Lighting Design Report

Land South of Smugglers' Lane, Barns Green

Miller Homes & Miller Developments

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SLR Project No.: 433.000146.00001

Client Reference No: UK.035260

10 October 2025

Revision: 01

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	10 October 2025	TS	ND	ND
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Basis of Report

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Executive Summary

Miller Homes & Miller Developments (the 'Client') has instructed SLR Consulting Ltd to provide a lighting design and assessment to support a full planning application for approximately 65 dwellings (the 'Development') on Land to the south of Smugglers' Lane, Barns Green RH13 0PS (the 'Site').

The lighting design will consider the requirements of all current industry regulations and recommendations alongside the requirement to protect light sensitive ecology including affects to biodiversity.

A best practice approach has been taken to ensure the scheme has minimal impact on the surrounding environment whilst providing safe and secure lighting where necessary.

The result of the detailed lighting design based on the advice contained within this document will provide a suitable and compliant scheme with minimal impact on ecology or other receptors.

A baseline lighting survey was undertaken by SLR Consulting Ltd ('SLR') surveyors on the 23rd of September 2025 to assess baseline lighting conditions. Photographic and photometric data was collected at various viewpoint locations, both within and around the Site as well as at identified receptor locations.

A daytime survey was conducted by SLR with photography taken along with relevant data on the location and prevailing conditions. A nighttime survey was conducted the same day. Again, relevant data and photography was recorded to establish the existing lighting conditions in and around the Site.

The Baseline Lighting Survey forms the basis for the Lighting Impact Assessment where prevailing conditions are considered alongside the new requirements for lighting within the Proposed Development.

As well as meeting all safety and design requirements for the Proposed Development, the Lighting Impact Assessment will consider ecological receptors and other human receptors that may be impacted by the proposed scheme.

Advice is given on the specification and positioning strategy of new lighting to minimise any potential impact on the ecology, the environment or neighbouring residential properties surrounding the development.

Every effort has been made to reduce, omit or minimise artificial lighting within the Proposed Development for the benefit of ecology, the character of the local area and the preservation of the quality of the landscape and night sky.

With minimal installed street lighting and sensitively designed domestic amenity lighting, the Proposed Development does not make any materially significant contribution to sky glow or pose a materially significant risk to the landscape through light pollution.

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Acronyms and Abbreviations

CIBSE	Chartered Institute of Building Services Engineers
ILP	Institute of Lighting Professionals
ALAN	Artificial Lighting at Night
PNL	Part Night Lighting

1.0 Introduction

1.1 Purpose of Report

1.1.1 The lighting design is provided to support full planning application for the development of a residential development comprising approximately 65 dwellings including the means of primary vehicle access and central spine road (the 'Development') on Land south of Smugglers' Lane, Barns Green RH13 0PS (the 'Site').

1.1.2 The report is intended to provide details of a carefully considered lighting design within the Site required for the safety, security and amenity of the residents whilst balancing the requirements to protect any identified receptors such as adjacent residential properties, light sensitive ecology, their linked natural habitats and the quality of the night sky.

1.2 Site and Context

1.2.1 The Site is situated immediately west of the village of Barns Green and approximately 6km to the southwest of Horsham. The Site occupies land to the south of Smugglers' Lane and to the west of Chapel Road.

1.2.2 The Site is bounded by mature tree lines to the north and south, the western boundary is formed of ancient and semi-natural woodland. To the east is a dense hedgerow forming the site boundary with Chapel Road.

1.2.3 To the south is situated the Sumners Pond Fishery and Campsite, along with the under construction Sumners Fields housing development.

1.2.4 There are residential properties to the east with some featuring overlooking views across Chapel Road.

1.2.5 To the north is Smugglers' Lane, running approximately east/west with mature tree lines either side. Beyond Smugglers' Lane is grazing land, another mature tree line and Muntham Drive.

1.2.6 The Development is to be accessed via a new connection to Chapel Road and features internal vehicular circulation.

Figure 1 – Location & Boundary

24088 – C101 (Coloured Site Layout) 1.500@A1 - 15.09.25 (OSP Architecture)

1.2.7 The Site is located at:

Land south of Smugglers' Lane, Barns Green, Horsham RH13 0PS

what3words: ///roadways.coder.educated

Google+ Code: 2JJ3+J3W Horsham

2.0 Assessment of Baseline Conditions

2.1.1 As set out in the ***'Land South of Smugglers' Lane, Barns Green – Baseline Survey Report Rev01 10.10.2025'*** ('Baseline Survey Report') prepared by SLR, a baseline lighting survey was undertaken by SLR surveyors on the 23rd of September 2025 to assess baseline lighting conditions.

2.1.2 Photographic and photometric data was collected at various viewpoint locations, both within and around the Site as well as at identified receptor locations.

2.1.3 A daytime survey was conducted with photography taken along with relevant data on the location and prevailing conditions. A nighttime survey was conducted the same day. Again, relevant data and photography was recorded to establish the existing lighting conditions in and around the Site.

2.1.4 Potential receptors were identified, and photographic and photometric data was collected at the identified receptor locations:

- Mature Tree Lines (the ancient and semi-natural woodland that forms the western Site boundary, the tree line that forms the northern Site boundary with Smugglers' Lane and the tree line that forms the southern boundary); and
- Properties on Chapel Road and The Hordens (to the east), along with Little Slaughterford (to the south).

2.1.5 Receptor locations and the light level survey results are set out in ***'****Figure 5 – Off-Site Viewpoint Map****'*** and within the Baseline Survey Report on Pages 10-23.

2.1.6 The conditions and sensitivity of these ecological and human receptors are summarised in Section 20-21 of the Baseline Survey Report which states:

'There are identified residential receptors located to the east and to the south of the Proposed Development Site, some of which have partial screening in the form of existing tree lines and hedgerows at the boundary.

Some have significant outward views across the Proposed Development area and as such will need to be considered in terms of obtrusive light. It is unlikely for these receptors to be adversely affected by the introduction of sensitively designed new lighting within the Proposed Development Site.

There are a number of existing tree lines, mature trees and hedgerows forming the boundary of the Proposed Development Site, and beyond the boundary, that all combine to provide a network of interconnected habitats. These potential habitats are currently observed to be in 'contextual darkness' and therefore provide good potential foraging or commuting routes for light sensitive ecology.'

2.2 Existing Lighting & Notable Light Sources

2.2.1 There is ad-hoc street lighting installed to the Chapel Road to the east and generalised street lighting in the residential streets to the east including to The Hordens.

2.2.2 At the Sumners Pond Fishery and Campsite, to the south there are low-level lighting bollards, to assist wayfinding, and amenity lighting marking entrances to communal spaces and to lodgings.

2.2.3 The under construction Sumners Fields housing development has developer installed amenity light at entrances and is due to have street lighting installed before completion.

2.3 Residential Receptors

2.3.1 Heron's Reach, a residential property, located to the east of the Site along Chapel Road has overlooking views towards the Site. Due to the presence of existing street lighting to Chapel Road, this receptor is observed to receive significant façade illuminance, there is low risk to this receptor from the addition of new lighting within the Site boundary. The Barns Green post office, which adjoins Heron's Reach, does not need to be considered in terms of obtrusive light as it is not inhabited during nighttime hours.

2.3.2 The Hordens, located to the east of the Site, have no significant views towards the Site as the primary facades are oriented at 90° to the Proposed Development Site. In addition, properties on the Hordens are subject to existing generalised street lighting and as such are unlikely to suffer materially adverse effects due to sensitively designed new lighting within the Proposed Development Site.

2.4 Ecological Receptors

2.4.1 To the west of the Site, running approximately northeast/southwest along the western Site boundary is ancient and semi-natural woodland. This habitat feature is part of a larger tree belt and connects to a series of woodland parcels and mature tree lines to the north, south and west of the Proposed Development Site, waterbodies and commercial fishing lakes including Bettys Lake and Match Lake, along grazing land to the north of Smugglers' Lane and to the west of the Proposed Development Site boundary. This habitat feature is an important foraging and commuting route for light sensitive species, including bats, and should be protected from light pollution that could degrade the quality of the wider habitat network.

3.0 Methodology, Policy and Guidance

3.1.1 The lighting strategy uses the information provided in **Section 3.1.2** below along with policy and guidance as per **Section 3.1.3**, to determine the best practise for lighting impacts to human and ecological receptors.

3.1.2 The following information has been considered:

- 24088 – P101Q (Site Layout) - 1:500@A1 - 15.09.2025 (OSP Architecture)
- 24088 – C101 (Coloured Site Layout) – 1:500@A1 – 15.09.2025 (OSP Architecture)

3.1.3 The following documents have been referred to in the preparation of this document. It is expected that, at the time of construction, the latest issue of the documents below will be referred to so as to ensure current regulations and best practice are met:

Government

- Clean Neighbourhoods and Environment Act 2005, (Section 102).
- DEFRA: Guidance on Sections 101 to 103 of the Clean Neighbourhoods and Environment Act 2005.
- Wildlife & Countryside Act 1981.
- Conservation (Natural Habitats etc.) Regulations 1994.

ILP - Institution of Lighting Professionals

- GN01:2021. Guidance Notes for the Reduction of Obtrusive Light.
- PLG02:2013. The Application of Conflict Areas on the Highway.
- PLG03:2012. Lighting for Subsidiary Roads.
- PLG04:2013. Guidance on Undertaking Environmental Lighting Impact Assessments.
- Bat Conservations Trust ILP Guidance Note GN08:2023 - Bats and Artificial Lighting at Night
- TR12-1:1997. Lighting of Pedestrian Crossings.
- TR25:2002. Lighting for Traffic Calming Features.

SLL - The Society of Light and Lighting (CIBSE)

- Fact File 8: Lighting for People who are Visually Impaired 2012.
- The SLL Lighting Handbook 2018.
- The SLL Code for Lighting 2022.

CIE - International Commission on Illumination

- CIE Publication 150-2017. Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, 2nd Edition.
- CIE Publication 115-2010. Lighting of Roads for Motor & Pedestrian Traffic.
- CIE Publication 126-1997. Guidelines for minimising sky glow.

British Standards

- BS 5489-1:2020 - Design of road lighting - Lighting of roads and public amenity areas. Code of Practice.
- BS EN 12464-2:2024 - Light and lighting - Lighting of work places - Part 2: Outdoor work places.

Other

- DarkSky (formally known as The International Dark-Sky Association or IDA).
- All-party Parliamentary Group (APPG) for Dark Skies.
- Bat Conservation Trust (BCT).
- Eurobats Publication Series No.8 - Guidelines for Consideration of bats in lighting projects.
- Secured by Design Residential (Homes) Guide 2025

3.1.4 Potential receptors are identified as:

- **Bats**, especially light sensitive species utilising the treelines and hedgerows around the periphery of the Proposed Development Site as foraging and commuting routes as part of a network of linked habitats including the ancient and semi-natural woodland forming the western Site boundary.
- **Residential properties** Heron's Reach, to the east of the Site, on Chapel Road which has overlooking views of the Site and The Hordens that have limited views towards the Site, as their primary facades are oriented at 90° to the Proposed Development Site.
- **The quality of the night sky** as the existing condition can be considered as Class 5 on the Bortle Scale, consistent with a 'Suburban' sky.

3.1.5 To determine the environmental zone for the site, information provided in the Institute of Lighting Professionals (ILP) Guidance Note 1 ***'ILPGN01:2021 - The Reduction of Obtrusive Light'*** Table 2 is replicated below in Table A. Environmental Zone **E2** as the appropriate zone for the site.

Table A: ILP Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural 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

3.1.6 **Table B** below shows illuminance limitations (lux levels) and maximum luminous intensity (cd, candelas) for each Environmental Zone. These are the maximum levels of light that would be permitted at the receptor and the emission of the light source within the luminaire when viewed from the receptor position.

3.1.7 For Environmental Zone E2 this would be maximum of 5 lux pre-curfew and 1 lux post-curfew. As a simple comparison, a standard candle at 1 metre would give 1 lux and twilight is judged to be approximately 1 lux. The maximum luminous intensity allowed would be 7,500 cd pre-curfew and 500 cd post-curfew.

3.1.8 Post-curfew hours would be considered from 21:00 hours (a reasonable expected time) until 07:00.

Table B: Illuminance Limitations & Maximum Luminous Intensity (Ap)

Zone	Pre-Curfew (lx)	Post-Curfew (lx)	Pre-Curfew (cd)	Post-Curfew (cd)
E0	N/A	N/A	0	0
E1	2	<0.1*	2,500	0
E2	5	1	7,500	500
E3	10	2	10,000	1,000
E4	25	5	25,000	2,500
	* If the installation is for public (road) lighting then this can increase to 1 lx			

3.1.9 The Institute of Lighting Professionals (ILP) Guidance Note 8 ***'ILPGN08:2023 - Bats and Artificial Lighting'*** provides further detail with particular attention to sections *'Appropriate Luminaire Specifications 4.29'* and '*Lighting Contour Plans 4.51-4.54'.*

3.2 Bats and Lighting

3.2.1 Relevant extracts from the ***'National Planning Policy Framework (NPPF) December 2024'***:

3.2.2 Para 187: *"Planning policies and decisions should contribute to and enhance the natural and local environment by: a) protecting and enhancing valued landscapes, sites of biodiversity or geological value. d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs."*

3.2.3 Para 192: *"To protect and enhance biodiversity and geodiversity, plans should: a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*

3.2.4 Para 193: *"When determining planning applications, local planning authorities should apply the following principles: a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and. d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate."*

3.2.5 Para 195: *"The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site."*

3.2.6 Para 198: *"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should: c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."*

3.2.7 Relevant extracts from the ***'Bat Conservations Trust ILP Guidance Note 08/2023 - Bats and Artificial Lighting at Night'*** include:

3.2.8 (1.12) - *'In addition to causing disturbance to bats at the roost, artificial lighting can also affect the feeding behaviour of bats. Many night-flying species of insect that bats hunt are attracted to light, especially those light sources that emit an ultraviolet component (Light Emitting Diodes (LEDs) have removed this) or have a high blue spectral content.'*

3.2.9 **Applied Strategy:** No lighting equipment to be specified that includes any UV emission and the colour temperature must be 2700k or lower.

3.2.10 (1.21) - *'Continuous lighting in the landscape, such as along roads or waterways, creates barriers which many bat species cannot cross, especially slower-flying species, even at very low light levels. Lesser Horseshoe bats have been shown to move their flight paths which link their roosts and foraging grounds to avoid artificial light installed on their usual commuting routes. Significant effects have been recorded from as low as 3.6 lux.'*

3.2.11 **Applied Strategy:** Careful consideration must be made for linear features such as the internal roadways requiring lighting at night, to prevent the bisection of parcels of habitat through continuous lighting. Mitigations such as part night lighting and part night dimming to be included in the control strategy as well as breaks in the lighting installed to create a network linked dark habitats via the hedgerows and tree lines around the Site.

3.2.12 (4.15) - *'An adverse impact from illumination onto a Key Habitat feature is likely to have a significant effect on the bats using it. Therefore, an absence of artificial illumination and glare acting upon both the feature and an appropriately sized buffer zone is most often the only acceptable solution. An ecologist will be best placed to set the size of such a buffer zone according to the species present and the level of usage, and these can be tens of metres if unattenuated light spill or glare from local sources is predicted. The input of a lighting professional should be sought when determining the distances of light spill from new sources and likelihood of glare.'*

3.2.13 **Applied Strategy:** In coordination with the project ecologist as part of the lighting scheme design, buffers protecting areas of existing bat activity are to be defined with the intention of preserving relative darkness throughout those habitats, foraging and commuting routes. In addition, where the ecologist identifies suitable links to form 'dark corridors' enabling light sensitive ecology to access a wider network of linked habitats throughout around the Site, these must also be protected from light pollution.

3.2.14 (4.16) - *'...There is no legal duty requiring any place to be lit. British Standards and other policy documents allow for deviation from their own guidance where there are significant ecological/environmental reasons for doing so. It is acknowledged that in certain situations lighting is critical in maintaining safety... Nevertheless, these are not exempt from the statutory protection afforded to bats, their roosts and commuting routes directly associated with roosts, and good design principles such as the Institution of Lighting Professionals' GN01: The Reduction of Obtrusive Light remain best practice. However, in the public realm, while lighting can increase the perception of safety and security, measurable, objective benefits on safety and security are less well established. Consequently, lighting design should be holistic, taking into consideration the relevant British Standards or local policies concerning lighting but, through a risk assessment-style process, be able to fully take into*

account the presence of protected species and the likely adoption of mitigation approaches through proper engagement with local communities.'

3.2.15 **Applied Strategy:** Subject to risk assessments, consideration should be made to areas of conflict between maintaining dark corridors and lighting for safety, security and amenity to potentially abstaining from lighting those areas and maintaining unlit areas to preserve dark 'hop-over' links to habitats beyond.

3.2.16 (4.31) - *'Light spill can be successfully screened through landscaping and the installation of walls and fences, or even banks and bunds. In order to ensure that fencing makes a long-term contribution, it is recommended that it is supported on concrete or metal posts. Fencing can also be over planted with hedgerow species or climbing plants to soften its appearance and provide a vegetated feature which bats can use for navigation or foraging.'*

3.2.17 **Applied Strategy:** Where appropriate, opaque fences should be included within the landscaping design to help with the limitation of light spill to any identified areas of sensitivity or to preserve the quality of lighting buffers.

3.2.18 (4.35) - *'Depending on the pattern of bat activity across the Supporting Habitat identified by the ecologist, it may be appropriate for an element of on-site lighting to be controlled by dimming or switching either diurnally, seasonally, or according to human activity (light on demand). This is known as Part-Night Lighting (PNL). It is important to state that PNL is not likely to be appropriate where Key Habitats are at risk, especially as PNL often results in lighting when bats are most active.'*

3.2.19 **Applied Strategy:** The inclusion of Part Night Lighting can be effective in managing areas such as peripheral drives and access roadways that benefit from lighting in terms of road safety and a reduction in the fear of crime but would ideally not be continuously lit. Conflict areas and crossings may be continuously lit during the hours of darkness for safety whilst the typical roadway may be subject to 'switch off' during late night hours. This ensures the lighting is not continuous and therefore does not present a barrier to light sensitive species in the landscape.

4.0 Lighting Strategy

4.1 Highways

4.1.1 There is no legal duty requiring any place to be lit or requiring that new developments should necessarily require street lighting. It is determined to be beneficial to minimise the extent of lighting and leave some areas unlit such as footpaths along woodland or ecological habitat which will not be lit by general street lighting.

4.1.2 Primary roadways, such as the Primary Circulation Roadway within the Site, including specific conflict areas such as junctions or crossing points, require suitable lighting subject to risk assessments and suitable Lighting Classes.

4.1.3 Whilst the Primary roadways will not be adopted highways, they should meet all criteria for adopted highways in terms of illumination and uniformity. Lighting proposals must comply with appropriate standards and guidance as appropriate for the road class and risk assessment.

4.1.4 Lighting should follow the hierarchy of the road network within the development plans. Higher levels of illumination may be required at junctions, conflict areas and spine roads with higher traffic volumes. Minor access roads can have lower column heights and lower levels of illumination proportionate to the roadway class and risk assessments. Peripheral areas such as hammer-heads, private drives and access to frontages must be designed to reduce any potential impact on the protected ‘Dark Zones’ as defined by the project ecologist.

4.1.5 Mitigation such as back-light shields and good optical control can minimise impact where roadway lighting must be installed adjacent to light sensitive habitats such as tree lines are used where necessary to further reduce impacts on ecology.

4.2 Design Parameters

4.2.1 Street lighting is provided to the primary roadway, circulatory and subsidiary roads within the Development.

4.2.2 The determination of whether a street or area is to be illuminated, and if so, to which class and illumination level, will be based upon a risk assessment for the street. The risk assessment will consider the following:

- amount and speed of vehicle traffic;
- segregation / interaction with pedestrians;
- complexity of visual field and navigation;
- hazards, such as parked cars or traffic calming;
- relationship with surrounding illuminated areas; and
- crime risk and perception of safety.

4.2.3 Guidance on the appropriate level of lighting in an area is contained in ***'BS 5489-1:2020 Annex A'*** This advice provides a systematic approach to the choice of lighting class based on:

- type of road or area;
- pedestrian and cycle flow;
- presence of conflict areas;
- presence of traffic-calming features;
- crime risk; and
- ambient luminance levels.

4.2.4 ***'BS EN 13201-2, Road Lighting – Performance Requirements'*** gives details of the necessary minimum and average levels of lighting to be achieved at each of the lighting classes. The lighting classifications have been identified in accordance with ***'BS13201-3:2015'*** and ***'BS5489-1:2020'***.

4.2.5 The primary roadway within the Proposed Development is designed in accordance with guidance contained within ***'BS 5489-1:2020 - Design of road lighting'***.

4.2.6 Methodology for selecting appropriate Lighting Classes are set out in ***'CIE115:2010'***, an internationally used standard. These concepts have been adapted for UK conditions and the particular applications described in ***'BS 5489-1:2020'***.

4.2.7 The Risk Assessment provided in **Table C: Primary Roadway Risk Assessment** suggests that aligning with ***'BS 5489-1:2020 - Lighting classes for Subsidiary Roads'***, the appropriate P Class for the Primary Roadway is designated as P4, considering both the proposed roadway design and prevailing conditions.

Table C: Primary Roadway Risk Assessment
Parameters for P Lighting Class Ref: CIE 115:2010 Table 6

Parameter	Option	Weighting
Speed	Low	1
Traffic Volume	Very Low	-0.5
Traffic Composition	Pedestrian / Cycle / Motorised	2
Parked Vehicles	Present	0.5
Ambient Illuminance	Low	-1
*(*Round up if not a whole number)* **Total:**		**2**
[6 - Total = Lighting Class]		**P4**

4.2.8 The Lighting Class identified for the Primary Roadway by risk assessment is **P4** (5 lux average, minimum 1) as shown in **Table D: Lighting Class Parameters** and the scheme should be calculated to this Lighting Class within the areas identified as 'Primary Roadway'. Columns should be a maximum of 6 metres in height and will be solar powered. These luminaires will not conform to local highways agency specifications or be adopted.

Table D: Lighting Class Parameters **Parameters for P Lighting Class Ref: BS EN 13201-2:2015 Road Lighting Part 2 - Table 3**		
Lighting Class: Selected Parameter	**Average Horizontal Illuminance (Lux Ave)**	**Minimum Horizontal Illuminance (Lux Min)**
Lighting Class P4	5	1

4.2.9 Lighting of circulatory roadways and car parks are not likely to result in adverse lighting conditions for ecology. However, to reduce potential light spill, these peripheral areas may be lit to a lower Lighting Class representing a minimal lighting level.

Table E: Circulatory Roadway and Car Park Risk Assessment **Parameters for P Lighting Class Ref: CIE 115:2010 Table 6**		
Parameter	**Option**	**Weighting**
Speed	Very Low	0
Traffic Volume	Very Low	-1
Traffic Composition	Pedestrian / Cycle / Motorised	2
Parked Vehicles	Present	0.5
Ambient Illuminance	Low	-1
*(*Round up if not a whole number)* **Total:**		**0.5 (1)***
[6 - Total = Lighting Class]		**P5**

4.2.10 The Lighting Class identified for the Circulatory Roadways and Car Parks by risk assessment should be P5 (3 lux average, minimum 0.6) as shown in **Table F: Lighting Class Parameters** and the scheme should be calculated to this Lighting Class within the areas identified as 'Circulatory Roadway' or 'Car Park'. Columns should be a maximum of 5 metres in height and will be solar powered. These luminaires will not conform to local highways agency specifications or be adopted.

Table F: Lighting Class Parameters **Parameters for P Lighting Class Ref: BS EN 13201-2:2015 Road Lighting Part 2 - Table 3**		
Lighting Class: Selected Parameter	**Average Horizontal Illuminance (Lux Ave)**	**Minimum Horizontal Illuminance (Lux Min)**
Lighting Class P5	3	0.6

4.2.11 Lighting of peripheral access, private drives and minor streets are not likely to result in adverse lighting conditions for ecology. However, to reduce potential light spill, these peripheral areas may be lit to a lower Lighting Class representing a minimal lighting level.

Table G: Subsidiary Roadway Risk Assessment Parameters for P Lighting Class Ref: CIE 115:2010 Table 6		
Parameter	**Option**	**Weighting**
Speed	Very Low	0
Traffic Volume	Very Low	-1
Traffic Composition	Pedestrian / Cycle / Motorised	2
Parked Vehicles	Present	0
Ambient Illuminance	Low	-1
*(*Round up if not a whole number)* **Total:**		**0**
[6 - Total = Lighting Class]		**P6**

4.2.12 The Lighting Class identified for the Subsidiary Roadways by risk assessment should be P6 (2 lux average, minimum 0.4) as shown in **Table H: Lighting Class Parameters** and the scheme should be calculated to this Lighting Class within the areas identified as 'Subsidiary Roadway'. Columns should be a maximum of 5 metres in height and will be solar powered. These luminaires will not conform to local highways agency specifications or be adopted.

Table H: Lighting Class Parameters Parameters for P Lighting Class Ref: BS EN 13201-2:2015 Road Lighting Part 2 - Table 3		
Lighting Class: Selected Parameter	**Average Horizontal Illuminance (Lux Ave)**	**Minimum Horizontal Illuminance (Lux Min)**
Lighting Class P6	2	0.4

4.2.13 All lighting within the Proposed Development Site will have a maximum colour temperature of 2700 kelvin to meet requirements of reducing impact on light sensitive ecology.

4.2.14 The proposed lighting scheme is designed to achieve target illumination criteria highlighted in **Table C - Table H** as a minimum at ana appropriate Maintenance Factor (MF) of 0.93.

4.2.15 LED luminaires must be designed to 'dark skies' standards with zero direct upward light emission, full shielding, warm colour temperature, appropriate lumen output (minimum required) and good optical design to constrain the light to the area intended for illumination only.

4.2.16 A potential mitigation for safety and wayfinding for pedestrians and cyclists in dark areas adjacent to the woodland or protected habitats are the inclusion of in-ground solar marker LEDs (with top shields) or retro-reflector bollards which do not provide illumination but do provide visible way finding in the dark areas. This technique is encouraged in the ***'ILP Guidance Note 08/23 Bats and Artificial Lighting At Night'*** where Case Study 1 may be referred to as a reference project. It should be noted:

'No accidents or uplift in crime in this area was reported and the solar-powered way-markers have subsequently been integrated into downstream developments to protect bat foraging habitats, where these intersect with key green infrastructure components.'

4.2.17 Pedestrian crossings points required to cross the Primary Circulation Roadway are assessed as part of the lighting design to be lit sufficiently under the chosen Lighting Class to ensure the safety of pedestrians and cyclists in these areas.

4.2.18 Lighting equipment should be offset a minimum of 0.8m from the roadside or cycle paths to avoid obstruction (**'BS5489-1:2020 Section 6.13'**) and should be placed so that they do not impinge on available widths of footways in the interests of wheelchair users and people pushing prams or pose a hazard for blind or partially-sighted people.

4.3 Control Strategy

4.3.1 Street lighting shall be fitted with photocell sensors to ensure they are not activated during hours of daylight when there is sufficient natural illumination to save energy and extend the life of the fixtures.

4.3.2 The Primary Roadway shall remain lit during the hours of darkness at a reduced level to ensure the safety and security of residents in the higher traffic areas, crossing points or junctions and to assist in wayfinding. Lighting within these Core Development areas is well screened by the massing of the development with low risk of this lighting affecting light sensitive ecology.

4.3.3 The Circulatory Roadways and Subsidiary Roadways (also referred to as private drives) towards the perimeter of the Site shall be switched off automatically between 21:00 and 07:00 to preserve darkness in the more sensitive peripheral areas of the Site for the benefit of light sensitive ecology.

4.3.4 Private drives have sufficiently low traffic volume meaning the safety risk to pedestrians and cyclists during late night hours in these areas is minimal, continuous lighting throughout the hours of darkness is therefore not required.

4.3.5 Prescence detection is applied to the lighting associated Circulatory and Subsidiary Roadways to allow for safe access when in active use but remain off to preserve the quality of dark corridors for ecology when not in active use. These solar powered lighting columns feature integrated PIR sensors and can be set to ramped dimming to prevent sudden changes in illumination that may otherwise potentially cause a nuisance to nearby residents and light sensitive ecology.

4.4 Residential Amenity Lighting

4.4.1 The developer will install habitat sensitive lighting equipment to the primary entrance and rear garden to dissuade the installation of ad-hoc lighting post habitation. No light from exterior amenity lighting should project beyond the property boundary.

4.4.2 Exterior lighting specified must have no directly visible light source or a diffused surface but should have downward only optics and very low output. Units should have inbuilt presence detection (with no manual override), this should be set to minimum practical duration 'on' and minimum sensitivity to reduce false triggering from a distance.

4.4.3 Luminaires to the front of properties, rear gardens and garages should be of suitable domestic amenity use with a maximum of 2700 kelvin colour temperature, contain no upward

light distribution, and the downward distribution should not leave the immediate area intended for illumination (i.e. the immediate area at the front door, the immediate area at the garage door or rear garden access door).

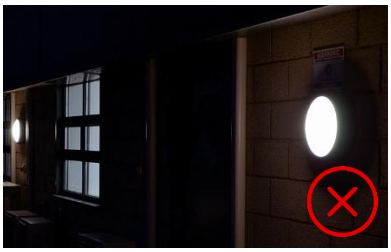
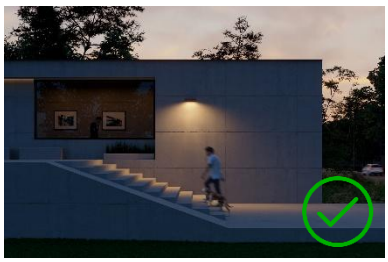
4.4.4 Due to the requirement to preserve darkness where possible around the periphery of the Site, minimal lighting is required to meet Secured by Design principles and allow for visibility or facial recognition at the primary entrance of residential properties. Porch or entrance lighting is ideally provided by a recessed baffled, low output, warm white (maximum 2700k) light source with well constrained downward only optics in an oversailing porch canopy or suitable wall light body. This helps to provide good vertical illuminance at the entrance portal as well as constrain the light to the immediate area with no direct contribution to lateral light spill or upward light emission.

4.4.5 Under no circumstances should any developer installed lighting fixture emit any direct light above horizontal. This means the proposed lighting scheme must not include any use of typical wall mounted flood lights, up/down wall lights, exposed bulbs, lanterns, bulkhead lights or any exterior up-lighting.

4.4.6 It should be noted when selecting suitable residential amenity lighting that artificial light emitted from premises which affects someone’s enjoyment of their own premises can be considered as a legal nuisance.

4.4.7 Examples of good and poor domestic amenity lighting are shown in **Table I: Examples of Good & Bad Domestic Amenity Lighting**:

Table I: Examples of Good & Bad Domestic Amenity Lighting

Exterior Entrance Lighting	Exterior Garage Lighting	Exterior Garden Lighting
		
Do Not Specify: Directly visible light source / lit surface Excessively bright Source of glare Projects light laterally No optical control Upward light emission No presence detection		
		
Do specify: No visible light source Minimal light output No glare Light constrained to area Good optical control No upward light emission Presence detection		

5.0 Summary & Conclusion

5.1.1 The application of lighting parameters, best practice lighting design techniques and specifications result in a development that has a minimal, sensitively designed general street lighting scheme and carefully considered domestic amenity lighting.

5.1.2 The result of the efforts to avoid excessively lighting the Proposed Development, in line with local and national policy, minimises any potential impact on the identified receptors.

5.1.3 Light sensitive ecology such as bats may continue to have access to the existing network of foraging and commuting routes along tree lines and hedgerows around the Site, as the development would not result in any materially significant light spill or glare conditions in these habitat locations.

5.1.4 Observations made during the Baseline Lighting Survey, including those most sensitive to the Proposed Development such as residential receptors to the east of Chapel Road including Heron's Reach and The Hordens are unlikely to experience any adverse effects or obtrusive light as a result of lighting within the Site boundary. This is evidenced in the form of photometric modelling results, which conclude there is no adverse effect on identified receptors as a result of the proposed lighting design.

5.1.5 With minimal installed street lighting and sensitively designed domestic amenity lighting, the Proposed Development would not make any materially significant contribution to sky glow or pose a materially significant risk to ecology, adjacent residential receptors, the landscape or the quality of the night sky through light pollution.

5.1.6 Evidence presented in **Appendix A** shows the extent of light spill from the proposed lighting installations and clearly demonstrates the light is tightly constrained to within the Site boundary.

Appendix A Lighting Layout Plan and Lux Contour Plan

Lighting Design Report

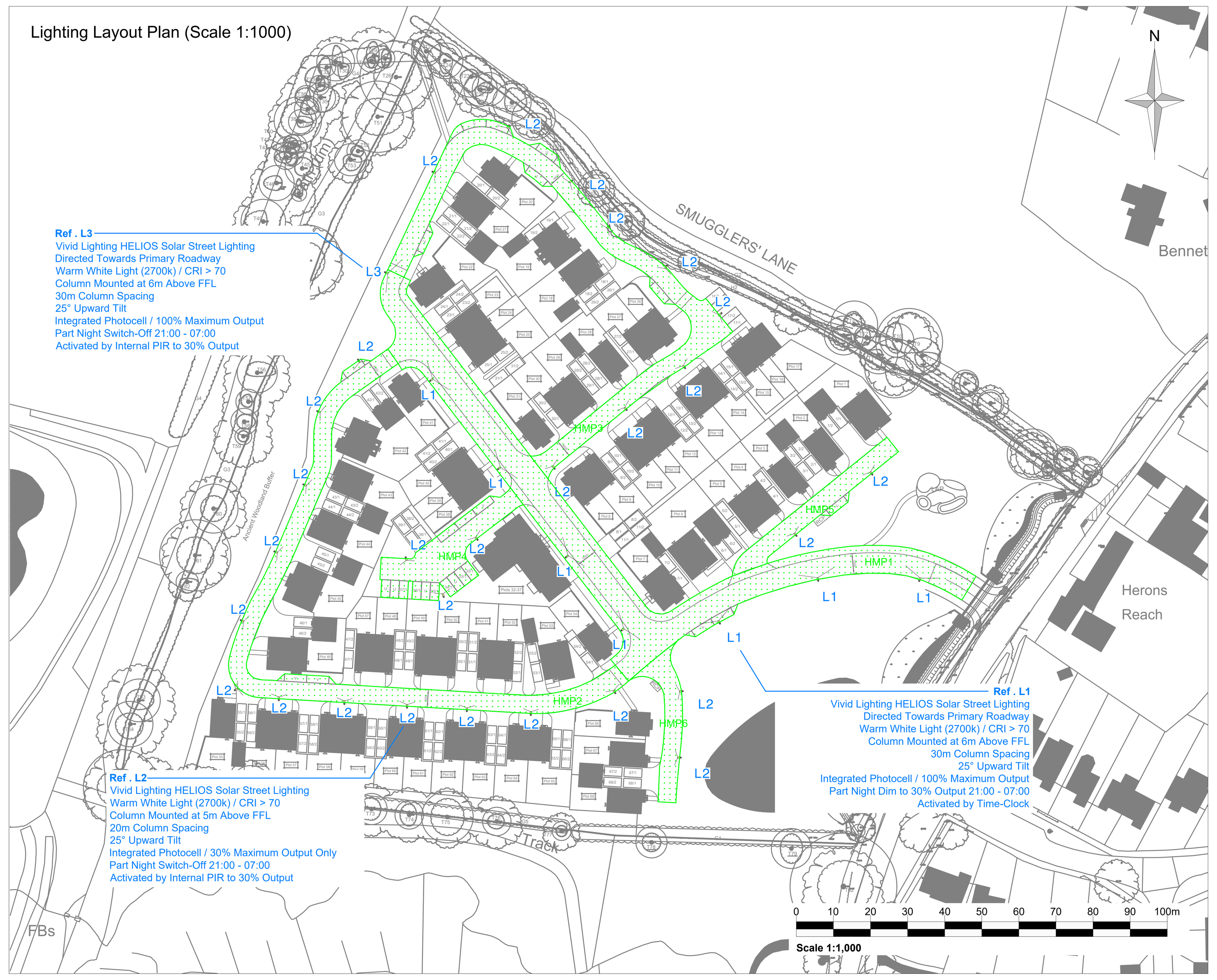
Land South of Smugglers' Lane, Barns Green

Miller Homes & Miller Developments

SLR Project No.: 433.000146.00001

10 October 2025

Lighting Layout Plan (Scale 1:1000)



HORIZONTAL ILLUMINANCE Normal Operation MF = 0.93 (E2 / ≤6 m / 5 years)	BS EN 13201-2:2015 Road Lighting Part 2: Performance Requirements	AVERAGE ILLUMINANCE (LUX)		MINIMUM (LUX)		TARGET
AREA / USAGE	**LIGHTING CLASS**	**REQUIREMENT**	**RESULT**	**REQUIREMENT**	**RESULT**	**PASS/ FAIL**
HMP1 - Primary Roadway	P4	5.00	5.940	1.00	1.150	PASS
HMP2 - Circulatory Roadway	P5	3.00	3.780	0.60	1.440	PASS
HMP3 - Circulatory Roadway	P5	3.00	3.380	0.60	0.700	PASS
HMP4 - Car Park	P5	3.00	3.040	0.60	0.700	PASS
HMP5 - Subsidiary Roadway	P6	2.00	2.810	0.40	0.550	PASS
HMP6 - Subsidiary Roadway	P6	2.00	3.540	0.40	0.530	PASS

ILP GUIDANCE NOTES ON THE REDUCTION OF OBTRUSIVE LIGHT

CURFEW: 21:00 - 07:00	ILLUMINACE IN THE VERTICAL PLANE [LUX] (Ev) VMP			TARGET
MAINTENANCE FACTOR (MF) = 1.0 (0 hrs / 0 yrs)	BASELINE RECORDED VALUE	PRE-CURFEW [VMP]	POST-CURFEW [VMP]	PASS / FAIL
ENVIRONMENTAL ZONE E2		**5.00**	**1.00**	
ECOLOGICAL RECEPTOR ASSESSMENT				
VMP1 - Southern Tree Line (75m Width x 8m Height)		0.35	0.05	PASS
VMP2 - Southern Tree Line (115m Width x 8m Height)		0.78	0.00	PASS
VMP3 - Ancient Woodland (92m Width x 8m Height)		0.15	0.00	PASS
VMP4 - Ancient Woodland (13.5m Width x 8m Height)		0.08	0.00	PASS
VMP5 - Ancient Woodland (100m Width x 8m Height)		0.40	0.04	PASS
VMP6 - Northern Tree Line (35m Width x 8m Height)		0.35	0.01	PASS
VMP7 - Northern Tree Line (45m Width x 8m Height)		0.55	0.02	PASS
VMP8 - Northern Tree Line (50m Width x 8m Height)		0.51	0.02	PASS
VMP9 - Northern Tree Line (27m Width x 8m Height)		0.09	0.03	PASS
VMP10 - Northern Tree Line (60m Width x 8m Height)		0.20	0.04	PASS
CP1 - Ancient Woodland (1.5m Height)	0.05	0.08	0.00	PASS
CP2 - Ancient Woodland (1.5m Height)	0.03	0.04	0.00	PASS
CP3 - Ancient Woodland (1.5m Height)	0.03	0.06	0.01	PASS
CP4 - Northern Tree Line (1.5m Height)	0.03	0.50	0.00	PASS
CP5 - Northern Tree Line (1.5m Height)	0.04	0.35	0.00	PASS
CP6 - Northern Tree Line (1.5m Height)	0.18	0.02	0.01	PASS
CP7 - Southern Tree Line (1.5m Height)	0.08	0.04	0.00	PASS
CP8 - Southern Tree Line (1.5m Height)	0.04	0.00	0.00	PASS
CP9 - Southern Tree Line (1.5m Height)	0.02	0.00	0.00	PASS

Lux Contour Plan (Scale 1:500)

LEGEND

0.2 lx
0.5 lx
1.0 lx
5.0 lx
10.0 lx
15.0 lx

Semi-cyclindrical vertical illuminance measurement points.

ILP GUIDANCE NOTES ON THE REDUCTION OF OBTRUSIVE LIGHT

CURFEW: 21:00 - 07:00 (All lights on 100% output No part night dimming or switch off as a 'worst case scenario')	UPWARDS LIGHT RATIO ULR [MAX %]	ILLUMINACE IN THE VERTICAL PLANE [LUX] (Ev) VMP		MAXIMUM LUMINOUS INTENSITY EMITTED BY LUMINAIRES [CD] CP (/in cd)		TARGET
MAINTENANCE FACTOR (MF) = 1.0 (0 hrs / 0 yrs)		PRE-CURFEW [VMP]	POST-CURFEW [VMP]	PRE-CURFEW [CP]	POST-CURFEW [CP]	PASS / FAIL
ENVIRONMENTAL ZONE E2	**5.00**	**5.00**	**1.00**	**7500**	**500**	
ULR	2.300					PASS
RESIDENTIAL RECEPTOR ASSESSMENT						
CP10 - Heron's Reach (4.5m Height)		0.06	0.06	172.00	172.00	PASS
CP11 - Heron's Reach (4.5m Height)		0.07	0.07	165.00	165.00	PASS
CP12 - Heron's Reach / Post Office (4.5m Height)		0.10	0.10	144.00	144.00	PASS
CP13 - Heron's Reach / Post Office (4.5m Height)		0.08	0.08	111.00	111.00	PASS
CP14 - 57 The Hordens (4.5m Height)		0.09	0.09	111.00	111.00	PASS
CP15 - 48 The Hordens (4.5m Height)		0.00	0.00	159.00	159.00	PASS

LUMINAIRE REF	QUANTITY	LOAD (Watts)	TOTAL LOAD (Watts)
L1 Mounting Height: 6 metres on Lighting Column Column Spacing: 30m Vivid Lighting HELIOS Solar Street Lighting Ultra Wide Side Throw Optic 20.2w LED Delivered Lumens: 2,583lm Warm White Light (2700k) / CRI > 70 Pre Curfew: 100% Maximum Output Post-Curfew: 30% Maximum Output Internal PIR: No Change	7	20.2w	141.4W @ 100%
L2 Mounting Height: 5 metres on Lighting Column Column Spacing: 20m Vivid Lighting HELIOS Solar Street Lighting Ultra Wide Side Throw Optic 20.2w LED Delivered Lumens: 2,583lm Warm White Light (2700k) / CRI > 70 Pre Curfew: 30% Maximum Output Post-Curfew: 0% Maximum Output Internal PIR: 30% Output	27	6.06w @ 30% Output	545.4W @ 100%
L3 Mounting Height: 6 metres on Lighting Column Column Spacing: 30m Vivid Lighting HELIOS Solar Street Lighting Ultra Wide Side Throw Optic 20.2w LED Delivered Lumens: 2,583lm Warm White Light (2700k) / CRI > 70 Pre Curfew: 100% Maximum Output Post-Curfew: 0% Maximum Output Internal PIR: 30% Output	1	20.2w	20.2W @ 100%

Rev	Amendments	Date	By	Chk	Auth
01	First Issue	10/10/25	TS	ND	ND

SLR

www.slrconsulting.com

Drawing Purpose: **FOR PLANNING**
Suitability Code: **S4**

Client: Miller Homes & Miller Developments

Project: Land South of Smugglers Lane, Barns Green

Drawing Title: Lighting Layout Plan + Lux Contour Plan

Scale: Varies @ A0
SLR Project No.: 433.000146.00001

Designed	Drawn	Checked	Authorised
TS	TS	ND	ND
Date 10/10/2025	Date 10/10/2025	Date 10/10/2025	Date 10/10/2025

Drawing Number: **433.000146.00001-LLP+LCP**
Rev.: **01**

Appendix B Operational Requirements

Lighting Design Report

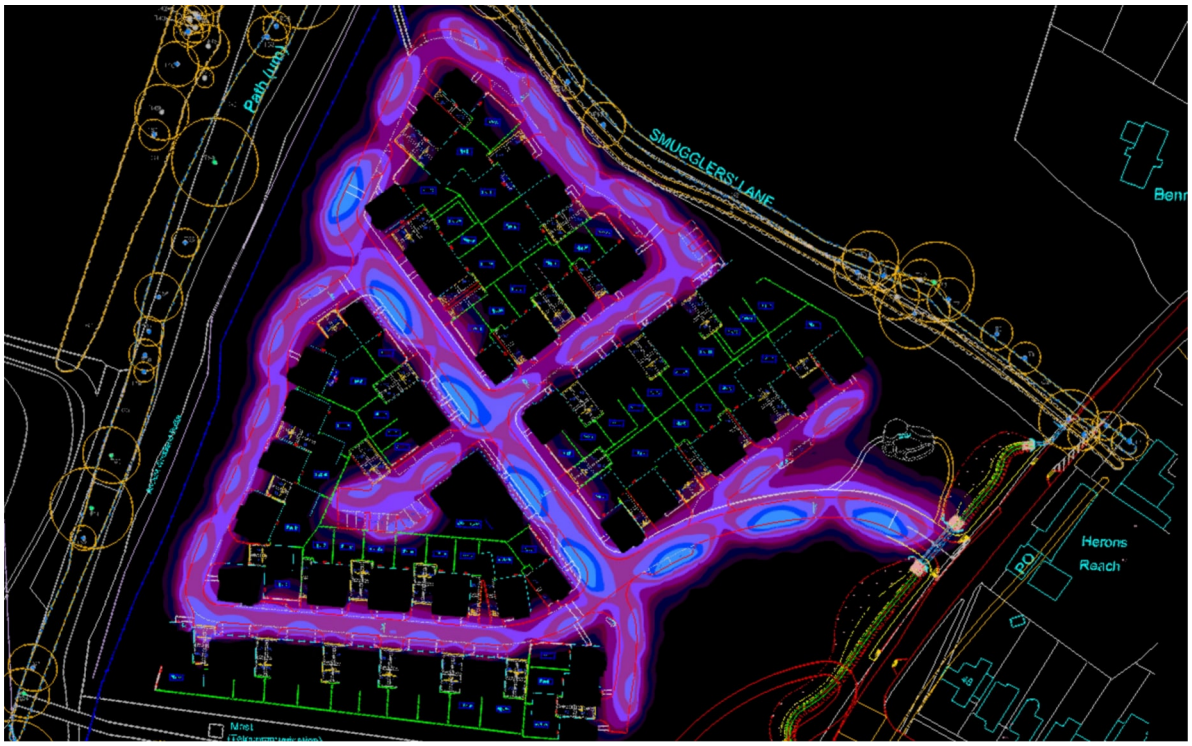
Land South of Smugglers' Lane, Barns Green

Miller Homes & Miller Developments

SLR Project No.: 433.000146.00001

10 October 2025

Date 10/10/2025



Land South of Smugglers' Lane, Barns Green - Appendix B - Operational Requirements

Appendix B - Operational Requirements
Maintainance Factor of 0.93

Description

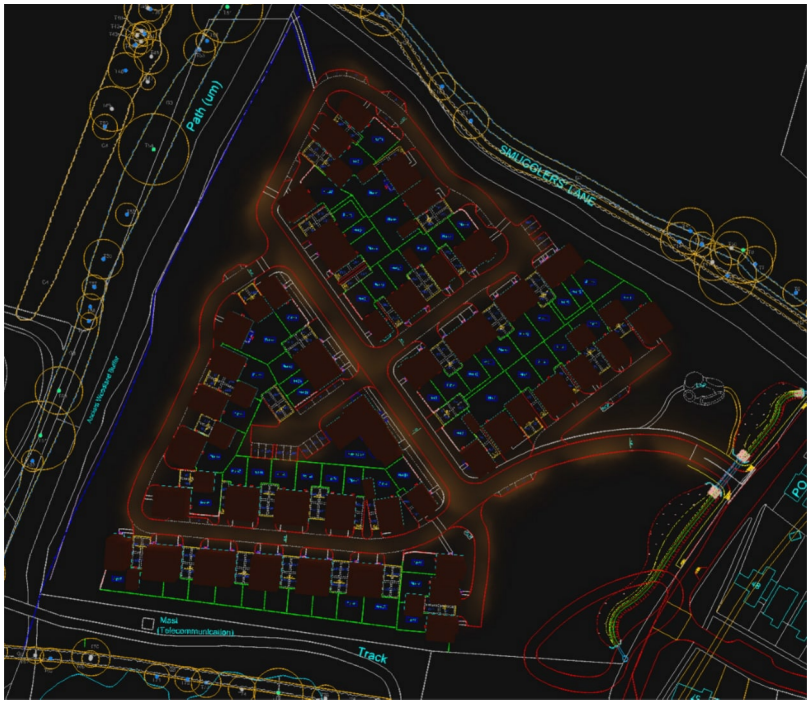
Project Number: 433.000146.00001
Based on: 24088 - P101Q (Site Layout)

Images

Pre-Curfew Light Rendering Glow Plan

Glow Plan visual representation of the 3D photometric model rendered with all parts of the lighting system active.

The CAD layout is visible for reference.

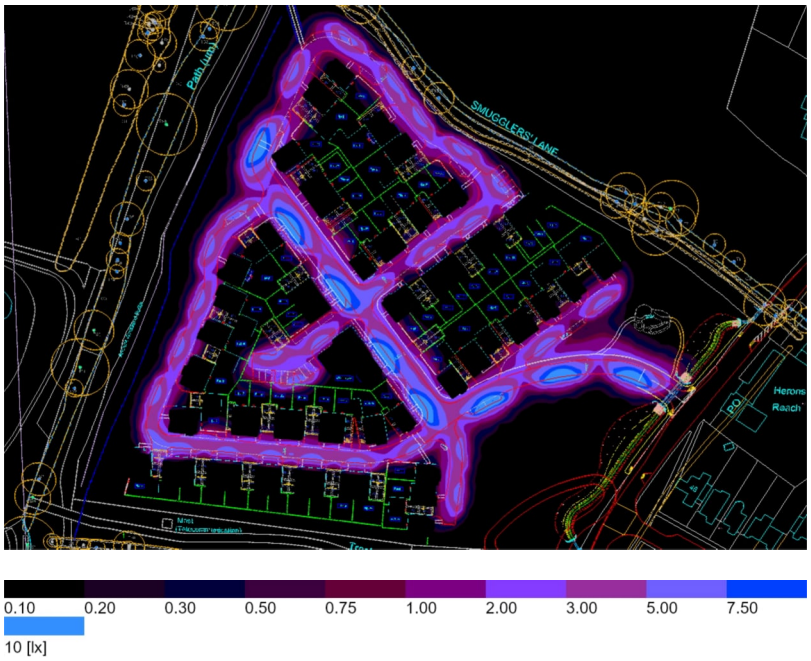


Pre-Curfew False Colour Glow Plan

Glow plan representation of the 3D photometric model rendered with all parts of the lighting system active.

The colours represent lux levels according to the key below.

The CAD layout is visible for reference.



Images

Post-Curfew Light Rendering Glow Plan

Glow plan representation of the 3D photometric model rendered with only the Post-Curfew lighting system active.

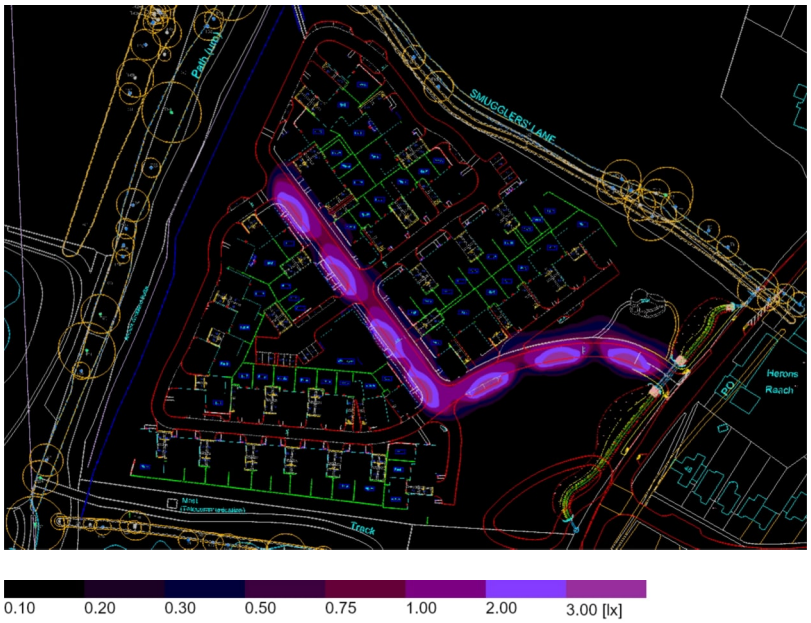
The CAD layout is visible for reference.

Post-Curfew False Colour

Glow plan representation of the 3D photometric model rendered with only the Post-Curfew parts of the lighting system active.

The colours represent lux levels according to the key below.

The CAD layout is visible for reference.



Dimming values

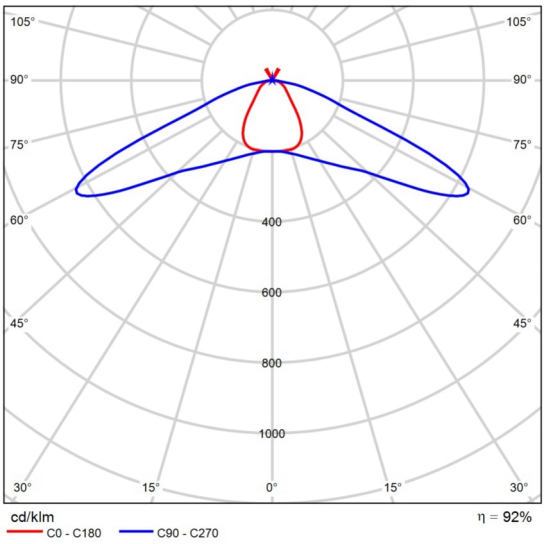
Control group	CG 1	CG 2	CG 3	CG 4
Pre-Curfew	–	30	100	100
Post-Curfew	–	0	0	30

Dimming values [%]

Product data sheet

Solar A/S - HELIOS 20W Solar Street Light

Article No.	HEL20W
P	20.2 W
Φ_{Lamp}	2804 lm
$\Phi_{Luminaire}$	2583 lm
η	92.15 %
Luminous efficacy	127.8 lm/W
CCT	2700 K
CRI	80
Index	L1-3



Polar LDC

Glare evaluation according to UGR

ρ Ceiling		70	70	50	50	30	70	70	50	50	30
ρ Walls		50	30	50	30	30	50	30	50	30	30
ρ Floor		20	20	20	20	20	20	20	20	20	20
Room size X	Y	Viewing direction at right angles to lamp axis					Viewing direction parallel to lamp axis				
2H	2H	22.3	23.8	22.6	24.0	24.3	35.0	36.5	35.3	36.7	37.0
	3H	23.2	24.5	23.5	24.8	25.1	36.3	37.7	36.7	37.9	38.2
	4H	23.7	25.0	24.1	25.3	25.6	36.6	37.9	36.9	38.1	38.4
	6H	24.2	25.3	24.5	25.6	26.0	36.8	37.9	37.1	38.3	38.6
	8H	24.2	25.3	24.6	25.7	26.0	36.8	37.9	37.1	38.2	38.6
	12H	24.2	25.3	24.6	25.6	26.0	36.8	37.9	37.1	38.2	38.5
4H	2H	25.4	26.7	25.8	27.0	27.3	34.9	36.1	35.2	36.4	36.7
	3H	26.0	27.1	26.4	27.4	27.7	36.3	37.4	36.7	37.7	38.0
	4H	26.4	27.4	26.8	27.7	28.1	36.7	37.6	37.1	38.0	38.4
	6H	26.9	27.7	27.3	28.1	28.5	36.9	37.8	37.4	38.2	38.6
	8H	27.0	27.8	27.4	28.2	28.6	37.0	37.8	37.5	38.2	38.6
	12H	27.1	27.8	27.5	28.2	28.6	37.1	37.8	37.5	38.2	38.6
8H	4H	27.2	28.0	27.6	28.4	28.8	36.6	37.4	37.0	37.8	38.2
	6H	27.8	28.5	28.3	28.9	29.4	36.9	37.6	37.4	38.0	38.5
	8H	28.2	28.7	28.7	29.2	29.7	37.1	37.7	37.6	38.1	38.6
	12H	28.5	29.0	29.0	29.4	29.9	37.3	37.8	37.8	38.2	38.7
12H	4H	27.4	28.1	27.8	28.5	29.0	36.5	37.3	37.0	37.7	38.1
	6H	28.1	28.7	28.6	29.1	29.6	36.9	37.5	37.4	38.0	38.4
	8H	28.5	29.0	29.0	29.5	30.0	37.1	37.6	37.6	38.1	38.6
Variation of the observer position for the luminaire distances S											
S = 1.0H		+0.6 / -0.8					+0.3 / -0.3				
S = 1.5H		+1.4 / -1.3					+1.4 / -1.4				
S = 2.0H		+1.8 / -1.9					+2.9 / -2.3				
Standard table		---					BK04				
Correction summand		---					19.9				
Corrected glare indices referring to 2804lm Total luminous flux											

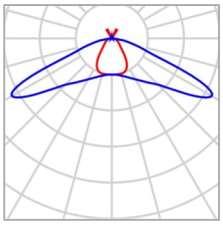
UGR diagram (SHR: 0.25)

Land South of Smugglers' Lane, Barns Green

Luminaire layout plan

Land South of Smugglers' Lane, Barns Green

Luminaire layout plan



Manufacturer	Solar A/S	P	20.2 W
Article No.	HEL20W	$\Phi_{Luminaire}$	2583 lm
Article name	HELIOS 20W Solar Street Light		
Fitting	1x CREE LED ARRAY		
Index	L1-3		

2 x Solar A/S HELIOS 20W Solar Street Light

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	146.784 m / 150.456 m / 5.341 m	166.170 m	166.289 m	5.341 m	3
X-direction	2 pcs., Centre - centre, Distances not equal	146.784 m	150.456 m	5.341 m	4
Arrangement	A1				

2 x Solar A/S HELIOS 20W Solar Street Light

Type	Line arrangement	X	Y	Mounting height	Luminaire
1st luminaire (X/Y/Z)	101.201 m / 203.304 m / 6.000 m	114.001 m	230.404 m	5.000 m	1
X-direction	3 pcs., Centre - centre, Distances not equal	101.201 m	203.304 m	6.000 m	2
Arrangement	A2				

Land South of Smugglers' Lane, Barns Green

Luminaire layout plan

3 x Solar A/S HELIOS 20W Solar Street Light

Type	Line arrangement
1st luminaire (X/Y/Z)	113.363 m / 174.128 m / 6.000 m
X-direction	3 pcs., Centre - centre, 30.000 m
Arrangement	A3

X	Y	Mounting height	Luminaire
113.363 m	174.128 m	6.000 m	5
131.629 m	150.329 m	6.000 m	6
149.894 m	126.531 m	6.000 m	7

Individual luminaires

X	Y	Mounting height	Luminaire
134.479 m	242.813 m	5.000 m	8
151.509 m	228.010 m	5.000 m	9
161.534 m	215.683 m	5.000 m	10
177.027 m	205.022 m	5.000 m	11
191.751 m	192.240 m	5.000 m	12
93.886 m	179.700 m	5.000 m	13
181.948 m	177.581 m	5.000 m	14
82.945 m	165.842 m	5.000 m	15
232.415 m	148.890 m	5.000 m	16
79.200 m	146.100 m	5.000 m	17
211.964 m	132.368 m	5.000 m	18
125.993 m	131.296 m	5.000 m	19
71.400 m	128.034 m	5.000 m	20
106.706 m	126.391 m	5.000 m	21
217.877 m	120.276 m	6.000 m	22

Land South of Smugglers' Lane, Barns Green

Luminaire layout plan

X	Y	Mounting height	Luminaire
245.145 m	120.220 m	6.000 m	23
116.896 m	115.929 m	5.000 m	24
62.300 m	109.500 m	5.000 m	25
191.347 m	108.732 m	6.000 m	26
164.928 m	106.819 m	6.000 m	27
60.700 m	90.736 m	5.000 m	28
181.270 m	90.405 m	5.000 m	29
163.144 m	89.980 m	5.000 m	30
72.471 m	88.088 m	5.000 m	31
90.144 m	87.064 m	5.000 m	32
107.032 m	86.074 m	5.000 m	33
123.157 m	85.131 m	5.000 m	34
140.398 m	84.132 m	5.000 m	35
180.743 m	72.496 m	5.000 m	36

Land South of Smugglers' Lane, Barns Green

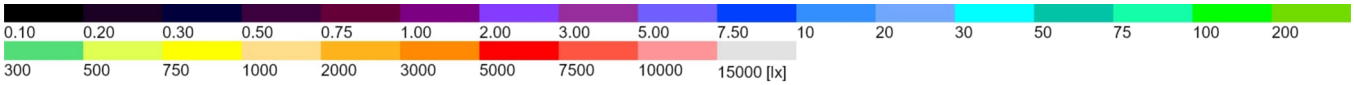
Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
92988 lm	727.2 W	127.9 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy	Index
36	Solar A/S	HEL20W	HELIOS 20W Solar Street Light	20.2 W	2583 lm	127.8 lm/W	L1-3

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

Calculation objects



Land South of Smugglers' Lane, Barns Green (Post-Curfew)

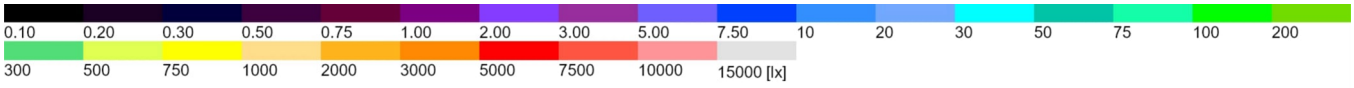
Calculation objects

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP1 - Primary Roadway Perpendicular illuminance Height: 0.100 m	1.62 lx	0.018 lx	4.68 lx	0.011	0.004	CG1
HMP2 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	0.003 lx	0.00 lx	0.12 lx	-	0.00	CG5
HMP3 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	0.012 lx	0.00 lx	0.59 lx	0.00	0.00	CG2
HMP4 - Car Park Perpendicular illuminance Height: 0.100 m	0.043 lx	0.000 lx	2.34 lx	0.00	0.00	CG4
HMP5 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	0.13 lx	0.011 lx	0.60 lx	0.085	0.018	CG3
HMP6 - Subsidairy Roadway Perpendicular illuminance Height: 0.100 m	0.12 lx	0.000 lx	1.16 lx	0.00	0.00	CG6

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

Calculation objects



Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

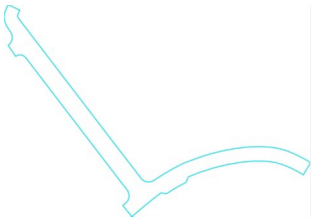
Calculation objects

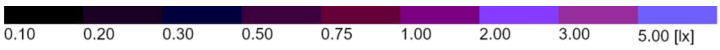
Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP1 - Primary Roadway Perpendicular illuminance Height: 0.100 m	5.94 lx	1.15 lx	15.8 lx	0.19	0.073	CG1
HMP2 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	3.78 lx	1.44 lx	7.44 lx	0.38	0.19	CG5
HMP3 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	3.38 lx	0.70 lx	14.5 lx	0.21	0.048	CG2
HMP4 - Car Park Perpendicular illuminance Height: 0.100 m	3.04 lx	0.70 lx	8.58 lx	0.23	0.082	CG4
HMP5 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	2.81 lx	0.55 lx	6.74 lx	0.20	0.082	CG3
HMP6 - Subsidairy Roadway Perpendicular illuminance Height: 0.100 m	3.54 lx	0.53 lx	6.92 lx	0.15	0.077	CG6

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

HMP1 - Primary Roadway



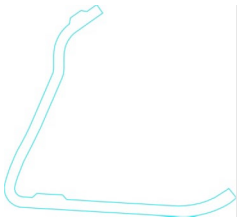


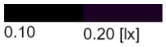
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP1 - Primary Roadway Perpendicular illuminance Height: 0.100 m	1.62 lx	0.018 lx	4.68 lx	0.011	0.004	CG1

Notes on planning:
Lighting to Primary Roadway dimmed to 30% and not lit to any standard. Lighting only for the safety and secuity of residents, along with wayfinding.

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

HMP2 - Circulatory Roadway



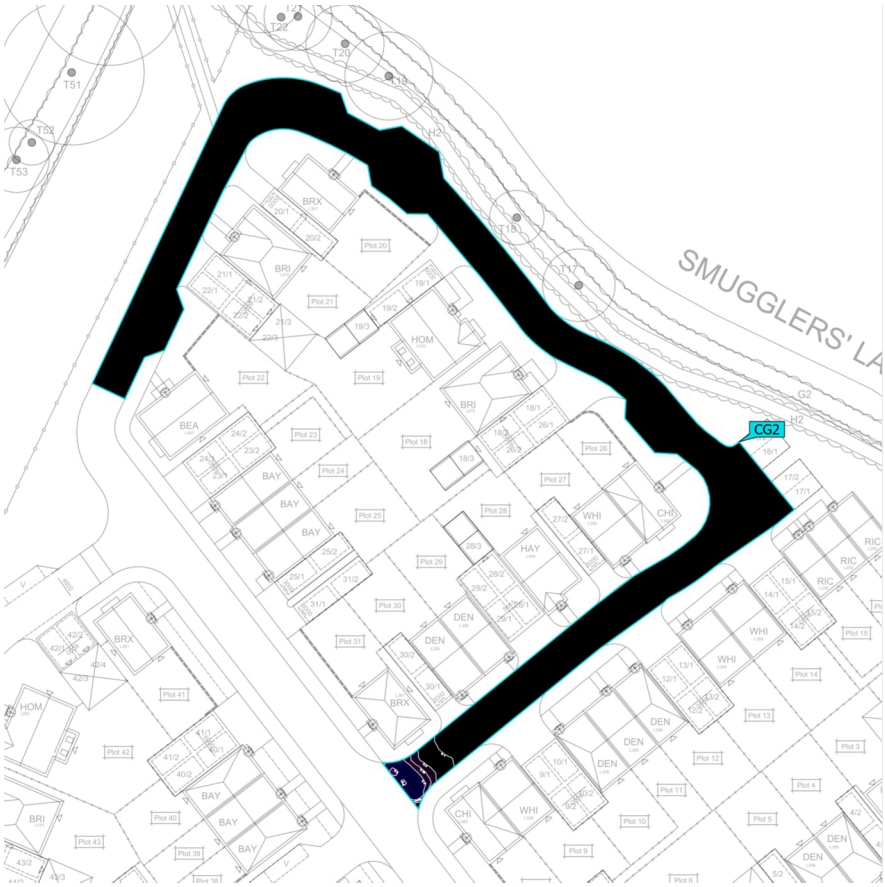


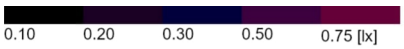
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP2 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	0.003 lx	0.00 lx	0.12 lx	-	0.00	CG5

Notes on planning:
Subject to part night switch off. No luminance criteria apply.

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

HMP3 - Circulatory Roadway





Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP3 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	0.012 lx	0.00 lx	0.59 lx	0.00	0.00	CG2

Notes on planning:
Subject to part night switch off. No luminance criteria apply.

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

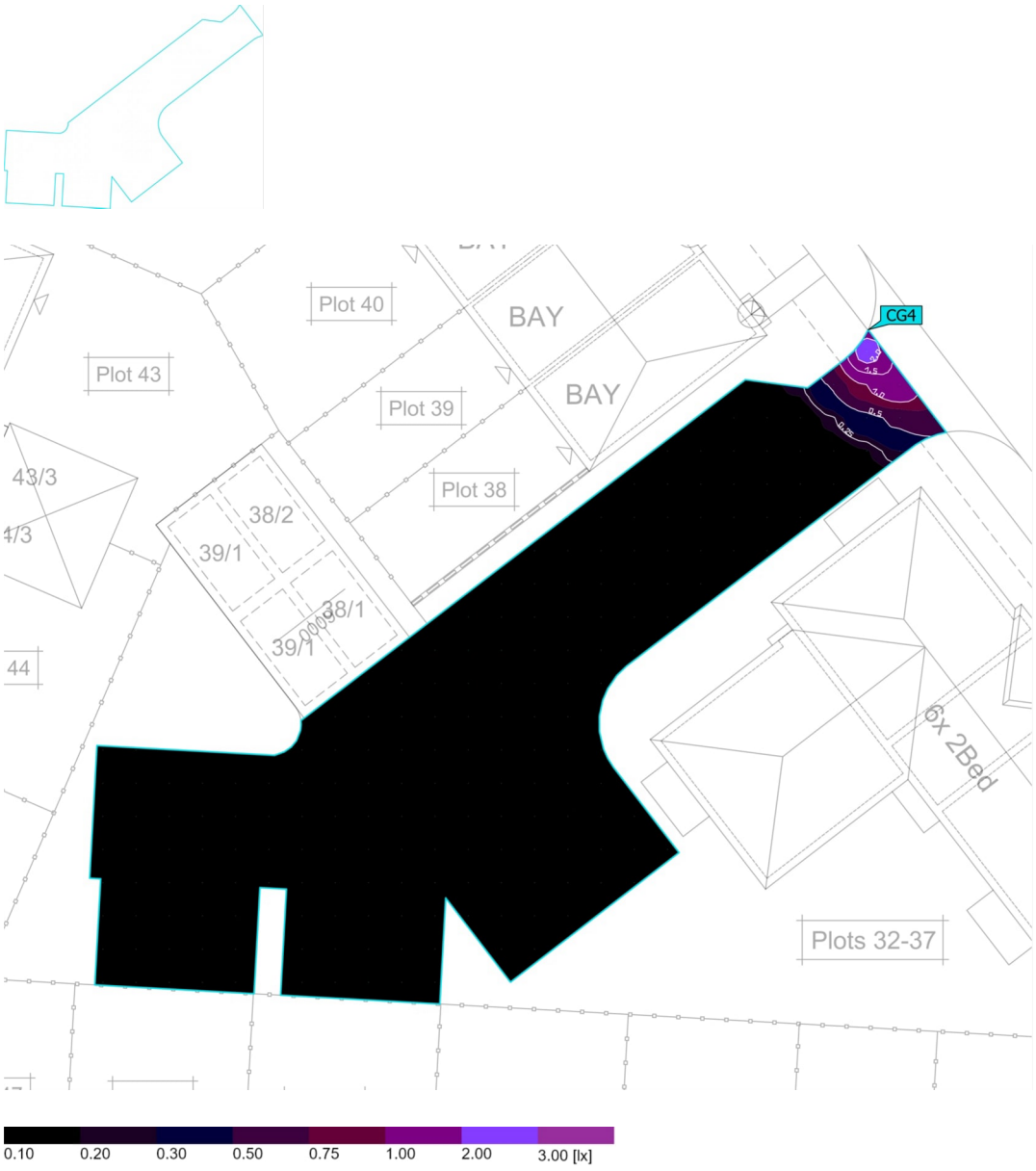
HMP5 - Subsidiary Roadway

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP5 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	0.13 lx	0.011 lx	0.60 lx	0.085	0.018	CG3

Notes on planning:
Subject to part night switch off. No luminance criteria apply.

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

HMP4 - Car Park

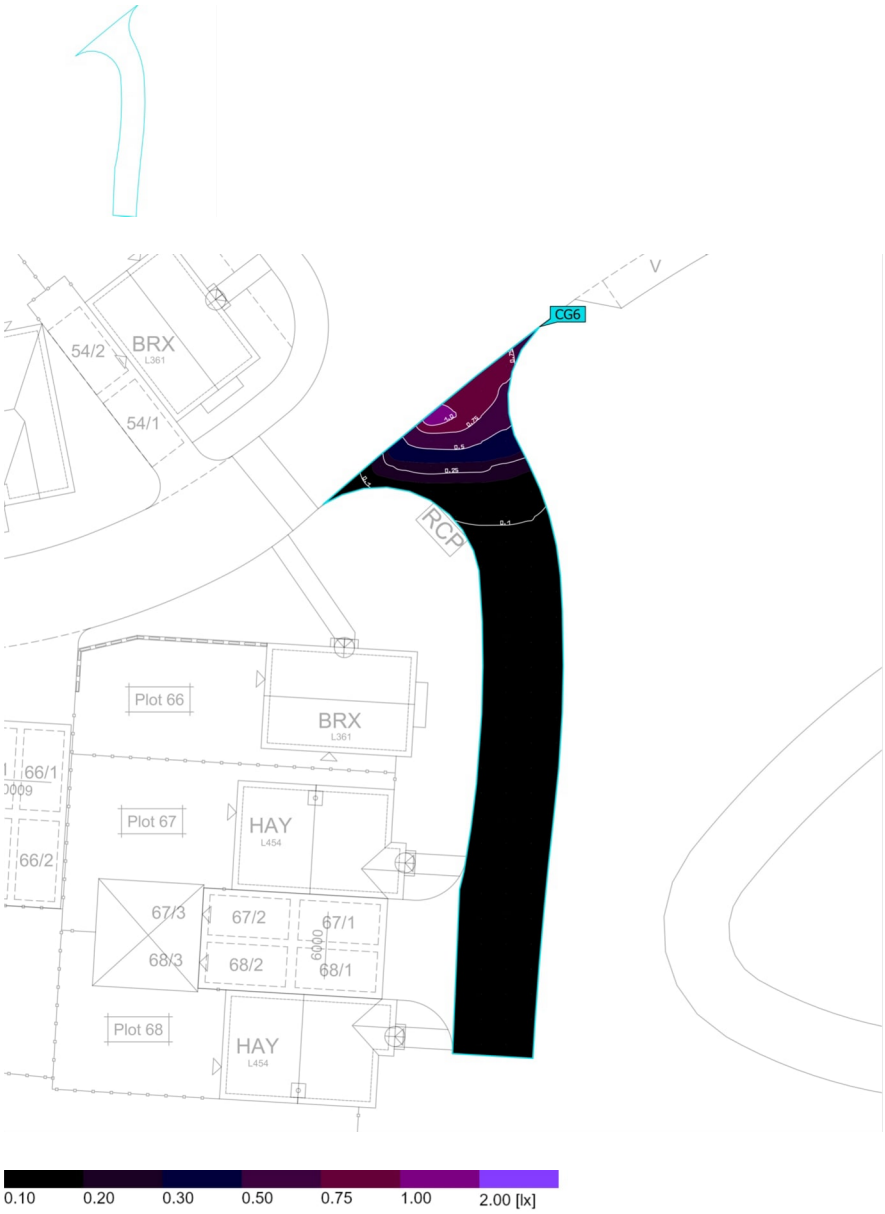


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP4 - Car Park Perpendicular illuminance Height: 0.100 m	0.043 lx	0.000 lx	2.34 lx	0.00	0.00	CG4

Notes on planning:
Subject to part night switch off. No luminance criteria apply.

Land South of Smugglers' Lane, Barns Green (Post-Curfew)

HMP6 - Subsidiary Roadway

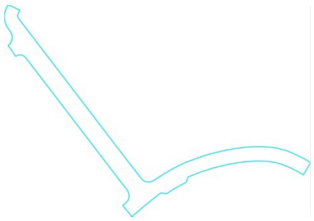


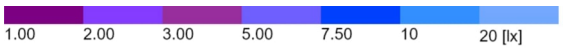
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP6 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	0.12 lx	0.000 lx	1.16 lx	0.00	0.00	CG6

Notes on planning:
Subject to part night switch off. No luminance criteria apply.

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

HMP1 - Primary Roadway



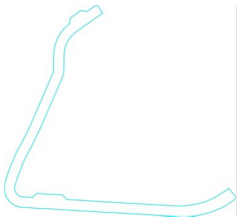


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP1 - Primary Roadway Perpendicular illuminance Height: 0.100 m	5.94 lx	1.15 lx	15.8 lx	0.19	0.073	CG1

Notes on planning:
P4 Lighting Class
5 Lux Average (Ē), Minimum of 1 Lux (Emin)

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

HMP2 - Circulatory Roadway



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP2 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	3.78 lx	1.44 lx	7.44 lx	0.38	0.19	CG5

Notes on planning:
P5 Lighting Class
3 Lux Average (Ē), Minimum of 0.6 Lux (Emin)

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

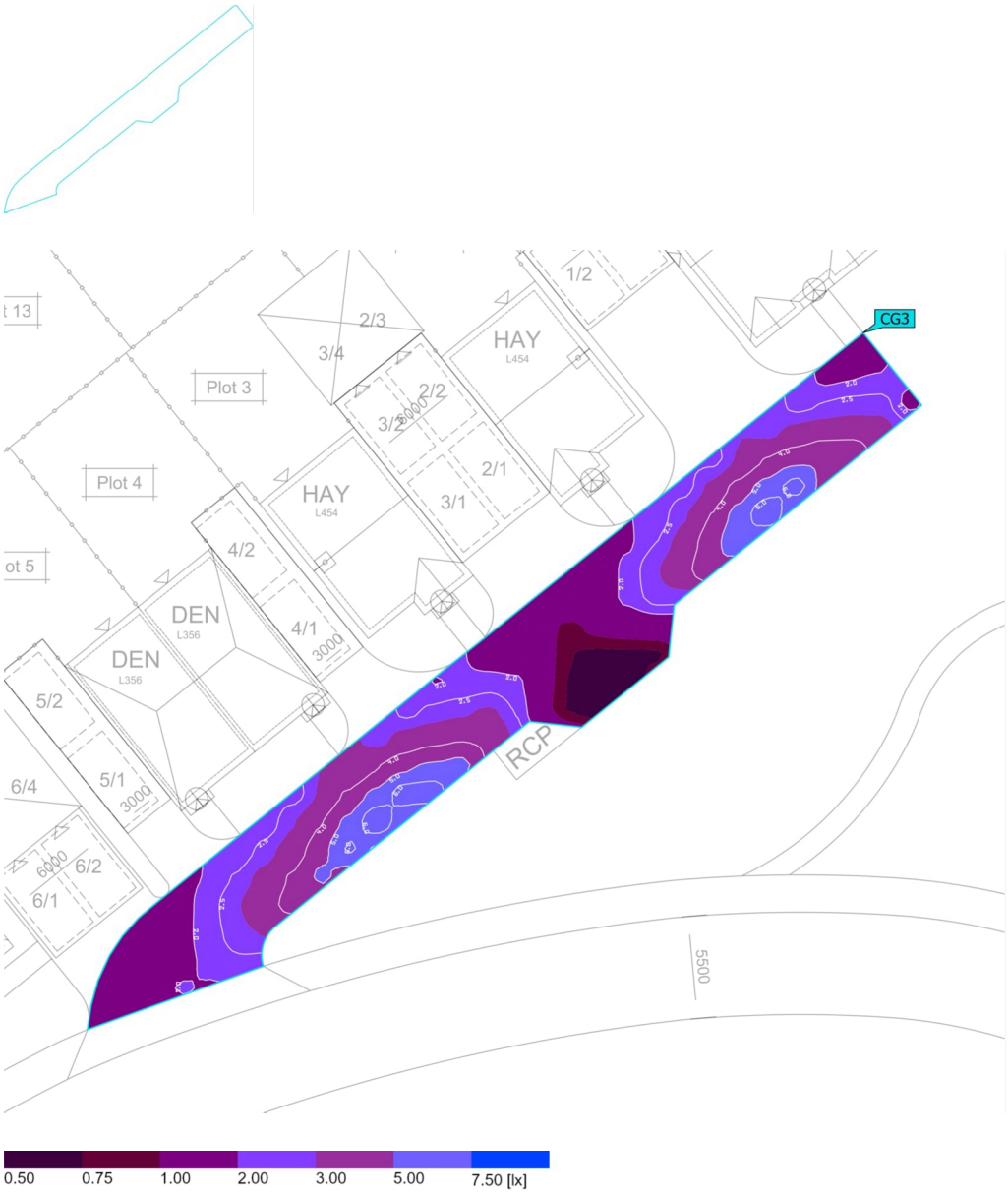
HMP3 - Circulatory Roadway

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP3 - Circulatory Roadway Perpendicular illuminance Height: 0.100 m	3.38 lx	0.70 lx	14.5 lx	0.21	0.048	CG2

Notes on planning:
P5 Lighting Class
3 Lux Average (Ē), Minimum of 0.6 Lux (Emin)

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

HMP5 - Subsidiary Roadway

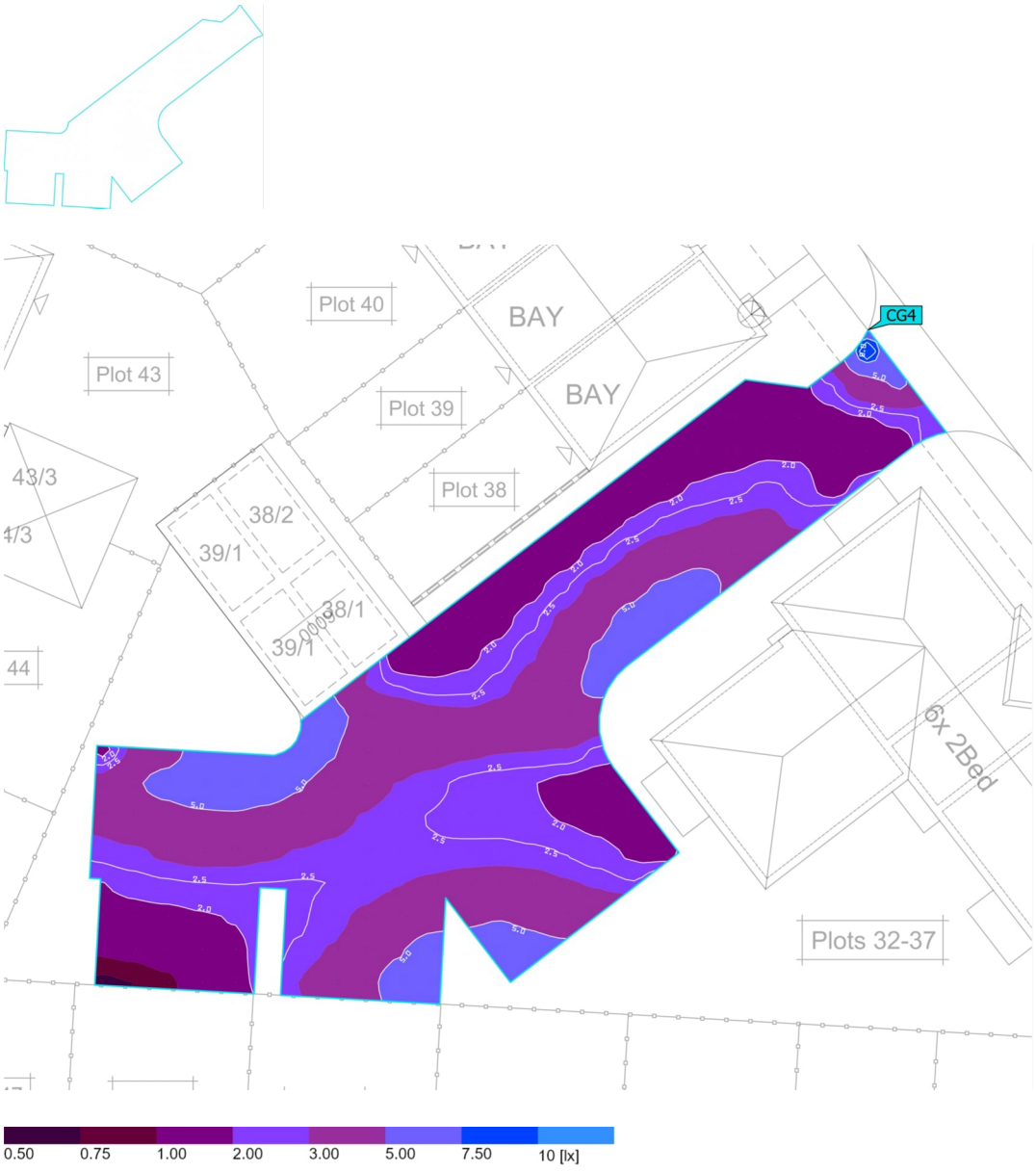


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP5 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	2.81 lx	0.55 lx	6.74 lx	0.20	0.082	CG3

Notes on planning:
P6 Lighting Class
2 Lux Average (Ē), Minimum of 0.4 Lux (Emin)

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

HMP4 - Car Park

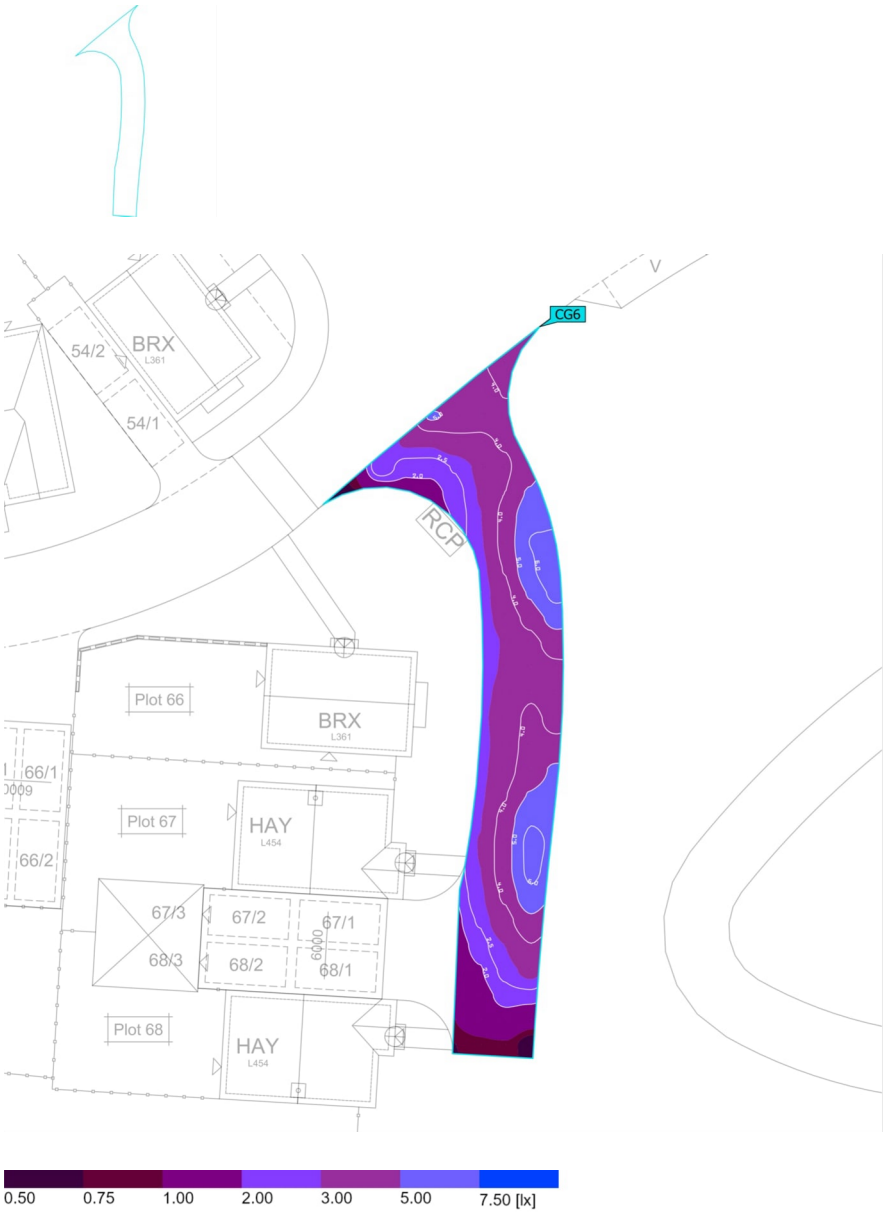


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP4 - Car Park Perpendicular illuminance Height: 0.100 m	3.04 lx	0.70 lx	8.58 lx	0.23	0.082	CG4

Notes on planning:
P5 Lighting Class
3 Lux Average (Ē), Minimum of 0.6 Lux (Emin)

Land South of Smugglers' Lane, Barns Green (Pre-Curfew)

HMP6 - Subsidiary Roadway



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
HMP6 - Subsidiary Roadway Perpendicular illuminance Height: 0.100 m	3.54 lx	0.53 lx	6.92 lx	0.15	0.077	CG6

Notes on planning:
P6 Lighting Class
2 Lux Average (Ē), Minimum of 0.4 Lux (Emin)

Appendix C Impact Assessment

Lighting Design Report

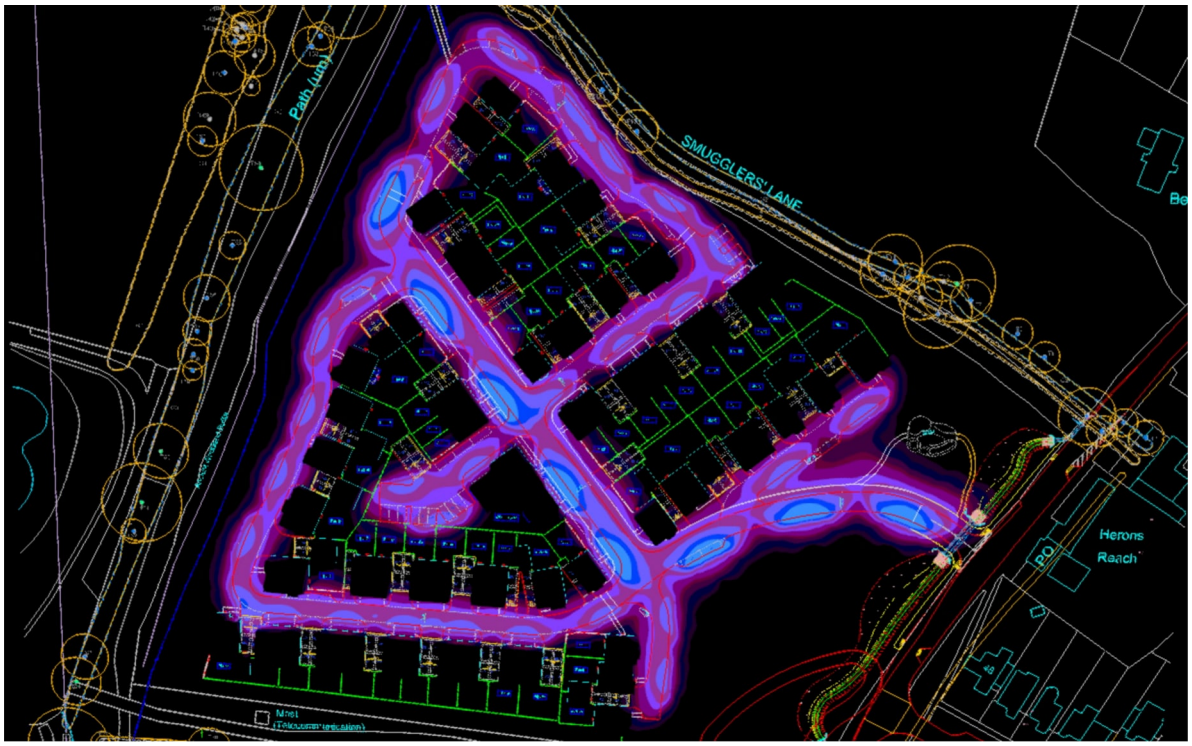
Land South of Smugglers' Lane, Barns Green

Miller Homes & Miller Developments

SLR Project No.: 433.000146.00001

10 October 2025

Date 10/10/2025



Land South of Smugglers' Lane, Barns Green - Appendix C - Impact Assessment

Appendix C - Impact Assessment
Maintainance Factor of 1.0

Description

Project Number: 433.000146.00001
Based on: 24088 - P101Q (Site Layout)

Land South of Smugglers Lane, Barns Green (Obtrusive light scene)

Summary

Land South of Smugglers Lane, Barns Green (Obtrusive light scene)

Summary

General information on the obtrusive light calculation

Standard	EN 12464-2:2014
Zone	Environmental Zone E2
Period under review	Post-curfew
Apply limits for	General lighting

General obtrusive light scene results

Symbol	Calculated	Threshold value	Check
R_{UL}	2.3 %	≤ 5.0 %	✓
R_{DLO}	90.0 %	–	
R_{ULO}	2.1 %	–	

Calculation points

Symbol	Calculated	Threshold value	Check	Index
E_{vmax}	0.098 lx	≤ 1.00 lx	✓	OP3
k_{Smax}	266	–		OP3
I_{max}	172 cd	≤ 500 cd	✓	OP1

Flux ratios are also calculated using only luminaires in the obtrusive lighting scene.

Land South of Smugglers Lane, Barns Green (Obtrusive light scene)

Calculation objects

Land South of Smugglers Lane, Barns Green (Obtrusive light scene)

Calculation objects

Calculation points

Properties	Calculated
CP10 - Heron's Reach k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	186
CP10 - Heron's Reach Vertical illuminance Rotation: 150.0°, Height: 4.500 m	0.064 lx (≤ 1.00 lx) ✓
CP10 - Heron's Reach Luminous intensity Height: 4.500 m	172 cd (≤ 500 cd) ✓
CP11 - Heron's Reach k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	217
CP11 - Heron's Reach Vertical illuminance Rotation: 150.0°, Height: 4.500 m	0.074 lx (≤ 1.00 lx) ✓
CP11 - Heron's Reach Luminous intensity Height: 4.500 m	165 cd (≤ 500 cd) ✓
CP12 - Heron's Reach / Post Office k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	266
CP12 - Heron's Reach / Post Office Vertical illuminance Rotation: 150.0°, Height: 4.500 m	0.098 lx (≤ 1.00 lx) ✓
CP12 - Heron's Reach / Post Office Luminous intensity Height: 4.500 m	144 cd (≤ 500 cd) ✓
CP13 - Heron's Reach k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	170
CP13 - Heron's Reach Vertical illuminance Rotation: 150.0°, Height: 4.500 m	0.080 lx (≤ 1.00 lx) ✓

Land South of Smugglers Lane, Barns Green (Obtrusive light scene)

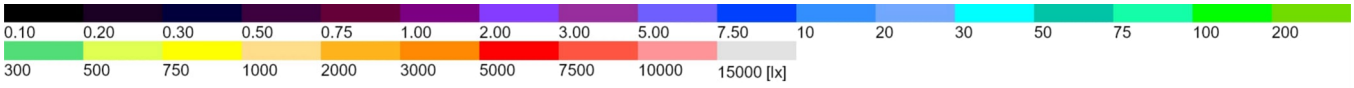
Calculation objects

Properties	Calculated
CP13 - Heron's Reach Luminous intensity Height: 4.500 m	111 cd (≤ 500 cd) ✓
CP14 - 57 The Hordens k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	29.9
CP14 - 57 The Hordens Vertical illuminance Rotation: 75.0°, Height: 4.500 m	0.009 lx (≤ 1.00 lx) ✓
CP14 - 57 The Hordens Luminous intensity Height: 4.500 m	111 cd (≤ 500 cd) ✓
CP15 - 48 The Hordens k_S Ambient luminance: 0.10 cd/m², Height: 4.500 m	43.1
CP15 - 48 The Hordens Vertical illuminance Rotation: -105.0°, Height: 4.500 m	0.000 lx (≤ 1.00 lx) ✓
CP15 - 48 The Hordens Luminous intensity Height: 4.500 m	159 cd (≤ 500 cd) ✓

Notes on planning:
All values take the initial flux (MF = 1) into account. The k_S value was calculated by limiting the spatial angle to 10e-6.

Land South of Smugglers Lane, Barns Green (Post-Curfew)

Calculation objects



Land South of Smugglers Lane, Barns Green (Post-Curfew)

Calculation objects

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP1 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.003 lx	0.000 lx	0.048 lx	-	0.00	CG4
VMP10 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.026 lx	0.007 lx	0.037 lx	0.27	0.19	CG9
VMP2 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.000 lx	0.000 lx	0.001 lx	-	-	CG3
VMP3 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.001 lx	0.000 lx	0.004 lx	-	-	CG1
VMP4 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.001 lx	0.000 lx	0.004 lx	-	-	CG10
VMP5 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.006 lx	0.000 lx	0.037 lx	-	0.00	CG2
VMP6 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.002 lx	0.000 lx	0.013 lx	-	0.00	CG5
VMP7 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.003 lx	0.000 lx	0.018 lx	-	0.00	CG6
VMP8 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.005 lx	0.000 lx	0.024 lx	-	0.00	CG7
VMP9 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.009 lx	0.003 lx	0.027 lx	-	0.11	CG8

Calculation points

Properties	Calculated	Index

Land South of Smugglers Lane, Barns Green (Post-Curfew)

Calculation objects

Properties	Calculated	Index
CP1 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.000 lx	CP1
CP1 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.000 lx	CP1
CP2 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.000 lx	CP2
CP2 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.000 lx	CP2
CP3 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.011 lx	CP3
CP3 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.009 lx	CP3
CP4 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.000 lx	CP4
CP4 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.000 lx	CP4
CP5 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.000 lx	CP5
CP5 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.000 lx	CP5
CP6 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.009 lx	CP6
CP6 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.007 lx	CP6

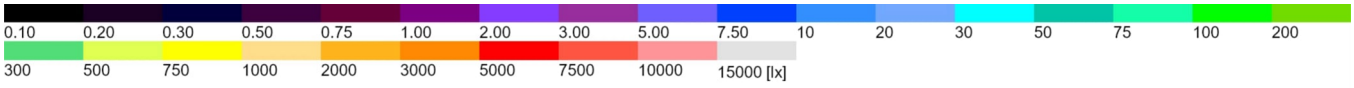
Land South of Smugglers Lane, Barns Green (Post-Curfew)

Calculation objects

Properties	Calculated	Index
CP7 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.001 lx	CP7
CP7 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.000 lx	CP7
CP8 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.000 lx	CP8
CP8 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.000 lx	CP8
CP9 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.000 lx	CP9
CP9 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.000 lx	CP9

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

Calculation objects



Land South of Smugglers Lane, Barns Green (Pre-Curfew)

Calculation objects

Calculation surfaces

Properties	$\bar{E}$	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP1 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.046 lx	0.000 lx	0.35 lx	0.00	0.00	CG4
VMP10 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.11 lx	0.025 lx	0.20 lx	0.23	0.13	CG9
VMP2 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.008 lx	0.000 lx	0.078 lx	-	0.00	CG3
VMP3 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.051 lx	0.001 lx	0.15 lx	0.020	0.007	CG1
VMP4 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.041 lx	0.028 lx	0.075 lx	0.68	0.37	CG10
VMP5 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.068 lx	0.017 lx	0.40 lx	0.25	0.043	CG2
VMP6 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.078 lx	0.007 lx	0.35 lx	0.090	0.020	CG5
VMP7 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.16 lx	0.046 lx	0.55 lx	0.29	0.084	CG6
VMP8 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.13 lx	0.002 lx	0.51 lx	0.015	0.004	CG7
VMP9 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.030 lx	0.009 lx	0.090 lx	0.30	0.100	CG8

Calculation points

Properties	Calculated	Index

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

Calculation objects

Properties	Calculated	Index
CP1 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.12 lx	CP1
CP1 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.082 lx	CP1
CP2 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.046 lx	CP2
CP2 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.037 lx	CP2
CP3 - Ancient Woodland Vertical illuminance Rotation: -20.0°, Height: 1.500 m	0.076 lx	CP3
CP3 - Ancient Woodland Semi-cylindrical illuminance Rotation: -20.0°, Height: 1.500 m	0.059 lx	CP3
CP4 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.41 lx	CP4
CP4 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.50 lx	CP4
CP5 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.41 lx	CP5
CP5 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.35 lx	CP5
CP6 - Northern Tree Line Vertical illuminance Rotation: -120.0°, Height: 1.500 m	0.029 lx	CP6
CP6 - Northern Tree Line Semi-cylindrical illuminance Rotation: -120.0°, Height: 1.500 m	0.023 lx	CP6

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

Calculation objects

Properties	Calculated	Index
CP7 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.060 lx	CP7
CP7 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.040 lx	CP7
CP8 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.006 lx	CP8
CP8 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.004 lx	CP8
CP9 - Southern Tree Line Vertical illuminance Rotation: 80.0°, Height: 1.500 m	0.001 lx	CP9
CP9 - Southern Tree Line Semi-cylindrical illuminance Rotation: 80.0°, Height: 1.500 m	0.001 lx	CP9

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP3 - Ancient Woodland

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP3 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.001 lx	0.000 lx	0.004 lx	-	-	CG1

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP5 - Ancient Woodland

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP5 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.006 lx	0.000 lx	0.037 lx	-	0.00	CG2

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP2 - Southern Tree line

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP2 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.000 lx	0.000 lx	0.001 lx	-	-	CG3

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP1 - Southern Tree line

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP1 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.003 lx	0.000 lx	0.048 lx	-	0.00	CG4

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP6 - Northern Tree line

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP6 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.002 lx	0.000 lx	0.013 lx	-	0.00	CG5

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP7 - Northern Tree line

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP7 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.003 lx	0.000 lx	0.018 lx	-	0.00	CG6

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP8 - Northern Tree line

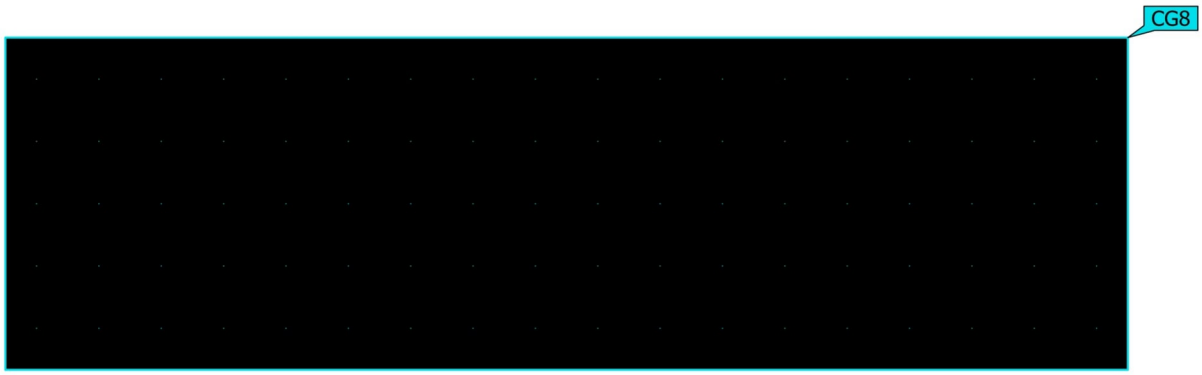
0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP8 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.005 lx	0.000 lx	0.024 lx	-	0.00	CG7

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP9 - Northern Tree line



0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP9 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.009 lx	0.003 lx	0.027 lx	-	0.11	CG8

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP10 - Northern Tree line

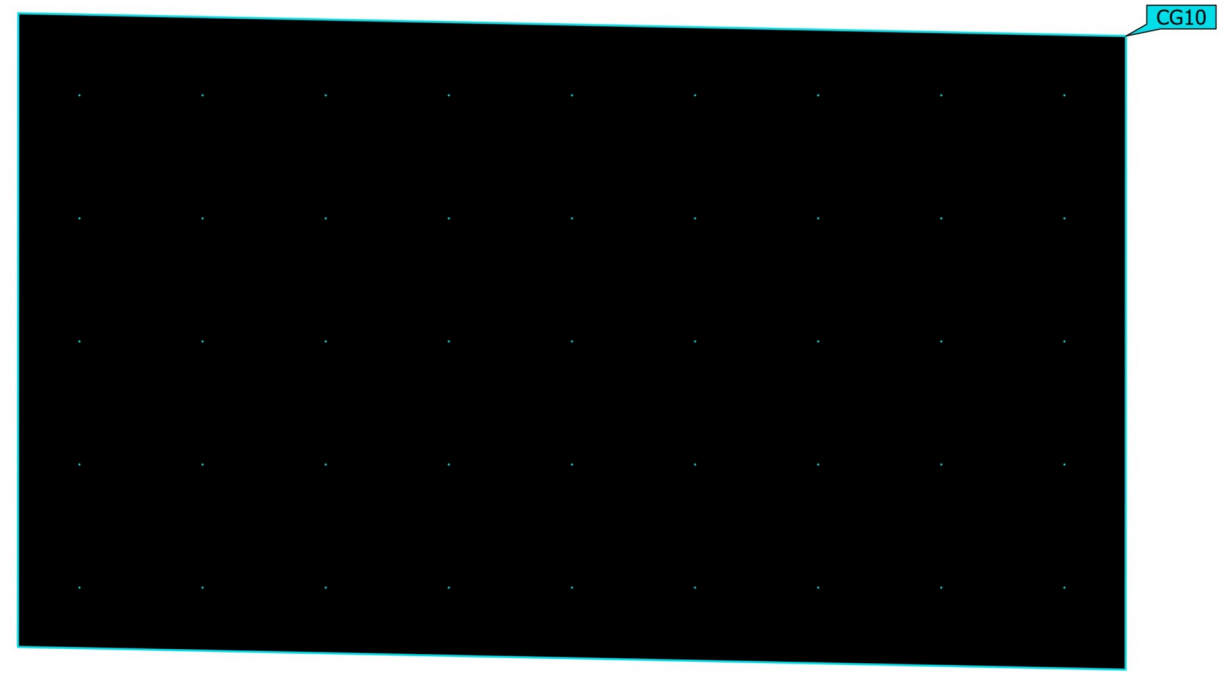
0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP10 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.026 lx	0.007 lx	0.037 lx	0.27	0.19	CG9

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Post-Curfew)

VMP4 - Ancient Woodland



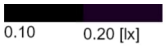
0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP4 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.001 lx	0.000 lx	0.004 lx	-	-	CG10

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP3 - Ancient Woodland

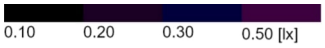


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP3 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.051 lx	0.001 lx	0.15 lx	0.020	0.007	CG1

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP5 - Ancient Woodland



Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP5 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.068 lx	0.017 lx	0.40 lx	0.25	0.043	CG2

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP2 - Southern Tree line

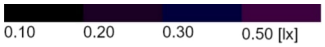
0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP2 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.008 lx	0.000 lx	0.078 lx	-	0.00	CG3

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP1 - Southern Tree line

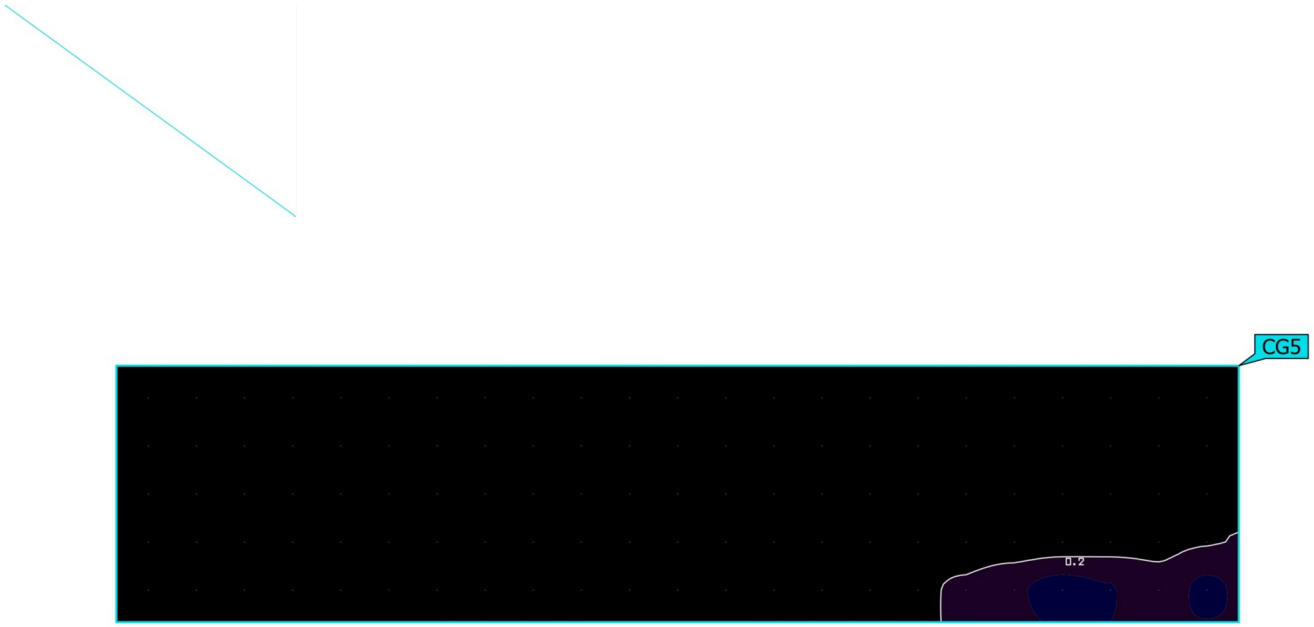


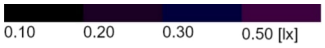
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP1 - Southern Tree line Perpendicular illuminance Height: 4.000 m	0.046 lx	0.000 lx	0.35 lx	0.00	0.00	CG4

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP6 - Northern Tree line



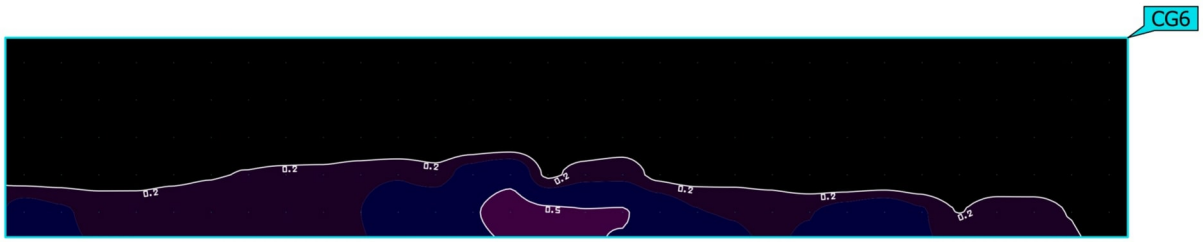


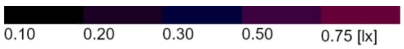
Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP6 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.078 lx	0.007 lx	0.35 lx	0.090	0.020	CG5

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP7 - Northern Tree line



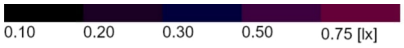


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP7 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.16 lx	0.046 lx	0.55 lx	0.29	0.084	CG6

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP8 - Northern Tree line

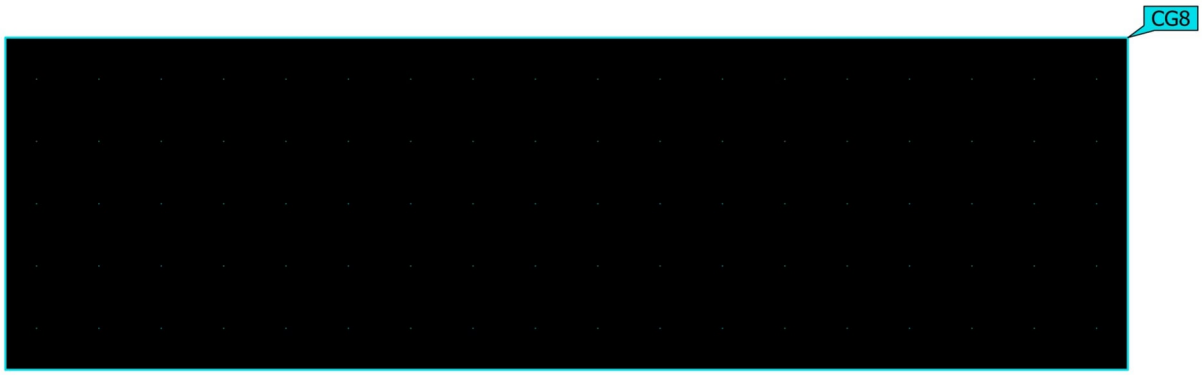


Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP8 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.13 lx	0.002 lx	0.51 lx	0.015	0.004	CG7

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP9 - Northern Tree line



0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP9 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.030 lx	0.009 lx	0.090 lx	0.30	0.100	CG8

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP10 - Northern Tree line

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP10 - Northern Tree line Perpendicular illuminance Height: 4.000 m	0.11 lx	0.025 lx	0.20 lx	0.23	0.13	CG9

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew

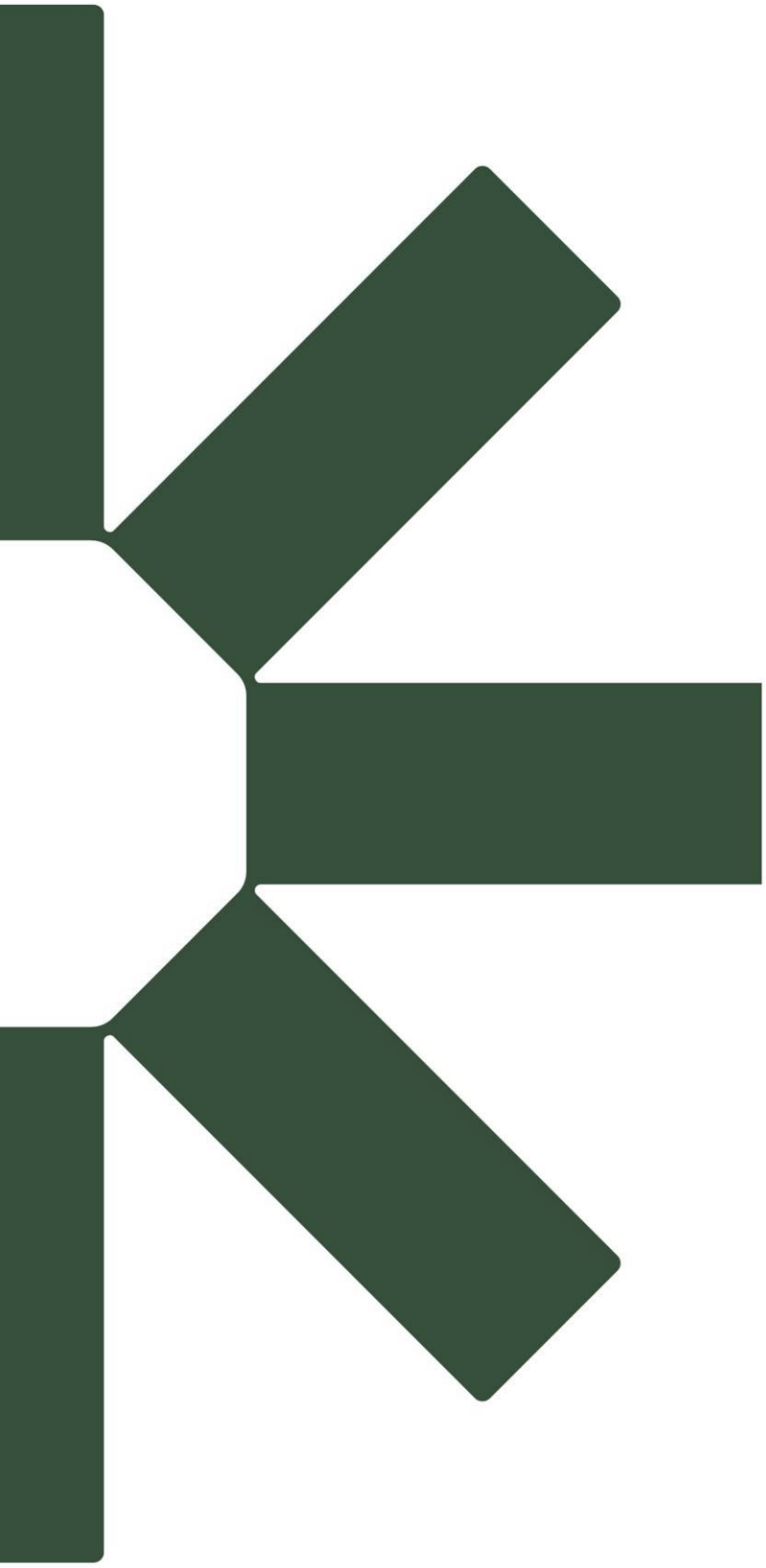
Land South of Smugglers Lane, Barns Green (Pre-Curfew)

VMP4 - Ancient Woodland

0.10 [lx]

Properties	Ē	E_{min}	E_{max}	U_o (g_1)	g_2	Index
VMP4 - Ancient Woodland Perpendicular illuminance Height: 4.000 m	0.041 lx	0.028 lx	0.075 lx	0.68	0.37	CG10

Notes on planning:
ILP GN01:2021 Table 3
Requirements: <5 lx Pre-curfew & <1lx Post-curfew



Making Sustainability Happen