

**DATED 14/04/2011**

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**CAMBRIDGESHIRE COUNTY COUNCIL  
STANDARD DEVELOPMENT SPECIFICATION**

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<b>TERM</b>	<b>Definition</b>
<b>Adoption or Adopted</b>	The transfer of ownership of Lighting Equipment on the satisfactory completion of a Developer Agreement from the developer to the Local Authority. Upon Adoption the Local Authority will accept responsibility for payment of the on-going energy charges and future maintenance costs at public expense. This can include Lighting Equipment for the Local Authority accepts responsibility for under the terms of a Commuted Sum.
<b>Central Management System or CMS</b>	Means an electronic system for transmitting, recording and analysing data to record electrical faults on street lighting apparatus and to control and switch light output and measure consumption.
<b>Commuted Sum</b>	A sum paid by the developer to the Local Authority for the extra-over through life cost of ownership associated with the installation of Lighting Equipment of a style or type that is a departure of the normal standard, not being a condition of the Local Authority as the Planning Authority. A commuted sum may also be applied where Lighting Equipment is transferred to the Local Authority, being installed in areas that are not Highway. In all cases, commuted sums shall be calculated by the Local Authority, such calculation being described in Appendix 3.
<b>Compact Fluorescent Lamp</b>	A compact fluorescent lamp, single ended connection and using electronic control gear (white coloured light)
<b>Conflict Area</b>	Means any of: (a) road junctions where the roads are in Traffic Groups 2, 3a or 3b of Table 4.1; (b) complex road junctions; (c) pedestrian refuge island; (d) at the location of horizontal traffic calming features such as speed tables, build-outs and chicanes (e) roundabouts and mini roundabouts; (f) the frontage and entrance of schools and hospitals to a maximum of 100 metres; (g) the road junction to public car park entrances having a capacity for more than 20 vehicles.
<b>Cosmopolis Lamp</b>	High intensity discharge full spectrum light source using electronic control gear.
<b>Design Brief</b>	A document signed by Authority Project Representative outlining the standards to be achieved, the extents of the areas to be lit, the acceptable materials to be used and any requirements for alterations to existing Lighting Equipment affected by the development proposals.

TERM	Definition
<b>Developer Agreement</b>	An agreement between a developer and the local authority entered into under: (a) Section 38 of the Highways Act 1980; (b) Section 278 of the Highways Act 1980; (c) Section 106 of the Town & Country Planning Act 1990
<b>Environmental Zone</b>	As defined in Institution of Lighting Professionals: 'Guidance Notes for the Reduction of Light Pollution' available at <a href="http://www.ile.org.uk">www.ile.org.uk</a>
<b>Full Spectrum Light Source</b>	Shall have a colour-rendering index Ra 60, and the colour temperature shall be between 1950 <sup>0</sup> K and 6000 <sup>0</sup> K.
<b>Highway Authority</b>	For the purpose of this Protocol the Highway Authority is Cambridgeshire County Council.
<b>Highway or Adopted Highway</b>	Roads, footways, footpaths and cycleways and other areas owned by the Local Authority as the Highway Authority as defined in the Highways Act 1980.
<b>Lighting Equipment</b>	Includes: (a) Lighting on all roads, footways, footpaths and cycleways the responsibility of the Local Authority as the Highway Authority either now or as part of a Developer Agreement; (b) Amenity lighting, located in areas not defined as Highway for the purpose of lighting other public areas, access ways and footpaths etc., the responsibility of the Local Authority either now or as part of a Developer Agreement; (c) Internally and externally lit traffic signs and lit traffic bollards to meet the requirements of the Traffic Signs General Directions; (d) Subway and underpass lighting provided for roads and areas defined in a) and b); (e) Pedestrian (zebra) crossings on the roads and areas described in a); (f) Feeder pillars and cable networks whose purpose is to supply electrical energy to a), b), c), d) and e).
<b>Lighting Designer</b>	A person satisfying the requirements of that title as described in the Institution of Lighting Professionals Competency and Occupations Matrix for Lighting Design Staff.
<b>Lighting Design Team Leader</b>	A person satisfying the requirements of that title as described in the Institution of Lighting Professionals Competency and Occupations Matrix for Lighting Design Staff.
<b>Local Authority</b>	Cambridgeshire County Council.
<b>Ra</b>	Colour Rendering Index Ra (sometimes called 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.
<b>RCD</b>	Residual Current Device.
<b>Residential Areas</b>	Those areas contained within the county primarily serving residential properties.

<b>TERM</b>	<b>Definition</b>
<b>Sensitive Areas</b>	<ul style="list-style-type: none"> <li>a) Countryside Heritage Areas;</li> <li>b) Environmentally Sensitive Areas;</li> <li>c) Areas of Outstanding Natural Beauty;</li> <li>d) Sites of Special Scientific Interest;</li> <li>e) Listed and Registered Historic Parks and Gardens;</li> <li>f) Conservation Areas;</li> <li>g) City, Town and District Centres;</li> <li>h) Statutory Conservation Areas, Scheduled Ancient Monuments, Listed and Registered Historic Parks and Gardens, Listed Buildings and areas abutting their boundaries;</li> <li>i) Non-statutory historic or heritage areas and older urban renewal areas identified by the local authority as the Local Planning Authority;</li> <li>j) Other local authority sponsored initiatives, such as the regeneration of older urban areas in initiative programmes, which will be the subject of special treatment and funding. These will generally operate within the categories described above but some will have their own requirements;</li> <li>k) The City and Town centre area which will be subject to individual assessment of the equipment design and lighting standard to form part of the local authority lighting strategy.</li> </ul>
<b>SON Lamp</b>	High pressure sodium discharge lamp (golden coloured light).
<b>Street Lighting Service Provider</b>	Balfour Beatty, who is contracted by the Local Authority to maintain the street lighting and for whom the contact details will be provided by the Local Authority upon request.
<b>Authority Project Representative</b>	The Street Lighting PFI Contract Manager representing the Local Authority.
<b>Urban Areas</b>	Those areas contained within the boundaries of Cities and Towns including non-residential estates.

## **1. INTRODUCTION**

### **1.1. This document identifies the basic principles and standards applying to the provision of street lighting for the Local Authority and:**

- (a) Where a defined term or word is used the initial letter(s) shall be capitalised;
- (b) The meaning of the defined terms or words can be found in the definitions section; and
- (c) The definition of street lighting shall encompass all items of Lighting Equipment provided on the Highway which can include public open spaces that either is, or is planned to be, maintained by the Local Authority under a Developer Agreement.

## **2. REQUIREMENTS FOR LIGHTING**

### **2.1. Determination of Whether or not Lighting Should be Provided or Improved**

- (i) The Local Authority shall be entitled, in its absolute discretion, to determine whether or not lighting should be provided or improved on a particular length of highway details of which will be contained in the Design Brief issued by the Local Authority.

### **2.2. Requirements for Lighting and Responsibility for Installation**

- (a) Where lighting is provided, it shall be in accordance with the requirements set out in this Standard Development Specification;
- (b) Where the Local Authority determines that lighting should be provided, extended or improved, the developer shall be responsible for the supply and installation of that Lighting Equipment unless explicitly agreed to the contrary with the Local Authority before commencement on site.

### **2.3. Amendments to Existing Lighting Equipment**

- (a) The developer will be responsible for undertaking any amendments to existing Lighting Equipment affected as a result of his proposals.

### **2.4. Consultation & Development of the Design Brief**

- (a) Prior to commencement of the lighting design process a Design Brief will be issued to the developer by the Local Authority;
- (b) Consultation shall be undertaken by the Local Authority in the development of the Design Brief. In particular:
  - (i) all relevant stakeholders as determined by the Local Authority;
  - (ii) Authority Project Representative will consult with all relevant stakeholders to ensure that historical styling and/or location of equipment is correct;
  - (iii) the Design Brief should take into account the view of interested outside bodies (e.g. historical societies) to ensure that the appropriate environmental and lighting design solutions are achieved;
  - (iv) . Authority Project Representative will consult with the Service Provider to ensure acceptability for accrual into the maintenance contract.

**2.5. Design Approval**

- (a) All new lighting designs shall be submitted to the Local Authority and the Authority Project Representative for approval;
- (b) All new or adapted street lighting that is either Adopted or proposed to be Adopted by the Local Authority on completion shall be designed by a suitably qualified Lighting Designer whose work shall be verified by a Lighting Design Team Leader prior to submission for approval;
- (c) In order for approval to be given lighting designs must demonstrate compliance with the requirements of the Design Brief and this Standard Development Specification. Lighting scheme design approval must be obtained in writing from the Local Authority prior to commencement on site;
- (d) Lighting design submissions shall be subjected to a maintainability assessment by Authority Project Representative. Schemes will be rejected where the maintainability assessment indicates excessive energy usage or increased through-life costs are identified associated with the equipment type or access;
- (e) For approval, correspondence, draft layouts, Lighting Equipment details and the like necessary to achieve this must be sent to Authority Project Representative at the Local Authority. An electronic file of the lighting design proposals or at least 2 sets of the final lighting scheme printed layout drawings will be required together with all lighting and cable design calculation sheets, computer print-outs etc. demonstrating compliance with the Design Brief and this Standard Development Specification;
- (f) All designs submitted shall be at the developers own expense. Following the initial approval check all subsequent approval checks by the Local Authority will be charged at reasonable cost.
- (g) Once approved, the Local Authority will issue one complete set of printed approved drawings to the developer. Each drawing will be signed and dated on behalf of the Local Authority by Authority Project Representative or his representative, indicating its status as an approved drawing. Inspections and subsequent Adoption of the lighting scheme will be judged against the latest approved scheme drawings issued. Any alterations to the road layout, lighting column position or cable route that have in any way affected the approved design must be re-submitted for approval prior to construction. The Local Authority reserves the right not to issue retrospective design approval;
- (h) Prior to Adoption, the Local Authority will ensure that the lighting system provided by the developer has been supplied and installed in accordance with the approved design and that the Lighting Equipment installed and the installation methods used are compliant with the Design Brief and this Standard Design Specification in force at the time of the design approval. Upon satisfying itself that these parameters have been met, the Lighting Equipment will be added to the Local Authority street lighting inventory at the earliest opportunity for payment of energy supply only;
- (i) The Local Authority will not be responsible for the Lighting Equipment prior to formal Adoption and part of the design approval for Developer Agreements will be the developer's proposals for dealing with maintenance, out-of-hours contact details for the period from installation of the Lighting Equipment to the Adoption of the highway by the Local Authority. Any lighting installed under a Developer Agreement will be the responsibility of the developer for all charges or costs relating to the maintenance of

the Lighting Equipment until full Adoption is confirmed by the Local Authority. The Developer will be required to agree the arrangements for the payment of electrical energy with the local Distribution Network Operator prior to commencement on site up to implementation of (g) above;

### **3. LIGHTING SPECIFICATION**

#### **3.1. Considerations in Determining Levels of Illumination, Lighting Positions and Styles**

- (a) In determining levels of illumination, lighting positions and styles, the Design Brief and subsequent acceptance of design submissions will consider pedestrian and vehicular uses/needs in relation to the following identified matters:
  - (i) Areas of activity, theatres, shops, school entrances, bus and light rail stops, libraries, highways, paths etc, and areas other area of inter-modal conflict;
  - (ii) Listed buildings and historic qualities of the area;
  - (iii) Building heights;
  - (iv) The windows of domestic properties;
  - (v) Drives, lowered kerbs and accesses;
  - (vi) Trees and large shrubs;
  - (vii) Property boundaries. Wherever possible Lighting Equipment will be sited on boundaries;
  - (viii) Overhead and underground services;
  - (ix) Street features - crossing points, sitting areas, tree planting, traffic calming, materials/colours etc.;
  - (x) Existing lighting - positions, styles, heights, lighting levels, lighting type, lighting from shops, floodlights, etc. In assessing appropriate levels of illumination the existing and ambient lighting e.g. from shops, floodlighting schemes, etc, shall not be taken into account. Whilst, such lighting adds to the ambience of the area it should be recognised that the continued operation of ambient or privately owned lighting sources cannot be guaranteed for the life of the scheme;
  - (xi) Uneven surfaces (important to the handicapped), hazards, etc.;
  - (xii) Local knowledge, incidence of vandalism, accident blackspots, etc.

#### **3.2. Selection of Lighting Class**

- (a) The Local Authority shall determine the lighting classes which shall apply;
- (b) The lighting requirements for a particular road are determined from Tables 1.1 to 1.4 contained in Appendix 1;
- (c) Generally, the lighting requirements will be determined by the Carriageway Hierarchy, Footway Hierarchy and City, Town and District Centre descriptions contained in "Well

Maintained Roads – Code of Practice for Highway Maintenance Management – Roads Liaison Group 2005” which has been adopted as the Local Authority policy with local variations;

- (d) The table in Appendix 2 shows the alignment between the Well Maintained Highways road hierarchy and the appropriate light levels as outlined in BS5489:2003 in respect of traffic routes, and the allocation of S class lighting for local access roads based on crime, colour rendering index (CRI), traffic flow and environmental zone;
- (e) Where the Local Authority considers that a road or area has a high crime rate, compared with the average crime rate for the whole of the Local Authority administrative area, then the Authority Project Representative may increase the lighting class indicated in Table 1.2 of Appendix 1 by one lighting class or, in exceptional circumstances, two classes. For the avoidance of doubt, where such a situation occurs and the indicated lighting class is S3, a one level increase would make the requirement S2.

### 3.3. **Glare**

- (a) All new lighting shall be designed to minimise the effects of obtrusive light at night and to reduce its visual impact during daylight. To that end, compliance with ‘Guidance Notes for the Reduction of Light Pollution’, Issued by Institution of Lighting Professionals, will need to be demonstrated and any subsequent amendments as part of the lighting design approval process;
- (b) All luminaires shall incorporate an optical system to direct the light onto the highway within the limits set by BS 4533. Requirements for the restriction of glare from lighting installations are described in BS EN 13201: 2003, Part 2. These recommendations shall be followed together with any specific amendments or requirements of this document;
- (c) Luminaires for Traffic routes, lighting (the “ME” Classes prescribed in Appendix 1) shall have adequate optical control to minimise light pollution and obtrusive light to properties and to control glare. Installed intensities shall not exceed the limits of Class G2. For conflict areas and environmental zones E1 & E2, shall not exceed G4;
- (d) Luminaires for residential roads, side streets, industrial and commercial road lighting (the “S” Classes prescribed in Appendix 1, tables 1.2 and 1.4) shall have adequate optical control to minimise light pollution and obtrusive light to properties and to control glare. Installed intensities shall not exceed the limits of Class G1;
- (e) In undertaking the lighting design due account of the location of all publicly owned and operated Closed Circuit Television (CCTV) equipment shall be taken to minimise the effect of the lighting on the sight lines of the CCTV equipment and the consequence of glare into the cameras.

### 3.4. **General Requirements**

- (a) In conservation areas, or other areas with high pedestrian movements, the use of wall mounted equipment should be considered;
- (b) Wall mounted equipment is not normally permitted in residential developments;
- (c) Where any wall mounted equipment is permitted, then a wayleave agreement in perpetuity fully protecting the Local Authority’s interest must be provided at the developers expense;

- (d) Where columns are used for the support of decorations, festive lighting, etc., those requesting the facilities will be responsible for funding the extra-over purchase costs associated with manufacturing and installing the enhanced Lighting Equipment;
- (e) The use of “non-standard” traditional, heritage or contemporary style lighting columns, column embellishments or lanterns will only be accepted where it forms part of a theme for the area and with the approval of the Local Authority Planning Department and Authority Project Representative. If such approval is obtained, the developer shall be required to pay a Commuted Sum in respect of extra-over through-life costs associated with additional maintenance and/or energy costs compared with “standard” Lighting Equipment;
- (f) The lighting designs submitted to the local authority will need to demonstrate that the maximum height restriction indicated in Tables 1.1 to 1.4 in Appendix 1 have been adhered to unless the specific written approval of Authority Project Representative has been obtained;
- (g) The retention of existing columns/lanterns, where these are of local historical importance is desirable, particularly, where they form a feature of the locality. However, the age, electrical and structural safety requirements must be considered paramount when deciding whether to reuse units and this shall be at the discretion of the Local Authority;
- (h) Wherever permitted lanterns and associated equipment may be affixed to buildings, particularly where footways are narrow and subject to high pedestrian traffic. Drawings (1) and (2) in Appendix 6 show indicative examples of general arrangements, they do not purport to represent any particular installation which could vary significantly although follow the principles indicated. The associated work in achieving way-leave agreements and listed building consents for such equipment must be taken into account when programming schemes which include lighting improvements. Where lighting columns have to be used, they should be sited to avoid obstruction to the footway (particularly for the disabled). However, where this means that columns would be provided at the back of footways adjacent to buildings, every effort must be made to install wall mounted fittings in lieu of columns.

### 3.5. Specific Requirements

- (a) **Lighting columns, brackets and posts** shall comply with BS EN 40, be as specified within paragraph 1 of Appendix 5, and be of galvanised steel construction except;
  - (i) where passively safe Lighting Columns and posts which shall be constructed of a material that is generally available in the market at the time of purchase;
- (b) where the Authority specifies that a colour finished protective coating is required then it shall be protected and colour finished to match either the existing Lighting Column colour or to meet the Authority’s colour requirements with one of the following factory applied corrosion protection systems to a minimum dry film thickness of 300 microns applied to all external surfaces:
  - (i) Ameron Steelguard Root treatment and Ameron PSX 700 coating;
  - (ii) Plascoat coating; or
  - (iii) Vinadac Glass Flake Sheen Finish coating;

and the inherent properties of the material or system of corrosion protection referred to in paragraph 3.5.(a) shall provide a design life of not less than 30 years without further protective treatment in the normal street environment.

- (c) **Lanterns and lamps** shall be as specified within para. 2 of Appendix 5 and luminaires shall meet the requirements of BS EN 60598, and BS EN 60529 1992 for ingress protection and class IP6x for the optical compartment. In addition:
  - (i) The contractor will install a curved tempered glass bowl on traffic routes treated with Philips DynaClean technology to optimise the frequency of cleaning. In subsidiary roads and residential areas, polycarbonate bowls may be used. Flat glass Luminaires will be installed in areas such as elevated lighting positions on bridges, to meet glare class requirements.
- (d) **Cut-Outs** shall be as specified within para. 3 of Appendix 5;
- (e) **CMS nodes**; In specified areas, each lighting column, shall be fitted with a CMS node as specified within para. 4 of Appendix 5 and integrated into the Local Authority Central Management System. Contact must be made with the Local Authority's Street Lighting Service Provider prior to any installation of CMS nodes to ensure that the CMS node is correctly configured;
- (f) **CMS Base Stations**; where specified by the Local Authority, developers may be instructed to install a Telensa Base Station as specified in paragraph 8 of Appendix 5 and integrated into the Central Management System. Contact must be made with the Local Authority's Street Lighting Service Provider prior to any installation of CMS Base Stations to ensure that it is correctly configured;
- (g) **Photocells**; where CMS nodes are not to be fitted under direction of Authority Project Representative, each lighting point shall be fitted with a Photoelectric Cell Controller as specified within para. 4 of Appendix 5 and will comply with BS5972 and be of one-piece construction, either "plug-in" or miniature units;
- (h) **Use of Brackets**; Post top columns will be used as the standard installation; however bracket arms may be employed where the surround ratio and uniformity on wide roads could be an issue. Bracket arms, where used, will form a complete lighting scheme and not contain a mixture of post top and brackets;
- (i) For Lighting Columns with brackets, at the point of intersection of shaft and bracket, the cross section of the bracket will equal that of the shaft, and the design of the connection will be such as to prevent the ingress of rain into the shaft;
- (j) The assembly of the column shaft and bracket will incorporate a mechanical location system in addition to high tensile socket headed securing screws, and it will be possible to fit the bracket in any one of 4 x 90 degree positions relative to the column door opening;
- (k) **Control Gear**; In specified areas, the contractor will fit Telensa CMS equipment and Philips dimmable DALI electronic ballast across the entire range of lamps and lanterns;
- (l) **Fixed Dimming**; In areas not covered by CMS, Phillips DALI Xtreme ballasts shall be fitted, and pre-programmed to meet the dimming requirements set out in table 1.2a of Appendix 5.

**3.6. Sensitive Areas**

- (a) In Sensitive Areas a detailed Design Brief shall be prepared by Authority Project Representative jointly in conjunction with the appropriate officers as necessary from the local authority Planning Department, the local authority Conservation Officer, the Ward and District Committees affected and, if necessary, the City, Town and District Centre Managers.

## APPENDIX 1

### Selection of the Lighting Level to be Provided on a Public Highway

#### 1 General

The following tables 1.1, 1.2, 1.3, 1.4 and 1.5 provide an aid to the selection of the minimum level of lighting to be provided on an Adopted Highway, being based on the requirements of BS EN 13201: 2003, Parts 2 to 4, Selection of Lighting Classes and BS 5489: 2004, Part 1, Code of practice. However, the actual level of lighting shall be determined and confirmed by Authority Project Representative.

##### 1.1. Table 1.1: Traffic Routes

Carriageway Hierarchy	Definition	Lighting Class	Conflict Area (non Signal)	Conflict Area (Signal controlled)	Max. Mounting Height
2	Strategic routes	ME2	CE1	CE2	12
3a	Main distributor roads	ME3b	CE2	CE3	10
3b	Secondary distributor roads and industrial roads	ME3c	CE2	CE3	10
4a	Link Roads	ME4b	CE3	CE4	8

##### 1.2. Table 1.2: Subsidiary and Residential Roads

Carriageway Hierarchy	Definition	Lighting Class		Max. Mounting Height
		Lamp $R_a < 60$	Lamp $R_a \geq 60$	
4b	Residential / Access and Through Roads >10m EW	S4	S5	8
	Residential / Access and Through Roads <10m EW	S4	S5	6

##### 1.3. Table 1.3: City, Town and District Centres

Definition	Lighting Class	Max Mounting Heights
City and Town mixed vehicular and pedestrian areas >10m EW	CE3	10
City and Town mixed vehicular and pedestrian areas <10m EW	CE3	8
City and Town centre wholly pedestrian areas >10m EW	CE4	8
City and Town centre wholly pedestrian areas <10m EW	CE4	6
District centre mixed vehicular and pedestrian areas >10m EW	CE4	10
District centre mixed vehicular and pedestrian areas <10m EW	CE4	8
District centre wholly pedestrian areas >10EW	CE5	8

District centre wholly pedestrian areas <10EW	CE5	6
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1.4. **Table 1.4: Footways and Cycleways**

Footway Hierarchy	Definition	Lighting Class		Max. Height
		Lamp $R_a < 60$	Lamp $R_a \geq 60$	
1	Local Footpaths and Cycle-tracks	S4	S5	6

1.5. **Table 1.5: Public Amenity Areas**

Car Parks	Definition	Lighting Class		Max. Height
		Lamp $R_a < 60$	Lamp $R_a \geq 60$	
a	Light traffic, e.g. district centre areas	S4	S5	In keeping with surrounding neighbourhood
b	Medium traffic, e.g. town centre areas	S2	S3	
c	Heavy traffic, e.g. parking areas of schools, churches, major sports.	CE2	S2	

**2. Traffic Routes, Residential Roads, City and District Centre Highways and Footways and Cycleways**

- 2.1 The Traffic Routes, which form the Highway Network, have different roles depending on levels of traffic flow and their relative importance as communication links. The Carriageway Hierarchy, Footway Hierarchy and City and District Centre descriptions used in tables 1.1, 1.2, and 1.4 above, correspond to the "Well Maintained Roads – Code of Practice for Highway Maintenance Management – Roads Liaison Group 2005". A table indicating the appropriate lighting levels associated with Well Maintained Roads is included at the end of this section;
- 2.2 The Hierarchy will be formally reviewed at regular intervals to take into account changes in the road network and traffic patterns. However, interim changes will be made where new construction or re-classification has taken place, or when changes in traffic flows or developments make it appropriate.

**3. Other Requirements**

- 3.1 Conflict Areas shall be lit to the standards set out in Table 1.1 and shall extend to include the radii of each road or traffic feature they are intended to cover and extend from the junction not less than 30 metres;
- 3.2 Conflict Areas shall include the area covering any footpaths and cycleways adjoining the highway;
- 3.3 Conservation areas and other special interest areas shall be lit to the appropriate lighting class for the particular traffic group, footway or cycleway as set out in Tables 1.1, 1.2, 1.3 and 1.4.

- 3.4 Disability Glare and Threshold Increment (TI) (both as defined in BS EN 1320: 2003) shall not exceed 15% and may be reduced in Sensitive Areas to 10%.
- 3.5 For any S series Lighting Class the maintained average illuminance on the road surface between the two adjacent lighting units with the minimum spacing in any lighting System shall not exceed the minimum illuminance requirements of the next higher S series Lighting Class (where, for the avoidance of doubt, S1 is a higher Lighting Class than S2);
- 3.6 Except where a cycleway forms part of the adjacent highway or footway infrastructure, separate lighting should be provided in all urban and suburban locations. The level of lighting for cycleways shall be as for corresponding footway categories defined in Table 1.4.

#### **4. Requirements which Cannot Reasonably be Met**

- 4.1 If during the design process the Lighting Designer considers lighting requirements in Tables 1.1, 1.2, 1.3, 1.4 and 1.5 of this Appendix 1 cannot reasonably meet in any of the following circumstances:
  - (a) following consultation with the Authority Project Representative, a higher or lower lighting standard than that prescribed in Tables 1.1, 1.2, 1.3, 1.4 and 1.5 of this Appendix 1 or enhanced Lighting Equipment is proposed by the Authority Project Representative;
  - (b) The close proximity of overhead obstacles such as power lines adversely affects the position and/or mounting height of the Lighting Equipment;
  - (c) The lack of footways or verges restricts the positioning of Lighting Equipment;
  - (d) Multiple features designated as Conflict Areas are located less than 50 metres apart;
  - (e) The width of the area to be lit requires luminaire mounting heights in excess of those prescribed;
  - (f) Specific planning restrictions in designated conservation areas apply;then the Local Authority and Authority Project Representative shall acting reasonably take this into account in the determination of the lighting class that shall apply.

**APPENDIX 2**

**Carriageway Hierarchy**

Cat	Hierarchy	Type of Road / General Description	Well Maintained Highways Description	BS 5489:2003		ADT	Lighting Class
				Desc.	Additional Criteria		
1	Motorway	Limited access motorway regulations apply	Routes for fast moving long distance traffic. Fully grade separated and restrictions on use.	For Motorways, Strategic Routes, Main Distributors and Link roads the road description used in BS 5489:2003 is aligned with that used in Well Maintained Highways.	Main carriageway in complex interchange areas		ME1
					Main carriageway with interchanges <3 km	>40,000	ME1
						<40,000	ME2
					Main carriageway with interchanges >3km		ME2
2	Strategic Route	Trunk and some Principal 'A' routes between primary Destinations	Routes for fast moving long distance traffic with little frontage access or pedestrian traffic. Speed limits are usually in excess of 40 mph and there are few junctions. Pedestrian crossings are either segregated or controlled and parked vehicles are generally prohibited.		Dual or single carriageways	>15 000	ME2
						<15 000	ME3a
3a	Main Distributor	Major Urban Network and Inter- Primary Links. Short – medium distance traffic	Routes between Strategic Routes and linking urban centres to the strategic network with limited frontage access. In urban areas speed limits are usually 40 mph or less, parking is restricted at peak times and there are positive measures for pedestrian safety.		Dual or single carriageways	>15 000	ME2
						<15 000	ME3a
3b	Secondary Distributor	Classified Road (B & C class) and unclassified urban bus routes carrying local traffic with frontage access and frequent junctions	In built up areas these roads have 30 mph speed limits and very high levels of pedestrian activity with some crossing facilities including zebra crossings. On-street parking is generally unrestricted except for safety reasons		Urban areas (Zone E3).	>15000	ME2
						>7000 <15000	ME3b
			<7000		ME3c		
			Rural areas (Zone E1/2).		>15000	ME3a	
>7000 <15000	ME3B						
<7000	ME4a						

Cat	Hierarchy	Type of Road / General Description	Well Maintained Highways Description	BS 5489:2003				ADT	Lighting Class	
				Description	Additional Criteria					
4a	Link Road	Roads linking between the Main and Secondary Distributor Network with frontage access and frequent junctions	In rural areas these roads link the smaller villages to the distributor roads. They are of varying width and not always capable of carrying two-way traffic.	For Motorways, Strategic Routes, Main Distributors and Link roads the road description used in BS 5489:2003 is aligned with that used in Well Maintained Highways.	Urban areas (Zone E3).				ANY	ME4b
			In urban areas they are residential or industrial interconnecting roads with 30 mph speed limits random pedestrian movements and uncontrolled parking						Any (with High ped. or cycle traffic)	S1 or S2
			Rural areas (Zone E1/2).						ANY	ME5
4b	Local Access Road	Roads serving limited numbers of properties carrying only access traffic	In rural areas these roads serve small settlements and provide access to individual properties and land. They are often only single lane width and unsuitable for HGVs. In urban areas they are often residential loop roads or cul de sacs.	For Local Access Roads, BS 5489:2003 uses crime, colour rendering index (CRI), traffic flow and environmental zone as criteria for lighting class selection.	<b>Low traffic flow</b>					
						E1/E2	E3/E4	E1/E2	E3/E4	
						Ra<60	Ra<60	Ra>60	Ra>60	
					High Crime	S2	S2	S3	S3	
					Medium Crime	S3	S3	S5	S4	
					Low Crime	S4	S4	S6	S5	
					<b>Normal traffic flow</b>					
					High Crime	S2	S1	S3	S2	
					Medium Crime	S3	S2	S4	S3	
					Low Crime	S4	S3	S5	S4	
					<b>High traffic flow</b>					
					High Crime	S1	S1	S2	S2	
					Medium Crime	S2	S1	S3	S2	
Low Crime	S3	S2	S4	S3						

## APPENDIX 3

### Commuted Maintenance Payments

#### 1. Commuted Maintenance Payments

- 1.1. a commuted maintenance payment will be required where a developer chooses to utilise materials or additional lighting installations for Lighting Equipment or general street furniture (including unlit signs) which, in the opinion of the Local Authority, will require premature or more costly replacement or incur additional maintenance costs;
- 1.2. the extra-over cost of ownership shall be calculated by comparing the proposed equipment with that required during the notional whole life cost of ownership of more conventional road Lighting Equipment or street furniture. Thus, the required commuted sum represents the additional cost of ownership incurred by the Local Authority compared with the maintenance or replacement expenditure it would otherwise have incurred if more conventional equipment had been used;
- 1.3. the calculation for all Lighting Equipment shall be made by the Authority Project Representative and shall include (but not necessarily be restricted to) the following:
  - (a) energy;
  - (b) maintenance;
  - (c) accessibility;
  - (d) replacement of a whole unit or component parts;
  - (e) vulnerability to wilful or vehicular damage.

## APPENDIX 4

### List of References and Regulations

- Well-lit Highways – Code of Practice for Highway Lighting Management – UK Lighting Board 2004;
- Well Maintained Roads – Code of Practice for Highway Maintenance Management – Roads Liaison Group 2005;
- Health and Safety at Work Act, 1974;
- Electricity at Work Regulations, 1989;
- BS 7671: 1992, Requirements for Electrical Installations;
- BS 4533: 1992, Luminaires - Section 102.3, Specification for Luminaries' for road and street lighting;
- BS EN 13201: 2003, Parts 2, 3 and 4, Road lighting;
- BS 5489: 2004, Part 1, Code of practice for the design of road lighting;
- BS EN 60529: 1992, Specification for Clarification of Degrees of Protection provided by Enclosures;
- BS 5649: Lighting Columns;
- Department of Transport Departmental Standard BD 26/86 - Design of Lighting Columns;
- Department of Transport Advice Note TA 49/86 - Appraisal of New and Replacement Lighting on Trunk Roads and Trunk Road Motorways;
- Traffic Signs Regulations and General Directions;
- Disabled Persons Act 1981;
- The Disability Discrimination Act October 1995;
- Road Hump Regulations 1990;
- Institution of Lighting Professionals and County Surveyors' Society: Code of Practice for the Installation and Operation of Seasonal Decorations on or Above the Public Highway, Second Edition, 2005;
- Institution of Lighting Professionals: Competency Requirements for Lighting Design Staff 2007;
- Institution of Lighting Professionals: 'Guidance Notes for the Reduction of Light Pollution' available at [www.ilp.org.uk](http://www.ilp.org.uk).

## APPENDIX 5

### Equipment Specifications

#### 1 General

##### 1.1. Table 1.1: Lighting Columns

Manufacturer	Nom Height
Available upon request form Street Lighting Service Provider	6m
	8m
	10m
	12m

##### 1.2. Lanterns and Lamps

Luminaire Type	Lamp Type	EN13201 Lighting Category
CU Phosco P655	150W SON-T PIA	CE3 CE2 CE1 ME4 ME3 ME2
CU Phosco P655	250W SON-T PIA	
CU Phosco P655	400W SON-T PIA	
Philips Iridium 254	250W SON-T PIA	
Philips Iridium 254	150W SON-T PIA	
Philips Iridium 253	150W SON-T PIA	
Philips Iridium 253	100 SON-T PIA	
Philips Residium	36W PL-L	S Classes CE2 CE3
Philips Residium	55W PL-L	
Philips Iridium 252	90W CosmoPolis	
Philips Iridium 252	60W CosmoPolis	
Philips Mini Iridium 451	90W CosmoPolis	
Philips Mini Iridium 451	60W CosmoPolis	
Simmons Signs Safeway Subway Light Unit	55W PL-L	BS 5489 Table 4

##### 1.2a Dimming regime table

Road Type	Dimming Regime
Traffic Routes	between the hours of 20.00 and 24.00 by one (1) lighting class and between 24.00 and 06.00 by two (2) lighting classes
Residential	between the hours of 22.00 and 06.00 by 40% Lamp light output*

\*excluding CE lighting class areas in Town and City centres

### 1.3. Cut-Outs

Manufacturer	Ref	Description
Charles Endirect	<b>LDPFI 6</b>	DNO Feed, single fuseway
	<b>LDPFI 8</b>	DNO Feed, single fuseway and single Private Cable fuseway out
	<b>LDPFI 1</b>	Private Cable feed in and out, single fuseway
	<b>LDPFI 2</b>	Private Cable feed in and out, single fuseway with extension box for larger cables
TOFCO	<b>F72</b>	Compact single fuseway , latch type cut-out

### 1.4. CMS Nodes & Photocells

Photocells will consume less than 0.25 circuit watts and factory calibrated to provide a switch-on level of 35 Lux and a switch-off setting of 18 Lux. The manufacturer will supply a certificate of calibration and compliance.

Manufacturer	Ref	Description
Royce Thompson	SC1000SAV	Nema Socket
Royce Thompson	MicroStar 2000	Mini Cell – fitted in Lantern
Telensa; contact to be made with Street Lighting Service Provider	Combined Conduit Telecell	Integral Dimming / Dali unit CMS Node

### 1.5. Illuminated Beacons

Manufacturer	Ref	Description
Simmons signs	Modupost / Midubel	Combined pedestrian crossing beacon with Street Light.

### 1.6. Illuminated Traffic Signs

Manufacturer	Ref	Description
Reddilight	Enterprise sign light RH2	LED aluminium sign light for use with up to 600mm traffic signs

### 1.7. Illuminated Traffic Bollards (Solar)

Manufacturer	Ref	Description
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TMP	Heritage Solalite	internally illuminated by a solar powered LED and as a reboundable reflective highway traffic bollard
Simmons signs	Weebol	reboundable reflective highway traffic bollard for use in approved locations
Simmons signs	Simbol / Global Baselight	Base lit illuminated flexible Bollard

1.8. **CMS Base Station**

Manufacturer	Ref	Description
Telensa; contact to be made with Street Lighting Service Provider	Base Station	CMS collector including light meter (3G if coverage permits)

APPENDIX 6

Wall Mounted Installation 1



