



Lighting Design Considerations & Environmental Report

**North School Road
Arborfield Cross**

DESIGN CONSIDERATIONS & ENVIRONMENTAL REPORT - RESERVED MATTERS

Document Issue Sheet

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This Design Considerations & Environmental Report has been prepared for our client as stated within our appointment only and expressly for the purposes set out in an appointment and we owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law. This report has been based solely on the specific design assumptions and criteria stated herein.

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1. Introduction

1.1 This Design Considerations & Environmental Report has been prepared by Williams Lighting Consultants Ltd. for and on behalf of the Client in support of an application for approval of Reserved Matters for Layout, Scale, Landscaping and Appearance for residential development and associated works pursuant to Outline Approval ref: 250735, at Land to the north of School Road, Arborfield Cross. The report assesses the design considerations and environmental impacts associated with the proposed external lighting equipment

1.2 Site Location:

North School Road, Arborfield Cross

2. Design Considerations

2.1 Existing Lighting

2.1.1 The site is a new development, no lighting is present.

2.2 Maintenance Factors

2.2.1 Proposed luminaire maintenance factors have been derived from an E2 environmental zone with a 72-month cleaning cycle. Luminaire lumen maintenance factor at 100,000 hours is 0.9 mounted at a height of less than 6m producing an MF of 0.83.

2.3 Overhead Cables

2.3.1 None present.

2.4 Lighting Levels

2.4.1 The proposals have been designed to meet the requirements of the lighting class P5 as per BS 5489-1:2020. Based on 20mph, E2 zone and normal traffic flow.

2.5 Ecology Concerns

- 2.5.1 In reference to Planning Condition 24 - Lighting Strategy (Bats). Prior to or concurrent with Reserved Matters application a Lighting Design Strategy for Biodiversity for the development hereby approved shall be submitted to and approved in writing by the Local Planning Authority. The strategy shall:

Identify those areas/features on and around the site that are particularly sensitive for bats and where the development may cause disturbance in or around their breeding sites and resting places or along foraging and/or commuting routes; and

Show how and where external lighting will be installed (through the provision of appropriate lighting contour plans and technical specifications) so that it can be clearly demonstrated that areas to be lit will not disturb or prevent bats using their territory or having access to their breeding sites and resting places.

All external lighting shall be installed in accordance with the specifications and locations set out in the approved strategy, and these shall be maintained thereafter in accordance with the approved strategy.

Reason: To avoid detriment to protected species, in accordance with Section 15 of the National Planning Policy Framework, Core Strategy policies CP3 and CP7; and Managing Development Delivery Local Plan policy and TB23.

- 2.5.2 An Ecological Assessment covering the site has been prepared by Derek Finnie Associates (March 2025, ref DFA25012V3). Bat activity surveys recorded a moderate assemblage comprising common pipistrelle, soprano pipistrelle, noctule and brown long eared bat, with Myotis species also recorded on the static detectors. Foraging activity was concentrated along the south eastern linear tree belt, where up to four common pipistrelle were recorded shortly after sunset and the associated roost is considered likely to be nearby but outside the site. Pipistrelle foraging was also recorded along the north eastern boundary hedgerows and noctule were recorded foraging over the western field. No roosts were identified within the site and the trees identified for removal were assessed as having negligible roost potential.
- 2.5.3 The boundary hedgerows are classified as Habitats of Principal Importance and, together with the linear tree belts, form commuting and foraging habitat for bats. The assessment identifies light spill from the operation of the scheme as having the potential to adversely impact foraging and commuting bats which, in the absence of

mitigation, could lead to a permanent adverse impact at a site level (paragraph 6.1.7). The assessment also records a limited grass snake population within the site, an adder recorded close to the western boundary in 2017, and a breeding bird assemblage within the boundary vegetation which includes song thrush and starling, both Species of Principal Importance.

- 2.5.4 The lighting design responds to these constraints with regard to ILP Guidance Note 08/23, Bats and Artificial Lighting at Night. Warm white 3000K LED light sources are proposed throughout (lowest CT for the adoptable unit specification), limiting the blue light content to which bats are most sensitive. Lanterns are post top mounted at 0° inclination so that there is no direct upward light, and shallow distribution optics direct light onto the carriageway and footways. Luminous flux is limited to that necessary to achieve lighting class P5 in accordance with BS 5489-1:2020, and columns are positioned within the internal road network, set away from retained boundary vegetation wherever practicable. The lanterns at the site access from School Road, adjacent to the south eastern linear tree belt, incorporate factory fitted rear shields to limit back spill towards the retained vegetation. Lux contours are shown on drawing WLC1468-1300-001 to demonstrate the extent of residual spill toward the retained hedgerows and tree belts. All drivers are DALI enabled and dimmable, allowing output to be reduced further should the adopting authority require a dimming regime.
- 2.5.5 The ecological constraints are identified relative to the proposed lighting on the ecology markup of drawing WLC1468-1300-001, covering the western boundary tree belt, the south eastern linear tree belt, the north eastern boundary hedgerows, the roadside hedgerow and the approximate extent of the grass snake records.

3. Environmental Considerations

3.1 Proposed Lighting

3.1.1 The proposed design ensures existing receptors do not have any light spill onto their properties.

3.1.2 The potential lighting impact has been significantly reduced using a competent design practice and careful considerations towards heights of columns and equipment specification.

3.2 Obtrusive Light Limitations for Exterior Lighting

3.2.1 The below table has been reproduced from the ILP GN01/20 and provides maximum limits on vertical illuminance values on properties. Rear shields proposed for units close to property elevations.

Table 1 (Table 3 GN01/20): Maximum values of vertical illuminance on properties.						
Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance on 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

3.2.2 The proposed site is considered under Environmental Zone E2.

3.2.3 The below table has been reproduced from the ILP GN01/20 and provides maximum limits on upward light values.

Table 2 (Table 6 GN01/20) Maximum values of upward light ratio (ULR) of luminaires.					
Light technical parameter	Environmental zone				
	E0	E1	E2	E3	E4
Upward Light Ratio (ULR %)	0	0	2.5	5	15

3.3 Proposed Luminaire

Table 3: Luminaire Specification				
Luminaire	Proposed Locations	Characteristics		Image
Philips Luma Micro	Highway lighting	Upward Light: Glare Rating: Colour temperature: Efficacy:	0% G3 3000K (Warm White) Up to 140lm/cW	

3.4 Ecology

3.4.1 See 2.5.

4. Environmental Residual Effects

4.1 The proposed lighting will have a residual effect on the environment, and these will occur at different phases during the project. The residual effects have been assessed below and consider the permanent and temporary effects.

4.2 Operational - Landscape and Visual (permanent impact)

4.2.1 There is a permanent impact on the visual scene. With the use of a design practice, the impact can be minimized through good design, reducing the number of columns required. With the use of modern lanterns light is well controlled.

4.2.2 Recommendation: Design prepared by competent designer following BS 5489 and ILP Guidance on the Reduction of Obtrusive Light.

4.3 Operational - Community (permanent impact)

4.3.1 A well-designed lighting installation will have a positive impact on the local community, providing:

- A reduction in the fear of crime
- Encourage the use of more sustainable modes of transport, such as walking, cycling.

4.3.2 Recommendation: None