



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

UTILITA BOWL

LIGHTING IMPACT ASSESSMENT

DFL-UK

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Quality



Knowledgeable



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EXECUTIVE SUMMARY

A Lighting Impact Assessment has been undertaken for the proposed lighting scheme at the Utilita Bowl, the scheme has been completed by Abacus Lighting and subsequently the assessment is based on the information provided, this report is supported by a comprehensive survey to establish the existing nighttime lighting baseline.

The survey confirms that the site is already subject to significant artificial lighting from existing stadium and sports floodlighting, as well as temporary lighting generators. The existing sports floodlighting is particularly relevant, as it results in a higher baseline lighting environment than that considered within the Potentially Sensitive Ecological Receptor. The stadium lighting is visible across the Application Site, while the outer areas of the golf course remain intrinsically dark with limited artificial lighting.

The assessment has considered the potential effects of the proposed lighting, design by Abacus Lighting, on the surrounding sensitive receptors identified by DFL (human receptors) and a qualified ecologist (ecological receptors). Following the consideration of the information retrieved from the site survey, as the predicted illuminance levels provided through Abacus Lightings modelling of the proposed lighting, were lower than the existing baseline, it was established that the installation had the potential to be a betterment on the existing baseline. However, as the other existing light sources identified within the surrounding area, were not modelled, the overall residual effect is conservatively assessed as **Slight**, with effects on all human amenity receptors assessed as **Neutral or Slight** against the existing baseline.

Threshold Increment (TI) calculations have been undertaken to address the likely realistic effect on drivers, with the results confirming compliance with the relevant criteria.

The proposed lighting has been designed by Abacus Lighting taking into consideration the requirements of the task area, whilst taking into account the requirements of the Environmental Zone. Based on the information provided measures incorporated to the lighting are such to minimise spill and upward light spill whilst still achieving the desired illumination. Fade-in and fade-out controls will also be provided to minimise abrupt changes in lighting levels.

Overall, the assessment concludes that the proposed lighting scheme would **not result in significant adverse effects** on human amenity when compared against the light levels retrieved during the site survey and would likely provide a degree of improvement in terms of obtrusive light.

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 assessed the proposed lighting for development at Utilita Bowl, Southampton (referred to as Application Site hereafter).

1.1.3. The Proposed Development is:

"Utilita Bowl LED upgrade to ECB 2023 Specification"

1.1.4. 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.

1.1.5. A Lighting Strategy (**Appendix 1**) has been completed for the Proposed Development, this Lighting Strategy outlines the information provided by Abacus Lighting on completion of their lighting design. This Lighting Impact Assessment assesses the potential effects of the third party lighting design and its ability to stay within the industry standard limits for the control of obtrusive light and light spill.

1.1.6. 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 2026

- 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 August 2026 and states that the following elements are to be considered:

"P1: Planning for clean and safe places

1. To support efforts to avoid and mitigate risks from natural and man-made hazards, minimise levels of pollution and create clean, liveable and safe places for people to live, work and visit, development plans should:

a. Allocate land for development where, taking into account the potential for mitigation: [...]

[...]iii. Development proposals will not cause unacceptable levels of pollution, either alone or in combination with other pollution sources, taking into account communities which may be particularly vulnerable to its effects, such as children and older people, as well as habitats and species which may be vulnerable to pollution"

"DP3: Key principles for well-designed places

2. To create well-designed places, development proposals should also reflect relevant aspects of the following principles, as appropriate to the nature of the development and its location⁴⁵:

f. Public Space: include spaces that are safe, secure, inclusive, and accessible for all ages and abilities, including for groups such as women and girls; and which facilitate and encourage social interaction, play and healthy lifestyles (for example by providing high quality, clear and legible pedestrian and cycle

routes, a variety of recreational spaces and places to meet, integrating lighting and making building entrances and windows face onto streets and other public spaces to provide natural surveillance”

“P3: Living conditions and pollution

2. Within this context development proposals should:

a. Provide healthy living conditions for occupiers and users in terms of adequate access to light and avoiding exposure to levels of air, noise, artificial light or other sources of pollution which could have an unacceptable adverse effect on health and the quality of life. Where necessary suitable mitigation measures should be incorporated to secure acceptable living conditions;

b. Not give rise to, or contribute to, an unacceptable level of access to daylight and sunlight for neighbouring residents and occupiers, or unacceptable levels of air, noise, artificial light, water, soil or other forms of pollution on or beyond the site. Adverse impacts of this nature should be avoided where possible, or else mitigated to an acceptable degree. Where possible, opportunities should be taken to reduce pollution affecting the wider area (such as through traffic and travel management or improved external lighting);

c. Sustain and contribute to compliance with relevant limit values or national objectives and targets for air pollutants including PM2.5. Development proposals should take account of Air Quality Management Areas and be consistent with the objectives of relevant Air Quality Action Plans, Clean Air Plans and Local Air Quality Strategies;

d. Mitigate and reduce to a minimum potential adverse impacts resulting from noise, not result in levels of noise exposure which would have a significant observed adverse effect, and maintain the character of tranquil areas (those areas that have remained relatively undisturbed by noise from human sources and are prized for their recreational and amenity value for this reason);

e. Limit any adverse impact from artificial light on local amenity, intrinsically dark landscapes (those areas entirely, or largely, uninterrupted by artificial light) and nature; and f. Assess and mitigate impacts where the development could have an unacceptable adverse effect on water quality, especially in relation to sensitive water bodies such as chalk streams.”

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

2.4. CAP 738¹ Safeguarding of Aerodromes

- 2.4.1. The UK Civil Aviation Authority (CAA) publication outlines the need and approach to the safeguarding of Aerodromes, along with the concerns and guidance on how to ensure elements outside of the Aerodrome does not impair the use of the facilities.
- 2.4.2. CAP 738 states the following relevant to safeguarding in relation to lighting.

“What is Aerodrome Safeguarding

1.1 Safeguarding is the process by which the Aerodrome Operator can, in consultation with the Local Planning Authority (LPA) and within their capability, protect the environment surrounding the Aerodrome from developments and activities that have the potential to impact on the aerodrome’s safe operation.

Aerodrome safeguarding covers several aspects. Its purpose is to protect:

- a) the airspace around an aerodrome to ensure no buildings or structures may cause danger to aircraft either in the air or on the ground. This is achieved through both the ‘Obstacle Limitation Surfaces’ (OLS) and the ‘Instrument Flight Procedure’ (IFP).*
- b) the integrity of radar and other electronic aids to navigation by preventing reflections and diffractions of the radio signals.*
- c) aeronautical lighting, such as approach and runway lighting, by ensuring that they are not obscured by any proposed development and that any proposed lighting, either temporary or permanent, could not be confused for aeronautical ground lighting.”*

“Insufficient Information

3.4 Outline planning applications do not normally provide sufficient information to assess the impact a development may have on an aerodrome. They have to include an address, location and site plan. This information will only confirm whether the proposed development is located within the safeguarded area. If, at outline planning stage, you decide certain conditions may be appropriate (e.g. CAP 738 Chapter 3: The Safeguarding Process landscaping or lighting or height restriction) you should respond in a way that requests that these conditions are attached to any permission. It is important to remember that outline planning details can be changed without further consultation. In some cases, when it is clear that a proposed development would be unacceptable in principle at that location, you should respond accordingly. For example, if the proposed development falls within the area where the Take-off Climb, Approach or Transitional Surface prevails and the ground height almost meets it, then a structure in that position could present an unacceptable safety risk.

3.5 Planning conditions provide an opportunity to carefully monitor/manage certain aspects of the proposed development.

3.6 When the safeguarding assessment identifies the need for ‘planning conditions’, the aerodrome operator should explicitly request such conditions in their response to the LPA; this is particularly

¹ UK Civil Aviation Authority (CAA), Safety and Airspace Regulation Group, Civil Aviation Publication (CAP) 738, Third Edition Published October 2020,

important where landscaping features have the potential to introduce an increased birdstrike risk, or where lighting could present a hazard to aviation safety. Where such conditions have been requested, aerodrome operators should work collaboratively with developers and the LPA to ensure those conditions are discharged by the LPA, where possible, to the satisfaction of the aerodrome.

"3.17 Lighting elements of developments have the potential to distract or confuse pilots, particularly in the immediate vicinity of an aerodrome.

3.18 Aerodrome operators, LPAs and developers should pay attention to the intensity and alignment of road lighting, which is a matter of concern over much more than the areas close to the ends of a runway. The intensity of lighting can cause confusion to pilots by creating glare when viewed from the air; a road lighting scheme may give an illusion similar to an approach or runway lighting pattern which may confuse pilots who use such visual cues when landing at night or in low visibility conditions.

3.19 Where floodlighting is proposed, the aerodrome operator should request that the lighting scheme provides full cut-off with no light spill above the horizontal.

3.20 Article 224 of the Air Navigation Order 2016 (as amended) is explicit regarding lights liable to endanger aircraft, including the directions to be taken to extinguish any such light deemed as endangering aircraft."

2.5. Combine Aerodrome Safeguarding Team (CAST) Advice Note 2²

2.5.1. The CAST Aerodrome safeguarding advice note (Advice Note 2), introduces an overview of the information in CAP738 and other related documents some of which are not relevant to the application. The following bullet points are stated within this guidance.

"Various types of lighting have the potential to cause issues for example:

- Temporary lighting, e.g. construction lighting, light shows, temporary installations*
- Advertisements*
- Lighting of buildings and other structures*
- Street and car park lighting*
- Flood lighting at sporting venues or similar including special events in temporary locations No lighting should be displayed which could distract pilots or confuse them by being mistaken for aeronautical ground lights."*

² Combine Aerodrome Safeguarding Team (CAST), Reference: Advice Note 2, Subject: Lighting Near Aerodromes, dated April 2024.

3. LOCAL POLICIES

3.1. Introduction

3.1.1. The relevant Local Planning Authority (LPA) for the Proposed Development is Eastleigh Borough Council. Eastleigh Borough Council have published a document that contains policies relevant to the Application Site, this is:

- Eastleigh Borough Local Plan (2016 – 2036) adopted April 2022

3.2. Eastleigh Borough Local Plan (2016 – 2036)

3.2.1. The applicable policies are:

“Strategic Policy S1 – Delivering sustainable development

1. To be sustainable, new development in the Borough should:

(...) i. maintain local environmental quality, including avoiding damage to, and where possible enhancing, the existing valued urban and rural environments in the Borough and heritage assets;

j. have regard to the purposes¹² of the South Downs National Park, including regarding its status as an International Dark Night Skies reserve; and

k. maintain, enhance, extend and connect the natural habitats within and landscape value of the Borough, extending natural habitats into new and existing development to achieve an environmental net gain.”

“Policy DM1 – General criteria for new development

1. All new development should (as relevant):

a. not have an unacceptable impact on, and where possible should enhance:

i. residential amenities of both new and existing residents; the character and appearance of urban areas, the countryside and the coast;

ii. biodiversity (avoiding significant adverse impacts);”

“Policy DM8 – Pollution

1. Development will not be permitted if it is likely to cause loss of amenity or impact on public health or other unacceptable environmental impacts through:

(...) d. light intrusion, both generally and with respect to the South Downs National Park’s status as an International Dark Night Skies reserve;”

“Policy DM11 – Nature conservation

1. The Council will work with statutory and voluntary agencies and developers, and will determine planning applications, to:

a. protect, conserve and enhance all:

i. international, national and local nature conservation designations; and

ii. networks of natural habitats and features, including the Local Ecological Network, Priority Biodiversity Areas and Priority Biodiversity Links, watercourses, wetland complexes, woodland trees, and trees and hedgerows important to biodiversity and local character;

(...) International Designations

2. Development which is likely (either individually or in combination with other developments) to adversely affect the integrity of an international or European nature conservation site will not be permitted subject only to imperative reasons of overriding public interest and securing any necessary compensatory measures in the absence of alternative solutions. A 'project level' Habitat Regulations Assessment will be required where there are likely significant effects or uncertainty. Any mitigation measures required to ensure no adverse impact must be implemented at the appropriate time.

(...) National and Local Designations

4. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on a Site of Special Scientific Interest (SSSI), Site of Importance for Nature Conservation (SINC) or Local Nature Reserve (LNR) as shown on the policies map (or on a more recent plan provided by the Hampshire Biodiversity Information Centre) unless it can be demonstrated that:

a. there are no alternative solutions;

b. the adverse effects are unavoidable;

c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;

d. there is an overall biodiversity net gain; and

e. if there are any residual adverse effects which cannot be avoided, mitigated or compensated, the benefits of the development must clearly outweigh the adverse effects on the nature conservation value of the site and any broader impacts on national and local designations.

Priority habitats, protected and priority species and the local ecological network

5. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on priority habitats, protected or priority species, or on the local ecological network unless it can be demonstrated that:

a. there are no alternative solutions;

b. the adverse effects are unavoidable;

c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;

d. there is an overall biodiversity net gain; and

e. if there are any residual adverse effects, the benefits of the development clearly outweigh the adverse effects on priority habitats, priority and protected species, and the local ecological network.

Irreplaceable habitats

6. Development will not be permitted if it results in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Buffers

7. Buffers free from development will be provided to designated sites to avoid/mitigate impacts, including recreational impact and impacts on edge habitats, and to maintain dark skies."

"Policy DM34 – New and enhanced recreation and open space facilities

1. The provision, extension or enhancement of public and private recreation and open space facilities or uses including those identified in policy DM32 above will be permitted provided that:

a. they accord with the general development criteria and the biodiversity, and heritage policies of this Local Plan;"

4. STANDARDS

4.1. Cricket Sports Lighting Requirements – ECB Specification

- 4.1.1. This specification sets out the lighting requirements for cricket facilities and events in accordance with the standards and guidance issued by the England and Wales Cricket Board (ECB). The document covers the application of artificial lighting for cricket, including lighting levels, uniformity, glare control, colour properties and the positioning and performance of luminaires. The requirements are intended to provide suitable visual conditions for players, officials and spectators, while supporting optimal performance and maintaining appropriate standards for broadcast and non-broadcast cricket events.

5. GUIDANCE

5.1. Institution of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01:2026

5.1.1. The Lighting Strategy and this Lighting Impact Assessment are informed by industry guidance notes GN01:2026 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 ³ (Max %)	Light Trespass (Into Windows) E _v (lux)		Building Luminance Average, Pre-curfew
		Pre-Curfew	Post-Curfew ⁴	Average L (cd/m ²)
E0	0	0	0	0
E1	0	2	< 0.1	0
E2	2.5	5	1	5
E3	5	10	2	10
E4	15	25	5	25

Table 2: Obtrusive Light Criteria

³ ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.

⁴ 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.

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 lux⁵
 - Vertical light levels are not to achieve greater than 0.4 lux⁹ between 1.5mtrs and 6.5 mtrs above ground level ⁶
 - Correlated Colour Temperature (CCT) will be equal to or less than 2700K⁷
- 5.2.3. Where standardised mitigation is to be used, the Bat Conservation Trust Guidance (BCT), Landscape and urban design for bats and biodiversity ⁸is consulted using the following methods in conjunction with ILP guidance (GN08).
- Minimum light for safety is to be used (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 0.4 lux) any break in a foraging route will either be reconnected, diverted or mitigated where possible.

⁵ GN08:2023 Paragraph 4.54 page38

⁶ GN08:2023 paragraph 4.56 page 39 for 1.5m height, 6.5m height based on the underside of an established tree canopy.

⁷ GN08:2023 paragraph 4.29 page 29, BCT Bats and Lighting, Overview of current evidence and Mitigation paragraph 3.1.1 page 22.

⁸ 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 appropriate⁹.
- 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 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**.

⁹ All obtrusive light calculations will be compared to guidance from ILP GN01:2026 and ILP BCT GN08:2023

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 based 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 effect 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 GN01:2026 (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, GN01:2026, 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 **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
- Luminous Intensity (Glare)
- Sky Glow (Upward Light Ratio)

- 6.5.4. The effects assessment for the Proposed Development is based on the Lighting Strategy (**Appendix 1**), the Baseline Survey (**Appendix 2**), Site Assessment (Section 7) and the Lighting design calculations completed by Abacus Lighting.

7. SITE ASSESSMENT

7.1. Site Description and Context

- 7.1.1. The Application Site is the Utilita Bowl, Southampton, home of Hampshire County Cricket Club. The centre of the site is the grass cricket field itself which is circled by open spectator seating, three covered spectator stands, hardstanding areas and the Hilton Utilita Bowl Hotel overlooking the pitch to the northeast.
- 7.1.2. The stadium is surrounded by extensive car parking areas and access roads, with a smaller nursery pitch to the southeast, along with a medical facility, bowling green and residential property. In the wider environment, to the east and south, a golf course with several water features and woodland dominate, with the M27 Motorway and Charles Watts Way beyond.
- 7.1.3. To the west are areas of woodland, with the suburban residential area of West End. The northwest is largely commercial in character with employment sites, a large David Lloyd tennis centre and gym and a Holiday Inn Express Hotel. The north is predominantly residential in nature with residential dwellings and care homes located along Botley Road (B3035). An indicative boundary of the site can be seen in **Figure 1**.

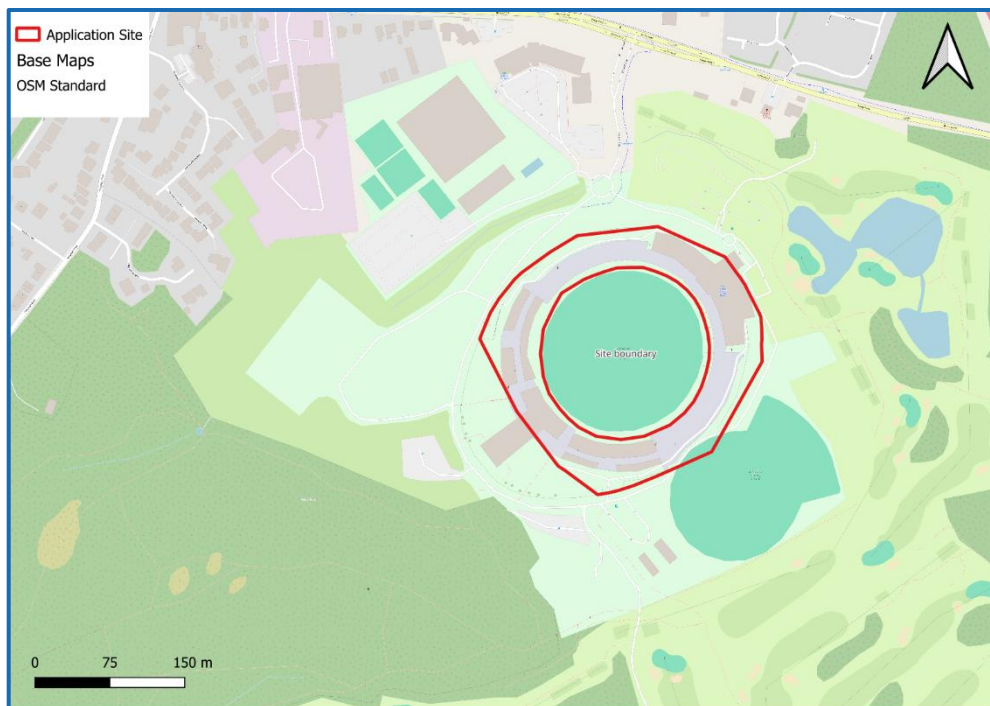


Figure 1: The Application Site Location and Boundary

7.2. Study Area

7.2.1. The study area of lighting effects extends 5 km from the centre of the Application Site.

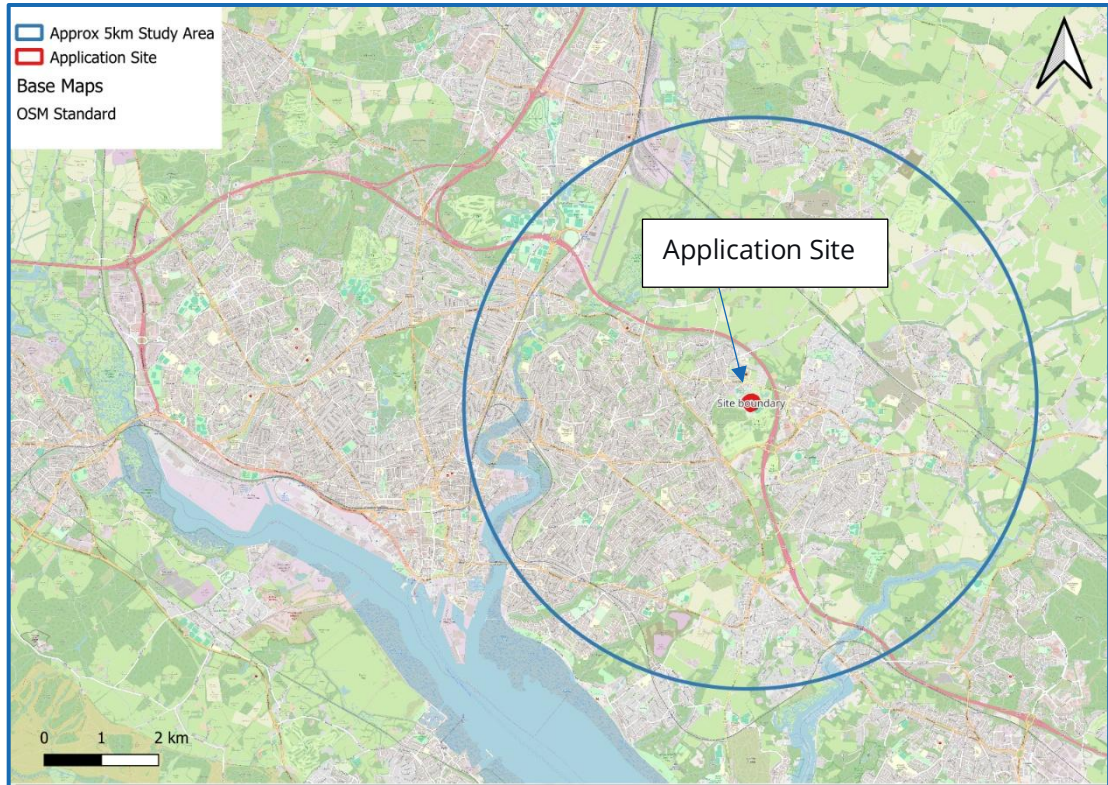


Figure 2: Study Area

7.2.2. The study 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. The area is within 5 km¹⁰ proximity of a designated Special Area of Conservation (SAC), Sites of Special Scientific Interest (SSSI) and National Landscape (Formerly AONBs). These are shown in **Figure 3** and referred to as:

- River Itchen SAC – within 2.6 km to the northwest
- Solent Maritime SAC – within 3.9 km to the southeast
- Moorgreen Meadows SSSI – within 406 m to the northeast
- River Itchen SSSI – within 2.6 km to the northwest
- Lee-on-the-Solent to Itchen Estuary SSSI – within 3.5 km to the southwest
- Upper Hamble Estuary and Woods SSSI – within 2.9 km to the southeast

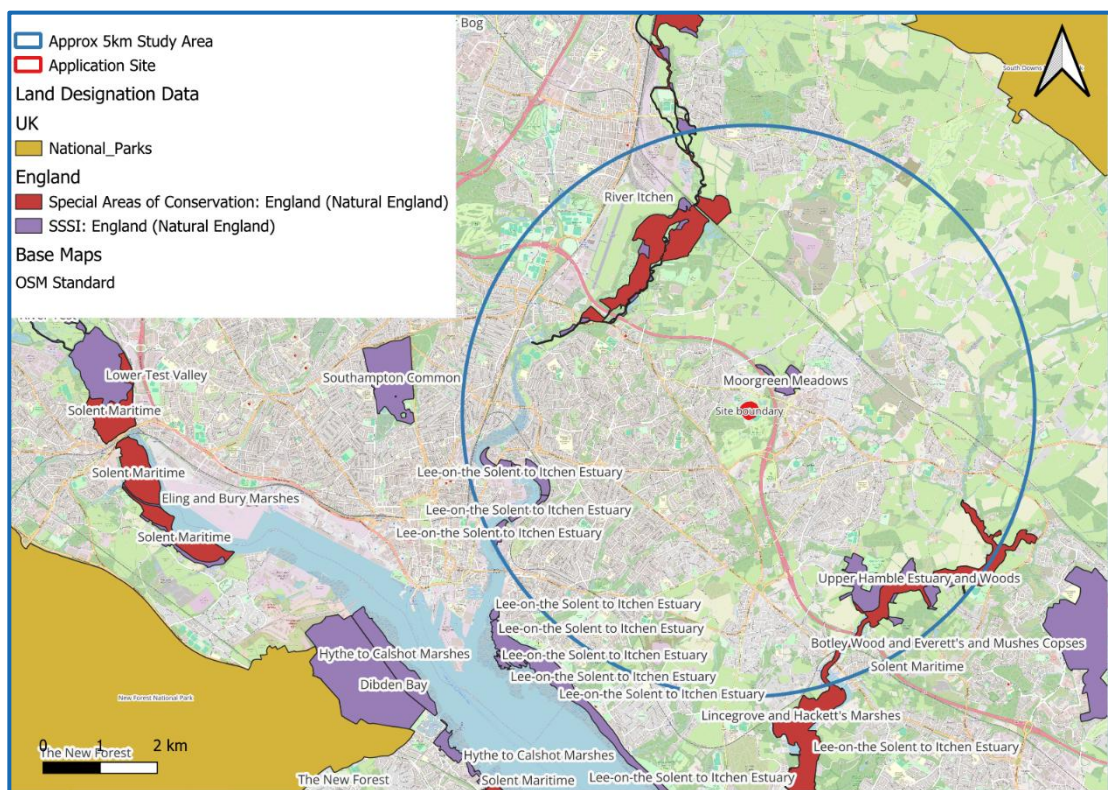


Figure 3: Site Designations

¹⁰ Based on empirical thresholds from visual impact studies, tall slender structures in open landscapes are typically prominent up to about 2 km, still relatively prominent between 2 and 5 km, and beyond this distance their prominence declines significantly, based on statements within Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes study (U.S.BLM-sponsored)

7.4. Local Character

- 7.4.1. The Application Site is situated in a settlement gap between the suburbs of West End to the west and Hedge End to the east, to the northeast of the city centre of Southampton. The area immediately surrounding the Application Site to the east and south is dominated by a golf course mainly modified grassland with patches of woodland and several ponds. Further to the east is the M27 Motorway with a large expanse of business park beyond, before the residential suburbs of Hedge End begin.
- 7.4.2. The southwest is predominantly woodland associated with Telegraph Woods and Hanger Copse, with the residential extent of West End bordering to the west of the woodland and extending to the northeast. A large David Lloyd Tennis Centre/ Gym and Holiday Inn Express Hotel border to the northeast and north. Further residential development is found along Botley Road (B3035) to the north, with several residential care homes and Moorgreen Hospital.

7.5. Existing Lighting

- 7.5.1. The Application Site itself is extensively and brightly illuminated as detailed in the Baseline Survey Report (**Appendix 2**), with pylon mounted floodlights and some column mounted wayfinding lighting around the perimeter of the stadium section.
- 7.5.2. The stadium is surrounded by an access road and numerous car parks. The road and car parks to the west of the stadium are unlit, but the roundabout, access road and car parks to the north and east serving the Hilton Hotel are lit by column mounted luminaires, as shown in **Figure 4**. The Well Being Centre to the south also has illuminated bollards in its car park.



Figure 4: View of lighting at Hilton Hotel

- 7.5.3. The David Lloyd Centre and Holiday Inn Hotel located to the north and northwest both have column mounted lighting on their access roads and in their car parks. Additionally, the David Lloyd Centre has several floodlit outdoor tennis and padel courts, which add to the brightness of the surrounding area.
- 7.5.4. All roads in the vicinity of the Application Site have street lighting. There are several traffic routes with high level lighting around the area, with Botley Road to the north, Tollbar Way to the east, Charles Watts Way to the south and Moorhill Road to the west being lit by luminaires mounted approximately between 8 – 10m, as is Marshall Drive that provides primary access to the Application Site, as shown in **Figure 5**.



Figure 5: View of lighting layout on Botley Road at junction with Marshall Drive

- 7.5.5. The areas immediately to the east, south and southwest are largely dark as they comprise the grassland of the golf course and the woodland of Telegraph Woods. The M27 Motorway to the east is unlit where it runs parallel to the Application Site. However, to the east of the M27 is a large Business Park with numerous national retailers with extensive lit car parks, which mark the edge of the suburb of Hedge End.

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 Environmental Zone for the Application Site has been assessed as **E3**. However, taking into consideration the existing lighting installation within the Application Site and its established influence on the surrounding area, the site has been assessed as **E4** for the purposes of this assessment. This is the same means of test as previously taken when the existing light installation was applied and is appropriate for the use of the Application Site.
- 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 E4 environmental zone (**Appendix 1** and **Table 8**).

E Zone	Surrounding	Examples	Limitations E _v (lux)		Sky Glow ULR (Max)
			Pre-curfew	Post-curfew	
E4	Urban	Town / City centres with high levels of night-time activity	25	5	15%

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 3**.

8.2. Ecological

- 8.2.1. Johns Associates (the project ecologist) has been liaised with regarding the identification of sensitive areas within and surrounding the Application Site. The ecology receptors with sensitivity to lighting are detailed in **Table 9**.

Receptor Type	Receptor No.	Description	Sensitivity
Ecology	PSER 001	Telegraph Wood – high density woodland to the Southwest	Medium

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 on Botley Road to the north	Low
Human Amenity	PHAR 002	Residential dwellings on opposite side of Botley Road to the north	Low
Human Amenity	PHAR 003	Residential dwellings located on Telegraph Heights to the west	Low
Human Amenity	PHAR 004	Residential dwellings located on Westgate Mews to the west	Low

Table 10: Human Amenity Receptors (PHAR)

8.4. Human Safety Receptors

8.4.1. Human safety receptors have been identified surrounding the Application Site. These are listed in **Table 11** and the locations are shown in **Figure 6**.

8.4.2. Whilst Southampton Airport and Hill Farm Airstrip have been acknowledged as Potential Safety Receptors, they will not be assessed in this document. As the proposal looks to increase the height of the luminaires, consultations should be undertaken with Southampton Airport to ensure that lights are

8.4.3. As per CAP 738 Safeguarding of Aerodromes published by the UK Civil Aviation Authority and outlined in Section 3.19 the control of the floodlights will be controlled by a cut off shield,

"3.19 Where floodlighting is proposed, the aerodrome operator should request that the lighting scheme provides full cut-off with no light spill above the horizontal."

8.4.4. Overall, the upward light spill for the proposed development is 0.3%, as the result is less than 0.5 % it is unlikely that this will be impactful on the receptor, however further consultation should be had with the relevant aerodrome licence holder/operator (their Aerodrome Safeguarding team) to ensure that the light will not be in line with the landing and take-off path of the aeroplanes.

8.4.5. As the proposed lighting will be replacing the existing installation with directed, more controlled lighting, it is unlikely to be a significant change. Very little light will be emitted upwards, as confirmed by the luminaire specifications, thus not increasing the impact of upwards obtrusive light beyond the existing as discussed in **Section 7.5**.

Receptor Type	Receptor No.	Description	Sensitivity
Human Safety	PSR 001	Southampton Airport located approx. 3.1 km to the northwest	Low
Human Safety	PSR 002	Hill Farm Airstrip located approx. 3.7 km to the northeast	Low

Table 11: Human Safety Receptors (PSR)



Figure 6: Potential Safety Receptors (PSR) locations

9. LIGHTING BASELINE SURVEY

9.1. Summary

- 9.1.1. This report is to outline the findings of the Baseline Survey undertaken by DFL (Designs for Lighting Ltd), a lighting design consultancy specialising in Lighting Impact Assessments, obtrusive light mitigation and detailed lighting design.
- 9.1.2. The purpose of this report is to summarise the results of the baseline survey led by James Probut on 22/07/2026, this will aid in the conclusion of the accompanying Lighting Impact Assessment.
- 9.1.3. The results (**Table 2**) show that the Application Site has a large amount of lighting with impact from existing light sources and temporary lighting generators. The outer edge of the site on the golf course is intrinsically dark with little artificial lighting present and no lighting located within the boundary. Lighting is visible from within the Application Site with the stadium lighting visible from all areas of the Application Site. The brightest area is localised to the western side of the stadium where no blocking elements are present.
- 9.1.4. The survey included on-site measurements of light levels and night-time photography to show how the area is currently illuminated. Readings were taken at a number of locations across the site and surrounding area to capture both brighter and darker conditions
- 9.1.5. The photographs taken during the survey support the measured results and show the main sources of light and the darker conditions found on the Application Site.

9.2. Key Illuminance Measurements

Reading number	Eh	Ev North	Ev East	Ev South	Ev West
1	805	267	1037	21.6	21.92
2	4.65	1.20	15.40	10.30	1.62
21	0.59	0.04	0.06	1.14	2.06
22	0.08	0.07	0.02	0.11	0.14
33	0.05	0.24	0.02	0.01	0.14
34	0.05	0.21	0.02	0.02	0.10
42	4.30	5.92	040.	2.70	9.66
43	2.51	3.09	0.31	1.30	8.90
44	1.64	4.22	0.24	0.47	4.73

Table 12: Key Baseline Illuminance Results

10. ASSESSMENT OF EFFECTS

10.1. Overview

10.1.1. This assessment is based on the Light Spill Diagram (**Appendix 4**) and Lighting Strategy (**Appendix 1**).

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. This mitigation by design is also detailed within (**Table 13** and **Table 24**).

Mitigation Name	Description of Mitigation	Installation Location
Glare shields	600mm glare shields are to be installed on individual luminaires to eliminate any glare onto neighbouring property	All Luminaires
Fade in and Fade out Controls	Fade-in and fade-out controls will also be provided to minimise abrupt changes in lighting levels.	All Luminaires

Table 13: Mitigation by Design

10.3. Obtrusive Light Calculations

- 10.3.1. During post-curfew hours, the proposed lighting will be switched off (23:00) and therefore there will be no operational lighting associated with the site during this period. As a result, lighting conditions and potential effects during post-curfew hours have not been assessed as part of the lighting assessment.
- 10.3.2. The assessment has instead focused on the periods during which the lighting will be operational pre curfew, when potential effects such as light spill, glare, sky glow and illumination of surrounding areas could occur. As the lighting will not be in operation during post-curfew hours, no additional lighting effects are anticipated during these periods.

Receptor Number	Requirements of GN01:2026 for the Environmental Zone (E4)		Calculated Maximum Result (Lux)
	[lux]		
	Pre-Curfew	Post-Curfew	
PHAR 001	25	5	5
			6
PHAR 002	25	5	9
			0
			10
			0
			10
PHAR 003	25	5	1
PHAR 004	25	5	1
			2
			2
			1
			2

Table 14: Light Intrusion Calculations

Receptor Number	Requirements from GN08:2023	Calculated
	[lux]	Maximum Result (Lux)
PSER 001	<0.5	16

Table 15: Light Spill Calculations

Receptor Number	Requirements of GN01:2026 for the Environmental Zone (E4)		Calculated Maximum Result
	Pre-Curfew	Post-Curfew	
PHAR 001	25,000	2,500	9,657
			18,331
PHAR 002	25,000	2,500	18,468
			9,030
			16,167
			10,814
			16,240
PHAR 003	25,000	2,500	19,284
PHAR 004	25,000	2,500	17,930
			17,838
			20,759
			19,016
			19,152

Table 16: Luminous Intensity Calculations

Receptor Number	Requirements of GN01:2026 for the Environmental Zone (E4) [%]	Upward Light Ratio for Manufacturer Specification
PHAR 001	15%	0.3
PHAR 002	15%	0.3
PHAR 003	15%	0.3
PHAR 004	15%	0.3

Table 17: Upward Light Ratio

10.3.3. Threshold Increment calculations have been considered as part of this design for the M27 northbound and M27 Southbound carriageway and results are shown within **LS4065974-13C - Utilita Bowl Spill & Glare**, where they show an adaption Luminance result of 10 lux on both carriageways.

10.3.4. Threshold Increment (TI) calculations have been undertaken to assess the potential effects of the proposed cricket pitch lighting on users of the nearby highway. TI provides a quantitative assessment of disability glare experienced by a road user by considering the luminance of the lighting installation in relation to the road user's visual environment. This is considered more appropriate than a general glare calculation, as it assesses the potential effect from the specific viewpoint of a driver and provides a recognised measure of whether the proposed lighting could impair visibility or the ability to identify potential hazards on the highway.

10.4. Magnitude of Change

10.4.1. By comparing the modelled illuminance levels at the sensitive receptors with the recommendations made in GN01:2026 and GN08:2023 the magnitude of change is assessed.

Receptor	Magnitude of Change Assessment	Magnitude of Change	Duration
PSER 001	Light levels for this area exceed the maximum values stated within GN08 2023. As such the magnitude of change is assessed as Major .	Major	Long Term
PHAR 001		Negligible	Long Term

PHAR 002	Light levels and glare for this area are within guidance limits stated within GN01 2026. As such the magnitude of change is assessed as Negligible.	Negligible	Long Term
PHAR 003		Negligible	Long Term
PHAR 004		Negligible	Long Term

Table 18: Magnitude of Change Assessment

10.5. Significance of Effect

10.5.1. Based on the sensitivity of the receptor (**Table 9**, **Table 10** and **Table 11**) and the magnitude of change (**Table 18**) the significance of effect is predicted by using significance of the effect matrix (**Table 6**).

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
PSER 001	Medium	Major	Moderate or Large
PHAR 001	Low	Negligible	Neutral or Slight
PHAR 002	Low	Negligible	Neutral or Slight
PHAR 003	Low	Negligible	Neutral or Slight
PHAR 004	Low	Negligible	Neutral or Slight

Table 19: Assessment of Significance of Effect

10.5.2. The residual effect on all human amenity receptors is assessed as being **Neutral or Slight**

10.5.3. The residual effect of the ecology receptors is considered to be **Moderate or Large**. This is primarily due to the proposed stadium floodlighting within the Application Site.

10.6. Additional Considerations

- 10.6.1. The lighting design has taken into consideration the existing baseline lighting conditions and the potential effects of the Proposed Development. These considerations have informed the design of the lighting scheme and the assessment of potential effects.
- 10.6.2. Specific lighting mitigation is **not considered to be required**. However, the Baseline Survey identified that existing illuminance levels along this boundary (Locations 15 to 18 and 52) range from 3.60 to 18.36 lux, indicating that levels exceeding the GN08:2023 criteria are already present within this area. The lighting calculations for the Proposed Development indicate an overall result of just 16 lux at the boundary, which represents a reduction compared with the higher levels recorded as part of the baseline survey.
- 10.6.3. In consideration of the existing baseline conditions, the exceedance presented in **Table 15** is therefore not considered to represent a major impact on the surrounding area. The existing lighting environment has been taken into account when considering the significance of the predicted effects.

10.7. Magnitude of Change After Considerations

- 10.7.1. By comparing the modelled illuminance levels at the sensitive receptors with the recommendations made in GN01:2026 and GN08:2023 the magnitude of change is assessed.

Receptor	Magnitude of Change Assessment	Magnitude of Change	Duration
PSER 001	Based on the baseline Assessment light levels within this area already exceed the recommendations outlined in GN08:2023 with an overall result of 18.36 lux. The results from lighting calculations show that the highest level of illuminance with the proposed installation is 16 lux. As a result, the magnitude of change has been assessed as	Negligible	Long Term

Table 20: Magnitude of Change Assessment After Considerations

10.8. Significance of Effect After Considerations

10.8.1. Based on the sensitivity of the receptor (**Table 9, Table 10, Table 11** and **Table 12** and the magnitude of change (**Table 18**) the significance of effect is predicted by using significance of the effect matrix (**Table 6**) after additional mitigation is applied.

Receptor	Sensitivity	Magnitude of Change	Significance of Effect
PSER 001	Medium	Negligible	Neutral or Slight

Table 21: Assessment of Significance of Effect After Additional Mitigation

10.8.2. The residual effect after additional considerations of the ecology receptors are to be evaluated as **Neutral or Slight**. The overall residual effect would likely be a betterment due to the levels of illuminance on this area being lower than the existing baseline. However, due to other light sources being present and not fully accounted for the residual effect is assessed as **Neutral or Slight**.

11. CONCLUSION

- 11.1.1. The Lighting Survey Report for Utilita Bowl provides a comprehensive overview of the existing lighting conditions and establishes a reliable baseline for future assessment. The report outlines the methodology used to capture accurate illuminance data, supported by photographic evidence, and evaluates the lighting environment in relation to its surrounding context.
- 11.1.2. The findings confirm that the site has a large amount of lighting with impact from existing light sources and temporary lighting generators. The outer edge of the site on the golf course is intrinsically dark with little artificial lighting present and no lighting located within the boundary of the golf course. Lighting is visible from within the Application Site with the stadium lighting visible from all areas of the Application Site. The brightest area is localised to the outside of the western side of the stadium where no blocking elements are present.
- 11.1.3. By documenting the current lighting conditions, this report supports the wider planning process by providing evidence-based context for any future lighting design or development proposals. The established baseline will enable informed decision-making, ensuring that subsequent lighting interventions are designed to be sensitive to the existing nighttime environment, minimise obtrusive light, and preserve the area's character.
- 11.1.4. The assessment has considered the potential effects of the proposed lighting scheme on the identified surrounding sensitive receptors, taking account of the existing lighting environment and the proposed mitigation measures such as spill shields.
- 11.1.5. It is important to note that existing sports floodlighting is already installed within the assessment area. As a result, the baseline lighting environment is higher than the modelled illuminance proposed on receptor **PSER 001**. The assessment has therefore considered the existing lighting conditions when determining the magnitude and significance of effects associated with the proposed development.
- 11.1.6. Prior to taking account of the existing baseline, the potential effects on receptors were assessed as **Moderate or Large**. The predicted levels of illuminance within the assessed area are **lower than the existing baseline**. Thus, the effect is **Neutral**.
- 11.1.7. Notwithstanding this, other existing light sources in temporary locations that are present within the surrounding area and contribute to the existing lighting environment are unknown and cannot be accurately modelled. Consequently, the overall residual effect is conservatively assessed as **Neutral or Slight**.

- 11.1.8. The residual effects on all identified human amenity receptors are assessed as **Neutral or Slight**, indicating that the proposed lighting scheme would not result in a significant adverse effect on residential or other sensitive human receptors.
- 11.1.9. In addition, glare and Threshold Increment (TI) calculations have been undertaken for the proposed lighting installation. The results demonstrate that the scheme complies with the relevant TI calculations confirm that the motorway is unlikely to be negatively affected, providing further confirmation that the proposed lighting design would not result in unacceptable effects for surrounding receptors or road users.
- 11.1.10. Based on the information provided all luminaires have been designed in such a fashion that little upward light is emitted from the light sources itself. The lighting controls will incorporate fade-in and fade-out functionality to ensure a gradual change in illumination levels when the lighting is brought into operation or switched off. This approach will provide sensitive receptors with sufficient time to adapt to the change in light level, thereby minimising the potential for obtrusive light and associated visual discomfort. The lighting design has been developed in accordance with the relevant requirements of an E4 Environmental Zone along with the NPPF 2026 and the Eastleigh Borough Local Plan (2016 – 2036), this includes minimising the potential for spill light and restriction of upward light.

12. SUMMARY OF EFFECTS

12.1.1. The summary of the effects from lighting can be seen in **Table 22**.

Receptor	Sensitivity	Magnitude of Change (Adverse or Beneficial)	Duration	Significance of Effect	Additional Considerations (if required)	Magnitude of Change After Addition Mitigation (Adverse or Beneficial)	Final Residual Effect (Adverse or Beneficial)
PSER 001	Medium	Major	Long Term	Large or Very Large	Yes	Negligible	Neutral or Slight
PHAR 001	Low	Negligible	Long Term	Neutral or Slight	N/A	N/A	Neutral or Slight
PHAR 002	Low	Negligible	Long Term	Neutral or Slight	N/A	N/A	Neutral or Slight
PHAR 003	Low	Negligible	Long Term	Neutral or Slight	N/A	N/A	Neutral or Slight
PHAR 004	Low	Negligible	Long Term	Neutral or Slight	N/A	N/A	Neutral or Slight

Table 22: Summary of Lighting Effects

APPENDIX 1

Lighting Strategy

13. LIGHTING STRATEGY

13.1. Introduction

13.1.1. The Proposed Development will require lighting for safety and amenity during the hours of darkness. The assessment considers the proposed lighting information provided by Abacus Lighting for the Development and its potential effects on nearby human and ecological receptors.

13.1.2. Abacus Lighting has undertaken the Lighting Design for the Proposed Development the information provided is available in document **LS4065974-13C - Utilita Bowl Spill & Glare**. In accordance with the information provided the lighting has been designed to an appropriate specification and with reference to the relevant standards and guidance, including the ECB Specification 2023. DFL have not assessed and do not confirm the compliance of the task light levels only the impacts and effects of the installation on the surrounding area.

13.1.3. This Lighting Strategy element is given to detail the information provided on the specific light fitting and the regulations that have informed the details provided.

13.2. The Proposed Development

13.2.1. The follow areas will require task lighting to facilitate the safe undertaking of operational tasks:

13.2.2. Lighting to a private specification will be required in the following task areas:

- > Proposed Sports Lighting

13.3. Operational Lighting

Proposed Sports Lighting

13.3.1. The Proposed Sports Lighting will be illuminated in accordance with the ECB 2023 Specification.

13.3.2. The illuminance performance requirements for the Proposed Sports Lighting are outlined in **Figure 7**.

<u>Horizontal Illuminance - Performance criteria</u>			
	Eh average (lux)	U1 min/max	U2 min/avg
TV Pitches Area	2500	0.60	0.75
Infield Zone	2250	0.60	0.75
Outfield Zone	1500	0.60	0.75
<u>Vertical Illuminance - Performance criteria</u>			
	Ev average (lux)	U1 min/max	U2 min/avg
TV Pitches Area	1500	0.50	0.70
Infield Zone	1250	0.40	0.60
Outfield Zone	1000	0.40	0.55
<u>Main Camera Illuminance - Performance criteria</u>			
	Ev cam average (lux)	U1 min/max	U2 min/avg
TV Pitches Area	2000	0.60	0.75
Infield Zone	1800	0.55	0.70
Outfield Zone	1500	0.50	0.65

Figure 7: Extract from the ECB 2023 Specification Showing Light Levels Required

13.4. Operational Equipment

Equipment Specification	
Application Area	Proposed Sports Lighting
Correlated Colour Temperature [Kelvin / K]	≤ 5700k
Luminaire Manufacturer	Abacus Lighting
Mounting Arrangement	Horseshoe bracket on headframe
Upward Light Output Ratio [%] E4 < 15%	0.3 (Modelled)
Example Luminaire Image	
Controls ¹¹	Manual switching with fade in and fade out controls with 300 mm and 600 mm shields
Notes	Light output, height, luminaire tilt and Luminaire Model can be found in LS4065974-13C - Utilita Bowl Spill & Glare .

Table 23: Luminaire performance requirements – Proposed Sports Lighting

¹¹ Dimming: when dimming is applied it is announced as a percentage still in use of the total percentage output (dimmed too, not dimmed by).

13.5. Mitigation by Design

13.5.1. **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 0.3%	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

Please see 4834-DFL-ELG-XX-SU-EO-13001-S3-P01 for further information

APPENDIX 3

Identified Receptor Maps



Figure 8: Identified Receptor Locations

APPENDIX 4 – LIGHT SPILL DIAGRAM AND GLARE

Please see LS4065974-13C - Utilita Bowl Spill & Glare for further information

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 tilted 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.

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- **Electrical** teams – we don't just put a light in the ground, we can help you get power to it as well! Additionally, we also offer design services for EV charging. As this market rapidly expands, make sure you have the experts managing the load, otherwise your EV charging solutions might not live up to expectations.
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