

Lighting Pollution Statement

Shurgard Tottenham

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Contents

1	Introduction	4
2	Adopted Principles	5
2.1	Overview	5
2.2	Colour	6
3	Outline Design Proposals	8
3.1	Overview	8

1 Introduction

This Light Pollution Statement outlines the proposed criteria for the external lighting for the proposed Self storage facility in Garman Road in Tottenham. The report considers the impact of the proposed external lighting scheme on the environment as well as the lighting design standards of Tottenham Council.

2 Adopted Principles

2.1 Overview

The general principles of the external lighting scheme will be as follows.

Amenity lighting to the access routes, entrance areas and security lighting to the building perimeter will be provided in alignment with BS 5489, and relevant CIBSE codes.

The scheme shall utilise LED lamped luminaires as they feature no UV component and research indicates that while lower UV components attract fewer invertebrates, warmer colour temperatures around 3000° K cause less impacts on bats.

Amenity lighting shall be provided with an average illumination of 5 Lux through pedestrian and access routes, with the illumination increasing to 15 lux within 5m of each entrance.

All external luminaires will be vandal resistant with at least IP54 environmental protection.

Limit the environmental impact and potential light pollution through the installation of luminaires with suitable photometric optics to minimise light spill. This is displayed within Figure 2.1.

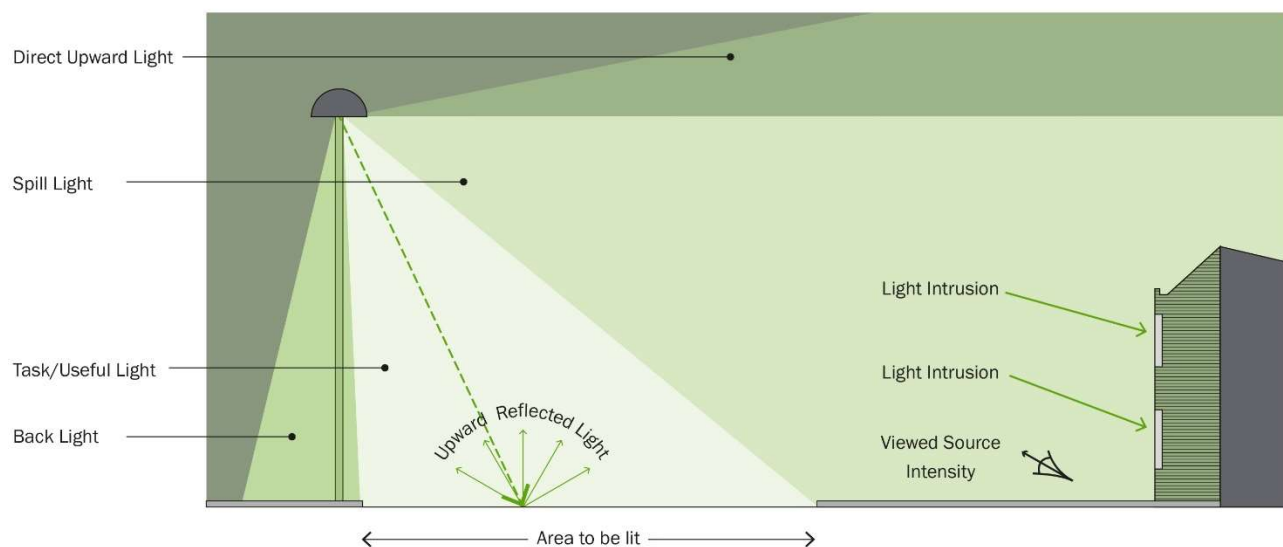


Figure 2.1 Types of Obtrusive Light (Courtesy Of ILE)

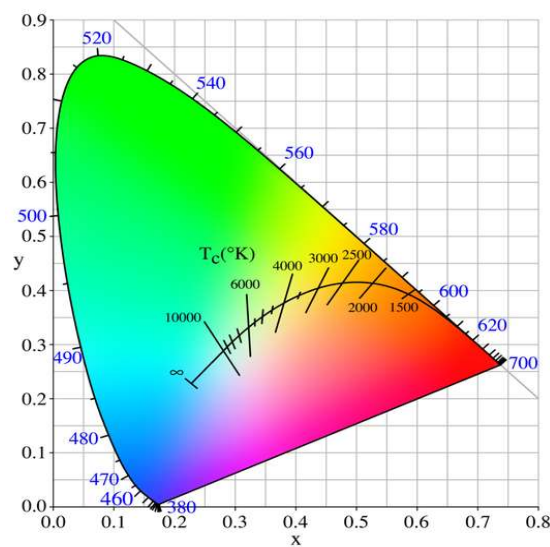
2.2 Colour

Where accurate colour judgments are to be made, care will be taken to select proper colour rendering group.

2.2.1 Colour Rendering Index

The colour rendering index is what we as lighting designers use to quantify a lamp sources suitability for the application.

The colour rendering index (CRI) is a quantitative measure of the ability of a light source to reproduce the colours of various objects faithfully in comparison with an ideal or natural light source. Light sources with a high CRI are desirable in colour-critical applications such as photography and cinematography. It is defined by the International Commission on Illumination as follows:



2.2.2 Glare

The following glare criteria will be adopted for the design.

Table 2.3 Obtrusive Limitations for Exterior Lighting Installations

Environmental Zone	Sky Glow ULR (Max %)	Light Trespass (into Windows) Ev (lx)		Source Intensity I (kcd)		Building Luminance Pre-Curfew
		Pre-Curfew	Post-Curfew	Pre-Curfew	Post-Curfew	Average L (cd/m ²)
E1	0	2	1	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5	10	2	10	1	10
E4	15	25	5	25	2.5	25

For this project we shall be aiming for an E2 / E3 rating, subject to the local authority agreements.

- ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.
 - Ev = Vertical Illuminance in Lux and is measured flat on the glazing at the centre of the window
 - I = Light Intensity in Cd
 - L = Luminance in Cd/m²
 - Curfew = The time after which stricter requirements (for the control of obtrusive light) will apply; 22.00hrs in this instance.
 - *= From Public Road lighting installations only
- 1) Upward Light Ratio – Some lighting schemes will require the deliberate and careful use of upward light – e.g. ground recessed luminaires, ground mounted floodlights, festive lighting – to which these limits cannot apply. The use of controlled attachments will be used to ensure that the ULR is limited.
 - 2) Light Trespass (into Windows) – These values are suggested maxima and need to take account of existing light trespass at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. The proposed luminaires will have very controlled optics reducing glare and light spill.
 - 3) Source Intensity – This applies to each source in the potentially obtrusive direction, outside of the area being lit. When selected the luminaire we will consider the lamp position within the luminaire ensuring that the lamp source is deep within the luminaire minimising the source intensity.
 - 4) Building Luminance – This should be limited to avoid over lighting and related to the general district brightness. Any external lighting will be designed to be subtle and consider the surface reflective of the façades ensuring that reflected light will not cause nuisance glare.

2.2.3 Light Sources

All luminaires will utilise LED light sources. The scheme shall utilise LED lamped luminaires as they feature no UV component and research indicates that while lower UV components attract fewer invertebrates, warmer colour temperatures around 3000° K cause less impacts on bats.

These sources have been selected on the basis that a white light is produced for use with CCTV for general building security purposes, they have low energy consumption and low lamp replacement periods.

3 Outline Design Proposals

3.1 Overview

The following section describes the principles behind the design and how it is anticipated that the requirements detailed will be achieved based on Figure 3.1:



Figure 3.1 Illumination Zoning Layout Plan

Table 3.2 Proposed Illumination Design with Relation to Lux, Level, Uniformity of Light and Glare Factor.

Type of Area, Task or Activity	Em (lx)	U ₀	R _{GL}	R _a	Specific Requirements
Walkways exclusively for pedestrians	5	0.25	50	20	-
Medium Traffic Car Park	10	0.25	50	20	-
Traffic Areas for Slowly Moving Vehicles (max 10km/h) eg; Bicycles, Trucks and Excavators	10	0.40	50	20	-
Regular Vehicle traffic (max 40km/h)	20	0.40	45	20	At shipyards and in docks, R _{GL} may be 50

3.1.1 Streets And Roadways

The roadways are generally positioned away from adjacent buildings is not applicable to this project. The existing roadways lighting is adopted by the local authority and will remain unchanged during the project's duration.

Figure 3.1 illustrates the Illumination Zoning Layout plan based on the proposed illuminance design with relation to lux level, uniformity of light, and the glare factor which has been extracted from BS EN 12464-2: 2014 as shown in Table 3.1.

3.1.2 Car Park Areas

It is proposed that a lighting level of 10 lux will be achieved at 1Nr. External parking bay, which is designated as disabled user. This luminaire will be column mounted, the height of the column is to be determined to suit the area, at this stage it is anticipated a 4m column will be utilised. This column is to support an LED lantern. The luminaires and associated optics will be selected to:

- Minimise rear spill and maximise the useful light
- Minimise the tilt angle of the head to avoid glare
- Avoid nuisance glare through fitting design and correct positioning on site.

The external lantern will operate on integral photocell operation only and will be activated only when triggered.

3.1.3 Common Amenity Space

The introduction of amenity lighting is required to the surrounding path, providing illumination to a proposed footpath leading around the building perimeter to the car park. Lighting in this area will be provided with wall mounted IP65 luminaires. These will be controlled via local photocell operation, installed integral to each fitting. Fittings are specified with a downward light distribution only and will be covered with a robust cover to minimise the upward light spill to less than 2.5% ULOR. Luminaires will be distributed at 8m spacings and installed at 4.1m AFGL.

3.1.4 Building Façade

As per the latest Shurgard Specifications, façade lightings have been proposed as a part of this scheme. The façade lighting provided for this scheme is in accordance with the requirements of Shurgard. These include IP65 luminaires which are a combination of light cell and timer: On when dark and off when daylight, but always off 00.00- 05.00.