



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

LAND AT UPLANDS, WEST ASHTON ROAD

LIGHTING IMPACT ASSESSMENT

DFL-UK

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EXECUTIVE SUMMARY

Lighting associated with the Proposed Development shall be designed in accordance with the Lighting Strategy for the Application Site outlined in **Appendix 1**.

The Lighting Impact Assessment has been written in accordance with the relevant industry guidance and local policies, ensuring that it is unlikely to give rise to obtrusive light with the potential to significantly affect human, environmental and ecological receptors.

The Application Site and the surrounding area is semi-rural, due to its vicinity to residential housing to the north and west and its vicinity to arable fields to the south and southeast. It fits the description of *"Sparsely inhabited rural areas, village or relatively dark outer suburban location"* Therefore, fits the criteria for an E2 environmental zone.

Through the application of the Lighting Strategy, human receptors will not be significantly affected by obtrusive light. There will be at worst a **Neutral (not significant)** residual effect on the Human Amenity Receptors, and this is not considered significant due to the results of the obtrusive light calculations.

Through the application of the Lighting Strategy, ecological receptors will not be significantly affected by obtrusive light. There will be at worst a **Neutral (not significant)** residual effect on Ecology Receptor 002, and **Slight (not significant)** on Receptor 001. This is not considered significant due to the results of the obtrusive light calculations.

There will be a change in the lighting baseline levels due to the Proposed Development. However, this will not result in a change in the environmental zone in the area

1. INTRODUCTION

1.1. Overview

- 1.1.1. This Lighting Impact Assessment has been prepared by DFL (Designs for Lighting Ltd), a leading lighting design consultancy renowned for delivering expert Lighting Impact Assessments, innovative obtrusive light mitigation strategies, and precision-engineered lighting designs.
- 1.1.2. The Lighting Impact Assessment is intended to set out a minimally obtrusive approach to the lighting, whilst ensuring it is necessary and considers the sensitivity of nearby human and ecology receptors.
- 1.1.3. The Lighting Impact Assessment assessed the proposed lighting for development Land at Uplands, West Ashton Road, (referred to as Application Site hereafter).
- 1.1.4. The Proposed Development is:
- "Full planning application for the demolition of existing dwelling ('Uplands') and erection of 40 dwellings with associated public open space, landscaping and sustainable urban drainage system. Removal of existing access and provision of new replacement vehicular access to West Ashton Road"*
- 1.1.5. Lighting associated with the Proposed Development will follow relevant British Standards and Institution of Lighting Professionals (ILP) guidance to ensure obtrusive light is minimised in accordance with best practice.
- 1.1.6. A Lighting Strategy (**Appendix 1**) has been developed for the Proposed Development. This Lighting Impact Assessment assesses the potential effects of the lighting proposed within this strategy on receptors that have been identified surrounding the Application Site.
- 1.1.7. This report outlines the following:
- > Relevant obtrusive light policies in direct relation to the Proposed Development,
 - > Relevant National and Local Policies,
 - > Relevant Guidance Documents,
 - > Why the Proposed Development requires artificial lighting,
 - > Details as to how lighting will be implemented for the Proposed Development,
 - > The existing lighting conditions within and surrounding the Application Site,
 - > Those locations that are sensitive to lighting, and;
 - > The potential effects of the proposed lighting on those areas that have been identified as sensitive to lighting.

2. LEGISLATIVE FRAMEWORKS AND NATIONAL POLICIES

2.1. Environmental Protection Act 1990 / Clean Neighbourhoods and Environment Act 2005

- 2.1.1. Since 2005, artificial light has been incorporated as a potential statutory nuisance. An amendment to section 79 of the Environmental Protection Act 1990, contained within the Clean Neighbourhoods and Environment Act 2005 states:

"The following matters constitute "statutory nuisances" for the purposes of this Part, that is to say— [...]

[...] artificial light emitted from premises so as to be prejudicial to health or a nuisance;

[...]and it shall be the duty of every local authority to cause its area to be inspected from time to time to detect any statutory nuisances which ought to be dealt with under section 80 and, where a complaint of a statutory nuisance is made to it by a person living within its area, to take such steps as are reasonably practicable to investigate the complaint".

2.2. National Planning Policy Framework 2024 (Amended 2025)

- 2.2.1. The National Planning Policy Framework (NPPF) sets out the government's planning policies for England and how they are expected to be applied and provides a framework for local plans. With regard to light pollution, the NPPF was updated in February 2025 and states that the following elements are to be considered:

"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:

- *mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life;*
- *identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and*
- *limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation."*

2.3. Planning Practice Guidance

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

"The following questions indicate matters that may need to be considered in relation to managing the effects of light pollution:

- *Does an existing lighting installation make the proposed location for a development unsuitable, or suitable only with appropriate mitigation? For example, this might be because:*
- *the artificial light has a significant effect on the locality; and/or*
- *users of the Proposed Development (e.g., a hospital) may be particularly sensitive to light intrusion from the existing light source.*

Where necessary, development proposed in the vicinity of existing activities may need to put suitable mitigation measures in place to avoid those activities having a significant adverse effect on residents or users of the proposed scheme, reflecting the agent of change principle. Additional guidance on applying this principle is set out in the planning practice guidance on noise.

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

Paragraph 002 Ref ID: 31-002-20191101 revision 01 11 2019

3. LOCAL POLICES

3.1. Introduction

- 3.1.1. The relevant Local Planning Authority (LPA) for the Proposed Development is Wiltshire Council with policies detailed within the Wiltshire Core Strategy (Adopted January 2015) applying to the lighting associated with the Proposed Development.

The applicable policies are:

“Core Policy 50: Biodiversity and geodiversity

It is vital that all stages of sustainable development are informed by relevant ecological information, from site selection and design to planning decisions and long-term management. All effects should be considered, including positive and negative, direct and indirect, cumulative, and on and offsite impacts over the lifetime of the development (including construction, operational and restoration phases), also giving consideration to disturbance effects such as noise, lighting, recreational pressures, trampling, traffic, domestic pets, vandalism etc.”

“Core Policy 57: Ensuring high quality design and place shaping

the sensitive design of advertisements and signage, which are appropriate and sympathetic to their local setting by means of scale, design, lighting and materials”.

- 3.1.2. The relevant Local Highway Authority (LHA) for the Application Site is Wiltshire Council, who have published an adoptable specification for lighting systems as detailed in the documents:

- Lighting Spec Rev S - Residential Generic (LED and CMS)

3.2. Lighting Spec Rev S - Residential Generic (LED and CMS)

- 3.2.1. The document is the residential street lighting specification for Wiltshire, that provides guidance for designing LED-based lighting systems with Central Management System (CMS) integration. It outlines required standards (primarily BS5489-1:2020) for selecting appropriate lighting classes based on road type and environment and specifies the use of energy-efficient LED lanterns (typically 3000K) with dimming capabilities to reduce output during low-usage periods. It details approved equipment such as column types, lantern models, control gear, and photocells, along with requirements for maintenance factors, glare control, and photometric performance.
- 3.2.2. The specification also covers electrical infrastructure, including isolators, wiring, unmetered power supplies, and CMS compatibility (notably Telensa systems), as well as additional elements like illuminated traffic signs, bollards, and powered bus shelters. Finally, it sets out strict requirements for technical design submissions, including positioning of lighting units, drawing standards, and compliance checks necessary for approval and adoption by the local authority.

4. BRITISH STANDARDS

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

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

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

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

5. GUIDANCE

5.1. Institution of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2021

- 5.1.1. The Lighting Strategy and this Lighting Impact Assessment is informed by industry guidance notes GN01:2021 which aim to reduce the potential for obtrusive light to occur, which is typically caused by poorly designed and installed exterior artificial lighting.

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	Astronomical Observable dark skies, UNESCO starlight reserves, IDA Dark Sky Parks.
E1	Natural	Intrinsically dark	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, etc.
E2	Rural	Low district brightness	Sparsely inhabited rural areas, Village or relatively dark outer suburban locations.
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres or suburban locations.
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity.

Table 1: Environmental Zone Descriptions

Zones	Sky Glow ULR ¹ (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre-Curfew	Post-Curfew ²	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	0 (1*) ³	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2: Obtrusive Light Criteria

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

² Curfew refers to a time when the local planning authority has agreed that the lighting installation should be switched off; this typically refers to 23h00 – 07h00.

³ If the installation is for public (road) lighting, then this may be up to 1 lx

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

- 5.2.1. This document is aimed at lighting professionals, lighting designers, planning officers, developers, bat workers/ecologists and anyone specifying lighting. It is intended to raise awareness of the impacts of artificial lighting on bats, and mitigation is suggested for various scenarios. However, it is not meant to replace site-specific ecological and lighting assessments.
- 5.2.2. Based on the information provided the following limitations are recommended
- Horizontal light levels are not exceeding 0.2 lux⁴
 - Vertical light levels are not achieve greater than 0.4 lux⁹ between 1.5mtrs and 6.5 mtrs above ground level ⁵
 - Correlated Colour Temperature (CCT) will be equal to or less than 2700K⁶
- 5.2.3. Where standardised mitigation is to be used, the Bat Conservation Trust Guidance (BCT), Landscape and urban design for bats and biodiversity ⁷is consulted using the following methods in conjunction with ILP guidance (GN08).
- Minimum light for safety is to be used n(AS per British Standards or relevant guidance documents)
 - Flat cut-off lanterns are to be proposed
 - The most appropriate narrow spectrum light will be used avoiding blue wavelengths (less than 2700K)
 - Pedestrian lighting in close proximity will be targeted below 3 Lux
 - Increased lantern spacing
 - Lighting of only high risk stretches of roads allowing headlights to provide necessary illumination at other times.
 - Limiting the times of use to provide dark periods
 - Use of temporary close-boarded fencing until vegetation matures shielding sensitive areas from lighting.
 - Deployment of hop-over at crown height, hop over vegetation, hop over vegetation and walls and viaduct bridges.
- 5.2.4. Whilst lighting will be designed to comply with the GN08:2023 criteria for creation of a dark corridor (horizontal of 0.2 lux and vertical of 04 lux) any break in a foraging route will either be reconnected, diverted or mitigated where possible.

⁴ GN08:2023 Paragraph 4.54 page38

⁵ GN08:2023 paragraph 4.56 page 39 for 1.5m height, 6.5m height based on the underside of an established tree canopy.

⁶ GN08:2023 paragraph 4.29 page 29, BCT Bats and Lighting, Overview of current evidence and Mitigation paragraph 3.1.1 page 22.

⁷ BCT Landscape and Urban design for bats and biodiversity page 28 and page 29

5.3. **PLG04:2013 Guidance on Undertaking Environmental Lighting Impact Assessment**

- 5.3.1. This document is aimed at lighting professionals and provides a methodology for undertaking Lighting Impact Assessments.
- 5.3.2. This includes guidance on conducting:
- Desktop Assessments, including the assessment of Environmental Zones
 - Lighting Baseline Surveys
 - How to conduct obtrusive light calculations for a Proposed Development, and where these are appropriate⁸.
- 5.3.3. This has informed the methodological approach to the Lighting Impact Assessment, but not the process of assessing the significance of an effect.

5.4. **Design Manual for Roads and Bridges – LA 104 Environmental Assessment and Monitoring Revision 1**

- 5.4.1. This document outlines the process for assessing the significance criteria of an effect. While it is primarily intended as guidance for the environmental assessment of roads, and the application site may not directly align with the specific purpose of this guidance, it is considered one of the most robust frameworks for addressing environmental impact and is therefore consulted during the preparation of this documentation.
- 5.4.2. This process is a widely adopted across the UK and provides a recognised approach for the assessment of significant residual effects. This process has also been widely applied to lighting within the UK.
- 5.4.3. This has directly informed Table 3 - Table 7.

⁸ All obtrusive light calculations will be compared to guidance from ILP GN01:2021 and ILP BCT GN08:2023

5.5. Bat Special Areas of Conservation (SAC) – Planning Guidance for Wiltshire

- 5.5.1. The Bat Special Areas of Conservation (SAC) Planning Guidance for Wiltshire is a technical framework designed to ensure that development projects do not adversely affect three internationally protected bat sites: Bath and Bradford-on-Avon Bats, Chilmark Quarries, and Mottisfont. Focusing on the conservation of Greater Horseshoe, Lesser Horseshoe, and Bechstein's bats, the document establishes specific "Consultation Zones" where developers must conduct rigorous, full-season ecological surveys to identify how bats use the landscape for commuting and foraging. It emphasizes the preservation of "Functionally Linked Land"—such as hedgerows and dark corridors—and sets strict limits on light pollution (typically below 0.5 lux) to prevent habitat fragmentation. Ultimately, the guidance mandates that all planning applications within these zones undergo a Habitats Regulations Assessment (HRA), requiring developers to prioritize the avoidance of impact or provide robust mitigation and financial contributions to maintain the "favourable conservation status" of these sensitive species.

6. METHOD OF ASSESSMENT AND SIGNIFICANCE CRITERIA

6.1. Methodology

- 6.1.1. The assessment has been carried out in accordance with the published guidance documents from the ILP and Highways standards. These quantify impacts to surroundings, the levels of direct upward light, light intrusion, viewed source intensity and glare regarded as acceptable for varying environmental zones.
- 6.1.2. The methodology employed for this Lighting Impact Assessment is appropriate to the location of the Application Site. It comprises:
 - A review of the legislative, policy and guidance context,
 - Consultation with the design team and relevant stakeholders,
 - A desktop study and site survey in which the baseline conditions were established (Environmental Zone),
 - The conducting of obtrusive light calculation bases on the Lighting Strategy (**Appendix 1**)
- 6.1.3. The methodology takes guidance from the Institution of Lighting Professionals PLG 04 document “Guidance on Undertaking Environmental Lighting Impact Assessments” with the significance criteria coming from the Highways standard DMRB V11 (LA104) model of assessing impact.

6.2. Significance Criteria

- 6.2.1. Sensitivity of the receptor is classified as Very High, High, Medium, Low, or Negligible, as outlined in **Table 3**.
- 6.2.2. Magnitude of change is evaluated as Major, Moderate, Minor, Negligible, No Change, Adverse, or Beneficial, with detailed descriptions provided in **Table 4**.
- 6.2.3. The significance of an effect from artificial lighting is assessed by first determining the sensitivity of the receptor and the magnitude of change at that receptor under the revised conditions.
- 6.2.4. The significance category is determined using the matrix within **Table 6** and the significance of an effects is defined in **Table 7**.
- 6.2.5. The duration of the effect is established in accordance with **Table 5**, and this informs the magnitude of change assessment.
- 6.2.6. Residual effects are the effects (as defined in **Table 7**) that remain after all feasible mitigation measures have been applied to a Proposed Development — for example, a Moderate effect may be reduced to Slight or Neutral with effective mitigation.

Sensitivity	Description of Criteria
Very High	Very high importance and rarity, international scale and very limited potential for substitution. The environment is fragile, and an impact is likely to leave it in an altered state from which recovery would likely be impossible.
High	High importance and rarity, national scale, and limited potential for substitution. The environment is fragile, and an impact is likely to leave it in an altered state from which recovery would be difficult or impossible.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution. The environment has a degree of adaptability and resilience and is likely to accommodate the changes caused by an impact, although there may still be some residual modification as a result.
Low	Low or medium importance and rarity, local scale. The environment is adaptable and is resilient to change. Nearly all impacts can be absorbed within it without modifying the baseline conditions.
Negligible	Very low importance and rarity, local scale. Receptor has little or no night-time activity.

Table 3: Criteria for Receptor Sensitivity

Magnitude of Change		Definition of Change
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements. Example: A large increase in light levels at the receptor, exceeding guidance limits (including breaches of higher category limits).
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality. Example: A large reduction in light levels at the receptor, bringing them from well above the guidance limit to within or below it.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements. For example: Increase in light levels reaching the receptor that are breaching the guidance threshold, but not significantly above the limit.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality. Example: A decrease in light levels at the receptor, bringing them within or just below the guidance limit.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements. Example: An increase in light levels at the receptor up to, but not exceeding, the guidance limit.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring. Example: A decrease in light levels at the receptor to below the existing likely baseline
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements. Example: Increase in light levels reaching the receptor that are below the guidance threshold but above natural variation.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements. Example: Decrease in light levels reaching the receptor, but where the existing lighting was not resulting in a breach in guidance thresholds.
No Change		No Change from baseline condition (light levels reaching receptor are within the limits of natural variation), this will be deemed "negligible" when assessed as a magnitude of change.

Table 4: Criteria for Magnitude of Change (+/- = Baseline – Proposed Design)

Duration	Definition
Short Term	A period of months up to one year
Medium Term	A period of one year, up to five years
Long Term	A period of greater than five years

Table 5: Definitions of Duration of Effect

Significance of Effect Matrix		Magnitude of Change				
		No Change	Negligible	Minor	Moderate	Major
Sensitivity	Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
	High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
	Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
	Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
	Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Table 6: Significance of Effect Matrix

Significance Category / Residual Effect	Typical Description
Very Large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

Table 7: Definitions of significance Categories / Residual Effect

- 6.2.7. The approach to assigning significance of effect relies on reasoned argument, the professional judgement of competent experts and using effective consultation to ensure the advice and views of relevant stakeholders are taken into account.
- 6.2.8. Significant effects typically comprise residual effects that are within the Moderate, Large or Very Large categories.

6.3. Study Area

6.3.1. The purpose of the study area is to provide a reasonable area to conduct the Lighting Impact Assessment within. It will include:

- Sufficient area to provide a robust understanding of the lighting baseline surrounding and within the Application Site.
- Include all receptors that can reasonably be expected to experience effects of lighting.

6.3.2. The study area for the assessment of the effects of lighting is based on several factors. These are:

- The size of the Application Site:
 - The larger the Application Site the larger the study area.
- The lighting being proposed:
 - The brighter the lighting the larger the study area,
 - The larger the volume of proposed lighting the larger the study area.
- The number of identified receptors and distance of these receptors from the Application Site:
 - The greater the number of receptors and the larger the distance of any identified receptors are from the Application Site, the larger the study area will be.

6.4. Classification of Environmental Zone

6.4.1. To understand the restrictions needed to keep the implementation of lighting to a minimum, we use what is classified as an environmental zone, this is rated from E0 to E4. An environmental zone is given its designation based on the context of the surrounding environment as defined by the ILP in GN01:2021 (see **Section 5**).

6.5. Potential Effects from Artificial Light

6.5.1. The potential effects on human receptors and the surrounding environment are evaluated based on their adherence to the limitations outlined in the relevant ILP guidance. This guidance, GN01:2021, outlines restrictions on such things as light intrusion, luminous source intensity and upward light ratio (or sky glow). The tables outlining the restrictions are in the **Section 5**.

6.5.2. As the needs of ecology differ from those of a human amenity or human safety receptor a separate set of guidance (GN08:2023), is used to evaluate the effects of lighting on the most light sensitive ecology receptors (Bats). An explanation of the implementation and restrictions to protect light sensitive ecology, such as bats, is outlined in **Section 5**.

6.5.3. The following parameters of obtrusive light will be assessed upon the relevant receptors:

- Light Spill
- Light Intrusion

6.5.4. The effects assessment for the Proposed Development is based on the Lighting Strategy (**Appendix 1**) and the obtrusive light calculations (

7. SITE ASSESSMENT

7.1. Site Description and Context

- 7.1.1. The Application Site is within the outer area of the town of Trowbridge, Wiltshire. This consists of open field space surrounded with treelines.
- 7.1.2. The Proposed Development is for a residential development, with a primary road that connects to West Ashton Road, with shared surfaces that connect the residential dwellings. This is surrounded by landscaping arrangements. The proposed site plan can be seen in **Figure 1**.



Figure 1 - Proposed Site Plan

7.2. Study Area

7.2.1. The study area of lighting effects extends 3 km from the centre of the Application Site.

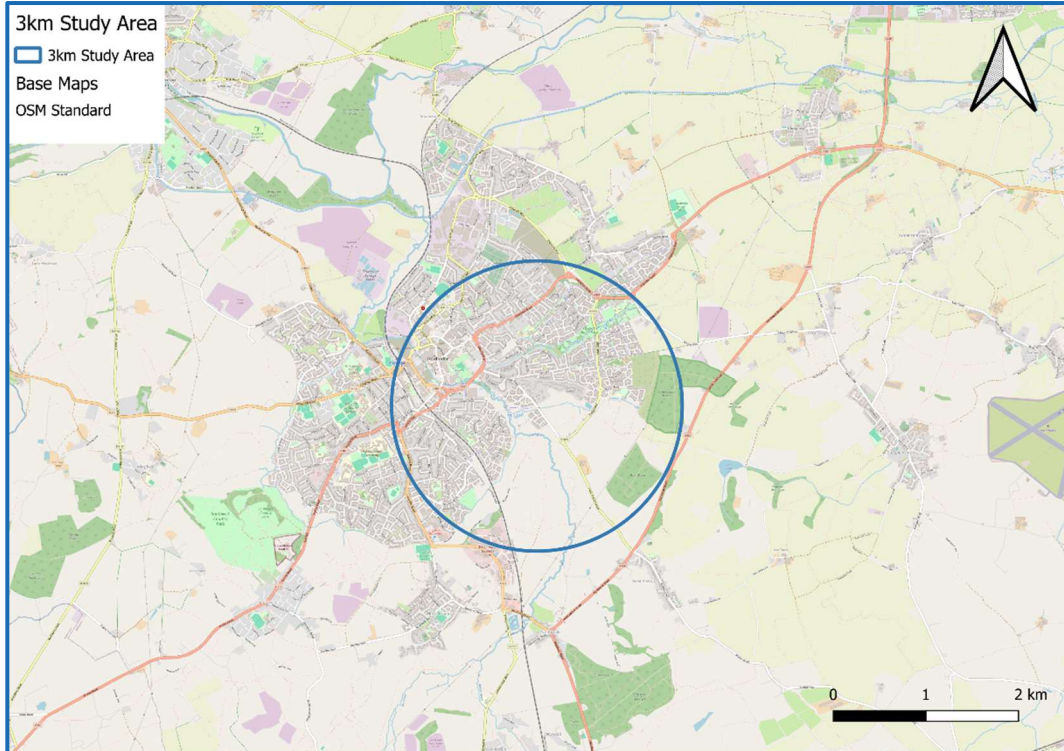


Figure 2: Study Area

7.2.2. The study area is used because it captures all receptors that could be impacted by the effects of lighting within the Proposed Development, and it also provides a reasonable area for the lighting baseline to be assessed.

7.3. Designations

- 7.3.1. There is a not designated Special Area of conservation (SAC), Sites of Specific Scientific Interest (SSSI) or National Landscape (Formerly AONB) within a radius of approximately 3km of the Application Site.
- 7.3.2. The Application Site is approximately 730 metres from the Smiths Well Wood Ancient Woodland and approximately 600 metres from the Biss Wood Ancient Woodland.

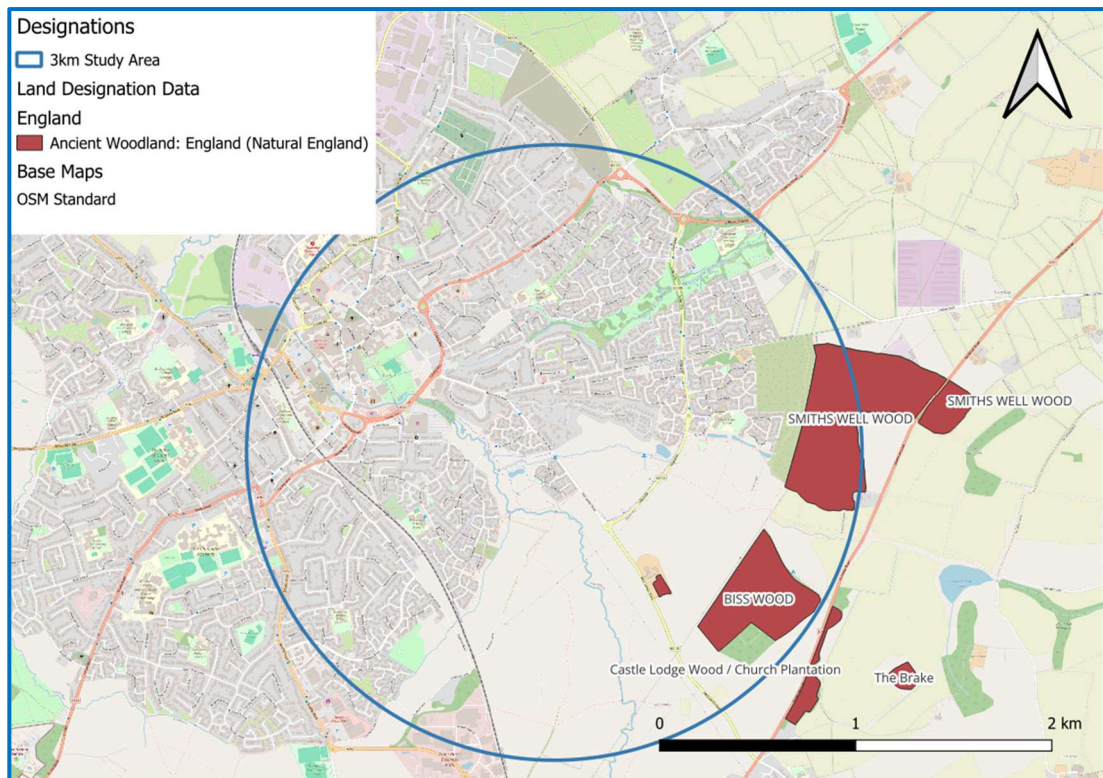


Figure 3 - Designations

7.4. Local Character

- 7.4.1. The Application Site consists primarily of open field space with surrounding treelines, with a public right of way bordering the southern side.
- 7.4.2. The surrounding area consists of residential dwellings on the western side along West Ashton Road, dwellings on the northern side along Lodge Crescent and dwellings on the eastern side along Leap Gate.
- 7.4.3. Further northwest, Trowbridge town centre is approximately 1.2km from the Application Site.

7.5. Baseline Lighting

- 7.5.1. The baseline lighting within the Application Site is predominantly dark due to the open field space that doesn't have existing lighting within it.
- 7.5.2. The surrounding area of the Application Site consists of streetlighting along West Ashton Road, Leap Gate and the roundabout that connects these. This can be seen in **Figure 4**.



Figure 4 - Existing Lighting along West Ashton Road

- 7.5.3. There are existing streetlighting columns on the roundabout for West Ashton Road and Leap Gate (**Figure 5**).



Figure 5 - Existing Lighting on the roundabout of West Ashton Road and Leap Gate (Google Maps, May 2024)

- 7.5.4. There are also streetlighting columns along Leap Gate, southeast of the Application Site (**Figure 6**).



Figure 6 - Existing streetlighting along Leap Gate (Google Maps, May 2024)

- 7.5.5. **Figures 4-6** show that the area surrounding the Application site contains existing streetlighting, which contributes to an existing baseline illuminance.

7.6. Environmental Zone Classification

- 7.6.1. The environmental zone criteria detailed within **Table 1** and **Table 2** informs the basis of the Lighting Impact Assessment.
- 7.6.2. The Application Site and the surrounding area is semi-rural, due to its vicinity to residential housing to the north and west and its vicinity to arable fields to the south and southeast. It fits the description of *“Sparsely inhabited rural areas, village or relatively dark outer suburban locations”*.
- 7.6.3. The lighting classes used within the Proposed Development, and the limitation placed on the lighting in terms of its environmental effect are informed by the requirements for an E2 environmental zone (**Appendix 1** and **Table 8**).

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

Table 8: Limitations of the Environmental Zone

8. IDENTIFIED RECEPTORS

8.1. General

- 8.1.1. The locations of the Identified Potential Sensitive Receptor in relation to the Application Site can be seen in **Appendix 4**.

8.2. Ecological

- 8.2.1. Based on the ecology document “**3183-PEAR-AG V2 - Preliminary Ecological Appraisal - Uplands, West Ashton Road, Trowbridge**” - **GE Consulting Services**, there are areas of ecological sensitivity within and surround the Application Site. The Lighting Strategy is to adhere to guidance from ILP GN08:2023.
- 8.2.2. The ecology receptors with sensitivity to lighting are detailed in **Table 9**.

Receptor Type	Receptor No.	Description	Sensitivity
Ecology	PSER 001	Woodland within Application Site	High
Ecology	PSER 002	Southern boundary of Application Site	High

Table 9: Sensitive Ecological Receptors (PSER)

8.3. Human Amenity

- 8.3.1. Human amenity receptors have been identified surrounding the Application Site. The human amenity receptors to lighting are detailed in **Table 10**.

Receptor Type	Receptor No.	Description	Sensitivity
Human Amenity	PHAR 001	Residential Dwellings along West Ashton Road 01	Medium
Human Amenity	PHAR 002	Residential Dwellings along West Ashton Road 02	Medium
Human Amenity	PHAR 003	Residential Dwellings along Lodge Crescent	Medium

Table 10: Human Amenity Receptors (PHAR)

9. LIGHTING BASELINE SURVEY

9.1. Overview

- 9.1.1. The baseline lighting survey was conducted on 15/04/2026 to provide an objective assessment of the lighting baseline levels within and surrounding the Application Site. This survey consisted of recorded illuminance levels, and photography of the existing lighting at night. The full survey report can be seen in **Appendix 2**.
- 9.1.2. Illuminance measurements were taken in the horizontal plane and in the vertical plane facing north, east, south, and west. This totalled 5 illuminance readings per measurement location. 37 illuminance measurement points were taken across the Application Site and surrounding area, resulting in 185 readings.
- 9.1.3. The illuminance measurements recorded across the Application Site confirm that baseline conditions are intrinsically dark, with the majority of readings, particularly Locations 10–34, consistently registering ≤ 0.05 Lux. A significant proportion of measurement points recorded 0.00 Lux confirming that large areas of the site experience complete darkness under existing conditions.
- 9.1.4. The photography taken adds context to the intrinsically dark nature of the Application Site as although the illuminance readings were low, external light sources were visible to the north, east, south and west of the Application Site. **Figure 7** provides a visual of the existing external lighting of the dwelling within the Application Site from the east of the Application Site facing west.



Figure 7: Photography taken within the Application Site during nighttime survey

10. ASSESSMENT OF EFFECTS

10.1. Overview

- 10.1.1. This assessment assumes that the lighting is installed as per the Lighting Strategy (**Appendix 1**) and the lighting calculations that have been conducted for the Proposed Development as detailed in **Appendix 3**.
- 10.1.2. The Light Spill Diagram shows significant areas of the Proposed Development which are intended to be lit and areas that are intended to be maintained in darkness.
- 10.1.3. Lighting effects for the most part will be contained within the lit areas of the Proposed Development. This combined with the mitigation by design (**Table 11**) and the Lighting Strategy will ensure that any lighting effects are minimised.

10.2. Mitigation by Design

- 10.2.1. This assessment is carried out with all the mitigation detailed in the Lighting Strategy (**Appendix 1**) included in the lighting design. This mitigation by design is also detailed within (**Table 11** and **Table 24**).

Mitigation Name	Description of Mitigation	Installation Location
Restricting the Upward Light Output Ratio	All luminaires will have an Upward Light Output Ratio of 0% and will be certified by Darksky.org.	Whole Proposed Development
Restricting Luminaire Tilt	All luminaires will be installed with a 0° as standard, in line with Wiltshire Council's residential lighting specification.	Whole Proposed Development
Glare Class Restriction	All luminaires for street lighting will have a minimum Glare Class of G3.	Whole Proposed Development
Rear Louvres & Shields	Manufacturers often provide "back light optics" where back light mitigation is integrated on the lenses of the luminaires. This is the preferred option as it provides the greatest degree of control. Where this is not available, traditional back light shields can be used. Columns 4D and 5D are to be fitted with rear shields to minimise the effects of light spill onto the ecological receptor.	Whole Proposed Development: Where luminaires are installed on the boundary of an area facing into the site. Especially if adjacent to areas of ecological interest.
Using the lowest possible Correlated Colour Temperature	Throughout the Proposed Development the standard Correlated Colour Temperature used will be ≤2700K as per Wiltshire Council's residential lighting specification, due to the vicinity of the ecological receptors.	Whole Proposed Development

Mitigation Name	Description of Mitigation	Installation Location
Using the lowest applicable lighting levels for tasks and areas	All areas and tasks will be lit using the lowest applicable lighting levels as defined in the relevant British Standard. This will ensure a standard and recognised levels of light are provided for all areas of the Proposed Development, while ensuring no area is over lit. During the detailed lighting design, a risk assessment must be undertaken to help defined the specific lighting class for any area. If any guidance encourages the increase in the lighting level compared to the British Standard, the British Standard level must take precedence.	Whole Proposed Development
Control Systems	Wiltshire Council's residential lighting specification includes a dimming regime of: 100% output – Dusk to 8pm. 75% output 8pm to 11pm 50% output 11pm to 6am 100% output 6am to Dawn This is to be adopted for the Proposed Development	Subsidiary Roads within the Proposed Development.
Using the minimum practical mounting height	All luminaires will be mounted at the minimum practical mounting height for the area or task. This will reduce the visibility of the luminaires in the landscape, by allowing surrounding trees and buildings to act as blocking features to direct views of luminaires.	Whole Proposed Development
Using appropriate optics for the areas being illuminated	The luminaire optic used will be specific to the area being lit. This will ensure the task and area is lit to a standard level of light, while also allowing the lux contours to be shaped to the specific areas. This will help reduce light spill out of area and either over lighting or under lighting area. This will also prevent the need to tilt luminaires and will reduce light spill and upward light.	Whole Proposed Development

Mitigation Name	Description of Mitigation	Installation Location
Only using Luminaires where Photometry is Available from the Manufacturer	Luminaires will be used with integral LEDs and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.	Whole Proposed Development

Table 11: Mitigation by Design

10.3. Obtrusive Light Calculations

- 10.3.1. Vertical Light Spill calculations have been conducted for the assessed human and ecological receptors (**Table 12** and **Table 13**).
- 10.3.2. Full details of the vertical light spill calculations can be found in **Appendix 3**.
- 10.3.3. All illuminance calculations have been conducted using a maintenance factor of 1.0 to represent worst case scenario.

Human Receptors

- 10.3.4. As detailed in **Table 12** and **Appendix 3**, the human receptor illuminance results do not exceed the guidance requirements from ILP GN01:2021 for an area identified as an E2 environmental zone.

Receptor Number	Requirements of GN01:2021 for the Environmental Zone (E2)		Calculated Maximum Result
	[lux]		
	Pre-Curfew	Post-Curfew	
PHAR 001	5	1	0.00
PHAR 002	5	1	0.02
PHAR 003 #1	5	1	0.07
PHAR 003 #2	5	1	0.10
PHAR 003 #3	5	1	0.10
PHAR 003 #4	5	1	0.12
PHAR 003 #5	5	1	0.38
PHAR 003 #6	5	1	0.02
PHAR 003 #7	5	1	0.00

Table 12: Light Intrusion Calculations

Ecology Receptors

- 10.3.5. As detailed in **Table 13** and **Appendix 3**, the ecological receptors illuminance results do not exceed 0.4 Lux. This is compliant with the recommendations made by the BAT Conservation Trust and ILP GN08:2023.

Receptor Number	Requirements from GN08:2023 [lux]	Calculated Maximum Result
PSER 001 #1	<0.5	0.38
PSER 001 #2	<0.5	0.33
PSER 001 #3	<0.5	0.39
PSER 002 #1	<0.5	0.01
PSER 002 #2	<0.5	0.00
PSER 002 #3	<0.5	0.00
PSER 002 #4	<0.5	0.00

Table 13: Light Spill Calculations

10.4. Magnitude of Change

- 10.4.1. By comparing the modelled illuminance levels at the sensitive receptors with the recommendations made in GN01:2021 and GN08:2023 the magnitude of change is assessed.

Receptor	Magnitude of Change Assessment	Magnitude of Change	Duration
PHAR 001	As shown in Table 12 and Appendix 3, this receptor will not experience illuminance above the post-curfew 1 Lux limit for an E2 environmental zone as detailed within ILP GN01:2021. There will be No Change in the lit environment near this receptor. Therefore, the magnitude of change is assessed as No Change.	No Change	Long Term
PHAR 002	As shown in Table 12 and Appendix 3, this receptor will not experience illuminance above the post-curfew 1 Lux limit for an E2 environmental zone as detailed within ILP GN01:2021. The maximum value of 0.02 Lux as shown in Table 12, is lower than the baseline survey illuminance result nearest to the receptor (Table 26 - Point 36). There will be No Change in the lit environment near this receptor. Therefore, the magnitude of change is assessed as No Change.	No Change	Long Term
PHAR 003	As shown in Table 12 and Appendix 3, this receptor will not experience illuminance above the post-curfew 1 Lux limit for an E2 environmental zone as detailed within ILP GN01:2021. The maximum value of 0.38 Lux as shown in Table 12, is higher than the recorded baseline values nearest to the receptor.	Negligible Adverse	Long Term

	There will be a slight change in the lit environment near this receptor. Therefore, the magnitude of change is assessed as Negligible		
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Table 14: Magnitude of Change Assessment (PHAR)

Receptor	Magnitude of Change Assessment	Magnitude of Change	Duration
PSER 001	As shown in Table 13 and Appendix 3, this receptor will not experience illuminance levels above the guidance requirements of 0.4 Lux in ILP GN08:2023. The maximum value of 0.39 Lux as show in Table 13, is higher than the baseline survey illuminance result nearest to the receptor (Table 26 – Point 008 and 009). There will be a slight change in the lit environment near tis receptor. Therefore, the magnitude of change is assessed as Minor Adverse.	Minor Adverse	Long Term
PSER 002	As shown in Table 13 and Appendix 3, this receptor will not experience illuminance levels above the guidance requirements of 0.4 Lux in ILP GN08:2023. The maximum value of 0.01 Lux as show in Table 13, is in line with the baseline survey illuminance result nearest to the receptor boundary (Table 26 – Points 24 - 35). There will be no change in the lit environment near this receptor. Therefore, the magnitude is assessed as no change.	No Change	Long Term

Table 15 - Magnitude of Change Assessment (PSER)

10.5. Significance of Effect

- 10.5.1. Based on the sensitivity of the receptor (Table 9 and Table 10) and the magnitude of change (Table 14) the significance of effect is predicted by using significance of the effect matrix (Table 6).

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
PHAR 001	Medium	No Change	Neutral
PHAR 002	Medium	No Change	Neutral
PHAR 003	Medium	Negligible Adverse	Neutral or Slight

Table 16: Assessment of Significance of Effect (PHAR)

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
PSER 001	High	Minor Adverse	Slight or Moderate
PSER 002	High	No Change	Neutral

Table 17: Assessment of Significance of Effect (PSER)

- 10.5.2. The residual effect on all human amenity receptors and heritage receptors is assessed as being **Neutral (Not Significant)**.
- 10.5.3. The residual effect on ecology receptor PSER 001 is considered to be **Slight (Not Significant)**. This is due to both the baseline illuminance result at reading number 8 and 9, compared with the vertical illuminance result of the proposed lighting. There is a **Slight** increase from the baseline but this is still below <0.5 Lux as per the guidance from the BCT and ILP GN08:2023, which is considered not significant.
- 10.5.4. The residual effect on ecology receptor PSER 002 is considered to be **Neutral (Not Significant)**.
- 10.5.5. These effects are not considered significant in terms of lighting. There will be no effects above those limits defined within ILP GN01:2021 or ILP GN08:2023.

11. ASSUMPTIONS AND LIMITATIONS

- 11.1.1. Several assumptions have been made in the completion of the Lighting Strategy and this Lighting Impact Assessment. These will be confirmed or amended during the detailed design stage once full details of the design constraints have been confirmed.
- 11.1.2. It is assumed that the speed limit of all roads within the Proposed Development will be ≤ 30 mph, and that carparking will not be allowed on any roadways except in allocated spaces.
- 11.1.3. The traffic flow through the Proposed Development will be normal⁹ and of residential use. Normal traffic flow is defined within BS 5489-1:2020 as:
- “Normal traffic flow refers to areas where the traffic usage is of a level equivalent to a housing estate access road.”*
- 11.1.4. According to Police UK, the area surrounding the Application Site in Trowbridge experiences a moderate crime rate. Data obtained from the Police.uk website indicates a crime rate of approximately 60 total reported crimes per 1,000 people in 2024. This figure is slightly below the wider police force average of around 65 total reported crimes per 1,000 people for the same period, suggesting that Trowbridge performs broadly in line with, but marginally better than, the overall force area in terms of crime levels.¹⁰.
- 11.1.5. Several third-party sources have been used in the creation of the Lighting Strategy and Lighting Impact Assessment. DFL-UK have used this information to conduct an initial assessment of the baseline lighting conditions and the Environmental Zone of the Application Site, as well as to identify several of the receptors relevant to the Proposed Development. DFL-UK cannot guarantee the accuracy of this data, and relies on this for indicative assessment only. Where available, primary data has been used and will be used to inform the detailed lighting designs. Examples of the third-party sources are:
- > Department for Transport Data
 - > Police UK Data
- 11.1.6. It is assumed that the lighting installation will be installed by a suitable qualified and competent contractor and the principles detailed within the Lighting Strategy (**Appendix 1**) will be followed.

⁹ [Road Traffic UK](#)

¹⁰ [Police.UK - Compare Your Area](#)

12. CONCLUSION

12.1. General

- 12.1.1. Lighting associated with the Proposed Development shall be designed in accordance with the Lighting Strategy for the Application Site outlined in **Appendix 1**.
- 12.1.2. The Lighting Strategy has been written in accordance with the relevant industry guidance and local policies, ensuring that it is unlikely to give rise to obtrusive light with the potential to significantly affect human, environmental and ecological receptors.
- 12.1.3. Through the application of the Lighting Strategy, human receptors will not be significantly affected by obtrusive light. There will be at worst a **Neutral (not significant)** residual effect on the Human Amenity Receptors, and this is not considered significant due to the results of the obtrusive light calculations.
- 12.1.4. Through the application of the Lighting Strategy, ecological receptors will not be significantly affected by obtrusive light. There will be at worst a **Neutral (not significant)** residual effect on Ecology Receptor 002, and **Slight (not significant)** on Receptor 001. This is not considered significant due to the results of the obtrusive light calculations.
- 12.1.5. There will be a change in the lighting baseline levels due to the Proposed Development.

13. SUMMARY OF EFFECTS

13.1.1. The summary of the effects from lighting can be seen in **Table 18**.

Receptor	Sensitivity	Magnitude of Change (Adverse or Beneficial)	Duration	Significance of Effect	Addition Mitigation (if required)	Magnitude of Change After Addition Mitigation (Adverse or Beneficial)	Final Residual Effect (Adverse or Beneficial)
PHAR 001	Medium	No change	Long Term	Neutral	N/A	N/A	N/A
PHAR 002	Medium	No change	Long Term	Neutral	N/A	N/A	N/A
PHAR 003	Medium	No change	Long Term	Neutral	N/A	N/A	N/A
PSER 001	High	Minor Adverse	Long Term	Slight or Moderate	N/A	N/A	N/A
PSER 002	High	No change	Long Term	Neutral	N/A	N/A	N/A

Table 18: Summary of Lighting Effects

APPENDIX 1

Lighting Strategy

14. LIGHTING STRATEGY

14.1. Introduction

- 14.1.1. The Proposed Development will require lighting for safety and amenity during the hours of darkness. Lighting will be fit for purpose and sensitive to nearby human and ecological receptors.
- 14.1.2. The following criteria seeks to ensure that the lighting is not outside of the obtrusive light limits for the environmental zone in which the Proposed Development is located, is sensitive to the area, and provides a recognised standard level of lighting for all adoptable areas requiring illumination.
- 14.1.3. Lighting will be of an appropriate specification and designed in accordance with British Standards.

14.2. The Proposed Development

- 14.2.1. Lighting to an adoptable specification will be required in the following areas:
 - > Spine Road
 - > Shared Surfaces
- 14.2.2. Lighting to a private specification will be required in the following task areas:
 - > Dwellings (fronts and rears)

14.3. Spine Road

- 14.3.1. The spine road will be illuminated in accordance with BS 5489-1:2020 and BS EN 13201-2:2015 for safety, amenity and wayfinding purposes. The lowest practical lighting levels are proposed within this Lighting Strategy.
- 14.3.2. Performance requirements for the main spine road are outlined in **Figure 8**.
- 14.3.3. Following a risk assessment, the lighting class will remain as recommended in BS 5489-1:2020.

Lighting classes for subsidiary roads			
Traffic flow	Lighting class		
	E1 to E4 ^{A)}	E1 to E2 ^{A)}	E3 to E4 ^{A)}
	Pedestrian and cyclists only	Speed limit $v \leq 30$ mph	Speed limit $v \leq 30$ mph
Busy ^{B)}	P5	P4	P3
Normal ^{C)}	P5	P5	P4
Quiet ^{D)}	P6	P5	P4

Figure 8: Performance Requirements from BS 5489-1:2020

Area	Class	BS 5489-1:2020 Requirements		MF used
		Eav Lux	Min ¹¹	
Spine Road	P5	3-4.5	0.6	0.87

Table 19: Design Parameters BS 5489-1:2020

¹¹ Minimum required lux level

14.4. Operational Equipment for Spine Road

Equipment Specification	
Application Area	Spine Road (adoptable)
Correlated Colour Temperature [Kelvin / K]	≤3000K
Luminaire Manufacturer	Urbis Schreder (or similar approved)
Luminaire Model	Axia 3 (or similar approved)
Light Source	LED
Height [m]	≤6m
Mounting Arrangement	Post top
Luminaire Tilt [°]	0°
Glare Glass (G Class)	G3
Upward Light Output Ratio [%] E4 < 15%	0%
Example Luminaire Image	
Controls ¹²	Telensa CMS via DALI protocol compatible Control Specification to follow Wiltshire Council

Table 20: Luminaire performance requirements – Spine Road

¹² Dimming: when dimming is applied it is announced as a percentage still in use of the total percentage output (dimmed too, not dimmed by).

14.5. Shared Surfaces

- 14.5.1. The shared surfaces will be illuminated in accordance with BS 5489-1:2020 and BS EN 13201-2:2015 for safety, amenity and wayfinding purposes. The lowest practical lighting levels are proposed within this Lighting Strategy.
- 14.5.2. Performance requirements for the subsidiary roads are outlined in **Figure 9**.
- 14.5.3. Following a risk assessment, the lighting class will remain as recommended in BS 5489-1:2020.

Lighting classes for subsidiary roads			
Traffic flow	Lighting class		
	E1 to E4 ^{A)}	E1 to E2 ^{A)}	E3 to E4 ^{A)}
	Pedestrian and cyclists only	Speed limit $v \leq 30$ mph	Speed limit $v \leq 30$ mph
Busy ^{B)}	P5	P4	P3
Normal ^{C)}	P5	P5	P4
Quiet ^{D)}	P6	P5	P4

Figure 9: Performance Requirements from BS 5489-1:2020

Area	Class	BS 5489-1:2020 Requirements		MF used
		Eav Lux	Min ¹³	
Subsidiary Roads	P5	3-4.5	0.6	0.82

Table 21: Design Parameters BS 5489-1:2020

¹³ Minimum required lux level

14.6. Operational Equipment for Shared Surfaces

Equipment Specification	
Application Area	Shared Surfaces (adoptable)
Correlated Colour Temperature [Kelvin / K]	≤3000K
Luminaire Manufacturer	Urbis Schreder (or similar approved)
Luminaire Model	Axia 3 (or similar approved)
Light Source	LED
Height [m]	≤5m
Mounting Arrangement	Post top
Luminaire Tilt [°]	0°
Glare Glass (G Class)	G3
Upward Light Output Ratio [%] E4 < 15%	0%
Example Luminaire Image	
Controls ¹⁴	Telensa CMS via DALI protocol compatible Control Specification to follow Wiltshire Council

Table 22: Luminaire performance requirements – Shared Surfaces

¹⁴ Dimming: when dimming is applied it is announced as a percentage still in use of the total percentage output (dimmed too, not dimmed by).

14.7. Dwellings (fronts and rears)

14.7.1. The dwellings fronts and rears will be illuminated for amenity and wayfinding purposes.

Equipment Specification	
Application Area	Dwellings (fronts and rears)
Correlated Colour Temperature [Kelvin / K]	≤3000K
Luminaire Manufacturer	Ligman (or similar approved)
Luminaire Model	Gino (or similar approved)
Light Source	LED
Height [m]	≤2m
Mounting Arrangement	Wall mounted
Luminaire Tilt [°]	0°
Upward Light Output Ratio [%] E4 < 15%	0%
Example Luminaire Image	
Controls ¹⁵	PIR sensors – off 30 seconds after no movement detected

Table 23: Luminaire performance requirements – Dwellings (fronts and rears)

¹⁵ Dimming: when dimming is applied it is announced as a percentage still in use of the total percentage output (dimmed too, not dimmed by).

14.8. Mitigation by Design

14.8.1. **Table 24** details the mitigation by design that is included within the Lighting Strategy.

Mitigation Name	Description of Mitigation	Installation Location
Restricting the Upward Light Output Ratio	All luminaires will have an Upward Light Output Ratio of 0% and will be certified by Darksky.org.	Whole Proposed Development
Restricting Luminaire Tilt	All luminaires will be installed with a 0° as standard, in line with Wiltshire Council's residential lighting specification.	Whole Proposed Development
Glare Class Restriction	All luminaires for street lighting will have a minimum Glare Class of G3.	Whole Proposed Development
Rear Louvres & Shields	Manufacturers often provide "back light optics" where back light mitigation is integrated on the lenses of the luminaires. This is the preferred option as it provides the greatest degree of control. Where this is not available, traditional back light shields can be used. Columns 4D and 5D are to be fitted with rear shields to minimise the effects of light spill onto the ecological receptor.	Whole Proposed Development: Where luminaires are installed on the boundary of an area facing into the site. Especially if adjacent to areas of ecological interest.
Using the lowest possible Correlated Colour Temperature	Throughout the Proposed Development the standard Correlated Colour Temperature used will be ≤3000K as per Wiltshire Council's residential lighting specification. Where there are areas of specific ecological sensitivity the lighting near this area will be dropped to ≤2700K.	Whole Proposed Development
Using the lowest applicable lighting levels for tasks and areas	All areas and tasks will be lit using the lowest applicable lighting levels as defined in the relevant British Standard. This will ensure a standard and recognised levels of light are provided for all areas of the Proposed Development, while ensuring no area is over lit. During the detailed lighting design, a risk assessment must be undertaken to help defined the specific lighting class for any area. If any guidance encourages the increase in the lighting level compared to the British Standard, the British Standard level must take precedence.	Whole Proposed Development
Dimming	Wiltshire Council's residential lighting specification includes a dimming regime of: 100% output – Dusk to 8pm.	Subsidiary Roads within the Proposed Development.

Mitigation Name	Description of Mitigation	Installation Location
	75% output 8pm to 11pm 50% output 11pm to 6am 100% output 6am to Dawn This will be adopted for the Proposed Development.	
Using the minimum practical mounting height	All luminaires will be mounted at the minimum practical mounting height for the area or task. This will reduce the visibility of the luminaires in the landscape, by allowing surrounding trees and buildings to act as blocking features to direct views of luminaires.	Whole Proposed Development
Using appropriate optics for the areas being illuminated	The luminaire optic used will be specific to the area being lit. This will ensure the task and area is lit to a standard level of light, while also allowing the lux contours to be shaped to the specific areas. This will help reduce light spill out of area and either over lighting or under lighting area. This will also prevent the need to tilt luminaires and will reduce light spill and upward light.	Whole Proposed Development
Only using Luminaires where Photometry is Available from the Manufacturer	Luminaires will be used with integral LEDs and only where the luminaire photometry is available from the manufacturer. This is to ensure the photometric footprint of the luminaires can be modelled to ensure the potential effects of light spill are minimised or mitigated.	Whole Proposed Development

Table 24: Mitigation by Design Table

APPENDIX 2

Lighting Baseline Survey

15. BASELINE LIGHTING SURVEY REPORT

15.1. Introduction

- 15.1.1. This Lighting Survey Report has been written by DFL (Designs for Lighting Ltd), a lighting design consultancy specialising in Lighting Impact Assessments, obtrusive light mitigation, and detailed lighting design.
- 15.1.2. The Lighting Survey Report assesses the existing lighting installed within the land at Uplands, West Ashton Road and the existing lighting environment surrounding this area.
- 15.1.3. The baseline lighting survey was conducted on 15/04/2026 to provide an objective assessment of the lighting baseline levels within and surrounding the Application Site. This survey consisted of recorded illuminance levels, and photography of the existing lighting at night.
- 15.1.4. The lighting survey was carried out by two quality and competent lighting professionals with experience of conducting such surveys.

15.1. Methodology

- 15.1.1. Illuminance measurements were taken on the horizontal plane with the illuminance meter being placed on the ground above the measurement point, and on the vertical plane at approximately 1.5 m in height facing north, east, south, and west. This totalled 5 illuminance readings per measurement location.
- 15.1.2. Measurements were taken using a Konica Minolta T-10A illuminance meter (serial number: 20015648) which has a current calibration certificate (certificate no: STD_137059). A copy of the calibration certificate can be found in **Section 15.8**. This is a handheld illuminance meter.
- 15.1.3. All photography was recorded in locations within and surrounding the Application Site, to provide an overview of the existing lighting, and to provide context to the illuminance readings that were recorded.
- 15.1.4. Photographs were recorded using a DSLR camera mounted on a tripod.
- 15.1.5. The location of all illuminance measurements and the photography locations can be seen in **Section 15.6**.

15.1. Weather Conditions During the Survey

Date	Astronomical Twilight	Moon Phase	Weather Conditions (night)	Night-time Phase Start
15/04/2026	21:24 – 22:13	Third Quarter	Clear	21:26

Table 25: Weather Conditions During Lighting Survey

15.2. Illuminance Measurements

Reading number	Eh	Ev North	Ev East	Ev South	Ev West
1	0.15	0.05	0	0.05	0.34
2	0.05	0	0.03	0.01	0.12
3	0.2	0.19	0.03	0.04	0.32
4	0	0	0	0.01	0
5	0	0	0	0.01	0
6	0.01	0.24	0	0	0.02
7	0.01	0.11	0	0	0.07
8	0.04	0.13	0	0.01	0.24
9	0.04	0.07	0	0.03	0.24
10	0	0	0.05	0	0
11	0	0	0	0	0.01
12	0	0	0	0	0
13	0	0	0	0	0
14	0	0	0	0	0
15	0	0	0	0	0
16	0	0	0	0	0
17	0	0	0	0.02	0.04
18	0	0	0	0.01	0.03
19	0	0	0	0.01	0.02
20	0	0	0	0.01	0.02
21	0	0	0	0	0
22	0	0	0	0	0
23	0	0	0	0	0
24	0	0	0	0	0
25	0	0.01	0	0	0
26	0	0.01	0	0	0
27	0	0.02	0.01	0	0
28	0	0	0	0	0
29	0	0	0	0	0.02
30	0	0.02	0	0	0.02
31	0	0.02	0	0	0.02
32	0	0.02	0	0	0.02
33	0	0.02	0	0	0
34	0	0.02	0	0	0
35	0.08	0	0	0.05	0.24
36	7.66	4.87	0.61	1.3	5.22
37	13.09	8.76	6.1	3.09	3.7

Table 26: Baseline Illuminance Results

- 15.2.1. The illuminance measurements recorded across the Application Site confirm that baseline conditions are intrinsically dark, with the majority of readings, particularly Locations 10–34, consistently registering ≤ 0.05 Lux.
- 15.2.2. A significant proportion of measurement points recorded 0.00 Lux confirming that large areas of the site experience complete darkness under existing conditions.
- 15.2.3. Readings 1-3 and 35 facing west demonstrated elevated levels of illuminance than the intrinsic darkness of the rest of the Application Site due to lighting levels being received from column lighting on West Ashton Road adjacent to the Application Site.
- 15.2.4. Readings 1-9 facing north were taken facing areas relating to the existing dwelling on site. The existing dwelling had wall mounted exterior lighting which demonstrated an influence on the

received Lux levels, as these levels were increased in comparison to the intrinsically dark nature of the wider site.

- 15.2.5. Readings 36 & 37 were taken at photography locations 5 & 6 along West Ashton Road and demonstrate that the existing column lighting provides a moderate level of existing illuminance in the surrounding area of the Application Site.

15.3. Nighttime Photography

- 15.3.1. To provide some visual context to the illuminance readings photography has been recorded across the Application Site.
- 15.3.2. The photography taken during the lighting survey can be seen below (Figure 10 - Figure 22).

Photography Location 1 – Photo 1 Facing East



Figure 10: View from Photography Location 1 – Photo 1

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

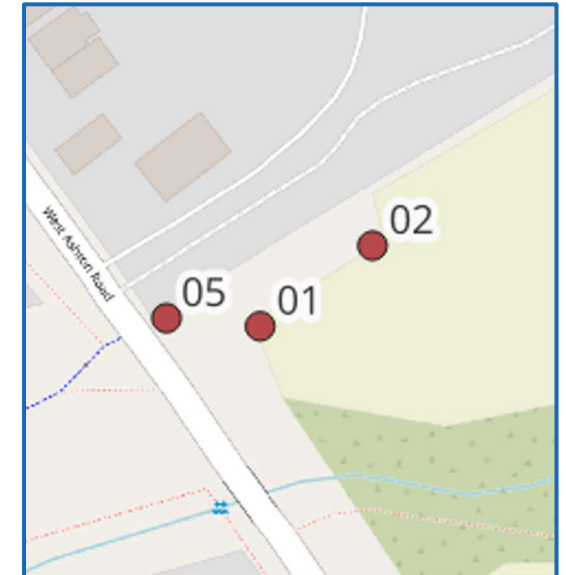


Photo Parameters:

F-stop: f/8

Exposure Time: 8 sec

ISO Speed: ISO-200

Exposure Bias: 0 step

Focal Length: 18 mm

Max Aperture: 3.6

Photography Location 2 – Photo 1 Facing West



Figure 11: View from Photography Location 2 – Photo 1

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 should be set to maximum brightness.

Location:

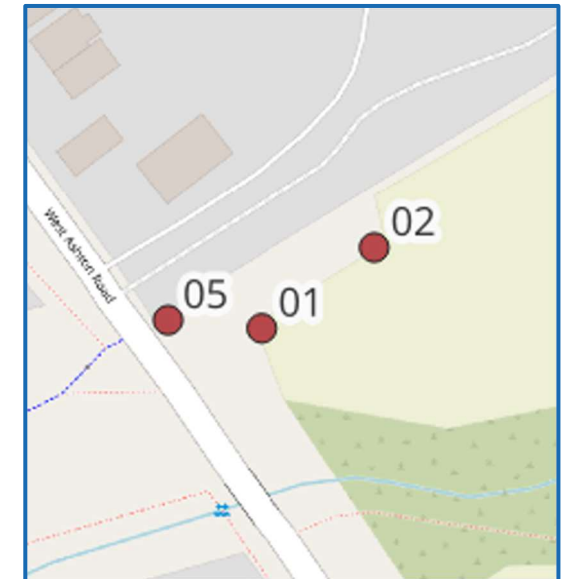


Photo Parameters:

F-stop: f/8
 Exposure Time: 10 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

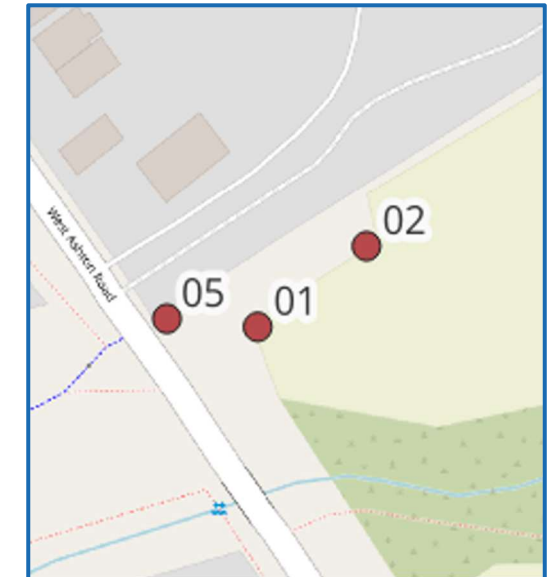
Photography Location 2 – Photo 2 Facing Southwest



Figure 12: View from Photography Location 2 – Photo 2

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 should be set to maximum brightness.

Photo Location:



Parameters:

F-stop: f/8
 Exposure Time: 8 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 3 – Photo 1 Facing West



Figure 13: View from Photography Location 3 – Photo 1

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

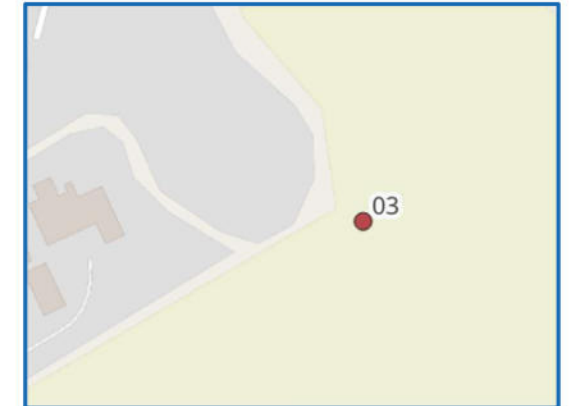


Photo Parameters:

F-stop: f/8
 Exposure Time: 8 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Location:

Photography Location 3 – Photo 2 Facing North



Figure 14: View from Photography Location 3 – Photo 2

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 should be set to maximum brightness.

Location:

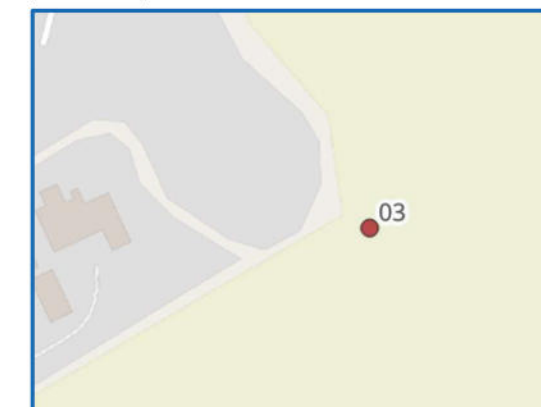


Photo Parameters:

F-stop: f/8
 Exposure Time: 15 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 3 – Photo 3 Facing East



Figure 15: View from Photography Location 3 – Photo 3

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 should be set to maximum brightness.

Location:

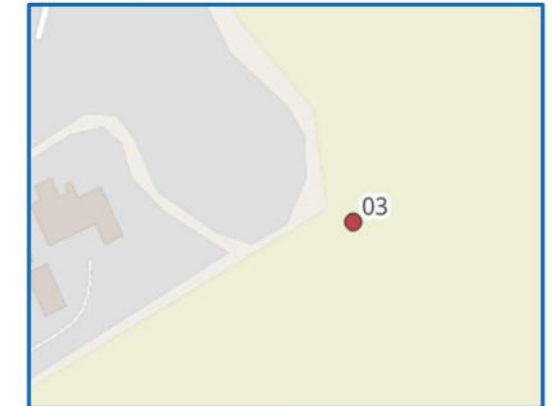


Photo Parameters:

F-stop: f/8
 Exposure Time: 25 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 3 – Photo 4 Facing South



Figure 16: View from Photography Location 3 – Photo 4

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 should be set to maximum brightness.

Location:

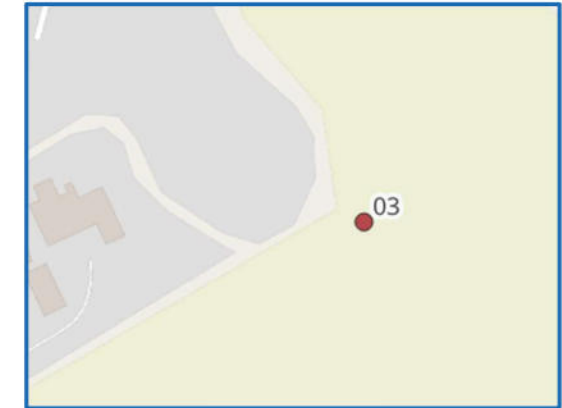


Photo Parameters:

F-stop: f/8
 Exposure Time: 15 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Location:

Photography Location 4 – Photo 1



Figure 17: View from Photography Location 4 – Photo 1

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 should be set to maximum brightness.

Location:

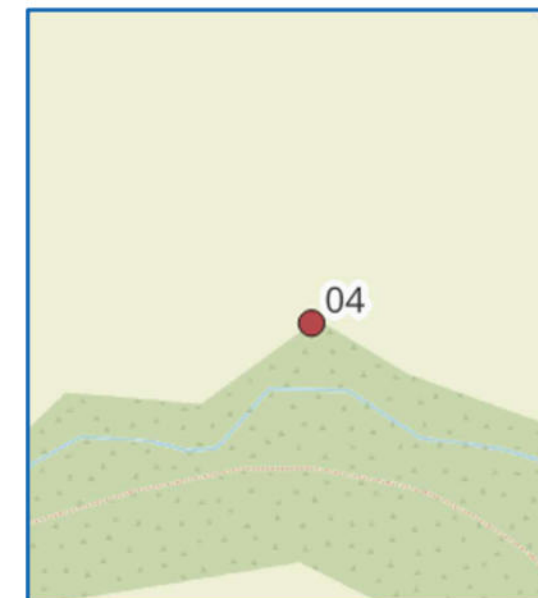


Photo Parameters:

F-stop: f/8
 Exposure Time: 20 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 4 – Photo 2 Facing North



Figure 18: View from Photography Location 4 – Photo 2

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

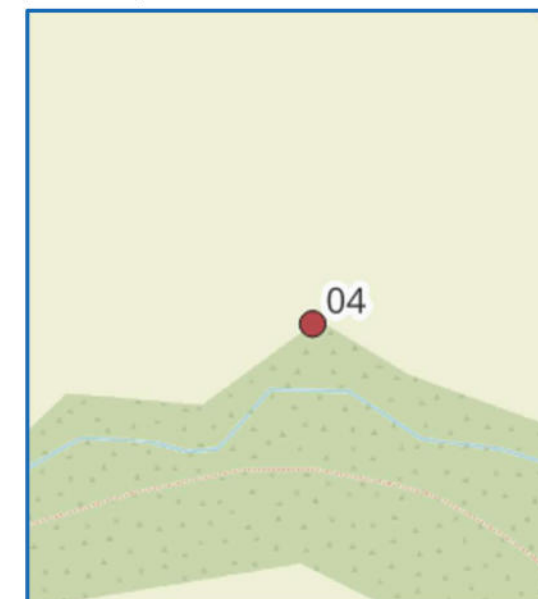


Photo Parameters:

F-stop: f/8
 Exposure Time: 25 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 4 – Photo 3 Facing Northeast



Location:

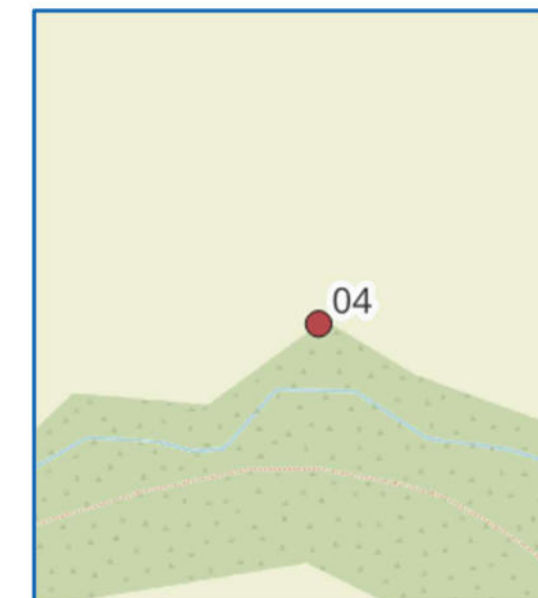


Photo Parameters:

F-stop: f/8
 Exposure Time: 30 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Figure 19: View from Photography Location 4 – Photo 3

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Photography Location 5 – Photo 1 Facing Southwest



Figure 20: View from Photography Location 5 – Photo 1

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

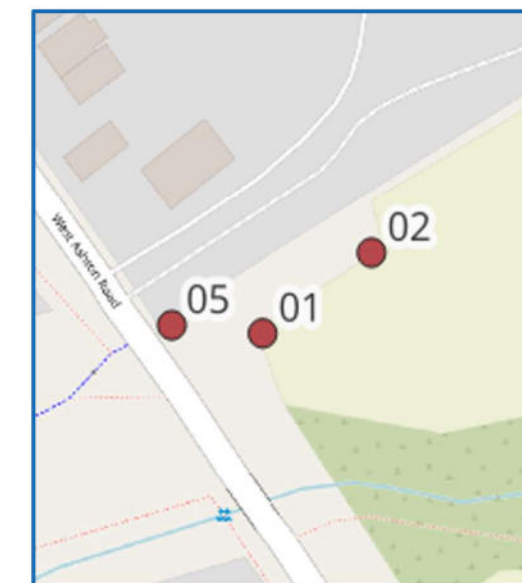


Photo Parameters:

F-stop: f/8
 Exposure Time: 2 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

Photography Location 5 – Photo 2 Facing Northwest



Figure 21: View from Photography Location 5 – Photo 2

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

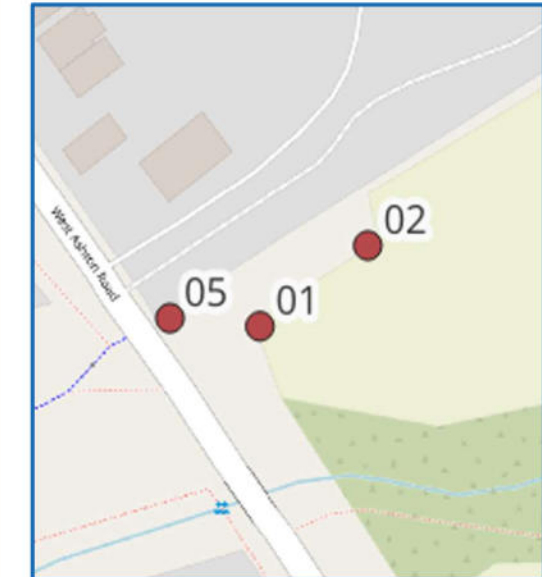


Photo Parameters:

F-stop: f/8
 Exposure Time: 4 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 4

Photography Location 6 – Photo 1 Facing South



Figure 22: View from Photography Location 6 – Photo 1

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 and the brightness of the screen used to view
 should be set to maximum brightness.

Location:

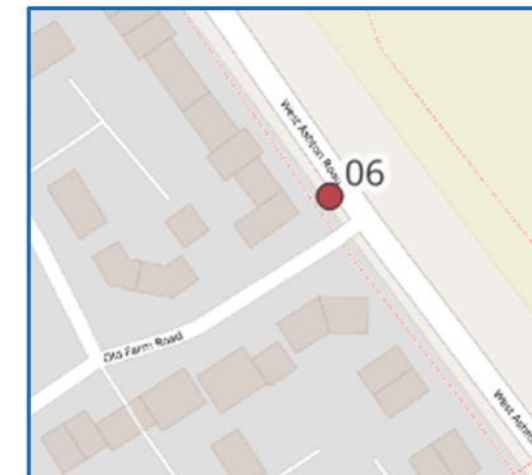


Photo Parameters:

F-stop: f/8
 Exposure Time: 2 sec
 ISO Speed: ISO-200
 Exposure Bias: 0 step
 Focal Length: 18 mm
 Max Aperture: 3.6

15.4. Lighting Baseline Summary

- 15.4.1. The photography of the existing lighting within and surrounding the Application Site demonstrates that although the illuminance readings were close to 0 Lux, existing lighting is visible within the Application Site.
- 15.4.2. Figure 11, Figure 12, Figure 13, Figure 16 and Figure 19 show that the column lighting for roadways, including West Ashton Road and surrounding the Application Site is visible through the hedgerows and treelines even though minimal lighting levels were received.
- 15.4.3. Figure 10, Figure 15 and Figure 19 show that existing lighting associated with residential dwellings to the east of the Application Site is visible within the site.
- 15.4.4. **Figure 16** demonstrates the sky glow that was visible from existing lighting to the south of the Application Site. This adds further context to the illuminance readings taken within the Application Site as although the readings were negligible, lighting was still visible.
- 15.4.5. Figure 20, Figure 21 and Figure 22 were taken on West Ashton Road to visualise the column lighting that was visible within the Application Site. Columns layouts were similar for Leap Gate Road to the south and east of the Application Site which also contextualises the photos taken in these directions.
- 15.4.6. The dwellings of Lodge Court to the north of the Application Site also exhibited exterior lighting that was visible from within the Application Site, as shown in **Figure 14**, **Figure 18** and **Figure 19**.
- 15.4.7. The existing dwelling within the Application Site had exterior lighting which was switch on for the duration of the survey. **Figure 13** and **Figure 17** best capture the exterior lighting of the existing residential dwelling. However, the entrance lighting within the Application Site was set on a PIR sensor and therefore was not on during the survey as motion was not detected.

15.5. Conclusion

- 15.5.1. The baseline survey demonstrated that the Application Site is an intrinsically dark field shielded by existing treelines and hedgerows.
- 15.5.2. The illuminance measurements recorded were near zero throughout the Application Site, with only the external light sources of West Ashton Road to the west and the existing external lighting of the residential dwelling of the Application Site providing any influence on the recorded illuminance levels.
- 15.5.3. The photography taken within the Application Site added context to the intrinsically dark nature of the Application Site, as although the illuminance readings were low, external light sources were visible to the north, east, south and west of the Application Site.
- 15.5.4. To the east, south and west of the Application Site, column lighting for West Ashton Road and Leap Gate were visible through the treelines of the Application Site, despite having negligible influence on the illuminance levels received. To the south of the Application Site sky glow was particularly noticeable, although the source of the sky glow was unidentifiable.
- 15.5.5. External lighting from residential dwellings to the north and east of the Application Site, including the existing dwelling within the site was visible throughout the nighttime survey. However, only the existing external lighting from the residential dwelling within the Application Site had an influence on the illuminance measurements recorded.

15.6. Illuminance Measurement Locations

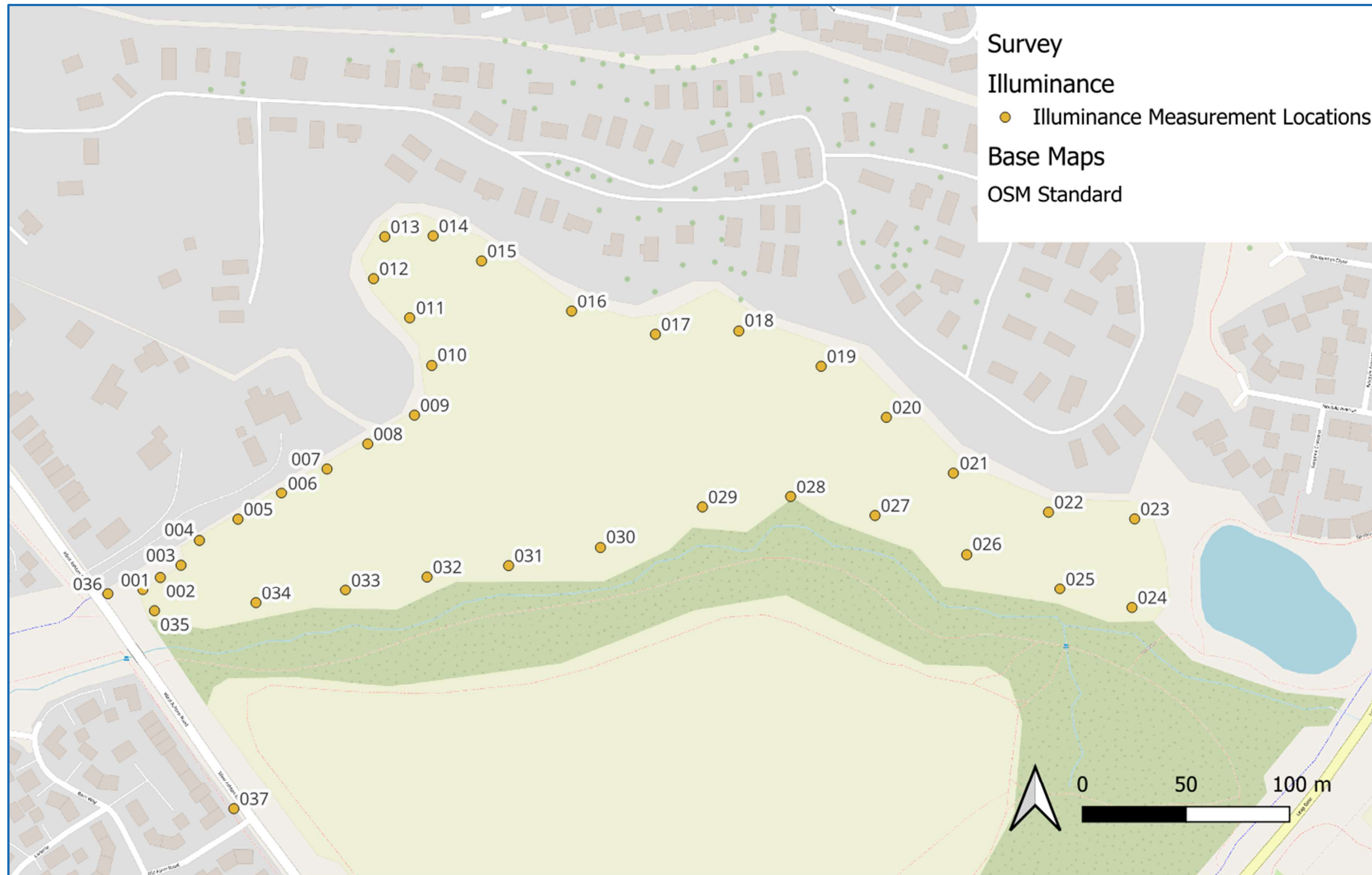


Figure 23: Illuminance Measurement Locations

15.7. Photography Locations

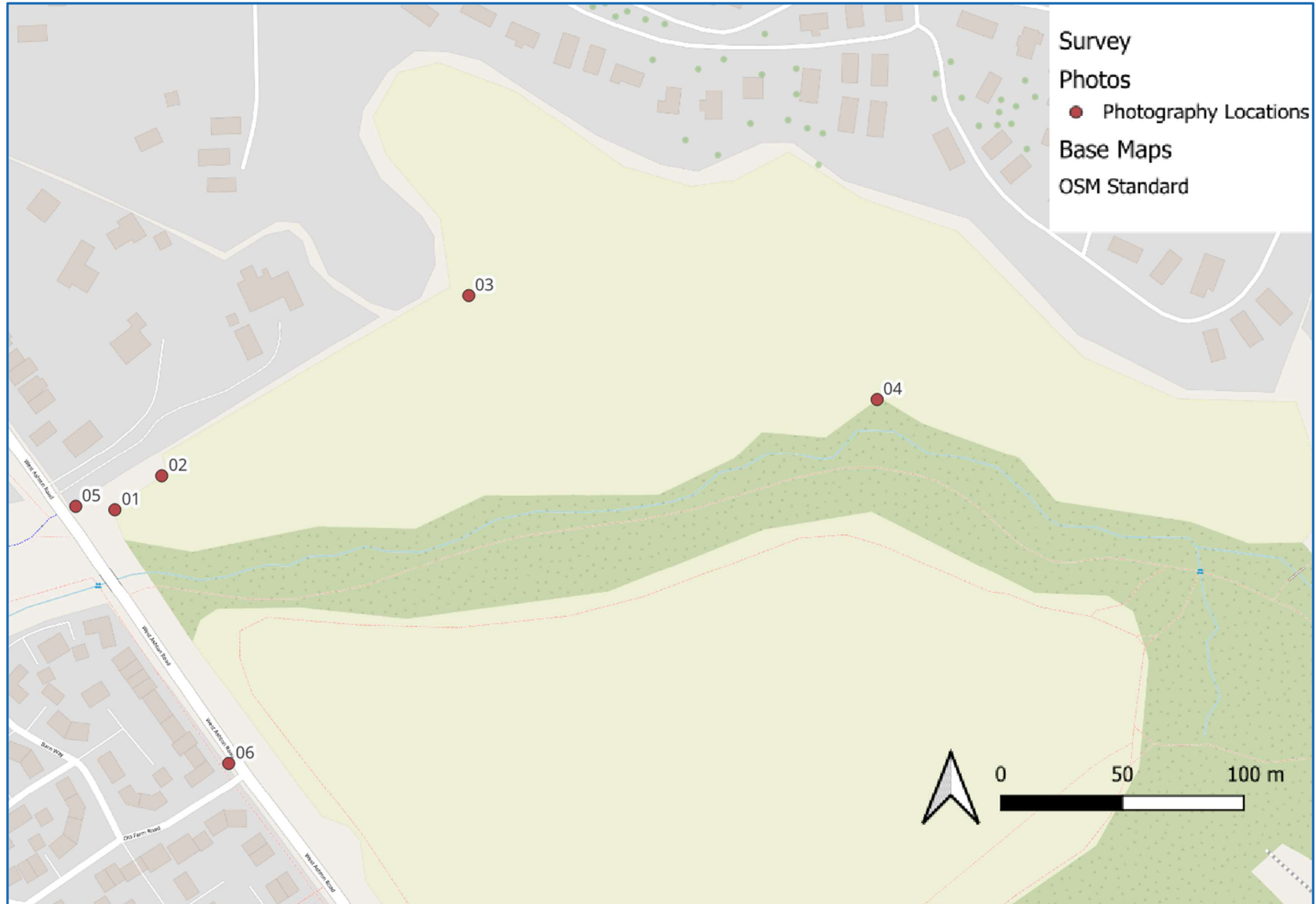


Figure 24: Photography Locations

15.8. Calibration Certificate for Illuminance Meter

Certificate of Calibration

Issued by: BSRIA Limited
Date of issue: 06 March 2026

Certificate number
STD_166082

Page 1 of 2 pages



LABORATORY ADDRESS
BSRIA HOUSE, Old Brocknell Lane West,
Brocknell, Berkshire RG12 7AH, UK
T: +44 (0) 1344 459 314 | 0800 254 5566
E: instruments@bsria.co.uk
W: www.bsria.com/uk/instrument/



Venkat Srinivasan
Approved signatory

Customer: Designs for Lighting UK Ltd
Fao Fran Goodyear 17 City Business Centre Hyde Street
Winchester Hampshire SO23 7TA

Date received: 27 February 2026

Instrument: BSRIA I.D.: 131075
Description: Light meter
Manufacturer: Konica Minolta
Model: T-10A
Serial number: 20015974
Procedure version: BLT264V1

Laboratory conditions:
Temperature: 20 °C ± 4 °C Relative humidity: < 75 %rh
Mains voltage: 240 V ± 10 V Mains frequency: 50 Hz ± 1 Hz

Comments:
Instrument calibration conducted as found - no adjustments undertaken.
This certificate only relates to the range shown within.
At time of calibration the instrument was fitted with the measurement head serial number 30018004.

Calibration information:
The instrument was calibrated by comparison against laboratory reference equipment whose values are traceable to recognised National Standards. This is an electronic document that has been signed digitally.

The uncertainties quoted refer to the calibration only and are not intended to indicate any long-term instrument specification/performance. This certificate only relates to the items calibrated and was performed at the above laboratory address.

Calibrated by: T. Hossain

Date of calibration: 06 March 2026

This certificate provides traceability of measurement to recognised National Standards, and to the units of measurement realised at the National Physical Laboratory or other recognised National Standards laboratories.
Copyright of this certificate is owned by the issuing laboratory and may not be reproduced except with the prior written approval of the issuing laboratory. This certificate complies with the requirements of BS EN ISO 10012:2003.

Figure 25: Illuminance Meter Calibration Certificate Page 1

Certificate of Calibration

As Found Results

Certificate number
STD_166082

Page 2 of 2 pages

Reference equipment used in the calibration:

Instrument description	Serial number	Certificate number	Last cal. date	Cal. period
Light Bench (ZZMLB02)	18425/2 & 18426/1	ZZMLB02 - March 2025	20/03/2025	12 Months
Light Bench (ZZMLB03)	18425/1 & 18427/1	ZZMLB03 - March 2025	20/03/2025	12 Months
Distance Measuring System (ZZMLB04)	4816	ZZMLB04 - March 2025	07/03/2025	12 Months

Calibration uncertainties:

Illuminance : 0 to 2000 lux ±5 % of applied value or 0.1 lux whichever is greatest.
Measurement uncertainty equals the above plus the devices resolution as reported in the results section, added in quadrature.

Calibration procedure, Illuminance:

The instrument was calibrated against laboratory standards which are themselves traceable back to National Standards.

The illuminance measurements were conducted in accordance with the methodology contained in BS 667 using a tungsten filament lamp with a colour temperature of 2856 k. Illuminance levels were calculated using an inverse square law with respect to distance away from a tungsten filament lamp source.

The light meters reference plane was taken to be the front face of the diffuser.

The illuminance meter was zeroed prior to calibration.

Calibration results, Illuminance:

Range	Applied	Indicated	Correction	Specification	% of Spec.	Comment
Auto	0.00 lux	0.00 lux	0.00 lux	±0.01 lux	0.0 %	
	50.0 lux	50.2 lux	-0.2 lux	±1.1 lux	18.2 %	
	100.0 lux	99.4 lux	0.6 lux	±2.1 lux	28.6 %	
	250.0 lux	246.8 lux	3.2 lux	±5.1 lux	62.7 %	
	500.0 lux	492 lux	8.0 lux	±11.0 lux	72.7 %	
	1000.0 lux	987 lux	13.0 lux	±21.0 lux	61.9 %	
2000.0 lux	1968 lux	32.0 lux	±41.0 lux	78.0 %		

Any test points marked with a * do not comply with instrument specification.

End.

Figure 26: Illuminance Meter Calibration Certificate Page 2

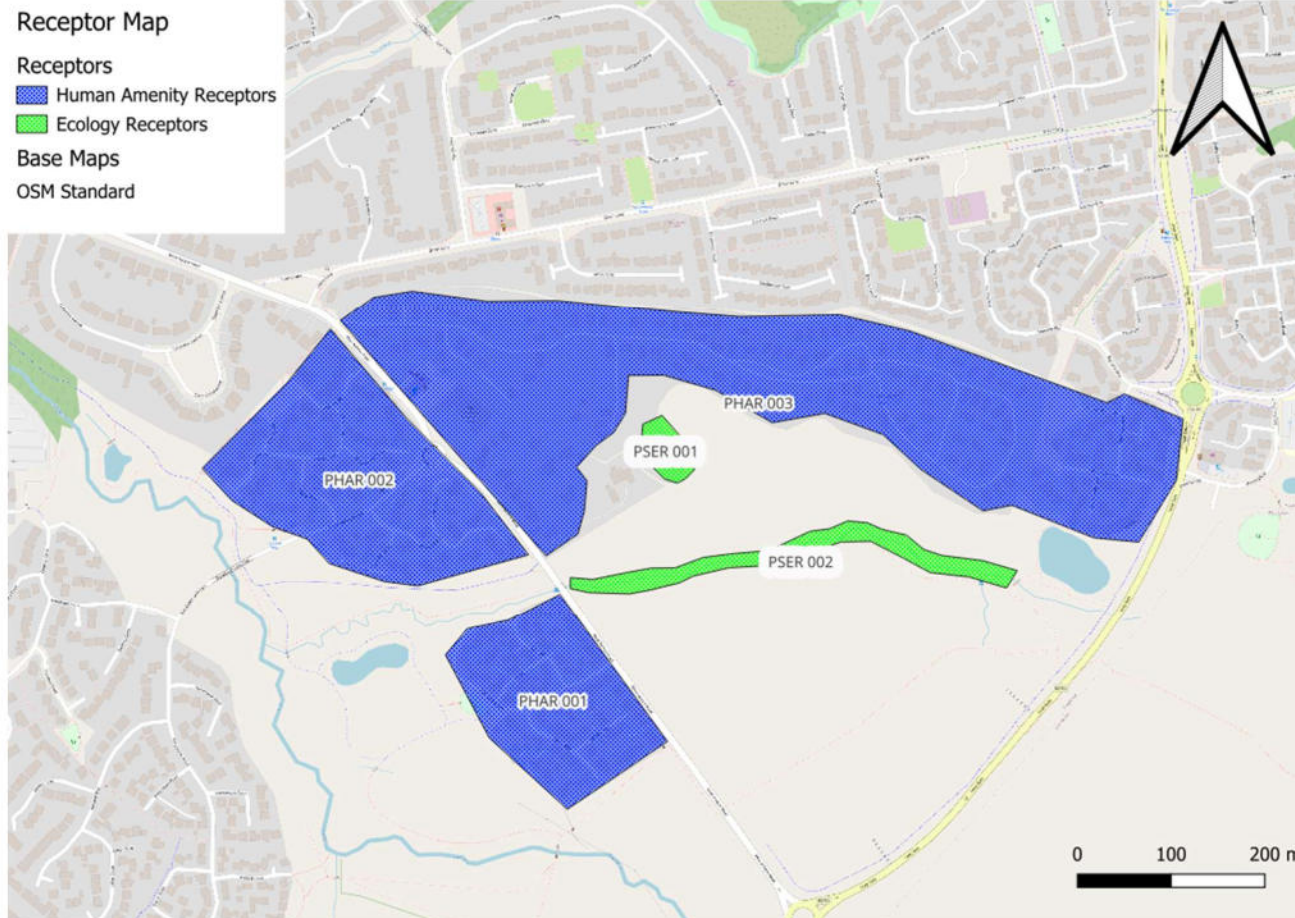
APPENDIX 3

Light Spill Diagram & Obtrusive Light Calculations

- > "4557-DFL-ELG-XX-CA-EO-13001"
- > "4557-DFL-ELG-XX-LD-EO-13001"

APPENDIX 4

Identified Receptor Maps



TECHNICAL DESCRIPTIONS, DEFINITIONS & ABBREVIATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

This isn't the end...

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

- **Lighting Impact and Planning** team that focus on delivering the most effective and sensitive lighting solutions to support planning.
- **Residential** teams that cover all aspects of new development and redevelopment spanning private, section 38 and section 278 design packages.
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