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Dunsbury Park, Havant, Portsmouth – Plot 1 LIGHTING ENVIRONMENTAL IMPACT ASSESSMENT

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LIGHTING ENVIRONMENTAL IMPACT ASSESSMENT

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Contents

Executive Summary	3
1. Introduction	4
1.1 Background	4
1.2 Objective and Scope of Works	4
1.3 Limitations and Constraints	4
2. Site Details	6
2.1 Site Location and Description	6
2.2 Proposed Development	7
3. Policy, Legislation, Guidance and Standards	8
3.1 National Level	8
3.1.1 The Environmental Protection Act, 1990 (As amended)	8
3.1.2 National Planning Policy Framework, 2025	8
3.1.3 Planning Practice Guidance – Light Pollution, 2019	8
3.2 Local Level	9
3.2.1 Havant Borough Council Core Strategy 2011 (adopted March 2011)	9
3.2.2 Havant Biodiversity Strategy 2025	9
3.3 Guidance / Standards	9
3.4 Lighting Level Criteria	10
4. Receptors	14
4.1 Dark Skies	14
4.2 Receptor Types	15
4.2.1 General Public	15
4.2.2 Ecological	15
4.2.3 Neighbouring Properties	16
4.2.4 Receptors Sensitivity	16
5. Assessment Methodology	18
5.1 Relevant Guidance	18
5.2 Desktop Assessment	18
6. Desktop Assessment	19
6.1 Introduction	19
6.2 Existing Lighting	19
7. Proposed Lighting	21
7.1 Overview	21
7.2 Concept Lighting Design	21
7.3 Design Mitigation Measures	21
7.4 Lighting Controls, Dimming and Switch-Off	22
7.5 Luminaires and placement	22
8. Results	24
8.1 Summary of Assessment of Effects	24
8.2 Recommendations	24
9. Conclusion	25
9.1 Summary	25
9.2 Dark Sky Receptors	25
9.3 General Receptors	25
9.4 Neighbourhood Receptors	25
9.5 Ecological Receptors	25

Table of Tables

Table 4-1 - Magnitude of Impacts upon Lighting Sensitive Receptors	16
Table 4-2 - Sensitivity of Receptors to Lighting Impacts	17
Table 4-3 - Impact Significance Matrix	17
Table 8-1- Summary of Assessment of Effects	24

Table of figures

Figure -1 - Site Boundary and Proposed Land Use – Plot 1 Highlighted	6
Figure 3-1 – Table extracted from ILP GN01/21 for the reduction of obtrusive light	10
Figure 3-2 - Table extracted from ILP GN01/21 for the reduction of obtrusive light	11
Figure 3-3- Table extracted from BS 5489-1:2020 Table A.5 Lighting classes for subsidiary roads	11
Figure 3-4 - Table extracted from BS EN 13201-2:2015 Road Lighting Part 2: Performance requirements Table 3 P class lighting	12
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	12
Figure 3-6 - Table extracted from the Society of Light and Lighting (SLL) Code of Lighting 2022: Table 4.13 Parking areas	13
Figure 3-7 - Overall proposed illumination levels – Plot 1	13
Figure 4-1 - Types of obtrusive light from the Institution of Lighting Professionals	14
Figure 6-1 – Existing Development at Dunsbury Park, Havant	19
Figure 6-2 - CRPE Light Pollution Mapping	20
Figure 7-1 - Parking and Access Areas - Pole Top.	23
Figure 7-2 - Wall Luminaire.	23

Appendices

Appendix 1 Lighting Concept Strategy – Proposed Illumination Levels	27
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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'.

This report addresses the following element:

- Plot 1 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 side.
- Plot 1 will cover approximately 0.96 ha in size

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 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 client's 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; 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.

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 benefit of the client for this purpose only and may not be used by or disclosed to, in whole or in part, any other person without the express written consent of Ramboll, Ramboll neither owes nor

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

² British Standard 5489-1:2020 Design Road Lighting

accepts any duty to any third party, unless formally agreed to by Ramboll through that party entering, at Ramboll's sole discretion, a written reliance agreement.

2. Site Details

2.1 Site Location and Description

The site is situated in Dunsbury Park, Fitzwygram Crescent, Havant PO9 4EE, close to Junction 3 of the A3.

- Plot 1 is approximately 0.96 ha in size

The overall site is bordered by a residential development to the southeast, with additional residential properties situated across the A3 to the West. The northeast and southwest areas are comprised mainly of agricultural land and wooded regions. The A3 (M) lies approximately 0.18 km west of the site, beyond which is the town of Waterlooville. The site has access points on its north, southeast boundaries and southwest via B2150, a public footpath runs along the eastern boundary of the site.



Figure -1 - Site Boundary and Proposed Land Use – Plot 1 Highlighted

2.2 Proposed Development

The planning application is anticipated to comprise the following element:

- Plot 1 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 side.
- Plot 1 will cover approximately 0.96 ha in size

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 National Level

3.1.1 The Environmental Protection Act, 1990 (As amended)

Section 79 of the Environmental Protection Act 1990³ 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)⁴ 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 Pollution⁵, 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.

³ Secretary of State, 1990. Environmental Protection Act 1990, The Stationary Office. Available at: <http://www.legislation.gov.uk/ukpga/1990/43/contents>

⁴ Ministry of Housing, Communities and Local Government, 2025. National Planning Policy Framework. Available at: <https://www.gov.uk/guidance/national-planning-policy-framework>

⁵ 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 Havant Borough Council Core Strategy 2011 (adopted March 2011)⁶

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 2025⁷

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 12464-2:2024⁸;
- British Standard 13201⁹;
- British Standard 5489-1:2020 Code of Practice for the Design of Road Lighting¹⁰;
- Hampshire County Council, Technical Guidance Note TG13 – Street Lighting¹¹;
- Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night¹²;
- Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light¹³;
- Institution of Lighting Professionals, Towards a Dark Sky Standard¹⁴; and
- Chartered Institution of Building Services Engineers, Society of Light and Lighting (SLL) Code of Lighting 2022¹⁵.

⁶ Havant Borough Core Strategy

⁷ Havant Borough Council Biodiversity Strategy January 2025

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

⁹ British Standard 13201 – Road Lighting

¹⁰ British Standard 5489-1:2020 Design Road Lighting

¹¹ Hampshire County Council, Technical Guidance Note TG13 – Street Lighting

¹² The Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night

¹³ The Institution of Lighting Professionals, Guidance Note 01/02 The Reduction of Obtrusive Light

¹⁴ ILP's Towards a Dark Sky Standard, A Lighting Guide to Protect Dark Skies (2021)

¹⁵ Chartered Institution of Building Services Engineers, 2022. Society of Light and Lighting (SLL) Code of Lighting

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 this report, we have applied the limits and guidance within the Institute of Lighting Professionals (ILP) guidance note 01/21 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 3.1 below. It is recommended that Local Planning Authorities (LPAs) specify these environmental zones for exterior lighting control within their development plans.

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

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 3-2.

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 ≤ 30 mph 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.

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.

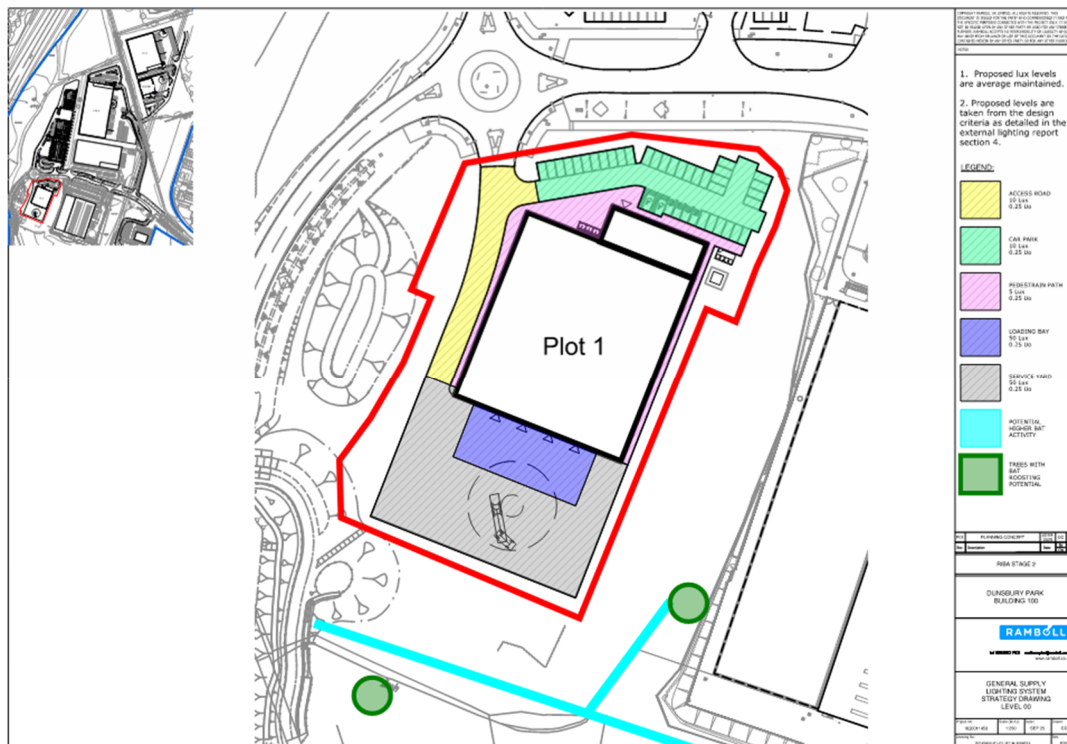


Figure 3-7 - Overall proposed illumination levels – Plot 1

4. Receptors

4.1 Dark Skies

As referenced by the ILP's Towards a Dark Sky Standard¹⁶, there are three main types of Light Pollution: Sky Glow, Glare and Light Intrusion (or Light trespass).

Sky glow

- 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 horizontal, which scatters in the atmosphere. This can be prevented by ensuring that lights are directed downwards.

Glare

- 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/Light trespass

- 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.

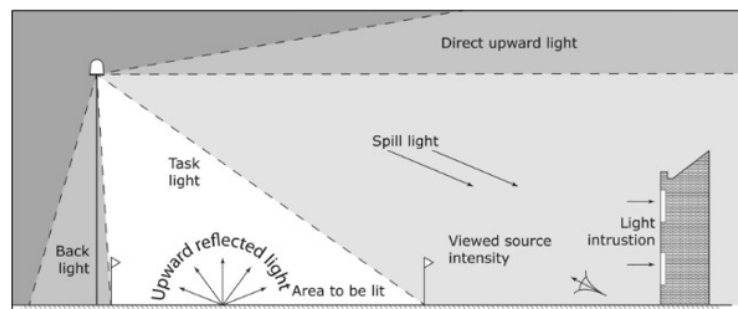


Figure 4-1 - Types of obtrusive light from the Institution of Lighting Professionals

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 minimize 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.
- Utilize dimming and other appropriate lighting controls to reduce unnecessary light.

¹⁶ ILP's Towards a Dark Sky Standard, A Lighting Guide to Protect Dark Skies (2021)

- Minimise short-wavelengths (bluish) light in the night-time environment to lessen the impact on human health and wildlife¹⁷.

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 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 4.1.¹⁸.

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

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, terrestrial invertebrate as well as potential for common amphibians. Further to this 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.

Retain and enhance boundary vegetation, such as woodland and scrub, to provide natural shelter and foraging opportunities. Future lighting scheme will be designed so as not to illuminate any areas of woodland and scrub, which should be retained where possible. 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.

¹⁷ DarkSky Approved | DarkSky International

¹⁸ The Institution of Lighting Professionals, Guidance Note 01/02 The Reduction of Obtrusive Light

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 GN08/23¹⁹.

Appropriate luminaire specification shall have the following key features;

- All luminaires should lack UV elements when manufactured. LED technology reduced amounts of UV wavelengths.
- 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 550nm.
- Only luminaires of good quality with a negligible or zero upward light ratio, and with good optical control, should be considered.

4.2.3 Neighbouring Properties

Neighbouring properties are situated along the southeast and western boundaries. Although no measurements were taken, Google Earth imagery indicates that these properties are at a considerable distance from the proposed warehouse locations.

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.

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.
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.

¹⁹ The Institution of Lighting Professionals, Guidance Note 08/23 Bats and Artificial Lighting at Night

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	<ul style="list-style-type: none"> Residential properties within ILP Environmental Zone E0 & E1 Ecological receptors Intrinsically dark landscapes (ILP Environmental Zone E0 & E1)
Medium	<ul style="list-style-type: none"> Residential properties within ILP Environmental Zone E2 Low district brightness area (ILP Environmental Zone E2) e.g., small town centres or urban locations.
Low	<ul style="list-style-type: none"> 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.

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.

6. Desktop Assessment

6.1 Introduction

This section outlines the desktop assessment of the development.

6.2 Existing Lighting

The development is located in Dunsbury Park, Fitzwygram Cres, Havant PO9 4EE, close to Junction 3 of the A3.

- Plot 1 is approximately 0.96 ha in size

The overall site is bordered by a residential development to the southeast, with additional residential properties situated across the A3 to the West. The northeast and southwest areas are comprised mainly of agricultural land and wooded regions. The A3 (M) lies approximately 0.18 km west of the site, beyond which is the town of Waterloo. The site has access points on its north, southeast boundaries and southwest via B2150, a public footpath runs along the eastern boundary of the site.

The development currently has with existing lighting within the surrounding plots.



Figure 6-1 – Existing Development at Dunsbury Park, Havant

Skyward radiance mapping prepared by Campaign for the Protection of Rural England (CPRE)²⁰ indicates 2-4NW/Cm2/sr levels of skyward radiance in the vicinity of the site, and this is

²⁰ <https://www.nightblight.cpre.org.uk/maps/>

considered to be 'medium brightness' (Figure 6-2)²¹. This brightness level is likely a resultant of the wider site's current in use plots as well as close proximity to residential properties.



Figure 6-2 - CRPE Light Pollution Mapping

²¹ England's Light Pollution and Dark Skies

7. Proposed Lighting

7.1 Overview

The proposed development will see several different types of people, including employees and commuters, 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.

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 including²²:

- 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.

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

²² Hampshire County Council [TG13 - Street Lighting](#)

- 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.

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 'light poles', 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.



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.



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	Areas where wildlife has been detected will remain unlit.
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.

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) have 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) have 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 will help to mitigate any potential impact on the general public.

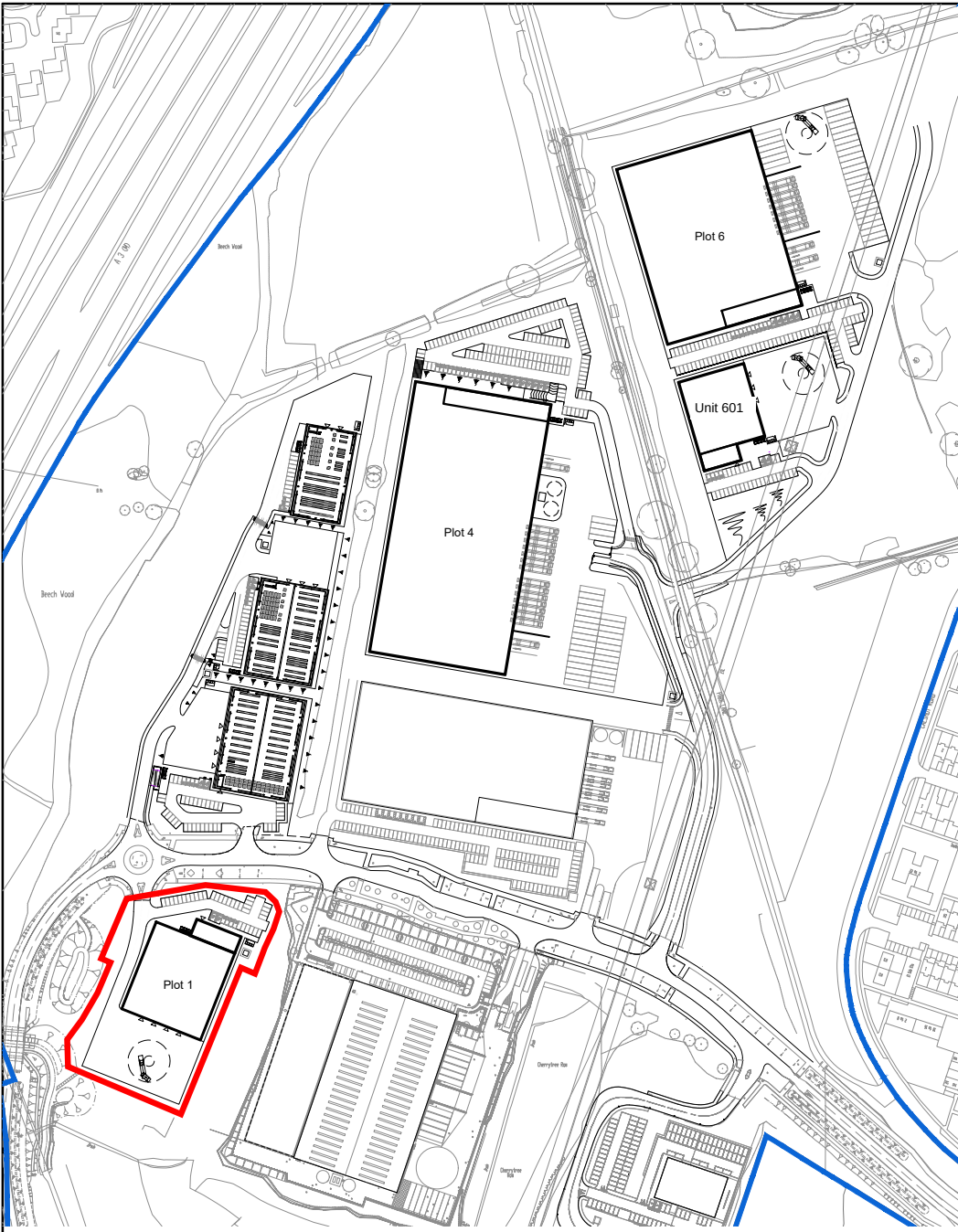
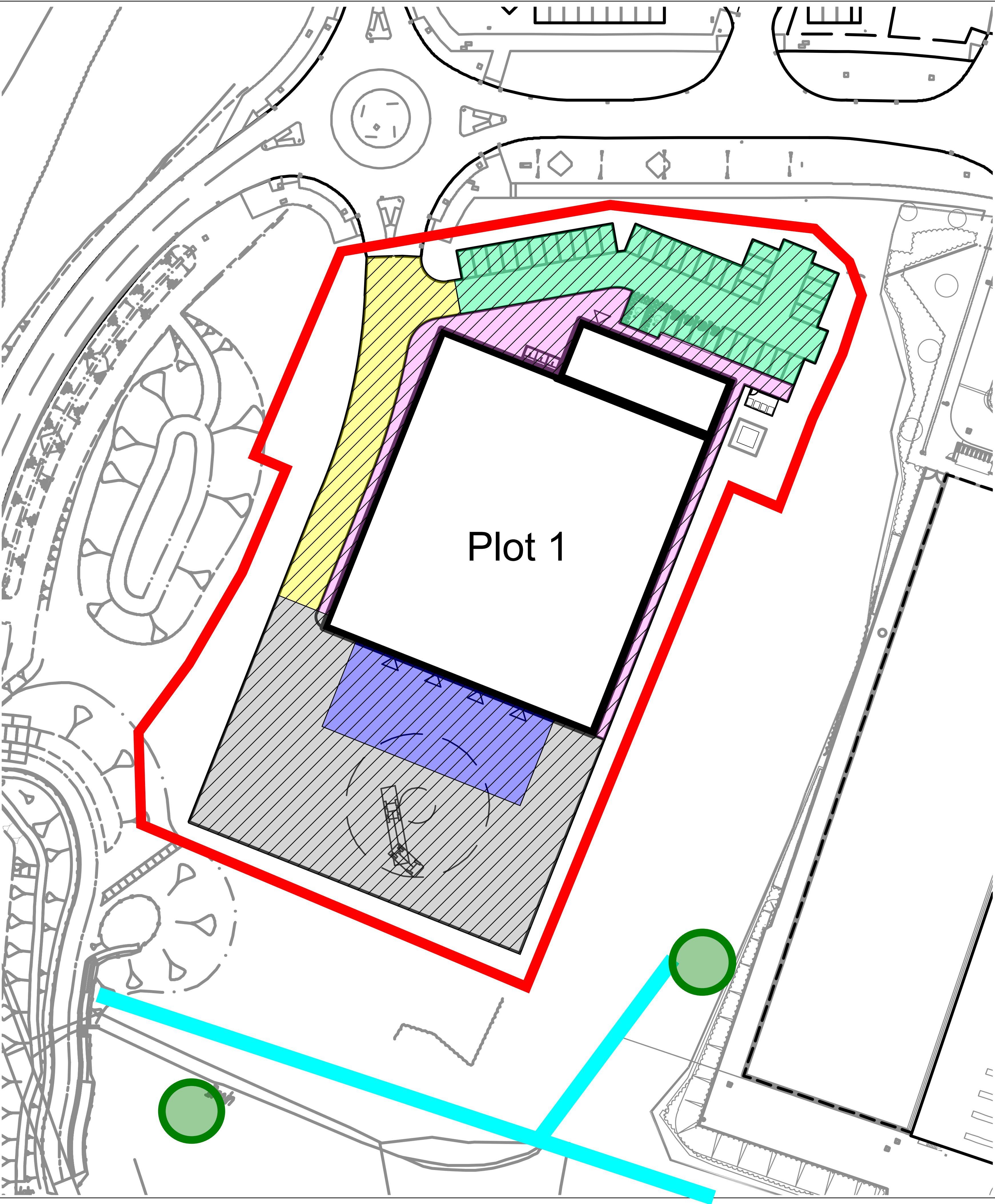
9.4 Neighbourhood Receptors

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) have 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) have 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



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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

POTENTIAL
HIGHER BAT
ACTIVITY

TREES WITH
BAT
ROOSTING
POTENTIAL

P01	PLANNING CONCEPT	22/09/2025	CC	PC
Rev	Description	Date	By Chk	App

RIBA STAGE 2

DUNSBURY PARK
BUILDING 100

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GENERAL SUPPLY
LIGHTING SYSTEM
STRATEGY DRAWING
LEVEL 00

Project No: 1620011450	Scale (@ A1): 1:250	Date: SEP 25	Drawn: CC
Drawing No: DP-RAM-01-01-ST-E-630021		Rev:	P01