

Intended for
Wates Developments Ltd

Document type
Report

Date
March 2026

Land adjacent to Windhover Roundabout, Bursledon Lighting Assessment

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Project name **Land adjacent to Windhover Roundabout, Bursledon**
Project no. **1620011691-024**
Recipient **Wates Developments Ltd**
Document type **Report**
Version **2.0 - re-issue for planning**
Date **24/03/2026**
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Description **Lighting Assessment**

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Contents

Executive Summary	4
1. Introduction	5
1.1 Background	5
1.2 Objective and Scope of Works	5
1.3 Limitations and Constraints	5
2. Site Details	7
2.1 Site Location and Description	7
2.2 Proposed Development	9
3. Policy, Legislation, Guidance and Standards	10
3.1 National Level	10
3.1.1 The Environmental Protection Act, 1990 (As amended)	10
3.1.2 National Planning Policy Framework, 2025	10
3.1.3 Planning Practice Guidance – Light Pollution, 2019	10
3.2 Local Level	11
3.2.1 Eastleigh Borough Local Plan (2016-2036)	11
3.3 Guidance / Standards	11
4. Assessment Methodology	13
4.1 Relevant Guidance	13
4.1.1 Light Output Model	16
4.2 Baseline Characterisation	16
4.2.1 Desktop Review	16
4.2.2 Visual Survey	16
4.3 Significance Criteria	16
5. Receptors	19
5.1 Dark Skies	19
5.2 General Public	20
5.3 Ecological	20
5.4 Neighbouring Properties	21
6. Existing Baseline	22
6.1 Desktop Assessment	22
6.1.1 Characterisation of Existing Lighting	22
6.1.2 Sky Radiance Mapping	22
6.2 On-Site Visual Survey	23
6.2.1 Methodology	23
6.2.2 Measurement Locations	24
6.2.3 Equipment	25
6.2.4 Weather and Astrological Conditions	25
6.2.5 Existing Lighting	25
6.3 Night-Time Survey Summary	27
6.4 Baseline Ecology	27
7. Concept Lighting Design	28
7.1 Overview of Concept Lighting Design	28
7.2 Design Mitigation Measures	28
7.3 Lighting Controls, Dimming and Switch-Off	29
7.4 Luminaires and placement	29
8. Results	32
8.1 Summary of Results – On-Site	32
8.2 Summary of Results – Off-Site	34
8.3 Summary of Assessment of Effects	35

8.4	Recommendations	35
9.	Conclusion	37
9.1	Summary	37
9.2	Local Receptors	37
9.3	Dark Sky Receptors	37
9.4	Ecological Receptors	37

Table of Tables

Table 4.1: Magnitude of Impacts upon Lighting Sensitive Receptors	17
Table 4.2: Sensitivity of Receptors to Lighting Impacts	17
Table 4.3: Impact Significance Matrix	17
Table 6.1: Measurements Recorded During a Night Survey on 13 February 2025	27
Table 8.1: Vertical Plane Illuminance Level results	34
Table 8.2: Summary of Assessment of Effects	35

Table of Figures

Figure 2.1: Site Location	8
Figure 2.2: Land adjacent to Windhover Roundabout, Bursledon Illustrative Masterplan (credit: Terence O'Rourke – 276504-TOR-XX-ZZ-DR-A-P102_Illustrative Masterplan-D)	9
Figure 4.1: Table Extracted from ILP GN01/21 for the Reduction of Obtrusive Light - Table 2: Environmental Zones	13
Figure 4.2: Table Extracted from Guidance Notes for the Reduction of Obtrusive Light – Table 3 (CIE 150 Table 2): Maximum Values of Vertical Illuminance on Premises	14
Figure 4.3: Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.5 General circulation areas at outdoor workplaces	14
Figure 4.4: Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.13 Parking areas	15
Figure 4. 5: Overall Proposed Illumination Levels	15
Figure 5.1: Types of Obtrusive Light from the Institution of Lighting Professionals	19
Figure 6.1: CRPE Light Pollution Mapping	23
Figure 6.2: Baseline lighting survey points	24
Figure 6.3: Weather on 13 th February 2025	25
Figure 6.4: Astronomical chart for 13 February 2025	25
Figure 6. 5: Point 28 & 29 – Existing Lighting. Taken during a night survey on 13 February 2025	26
Figure 7.1: Parking and Access Areas - Pole Top	30
Figure 7.2: Wall Luminaire	30
Figure 7.3: Pendant luminaire	31
Figure 8.1: Lux level scale, to be used with images below	32
Figure 8.2: Expected Lux Levels in Dock and Access Areas	32
Figure 8.3: Expected Lux Levels in Car Parking Areas	33
Figure 8.4: Expected Lux Levels in the development entrances	33
Figure 8.5: Vertical Plane locations	34

Appendices

Appendix 1

Gossen Mavolux 5032B Lux meter (Serial Number: 0A31316) calibration certificate (No: STD_155637)

Appendix 2

Baseline lighting survey results

Appendix 3

Lighting Concept Strategy – Proposed Illumination Levels

Executive Summary

Ramboll has been commissioned to complete a Lighting Assessment and develop a concept lighting design for the development of Land adjacent to Windhover roundabout and between Bursledon Road and West End Road, Bursledon, Hants, SO31 8BN for Wates Developments Ltd.

This report presents the LEIA and initial lighting design concept developed for the Proposed Development. It includes lighting lux levels plans and proposed lighting styles to provide a concept design for planning consideration.

Areas within the Proposed Development have been assessed to define the requirement for mitigation measures to limit the impact of artificial lighting proposed in the concept lighting lux levels plan.

In comparison to the baseline lighting conditions (a pronominally unlit site with flood lighting to entrances of barns), the impact of the Proposed Development on surrounding light sensitive receptors has been reviewed to ensure that there would be no significant effect to current baseline conditions for receptors identified within this report.

No significant effects on all assessed receptors as a result of the concept lighting are anticipated. The concept lighting design would mitigate the light spill along both the northern, eastern and western boundary lines, as well as the neighbouring vertical planes and would provide a safe and uniform lighting installation throughout the area.

It is proposed that the lighting design presented within this report be conditioned and developed to a full design.

1. Introduction

1.1 Background

Ramboll UK Limited ('Ramboll') has been commissioned by Wates Developments Ltd ('the Client') to undertake an external lighting assessment for a Site at the Land adjacent to Windhover roundabout and between Bursledon Road and West End Road, Bursledon, Hants, SO31 8BN, hereafter referred to as the 'Proposed Development'.

1.2 Objective and Scope of Works

The aim of this report is to provide a Lighting Environmental Impact Assessment (LEIA) (Lighting Assessment) of the initial concept lighting design developed for the Proposed Development. This LEIA has been provided to ensure that the outline planning application has considered the following principles, which will inform the detailed design of the Proposed Development:

- Provide a level of lighting on-site that meets the Clients brief and requirements set out within the relevant British Standards (BS);
- Provide safe conditions across the development;
- Reduce any adverse impact of the installation on neighbouring areas; and
- Reduce any adverse impact on the local environment, particularly nearby wildlife sites, protected species, and their habitats.

The lighting philosophy has been to:

- Achieve a satisfactory level of maintained illuminance across the Site;
- Minimise inconsistently lit areas; and
- Create a safe environment, whilst avoiding light pollution and light spill to surrounding areas.

All external lighting will be designed and installed in line with the best practice guidance, such as the Guidance Notes for the Reduction of Obtrusive Light¹ and British Standard 5489-1:2020 Design Road Lighting².

1.3 Limitations and Constraints

This report has been prepared by Ramboll exclusively for the intended use by the Client in accordance with the agreement between Ramboll and the Client defining, among others, the purpose, the scope and the terms and conditions for the services. No other warranty, expressed or implied, is made as to the professional advice included in this report and the associated agrees scope were intended, or any other services provided by Ramboll.

In preparation of the report and performance of any other services, Ramboll has relied upon publicly available information, information provided by the Client and information provided by third parties. Accordingly, the conclusions in this report are valid only to the extent that the information provided to Ramboll was accurate, complete, and available to Ramboll within the reporting schedule.

Ramboll's services are not intended as legal advice, nor an exhaustive review of site conditions and/or compliance. This report and accompanying documents are intended solely for the use and

¹ The Institution of Lighting Professionals, Guidance Note 01/02 The Reduction of Obtrusive Light

² British Standard 5489-1:2020 Design Road Lighting

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2. Site Details

2.1 Site Location and Description

The Site is situated at the Land adjacent to Windhover Roundabout and between Bursledon Road (A3024) and West End Road (A27), Bursledon, Hants, SO31 8BN.

The Site is circa 4.63ha (11.4 acres) and comprises predominantly undeveloped agricultural pasture land, but with potential for some Made Ground to be present in limited areas of the Site. The Site takes the form of two connected grassland fields with a patch of tall ruderals and a wet flush along its eastern edge. The Site also includes a small collection of agricultural-type buildings sited on an area of hard standing within its south eastern part. Topographically the Site falls to its south-west towards Bursledon Road, and rises north-east towards West End Road.

The Site is bordered by a residential development to the southwest, directly across the A3024. To the south lies Windhover Roundabout, with additional residential properties situated across the A27 to the east. Agricultural land and wooded areas are located to the north. The Site is within 500 meters of Junction 7 of the M27 and has access points on its south and east boundaries. The broader north and west areas are comprised mainly of agricultural land and wooded regions, while the east features a mix of agricultural land and residential properties. The southern area is predominantly residential.

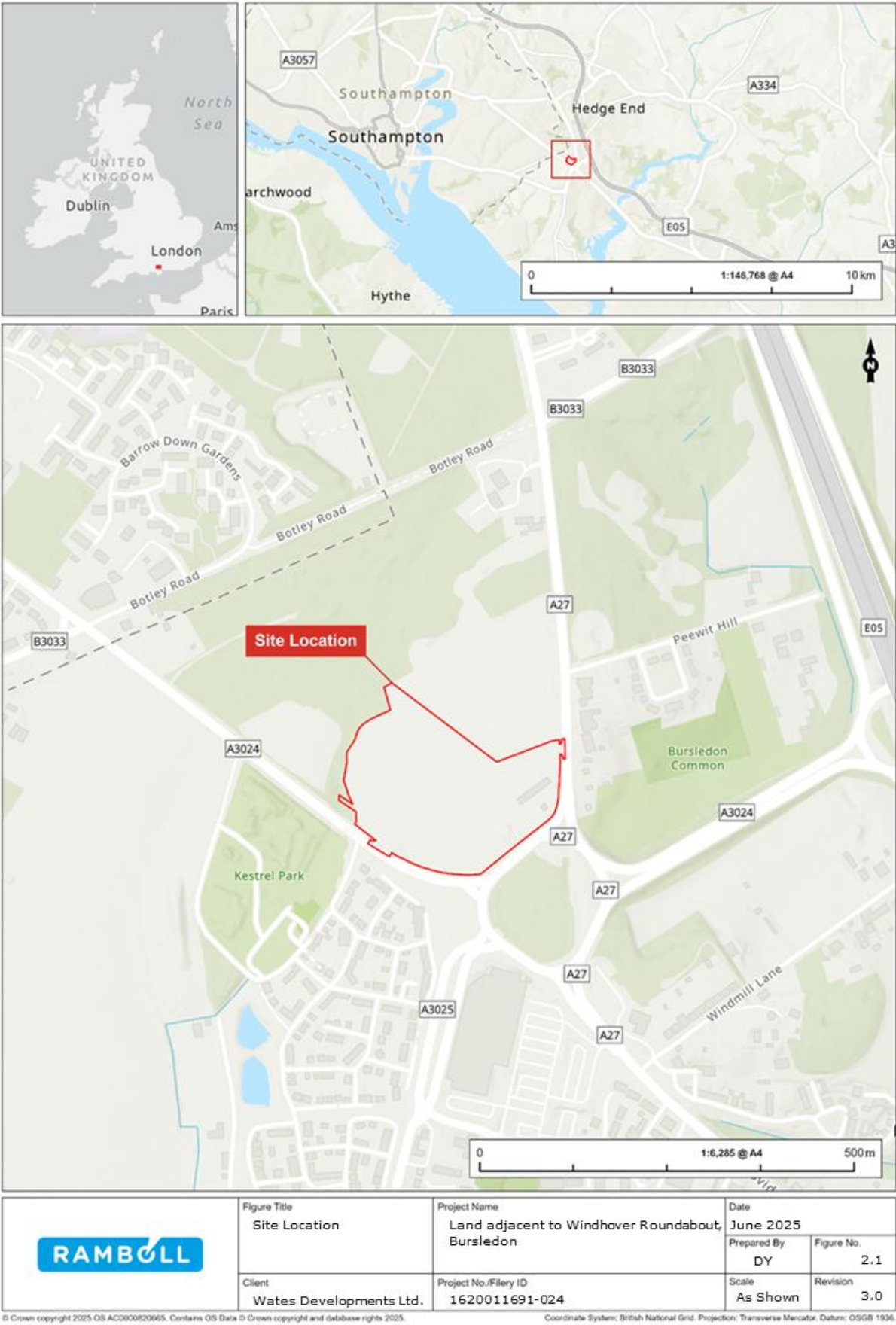


Figure 2.1: Site Location

2.2 Proposed Development

The Proposed Development comprises an Outline planning application (all matters reserved except for access) for employment development (Use Class B2/B8) of up to 18,580 square metres together with ancillary offices (Use Class E(g)(iii)) and other ancillary buildings, structures, parking, servicing and manoeuvring areas, landscaping and sustainable urban drainage features, following demolition of existing buildings.

An illustrative masterplan³ of the Proposed Development is shown in Figure 2.2.



Figure 2.2: Land adjacent to Windhover Roundabout, Bursledon Illustrative Masterplan (credit: Terence O’Rourke – 276504-TOR-XX-ZZ-DR-A-P102_Illustrative Masterplan-D)

³ Tor&Co, Cranbury Site, Bursledon, Illustrative Masterplan TOR-XX-ZZ-DR-A-P102

3. Policy, Legislation, Guidance and Standards

This section identifies the planning policies, legislation, and relevant guidance pertaining to external lighting. The Proposed Development falls under the authority of Hampshire County Council (HCC) and Eastleigh Borough Council (EBC).

3.1 National Level

3.1.1 The Environmental Protection Act, 1990 (As amended)

Section 79 of the Environmental Protection Act 1990⁴ declares that several matters, including artificial light, can be deemed 'statutory nuisances'. Under the provisions of the Environmental Protection Act, if a report of excessive or intrusive lighting is made to the local authority, an inspection may be carried out to determine whether the light constitutes a statutory nuisance. If confirmed, the local authority could take enforcement action, which may include requiring the individual or business responsible to mitigate or eliminate the issue.

The Environmental Protection Act identifies that artificial lighting can be prejudicial to health or a nuisance.

3.1.2 National Planning Policy Framework, 2025

The National Planning Policy Framework (NPPF)⁵ states that the planning system should contribute to and enhance the natural and local environment by ensuring that new development is appropriate for its location, and prevent new development from contributing to light pollution.

Within Section 15 Conserving and enhancing the natural environment, paragraph 198 of the NPPF states that:

'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

...c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

3.1.3 Planning Practice Guidance – Light Pollution, 2019

The Planning Practice Guidance (PPG) section of Light Pollution⁶, which accompanies the NPPF, was last updated in 2019.

Paragraph 1 and 2 of the Light Pollution PPG (Ref ID: 31-001-20191101) acknowledges that artificial lighting should be carefully considered in developments to ensure that an optimal approach is achieved. While artificial light is essential in new developments, the approach to lighting should be sufficiently designed to prevent light pollution, which may be harmful to human health and to the surrounding environment.

⁴ Secretary of State, 1990. Environmental Protection Act 1990, The Stationary Office. Available at: <http://www.legislation.gov.uk/ukpga/1990/43/contents>

⁵ Ministry of Housing, Communities and Local Government, 2025. National Planning Policy Framework. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework>

⁶ Ministry of Housing, Communities & Local Government, 2019. Planning Practice Guidance – Light Pollution. Available at: <https://www.gov.uk/guidance/light-pollution#full-publication-update-history>

'Artificial lighting needs to be considered when a development may increase levels of lighting, or would be sensitive to prevailing levels of artificial lighting. Artificial light provides valuable benefits to society, including through extending opportunities for sport and recreation, and can be essential to a new development. However, for maximum benefit, it is important to get the right light, in the right place and for it to be used at the right time.'

'Artificial light is not always necessary. It has the potential to become what is termed 'light pollution' or 'obtrusive light,' and not all modern lighting is suitable in all locations. It can be a source of annoyance to people, harmful to wildlife and undermine enjoyment of the countryside or the night sky, especially in areas with intrinsically dark landscapes. Intrinsically dark landscapes are those entirely, or largely, uninterrupted by artificial light. National parks and nature reserves can serve as good examples, particularly where they support habitats for native nocturnal animals.'

3.2 Local Level

3.2.1 Eastleigh Borough Local Plan (2016-2036)

The Eastleigh Borough Local Plan (2016-2036)⁷ was adopted in April 2022, and sets out the policies, and plans to guide future development within Eastleigh to 2036.

Policy DM8, Pollution, is the principal policy relevant to light pollution within the Local Plan. Although it does not provide quantitative limits, it stresses that development proposals should ensure the minimisation of lighting impacts. It recognises that lighting can have a significant impact on people's perception of their environment, and can cause discomfort, loss of privacy and obstruct the night sky; and that a well-designed approach to light can improve perceptions. Policy DM8 states that Eastleigh Borough Council will seek to ensure that lighting from development does not cause unacceptable environmental or amenity impacts, whilst also providing appropriate illumination.

Policy DM1, General criteria for new development, also acknowledges the implications of flood and security lighting. It recognises that new developments would need to consider and assess their impact on residential amenity.

3.3 Guidance / Standards

The following standards and guidance have been considered within this LEIA and concept lighting design:

- British Standard 12464-2:2024⁸;
- British Standard 13201⁹;
- British Standard 5489-1:2020 Code of Practice for the Design of Road Lighting²;
- Hampshire County Council, Technical Guidance Note TG13 – Street Lighting¹⁰;
- Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night¹¹;
- Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light¹;
- Institution of Lighting Professionals, Towards a Dark Sky Standard¹²; and

⁷ Eastleigh Borough Council, 2022. Eastleigh Borough Local Plan (2016-2036). Available at: <https://www.eastleigh.gov.uk/media/11806/to-be-published-final-local-plan-april-2022-v4.pdf>

⁸ British Standard 12464-2:2024 – Light and Lighting for Outdoor Workplaces

⁹ British Standard 13201 – Road Lighting

¹⁰ Hampshire County Council, Technical Guidance Note TG13 – Street Lighting

¹¹ The Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night

¹² ILP's Towards a Dark Sky Standard, A Lighting Guide to Protect Dark Skies (2021)

- Chartered Institution of Building Services Engineers, Society of Light and Lighting (SLL) Code of Lighting 2022¹³.

¹³ Chartered Institution of Building Services Engineers, 2022. Society of Light and Lighting (SLL) Code of Lighting

4. Assessment Methodology

The following section outlines the methodology applied to identify and assess the potential lighting impacts likely to result from the Proposed Development.

This LEIA and initial Lighting design concept has been undertaken by a competent building services engineer and has been checked and approved by a suitably qualified and competent lighting professional holding member grade with both the Chartered Institution of Building Services Engineers (CIBSE) and the Institution of Engineering Technology (IET) with Chartered Engineering (CEng) status on the Engineering Council Register.

4.1 Relevant Guidance

To safeguard and enhance the night-time environment, it is necessary to control obtrusive light which can present physiological and ecological problems to the Site’s immediate surroundings and inhabitants.

For this report, we have applied the limits and guidance within the Institute of Lighting Professionals (ILP) as set out in the following sections.

The Site has been classified as an E3 zone (Suburban), which corresponds to well-inhabited rural and urban settlements, small town centres of suburban locations with a medium district brightness lighting environment, as indicated in Figure 4.1 below. It is recommended that Local Planning Authorities (LPAs) specify these environmental zones for exterior lighting control within their development plans.

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

Figure 4.1: Table Extracted from ILP GN01/21 for the Reduction of Obtrusive Light - Table 2: Environmental Zones

It is not considered that there is a requirement for a specific curfew allowance and therefore the Proposed Development would look to target the normal pre-curfew limits to the boundary of the development, as set out in Figure 4.2. The illuminated vertical plane along the boundary shall not be lit greater than 10 lx pre-curfew.

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

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

Figure 4.2: Table Extracted from Guidance Notes for the Reduction of Obtrusive Light – Table 3 (CIE 150 Table 2): Maximum Values of Vertical Illuminance on Premises

The design criteria for lux levels, uniformity, and colour rendering index for the Proposed Development have been established using the Society of Light and Lighting (SLL) Code of Lighting 2022, which references BS 12464-2: 2014, covering lighting of outdoor workplaces where Figure 4.3 below is taken from.

Table 4.5 General circulation areas at outdoor workplaces

Ref	Type of area, task or activity	$\bar{E}_m$ (lux)	U_o	R_{GL}	R_a	Remarks
4.5.1	Walkways exclusively for pedestrians	5	0.25	50	20	Where there are other hazards present higher values of $\bar{E}_m$ are required. For example, in water and sewerage treatment works 20 lx, on building sites 20–50 lx and in petroleum and chemical works 50 lx
4.5.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0.40	50	20	
4.5.3	Regular vehicle traffic (max. 40 km/h)	20	0.40	45	20	At shipyards and in docks, R_{GL} may be 50
4.5.4	Pedestrian passages, vehicle turning, loading and unloading points	50	0.40	50	20	For reading labels and signs: $\bar{E}_m$ 50 lx
4.5.5	Cleaning and servicing	50	0.25	50	20	All relevant surfaces

Figure 4.3: Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.5 General circulation areas at outdoor workplaces

Figure 4.3 above outlines the lighting levels for roadways and surrounding paths outside the workplace. Although the guidance is intended for general circulation areas in outdoor workplaces, it also provides specific recommendations for horizontal illuminance levels in traffic areas for vehicles, loading and turning zones, docks as well as pedestrian pathways.

Table 4.13 *Parking areas*

Ref	Type of area, task or activity	$\bar{E}_m$ (lux)	U_o	R_{GL}	R_a	Remarks
4.13.1	Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks	5	0.25	55	20	
4.13.2	Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes	10	0.25	50	20	
4.13.3	Heavy traffic, e.g. parking areas of schools, churches, major shopping centres, major sports and multi-purpose building complexes	20	0.25	50	20	

Note: All the illuminance values listed in the table above should be regarded as absolute minima to be used in areas where there are no extra factors such as fear of crime that might require the lighting level to be increased.

Figure 4.4: Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.13 Parking areas

Figure 4.4 specifies the lighting levels required in parking areas, offering guidance on horizontal illuminance in medium-traffic zones.

The criteria outlined in the tables above have been applied to the Site layout, and the sketch drawings illustrates the intended lux levels in each area, as shown in Figure 4.5 below.

For greater detail of the sketch, please refer to Appendix 3.



Figure 4. 5: Overall Proposed Illumination Levels

4.1.1 Light Output Model

A Light Output Model was developed as part of this LEIA in order to estimate what the light lux levels could be as a result of the concept lighting design.

4.2 Baseline Characterisation

The existing lighting environment was characterised by a desktop assessment and a visual, non-intrusive survey conducted during the day and night of the 13 February 2025. The day element was completed to review the site, and understand the nature of where results should be taken for both safety and clarity of how the site was used at present. A night walk following the same route was then conducted taking light meter readings in the places identified during the day walk.

4.2.1 Desktop Review

To inform the on-site survey, a desktop assessment of the Site was undertaken using existing plans of the Site and Google Maps to gather information on the existing lighting characterisation, sky radiance mapping of light pollution and the baseline lighting survey completed.

4.2.2 Visual Survey

Illuminance measurements were taken from 29 different points across all land use types surrounding the Site, ranging from the entrance, to the fields, to the paths alongside, and the existing building along West End Road (see Appendix 2).

The purpose of the visual survey was to:

- Gain an understanding of the existing sources of artificial lighting on and surrounding the Site;
- Gain an understanding of the current levels of obtrusive light; and
- Gain an understanding of the Site and its surroundings.

During the daytime survey, locations for the proposed illuminance measurements were recorded on the Site plan. During the night-time survey, the locations were re-visited, and the illuminance levels were recorded on the site layout plans.

Illuminance measurements were taken in the horizontal at ground level and vertical plane at 1.25m above the floor level.

Illuminance measurements were taken using a Gossen Mavolux 5032B illuminance meter. This type is recommended in the ILP Guidance Note 7/17 "Choosing the right photometer or luminance meter" for providing a close match to the CIE $V(\lambda)$ photopic response curve and calibrated for low light levels.

4.3 Significance Criteria

The magnitude (or scale of change) is determined by assessing the predicted deviation from baseline conditions in relation to relevant guidelines. Wherever possible, a quantifiable assessment has been conducted using the following criteria: Substantial, Moderate, Slight and Negligible as detailed in Table 4.1 below.

Table 4.1: Magnitude of Impacts upon Lighting Sensitive Receptors

Magnitude	Examples of Impact
Substantial	Major increase in the level of light spill and glare on to surrounding areas and illuminance levels at the windows of residential receptors and would result in a major effect on baseline conditions significantly more than the recommended ILP guidance levels.
Moderate	Moderate increase in the level of light spill and glare on to surrounding areas and illuminance levels at the windows of residential receptors and would result in a noticeable effect on baseline conditions moderately more than the recommended ILP guidance levels.
Slight	Minor increase in the level of light spill and glare on to surrounding areas and illuminance levels at the windows of residential receptors, would cause a minor perceptible change in baseline conditions which are slightly above recommended ILP guidance levels but where current uses could still be maintained.
Negligible	No discernible increase or decrease in the level of light spill and glare onto surrounding areas and illuminance levels at the windows of residential receptors and would cause no discernible effect to current baseline conditions.

Receptors can have varying levels of sensitivity to lighting. Sensitivity has been categorised as High, Medium, or Low, as detailed in Table 4.2 below.

Table 4.2: Sensitivity of Receptors to Lighting Impacts

Sensitivity	Examples of Impact
High	- Residential properties within ILP Environmental Zone E0 & E1 - Ecological receptors - Intrinsically dark landscapes (ILP Environmental Zone E0 & E1)
Medium	- Residential properties within ILP Environmental Zone E2 - Low district brightness area (ILP Environmental Zone E2) e.g., small town centres or urban locations.
Low	- Residential properties within ILP Environmental Zone E3 & E4 - High district brightness area (ILP Environmental Zone E3 & E4) e.g., Town/city centres with high levels of night-time activity.

The interaction between magnitude and sensitivity is used to determine the significance of an environmental effect, as illustrated in Table 4.3 below.

Table 4.3: Impact Significance Matrix

Sensitivity of Receptor	Magnitude of Impact			
	Substantial	Moderate	Slight	Negligible
High	Major	Major-Moderate	Moderate	Minor
Medium	Major-Moderate	Moderate	Minor	Minor - Negligible
Low	Moderate	Minor	Minor - Negligible	Negligible

As demonstrated in Table 4.3, 'Major', 'Major-Moderate' and 'Moderate' effects are considered to be 'significant'. All other effect scales are considered to be 'not significant'.

All receptors other than ecological receptors have a receptor sensitivity of 'Low'. Ecological receptors, i.e. bats, have a receptor sensitivity of high.

In assessing the proposed luminaires, their locations, and their impact on the surroundings of the development, the lighting design should aim to achieve a 'Negligible' effect. This means there should be no discernible increase or decrease in the level of light spill or glare onto surrounding areas and no change in illuminance levels at the windows of residential receptors. Achieving a negligible effect would ensure no discernible effect to current baseline conditions. Thus, a Negligible impact should be considered and reviewed when designing the concept lighting plan for the Site.

5. Receptors

5.1 Dark Skies

As referenced by the ILP's Towards a Dark Sky Standard¹², there are three main types of Light Pollution: Sky Glow, Glare and Light Intrusion (or Light trespass).

- **Sky glow** refers to the brightening of the night sky visible from the horizon, predominantly originating from built-up areas. It is caused by poorly directed light sent above the horizon, which scatters in the atmosphere. This can be prevented by ensuring that lights are directed downwards;
- **Glare** is the uncomfortable brightness of a light source when viewed against a contrasting darker background. In less densely populated rural areas, glare will appear relatively more intense than in urban areas.
- **Light intrusion, or light trespass**, occurs when light spills beyond the property or area being illuminated. While it generally pertains to windows and private property, it also affects natural habitats and areas of high species interest.

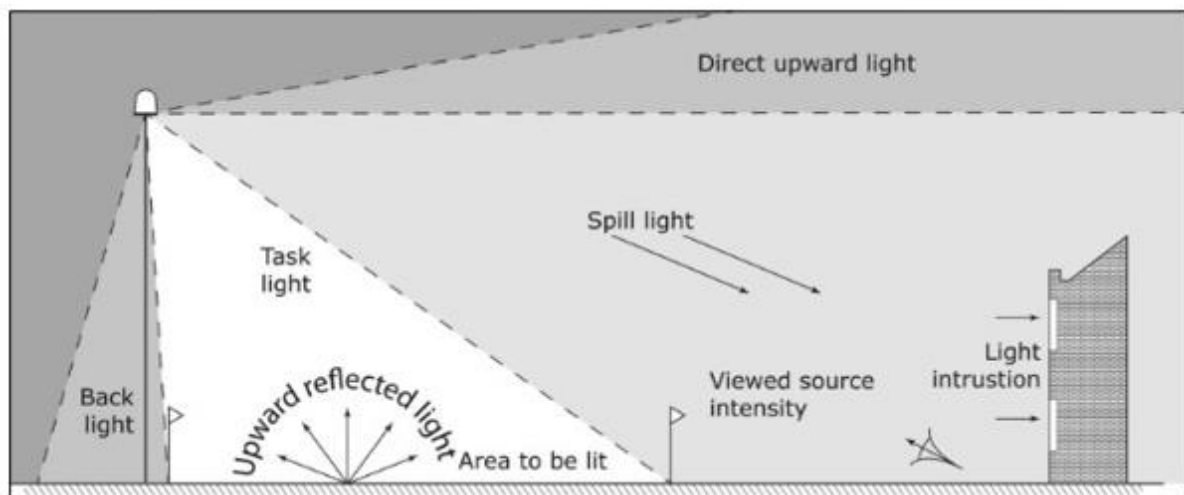


Figure 5.1: Types of Obtrusive Light from the Institution of Lighting Professionals

A 'Dark Sky' as defined in the Oxford Dictionary is denoting or located in a place where the darkness of the night sky is relatively free of interference from artificial light.

Dark-sky lighting refers to lighting solutions specifically designed to minimise light pollution, which is the excessive or misdirected artificial light that can obscure the night sky. The International Dark-Sky Association (IDA) promotes the use of dark-sky compliant lighting to protect the night environment. To be considered dark-sky friendly, lighting fixtures must:

- Restrict the amount of up-ward-directed light to prevent skyglow;
- Avoid causing glare to ensure visibility and safety;
- Avoid over-lighting to conserve energy;
- Utilise dimming and other appropriate lighting controls to reduce unnecessary light; and
- Minimise short-wavelengths (bluish) light in the night-time environment to lessen the impact on human health and wildlife¹⁴.

Dark-sky lighting is essential for preserving our view of the stars and the cosmos, as well as for supporting the well-being of nocturnal wildlife and maintaining the overall health of our

¹⁴ DarkSky Approved | DarkSky International

environment. Additionally, it involves selecting responsible outdoor lighting that enhances safety, security, and the aesthetic beauty of the night without contributing to light pollution.

Sky glow is the general diffuse sheen visible in the direction of large cities, airports, and industrial complexes. It results from both natural and artificial light sources and is not solely dependent on lighting design. Atmospheric conditions such as humidity, aerosols, clouds, haze, and pollution also play a significant role. Light propagating into the atmosphere, either directly from upward directed or insufficiently shielded sources, or after reflecting off the ground or other surfaces, is partially scattered back towards observers on the ground. This effect is illustrated in Figure 5.1¹⁵.

'Light spill' as defined by the IPL Guidance note 01/02⁸, is the "spilling of light beyond the boundary of the area being lit and light intrusion (nuisance) are forms of obtrusive light which may cause nuisance to others, or adversely affect fauna and flora as well as waste money and energy."

Selecting the appropriate luminaire with the correct optical distribution and mounting height is crucial for minimising light spill and obtrusive light while ensuring optimal lighting performance in the task area.

5.2 General Public

In this assessment, public receptors, including pedestrians and road users, are considered to be potentially affected by glare from the Proposed Development. Key existing public receptors have been identified and classified as light-sensitive observers within this evaluation. General public receptors are assumed to be at local ground level (0 m).

5.3 Ecological

Although significant research into the effects of lighting on ecological receptors is ongoing, there are currently no definitive guidelines that establish absolute light pollution limits for light-sensitive ecological areas. Nevertheless, some research has been conducted, and potentially suitable light spill level limits do exist.

According to the ILP GN08/23 document¹¹, "Bats and Artificial Lighting", there are no lux level thresholds available for individual bat species. The key is to maintain or reduce existing light levels and reduce blue content to protect any bat species present.

Surveys conducted by Aspect Ecology (reported upon within a standalone Ecological Appraisal¹⁶) identified pipistrelle bats commuting and foraging along the north peripheral hedgerows. However, bats are likely not using this area as a roosting site.

Glare has some impacts on bats and other wildlife, and therefore should be considered through the application of best practice advice on reducing obtrusive light – the Reduction of Obtrusive Light remains best practice. Lighting design concepts, when considering bats, should follow guidance set out in Guidance Note GN08/23¹¹. Pipistrelles bats have been identified as being attracted to light sources along foraging routes when lighting is between 1 and 5 lux.

On this basis, an appropriate luminaire specification should have the following key features:

- All luminaires should lack UV elements when manufactured. LED technology reduced amounts of UV wavelengths.

¹⁵ The Institution of Lighting Professionals, Guidance Note 01/02 The Reduction of Obtrusive Light

¹⁶ Aspect Ecology, 2026. 6655 EcoAp vf1 JE/JW/AB - Ecological Appraisal.

- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capabilities.
- Light sources should feature peak wavelengths higher than 550 nm.
- Only luminaires of good quality with a negligible or zero upward light ratio, and with good optical control, should be considered.

5.4 Neighbouring Properties

Neighbouring properties are situated along the eastern and south-western boundaries. Although no measurements were taken, Google Earth imagery indicates that these properties are at a considerable distance from the Proposed Development.

Careful consideration should be given to the types of proposed lighting poles, incorporating shields and limiting the upward light output ratio to mitigate any potential impact.

6. Existing Baseline

6.1 Desktop Assessment

This section outlines the desktop assessment of the development undertaken prior to the on-site surveys, and any relevant information gathered on the existing lighting characterisation, sky radiance mapping of light pollution and the baseline lighting survey completed.

6.1.1 Characterisation of Existing Lighting

The Site is bordered by a residential development to the southwest, directly across the A3024. Adjacent lies Windhover Roundabout, with additional residential properties situated across the A27 to the east. Adoptable street lighting is installed along the carriageway following the Local Plan guidance referenced in Section 3 of this report.

Agricultural land and wooded areas are located to the north, and are unlit. The broader north and west areas are comprised of mainly agricultural land and wooded regions, while the east features a mix of agricultural land and residential properties. This area is unlit.

The Site is within 500 meters of Junction 8 of the M27 via Windhover Roundabout and has access points on its south and east boundaries. Carriageway lighting can be found illuminating the junction of this major carriageway. The road junction is maintained by national highways who have no further guidance on the lit environment to that of the British Standard outlined in Section 3 of this report.

The southern area is predominantly residential with lighting to carriageways provided.

The development currently has a number of outbuildings sitting on the south eastern boundary. Here there are 3-4 No of flood lights assumed for security due to the nature of the presence detector switching the luminaires on when an object passes.

6.1.2 Sky Radiance Mapping

Skyward radiance mapping prepared by Campaign for the Protection of Rural England (CPRE)¹⁷ indicates 4-8 NW/Cm²/sr levels of skyward radiance in the vicinity of the Site, and this is considered to be 'medium brightness' (Figure 6.1)¹⁸. This brightness level is likely a resultant of the Site's proximity to residential properties, as well as Windhover Roundabout, the A3024, A27 and the M27 where readings of 8-16 NW/Cm²/sr levels are recorded.

Whilst this information is useful to understand the current sky glow and light pollution impact within the area of the site, it does not indicate what luminaires provide these levels recorded in the map.

¹⁷ <https://www.nightblight.cpre.org.uk/maps/>

¹⁸ England's Light Pollution and Dark Skies

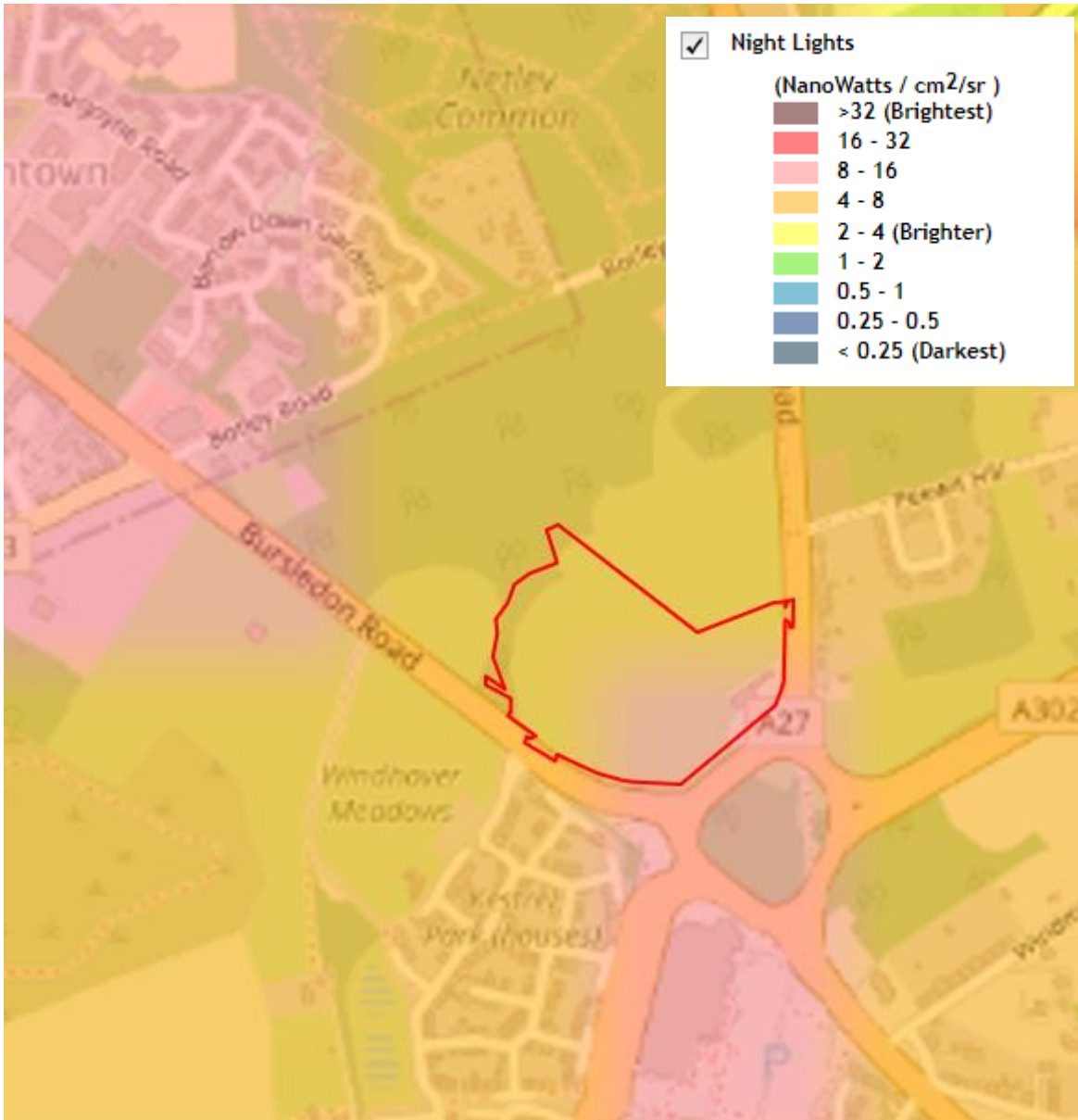


Figure 6.1: CRPE Light Pollution Mapping

6.2 On-Site Visual Survey

6.2.1 Methodology

A visual inspection and light survey were conducted during the day and night of the 13 February 2025 to determine the existing baseline light conditions at the Site.

Prior to the survey, a full desktop assessment was completed to determine the onset of astronomical darkness, (as lighting surveys can take place no earlier than astronomical dusk to ensure readings are representative of natural darkness with no contributions from daylight for sunlight).

Illuminance measurements were taken in the horizontal and vertical planes.

6.2.2 Measurement Locations

Measurements were taken across 29 different locations identified during the initial day time site walk. Whilst many are along the boundary line, seven were taken through the centre of the site to understand what impact, if any, the existing surrounding lighting had on the site. Figure 6.2 shows the locations and photographs taken looking west.



Figure 6.2: Baseline lighting survey points

6.2.3 Equipment

Measurements were taken using a BSRIA Gossen Mavolux 5032B lux meter. This type is the recommended in the ILP Guidance Note 7/17 “Choosing the right photometer or luminance meter” for providing a close match to the CIE V(λ) photopic response curve and calibrated for low light levels.

The calibration certificate (No: STD_155637) for the illuminance meter (Serial Number: 0A31316) used during the on-site survey can be seen in Appendix 1.

6.2.4 Weather and Astrological Conditions

6.2.4.1 Night-Time Survey

The night-time survey was undertaken between 18:44pm and 19:37pm. Weather conditions was an overcast with light sprinkles of rain; with a full moon (99% visible¹⁹) The temperature was 0-6°C²⁰. These conditions are seen as fair and reasonable to complete the survey.

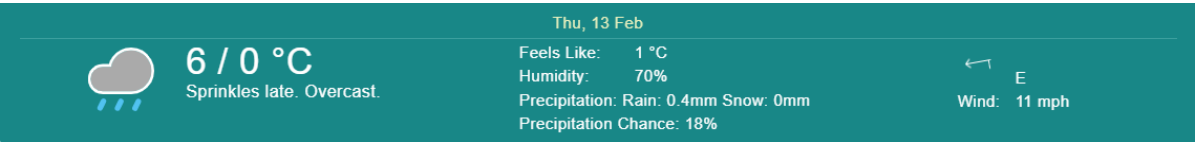


Figure 6.3: Weather on 13 February 2025

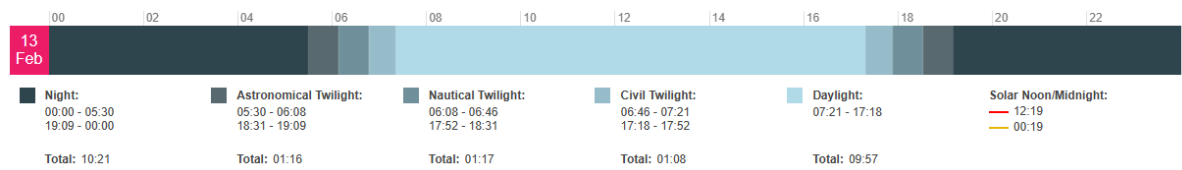


Figure 6.4: Astronomical chart for 13 February 2025

6.2.5 Existing Lighting

This section is to be read in conjunction with the plan provided in Appendix 2 showing the location of the lighting points, as referenced in Table 6.1. The agricultural building currently on-site has existing lighting, as shown below in Figure 6.5

¹⁹ [Moon Phases | Current Moon Phase and Monthly Moon Phase Calendar](#)
²⁰ [Past Weather in Bursledon, England, United Kingdom — Yesterday or Further Back](#)



Figure 6. 5: Point 28 & 29 – Existing Lighting. Taken during a night survey on 13 February 2025

6.3 Night-Time Survey Summary

The results indicate an inconsistent level of lighting present. This inconsistency is likely due to the high traffic roundabout located directly to the south east, the residential properties situated to the east and southwest, and the localised existing lighting on the Site itself.

Table 6.1: Measurements Recorded During a Night Survey on 13 February 2025

Points	X (lux)	Y (lux) 1.2m above finished floor level (AFFL)	Time PM
1	1.14	1.05	18:44
2	0.15	0.14	18:47
3	0.11	0.09	18:48
4	0.09	0.09	18:51
5	0.51	1.62	18:55
6	2.8	3	18:56
7	5.12	5.7	18:59
8	6.3	6.7	19:00
9	4.6	3.9	19:03
10	6	4.5	19:04
11	0.6	0.62	19:06
12	0.2	0.36	19:07
13	0.1	0.18	19:09
14	1.75	1.3	19:11
15	1.04	1.7	19:12
16	0.11	0.12	19:13
17	0.14	0.13	19:15
18	0.21	0.83	19:17
19	0.1	0.23	19:18
20	0.1	0.02	19:21
21	0.09	0.06	19:23
22	0.07	0.03	19:25
23	0.06	0.02	19:26
24	0.07	0.04	19:28
25	0.06	0.01	19:29
26	0.08	0.04	19:31
27	0.07	0.03	19:33
28	11.48	1.12	19:36
29	7.4	3.7	19:37

6.4 Baseline Ecology

Section 5.3.14 of the Ecological Appraisal¹⁶ has identified the presence of Bats to the north western hedgerow network connection woodlands to the north of the site to Netley common LNR in the north. Nighttime Bat walkover surveys referenced in the Ecological Appraisal were taken between July and October, and found the presence of common pipistrelle, amongst others.

7. Concept Lighting Design

7.1 Overview of Concept Lighting Design

The Proposed Development will see several different types of people from the workforce, utilising the new warehouses, offices and parking area, each requiring a different lighting experience for way finding and passage.

Artificial lighting is essential to ensure the safety and security of individuals travelling within and using the Site and will be vital in enhancing visibility and fostering a sense of security.

A preliminary external outline concept lighting scheme has been developed to ensure that the conditions outlined below can be achieved whilst mitigating light pollution and limiting the impact to sensitive receptors.

The concept design specifies the use of 4000°K LED luminaires to achieve significant energy savings and provide excellent optical control. This technology helps minimise obtrusive light, benefiting residents and neighbouring buildings.

New access roads will be illuminated for the safe passage of pedestrians, cyclists, and road users by increasing the ability to recognise other users, increase safety and see hazards. HCC has standards for street lighting including²¹:

- Lighting designs should be based on the current versions of: a) BS 5489-1 - Code of Practice for the Design of Road Lighting (Part 1: Lighting of Roads and Public Amenity Areas) and the associated current BS EN 13201 Standards
- Light intrusion (such as into windows) is to be avoided and any apparent issues are to be monitored by the Developer in accordance with ILP Guidance Note for the Reduction of Obtrusive Light. Lighting designers should produce vertical illuminance calculations where appropriate.
- Overall maintenance factors are derived from BS5489 methodology. For a Hampshire County Council PFI-approved IP65 luminaire the overall maintenance factor is derived thus:
 - a) 48 – month cleaning cycle = 0.94 (no allowance for <6m in E3/4 Zones)
 - b) LED lumen maintenance at 25 years = 0.90.
 - c) “lamp” survival factor (failure fraction) = 1.0.
 - d) Overall maintenance factor = 0.85.

7.2 Design Mitigation Measures

The following mitigation measures have been applied to the lighting design to minimise obtrusive light and impact (daytime and night-time) on the environment and ecology.

- The use of luminaires with zero upward light output at and above the horizontal plane to reduce glare and sky glow on neighbouring properties; and
- The use of optimal light distributions for their specific location and orientation to focus on the task areas only.

²¹ [TG13 - Street Lighting](#)

7.3 Lighting Controls, Dimming and Switch-Off

Advancements in technology enables the variation of lighting levels. Typically, lighting levels can be reduced when usage decreases, unless there are compelling reasons to maintain higher levels, such as in areas with high accident or crime rates. Dimming lights to specific levels allows them to be adjusted to the appropriate lighting class to meet specific road conditions at any given time. Additionally, implementing dimming offers environmental benefits, including reduced light intrusion, diminished light pollution, lower electrical energy consumption, and decreased carbon emissions.

The proposed luminaires are to have Constant Light Output (CLO) enabling built into the LED drivers. This functionality adjusts the luminous flux of the light source, based on the known or predicted depreciation behaviour of the light source, to enable a constant luminous lux output over time. This avoids over lighting the areas at initial installation period and decreases replacement and luminaire cleaning times.

For further mitigation measures, the lighting on the access road can be 'group' controlled. This means that the lighting on the road can be turned off (or dimmed to 1%) when pedestrians or vehicle movement is not detected at each entry point of the roads. This can be achieved using motion detector sensors built into fittings or mounted to the buildings. The timings and commissioning of this should be further investigated at the detailed design stage.

7.4 Luminaires and placement

The type of fittings recommended, following the mitigation measures and concept design, can be seen below in Figure 7.1. The selection of luminaires should complement the architectural and landscape designs and take into consideration the final finishes from luminaires already in place in areas surrounding the Site.

Neighbourhood lighting which consists of roadways, pathways, and parking areas, has been based on a mixture of luminaires to achieve a layered light approach for safety and accent. The main lighting should be achieved using 'light poles', like BEGA 84252 K4 and BEGA 77 718 K4 with a long arm achieve a uniform lighting level across the walkways and roads.

Optics on the chosen luminaire would mitigate light in the upper hemisphere providing a >1% upward lighting output ratio. This would limit the obtrusive light and direct glare into neighbouring properties and the night sky.



Figure 7.1: Parking and Access Areas - Pole Top

To provide additional lighting, where a pole top luminaire is not suitable wall luminaires should be used with BEGA 66 462 K4. With their asymmetrical light distribution, these luminaires are ideal for the spatial illumination of spaces, such as small open spaces, entrance areas and parking spaces.

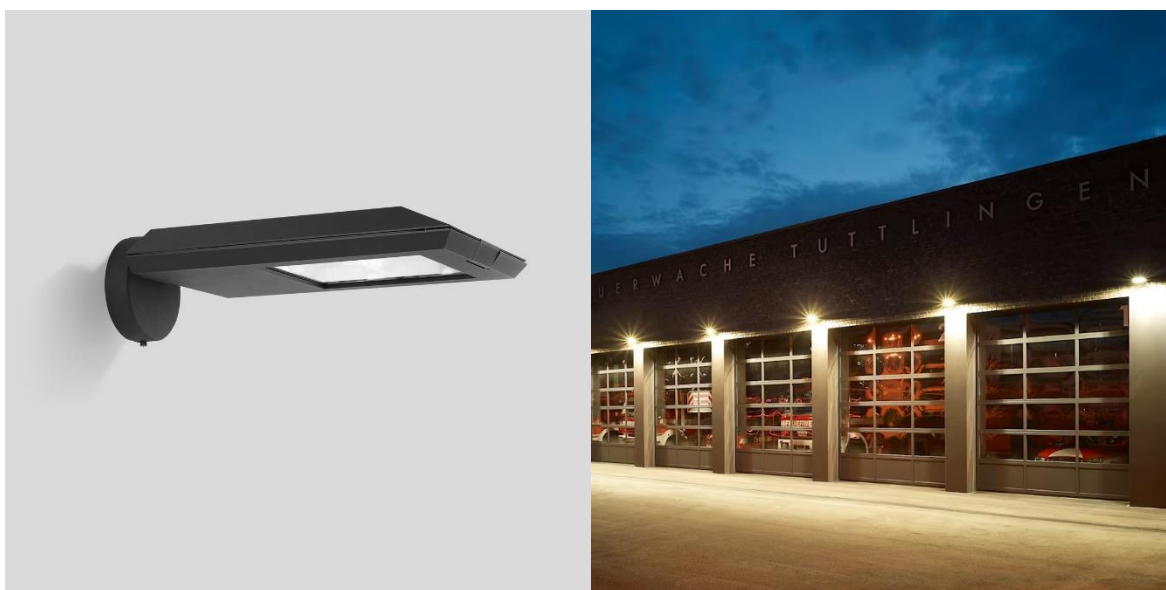


Figure 7.2: Wall Luminaire

To provide additional lighting, where a pole top and wall luminaires are not suitable pendant luminaires should be used with BEGA 99 458 K4. With their symmetrical flat beam light distribution for use with catenary systems, the cable hanger system of the luminaire is suitable for transverse suspension systems and longitudinal chain systems.



Figure 7.3: Pendant luminaire

8. Results

8.1 Summary of Results – On-Site

The proposed lighting design for the Proposed Development can achieve the required average lighting levels of 10lx pre-curfew as according to E3 environmental zone and provide uniformity across different areas. The proposed lighting design also seeks to reduce obtrusive light.

The design intent demonstrates that it is feasible to achieve the lighting levels required by the standards identified in Section 3, ensuring the safe passage workers while mitigating light exposure to the defined receptors identified earlier in this report. Figures seen below provide the reader with what can be achieved within the site boundary with the luminaires identified in the section above.

The figures provided are taken from initial lighting calculations at this stage of the design and provide information on lux levels following the scale seen in Figure 8.1 below.

Additionally, the resultant light spill, glare on surrounding areas, and illuminance levels at local receptors would not have a significant effect on the neighbouring vertical boundary, see Section 8.2.

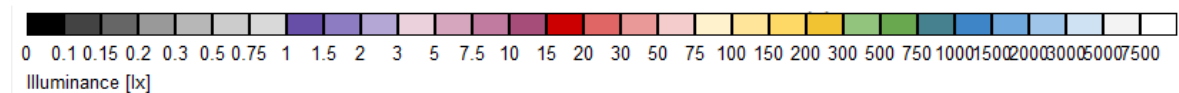


Figure 8.1: Lux level scale, to be used with images below

Figure 8.2 illustrates the light output model that the fittings selected along the main dock and access area through the development could achieve. The results indicate that the access/dock area achieves an illumination level of 50 lux on the outer edges, which gradually decreases to approximately 20 lux in the center which meets the relevant requirements.

It is also acknowledged that the north-eastern and south-western areas of the main dock / access area are expected to have 15-20 lux levels.



Figure 8.2: Expected Lux Levels in Dock and Access Areas

Figure 8.3 illustrates the light output model that the selected fittings can achieve throughout the car parking areas within the development. The results indicate that the parking areas achieves an average illumination level of 10 lux at 0.25Uo uniformity which meets the relevant requirements.



Figure 8.3: Expected Lux Levels in Car Parking Areas

Figure 8.4 illustrates the light output model that the selected fittings can achieve throughout the roadway’s areas within the development. The results indicate that the roadway access areas achieve an average illumination level of 10 lux at a uniformity of 0.4U_o which meets the relevant requirements. Where the access road meets the A27 West End road, proposed illumination levels are in keeping with the baseline lighting of the highway as found from the measurements taken on the 13 February 2025.



Figure 8.4: Expected Lux Levels in the development entrances

8.2 Summary of Results – Off-Site

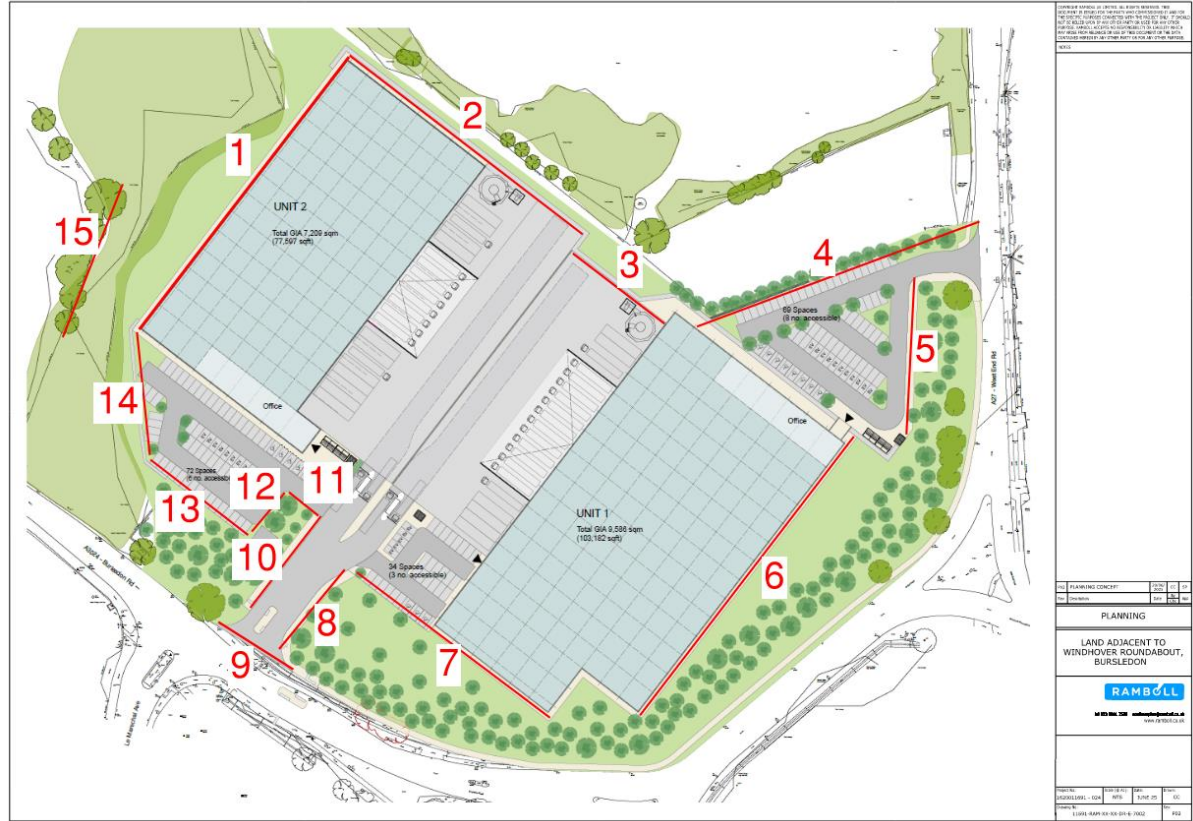


Figure 8.5: Vertical Plane locations

The figure above is taken from the initial calculations completed to understand what is achievable in relation to light spill on to vertical planes around the site boundary and receptors.

The table below has listed out the average lighting level across the calculation plane inserted at a height of 0-4m in the vertical plane.

As shown in Table 8.1, each of the planes have the ability to achieve the guidance lighting levels described in Section 4 of Figure 4.2 for this report, i.e., to have a pre-curfew average lighting level on the vertical plane of 10 lux level for an E3 Environmental Zone.

Table 8.1: Vertical Plane Illuminance Level results

Point	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Illuminance level in lx	0.02	2.3	10.9*	0.9	2.2	0.01	0.8	0.9	3.9	1.1	2.7	1.9	1.5	1	0.04

* At location 3 the average Illuminance Level drops to <8lux within approximately 0.5m of the plane shown in Figure 8.5

Vertical plane 15 has been added to give an indication of the potential lighting levels on the hedgerow network extending to the north-west boundary of the site which may have bat roosting potential (see Ecological Appraisal for further information on the location identified). The vertical luminance taken as part of the initial design for this report found that a lighting level of 0.04lx can be achieved. This following the ILP Guidance Note GN 08/23 which specifies to achieve less than 0.4lx on the vertical plane, as set out in Section 4.54 of the guidance. Section 5.10 also specifies to provide dark corridors of less than 0.5lux.

8.3 Summary of Assessment of Effects

Table 8.2 provides a summary of the assessment of effects.

Table 8.2: Summary of Assessment of Effects

Receptor	Sensitivity	Magnitude of Change	Significance of Residual Effect (after mitigation)	Comment
Dark Skies	Low	Negligible	Negligible	Dark sky lighting proposed will ensure light does not spill into surrounding areas.
General Public	Low	Negligible	Negligible	Dark sky lighting proposed will ensure light does not spill into surrounding areas
Ecological	High	Negligible	Minor	Areas where wildlife has been detected will remain unlit.
Neighbouring Properties	Low	Negligible	Negligible	Dark sky lighting proposed will ensure light does not spill into neighbouring properties

8.4 Recommendations

Low levels of light spill on the horizontal plane have been achieved in the concept design by utilising quality luminaires with controlled light “throw” in the lower hemisphere with no rear light spill. All fittings should be orientated to minimise light spill on the adjacent and nearby boundaries.

Within the proposed lighting design, the impact on potential ecological receptors has been mitigated as far as reasonably practicable at this stage in the design by:

- Using luminaires with zero upward light output at and above the horizontal plane to reduce glare and sky glow on neighbouring properties, potential bat foraging routes and into residential windows;
- Using optimal light distributions for their specific location and orientation to focus on the task areas only; and
- No luminaires proposed to be positioned on the boundary line behind the building.

The proposed lighting design for the external areas of the development ensures a safe passage for workers while minimising obtrusive light to neighbouring properties and other receptors.

Initial lighting designs show that light produced from the development's luminaires will not be present on the vertical plane along the red line boundary and will mitigate light glare and obtrusive light on the local existing residential and ecological receptors.

If required, further interventions could be discussed and agreed at detailed design stage.

Interventions could include measures such as:

- Additional planting of screening vegetation;
- Control on lighting (dusk to dawn sensors, time clocks);
- Dimming of luminaires; and
- Rear lamp shields.

9. Conclusion

9.1 Summary

In comparison to the baseline lighting conditions, the impact of the Proposed Development on surrounding light sensitive receptors has been reviewed to ensure that there would be no significant effect to current to the receptors identified in this report. The concept lighting design would mitigate the light spill along both the western and southern boundary lines, as well as the neighbouring vertical planes and would provide a safe and inviting environment within the Proposed Development itself.

It is proposed that the lighting design presented within this report be conditioned and developed to a full design, with a lux level plot drawing identifying vertical places on neighbouring boundaries.

The principles of design described within this report highlights how the Proposed Development can be designed to minimise lighting impacts on ecological and surrounding landscape whilst maintaining safe roads and pathways.

9.2 Local Receptors

Neighbouring properties along the southwest and eastern boundary have been identified and assessed as sensitive receptors in this report.

The proposed design concept also shows that light can be limited on the vertical plane and can be lit to a maximum of 10lux in line with the Institution of Lighting Professionals Guidance Note for the Reduction of Obtrusive Light for ILP Environmental Zone E3, providing a neutral residual effect without mitigation measures.

9.3 Dark Sky Receptors

The initial assessment of potential luminaire types and placement at this stage shows that the design concept intent would limit glare and sky glow effect, as described out in the ILP (2021) Guidance Note for the Reduction of Obtrusive Light for ILP Environmental Zone E3.

9.4 Ecological Receptors

The levels of light spill from the proposed lighting have been predicted for the surrounding ecological receptors. The north western boundary of the Site will remain unlit as part of the Site's development, ensuring no impact from the proposed lighting.

Additionally, under the proposed scheme, all trees, hedges, and boundary shrub to the north will be fully retained and safeguarded under the development proposals. The distance from the ecological receptors and the development area further reduces sensitivity and minimises the impact on these receptor type.

Appendix 1

Gossen Mavolux 5032B Lux meter (Serial Number: 0A31316)
calibration certificate (No: STD_155637)

Certificate of Calibration

Issued by:BSRIA Limited

Date of issue:20 September 2024

Certificate number

STD_155637

Page 1 of 3 pages

BSRIA

Laboratory address:

Old Bracknell Lane West, Bracknell,
Berkshire RG12 7AH

T: +44 (0) 1344 459 314 | 0800 254 5566

E: instruments@bsria.co.uk

W: www.bsria.com/uk/instrument/

MARTIN TROTTER

Approved signatory

Customer:

Instrument Solutions
Old Bracknell Lane West
Bracknell Berkshire RG12 7AH

Date received:

18 September 2024

Instrument:

BSRIA I.D.:202973

Description:Light meter

Manufacturer:Gossen

Model:MAVOLUX 5032B USB

Serial number:0A31316

Procedure version:U6F14V2

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.
Unit zero checked prior to calibration.

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:20 September 2024

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.

Doc ID RUK2021N00014-RAM-RP-00256 / Version 2.0

39/45

Certificate of Calibration

As Found Results

Certificate number
STD_155637

Page 2 of 3 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 2024	14/03/2024	12 Months
Light Bench (ZZMLB03)	18425/1 & 18427/1	ZZMLB03 - March 2024	14/03/2024	12 Months
Distance Measuring System (ZZMLB04)	4816	ZZMLB04 - Feb 2024	15/02/2024	12 Months

Calibration uncertainties:

The reported measurement uncertainty values shown have been calculated taking into account the device resolution and stability at the time of calibration.

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

Instrument contents:

Main unit	Yes
Detector head	Yes
Zero cap	Yes
USB cable	Yes
Software CD	Yes
x1 battery fitted	Yes
x1 battery spare	Yes
Manual	Yes
Calibration certificate	Yes
Carry case with strap	Yes

Inspection results:

Visual inspection	Pass
Integrity seals	Pass
Memory cleared	Pass

Certificate of Calibration

As Found Results

Certificate number
STD_155637

Page 3 of 3 pages

Calibration procedure:

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 BS667 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.

Calibration results:

Illuminance - lux range

Unit under test display zeroed before test

Applied	Indicated	Correction	Specification	% of Spec.	Uncertainty
50.00 lux	50.1 lux	-0.10 lux	±3.50 lux	2.9 %	2.5 lux
100.0 lux	102.2 lux	-2.2 lux	±6.0 lux	36.7 %	5.0 lux
200.0 lux	204 lux	-4.0 lux	±11.0 lux	36.4 %	10 lux
500.0 lux	516 lux	-16.0 lux	±26.0 lux	61.5 %	25 lux
1000.0 lux	1027 lux	-27.0 lux	±51.0 lux	52.9 %	50 lux
2000.0 lux	2050 lux	-50.0 lux	±101.0 lux	49.5 %	100 lux

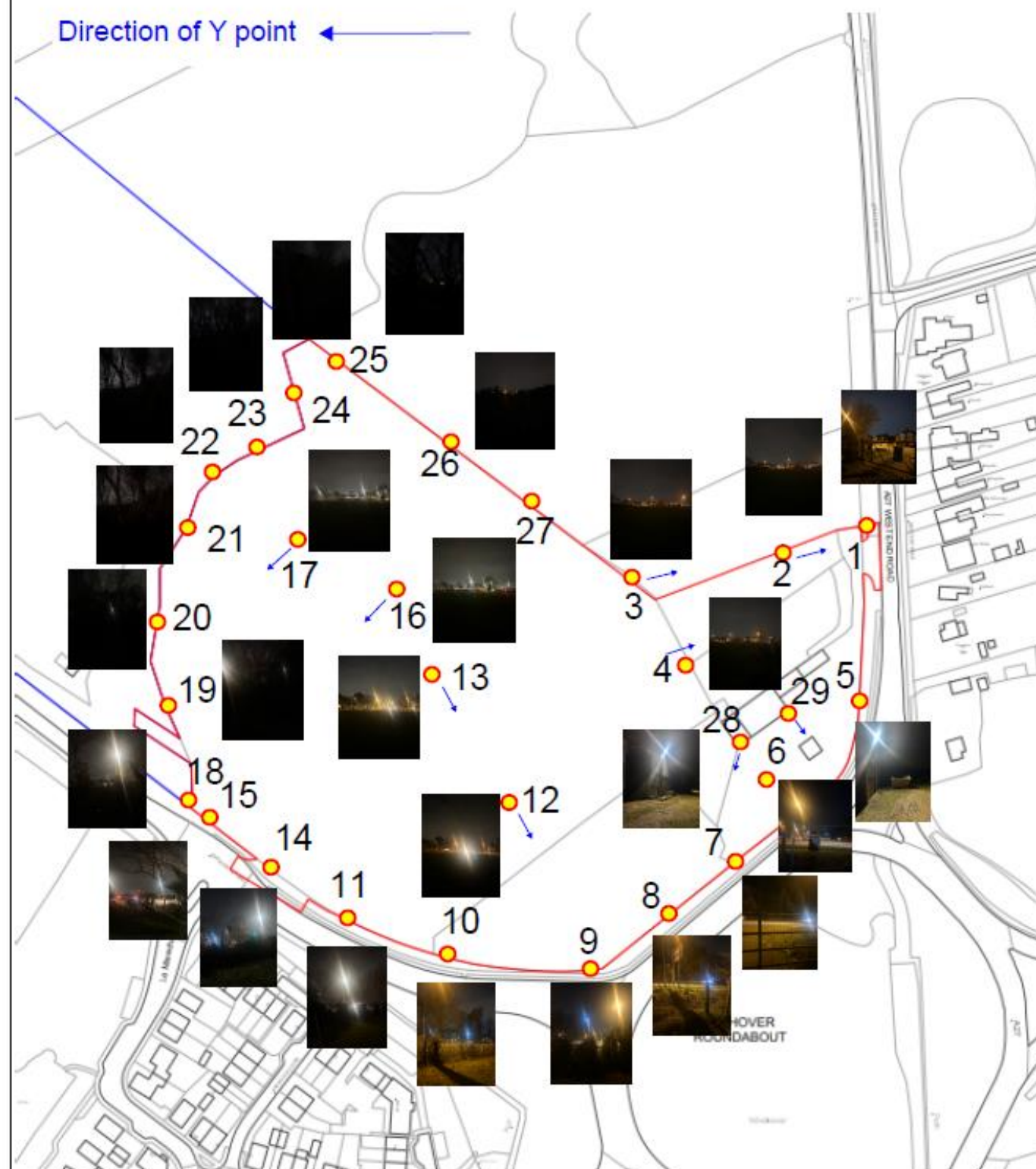
End.

Appendix 2 Baseline lighting survey results

(All Results are presented in Lux)

Key

Direction of Y point



Land at Windhover, Bursledon

13/02/2025

Points	X (lux)	Y (lux)	Time PM
1	1.14	1.05	18:44
2	0.15	0.14	18:47
3	0.11	0.09	18:48
4	0.09	0.09	18:51
5	0.51	1.62	18:55
6	2.8	3	18:56
7	5.12	5.7	18:59
8	6.3	6.7	19:00
9	4.6	3.9	19:03
10	6	4.5	19:04
11	0.6	0.62	19:06
12	0.2	0.36	19:07
13	0.1	0.18	19:09
14	1.75	1.3	19:11
15	1.04	1.7	19:12
16	0.11	0.12	19:13
17	0.14	0.13	19:15
18	0.21	0.83	19:17
19	0.1	0.23	19:18
20	0.1	0.02	19:21
21	0.09	0.06	19:23
22	0.07	0.03	19:25
23	0.06	0.02	19:26
24	0.07	0.04	19:28
25	0.06	0.01	19:29
26	0.08	0.04	19:31
27	0.07	0.03	19:33
28	11.48	1.12	19:36
29	7.4	3.7	19:37

PLANNING CONCEPT	20/04/2025	CC	SP
Rev	Description	Date	By

PLANNING

LAND ADJACENT TO
WINDHOVER ROUNDABOUT,
BURSLEDON

RAMBOLL

01 923 8961 7000 enquiries@ramboll.co.uk
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BASELINE LIGHTING SURVEY RESULTS

Project No:	Scale (B A1):	Date:	Drawn:
1620011691 - 024	NTS	JUNE 25	CC
Drawing No:			Rev:
11691-RAM-XX-XX-DR-E-7002			P02

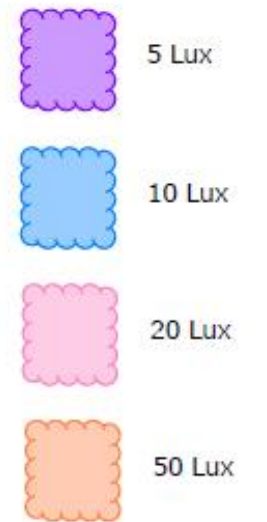
Appendix 3

Lighting Concept Strategy – Proposed Illumination Levels

NOTES

1. Proposed lux levels are taken at finished floor level
2. Proposed levels are taken from the design criteria as detailed in the baseline lighting report section 4.
3. Backgrounds have been provided by Terence O'Rourke Ltd

Lux Levels



Rev	Description	Date	By	App
1	PLANNING CONCEPT	28/09/2023	CC	BP

PLANNING

LAND ADJACENT TO
WINDHOVER ROUNDABOUT,
BURSLEDON

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LIGHTING CONCEPT STRATEGY - PROPOSED ILLUMINATION LEVELS

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