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Dunsbury Park, Havant, Portsmouth – Plot 4 Building 400
LIGHTING ENVIRONMENTAL IMPACT ASSESSMENT

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Executive Summary

Ramboll have been commissioned to develop the Lighting Environmental Impact Assessment (LEIA), including a concept lighting design, for the proposed Development of Dunsbury Park, Havant, Portsmouth for Portsmouth City Council (the 'Client')

This report presents the LEIA and initial lighting design concept for the proposed Dunsbury Park development, hereafter referred to as 'The Proposed Development'.

The planning application is anticipated to comprise the following elements:

- Plot 4 Full Application for a tenant-led scheme comprises the construction of a new unit of similar construction to the adjacent units with associated service yard and parking with access on the north and southeast sides.
- Plot 4 will cover approximately 3.2 hectares.

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.

The report includes lighting lux levels plans and proposed lighting styles to provide a concept design for planning considerations.

The concept lighting design would mitigate the light spill across all boundary lines, as well as the neighbouring vertical planes and would provide a safe 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 appointed by Portsmouth City Council (the 'Client') to undertake an external lighting assessment with respects to the application for planning permission at the proposed land at Dunsbury Park, Havant, Portsmouth (the 'Site')

1.2 Objective and Scope of Works

The objective of this report is to provide a Lighting Environmental Impact Assessment (LEIA) evaluating the initial concept lighting design for the Proposed Development. This assessment supports the full planning application by ensuring the design adheres to core principles that will guide the detailed design phase.
The overarching lighting philosophy is to balance operational safety with environmental stewardship. Specifically, the scope of works aims to:

- **Ensure Compliance & Safety:** Achieve a satisfactory level of maintained illuminance across the site to create a safe environment for all users, strictly adhering to the client's brief and relevant British Standards (BS).
- **Protect Residential Amenity:** Mitigate light pollution, light spill, and glare to prevent any adverse impacts on neighbouring properties.
- **Preserve Ecology:** Protect the local environment, particularly nearby wildlife sites, habitats, and nocturnal species, by minimizing obtrusive light.

All external lighting will be designed and installed in accordance with industry best practices, notably the ILP *Guidance Notes for the Reduction of Obtrusive Light (GN01/21)* and *BS 5489-1:2020: Design of Road Lighting*.

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.

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.

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2. Site Details

2.1 Site Location and Description

The site is situated in Dunsbury Park, Fitzwygram Cresent, Havant PO9 4EE, close to Junction 3 of the A3. Plot 4 is approximately 3.36 ha in size.

The overall site is bordered by a residential development to the southeast, with additional residential properties situated across the A3(M) to the west. The areas to the northeast and southwest consist primarily of agricultural land and woodland. The A3(M) lies approximately 0.18 km west of the site, beyond which is the town of Waterlooville. The site features access points on its northern and southeastern boundaries, as well as to the southwest via the B2150. Additionally, a public footpath runs along the site's eastern boundary.

Figure -1 - Site Boundary and Proposed Land Use.

2.2 Proposed Development

The full planning application encompasses the development of Plot 4 for a tenant-led scheme (Building 400), which covers an area of approximately 3.2 hectares. The proposal involves the construction of a new unit, similar in design and scale to the adjacent existing units, along with an associated service yard and parking facilities. Vehicle and pedestrian access to the plot will be provided via the northern and southeastern boundaries.

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 jurisdiction of Hampshire County Council (HCC) and Havant Borough Council (HBC).

3.1.1 The Environmental Protection Act, 1990 (As amended)

Section 79 of the Environmental Protection Act 1990[1] 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) [2] 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 Pollution[3], 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.

'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

[1] Secretary of State, 1990. Environmental Protection Act 1990, The Stationary Office. Available: http://www.legislation.gov.uk/ukpga/1990/43/contents

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

[3] 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

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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 Havant Borough Council Core Strategy 2011 (adopted March 2011)[4]

Sets out local policies relating to nature conservation and biodiversity for the site. It advocates for the creation, protection and enhancement of green assets, including parks, gardens, green roofs, native hedgerows and trees.

3.2.2 Havant Biodiversity Strategy 2025[5]

Outlines the biodiversity Strategy to provide a framework for action towards nature recovery

3.3 Guidance / Standards

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

- British Standard 12464-2:2024[6];
- British Standard 13201[7];
- British Standard 5489-1:2020 Code of Practice for the Design of Road Lighting[8];
- Hampshire County Council, Technical Guidance Note TG13 – Street Lighting[9];
- Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night[10];
- Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light[11];
- Institution of Lighting Professionals, Towards a Dark Sky Standard[12]; and
- Chartered Institution of Building Services Engineers, Society of Light and Lighting (SLL) Code of Lighting 2022[13].

[4] Havant Borough Core Strategy
[5] Havant Borough Council Biodiversity Strategy January 2025
[6] British Standard 12464-2:2024 – Light and Lighting for Outdoor Workplaces
[7] British Standard 13201 – Road Lighting
[8] British Standard 5489-1:2020 Design Road Lighting
[9] Hampshire County Council, Technical Guidance Note TG13 – Street Lighting
[10] The Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night
[11] The Institution of Lighting Professionals, Guidance Note 01/02 The Reduction of Obtrusive Light
[12] ILP's Towards a Dark Sky Standard, A Lighting Guide to Protect Dark Skies (2021)
[13] Chartered Institution of Building Services Engineers, 2022. Society of Light and Lighting (SLL) Code of Lighting

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3.4 Lighting Level Criteria

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 the purposes of this assessment, the limits and design guidance set out by the Institution of Lighting Professionals (ILP) in *Guidance Note 01/21 for the Reduction of Obtrusive Light* have been applied.
In accordance with ILP criteria, the site has been classified as an **Environmental Zone E3 (Suburban)**. This classification corresponds to well-inhabited rural and urban settlements, small town centres, or suburban locations with a medium district brightness. Assessing the site under the E3 classification ensures the lighting design complies with the exterior lighting controls typically expected and specified by Local Planning Authorities (LPAs).

Table 2: Environmental zones

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

Figure 3-1 – Table extracted from ILP GN01/21 for the reduction of obtrusive light

A specific lighting curfew is not considered necessary for this site. Consequently, the exterior lighting design for the Proposed Development will adhere to the standard pre-curfew limits at the site boundaries, as detailed in Figure 3-2.

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Limitation of illumination on surrounding premises

Light intrusion / nuisance

Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on premises

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 3-2 - Table extracted from ILP GN01/21 for the reduction of obtrusive light

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, as well as SLL Light Guide 9: Lighting for communal residential buildings.

When considering the road and pathway through the development, guidance had been taken from BS 5489-1:2020: Design of road lighting Part 1: Lighting of roads and public amenity areas – code of practice; alongside BS EN 13201-2:2015, specifying performance requirements for road lighting in Table 3 P class lighting.

The following reference tables capture the guidance followed in figures 3.3 and 3.4 below.

Table A.5 — *Lighting classes for subsidiary roads*

Traffic flow	Lighting class		
	E1 to E4[A)]	E1 to E2[A)]	E3 to E4[A)]
	Pedestrian and cyclists only	Speed limit $v \leq 30$ mph	Speed limit $v \leq 30$ mph
Busy [B)]	P5	P4	P3
Normal [C)]	P5	P5	P4
Quiet [D)]	P6	P5	P4

Figure 3-3- Table extracted from BS 5489-1:2020 Table A.5 Lighting classes for subsidiary roads

For this report, the service road has been classified as P4, suitable for pedestrians and cyclists, with a speed limit of ≤ 30mph for vehicles and an environmental classification of E3. According to BS 5489-1:2020, this classification refers to areas with quiet traffic flow, similar to residential roads, primarily associated with adjacent properties or properties on equivalent roads accessed from this road.

Table 3 — P lighting classes

Class	Horizontal illuminance		Additional requirement if facial recognition is necessary	
	$\bar{E}$ [a] [minimum maintained] lx	E_{min} [maintained] lx	$E_{v,min}$ [maintained] lx	$E_{sc,min}$ [maintained] lx
P1	15,0	3,00	5,0	5,0
P2	10,0	2,00	3,0	2,0
P3	7,50	1,50	2,5	1,5
P4	5,00	1,00	1,5	1,0
P5	3,00	0,60	1,0	0,6
P6	2,00	0,40	0,6	0,2
P7	performance not determined	performance not determined		

[a] To provide for uniformity, the actual value of the maintained average illuminance shall not exceed 1,5 times the minimum $\bar{E}$ value indicated for the class.

Figure 3-4 - Table extracted from BS EN 13201-2:2015 Road Lighting Part 2: Performance requirements Table 3 P class lighting

For visual safety throughout the site, the roads will be illuminated to a minimum maintained level of 5 lx, in accordance with the P4 classification. This is one class above P5, ensuring that the major walkways align with the design roadway, as outlined in Table 3.4 above.

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 3-5 - Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.5 General circulation areas at outdoor workplaces

Figure 3.5 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.

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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 3-6 - Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.13 Parking areas

Figure 3.6 above 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 drawing illustrates the intended lux levels in each area, as shown in the image below.
For greater detail of the sketch, please refer to Appendix 1.

Figure 3-7 - Overall proposed illumination levels (Please refer to Appendix 1 for the full concept layout).

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4. Receptors

4.1 Dark Skies

As outlined in the ILP's *Towards a Dark Sky Standard*, there are three primary forms of light pollution: sky glow, glare, and light intrusion (also known as light trespass).

- Sky Glow: The brightening of the night sky visible above the horizon, predominantly originating from built-up areas. It is caused by poorly directed light emitting above the horizontal plane, which then scatters in the atmosphere. This can be mitigated by ensuring all luminaires are shielded and directed downwards.

- Glare: The uncomfortable or visually disabling brightness of a light source when viewed against a contrasting darker background. In less densely populated or intrinsically darker areas, glare appears relatively more intense than in brightly lit urban environments.

- Light Intrusion (Light Trespass): Occurs when light spills beyond the boundary of the property or specific area intended to be illuminated. While this is most commonly associated with nuisance light entering residential windows, it can equally affect natural habitats and areas of high ecological value.

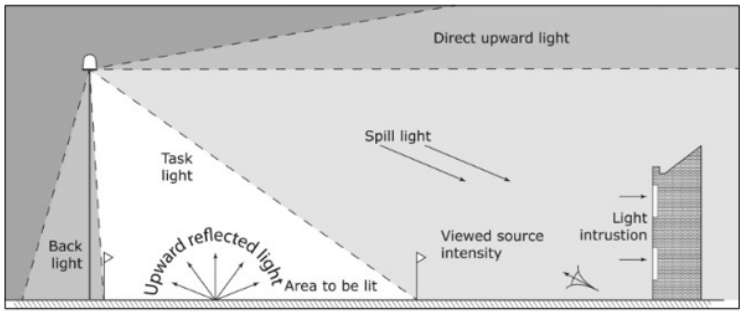

Figure 4-1 - Types of obtrusive light from the Institution of Lighting Professionals

As defined by the Oxford English Dictionary, a 'Dark Sky' denotes a location where the darkness of the night sky remains relatively free from artificial light interference.
Dark-sky lighting refers to lighting solutions specifically designed to minimize light pollution—the excessive or misdirected artificial light that obscures the night sky. DarkSky International (formerly the IDA) promotes the use of dark-sky compliant lighting to protect the nocturnal environment. To be considered dark-sky friendly, lighting fixtures and designs must:

- Restrict the amount of upward-directed light to prevent sky glow.
- Avoid causing glare to ensure visual comfort and safety.
- Avoid over-lighting to conserve energy and reduce environmental impact.
- Utilize dimming and other appropriate lighting controls to reduce unnecessary light during low-usage periods.
- Minimise short-wavelength (bluish) light in the night-time environment to lessen the impact on human health and nocturnal wildlife.

Implementing dark-sky compliant lighting is essential for supporting the well-being of nocturnal wildlife, mitigating broader environmental impacts, and preserving our natural view of the cosmos. Furthermore, it ensures that outdoor lighting responsibly balances safety, security, and aesthetics without contributing to light pollution.
Sky glow is the general diffuse sheen visible in the direction of large cities, airports, and industrial complexes. While it results from both natural and artificial light sources, atmospheric conditions, such as humidity, aerosols, clouds, haze, and pollution, also play a significant role. Light

propagating into the atmosphere, whether directly from upward-directed or insufficiently shielded sources, or reflected off the ground and other surfaces, is partially scattered back toward observers on the ground. This effect is illustrated in Figure 4.1.
Therefore, selecting the appropriate luminaire with the correct optical distribution and mounting height is crucial. This approach ensures optimal lighting performance within the intended task area while actively minimizing reflected light spill and obtrusive sky glow.

4.2 Receptor Types

4.2.1 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 (0m).

4.2.2 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.

The woodland and scrub provide suitable habitat for nesting birds, common and widespread reptile species, hedgehogs, and terrestrial invertebrates, as well as potential habitat for common amphibians. Furthermore, there is connectivity and foraging habitat for bats and occasional foraging cannot be ruled out for badgers. No bat survey has been received when producing this report; however, a layout identifying trees with bat potential was provided.

Boundary vegetation, such as woodland and scrub, should be retained and enhanced where possible, to provide natural shelter and foraging opportunities. The future lighting scheme will be designed to minimize the illumination of woodland and scrub areas where practicable, with final parameters to be agreed upon in consultation with the project ecologist and local ecology officer. This is to maintain the value of the site for bats and biodiversity in general.

According to the ILP GN08/23 document, "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.

Glare has some impacts on bats and other wildlife and therefore should be considered alongside 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 GN08/23[14].

To effectively mitigate impacts on local wildlife, the specified luminaires shall incorporate the following key features:

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

- Zero UV Emission: Luminaires must not emit ultraviolet (UV) light. Modern LED technology is highly recommended, as it produces negligible UV wavelengths compared to traditional light sources.
- Advanced LED Technology: LED luminaires should be utilized wherever possible due to their sharp optical cut-off, highly controllable intensity, excellent colour rendition, and dimming capabilities.
- Warm Light Spectrum: Light sources should feature peak wavelengths exceeding 550nm. This avoids the blue light spectrum, which is known to be particularly disruptive to nocturnal ecological receptors such as bats.
- Strict Optical Control: Only high-quality luminaires featuring precise optical control and a zero or negligible Upward Light Ratio (ULR) will be considered for the final design.
- The design intent is to achieve preferred illuminance levels (0.5 to 1.0 lux) along sensitive ecological boundaries without overcommitting to exact values at this outline stage, maintaining reasonable flexibility for the detailed design once bat surveys are completed.

4.2.3 Neighbouring Properties

Neighbouring residential properties are located along the southeastern and western boundaries of the site. A desktop spatial analysis using satellite imagery indicates that these sensitive receptors are situated at a considerable distance from the proposed warehouse unit and service yard.

To mitigate any potential impact on these residences, careful consideration will be given to the selection and placement of lighting columns. This strategy includes incorporating rear shields where necessary and strictly limiting the upward light output ratio (ULOR) of all luminaires to prevent light trespass beyond the site boundary.

4.2.4 Receptors Sensitivity

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, Negligible, and No Impact, 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.

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Negligible	No 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 exhibit varying levels of sensitivity to environmental changes. Sensitivity has been categorized as High, Medium, or Low, as detailed in Table 5.2 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.

For this scheme, the sensitivity of existing receptors has been assessed as:

- Dark skies – Low
- General public – Low
- Ecological – High
- Neighbouring properties - Low due to the suburban location of the scheme (within ILP Environmental Zone E3).

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	Examples of Impact				
	Substantial	**Moderate**	**Slight**	**Negligible**	**No-Impact**
High	Major	Major-Moderate	Moderate	Minor	Minor - Neutral
Medium	Major-Moderate	Moderate	Minor	Minor -Neutral	Neutral
Low	Moderate	Minor	Minor - Neutral	Neutral	Neutral

In assessing the proposed luminaires, their locations, and their impact on the development, the lighting design should expect to achieve a negligible effect. This means there should be minimal levels 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 most current baseline conditions. However, due to the high sensitivity of ecological receptors, this impact would be considered minor. Thus, overall, a Minor impact should be considered and reviewed when designing the concept lighting plan for the site.

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5. Assessment Methodology

5.1 Relevant Guidance

This lighting assessment 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.

5.2 Desktop Assessment

A desktop assessment of the site was undertaken using existing plans of the site and Google Maps.

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6. Desktop Assessment

6.1 Introduction

This section outlines the desktop assessment of the development.

6.2 Existing Lighting

The development currently has existing lighting within the surrounding plots.

Figure 6-1 – Dunsbury Park, Havant base map.

Skyward radiance mapping prepared by Campaign for the Protection of Rural England (CPRE)[15] indicates 2-4nW/cm²/sr levels of skyward radiance in the vicinity of the site, and this is considered to be 'medium brightness' (Figure 6-2)[16]. This brightness level is likely a resultant of the wider site's current in use plots as well as close proximity to residential properties.

[15] https://www.nightblight.cpre.org.uk/maps/

[16] England's Light Pollution and Dark Skies

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Figure 6-2 - CRPE Light Pollution Mapping

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7. Proposed Lighting

7.1 Overview

The proposed development will accommodate various users, including employees and commuters, utilising the new warehouse, offices and parking area, each requiring a different lighting experience for wayfinding 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.

New access roads will be illuminated for the safe passage of pedestrians, cyclists, and road users by increasing the ability to recognize other users, increase safety and see hazards. HCC has standards for street lighting including[17]:

- 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 Concept Lighting Design

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

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

7.3 Design Mitigation Measures

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

- Where reasonably practicable, the use of luminaires with a negligible or zero upward light output at and above the horizontal plane to reduce glare and sky glow at and above the horizontal plane to reduce glare and sky glow on neighbouring properties, and into residential windows.

[17] Hampshire County Council TG13 - Street Lighting

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- The use of optimal light distributions for their specific location and orientation to focus on the task areas only.

7.4 Lighting Controls, Dimming and Switch-Off

Advancements in technology enable 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 exact dimming profiles and control strategies will be finalized during the detailed design stage, balancing operational safety requirements with the recommendations of the project ecologist

7.5 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.

The lighting will consist of:

- Roadways;
- Pathways;
- Loading bays;
- Service yard; and
- Parking areas.

The lighting design will be based on a mixture of luminaires to achieve a layered light approach for safety and accent. The main lighting should be achieved using lighting columns, with a long arm to 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.

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Figure 7-1 - Parking and Access Areas - Pole Top.

To provide additional lighting, where a pole top luminaire is not suitable wall luminaires may be used. 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.

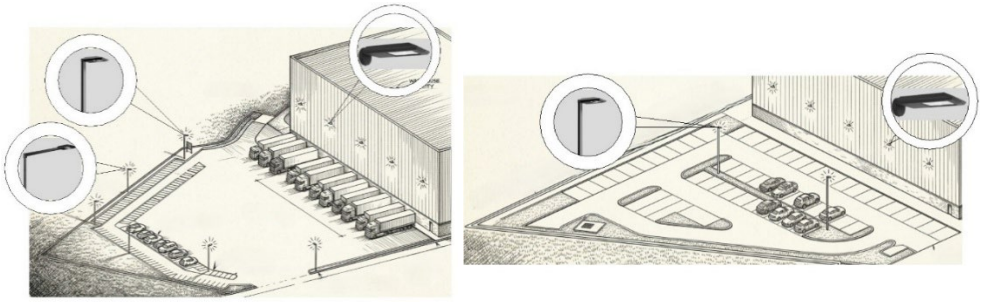

Figure 7-3 – Lighting Strategy (indicative conceptual visuals). *Note: Conceptual strategy sketches only. Full photometric calculations to follow at the detailed design stage.*

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8. Results

8.1 Summary of Assessment of Effects

Table 8.1 provides a summary of the assessment of effects.

Table 8-1- Summary of Assessment of Effects

Receptor	Sensitivity	Magnitude of Change	Significance of Residual Effect (after mitigation)	Comment
Dark Skies	Low	Negligible	Neutral	Dark sky lighting proposed will ensure light does not spill into surrounding areas.
General Public	Low	Negligible	Neutral	Incorporating shields and limiting the upward light output ratio will help to mitigate any potential impact on the general public.
Ecological	High	Negligible	Minor	Lighting in areas identified as sensitive for wildlife will be minimized and strictly controlled in accordance with the final ecological survey recommendations.
Neighbouring Properties	Low	Negligible	Neutral	Incorporating shields and limiting the upward light output ratio will help to mitigate any potential impact on neighbouring properties.

8.2 Recommendations

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 a negligible or 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 permanent lighting proposed to be positioned on the boundary line behind the units which border the potential bat and other wildlife connectivity and foraging routes and habitats.

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.
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.

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9. Conclusion

9.1 Summary

The impact of the Proposed Development on surrounding light sensitive receptors has been reviewed to ensure that there would be no discernible effects. The concept lighting design would mitigate the light spill along 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 shall be conditioned and developed to a full design, with a lux level plot drawing identifying vertical planes on neighbouring boundaries.

9.2 Dark Sky Receptors

Dark sky receptors have been assessed as low sensitive receptors in this report. As a result, the significance of residual effects (after mitigation) has been assessed as neutral. 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 in the Institution of Lighting Professionals (ILP) (2021) Guidance Note for the Reduction of Obtrusive Light for ILP Environmental Zone E3.

9.3 General Receptors

General receptors have been identified and assessed as low sensitivity receptors in this report. As a result, the significance of residual effects (after mitigation) has been assessed as neutral. The initial assessment of potential luminaire types and placement at this stage shows that the design concept intent would limit the upward light output ratio and will help to mitigate any potential impact on the general public.

9.4 Neighbourhood Receptors

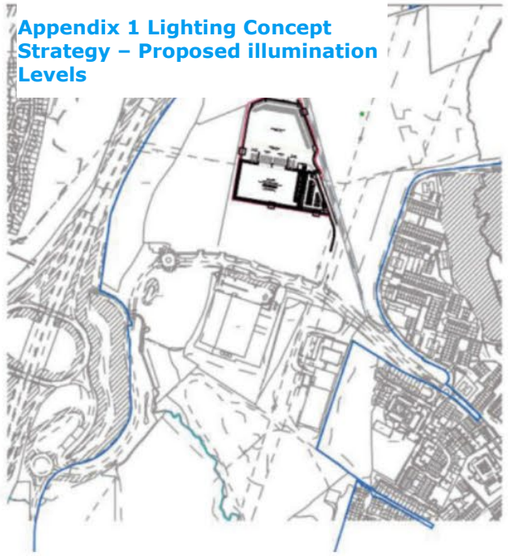
Neighbourhood properties along the southeast and western boundary have been identified and assessed as low sensitive receptors in this report. As a result, the significance of residual effects (after mitigation) has been assessed as neutral. The initial assessment of potential luminaire types and placement at this stage shows that the design concept intent would limit the upward light output ratio and will help to mitigate any potential impact on the neighbouring properties.

9.5 Ecological Receptors

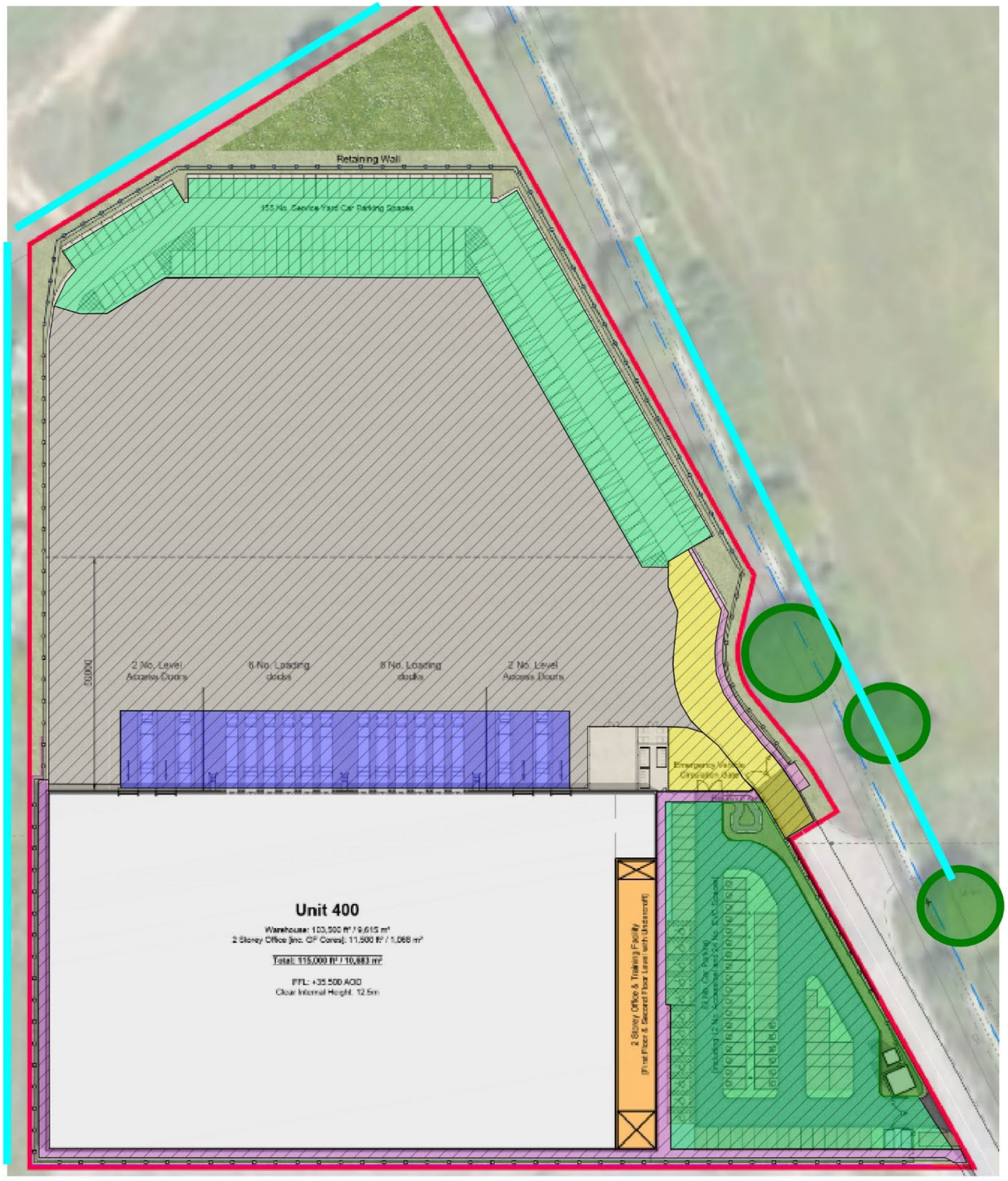
Ecological receptors have been identified and assessed as high sensitivity receptors in this report. As a result, the significance of residual effects (after mitigation) has been assessed as minor. The initial assessment of potential luminaire types and placement at this stage shows that the design concept intent would limit the level of light spill. The future lighting scheme will be designed so as not to illuminate any areas of woodland and scrub, which should be retained where possible. This will prevent harsh lighting making habitats unfavourable for protected/notable species.

Appendices

Key Plan



Appendix 1 Lighting Concept Strategy – Proposed illumination Levels



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NOTES

1. Proposed lux levels are average maintained.

2. Proposed levels are taken from the design criteria as detailed in the external lighting report section 4.

LEGEND:

- ACCESS ROAD
  10 Lux
  0.25 Uo
- CAR PARK
  10 Lux
  0.25 Uo
- PEDESTRAIN PATH
  5 Lux
  0.25 Uo
- LOADING BAY
  50 Lux
  0.25 Uo
- SERVICE YARD
  50 Lux
  0.25 Uo
- HIGH BAT ACTIVITY
- TREES WITH BAT ROOSTING POTENTIAL

Rev	Description	Date	By Chk	App
P02	PLANNING	24/04/2026	CC	SP
P01	PLANNING CONCEPT	22/09/2025	CC	PC

PLANNING

DUNSBURY PARK
PLOT 4
BUILDING 400

RAMBOLL
tel 023 8081 7500 sx.champton@ramboll.co.uk
www.ramboll.co.uk

GENERAL SUPPLY
LIGHTING SYSTEM
STRATEGY DRAWING
LEVEL 00

Project No:	Scale (@ A1):	Date:	Drawn:
1620011450	1:500	SEP 25	CC

Drawing No:	Rev:
DP-RAM-02-00-ST-E-630021	P02