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STREET LIGHTING DESIGN INFORMATION

ARBORFIELD, PARCEL N

Document Control

Revision Date	Revision	Comment	Author
30/07/2025	A	First Issue	Julian Joseph
26/09/2025	B	Calculation report document number updated.	Julian Joseph

Contents

1. Introduction

1.1. This document supports the outline street lighting design detailed on drawing number 100711-JLD-ARB-DR-0001 required for the Arborfield Parcel N planning application.

2. Environmental Zone

2.1. To determine which of the parameters are applicable within the design guidance, the environmental zone must first be selected. Given the location of the site, the zone highlighted and defined in Table 1 would be most appropriate.

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
* SQM (Sky Quality Measurements) referenced by the International Dark-Sky Association (IDA).			

Table 1

3. Road Lighting Class Selection

3.1. The lighting class for the roads have been selected using Table A.5 from BS5489 (Table 2).

3.2. Table 3 shows the corresponding minimum illuminance values for the selected lighting classes.

BS5489-1:2020 Table A.5 - Lighting Classes for subsidiary roads			
Traffic Flow	E1 to E4	E1 to E2	E3 to E4
	Pedestrian and cyclists only	Speed limit v ≤ 30 mph	Speed limit v ≤ 30 mph
Busy	P5	P4	P3
Normal	P5	P5	P4
Quiet	P6	P5	P4

Table 2

BS EN 13201-2:2015 Table 3 – P lighting classes		
Class	Average Illuminance (lux)	Minimum Illuminance (lux)
P1	15.00	3.00
P2	10.00	2.00
P3	7.50	1.50
P4	5.00	1.00
P5	3.00	0.60
P6	2.00	0.40

Table 3

4. Ecology Mitigation

4.1. Given the semi-rural nature of the site and retained mature trees, it is reasonable to suggest that bat activity is highly likely. Therefore, in the absence of a detailed ecology report, the design incorporates the following mitigation measures based on ILP GN08/23 guidance:

4.2. UV Emission: Metal halide and compact fluorescent sources will not be used due to their UV component.

4.3. LED Luminaires: LEDs are to be used due to their sharp cut-off, lower intensity, good colour rendition, and dimming capability.

4.4. Colour Temperature (CCT): A warm white light source (2700 Kelvin or lower) will be specified to reduce the blue light component.

4.5. Light sources will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.

4.6. Column Heights: Will be limited to 5m to minimise light spill and glare visibility, balancing this with the potential for increased numbers of columns and upward light reflectance from bollards.

4.7. Upward Light Ratio (ULR): Only luminaires with a negligible or zero Upward Light Ratio and good optical control will be considered.

4.8. Mounting: Luminaires will be mounted horizontally, with no light output above 90 degrees and/or no upward tilt.

4.9. Accessories: Baffles, hoods, or louvres can be used to reduce light spill, but their effect may be less than anticipated with modern LED luminaires.

5. Limitation of Spill Light

5.1. **Sky glow –** LED luminaires will be used and set at 0 degrees with zero direct upward light spill.

5.2. **Glare –** Luminaires will be specified with a G3 luminous intensity rating where to reduce glare/viewed source intensity for highway users.

5.3. **Light trespass –** Spill light through property windows will be limited through careful positioning of lighting i.e., not planted directly in front of properties where possible.

5.4. Diagram 1 from 'ILP Guidance Note 01/20 – Guidance Notes for the Reduction of Obtrusive Light' depicts the types of obtrusive light described above.

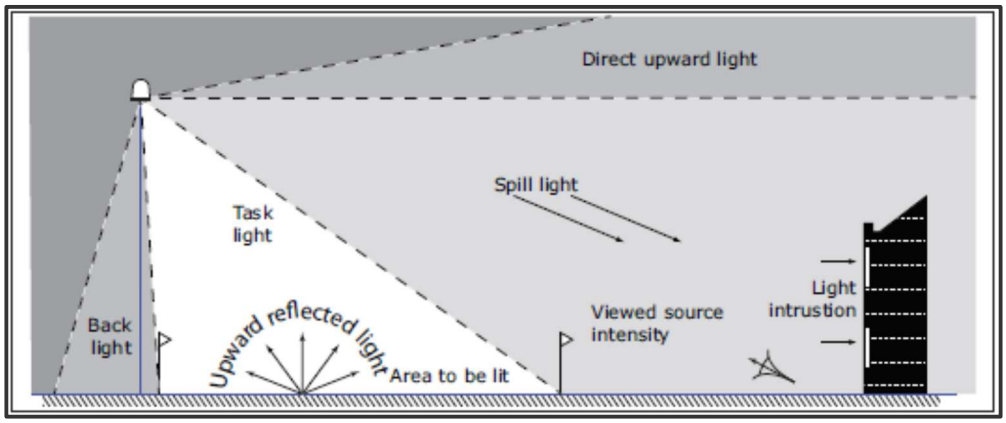

Diagram 1

6. Design Summary

6.1. Lighting Reality lighting design software version 2.3.1 has been used to plot the horizontal illuminance values. See calculation report 100711-JLD-ARB-DC-0002 for results.

6.2. Also refer to drawing 100711-JLD-ARB-DR-0001 for full lighting layout detail.

6.3. The drawing information demonstrates alignment with the mitigation measures set out in this document.

7. References

7.1. BSEN13201-2:2015 Performance Requirements

7.2. BS5489-1:2020 Code Of Practice For The Design Of Road Lighting

7.3. ILP Guidance Note 01/20 Guidance Notes For The Reduction Of Obtrusive Light

7.4. ILP Guidance Note 08/23 Bats And Artificial Lighting At Night