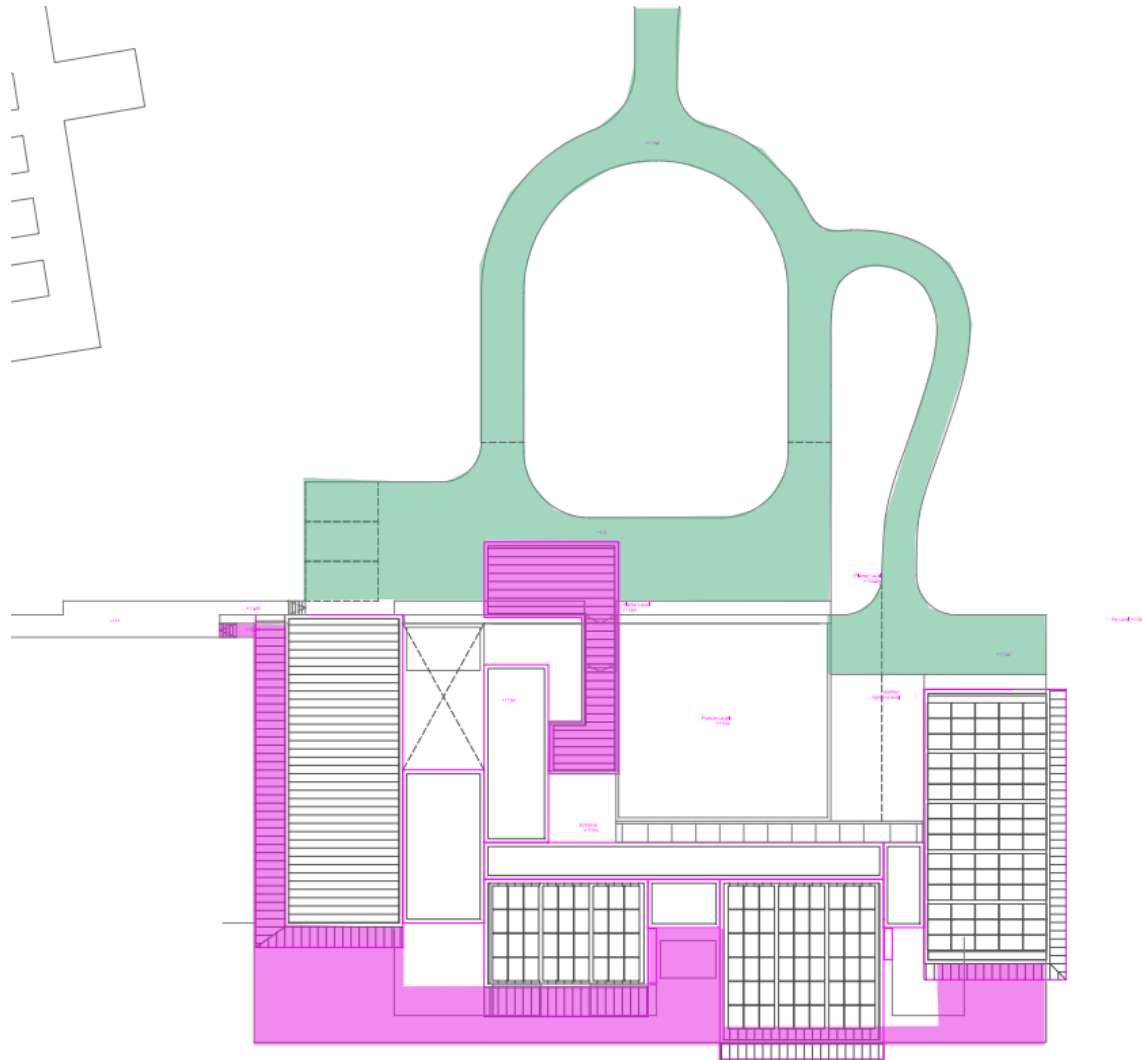
Colour Spectrum	
Summary	The colour spectrum of a luminaire describes the intensity of light it emits across different wavelengths. Many nocturnal species are particularly sensitive to blue and UV light, which can alter their behaviour, feeding, and reproduction. To reduce ecological impact, lighting with longer wavelengths (e.g., amber or red light above 600 nm) is often recommended near sensitive habitats, as it is less disruptive to wildlife.
Limiting Values	Many nocturnal species are particularly sensitive to blue and UV light, which can alter their behaviour, feeding, and reproduction. To reduce ecological impact, lighting with longer wavelengths (e.g amber or red light above 550 nm) is often recommended near sensitive habitats, as it is less disruptive to wildlife.
Project Response	All luminaires will be designed with a peak wavelength higher than 500nm only. 

⁸ ILP Guidance Note 8 – Bats and Artificial Lighting (2023) Section 4.29 (Appropriate Lighting Specification).

Colour Rendering Index	
Summary	Colour rendering qualities of light refers to their ability to reproduce the colour of objects being illuminated.
Limiting Values	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.
Project Response	<i>The CRI value of the LED's for external luminaires will not be less than CRI70.</i>



Proposed Dwelling - External Lighting Plan



Key:

-  - Pathway / Terrace / Pergola Lighting
-  - Roadway Lighting

7 TEMPORARY CONSTRUCTION LIGHTING

lighting provision will be required within the construction site will be for health and safety and security requirements. These measures will form part of a Construction Environmental Management Plan.

Lighting associated with the construction works is assumed to be temporary and intermittent in nature. It is assumed that some level of motion activated security lighting will be required during the hours of darkness.

The sources of artificial light that have been assumed to be present during the construction phase are:

- Temporary floodlighting particularly during winter months.
- Floodlighting and security lighting associated with site access, on-going work areas, temporary car parking areas and on the exterior of construction compounds.
- Lighting at height associated with construction of structures.
- Interior lighting within any temporary office units within any construction compounds

Mitigation of the effects of the lighting installation during the construction phase will include the following.

- Specifying construction compound and agreeing these with the local council.
- Specifying working hours, location of temporary floodlights and their use.
- Ensuring that lighting is switched off when not required for construction activities, health and safety or security.
- Ensuring lighting colour temperature and wavelength spectrum in compliance with the final luminaire performance specification.
- Glare will be minimised by ensuring that the main beam angle of all luminaires are directed away from any potential observer into the centre of site wherever possible, and angled at less than 70 degrees from the horizontal
- Light spill will be minimised by avoiding poorly sited luminaires located at the boundary of the development
- Sky glow will be minimised by using modern flood lights with good photometric control, angled at less than 70 degrees from the horizontal and by using additional shields as appropriate.
- The selection of luminaires, including those required for night-time security, that are designed to minimise any obtrusive light.
- The Contractor will be required to sign up to the "Considerate Constructors Scheme" and thereby act quickly and responsibly to rectify any lighting misaligned and/or found to be causing a nuisance.

8 EXISTING DWELLING LIGHTING ASSESSMENT

The existing dwelling has been vacant for a considerable time and is in a poor condition with non-functioning internal lighting. As such, the property has been modelled within Dialux Evo 13.1 lighting software using recent survey record drawings. 360 degree suspended pendant luminaires have been installed within each room to achieve 200 lux at floor level throughout all rooms.

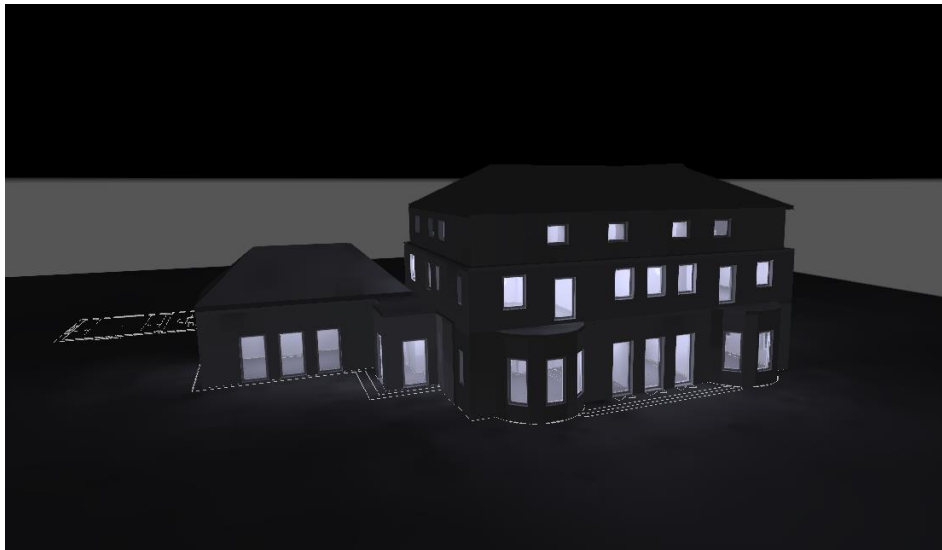
The dwelling is not provided with any existing external lighting.

A lighting calculation plane measuring 80m x 80m was placed above the dwelling at a height of 20m above external ground level. The following lux levels were calculated:

Parameter	Result
Average Lux	0.23 lux
Max	0.45 lux

The new dwelling will sit at a lower elevation on the landscape and will not have any rooflights. We therefore expect that future modelling of the new dwelling will provide lux level calculations on the same horizontal calculation plane that are equal or better than the existing building.

Calculation Model:



Calculation Plane:

