Part 8 ▸ Street Lighting

8.1 WCC Policy Approach

General Specification for Lighting on adoptable highways, cycleways, and footways.

Warwickshire County Council's (WCC) stock of apparatus is maintained on a contract.

This Guidance Document summarises the Development Standard for Warwickshire County Council and ensures compliance with the Adoption Required Standards.

Commuted Sums will apply to any non-standard apparatus. Specification details of all such apparatus must be agreed in consultation with Warwickshire County Council's Street Lighting team prior to installation.

8.2 Definitions and Abbreviations

Adoption	When applied to any item of Apparatus, Apparatus which has become the responsibility of Warwickshire County Council.
Apparatus	Street lighting and off-highway lighting installations and materials which, for the avoidance of doubt and without limitations includes:- lighting points, lighting columns, posts, straight posts (only to the extent used as an additional support for an illuminated traffic sign) together with their respective attachments, luminaires, lanterns, shields, control gear, control devices, switches, relays, meters, illuminated traffic signs, subway lighting, illuminated traffic bollards, Belisha beacons, illuminated pedestrian refuge beacons, school crossing patrol warning lights, flood lighting of monuments and buildings, surface car park lighting systems, wall mounted connection boxes, conduits, surface mounted wiring/cabling, feeder pillars, Authority owned Private Cable Networks and all associated components.
Authority Attachment(s)	Any Authority-owned street or traffic signs or sign plate or notices or other equipment and items authorised by WCC Authority to be attached to Apparatus including (and in the case of illuminated items only) to other structures.
SDD	Standard Detailed Drawings
WCC	Warwickshire County Council
De-Adopted	When applied to any item of Apparatus, Apparatus which is no longer the responsibility of Warwickshire County Council
DNO and IDNO	(a) a distribution network operator and/or (b) an independent distribution network operator within the meaning of Part 1 of the Electricity Act 1989 as amended by the Utilities Act 2000.
Developer	Company, authority or individual and their agents responsible for organising, planning of installing lighting or traffic management equipment that it is proposed for WCC to adopt at public expense, upon completion of the aforesaid works.

8.3 Technical Requirements – Planning and Design

8.3.1 Planning of Developments

Developers and their Consultants need to consider street lighting at the earliest opportunity and should consider:

a) Sustainability. Public realm lighting must minimise CO2 emissions and future maintenance costs. Efficient lighting is not incompatible with a pleasing street scene. Incorporating advice early in the planning of any development will enable the achieving of correct lighting levels.

b) Design Codes. Development Design Codes should incorporate a site-specific lighting design brief from BS5489-2020 design guidance. All design briefs will be based on the advice contained in this document. WCC's Street Lighting team should be consulted early in the process so that detailed advice can be incorporated in the design.

c) Street Layout. If footpaths and cycle paths are routed separately from the road then they may require separate systems of lighting, with attendant increased energy and CO2 emissions.

d) Highway Trees. Integration of street lighting, tree planting and landscaping; these aspects should be developed harmoniously by Developers, their Design Consultants, Local Planning Authorities and the Highway Authority. The height and spread of some trees may conflict with efficient lighting solutions. Combined arboriculture and lighting advice should be obtained at an early stage from all parties before tree positions are agreed.

e) Ecology & Lighting. Where Planning conditions and environmental assessments identify the mitigation of lighting due to protected species and its ecological impacts should be included in all designs to mitigate impact on wildlife and in line with WCC ecology policy.

f) Non-standard apparatus. Any departure from standard materials will require specific approval by WCC's Street Lighting team as part of the technical design approval process. Non-standard apparatus will always incur commuted sum charges.

8.3.2 BS5489 and BS EN13201

A) Lighting designs should be based on the current version of BS 5489-1-2020 Code of Practice for the Design of Road Lighting (Part 1: Lighting of Roads and Public Amenity Areas) and the associated current BS EN 13201 Standards including Warwickshire's internal lighting policies.

b) BS EN 12464 – Outdoor Lighting

c) BS 7671 – Latest Edition IEE Wiring Regulations

d) BS EN 40-3 - Design & Verification – Lighting Columns

e) BS EN 12899 – Part 1 Fixed Signs – Vertical Road Traffic Signs

f) HSE GS6 – Avoiding Danger from Overhead Lines

g) National Highways, Design Manual for Roads and Bridges, and Manual for Streets 2 technical guidance.

8.3.3 Institution of Lighting Professionals (ILP) Guidance

Designs are to take guidance from the Institution of Lighting Professionals' (ILP) technical reports, professional lighting guides and guidance notes.

8.3.4 Environmental Zones and Light Intrusion

Developments should be categorized by Environmental Zones in accordance with *ILP Guidance Note for the Reduction of Obtrusive Light.*

Light intrusion (e.g. into windows) is to be avoided and any apparent issues are to be monitored by the Developer in accordance with ILP Guidance *Note for the Reduction of Obtrusive Light.* Lighting designers should produce vertical illuminance calculations where appropriate. Designers should achieve 2Lux or less light spill intrusion into residential windows as per Table 3 of ILP GN01/21.

8.3.5 Construction, Design and Management Regulations (CDM)

Lighting design must be carried out by appropriately qualified Competent persons in accordance with current CDM regulations. Refer to ILP guidance NOTE 4 CDM 2015 Overview and Design Manual for Roads & Bridges TD501.

Guidance Note 4 CDM 2015 overview can be found on the ILP website: https://theilp.org.uk/publication/guidance-note-4-cdm-2015-overview/

A clear note must be appended to the street lighting layout drawings detailing which of the Highway Electrical Design Procedures was used by the designer – see the HEA Guidance Note CDM 2015 Regulations / Applicability to Highway Lighting Design.

If a site involves changes to the existing highway network a solely desktop indicative lighting design is not acceptable. **Desktop designs are not acceptable for S278 or changes to the existing highway.**

8.3.6 Hazard Elimination and Management List (HEML)

As defined within current CDM regulations, all risks at construction, maintenance, decommissioning & replacement must be assessed as an integral part of the design process. Guidance on risk assessment and the use of risk matrices is provided by the Health & Safety Executive. Hazards may include, but not be limited to, highway features and users, underground services, overhead power and telecoms, fuel pipelines, mobile phone masts, waterways, aerodromes, rail infrastructure, etc.

A Hazard Elimination and Management List that considers all relevant potential hazard factors must be submitted with all detailed lighting designs.

8.3.7 HSG47

Designers are to ensure that designs are viable the Developer should ensure that underground service locations are identified to the Designer and that designs are based on up-to-date information. Designers are to "design out" risks where practicable and to ensure that any significant residual hazards are documented and noted on layout drawings - ref HSG47 *Avoiding Danger from Underground Services.*

8.3.8 G39/1

Designers are to ensure compliance with relevant clearances and processes as detailed in G39/1 Model Code of Practice Covering Electrical Safety in Planning, Installation, Commissioning & Maintenance of Public Lighting and Other Street Furniture. In conjunction with G39/1 Safety during installation and removal of Lighting Columns and similar furniture please refer to guidance document ILP GP10

8.3.9 Approach to Lighting Design

New designs need to be prepared in sympathy with the local environment.

a) Site-specific design brief – designs should be based on a site-specific design brief in liaison with WCC's Street Lighting team if required.

b) New sites (e.g. S38) - these designs may be derived from solely desktop activity.

c) Existing roads (e.g. S278) – where a site involves changes to the existing highway network a solely desktop indicative lighting design is not acceptable.

d) Tying-in with existing highway lighting - the lighting design calculations should demonstrate compliance and consistency in the transition area from the old lighting to the new lighting.

e) Efficacy of design – designers need to show that the optics chosen to have the optimal distribution pattern and flux for the predominant road geometry, to light the target area with efficacy in mind, and to minimise unwanted spill light.

f) Column setting out detail in a table format to include lantern aiming, spacing and setback distances for columns are to be provided along with SHE Box on design layout.

g) Street clutter – proliferation of street clutter is undesirable. Where possible sign plates may be located on appropriately positioned lighting columns. However, the designer MUST check that columns are designed to accommodate the loading from the additional weight & windage of any Authority attachments AND that residual capacity for additional 0.3m2 signage remains.

c) Existing roads (e.g., Section 278) – Where a site involves changes to the existing highway network a solely desktop indicative lighting design is not acceptable.

d) Tying-in with existing highway lighting - The lighting design calculations should demonstrate compliance and consistency in the transition area from the old lighting to the new lighting.

e) Efficacy of design – Designers need to show the optics chosen have the optimal distribution pattern and flux for the predominant road geometry to light the target area with efficacy in mind, and to minimise unwanted spill light.

f) Viability of design – Designers should make every effort to ensure designs are viable for construction. For example, with works on existing roads the availability of DNO LV mains supply cables for proposed columns should be ascertained along with the identification of hazards and obstructions (utilities, services, trees, etc.).

g) Street clutter – Proliferation of street clutter is undesirable. Where possible sign plates may be located on appropriately positioned lighting columns. However, the designer **MUST** check that columns are designed to accommodate the loading from the additional weight and windage of any Authority Attachments **AND** that residual capacity for additional 0.3m^2 signage remains.

8.3.10 Column Height Constraints

Column heights should be considerate of the scale of the street scene whilst allowing energy-efficient design. Column heights are constrained by the road type and environmental context. Seek WCC's Street Lighting team advice if required on each site-specific design brief.

8.3.11 Lighting Layout Drawing

Design drawings are to be supplied at scale of 1:500 and are to be a maximum size of A1, and are to include:

a) Statement of the design procedure used

b) Summary of target lighting class(es)

c) Boundary showing adoptable area and any easements required

d) Tree planting layout

e) Vehicular crossovers and driveways

f) Significant residual hazards

g) Clearance from columns to hazards to be highlighted

h) Environmental constraints relevant to lighting

i) Positions of highway electrical apparatus with lantern aiming

j) Key/legend – including materials specification with quantities. For each LED lantern these attributes need to be identified: luminaire body, CCT, optic, flux output, system wattage, quantities. Non-standard columns will require accompanying detail drawings

k) Existing and new unit ID numbers

l) A schedule of illuminated apparatus, summarising clearance from kerbs, supply cable service type

m) Where 'private' (non-DNO/IDNO) cable systems are to be used all cable and duct routes are to be shown on detailed design drawings, along with schematic circuit diagrams (supporting calculations will also be required)

n) Private lighting installed on housing developments in areas adjacent to highway lighting is to be indicated along with a note of the responsible maintenance management companies

As-built drawings should include a summary schedule of revisions.

8.3.12 Maintenance Factors (New Equipment)

Overall maintenance factors are derived from BS5489 methodology. For an WCC-approved luminaire, such as TRT Aspect/Mini, the overall maintenance factor will + 0.84

8.3.13 Lighting Design Calculations

These should be from Lighting Reality, with file names that clearly describe the location, and should include:

a) 'User notes/title page notes' – these should describe the target lighting class, include a commentary on the design constraints; explain any deviations from design standards (if necessary, a separate 'designer narrative' document to be included).

b) 'Roadway' RTMR file calculations – are required to demonstrate compliance, determine minimum/maximum optimal spacing and optimal optic choice for the site's predominant road geometries; the original RTMR files are required.

c) 'Outdoor' calculations – are also required for illuminance of irregular areas; multiple calculation grids should be provided, with grids confined to relevant discrete areas to minimise any distorting effects on average illuminance values. Luminaires should generally be aimed perpendicular to the adjacent kerb or road centre line. To demonstrate the correlation of design calculations and column positions the lighting layout drawing with relevant topographic information is to be used as the base drawing within Lighting Reality e.g. when the lighting calculations have been completed the subsequent layout drawing should be re-imported into the RTMA file.

d) PDF & 'read-only' files (supplied additionally as a record) should exclude greyscale, points and unnecessary Isolux contour lines. Masks should not be hidden, and the results should be displayed.

e) Vertical Grids – to be provided where light spill encroaches on ecology sensitive areas and residential windows, where the permitted value of light spill is exceeded.

8.3.14 Conflict Areas, Crossings, Traffic Calming, Cycleways

The guidance in ILP document PLG02 – Application of Conflict Areas is that context is paramount, with each site to be assessed on a case-by-case basis.

a) Roundabouts or complex junctions - the design may be deconstructed into multiple calculation grids, with each conflict area limited to include the area of conflict ahead of the driver and the adjacent area where a conflicting body might approach from.

b) Zebra crossings – supplementary lighting should generally be provided to give positive contrast of pedestrians on the crossing using CCT 5700K, refer to ILP document TR12 Lighting of pedestrian crossings.

c) Signalised crossings are generally not considered to require additional lighting. Designers should refer to ILP PLG02 document (Application of Conflict Areas) and create an additional calculation grid in order to ensure that average illuminance levels at the crossing 'carpet' are not lower than the approaches.

d) Uncontrolled crossings – for example new refuge islands – designers should create an additional calculation grid in order to ensure that average illuminance levels at the crossing 'carpet' are not lower than the approaches; it may be desirable to light these with some element of positive contrast through the standard road lighting, with columns placed equidistant from and in advance of the island (as viewed by the driver). Refer to ILP PLG02 & TR12 documents.

e) Traffic calming – guidance on the lighting of traffic calming features is outlined in ILP document TR25 Lighting for traffic calming features.

f) Cycleways & shared surface paths – guidance on the lighting of shared surface cycleways is outlined in ILP document PLG23 Lighting of cycle Infrastructure.

8.3.15 Column Positioning and Clearances

Apparatus positioning should be in accordance with good industry practice to avoid restricting pedestrian movement whilst ensuring the lighting unit can be safely maintained.

a) Apparatus must be sited within WCC adoptable highway – easements will be required where equipment is sited in private land (easement size will be, as minimum, 1.0m x 1.0m concrete mowing block and connected to the highway).

b) Clearance from carriageway – are to be not less than the minimum defined in Table 8.1. Greater clearances may be desirable. All clearances are to be itemised on detailed design layout drawings.

Speed Limit (mph)	Minimum horizontal clearance
Less than 30	0.8m
40 to 50	1.0m
60 to 70	1.5m
1 - Table derived from BS5489-1:2020, Table-1 (please note that this table refers to 'speed limit' not 'design speed')	
2 - Clearance is subject to other factors, e.g., passive safety risk assessment	

Table 8.1 - Horizontal Clearance from Carriageway

c) Footways – columns should generally be sited at the rear of the footway.

d) Verges – where verges are provided between carriageway and footway then columns may be sited in the verge, provided that minimum horizontal clearances are maintained (as Table 8.1). A concrete mowing block will be required

e) Clearance from crossovers/driveways – minimum lateral clearance of 1.0m to the path of any vehicle crossover should be maintained.

f) Shared surfaces - residential roads with shared surface arrangements will require careful consideration of column positions; there is currently no framework whereby WCC can adopt columns that are not protected by conventional kerb upstand and clearance from carriageway.

g) Clearance from buildings – such clearance as necessary to avoid disturbance to foundations or structures.

h) Hazards – columns are to be positioned to avoid conflict with hazards and to allow safe maintenance; working widths for barriers and road restraint systems should be noted.

i) Door alignment – column doors should be 'downstream' from adjacent traffic flow (such that opening a door requires a person to face the oncoming traffic).

j) Boundaries - ideally columns are to be sited on property boundaries.

k) Trees – clearance to trees must be maintained (see Section 8.3.16).

l) Footpaths – raise and lower columns are to be used where access via MEWP cannot be guaranteed and to be positioned so that apparatus can be safely maintained in the future.

m) Illuminated Signs - Any signs fixed to columns should give a minimum clearance above footway of 2.1m (2.5m for cycle tracks/ shared use) and 0.5m clearance to the carriageway kerb face.

n) Overhead power lines – early consultation with National Grid is required for proposals in the proximity of overhead power lines.

o) Cycle paths – columns should be set back a minimum 0.5m clear of cycle paths such that they do not obstruct overhanging handlebars. As per LTN 1/20 - Cycle infrastructure design, which includes share use.

p) Wall-mounted lanterns may be considered. Minimum vertical clearances above highway must be maintained. On new developments wall-mounted apparatus requires a Deed of Dedication, not a Wayleave Agreement, and WCC prior approved agreement.

8.3.16 Highway Trees and Lighting

At an early stage of development planning there should be detailed integration of tree planting layouts and lighting designs; the potential for foliage 'blocking' light distribution should be considered when deciding what species to plant.

a) Energy efficacy of lighting requires that optimal design spacings are achieved and the development of planting plans should be coordinated with lighting design.

b) Horizontal clearance - maximum growth of a tree canopy should be >5m from any lantern.

c) Vertical clearance - in some cases (e.g. with mature trees) it may be possible to locate columns beneath the tree canopy provided that ≥1.6m clearance is kept above the lantern.

d) Base compartments and their access doors should not be encroached upon by undergrowth restricting maintenance access.

8.3.17 Ecology and Lighting

Lighting design of any previously unlit area must consider ecological impacts. All new developments will have an environmental ecology report with Planning conditions. Lighting proposals should mitigate the potential impact of light spill on ecology sensitive habitats.

Lighting designers shall summarise their decisions in relation to significant environmental constraints.

Lighting designers should choose apparatus that has the optimal light distribution pattern for the road geometry, thus, to illuminate only the target area in accordance with the ILP 'GN08-Bats and Artificial Lighting in the UK'.

Designers to refer to WCC specific ecology policy 'WCC Street Lighting - Ecology sensitive areas' shown in Annex 8.1 when choosing the CCT Lamp source. Only 3000K LED to be selected in vicinity of ecology sensitive areas, all other areas to be 4000K.

It may be possible to mitigate lighting impacts, through other measures such as:

a) Louvres or back shields may be specified or a combination of internal and external Louvres.

b) Lantern Tilt – zero degree tilt should always be used for detailed design.

c) Light sources may be altered to different colour temperature and spectral distribution as per Annex 8.1.

d) Positioning lights sensitively – e.g. by avoiding positions of ecological sensitive areas.

e) Use suitable optic photometry – to reduce lighting footprint.

8.3.18 Non-Standard Apparatus and Commuted Sums

In conservation areas non-standard apparatus may be deemed to be appropriate by local planning authorities. Departure from standard materials will require the specific technical approval by the WCC's Street Lighting team. Non-standard apparatus may incur commuted sum charges.

Power supplies should be provided via mains DNO or IDNO networks; with few exceptions private cable networks are considered to be non-standard and will incur commuted sum charges.

8.3.19 Power Supply

The Developer is to procure unmetered low voltage electricity supplies for all apparatus (single-phase 230v earthed mains power supply) - by preference the supply should be from the local/host DNO. National Grid is the Distribution Network Operator within Warwickshire. Developers are advised to allow sufficient time for liaison with the DNO in advance of works (email: nged.streetlightmids@nationalgrid.co.uk)

a) IDNO – some developments are served by an electricity supply cable network that is owned by an IDNO (Independent DNO). In this case WCC must be advised of the identity of the IDNO.

b) Private cable networks – may be specified where mains supply cables cannot be provided – e.g. for apparatus such as illuminated signs sited on traffic islands or for passively safe apparatus (see Section 8.3.29). Supporting calculations should be provided. Private cable networks proposed in other circumstances will be likely to incur commuted sum charges (see Section 8.3.18).

In order to commission lighting unit's developers will first need to sign an Unmetered Connection Agreement (UmCA) with the host DNO (National Grid) and sign-up with an electricity supplier – for more information see nged.umso@nationalgrid.co.uk and www.ssen.co.uk/our-services/tools-and-maps/g81/unmetered-connections/

8.3.20 Electrical Test Data

The Developer shall carry out electrical testing of apparatus in accordance with the requirements of the current edition of BS 7671 (the IEE Wiring Regulations) which identifies the electrical testing required, only a BS7671 or HERs test certificate format will be acceptable.

Notwithstanding the requirements of BS 7671, the test certificate for each lighting unit **must be no more than 12 months old** at the time of the initial adoption inspection request.

All test results are to be recorded and presented to the Highway Authority before adoption.

a) BS 7671 tests for new apparatus shall be in the recommended format for new electrical equipment & include a 'Initial Certification of new installation e.g. HEA/HERS or IET GN3 Inspection & Testing format.

b) BS 7671 tests for private cable networks shall additionally include:

Cable Sheath Insulation Test. Earth electrode Resistance.

Electrical test certificates should be referenced against a named As-Built drawing and column/sign numbers should correlate.

at the time of the initial adoption inspection request.

All test results are to be recorded and presented to the Highway Authority before adoption.

a) BS 7671 tests for new apparatus shall be in the recommended format for new electrical equipment and include a 'Initial Certification of new installation": recommended e.g., HEA/HERS or IET GN3 Inspection and Testing.

b) BS 7671 tests for private cable networks shall additionally include:
Cable Sheath Insulation Test.
Earth Electrode Resistance.

Electrical test certificates should be referenced against a named as-built drawing and the column/sign numbers should correlate.

8.3.21 Passive Safety Risk Assessment

FFor guidance on passive safety classifications and electrical safety standards Lighting Designers should follow WCC Guidance policy on the Implementation of Passively Safe Lighting Columns and Signposts. For more information see Annex 4.2: https://api.warwickshire.gov.uk/documents/WCCC-2066277159-1618

WCC Passive Safe Policy will supersede and take precedent of all other external guidance documents except for appropriate risk assessment.

Within this procedure rural roads are defined as those where housing and other indications of urban life are generally isolated rather than located together in settlements.

Approach Summary

WCC policy states that all Rural **'A' class** roads with speed limit of 50mph road speed limit or above will be deemed by default as passive safe equipment to be used. An engineer must, in all cases, carry out an assessment and document the reasons based on the WCC policy factors where a decision not to install passively safe street furniture has been reached.

Passively safe street furniture (signposts, street lighting columns and traffic signals) should be installed on all Warwickshire's rural **A roads** only where speed limits are 50mph or above.

Unless any of the following apply:

· A road restraint system (RRS) is in place or proposed and the street furniture will be protected by the RRS.

· Street furniture can be installed 4.5 metres or more from the edge of the carriageway.

On all other roads for which Warwickshire County Council is the Highways Authority, passively safe street furniture will not be installed, unless a site-specific collision history indicates otherwise.

Collision Risk Assessment & Passive Safety:

The risk consideration should take into account the risk of serious personal injury collisions involving street furniture by looking at the site's collision history. The Designer to use UKRLG provision of Road Restraint Systems on local authority roads – this using speed limit and traffic flow criteria. The Lighting Designer's risk assessment should list the appraisal factors considered and assumptions made and should include a narrative of decisions taken.

8.3.22 Switching and Telensa Remote Monitoring System

New lighting will need to be fitted with Telecell nodes to enable their correct switching remotely. WCC specification requirements:

a) Before adoption, all lanterns are to be commissioned by the Authority with Telensa CMS nodes which allow individual streetlights to be monitored and switched and for light output to be dynamically controlled.

b) Individual 5PIN Telensa CMS nodes fit into a 7-pin nema socket built into each road lighting lantern. For some specialist lanterns (e.g. subway lighting units) internal nodes are fitted inside the lantern.

c) The 7-pin nema-socket can accommodate a standard NEMA-type photocell, which could be fitted temporarily, allowing installation of the Nodes (if required) at a later date (pre-Adoption); any conventional photocells fitted temporarily should be set to switch on at 35 lux & to switch off at 18 lux.

d) Each Node is identified by a unique sixteen-digit barcode number. Telensa provides barcode stickers with the apparatus: one sticker is to be mounted in the base of each column (suggested that the top of the supply cut-out should be wiped clean and the sticker affixed) and one sticker on a plan/column NODE installation sheet which the Developer must present to Warwickshire County Council prior to Adoption.

For further details please contact: **Telensa Limited, Iconix 3, London Road, Pampisford, Cambridge, CB22 3EG**

Email: support@telensa.com Tel: **+44 (0)1799 399200**

8.3.23 Standard Detail Drawings

Details of all current WCC standard detail drawings can be provided by request from WCC's Street Lighting team.

8.3.24 Lighting Columns Assets

WCC specification for lighting columns is as follows (n.b. for passively safe column requirements see Section 8.3.21)

a) Column types will either be Aluminium specified or Steel Galvanized with protective factory finish plascoat finish to WCC Standard Detail Drawings.

b) Steel Galvanized columns are to be manufactured in accordance with BS EN 40 & PD6547, and with a design life of 50 years.

c) Steel Galvanized Columns painting to be Plascoat factory-finish. Finish colour to be RAL7016 Grey- unless otherwise specified. In some areas the use of "black" or different colour may be specified by WCC.

d) Aluminium columns to have 76 mm spigot. Columns shall have the following minimum base tube diameter to facilitate electrical equipment to be fitted internally and equipped with a locking flush fitting door complete with separate earth connection to the door and the pole. Designers to refer to WCC detailed drawing SL100_2C.

e) All Columns shall comply with BS EN40-1, 3 & 6 including Guidance Notes PD 6547 and where specified by the Roads Authority's Representative with the requirements of The Highways Agency Department Standard BD 94/07.

f) Where there is a requirement for Passive Safety then the documents TD26/04 TA89/05 BD2/05 and EN12767 should be considered.

g) Columns will be 'post-top' style; outreach brackets may only be specified in agreement with WCC's Street Lighting team.

h) Column base-boards at least equivalent to the door size and made of treated hardwood of sufficient size to accommodate all control equipment and service cut-outs; boards shall be positively secured to the column by two flush fitting screws.

i) Earthing terminal to be 8mm diameter brass terminal with brass washers & nuts.

j) Where access via MEWP is not guaranteed columns should be mid-hinged.

k) Standard columns shall be designed to be capable of accepting the loads indicated in this table (if greater loads are required then 'heavy-duty' column design will need to be confirmed with detail drawing & manufacturer's design certificate at the design stage):

Column height/ type	Lantern weight	Lantern windage	Sign area	Sign weight	Sign eccentricity	Sign drag coefficient
5/6m post-top	10kg	0.13m²	0.6m²	5.0kg	0.4m	1.8
8m post-top	11.5kg	0.145m²	0.6m²	5.0kg	0.4m	1.8
10m post-top	21kg	0.22m²	1.0m²	5.0kg	0.4m	1.8
12m post-top	21kg	0.27m²	1.0m²	5.0kg	0.4m	1.8
5/6m post-top 'raise & lower'	9.5kg	0.055m²	0.3m²	5.0kg	0.3m	1.8

Table 8.3: Wind Loading

l) Columns to be supplied with manufacturer-applied ground-level / planting depth marker tape affixed to the root/base, and marker tape to be remain attached after installation.

m) Any sign attachments agreed are to be centred up to 3m above ground level, maximum eccentricity as shown in Table 3. No attachments shall be fitted to mid-hinged columns.

n) Attachments to columns, where agreed, shall be fixed with circumferential clamps of stainless steel AISI Grade 201 with neoprene strips placed under the clamps to prevent damage to the column or its protective coating.

o) Where planted root columns are not viable a flange base with designed foundation may need to be specified.

p) The column foundation details shown on WCC standard detail drawings assume poor soil conditions; column manufacturers detail drawings should be cross-checked to ensure all requirements are met.

q) Column data sheets and manufacturer's standard detail drawing to be provided before adoption.

8.3.25 Materials – Illuminated Signs

Signing requirements as per the current edition of TSRGD and BS EN 12899-1. Refer to SDD – Illuminated Signs SL200 1C

WCC specification for illuminated road signs is as follows:

a) Hot-dip galvanised steel wide base post (in Conservation Areas the finish should match the lighting columns e.g. Black Plascoat colour).

b) Base-boards at least equivalent to the door size and made of treated hardwood of sufficient size to accommodate all control equipment

and service cut-outs and secondary isolators; boards shall be positively secured to the column by two flush fitting screws.

c) Earthing terminal to be 8mm diameter brass terminal with brass washers & nuts.

d) Illuminated sign plates to class RA2 BS EN 12899.

e) Sign light units to be Simmonsigns integrated LED LUA or LUB with diecast aluminium body (or similar approved).

f) Sign light output determined by size of sign plate, as follows: 600mm Ø sign plates 3x1w integrated LUA; 750mm Ø sign plates 6x1w integrated LUA; >750mm sign plates LUB 10x1w LED.

g) Sign lighting units require an electronic ballast.

h) No attachments to mid-hinged columns unless for Health and Safety reasons. E.g. OHHV cables in vicinity.

8.3.26 Road Lighting Luminaire Assets

AAll new developments will use LED TRT Aspect and Aspect Mini luminaires. These will generally be of neutral white colour temperature (4,000ok) though there may be environmental mitigation applications where warm-white (3,000ok) is required.

Notes:

1. Lantern body and canopy to be powder coated.
2. Standard colour RAL9006 Light Grey unless otherwise specified. In some areas the use of 'black' may be specified.
3. Driver to be electronic and fully dimmable via DALI protocol.
4. Switching – all lanterns to be fitted with Telensa 7-pin nema socket and external 5-pin Telecell node (except Subway and Underpass lighting units and some specialist lanterns which are to be fitted with Telensa internal node).
5. Where asymmetric luminaires are specified (e.g. at a zebra crossing) these are to be of CCT a single step cooler than the adjacent roadway lighting (to be 5700K).

8.3.27 Materials - Internal Wiring of Columns and Signs

a) Refer to WCC Standard Detailed Drawings SL400_1, SL400_2 & SL400_3.

b) DNO supply cables to be terminated in single-phase.

c) Internal wiring to lantern to be multi-core PVC flexible Arctic Grade 2.5mm2 3-core outer sheath blue.

d) Earthing conductor to be 6mm2 PVC insulated coloured green/yellow; connections to be by bolted crimped terminations.

e) Internal cabling to be neatly clipped to the base board; all fixing screws to be stainless steel.

d) Base boards to be securely fixed to column base.

8.3.28 Materials - Passively Safe Equipment

Apparatus is to be selected in accordance with WCC Design Guide Annex 4.2 - Passive Safety Procedure, and the requirements of BS EN 12767:2019 (Table NA1) and as outlined in the ILP's TR30 'Guidance on the Implementation of Passively Safe Lighting Columns and Signposts'. **NOTE: WCC internal Passive Policy takes precedent of all external passive guidance documents.** For further information see Annex 4.2 - Passive Safety Procedure.

a) Passive Columns are to be installed in retention sockets (such as NAL) with foundations in accordance with manufacturer's instructions.

b) Electrical disconnection system to be NAL SIS system. SIS impact sensor to be installed in each item of passively safe apparatus. SIS monitoring unit to be fitted in an above-ground location (lamp column, wide-base signpost or feeder pillar) located outside the clearance zone. No underground control system will be acceptable.

c) Mains DNO/IDNO supply **may not** be provided with passively safe equipment, only private cable system. For private cable systems, see Section 8.3.29.

8.3.29 Private Cable, Ducting, Feeder Pillars

Refer to WCC 'SDD' - Standard detail drawings.

Pillars, ducts and cables are to be used exclusively for street lighting and illuminated signs.

Private cables to be laid in & across roads internal 100mm diameter orange PVC ducts (DNO/IDNO cables only in black duct). Refer to SDD.

Private cables to be laid in internal 50mm diameter orange PVC ducts (DNO/IDNO cables only in black duct). Refer to SDD.

Ducting systems to include necessary chambers/draw pits.

Cable ducts below footways to be >450mm below finished level; ducts below carriageways to be >600mm below finished level. Refer to NJUG guidelines.

150mm-wide yellow heavy gauge PVC tape marked 'street lighting' to be placed over private cables/ducts.

Cable ducts to be installed with draw cords.

Private cables to be XLPE\SWA\PVC.

All DNO cut outs shall have HRC fuse in pull-out carrier and provision for Live, Neutral & Earth cable connections including a PME link. IDNO supplied cut-outs to have sticker on each cut-out with emergency contact details and owner's address.

All outgoing circuits are to be labelled by an encapsulated waterproofed schematic drawing detailing the outgoing cable route & the population of lighting units on each circuit.

Feeder pillars to be installed with a minimum of 1.0m2 hard-standing provided at ground-level in front of the pillar door, with unit number ID reference displayed to WCC specification.

For electrical testing see Section 8.3.20.

8.4 Process – Design, Construction, Inspection and Adoption

8.4.1 Preliminary Enquiry

Developer to provide required drawings for initial Design Brief:

a) **Site Location plan** – to show phases of development, google link location, road names, etc.

b) Highway adoptable areas coloured plan, site development phasing, other relevant information including site specific planning conditions; design class propose, environmental impact assessments (EIA), presence of amenities such as shops, schools, sports or medical facilities.

c) Existing AADT of vehicles or predicted traffic flow and speed limits, night-time accident data, presence of traffic-calming features; confirmation of road surface materials.

d) Additional hazards – airports, railways, navigable waterways potential to impact on design.

8.4.2 Site-Specific Design Brief

On receipt of relevant information (8.4.1) WCC Street Lighting team will provide the designer with a site-specific design brief.

8.4.3 Lighting Design

Developer is to arrange for the design to be undertaken using the guidance contained in this document and annexures.

8.4.4 Detailed Design Submission

The following information to be supplied to WCC as part of detailed submitted Design for WCC to commence technical review of submitted design:

a) Document Drawing Register clearly identifying contents.

b) **Site Location plan** – to show phases of development.

c) **Highway Adoptable Areas** - Coloured plan with details of adjoining schemes and site phasing.

d) **Layout drawing** – PDF format required, at scale 1:500 maximum size A1 & CAD drawing with Topo less than 200 layers. Isolux curves shown on layout.

e) Hazard elimination & management list with detailed designers risk assessment.

f) Environmental scoping ecological report less than 12 months old. Designer to implement mitigation as per attached WCC Ecology sensitive areas policy.

g) **Lighting design calculations** – full RTMA & RTMR files from Lighting Reality to be supplied complete with design commentary.

h) **Site clearance drawing** – with proposed Tree removals/mitigation on Lighting design layout showing scaled full canopy area (Note: NO part of tree to be within 5m of proposed Lighting Column)

i) **Asset ID numbers** - Numbers to be sequential with road names.

j) **Network owner** – statement confirming identity of LV supply network owner, whether DNO or IDNO.

k) Private cable calculations if applicable, output from Amtech software, or similar.

l) **Illuminated sign details (if applicable)** - existing and new proposed illuminated signage and non-illuminated bollards drawing details with key symbols to be shown on the street lighting layout (to include a schedule of sign faces & dimensions, specification of sign light).

m) Special column requirements (if applicable).

n) **Initial Inventory Information** – Inventory Template document will be provided from WCC Street Lighting team.

o) Developers' emergency contact address/phone details required for ongoing maintenance issues prior to adoption.

p) Contract documents, schedules and appendices.

q) Written confirmation that the submission complies with the Adoptable Required Standards.

8.4.5 Ongoing Liaison

The Developer will need to incorporate WCC's comments from design appraisal into revisions, as required, resubmitting proposals for further scrutiny as necessary. If the proposed highway features are altered, then lighting column positions may need to be reconsidered by the designer.

8.4.6 Certificate of Technical Approval

When the design documents meet the required standards a Certificate of Technical Approval will be issued by the WCC's Street Lighting team.

8.4.7 Changes to the Design

Any subsequent changes to the agreed design need to be agreed with WCC's Street Lighting team. The Developer must supply revised design calculations and drawings.

8.4.8 Customer Liaison

The developer shall ensure prospective purchasers are informed that a plan of the street lighting scheme is displayed in the sales office so that purchasers, and existing residents, can be made aware of the impact of lighting units on adjacent properties. The developer must inform prospective purchasers that upon official adoption of the development by the local authority the development will become subject to WCC's part night lighting policy. Any areas not shown below will operate on a part night basis, operating hours shown in Table 8.4:

- Where there are potential hazards on the highway such as roundabouts, traffic signal-controlled junctions, central carriageway islands, traffic calming features, road humps etc.
- At formal pedestrian crossings (Zebra, Pelican, Puffin, Toucan and Pegasus).
- Areas covered by permanent Local Authority/Police CCTV cameras.
- Areas adjacent to elderly people care homes, sheltered accommodation complexes and A&E departments.
- Lighting adjacent to operational taxi ranks.
- Lighting on public footpaths, alleyways and cycle paths which are located away from roads.
- Parish, Town, District or Borough Council owned lighting.

Part night operating hours:

8.4.9 HEA Contractors

Following WCC's certificated approval of the lighting design, the Developer is to identify to WCC which accredited (HEA, NICEIC) & HERs

Table 8.4: Part Night Operating Hours

	On	Off	On	Off
Sunday night/Monday morning	Dusk	Midnight	05:30*	Dawn*
Monday night/ Tuesday morning	Dusk	Midnight	05:30*	Dawn*
Tuesday night/ Wednesday morning	Dusk	Midnight	05:30*	Dawn*
Wednesday night/ Thursday morning	Dusk	Midnight	05:30*	Dawn*
Thursday night/Friday morning	Dusk	Midnight	05:30*	Dawn*
Friday night/Saturday morning	Dusk	01:00	06:30	Dawn*
Saturday night/Sunday morning	Dusk	01:00	06:30	Dawn*

**The lights may not switch on for these periods during the summer months as daylight hours maybe earlier than stated.*

certified contractor has been appointed for the street lighting and illuminated sign installation and maintenance works.

8.4.10 Existing Apparatus Within the Works – De-adoption

Any existing apparatus due to be removed or altered will need to be de-adopted from the WCC maintenance contract. The Developer must inform WCC's Street Lighting team no fewer than 30 business days before the works programmed date by emailing streetlighting@warwickshire.gov.uk

Any existing apparatus that is temporarily made inaccessible for maintenance (e.g. barriered-off) will need to be suspended from the WCC maintenance contract. The Developer must inform WCC's Street Lighting team no fewer than 30 business days before barriers.

The Developer is responsible for maintenance of all apparatus (de-adopted or suspended) within their works until it is formally inspected and handed over to WCC. Maintenance should be in accordance with industry good practice with full records to be kept of any works.

8.4.11 Temporary Lighting/Signing

Where alterations to the existing highway are proposed the sequencing of works should ensure that the highway remains appropriately illuminated, i.e. that existing lights shall be maintained correctly and that any new lights shall be commissioned before the disconnection & removal of existing lights.

In the event that new road alignments are opened to traffic before the commissioning of the new approved lighting then temporary lighting shall be installed.

Temporary lighting shall illuminate the road to the appropriate design class and should not cause adverse impacts to nearby residents or road users.

8.4.12 Column Verification

To ensure compliance with materials specification the Developer must present WCC with column data sheets and ID batch numbers of the columns installed.

8.4.13 Labelling of Apparatus

All Assets must be numbered as agreed with WCC's Street Lighting team - sequentially by named road. If works affects existing roads, then sequential re-numbering of existing apparatus may be required after any road naming and numbering of the adjacent properties is completed.

Where appropriate (e.g. within the 'vicinity zone' of overhead power cables) an 'overhead warning' label should be applied to column shaft. See WCC standard detail drawing SL500_1.

All isolation points for outgoing & incoming private cable networks for lighting columns or illuminated sign to be clearly marked. SWA private looped sub-circuit to have labelling tags identifying column/sign ID number supplied and ID column/sign number that the looped cable supply feeds as per BS7671.

8.4.14 Cable Circuit Schematics

Isolation points for any private networks (e.g. - feeder pillars, or columns and signs with additional outgoing sub-circuits) must have enclosed in the base compartment an encapsulated waterproofed schematic drawing (A3 minimum) detailing the outgoing cable routes & the lighting units on each circuit along with as-laid cable routes.

8.4.15 Electrical Testing

As per the latest edition of BS7671, to include all items of highway apparatus i.e. road lighting, illuminated signs, feeder pillars, private supply cable networks.

8.4.16 Telensa Switching

Lanterns for adoption shall be controlled by the 'Telensa PLANet' remote monitoring system – the Developer shall liaise with Telensa.

For further details contact:

Telensa Limited
Iconix 3
London Road
Pampisford
Cambridge, CB22 3EG
Email: support@telensa.com. Telephone: **+44 (0)1799 399200**

8.4.17 Maintenance before Adoption

The Developer's duty of care includes maintenance of lights within the works in accordance with good industry practice and shall include:

a) **Reactive repairs** - prompt identification and repair of operational faults, emergency repairs as necessary, and maintaining records of these activities.

b) **Electrical testing** – to the requirements of BS7671 all apparatus is to be tested every six years. Notwithstanding the requirements of BS7671 the Developer will be asked to re-test if a test certificate for each lighting unit is over 12 months old. All test certifications must be **no more than 12 months old** at the time of the initial pre-adoption inspection request.

8.4.18 Records Required Before Pre-Adoption Inspection

The following information is to be supplied with a document register to WCC **prior to inspection**. Documents to be clearly named to identify their contents:

a) **As-built layout drawing** – including any revisions and agreed changes.

b) **HEML** – Hazard Elimination & Management List with Designers Risk assessment to comply with the requirements of CDM.

c) **Illuminated sign schedule** - (If applicable)

d) **Electrical test results** – test certificates to be compliant with BS7671.

e) **Column data sheet or column batch number** – including manufacturer, protective system, detail of any Authority attachments.

f) **Telensa node schedule** – the reference numbers of the Telensa nodes are to be detailed on a schedule of illuminated apparatus, listed by road & maintenance ID no.

g) **Pre-adoption inventory information** – Blank Template provided by WCC Street Lighting team.

h) Confirmation that the handover complies with WCC Adoption material and design Required Standards.

8.4.19 Pre-Adoption Inspection

WCC will arrange a thorough initial inspection of apparatus to be offered for adoption. Repeat inspections (After 2nd inspection) will be charged separately. Requests for inspection should be accompanied by the electrical test certificates, node schedule and as-built drawings (PDF format).

8.4.20 Energy

Following Adoption, the Developer to inform their energy supplier that the development is now within the scope of the WCC energy contract.

8.4.21 Pre-Adopted Inspection

Document Submissions

The Developer is to provide the appropriate pre-adoption documentation prior to initial inspection. Inspection checklist as follows:

	Pre-adoption inspection	
	"As-built" version of the lighting layout drawing	
	Hazard Elimination & Management List	
	Illuminated sign details (if applicable)	
	Electrical test result certificates correlating with column ID numbers (Date no longer than 12 months old)	
	Column data sheets/batch numbers	
	Telensa node schedule correlating with column ID numbers	
	Pre-adoption inventory information (Blank Template provided by WCC Street Lighting team)	
	Written confirmation that the installation complies with the Adoption Required Standards	
	Electrical Circuit schematic for Feeder Pillars in PDF & CAD	
	Relevant contract documents, schedules and appendices	
	Written confirmation that the design submission complies with the Adoption Required Standards	

8.4.22 Pre-Adoption Street Lighting Inspection Report

The 'WCC Blank Pre-Adoption Street Lighting Inspection Report' provides an audit checklist of potential 'Failure Codes' for the person undertaking the site inspections to progress adoption sign off. This example highlights many of the requirements under inspection but is not exhaustive. See Annex 8.2 for a copy of the WCC Blank Pre-Adoption Street Lighting Inspection Report.

8.5 Additional Further Guidance

Should you have a query about implementing WCC Street Lighting Guidance Document to your particular project, please contact: streetlighting@warwickshire.gov.uk

- Warwickshire County Council Street Lighting team with your S278 or S38 application.