



## EXTERNAL LIGHTING ASSESSMENT

For the proposed

Electric vehicle charging hub,  
a substation with 3.6m high acoustic fencing  
and associated works at:

LANE END GARAGE (SHELL TOLLERTON)  
95 Melton Road, Tollerton, Nottingham.

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Issued by:

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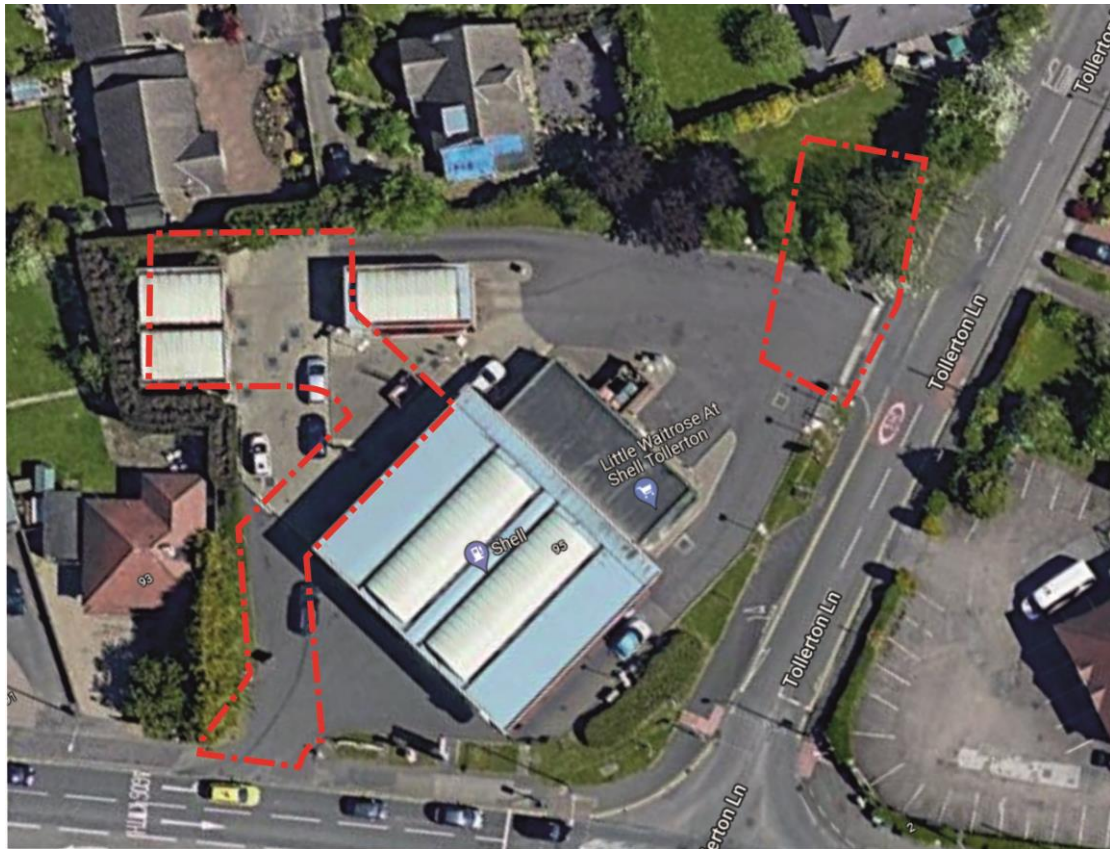
## **1.0 Introduction:**

- 1.1 My name is Graham White. I am the Senior Consultant and Managing Director of GWLC Lighting Consultancy.
- 1.2 I have worked within the construction industry for 48 years, achieving an HNC Civil Engineering qualification (1975) and for the last 32 years I have specialised within the building services sector with exterior lighting systems. I was awarded the National Lighting Contractors Certificate in 1988.
- 1.3 I provide professional lighting consultancy services for BP Oil UK Ltd, Shell UK Ltd, Esso Petroleum Ltd and their professional teams including Architects, Consulting Engineers, Planning Agencies and Ecologists for roadside service area proposals throughout England and Wales.
- 1.4 This document has been prepared to provide guidance to those considering this planning application in relationship to the proposed external lighting scheme.
- 1.5 A site survey and desk top exercise has been undertaken to assess the existing environment and then to provide a suitable lighting design for the proposed new development which will minimise the environmental impact on the surrounding residential, commercial and natural environment.

## **2.0 Executive Summary and Conclusions:**

- 2.1 This Lighting Impact Assessment sets out a process to inform and confirm the implementation of suitable measures to restrict and diminish the potential for Spill Light in accordance with the Institute of Lighting Professionals (ILP) Guidance Note for the Reduction of Obtrusive Light GN01/21).
- 2.2 Consideration of the existing ambient lighting around the proposed electrical vehicle charging hub and substation would indicate no increase in lighting levels over current base line conditions.  
The Lighting Illuminance Plan SH69 (**appendix 8A**) demonstrates that the lighting will be strictly contained within the site boundaries.
- 2.5 It is therefore my conclusion that the proposed lighting at the subject site will have no adverse impact on the current amenity or night sky over and above that experienced from the current baseline conditions in this area.

### 3.0 Site Location



- 3.1 Shell Lane End Garage, 94 Melton Road, Tollerton, NG12 4EN.  
The main site is located to the south of Tollerton village on the A606, which forms the southern boundary of Tollerton. The A606 provides a link from the southern ring road around Nottingham (A52) in the north, to Melton Mowbray in the south east, leading to Stamford/Peterborough beyond.  
The subject site areas to be redeveloped are indicated by the red dot/dash boundary lines.

#### **4.0 Baseline Conditions:**

- 4.1 The existing site lighting to be retained adjacent to the proposed EVC hub area is shown on Illuminance Drawing SH69 (section 8A) and described within the Lighting Specification (section 8B). An existing floodlight to the rear boundary is to be removed.

There are four residential properties adjacent to the subject site.

93 Melton Road to the west boundary, 22 and 29 Muir Road and 1 Tollerton Lane to the north boundary. Tollerton Lane is located along the east boundary and Melton Road to the south boundary.

There is a major intersection of Melton Road and Tollerton Lane to the south east corner of the site, requiring high levels of street lighting due to conflict status.

To the east and south of the site ambient light levels are quite high due to the proximity of the major intersection and the approach road lighting. Ambient light levels to the west and north boundaries are as to be expected for an environmental zone E3 medium district brightness (GN01/21 Table 2 page8) but E2 low district brightness would be adopted due to the rural area to the south of the Melton Road (A606).

#### **5.0 Lighting Requirement, Amenity and Ecology Impact:**

- 5.1 The proposed development is for Four electric vehicle (EV) charging bays to be located on the western side of the site plus a new EV equipment compound and substation to the east of the site by the exit to Tollerton Lane. The proposal replaces the existing customer car parking, reducing the number of places from eleven to five (including one accessible space).

Existing hardstanding and boundary treatments will remain as existing. The hedge (decorative ground cover) to the rear of the EVC units will be removed along with a couple of trees in the proposed electrical plant compound area, however, the hedge fronting onto Tollerton Lane will be retained, retaining the screening to the existing bin store and new plant area. There are no proposed alterations to the existing access and egress arrangements.

- 5.2 In terms of the issue of neighbour amenity, I have previously stated in para.4.1 the location of receptors relative to the appeal site.

It is my judgement that the level of illuminance and the reduction in mounting height (from 5m to 2.5m) of the 2no light sources required for the EV bays will diminish the risk of any light trespass in this area.

It is also established that the EV hub area and the proposed equipment compound and substation (1no new floodlight) will be screened by the existing fencing, the proposed relocation of the acoustic fence and the considerable height and density of the existing mature trees and shrubs.

## **6.0 Design Criteria:**

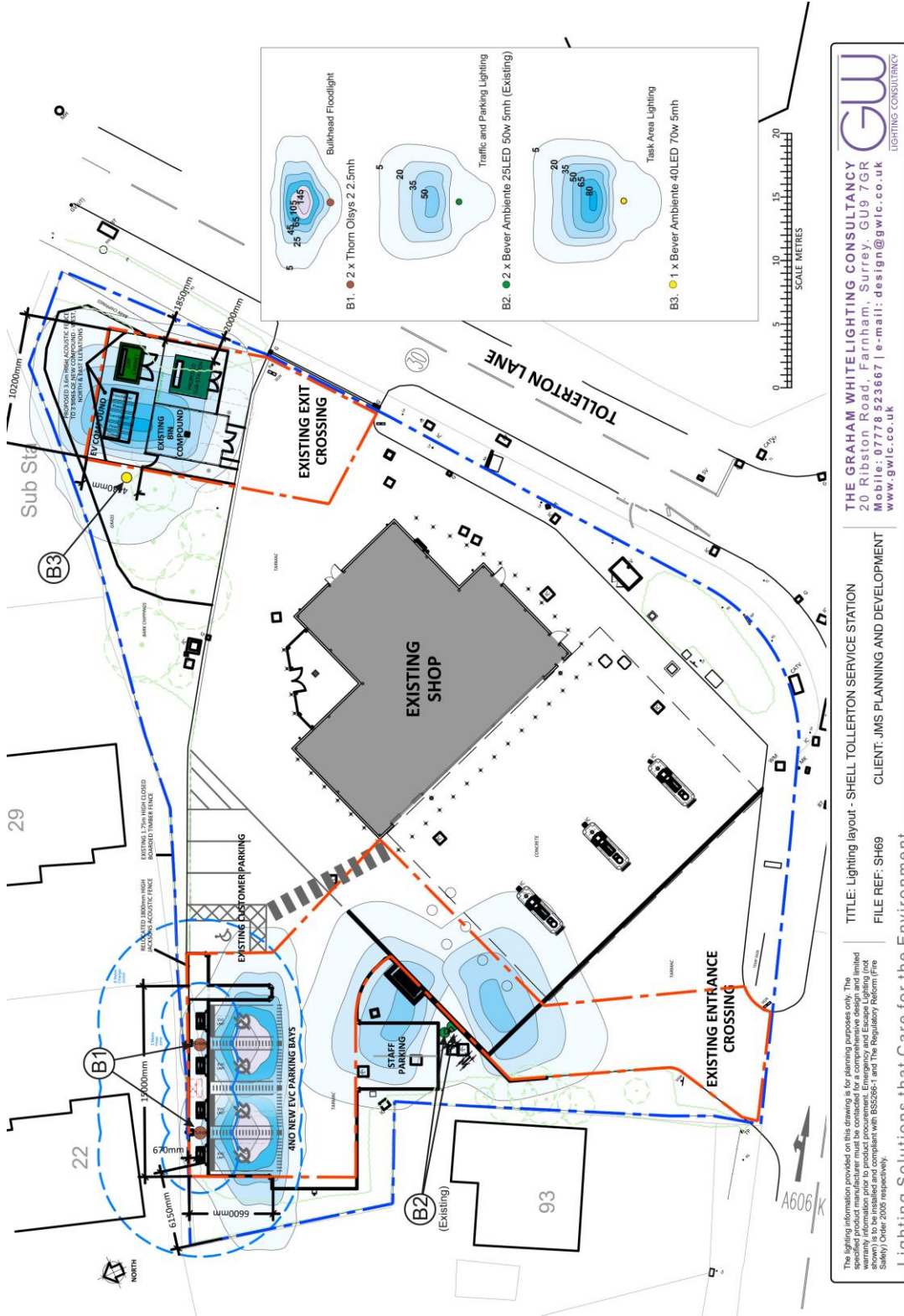
- 6.1 The external lighting scheme has been designed in line with the best practice for visual performance, comfort and the lowest energy consumption using LED light sources.
- 6.2 Illuminance levels for lighting in all external areas are as specified within the CIBSE Lighting Guide 6 (The Outdoor Environment) and relevant British Standards.  
The lighting design is compliant and meets the criteria stated within Table 2 (page 10) of the Institute of Lighting Professionals (ILP) Guidance notes for the Reduction of Obtrusive light GN01.2021.  
The EV bay lighting is designed to ensure that external lighting is concentrated in the appropriate areas and that there is no upward light component, removing unnecessary light pollution, energy consumption and nuisance to adjacent property.

## **7.0 Bibliography**

ILP Guidance Notes for the Reduction of Obtrusive Light: GN01.2021  
CIBSE Lighting Guide LG6: The outdoor environment.  
DOE: Lighting in the Countryside: Towards good practice.  
BS5489 Part 1. Roads and Amenity Areas.



8A) Proposed Lighting Illuminance Plan SH69



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**TITLE:** Lighting layout - SHELL TOLLERTON SERVICE STATION  
**FILE REF:** SH69  
**CLIENT:** JMS PLANNING AND DEVELOPMENT

The lighting information provided on this drawing is for planning purposes only. The consultant does not warrant or guarantee the accuracy of the information provided. The consultant is not responsible for the design, installation, or performance of any lighting system. The lighting system shown is to be installed and compliant with BS5266-1 and The Regulatory Reform (Fire Safety) Order 2006 respectively.

Lighting Solutions that Care for the Environment

## **(8B) Lighting Specification for Proposed Lighting Scheme.**

EV Hub and associated Electrical Compound at:-

Shell Lane End Garage, 94 Melton Road, Tollerton, NG12 4EN.

(Please refer to Drawing SH69 in this document ref.8A).

### **Exterior Lighting**

Small area floodlights (B1) are type Thorn Olsys 2. 24L70-740 STR BP8 CL1 (2no) at 2.5m mounting height. Area floodlight (B3) is type Bever 16884 [Ambiente01-A-WB01-40LED-N0-70W (EOS2 5700K) (1no) at 5m mounting height.

Area floodlights (B2) type Bever 16882 [Ambiente01-A-WB01-25LED-N0-50W (EOS2 5700K) (2no) at 5m mounting height **are existing and to be retained.**

The required lighting for the EV Hub and Electrical compound area is concentrated to provide minimum levels of light required for task and pedestrian/traffic route safety. Luminaire specifications, locations and mounting heights (mh) are shown on the Proposed Lighting Illuminance Plan SH69.

### **Design Data and Assessment Summary**

The Lighting Illuminance Plan provides a letter and colour key to denote the various types of luminaires specified.

Each luminaire is shown with its own ISOLUX contour diagram derived from the relevant photometric data.

Control of beam direction (below 70 degrees) is provided by the LED beam control system enabling sharp cut off, avoiding glare, trespass and night sky pollution.

A product datasheet is attached within the Appendices for each referenced luminaire type.

I am satisfied that any effect on the immediate environment by the designed illuminance for this site is appropriately mitigated and will not cause light trespass beyond the proposed development boundaries.

Graham White (Senior Designer)

GWLC

(8C) Product Datasheets (see product key at 8A Lighting Illuminance Plan)

Luminaire Ref: B1 (New)

THORN

Olsys Street

96274091 OLSYS2 24L70-740 STR BP8 CL1

LED	57W OSYR_24L70_STR_4K		IP66		IK08		CE		Ta50
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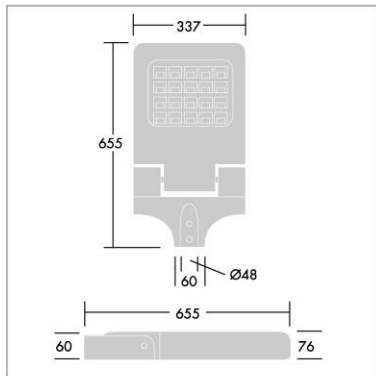
Olsys Street

An LED street lantern with street distribution for urban street lighting applications. electronic bi-power. Class I electrical, IP66, IK08. Body: die-cast aluminium (AS9U), powder coated silver-grey (RAL 9006). Enclosure: tempered glass. Optics: aluminium. Supplied in one box, ready to install. Mounting attachments to be ordered separately. Equipped with power reduction circuit, effective 3 hours before and 5 hours after a calculated midnight. Complete with 4000K LED

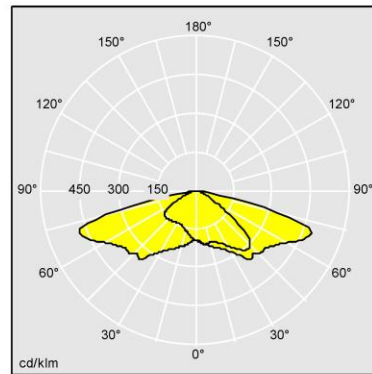
Dimensions: 505 x 337 x 76 mm  
 Total power: 57 W  
 Weight: 8.5 kg  
 Scx: 0.17 m<sup>2</sup>



TLG\_OSYS\_F\_2STRLIT.jpg



TLG\_OSYS\_M\_STR2.wmf



TLLA\_OLSYS\_2\_24\_700\_LTL\_GLD1021.idt

Lamp position: STD - standard  
 Light Source: LED  
 Luminaire luminous flux\*: 6373 lm  
 Luminaire efficacy\*: 112 lm/W  
 Lamp efficacy: 111 lm/W

Correlated colour temperature\*: 4000 Kelvin  
 Rated median useful life\*: 50000h L90 at 25°C  
 Ballast: 1x EL BP  
 Luminaire input power\*: 57 W  
 LOR: 1,00 ULOR: 0,00 DLOR: 1,00

All values marked with an \* are rated values. Thorn uses tried and tested components from leading suppliers, however there may be isolated instances of technology-related failures of individual LEDs during the rated product lifetime. International standards set the tolerance in initial flux and connected load at ±10%. Colour temperature is subject to a tolerance of up to +/-150 Kelvin from the nominal value. Unless stated otherwise, the values apply to an ambient temperature of 25°C. In most products the failure of one LED point causes no functional impairment to the lighting performance of the luminaire and is therefore no reason for complaint. Unless otherwise stated all Thorn LED products are suitable for unrestricted use (rated RG0 or RG1) with regard photobiological blue light safety (IEC/EN60598-1). Thorn Lighting is constantly developing and improving its products. The right is reserved to change specifications without prior notification or public announcement. © Thorn Lighting





## Luci Series **Ambiente** EOS<sup>2</sup> Area

### Benefits

- + Increases visibility and comfort.
- + Most advanced LED-technology.
- + Highly efficient design: Up to 114 lm/W luminaire efficacy.
- + Outdoor ambient resistant -40 °C to +60 °C.
- + Integrated diecast aluminium housing ensures good thermal management maximizing life and LED performance.
- + Protected against moisture, power dips or surges.
- + Same model for straight or bended poles, easy fine-tuning of angle.
- + Easy to install by one person.
- + Attractive design.
- + Mounting height: up to 18 meter.
- + Night-time dimming. Configurable dusk till dawn dimming schedule.
- + Self-controlled operating conditions:
  - Luminaire Intelligent Protection System (LIPS)
  - Active Overheat Protection (AOP)
  - Light Normalizer - No Lumen drop during lifetime.
- + Integrated EOS technology:
  - Plug-and-play self-organizing wireless network.
  - Encrypted communication.
  - Advised maximum spacing for network: 30 meter.
- + Intuitive control and analysis with the EOS Manager app:
  - User authentication and data encryption.
  - Visual representation of your EOS network.
  - Extensive configuration, information, and usage statistics.
  - Share sensor information between EOS devices.



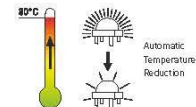
### Features

Number of LED's	25 / 40
Lumen Output	up to 8122 lm
Input Power	up to 70 W
Efficacy	up to 114 lm/W
Colour Temperature (CCT)	4000K / 5700K
Colour Rendering Index (CRI)	83+ / 73+
Rated Life	100.000+ Hours*
Housing	Diecast Aluminium / Tempered safety glass
Optic	PMMA
Mounting Options	Suitable for straight & bended poles (48 - 60 mm)
Pole diameter:	48 - 60 mm (60 - 76 mm adapter available**)
Adjustable angle:	-5° to +10°, bended or straight poles
Dimensions	644 x 303 x 132 mm
Operating Temperature	-40 °C to +60 °C***
Power Supply	Integrated
Voltage	90 - 305 VAC @ 47 - 63 Hz
	127 - 431 VDC
Power Factor	0.96 typical
IEC Safety Class	I (II optional)
Weight	5.9 kg
AC Harmonics	Less than 10% THD compliant to EN55015

\* L80 / B10 at 25 °C constant ambient temperature, constant full power

\*\* Sold separately

\*\*\* Active Overheat Protection above 80 °C at PCB

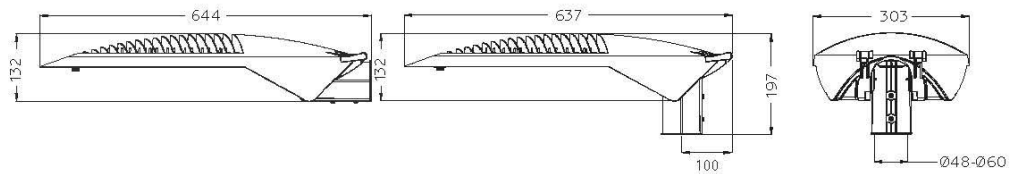


Bever\_SPEC\_Luci Series Ambiente EOS2 Area\_6B\_2017-09-19



Luci Series **Ambiente** EOS<sup>2</sup> Area

Dimensions

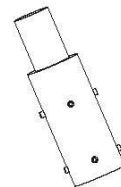


Information product

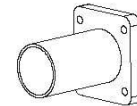
Article number	Nomenclature	Optic	Max. Power	Max. Lumen	Max. Efficacy	CCT	CRI
<b>Luci Series Ambiente 25 LED</b>							
16881	Ambiente01-A-WB01-25LED-N0-50W [EOS <sup>2</sup> , 4000K]	Wide Area	50 W	5128 lm	98 lm/W	4000K	83+
16882	Ambiente01-A-WB01-25LED-N0-50W [EOS <sup>2</sup> , 5700K]	Wide Area	50 W	5527 lm	106 lm/W	5700K	73+
<b>Luci Series Ambiente 40 LED</b>							
16883	Ambiente01-A-WB01-40LED-N0-70W [EOS <sup>2</sup> , 4000K]	Wide Area	70 W	7558 lm	105 lm/W	4000K	83+
16884	Ambiente01-A-WB01-40LED-N0-70W [EOS <sup>2</sup> , 5700K]	Wide Area	70 W	8122 lm	114 lm/W	5700K	73+

Accessoires

- 15354 Pole adapter for Luci Series Ambiente
- 14909 Wall adapter for Luci Series Ambiente

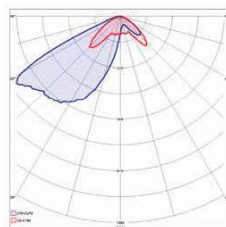


15354 Galvanized Steel  
Ø 60-76 mm adapter



14909 Aluminium  
Wall bracket

Optic



Wide Area

Bever\_SPEC\_Luci Series Ambiente EOS2 Area\_0B\_2017-09-19

## 8D) ILP GN01.2021 (page 10)

Guidance Note 01/21

### Environmental Zones

It is recommended that Local Planning Authorities specify the following 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

**Note 1** Where an area to be lit lies close to the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone (see comment below)

**Note 2** Rural zones under protected designations should use a higher standard of policy

**Note 3** Zone E0 must always be surrounded by an E1 Zone

**Note 4** Zoning should be agreed with the local planning authority. Due to local requirements a more stringent zone classification may be applied to protect special / specific areas

**Note 5** SQM (Sky Quality Meter) is referenced by the International Dark Skies Association (IDA). SQM is an instrument used to measure the luminance of the night sky. It is typically used by astronomers to quantify skyglow, using units of magnitudes per square arcsecond. the scale is between 16:00 (a bright night sky) and 22:00 (the least light pollution). The criteria for zone E0 was revised in mid 2019, with the new requirements not being made retrospective

**Note 6** Astronomical Observable Dark Skies will offer clearer views of the Milky Way and of other objects such as the Andromeda Galaxy and the Orion Nebula

**Note 7** Although values of SQM 20 to 20.5 may not offer clear views of astronomical dark sky objects such as the Milky Way, these skies will have their own relative intrinsic value in the UK