



South Wokingham Distributor Road: Spine Road and Western Gateway Phase 1

Specification Appendices 1300 series - Road Lighting, Columns and Brackets, CCTV Masts and Cantilever Masts

WHMP-TG-SRWG1-SP-LI-1301

(Revision P05, Date 19/01/2024)

South Wokingham Distributor Road: Spine Road and Western Gateway Phase 1

Specification Appendices 1300 series - Road Lighting, Columns and Brackets, CCTV Masts and Cantilever Masts

Wokingham Borough Council

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APPENDIX 13/1: GENERAL REQUIREMENTS AND INFORMATION

1.1. General Requirements

The *Contractor* shall note that the highway authority responsible for the ownership and maintenance of the road lighting and associated electrical works covering this contract is Wokingham Borough Council.

All street lighting installations shall be installed in accordance with Wokingham Borough Council guidance documents, unless instructed otherwise, which are included within this Specification Appendix: -

- Street Lighting - Design Process, Requirements and Specification Guide - V2 (November 2013). Street Lighting.
- Street Lighting - Design Process, Requirements and Specification Guide - Appendix A - V8 (August 2016).
- Design, Adoption Process and Specification Guide Appendix B – V1 (November 2013).

With exception to the luminaire types which are to be as follows:

Type	Model	Driver
A	KIRIUM PRO2 48LED 3k A1 CLO 400mA UMSUG 42 0051 0000 100	Telensa 5-pin NEMA Telecell with integral Dimming Module and GPS positioning
B	KIRIUM PRO2 48LED 3k C3 CLO 200mA UMSUG 42 0027 0000 100	Telensa 5-pin NEMA Telecell with integral Dimming Module and GPS positioning
C	KIRIUM PRO2 64LED 3k A5 CLO 750mA UMSUG 42 0125 0000 100	Telensa 5-pin NEMA Telecell with integral Dimming Module and GPS positioning

1.2. Lighting Column Requirements

The requirements for each type of lighting column and other associated electrical works are stated hereafter and further detailed in drawing nos. WMHP-TG-SRWG1-DR-LI-1301 to 1308 inclusive. Unless stated otherwise, the *Contractor* must note that the references to “BD 26, BD 83 and BD 88” in the Series 1300 and Appendices 13/1, 13/2 and 13/3 have been amended to read “BD 94” (DMRB 2.2.1):

- Column locations and quantities are detailed on drawing nos. WMHP-TG-SRWG1-DR-LI-1301 to 1308 inclusive. Column identification numbers shall be issued by Wokingham Borough Council.
- Nominal heights of columns shall be as scheduled in the table: Schedule to Appendix 13/1 Proposed Lighting Columns.
- Lanterns shall be post top mounted unless otherwise stated in the table: Schedule to Appendix 13/1 Proposed Lighting Columns.
- Luminaire weight and windage area and centres of application of the forces from the centroid of the column shaft.

The design factors relative to the loading of lighting columns for use shall be applied in accordance with BS EN 40-3-1:2013.

For lighting columns of 8m nominal height and under, calculations shall be carried out using terrain category III.

For lighting columns of 8m nominal height and above calculations shall be carried out using terrain category II.

For the purpose of calculation, clause 4.1.3, BS EN 40-3-1:2013 "Forces on the lantern," the following maximum windage areas shall be included relative to the nominal height of the column.

Nominal height (m)	Effective Windage area (sq.m)
6	0.059 m ²
8	0.059 m ²
10	0.059 m ²

For the purpose of design calculation, clause 3.1 BS EN 40-3-1:2013 "Dead Loads", the following maximum lantern masses shall be included relative to nominal height of the column.

Nominal height (m)	Mass (kg)
6	9.8 kg
8	9.8 kg
10	9.8 kg

- (v) Bracket arms are required as stated otherwise in the table: Schedule to Appendix 13/1 Proposed Lighting Columns, unless luminaires are post-top mounted.
- (vi) Terrain categories shall be Categories II and III as appropriate for the column heights as detailed in Schedule to Appendix 13/1 Proposed Lighting Columns and in accordance with BS EN 40-30-1: 2013, exposure coefficient ($C_{e(z)}$), topography factor (f) and reference wind velocity speed ($V_{ref,0}$) shall be as defined in BS EN 40-3-1: 2013;
- (vii) Height of lighting column above ground level shall be as stated in the table: Schedule to Appendix 13/1 Proposed Lighting Columns.
- (viii) Columns shall generally be planted as stated in the table: Schedule to Appendix 13/1 Proposed Lighting Columns.
- (ix) Information on soil types for the design of individual or groups of columns shall be in accordance with PD 6547:2004 + A1:2009.

- (x) Requirements for planted foundations of lighting columns is shown on Drawing Reference WMHP-TG-SRWG1-DR-LI-1321. The earth backfill shall be Class 8 material as detailed in sub Clause 1305.5.
- (xi) Size and number of door openings, number of doors to be fitted with hinges or metal chains and direction doors are to face shall be as per the following:
- All door openings shall be free from irregularities or burrs.
 - Lighting columns shall be provided with a tamper-proof locking device.
 - Lighting columns shall be provided with a 10mm (minimum) diameter brass earth terminal with two brass plain washers and two brass nuts.
 - Lighting columns shall be installed so that the door faces away from oncoming traffic unless otherwise specified by Engineer.
- (xii) Size requirements for base compartments shall be as described below:

Column Height (m)	Door Opening (mm)
6, 8 & 10	600mm x 115mm

The base compartment shall be fitted with a hardwood or other non-hygroscopic material not less than 90mm wide and 15mm thick, securely fixed internally to accommodate the fused cut-out assemblies, control equipment, service cables, etc.

- (xiii) Acceptable column materials and types in very exposed sites as defined in BD 26 (DMRB 2.2.1).
- (xiv) Aluminium columns shall be unpainted.
- (xv) There are no specific requirements for aesthetic approval of lighting column and bracket combinations;
- (xvi) 2 Number of door keys for each type of columns shall be provided;
- (xvii) Identification and location markings shall be in accordance with the following:

All lighting columns and detachable brackets shall carry a unique identification mark which indicates the year of manufacturer, the year and month of manufacture, the column reference number and information by which the material can be identified for recycling. The identification plate shall be 60mm x 90mm minimum and manufactured from a durable material suitable for the life of the column.

The identification plate shall have space for the *Contractor* to register the date of installation and name of installation contractor.

All lighting columns shall be fitted with a location number for identification purposes. The number shall be clearly stencilled onto the face of the column using black paint in figures 75mm tall at a height of 1.75m.

Wokingham Borough Council shall specify the numbering system / sequence.

- (xviii) There are no requirements for wall mountings including fixings.
- (xix) Requirements for earthing:
All columns and doors shall be fitted with M10 brass earth studs, 30mm long threaded whole length, with two plain brass washers and two brass hexagonal nuts within the base compartment easily accessible through the door opening. These shall be welded or brazed to the access door and the inside wall of the column and shall be distinctly and permanently marked using a metal label **"SAFETY ELECTRICAL CONNECTION - DO NOT REMOVE"**.

The electrical requirements for earthing shall be in accordance with BS7671 and BS7430.

- (xx) Columns shall not be mounted on structures or in situations where there is a risk that a detached door could cause an accident if it fell on the area below.
- (xxi) All Lighting columns shall be designed to support a standard 600mm road sign (or sign of equivalent surface area) and associated illumination requirements at a clearance height of up to 3m above ground level.
- (xxii) Requirements of electricity supplier including warning notices regarding proximity to overhead power lines:
For new connections, network alterations and all other enquires

Scottish and Southern Energy Networks
61 Spa Road
Melksham
SN12 7NU
<https://www.ssepd.co.uk/Home/>

- (xxiii) Each column should also be fitted with a secondary isolator unit (i.e. Charles Manufacturing LSI-02/SF or Lucy Trojan Mini).

1.3. Services

The *Contractor* shall liaise with Scottish and Southern Energy Networks (SSE) to establish an agreed timetable for new connections and disconnections and the provision of temporary supplies to maintain an operational supply to the street lighting, traffic signals and communication cabinets.

The electrical supply will be provided by SSE by means of a dedicated LV Mains supply cable;

- a) SSE shall provide a single phase supply direct to all street lighting columns that will be installed at the locations marked on the drawings. The ducting from the lighting

columns and bollards shall be provided by the *Contractor*.

- b) The electrical supply will be provided by SSE.

It is the *Contractor's* responsibility to ensure that the supply has been registered with an authorised electricity supply company before any part of the system is energised.

The final connections cannot be made without evidence that the relevant Supply Number (sometimes referred to as MPAN) has been registered.

1.4. Column and Bracket Data Sheets and Other Information to be provided

The *Contractor* shall complete the Column and Bracket Data Sheets (Appendix 13/2) in accordance with the Instructions for Completion (Appendix 13/3) and submit them to the Employer's Representative. In addition the Lighting Contractor shall provide the Employer's Representative with the following:

- Erection Method Statement: Outline method to be employed in transporting, storing and erecting columns, with special reference to protection of column finish and the amount of work to be done prior to erection.

Completed Data Sheets shall be provided no later than two weeks after the commencement of works.

1.5. As-Built Lighting Column Schedule (Contractor to Complete)

Col Ref:	Bracket	Column Type	Location (OS coordinates)	Offset	Base	Notes

1.6. Street Lighting - Design Process, Requirements and Specification Guide – V2 (November 2013).

Wokingham Borough Council Street Lighting Design, Adoption Process and Specification Guide

1. Design Process

- 1.1 All street lighting layouts and equipment specifications on new housing developments will require approval from Wokingham Borough Council before they are accepted as part of an agreement to adopt a road as public highway.
- 1.2 The lighting design shall be undertaken by a suitably experienced / qualified lighting engineer at the developer's expense.
- 1.3 Full design calculation details including layout drawings shall be provided to the Council's Engineer for approval prior to installation.
- 1.4 The column locations, lantern aiming directions, column numbering and use of "louvers" or "baffles" shall be shown on the final adoption drawing. The drawing shall include a key to show the agreed column heights, lantern types, lantern aiming positions, lantern bowl/glazing types, lamp types and control types.
- 1.5 Once approved, the design and specification shall not be modified without the consent of the Council's Engineer.
- 1.6 Any modifications to the original approved design shall be indicated on an "as built" drawing which shall be provided to the Council prior to adoption.

2. Design Requirements

- 2.1 Street lighting layouts should be designed in accordance with current British and European Standards:
 - BS 5489-1:2003 - Code of practice for the design of road lighting - Part 1: Lighting of roads and public amenity areas
 - BS 5489-2:2003 - Code of practice for the design of road lighting - Part 2: Lighting of tunnels
 - BS EN 13201-2:2003 - Road lighting - Part 2: Performance requirements
 - BS EN 13201-3:2003 - Road lighting - Part 3: Calculation of performance
 - BS EN 13201-4:2003 - Road lighting - Part 4: Methods of measuring lighting performance
- 2.2 Consideration should also be given to the guidance set out in the following publications:
 - Institute of Lighting Engineers Technical Report No. 12 – TR12 Lighting of Pedestrian Crossings
 - Institute of Lighting Engineers Technical Report No. 25 – Lighting for Traffic Calming Features
- 2.3 The maximum design illumination level appropriate to the site shall be agreed with the Council's Street Lighting Engineer in accordance with the Council's Street Lighting Policy.
- 2.4 Where the design illumination level is not set at the minimum applicable level appropriate to the site as set out in the British and European Standards, then the design shall allow for possible dimming of the lamps to a class up to one or two levels less.

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- 2.5 The lighting layout at junctions shall be in accordance with the current British Standards.
- 2.6 Mini-roundabouts shall be lit as a "Conflict Zone" to the appropriate CE class for the major joining road. For an estate road a minimum of 10 lux shall be achieved at any point on the road or surface or traffic islands within the agreed conflict zone. This level shall be increased to 20 lux where the mini-roundabout is located on a major traffic route.
- 2.7 Lighting columns shall be designed in a "staggered" arrangement where practical.
- 2.8 Lighting columns shall be located at the back of the adopted/adoptable footway or verge (usually approximately 2m behind the kerbline) unless otherwise agreed with the Council's Engineer.
- 2.9 Designs should take into account the need to reduce street "clutter" and it may be appropriate to utilise lamp columns to also mount other items of street furniture such as traffic signs and litter bins. In such cases suitable engineering calculations and risk assessments should be undertaken (see section 12).
- 2.10 The mounting of street lighting lanterns on privately owned buildings is not normally desirable due to the requirements for permissions and licences plus the increased likelihood of future access / maintenance problems. In some cases however this may be desirable to reduce street "clutter" or address specific engineering problems. In such cases the developer shall be responsible for any associated costs in setting up the permissions and licences.
- 2.11 Where practical, columns shall be placed in line with the boundary between properties.
- 2.12 Consideration shall be given to column locations with regard to:
- Vehicle movements across footways – column locations should be selected to reduce the risk of vehicle impact or obstructing visibility.
 - Trees and other vegetation – avoid possible obstruction to the lantern and column base access.
 - Intrusive light into windows of properties – if unavoidable then consider lantern "louvers" or "baffles".
 - Future maintenance activities – avoid the need for unnecessary traffic management or special access equipment. Consider drop-down / collapsible / demountable / mid-hinged columns if necessary.
 - Underground utility services / plant.
 - Ground conditions – avoidance of areas where rain or ground water may stand for excessive periods.
- 2.13 Columns heights should be selected to strike an appropriate balance between visual impact on the environment, illumination design requirements, energy requirements and future maintenance requirements. The column height should be sympathetic to the surrounding building and tree heights.
- 2.14 "Table 1" in Appendix A provides guidance for the selection of appropriate column heights for street lights in different road situations. These are a starting point and the final design height should be agreed with the Council's Engineer.

3. Power Supplies

- 3.1 Street Lighting columns shall be provided with mains electricity supplies unless otherwise specified. The provision of electricity supplies should be arranged directly between the developer and either the local Distribution Network Operator (DNO) or an OFGEM licensed Independent Distribution Network Operator (IDNO). In Wokingham Borough the DNO is Southern Electric PLC (part of Scottish & southern Energy) and

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the list of licensed IDNO's can be obtained from the OfGEM website at
<http://www.ofgem.gov.uk/Networks/ElecDist/Policy/IDNOs/Pages/IDNOs.aspx>.

- 3.2 Illuminated Traffic Signs, Traffic bollards and the like may have their electrical supply fed from a street lighting column or approved feeder pillar by means of a private cable connected to the column / pillar via a secondary fused isolator unit installed above the DNO/IDNO cut-out.
- 3.3 In situations where lighting is mounted on a building, bridge or other permanent structure then the electrical supply shall be fed from a suitable feeder by means of a private cable connected to the column / pillar via a secondary fused isolator unit installed above the DNO/IDNO cut-out. The cable shall be installed in galvanised steel conduit.
- 3.4 No "non-adoptable" electrical equipment shall have its electrical supply fed from the adoptable street lighting or traffic sign/bollard equipment.
- 3.5 All lamps, lantern control gear and photo-cells must have either temporary or approved energy "charge codes" prior to installation on the DNO/IDNO energy distribution network.
- 3.6 The DNO/IDNO will terminate the cable into the DNO/IDNO cut-out and energise the short tails to the unit by insertion of a fuse into the cut-out after completing the necessary insulation resistance, polarity and earth loop impedance checks, but will leave the fuse withdrawn from the secondary isolation device.
- 3.7 Where a competent person is on site and can provide certificates of satisfactory tests then the columns can be energised by that competent person.
- 3.8 The developer shall be responsible for payment of energy used at the developer's expense from the date of installation of the lights up to the date of their "adoption" by Wokingham Borough Council. The developer shall confirm in writing to Wokingham Borough Council that such arrangements have been made including details of the relevant Metering Point Administration Number (MPAN).

4. Construction

- 4.1 Contractors appointed by the Developer for the installation of highway electrical equipment shall be members of ASLEC (Association of Signals Lighting and Other Highway Electrical Contractors) and shall be registered with HERS (Highway Electrical Registration Scheme).
- 4.2 The design shall not be modified without the approval of Wokingham Borough Council.
- 4.3 All works within, or affecting, existing public adopted highway shall be undertaken in accordance with the requirements of the New Roads and Streetworks Act including requirements for notification of works and signing and guarding.

5. Certification, Inspection and Final Adoption

- 5.1 Within one calendar month of installation and connection of the lamp columns to the electricity supply, the developer shall provide to the council completed electrical test certificates for each unit in accordance with current IEE regulations.
- 5.2 The developer shall make suitable arrangements to ensure the continued and prompt maintenance of the lighting installations from the date of installation to the date of adoption by the Council. This shall include emergency response for situations that may pose a hazard to the public. Suitable contact details shall be provided to the Council for use by the public to report any faults / defects to the developer.

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- 5.3 Prior to the date of adoption, at a suitable date agreed with the Council's Engineer, the Council shall undertake a site inspection of the lighting units and any defects detected shall be remedied by the developer. Failure to remedy the defects may delay the site adoption.
- 5.4 Where lighting units have been installed for a period of 36 months or greater prior to their adoption by the Council then the developer shall arrange for all lamps to be replaced with new lamps at the developer's expense no more than one month prior to the date of adoption. Documented evidence of this work (including date each lamp was changed) shall be provided to the Council's Engineer. The developer shall dispose of the old lamps in accordance with WEE regulations.

- 5.5 The developer shall provide the Council with three sets of appropriate keys to the column door base and, if applicable, the hinge mechanism of drop-down /collapsible / demountable / mid-hinged columns.

6. Equipment and Materials

- 6.1 Street Light equipment shall be of the types specified in **Appendix A** selected according to the road type and traffic speed and levels as agreed with the Council's Engineer.
- 6.2 In some cases it may be agreed that an alternative equipment specification may be used for aesthetic reasons. This will be subject to approval by the Council and payment by the Developer of an appropriate commuted sum to allow for increased maintenance costs.
- 6.3 All materials shall be installed within manufacturer specification & shall comply with Statutory & other Regulations, Codes of Practice, Memoranda requirements, British Standard Specifications & Institute of Electrical Engineers Regulations current at the date of construction.
- 6.4 Materials and equipment shall be free from defect and abnormal wear and tear at the date of adoption.

7. Column Installation

- 7.1 "Roof" mounted columns shall be installed in accordance with the manufacturer's specification. As a minimum they shall be placed in a hole with steep sides allowing a minimum of 150mm clearance all round the base of the column for the full excavation depth. This hole shall then be backfilled. The first 800mm of backfill shall comprise concrete consolidated in 100mm layers. The cable entry slot shall be temporarily plugged to ensure that it is maintained free from concrete during the backfilling process. Concrete shall not be used above the lower edge of the cable slot over its width. The column shall be carefully erected & aligned in the vertical position.
- 7.2 "Flange" mounted columns, where specified, shall be installed in accordance with the manufacturer's specification.
- 7.3 Column doors shall be orientated and Drop-down /collapsible / demountable / mid-hinged installed so that they can be operated without obstruction or restriction and so that the column and lantern can be safely maintained by an operative without having to stand in a road carriageway or on private property.
- 7.4 Columns shall be supplied with a suitable "backboard" within the base of the column on to which the cut-out and isolator shall be fitted (backboard usually supplied by column manufacturer).
- 7.5 Aluminium columns shall be unpainted.

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7.6 Sign posts shall be galvanised steel and remain unpainted unless otherwise required by the "Traffic Signs Regulations and General Directions 2002" or specified by the Council's Engineer.

7.7 All columns and posts shall be provided with suitable root protection and the column or post shall not be used if the root protection is damaged in any way.

8. Lanterns

8.1 Street light lanterns shall normally be provided with a dished polycarbonate bowl, however where the design requires full-cut off illumination to reduce glare then flat glass glazing shall be used instead.

8.2 Lanterns shall be positioned and aimed in accordance with the approved lighting design.

8.3 Where it is considered that the street lighting lantern may cast undesirable illumination into a property then the lantern shall be fitted with the appropriate manufacturers "louver". In some circumstances a bespoke galvanised steel "baffle" shall be used subject to the approval of Wokingham Borough Council.

9. Controls

9.1 The council is utilising a "Remote Monitoring" Central Management System (CMS) which allows remote control of street lighting and communication of faults and energy data between a base station and each street light through a "Telecell".

9.2 Where Remote Monitoring is specified then the installer shall provide accurate Telecell ID details and location for each Telecell fitted as detailed in Appendix B.

9.3 This installer shall liaise with Wokingham Borough Council in advance to ensure that the site has suitable signal coverage so that units installed will connect to the CMS system. Council is in a position to commence remote operation from the day the unit is installed and powered.

9.4 Where units are not deemed to be within adequate signal range of an existing Wokingham Borough Council base station then a new base station shall be provided and installed by the developer subject to agreement with the Council.

10. Wiring

10.1 Wiring shall comply with British Standard Specifications and be installed according Institute of Electrical Engineers Regulations current at the date of construction.

10.2 The wiring shall be provided from the service connection at the baseboard to all equipment as appropriate. All wiring including that to the photo-electric switch control circuit shall be polyvinyl chloride insulated & sheathed cable of 800/1000 volt grade having a copper conductor size of not less than 2.5 mm². All cores shall be correctly colour coded. Unsupported lengths of wiring shall be kept to a minimum & not allowed to come into contact with components by their own freedom of movement. Double insulated tails of correct colour coding must be provided from the fuse & neutral link assembly to the service cut-out.

10.3 All metal work (other than current carrying parts) & including the column door shall be earthed. Earth bonding shall be carried out in polyvinyl chloride insulated copper cable of green/yellow colour combination of a minimum size of 2.5mm². The earth conductor shall be taken to the bottom of the base compartment of every column & terminated in a terminal block screwed to the base board unless the cut-out is equipped with such a terminal. The column earth stud shall be bonded to the earth block by means of 10mm²

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copper earth cable & in addition a 500mm min. length of 10mm² copper earth cable from the terminal block to connect the Electricity Board earthing point.

11. Column Numbering

- 11.1 A number shall be clearly stencilled onto the face of the column using a suitable black paint in figures approximately 75mm tall at a height from the ground of approximately 1.75m. Wokingham Borough Council shall specify the numbering system.

12. Attachments to Lamp Columns (Signs, Banners, CCTV cameras, etc)

- 12.1 No additional attachments (e.g. signs, banners, CCTV cameras) shall be fitted to a lamp column unless agreed by the Council Engineer and without the provision of suitable engineering calculations and a risk assessment to prove that such attachment shall not compromise the design loading of the column and foundation.
- 12.2 For guidance, providing a column has been installed correctly (i.e. with appropriate foundations) and it is in reasonable condition the council may accept the fitting of a standard 800mm road sign (or sign or equivalent surface area) and illumination providing the sign is mounted no higher than 3m above ground level and there are no additional attachments. This size may be increased to a standard 750mm road sign or sign of equivalent surface area if fitted to columns of 8m height and above.
- 12.3 Where signs are likely to exceed the sizes stated above then it may be appropriate to consider additional support posts (subject to structural calculations).
- 12.4 Some factors to consider if undertaking structural calculations are:
- Column type - e.g. steel, stainless steel, aluminium, concrete, etc.);
 - Column height
 - Column construction - e.g. tubular, octagonal, tapered, one-part, stepped, swaged joint between base and shaft, etc.
 - Column condition - e.g. corrosion, impact damage, spalling of concrete columns, existing deformation.
 - Foundation construction
 - Ground conditions
 - Sign size
 - Sign mounting height (principle of moments).
 - Location in terms of wind loading - e.g. sheltered or exposed,
 - Location in terms of risk - e.g. low or high speed road, low or high traffic/pedestrian levels, locations near road/trail bridges
 - Other attachments - e.g. existing signs, hanging baskets, festive decorations

13. Contacts

13.1 Wokingham Borough Council:

Neighbourhood Services
Wokingham Borough Council
Civic Offices
P.O. Box 153
Shute End
Wokingham
Berkshire
RG40 1BN.

Tel: (0118) 974 6000

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Website: www.wokingham.gov.uk

Street Lighting Team: e-mail StreetLighting@wokingham.gov.uk

Highway Development Control Team: e-mail HighwaysDC@wokingham.gov.uk

14. Notes

14.1 See **Appendix A** for equipment specification.

14.2 See **Appendix B** for further information and requirements relating to the CMS system and recording of Telecell ID numbers.

14.3 Should the reader be aware of any notable omissions from this document or necessary amendments then please contact The Street Lighting Team at Wokingham Borough Council.

This document last updated 6th November 2013 – Version 2.

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Wokingham Borough Council Street Lighting Design, Adoption Process and Specification Guide

Appendix A

Column Heights

Columns heights should be selected to strike an appropriate balance between visual impact on the environment, illumination design requirements, energy requirements and future maintenance requirements.

"Table 1" provides guidance for the selection of appropriate column heights and lantern combinations for street lights in different road situations. These are a starting point and the final design height and lantern type should be agreed with the Council's Engineer.

Table 1: Street Lighting Columns – Suggested Column Heights & Lantern Combinations

Approx. full Carriageway Width (does not include adjacent footpath or verge)	Residential Roads	Estate Distributor Roads	Main Traffic Routes
5 to 6m	5m + Type A lantern	5m + Type A lantern	6m
6 to 7m	6m + Type B lantern	6m + Type B lantern	8m + Type C lantern
7 to 9 m	6m + Type B Lantern	8m + Type C lantern	10m + Type D lantern
Dual Carriageways	Not normally applicable	10m + Type D lantern	12m + Type E lantern

Note: The above heights are for guidance only and exact requirements will be subject to design requirements for illumination levels, uniformity and glare, etc. It may also be necessary to increase heights at "Conflict Zones" such as roundabouts or at special road features such as pedestrian crossings or reduce heights where a column may be in proximity to overhead power lines, etc.

Column and Bracket Types

Table 2: Street Lighting Columns - Column and Bracket Specifications

Column Height	Tower Wagon Access / Safety	Column Type	Outreach Bracket
5m	Good	Aluminium Lighting Company "Conical" tapered aluminium post top column.	Lantern to be post top mounted
	Poor	Aluminium Lighting Company mid-hinged "Conical" tapered aluminium post top column.	Lantern to be post top mounted.
6m	Good	Aluminium Lighting Company "Conical" tapered aluminium post top column.	Lantern to be post top mounted
	Poor	Aluminium Lighting Company mid-hinged "Conical" tapered aluminium post top column.	Lantern to be post top mounted.
8m	Good	Aluminium Lighting Company "Conical" tubular aluminium column. Column to be suitable to support "Class B" signage.	Lantern to be post top mounted unless otherwise specified by WBC. Where a bracket is required then the column shall be fitted with an Aluminium Lighting Company detachable straight aluminium bracket with no uplift. Bracket normally 1.0m projection unless otherwise specified.
	Poor	To be confirmed	To be confirmed
10m	Good	Aluminium Lighting Company "Conical" tubular aluminium column. Column to be suitable to support "Class B" signage.	Lantern to be post top mounted unless otherwise specified by WBC. Where a bracket is required then the column shall be fitted with an Aluminium Lighting Company detachable straight aluminium bracket with no uplift. Bracket normally 1.5m projection unless otherwise specified.
	Poor	To be confirmed	To be confirmed
12m	Good	Aluminium Lighting Company "Conical" tubular aluminium column. Column to be suitable to support "Class B" signage.	Lantern to be post top mounted unless otherwise specified by WBC. Where a bracket is required then the column shall be fitted with an Aluminium Lighting Company detachable straight aluminium bracket with no uplift. Bracket normally 2.0m projection unless otherwise specified.
	Poor	To be confirmed	To be confirmed

Notes: "Tower Wagon Access" should be considered and should take into account basic accessibility, terrain, road safety and traffic management requirements, vicinity to overhead power lines and telecommunications masts and safe working at or near bridges and cuttings for railway lines and high speed roads.

Controls

Table 4 - Controls

Application	Control Type	Lux Setting
Street Light	Telensa 5-pin NEMA Telecell with integral Telensa Dimming Module (DALI standard) and GPS positioning	Remotely controlled by WBC
Illuminated Sign	Telensa Telecell	Remotely controlled by WBC
Illuminated Bollard	Telensa Telecell	Remotely controlled by WBC
	or where specified by Wokingham Borough Council a miniature solid state electronic photo electric cell sensitive to infra-red light (pre-fitted by bollard manufacturer)	On: 55 lux Off: 28 lux

Cut-Out

Table 5 – Cut-out

Application	Cut-Out Type
All applications	Lucy MC040SLF with 6 amp H.R.C. fuse as standard (fuse size may be increased as appropriate where feeds to other units are required – fuse size to conform to IEE regulations).

Isolator

Table 6 - Isolator

Application	Cut-Out Type
Single lantern (no feed to other units)	Charles Manufacturing LSI-02/SF or Lucy Trojan Mini isolation unit with 6 amp fuse (fuse size may be increased as appropriate where feeds to other units are required – fuse size to conform to IEE regulations).
Twin lantern or single lantern with single feed to other unit.	Charles Manufacturing (Model TBC) or Lucy Trojan (Model TBC) isolation unit with 6 amp fuses (fuse size may be increased as appropriate where feeds to other units are required – fuse size to conform to IEE regulations).
Single lantern with two feeds or twin lantern with single feed.	Charles Manufacturing (Model TBC) or Lucy Trojan (Model TBC) isolation unit with 6 amp fuses (fuse size may be increased as appropriate where feeds to other units are required – fuse size to conform to IEE regulations).

Illuminated Signs

Signs to be high visibility Class 1 retro-reflective to conform to "The Traffic Signs Regulations and General Directions 2002".

Post height as per requirements of Traffic Signs Manual. Where signs are located adjacent to footways or any point where pedestrians are likely to walk then heights to allow for minimum clearance between ground level and lowest edge of sign face of 2100mm. This height to increase to 2400mm when located next to cycleways. In other locations away from pedestrians or cyclists (e.g. roundabouts) then a minimum clearance of 1.5m is required.

Sign Post Types

Table 7 – Sign Posts

Sign Face Size	Posts with electrical fittings	Posts for Non-illuminated Signs or Additional Support Posts
Standard sized sign faces.	*114mm diameter base and 76mm shaft (Height varies – max. 4.5m) from CU Phosco or Corus Tubes.	*76mm diameter galvanised steel
Large sized sign faces and or multiple sign faces.	*140mm diameter base and 114mm shaft (Height varies) from CU Phosco or Corus Tubes.	*114mm diameter galvanised steel

* Sizes are for guidance only and all designs should be approved by a structural engineer taking into account wind loadings and soil conditions.

Sign Lantern Types

Table 8 – Sign Lanterns

Sign Face Size	Sign Lantern Type
Up to 750mm wide	Simmons signs "LUA" 6w LED (3x1w LED's) with grey body to Class E2 UE3 (ref: LUAINTGE2 MS070) with Telensa Telecell (see "Controls" above)*
Over 750mm wide	Simmons signs "LUB" 14w LED (10x1w LED's) with grey body (ref: LUBMKTLEDG MS070) to class E2 UE3 with Telensa Telecell (see "Controls" above)*

Note: Sign lanterns specified are for use in areas of low or medium background illuminance with a sign plate area not exceeding 1.5m² (UE3). In areas of high background illuminance (E3) or where the sign plate exceeds 1.5m² then a higher output lantern may be required.

Traffic Bollards (Signs)**Table 9 – Traffic Bollards**

Application	Bollard Type
Illuminated for General Use	Glasdon Rebound Signmaster with base and 7w LED light tray (bollard shell body to be white with sign faces as required by WBC Traffic Management Team).
Illuminated on High Speed Roads or Dual Carriageways	Simmons signs Contour 600mm with Simmons signs base and Simmons signs LED light tray (bollard shell body to be white with sign faces as required by WBC Traffic Management Team. LED to be appropriate to illuminate bollard in accordance with British Standards).
Non-illuminated where permitted (in conjunction with traffic lights or illuminated "Keep Left" signs).	Glasdon Retro-reflective (bollard shell body to be white with sign faces as required by WBC Traffic Management Team).

Feeder Pillars**Table 10 – Feeder Pillars**

Application	Type
Mini-pillar	To be confirmed.
Small pillar	To be confirmed.
Medium pillar	To be confirmed.
Large pillar	To be confirmed.

This document last updated 5th December 2019 – Version 9.

Wokingham Borough Council Street Lighting Design, Adoption Process and Specification Guide

Appendix B

1. Telensa PLANet CMS System

- 1.1 Highway adoptable lighting in Wokingham Borough is to be operated using a Central Management System (CMS) and this Authority uses the Telensa PLANet system (see <http://www.telensa.com/>).
- 1.2 Each lantern installed is required to be fitted with a Telensa PLANet Telecell and, where appropriate, a dimmer module as per the specification detailed in Appendix A. This will enable two-way communication with the PLANet management system operated by the Council which allows accurate on/off switching, lamp dimming (where available), monitoring of energy consumption and fault identification and diagnosis.
- 1.3 Each Telecell has a unique identity number that is programmed into it at manufacture and which is used by the system to distinguish it from others. **It is necessary to record which Telecell identity number is fitted to which column / unit.** This information can then be entered onto the PLANet system by the Council.

2. Recording Telensa Telecell Identification Numbers (OSID)

- 2.1 It is vital for the proper functioning of the system that the matching of Telecell ID's and column references is done accurately. If this is not achieved then it will not be possible for the Council to correctly set lamp switching or match and diagnose faults against the correct lighting unit.
- 2.2 **The Telecell ID can be found on a printed label on the base of the Telecell.** Note there are TWO numbers on the label; the "OSID" which is the Telecell ID and is purely numeric and the Telecell serial number which starts with 'LL...'. **It is important that the "OSID" is correctly recorded against each unit location.**
- 2.3 The Telecell ID is also barcoded on the label and this can be used to scan into a suitable hand-held computer (PDA) if used by the installation contractor².
- 2.4 The Telecell is supplied with 3 duplicate self-adhesive labels. These are intended for the following purposes:
 - i. To attach within or outside the luminaire. Inside somewhere clearly visible is recommended if possible. Note: avoid locations that will get too hot.
 - ii. To attach to a suitable tag to be located in the base of the column.
 - iii. To attach to installation documentation. An example "Telecell Installation Record Sheet" is included at the end of this document.
- 2.5 **It is very important that installation sheets are completed accurately and returned promptly to the Street Lighting Team at Wokingham Borough Council so that the association between the Telecell and column can be added to the system.** The system cannot operate properly without this.

- 2.6 It is also important to provide this information to the Street Lighting Team immediately after installation so that units can be set up correctly on the Telensa PLANet system and checked for connection and correct operation.

Notes:

* When used with asset management systems that provide this facility, Telecell IDs and the matching column reference may be captured using PDAs or similar. The Telecell and Column IDs can then be loaded electronically into the asset management system and from there into PLANet. This then removes the need to manually match the Telecell and column IDs on PLANet. Wokingham Borough Council use the "Mayrise" asset management system.

For example Telecell Installation Record Sheet see next page.

3. Telecell Installation Record Sheet (Example)

Site:		Agreement no:	
Developer:		Contractor:	
Completed by (name):		Date:	

Street Name	Column / Unit Number (as agreed with WBC)	Location Description (e.g. outside property number)	Lamp Type	Telensa Telecell OSID Number (e.g. 0002487255-58 or attach spare label provided with Telecell)

Important: It is essential that the details are recorded at installation and provided to the Wokingham Borough Council Street Lighting Team immediately after installation so that units can be set up correctly on the Telensa PLANet system and checked for connection and correct operation.

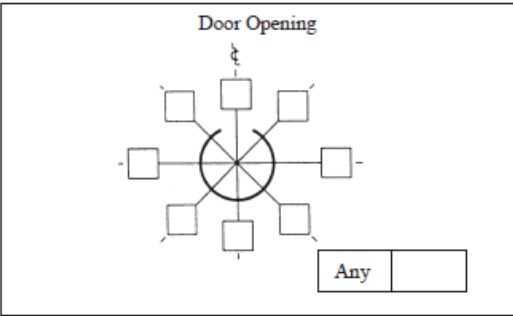
Note: This sheet does not replace the IEE Electrical Test Certificate which is also required to conform with Electrical Regulations.

APPENDIX 13/2: TYPICAL LIGHTING COLUMN AND BRACKET DATA SHEET

Typical Lighting Column and Bracket Data Sheet 1

Name of Manufacturer:			Column Reference No. Revision No. Date		
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NAME OF CONTRACT

Part A General			Acceptable positions of bracket arms relative to door position 								
Column nominal height		(m)									
Column material											
Material design strength		(N/mm ²)									
No. of door openings											
Door opening size - Height		(mm)									
- Width		(mm)									
Cross-section of base compartment	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Height (mm)</td> <td style="width: 33%;">Width (mm)</td> <td style="width: 33%;">Depth (mm)</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Height (mm)		Width (mm)	Depth (mm)						
Height (mm)	Width (mm)	Depth (mm)									
(11/03) Corrosion protection (steel columns only) - basic system type (sub-Clauses 1911.9 and 1911.10) (11/04) Reference Wind Velocity V_{ref} as defined in BS EN 40-3-1 m/s Details of signs and attachments allowed for in the design Area (mm ²), Eccentricity (mm), Height - additional sacrificial steel thickness, above that needed in the design, from the bottom of the column to at least 250 mm above the anticipated ground level (mm)											
Part B Foundation Data											
Planted base	Planting depth (m)										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3">Standard Soil Type Factor G</th> </tr> <tr> <td style="width: 33%;">630</td> <td style="width: 33%;">390</td> <td style="width: 33%;">230</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>		Standard Soil Type Factor G			630	390	230			
Standard Soil Type Factor G											
630	390	230									
	Diameter of concrete surround (if any)										
(1103) Flange plate	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Bolt hole centres</td> <td style="width: 33%;">Bolt Hole diameter</td> <td style="width: 33%;">Design load/bolt</td> </tr> <tr> <td>(mm)</td> <td>(mm)</td> <td>(N)</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Bolt hole centres	Bolt Hole diameter	Design load/bolt	(mm)	(mm)	(N)				
Bolt hole centres	Bolt Hole diameter	Design load/bolt									
(mm)	(mm)	(N)									
Relevant forces and moments at ground level Line of action of max. moment relating to door opening											

NOTE: For flange plates with slotted holes a diagram shall be included with this Data Sheet.

1.7. Typical Lighting Column and Bracket Data Sheet 2

(11/03) Part C Acceptable Luminaires

Luminaire: Maximum Characteristics

Post Top Column	Luminaire Connection		(11/04) Terrain Categories as defined in BS EN 40-3-1					
			I	II	III	IV		
	Diameter	Length	Luminaire Max Wt (kg)	(11/04) Maximum Windage Area (m ²) for Terrain Categories as defined in BS EN 40-3-1				
Single Arm Bracket Column:	Luminaire Lever Arm (mm)							
	Due to wt. of luminaire		Due to windage on luminaire					

Bracket Projection (m)	Ref No.	Drawing No.	Material		Luminaire Fixing Angle	Luminaire Connection		Luminaire Maximum Wt (kg)	(11/04) Maximum Windage Area (m ²) for Terrain Categories as defined in BS EN 40-3-1				
			Grade	Design Strength (N/mm ²)		Diameter (mm)	Length (mm)						

Double Arm Bracket Column:	Luminaire Lever Arm (mm)	
	Due to wt. of luminaire	Due to windage on luminaire

Bracket Projection (m)	Ref No.	Drawing No.	Material		Luminaire Fixing Angle	Luminaire Connection		Luminaire Maximum Wt (kg)	(11/04) Maximum Windage Area (m ²) for Terrain Categories as defined in BS EN 40-3-1				
			Grade	Design Strength (N/mm ²)		Diameter (mm)	Length (mm)						

Part D Certification

It is certified that the information given in this Data Sheet has been obtained in accordance with Departmental Standard BD 26 (DMRB 2.2.1) and the Specifications.

Signed on behalf of the Contractor

Date

APPENDIX 13/3: INSTRUCTIONS FOR COMPLETION OF LIGHTING COLUMN AND BRACKET DATA SHEETS

1.8. General

- 1.8.1. When information is not required a dash shall be inserted in the appropriate boxes.
- 1.8.2. Where a Data Sheet is amended it shall be given a new revision number with a date.
- 1.8.3. The revision numbers shall be consecutive letters of the alphabet, commencing with "A".
- 1.8.4. The date of the revision shall agree with the date of the *Contractor's* signature.
- 1.8.5. The column, or bracket material shall be aluminium, unless agreed otherwise.
- 1.8.6. The material design strength shall be the minimum specified in the design. Where more than one material is used values for all materials shall be given.
- 1.8.7. All relevant entries shall be made on the Data Sheet before the document is certified by the *Contractor*.

1.9. Column Data

- 1.9.1. The column nominal height shall be selected from clause 4.1 or 4.2 of BS EN 40-2:2004 as appropriate.
- 1.9.2. The number of door openings shall agree with the manufacturer's drawing.
- 1.9.3. The cross-section of the base compartment shall be indicated by a dimensioned diagram/sketch.
- 1.9.4. The acceptable positions of bracket arms relative to the door position shall be indicated on the diagram. Where all positions are acceptable the box noted "ANY" shall be ticked.
- 1.9.5. Where concrete is necessary around the planted base in accordance with sub-Clauses 1305.3 and 1305.4 the minimum diameter shall be entered.
- 1.9.6. For flange bases all forces and moments used in the design of the foundations, anchorages and attachment systems shall be given.

-
- 1.9.7. The corrosion protection system used on the column when new shall be recorded. Where additional steel is provided for sacrificial purposes the amount shall be recorded.
- 1.9.8. The signs and attachments surface area, eccentricity from the centre line of the column to the centre of area of the sign and height above ground level to the centre of area of the sign shall be stated.

1.10. Bracket Data

- 1.10.1. The luminaire lever arms, weight and maximum windage area quoted shall be based on the most adverse loading on the bracket when it is attached to any of the columns quoted in the compatible column sections.

(Note: The luminaire lever arms are the horizontal distances from the centre of gravity of the luminaire and, if applicable, the centre of the windage surface area to the end of the bracket joint).