



Streetscene and Transportation

Street Lighting, Traffic Signals and External Electrical Infrastructure

Policy, Design and Requirement Specification for:

Street Lighting
Illuminated Signs
Traffic Signals
Electrical and Illuminated Assets
Erection on and over Flintshire County Council Assets

December 2023

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Design, Guide and Specification

Introduction

This Design, Guide and Specification has been prepared by and for use in the following Councils with minor variations to the documentation as instructed per authority under each authorities instruction:

Conwy County Borough Council
Denbighshire County Council
Flintshire County Council
Gwynedd Council
Isle of Anglesey County Council
Powys County Council
Wrexham County Borough Council

Minor variations or additions to this standard Specification exist in each of the individual Councils and these will be detailed in Appendix 2.

Developers should note that this Design, Guide and Specification applies to all electrical, visual and illuminated equipment and associated parts on all network, highway, open spaces and associated locations and infrastructure including roads on residential developments, industrial estates, car parks and retail parks which are associated to and for the authority in question.

Whilst the specification of equipment to be used on roads for higher vehicular speeds will generally comply with this document, it is recommended that the design of street lighting on roads for higher vehicular speeds should be discussed with the County Street Lighting Engineer before detailed design commences.

The materials suggested for use in the installation on roads, developments, improvements or similar operations in this document are those which contribute to the County's preferred option for its systems and infrastructure for adoption or items in which are maintainable by and at public expense. Developers and installers who wish to utilise alternative designs or materials should liaise with the street lighting engineer to ensure that adoption will not be prejudiced.

The granting of planning permission or building regulations approval does not mean that the Highway Authority will adopt the proposed street lighting, electrical asset or any other similar infrastructure or part thereof, or necessarily that the highways as proposed will be suitable for adoption. It is vital that developers consult with the Highways Development Control Officer **before** submission for planning permission or building regulations approval to ensure that what is proposed will be acceptable for adoption.

The term "developer(s)" has been used throughout this document to identify the person or organisation who should comply with this design guide and specification. Within this document "developer" also includes "designers", "appointed persons" and "contractors".

Part A Design and Adoption

1 General

1.1 General Procedures

- 1.1.1 The preferred procedure for adoption will be in accordance with the provisions of Section 38/278 of the Highways Act, 1980 and developers are encouraged to enter into a formal agreement with the Highway Authority.
- 1.1.2 Where works associated with new road construction involve work within an adopted highway which cannot be included in a Section 38 agreement, a further agreement under Section 278 of the Highways Act, 1980 should be obtained. These agreements should be arranged with the appropriate Highway Authority Officer.
- 1.1.3 Where works associated with construction involve electrical work being undertaken within an area which is maintained by the Highway Authority Street Lighting Section and such work is being carried out by a Section or Department of the Council or any other authority which cannot enter into a Section 38 or 278 agreement and who are not normally involved with the maintenance of such equipment, the works shall be designed, approved and constructed in accordance with this document.
- 1.1.4 Before commencing a design the developer or representative shall contact the Lighting Authority to determine their requirements for street lighting. If the developer or representative considers that an alternative lighting class is appropriate, it should be referred to in writing to the Lighting Authority whose decision will be final and binding.

2 Design of Lighting Installations

2.1 General

- 2.1.1 The design of all lighting and electrical installations/proposals shall be undertaken by a competent lighting and electrical designer, as required and appropriate in accordance with the latest edition of the following publications, incorporating any amendments issued and any other or additional documentation as stated following initial dialogue between the Lighting Authority and the developer or representative:

- ❖ British Standard and British Standard European Specifications.
 - Code of Practice for the Design of Road Lighting BS 5489-1:2020
 - Road Lighting (Performance Requirements) BS EN1301-2-2015
 - Requirements for Electrical Installations BS 7671:2018
 - Supply of Materials [various British or European Standards as referred to below]
- ❖ The Institution of Lighting Professionals publications.
 - Code of Practice for Electrical Safety in Highway Electrical Operations, as amended within this Specification
 - Guidance Notes for the Reduction of Light Pollution

- Technical Report No. 12 – Lighting for Pedestrian Crossing
- Technical Report No. 23 – Lighting of Cycle Tracks
- Technical Report No. 25 – Lighting for Traffic Calming Schemes
- ❖ The Health and Safety at Work Act, 1974
- ❖ Traffic Signs Regulations and General Directions 2022
- ❖ The Electricity at Work Regulations
- ❖ Construction (Design and Management) Regulations 2020
- ❖ Engineering Recommendations 'ERG39' of the Electricity Association
- ❖ Automated External Defibrillators (AEDs) (Gov.uk – Department for Education)

2.1.2 After design and before applying for a Section 38/278 agreement, the proposed installation shall be submitted for approval to the street lighting engineer. All scheme designs approval shall be obtained in writing from the lighting authority prior to commencement on site and any such undertaking on site prior to approval and or acceptance will be at the developer or representative risk and will be required to satisfy the Street Lighting Engineer of on site installation compliance prior to any formal adoption. The submission shall comprise:

- ❖ All information specified in the Lighting Design Brief can be sent electronically to the lighting authority but the authority must be able to have full and uninterrupted access to the application and or the ability to transfer the application to a suitable internal file or device.

The following information will be required for approval:

- ❖ Location plan
- ❖ Adoption plan - Lighting design calculations including electronic calculation files, all input data and details of the software package that has been used. (lighting plots alone are not acceptable)
- ❖ Details of design consideration(s) made or assumed.
- ❖ Survey pictures for S278 schemes including the lighting layout of existing infrastructure which will affect the location in question and Survey pictures for S38 schemes which adjoin the existing adoptable network along with the relevant calculations as required by the lighting engineer.
- ❖ Details of all equipment proposed with supporting certification and documentation (if not detailed in this specification)
- ❖ Details of the proposed power supplies, including cable calculations and schematic drawings (where required)
- ❖ Column/Feeder Pillar DNO Connections schedule with Northings and Eastings and plotted on the relevant design application. (All to be unmetered)

- ❖ Scheme drawings – with minimum and average Lux ISO contour in DWG and PDF format. These will be based upon the current lantern and optical standard as issued by the lighting authority.
- ❖ Passive safety risk assessment (as per ILP TR30)
- ❖ Details of signing layout including supply connections.
- ❖ CDM details (Designer Risk Assessment, H&S File etc.)
- ❖ Environmental considerations (if required)

Please note that the above will have the following within and included within the application documentation –

- ❖ The dimensioned widths of carriageways, footways, link paths, cycle routes and service margins.
- ❖ The location of street lighting columns and lighting feeder pillars, any existing lighting installations together with the positions of any existing or proposed tree planting which might affect the illumination of the road.
- ❖ Numbered building plots, existing streets/roads and properties, named or numbered.
- ❖ Any proposed traffic calming measures.
- ❖ 2 copies of a completed schedule of equipment as shown in Appendix 1.
- ❖ Where the design information is supplied in the form of a site drawing showing Isolux contours, any minimum point or average values shall relate to each road and not to the site as a whole.
- ❖ Private cable network as required for approval of the street lighting engineer, a copy of the Distribution Network Operator [DNO] drawing showing the mains and private cable layout is required along with the relevant ducting, chambers and associated parts.

2.1.3 When dealing with the limitation of obtrusive light from the proposed lighting installation in accordance with the institution of lighting engineers guidance notes, the street lighting engineer shall be consulted before any design is undertaken if there is doubt as to which Environmental Zone is applicable to the development.

2.1.4 In exceptional circumstances, lanterns provided to illuminate the highway and which, because of limitations of space, or for aesthetic reasons, are fixed to buildings or structures, may be considered for adoption. Adoption will be subject to the securing of a suitable wayleave, the form of which is to be authorised by the street lighting engineer who will also require written confirmation from the designer of the building or structure or an independent structural engineer of the suitability of the building to support the weight of the lantern and bracket.

A copy of an approved wayleave and legal Agreement is required and at sole cost to the relevant developer or representative. No costs for this application or for future undertakings will be borne or held towards the authority and any such costs to carry out or assist in this process shall be recharged to the developer or representative. Such recharges shall be agreed in advance between the developer or representative and the street lighting engineer/authority.

- 2.1.5 The luminaire maintenance factor used in the design calculations shall be taken from the appropriate table in the BS 5489-1:2020 and shall equate to the cleaning interval and pollution level as advised by the Council's street lighting engineer. The unit flux maintenance factor shall be obtained from the manufacturer of the lamp, light engine or light emitting diode and shall be based on the figure quoted for lumen/output maintenance after 8000 burning hours for lamp sources or an agreed number of hours for light engine or light emitting diode. The Maintenance Factor to be used in the design calculations shall be the product of the luminaire maintenance factor and the lamp, light engine or light emitting diode maintenance factor.
- 2.1.6 Electricity supplies to lighting columns shall, unless stated and agreed between the developer or its representatives and the street lighting engineer be provided from the DNO mains via a feeder pillar and a private cable/ducting system to each and every column. Early contact should be made with the DNO and street lighting engineer to ascertain and agree the locations of their mains or possible private supplies.
- All installations with 2 or more columns within Flintshire County Council shall be supplied from a single supply point or various agreed supply points from the entrance of an adopted network and shall be on opposing cable circuits thus not to create a number of columns in a line with the same circuit supply.
- 2.1.7 Where it is necessary to provide underground cables and ducting, the proposed locations of the lighting columns shall be agreed with the street lighting engineer prior to any cable design being undertaken. The overall scheme shall be submitted to the street lighting engineer for approval on completion of any underground cabling layout and design.
- 2.1.8 In designing the street lighting installation, particular attention should be given to the requirements of Section 5 of BS 5489-1:2020 concerning the siting of columns.
- 2.1.9 If new lighting is to be installed near to a railway line, airport or in any other sensitive location, as defined in Section 12 of BS 5489-1:2020, the appropriate Authority must be consulted at an early stage about possible interference from the lighting. Copies of consultation correspondence must be provided with the submission to the street lighting engineer. All such documentation should include the final requirement and outcome proposal.
- 2.1.10 The lighting installation for car parks may be considered for adoption although, the car parks themselves, will not be considered for adoption by the Highway Authority unless prior agreement is met. The lighting of such features shall be designed in accordance with Section 10.7 of BS 5489-1:2020 and, in general, lighting within these areas shall involve the use of white light.
- 2.1.11 Any proposed tree or shrub planting within the highway boundary shall be located no closer than 5 metres from any street light or illuminated traffic sign and no closer than 2 metres from any feeder pillar. Where the developer provides landscaping or planting on land adjacent to the highway the minimum distances stated above should be complied with in order to avoid obstruction of highway electrical equipment.

Any location where columns are required to be installed and a mature tree is currently in-situ and can not be removed and an alternative position for the relocation of the column can not be given then with agreement between the developer, its representatives and the street lighting engineer a future commuted sum for pruning maybe request. The adoption requirements and agreement for this lays solely with the street lighting engineer.

- 2.1.12 If the development or installation is not adopted within 6 years, the authority reserves the right to review the suitability of all equipment installed and may require it to be upgraded at the developer or it's representative cost. Such applications shall be discussed and agreed between the developer or it's representative and the street lighting engineer.

If an agreement is not reached then the street lighting engineer's opinion, requirements and requests shall be final. If the developer or it's representative do not accept the final requirements and can not supply suitable mitigations to the satisfaction of the street lighting engineer than formal adoption will not take place.

Further and in addition to this, If adoption isn't agreed within 2 years from the date of the approval then a full clean, ballast/driver and photocell change will be required with all associated costs borne by the developer or it's representative. If adoption isn't agreed within 8 years from the date of the approval then a complete lantern and associate parts change, including columns and possibly cable (at the street lighting engineers discretion) will be required with all associated costs borne by the developer or it's representative.

- 2.1.13 Only when the authority and street lighting engineer is satisfied that all equipment has been installed correctly and to both manufacturer and the authorities specifications with all issues resolved will the street lighting system be accepted and as such considered for adoption.

2.2 Lighting of Estate Roads and Retail Parks

- 2.2.1 The lighting installation on estate roads in villages or other rural locations shall be designed having regard to the recommendations contained in the document "Lighting in the Countryside – Towards Good Practice" which can be obtained from The Stationery Office.
- 2.2.2 The lighting installation for the Urban Road Network including industrial estates and retail parks shall generally be designed to meet the requirements of Section 7 of BS 5489-1:2020. Information on the selection of an appropriate lighting class is given in Annex B of BS 5489-1:2020 however, prior to any design being undertaken the developer should discuss the particular requirements for the site under consideration with the street lighting engineer.
- 2.2.3 The lighting installation for the Estate Road Network shall generally be designed to meet the requirements of Section 9 of BS 5489-1:2020 and a usual mounting height of 5m or 6m with a post top lantern being the norm is expected. Information on the selection of an appropriate lighting class is given in Annex B of BS 5489-1:2020. If there is any doubt as to the standard to be applied having regard to the road's location and anticipated usage, this must be agreed with the Street Lighting Engineer prior to any design being undertaken.
- 2.2.4 The lighting of conflict areas ie. road junctions, roundabouts and pedestrian crossings shall be designed in accordance with Section 11 of BS 5489-1:2020. Information on the selection of an appropriate lighting class is given in BS 5489-1:2020. However consideration and knowledge requirement of each location will be given from the street lighting engineer and the final classification for this will be based upon the requirements given from the street lighting engineer.
- 2.2.5 The locations and types of illuminated signs, where required, shall be approved by the street lighting engineer prior to the submission for a Section 38/278 agreement or any other application, upgrade or amendment to the network. The street lighting engineer shall be consulted regardless as to the type of illumination to be used on those signs which are required to be illuminated, see Clause 6.2 with the final approval for this requirement given from the street lighting engineer.

- 2.2.6 The positions of all columns and illuminated signs and bollards will be shown on the approved plan, however before installation, the exact positions shall be agreed with the street lighting engineer on site. Care shall be taken over the location of the column door to ensure that maintenance operations can be carried out safely and easily. All installations shall be installed with the column door facing the ducting chamber with the ducting and chamber being installed at the rear of the footway unless prior agreement has been sought and agreed between the developer, its representatives and the street lighting engineer.
- 2.2.7 Columns shall generally be sited at the rear of the footway so as to avoid obstruction to pedestrian movement. In all cases the minimum clearance from the edge of carriageway to the face of the column shall comply with that recommended in Section 5 of BS 5489-1:2020. On residential developments, columns sited in service margins or grassed areas may be erected with a clearance of 800mm. In cases of doubt, the developer should seek clarification from the street lighting engineer and the final agreement and approval is from the authorities street lighting engineer. With such installations no part of the installation shall be installed on private or riparian land without prior agreement and a wayleave in place. This restriction, requirement and installation is for items above and below ground level.

2.3 Lighting of Cycle Routes

- 2.3.1 All cycle tracks and cycleways shall be illuminated unless prior agreement has been sought and approved by the street lighting engineer. Cycle routes shall be lit in accordance with the Institution of Lighting Professionals Technical Report No. 23 – Lighting of Cycle Tracks and shall have regard to the Environmental Zone in which the route is located. In Environmental Zones E1 and E2, or where after-dark usage is not likely to be high and a suitable alternative route is available which is lit, it is then recommended that the cycle route should be part nighted if low usage is anticipated or noticed. It is further recommended that the lighting of any cycle route should be discussed with the street lighting engineer prior to the design being undertaken to confirm and agree the most suitable form of lighting and visual appearance of the units to be installed.

2.4 Non-Standard Installations

- 2.4.1 Whilst there is some flexibility to allow choice in the type of materials to be used, the Council must impose some restriction in order that future maintenance costs, including the necessity to stock a multitude of replacement parts, are reduced to a minimum. Notwithstanding this, the Council is prepared to consider schemes which utilise non-standard highway lighting fittings or units where the developer considers that on aesthetic, or other reasonable grounds, a decorative or heritage-style lantern and/or column should be used for example. In all such cases the developer or its representative should make early contact with the street lighting engineer to discuss and agree the proposal. In such applications a commuted sum shall be set and agreed by the street lighting engineer for the additional cost in which these units or installations would reasonably cost over their life span. Upon failure or replacement of these units the authority holds the right to replace such units and installations with standard fittings or common items used within the department. In all and such cases the decision for this will lay with the street lighting engineer.
- 2.4.2 The Council as standard will require the payment by the developer or its representative of a commuted sum on all adoptable installations, which will be calculated by the street lighting engineer, to cover the maintenance and energy costs of the standard items over a 10 year period, however as per 2.4.1 an increase to this period of time may apply depending upon the proposed items and cost implications as seen by the street lighting engineer. Also refer to New Technologies and Out of Scope Installations within this specification.

3 Procedure Prior to and for Adoption of Street Lighting/Electrical

- 3.1 It shall be the developer's or its representatives' responsibility to ensure that prospective purchasers or owners are fully aware of the locations of all street lighting furniture. Any relocation of equipment shall be at the developer's or its representatives' expense prior to handover and shall be within design parameters or included in a complete re-design of the scheme. Any and all such redesigns will require the confirmation and approval of the street lighting engineer. If approval is not given by the street lighting engineer then adoption will not proceed.
- 3.2 The developer or its representative is responsible for all maintenance and energy usage and payments until such time as the installation is formally adopted in accordance with the relevant agreements. The developer or its representative shall forward confirmation of payments to the street lighting engineer of the energy (MPAN code) and its relevant codes for usage and lantern (UMSUG codes) upon approval of the design. If these are not submitted within 28 days of the approval to the street lighting engineer then approval maybe withdrawn and additional costs incurred to rectify. All such additional costs due to the non compliance to section 3.2 will be recharged back to the developer or its representative at the street lighting engineers hourly rate.
- 3.3 For section 278 or similar already/prior adopted location developments, the cost of energy shall be in line with 3.2 with all emergency maintenance/attendance being taken on by the authority once the installations are substantially completed with a recharge of all such activities being invoiced to the developer or its representative. Such applications and timeframes shall be at the street lighting engineers discretion. All other costs shall be the responsibility of the developer or its representative and in line with the authorities standards and repair timeframes. If the developer or its representative do not carry out these obligations in the agreed timeframes then the authority will action and attend as required to resolve the fault or maintenance issue at the developer or its representative cost. Such attendances shall be at the discretion of the street lighting engineer.
- 3.4 The developer or its representative shall be responsible for the mitigation of light intrusion, such as putting up shields if required from the lighting authority or from the residents if agreed between the relevant parties and the street lighting engineer. No shields or such devices shall be erected without the approval of the street lighting engineer and the engineer may wish to request a confirmation design for those locations in which a shield is erected. These designs and costs shall be borne by the developer or its representative. It is further required that all installations over 3 columns and lanterns the developer or its representative shall submitted, if request from the street lighting engineer an agreed number of shields for potential future use and installation upon the development or installation. The number of shields requested shall not exceed 1 complete shield arrangement per 8 lanterns.
- 3.5 The developer or its representative shall not offer the columns, signs, beacons, bollards or associated parts for inspection by the authority, until such time as they are confident that all works have been completed satisfactorily and to a point in which is agreed for inspections as specified by the authority, in accordance with this document and/or with the street lighting engineer. If such occurrences, aborted inspections, incomplete works or cancelled visits/inspections are met/undertaken by the street lighting engineer then subject to the engineers discretion an aborted visit and appropriate fee maybe applied at a minimum costing of two hours of the engineers time/rate. This cost will be fully invoiced to and paid by the developer or its representative, failure to comply with this will be seen as a breach of the specification and approval.
- 3.6 Numbering schemes will be approved on the initial design for construction and installation purposes with the final numbering scheme(s) being provided by the street lighting engineer

on or shortly after final inspection for adoption. The developer or its representative shall provide road names and postal addresses for each property where infrastructure has been installed so that the maintenance numbers can be specified. The developer or its representative shall be responsible for fixing the numbers to the lighting columns (and other street lighting equipment) or shall engage with the authority to carry out this task on their behalf with a recharge of costs incurred by the street lighting engineer and authority being recharged to the developer or its representative. This shall be agreed in writing prior to its undertaking between the relevant parties.

3.7 Prior to adoption of the highway the developer or its representative must submit the following to the street lighting engineer in respect of the street lighting installation:

- ❖ The original completion and electrical test certificates, which must be submitted as required by BS 7671 within 3 months of the required adoption date. These must be the original construction certification and if required then and also the reinspection certification.
- ❖ When several lighting units with similar particulars are offered for adoption, one test certificate, together with a schedule of test results for each lighting unit may be submitted.
- ❖ A specific layout plan at 1:500 scale showing the position and identifying number of each street lighting unit and the routes and depths of any underground street lighting cable network must be provided. The unit identification numbers must be cross-referenced to the test certificates.
- ❖ The developer or its representative will remain fully responsible for the public lighting installation, including payment of energy charges and continuing maintenance, until the date of formal adoption.
- ❖ The developer or its representative shall forward column door or feeder pillar keys depending upon the style and type and shall supply to the authority each style and type which has been installed within the development. A minimum of 1 key for each style and type shall be presented with further keys required at the rate of 1 keys per 10 columns or feeder pillars.
- ❖ The developer or its representative shall provide the street lighting engineer a health & safety file including the relevant method statements for the application of works and relevant infrastructure installations prior to any on site activities.

3.8 Following receipt of the documents listed in the above paragraph the street lighting engineer will arrange to inspect the installation to ensure that it fully complies with the Specification. Failure on the part of the developer or its representative to comply with any requirement under clause 7.1 or any of the above and restrictions/requirements within the approval and this documentation may prejudice adoption. The developer or its representative will then be required to verify the adequacy of the works undertaken entirely at his own expense and to the satisfaction of the street lighting engineer. Any additional or out of scope costs incurred by the street lighting engineer due to such failures or noncompliance will be recharged back to the developer or its representative at the street lighting engineers hourly rate and at the discretion of the street lighting engineer.

3.9 When the street lighting engineer considers that the installation fully complies with the approved drawings and this specification then the street lighting engineer shall issue a completion certificate. If the installation is covered by a Section 38, Section 278 or similar agreement, then the completion certificate will be sent to the Council Officer responsible for

the agreement, otherwise a copy of the completion certificate will be sent to the developer or it's representative directly. Confirmation of the certificate does not confirm fully adoption of the installation and development but only that of the agreed infrastructure as laid out within the approval documentation and that this can then be placed onto the relevant maintenance regime. All developments must have all aspects of the Streetscene or Highway network works carried out to an acceptable and approved level prior to any part of adoption. Where such variations are in place the discretion for this will lay with the street lighting engineer.

- 3.10 Prior to the end of the maintenance period and before final adoption agreement the developer or it's representative shall confirm that all assets for adoption in which require inclusion have been placed onto the National Underground Asset Register (NUAR). Adoption will not occur nor take place until such agreement and confirmation has been undertaken and confirm by the developer or it's representative.

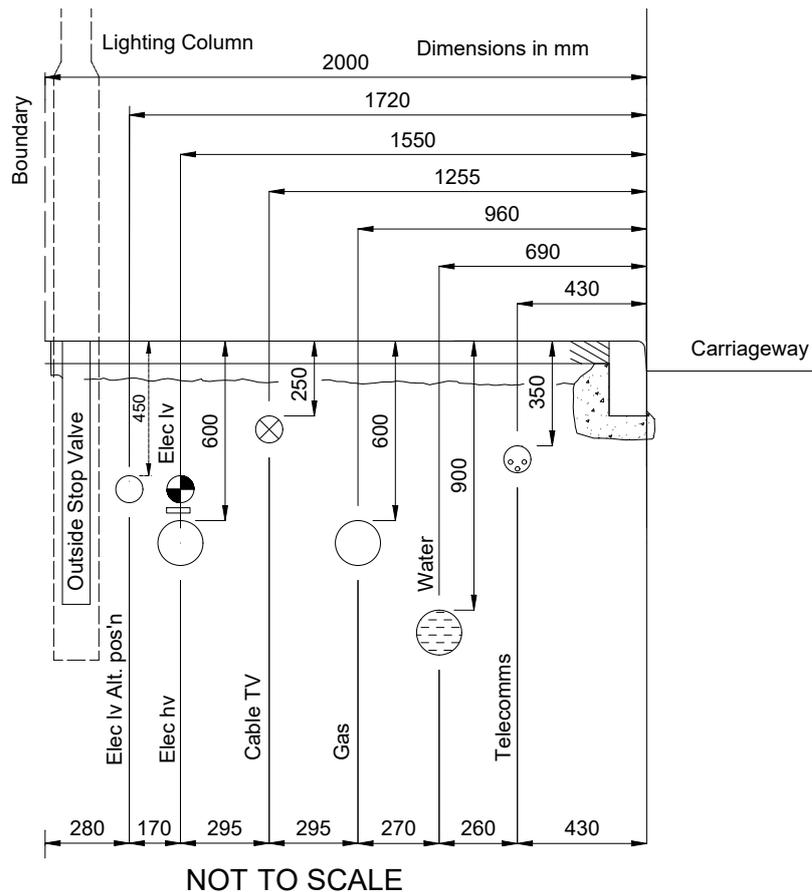
4 Statutory Undertakers and Service Utilities

4.1 Location of Plant/Apparatus

- 4.1.1 Public utility mains and services shall be laid within the highway boundary but not within the carriageway, unless there is no viable alternative. All items and infrastructure to be adopted and thus maintained by the authority shall be within the adoptable and agreed network or within an area of agreed wayleave as described previously.

4.2 Arrangement of Mains in a 2m Wide Footway

- 4.2.1 The preferred arrangement of mains in a footway is illustrated below and developers are requested to adhere to this arrangement wherever possible. Any deviation from the below must be approved prior by the street lighting engineer. Failure to gain approval to any such deviations will result in a non compliance to the approval and specifications, and as such may jeopardise adoption.



The recommended positions shown above result from an analysis of utility needs and the lateral clearances should be considered as a minimum.

The following points should be noted:

- ❖ Industrial estate footway/link path widths may need to be increased to achieve the minimum lateral spacing when larger mains are used.
- ❖ Lighting columns and its relevant infrastructure are to be sited at the rear of the footway as required by BS 5489. It is noted that on new developments and installations it is the developer or it's representative to ensure full compliance to the above preferred arrangements for underground assets.
- ❖ Duct boxes and chambers installed for private systems must be installed at the rear of the footway and in line with the appropriate infrastructure to which they serve.

4.2.2 Where a service margin is to replace a footway, the layout of mains must be agreed with the private street works engineer and street lighting engineer before the completion of a relevant adoption process and agreement.

5 Programme and Inspections

5.1 Programme

5.1.1 In addition to any requirements within the Section 38 Agreement or similar application for the submission of a programme of work for road construction the developer shall advise the street lighting engineer when he intends to install any highway electrical equipment.

- 5.1.2 The developer or its representative shall forward all relevant information to the acceptance of the street lighting engineer to ensure that a swift and thorough process of review and understanding is achievable. Failure to forward any reasonable or requested information may delay or even result in the application being refused.

5.2 Inspections

- 5.2.1 The street lighting engineer shall be advised by the developer or its representative at least 15 working days in advance of his intention to install highway electrical or electrical carrying equipment including ducting, in particular any installations below ground level, in order to allow the street lighting engineer the opportunity to undertake an inspection of the installation before it is covered.

In the event of the installation not taking part or being undertaken and as such a cancellation of the site inspection, the developer or its representative shall confirm that the installation will not take place by giving at least 5 working days notice of this directly to the street lighting engineer. Failure to comply with this clause may result in the developer or its representative having to excavate trial holes at the developer or its representative expense in order to confirm that the installation fully complies with this Specification and as in previous notations above, a cost maybe borne towards the developer or its representative.

- 5.2.2 Where and in agreement between the developer or its representative and the street lighting engineer attendance is not required or can not be met, photographic evidence of the installation will be required from the developer or its representative with this is being produced and provided to the street lighting engineer in a clear and appropriate format.

If this photographic evidence is not clear and or does not highlight the requirements as agreed, then this may result in the developer or its representative having to excavate trial holes at the developer or its representative expense in order to confirm that the installation fully complies with this Specification and as in previous notations above, a cost maybe borne towards the developer or its representative. Such requirements and appropriate proof will be at the discretion of the street lighting engineer.

6 Traffic Signs

6.1 General

- 6.1.1 Where works affect traffic movement on the existing highway network and where it is necessary in the interests of public safety elsewhere, then traffic safety measures for road works shall be implemented in accordance with Chapter 8 of the 'Traffic Signs Manual'. Furthermore, where required applications and approval shall be sought and agreed between the developer or its representative and the Streetscene streetworks department.

6.2 Permanent Traffic Signs

- 6.2.1 In all cases, the provision of appropriate traffic signs on new developments will be a requirement for adoption. Any provision must comply with the 'Traffic Signs Regulations and General Directions and be to the satisfaction of the street lighting engineer, who will advise whether signs need to be illuminated or not at the design phase and agreement. Certain locations will be illuminated at the request of the street lighting engineer based upon local requirements and knowledge.
- 6.2.2 Where traffic signs are required to be illuminated, details of all the installation requirements and the method of providing the electricity supply shall be submitted to the street lighting

engineer for approval. All such posts shall have an aperture of not less than 400mm x 115mm and be fitted with a weatherproof metal door having a vandal-resistant lock with key. The door and housing shall have the same finish as the post, both inside and out.

Wide based posts shall have an access door and cable entry slot. The cable entry slot shall be 75mm wide and 150mm high and shall be 500mm below ground level or to the manufactures guidance. The support posts and fittings shall comply with the requirements for sign posts and shall be fixed directly and securely to the sign stiffening members. All installations shall be in accordance with the manufacturers guidance.

Caps shall be applied to the top of the post to prevent ingress of water where applicable.

One piece light units with integral brackets shall be mounted directly on the sign post and/or on luminaire support posts or as directed by the street lighting engineer with all illuminated traffic signs shall complying with Class RA 2 of BS EN 12899.

Signs which require illuminating shall be mounted on a wide based post of the required and appropriate weight and windage bearing rating with the orientation of sign post doors complying with the correct and approved design.

- 6.2.3 The developer or it's representative shall consult the street lighting engineer regarding the type of illumination i.e. internal or external, to be used and shall conform the street lighting engineers requirements for such applications and installations.
- 6.2.4 All sign posts shall conform to BS EN 40, BS12899 and relevant sections within this document.
- 6.2.5 Caps shall be applied to the top of the post (coloured to match the post) to prevent ingress of water where appropriate and securely fitted.
- 6.2.6 Posts shall be galvanised steel with two pack glass flake epoxy or bitumen base to the external and internal root to 250mm above ground level, minimum dry film thickness 200µm colour black (shop/manufacture applied).
- 6.2.7 Passively safe sign posts shall be tubular passively safe signs and shall be provided with a purpose made post cap. Caps shall be applied to the top of the post (coloured to match the post) to prevent ingress of water where appropriate and securely fitted.

Only signposts that have been independently tested by an approved testing organisation and certified to comply with the appropriate class in BS EN 12767 shall be permitted. All such posts will require the approval of the street lighting engineer to suit and match current stock and spares for the authority.

- 6.2.8 Where signs on passively safe posts require power supply cables for illumination, the cables must be supplied with a pull-out plug or equivalent arrangement in accordance with BS EN 60309 Parts 1 and 2.
- 6.2.9 Sign plates shall comply with Class RA 2 of BS EN 12899 with all sign plates having a guaranteed on-site life of not less than 25 years. Confirmation of this shall be forwarded to the street lighting engineer prior to adoption. If a lesser life span or guarantee is supplied then either an increase in the commuted sum or agreement between the developer or it's representative and the street lighting engineer will be required.

Such a requirement will be in line with the previous explanations within this documentation and the street lighting engineers opinion being final.

6.2.10 Sign plates shall be made from composite or a pre agreed material between the developer or it's representative and the street lighting engineer. All signs shall be manufactured and erected in accordance with BS EN 12899-1:2022, Traffic Signs Regulations and General Directions 2016, Traffic Signs Manual, Specification for Highway Works, location plan and associated sign schedules and the following/above specification.

6.2.11 The finish shall be Class RA 2 retro-reflective material with a warranted life of not less than ten years and shall fulfil the requirements of BS EN12899-1:2022. If a lesser life span or guarantee is supplied then either an increase in the commuted sum or agreement between the developer or it's representative and the street lighting engineer will be required.

Such a requirement will be in line with the previous explanations within this documentation and the street lighting engineers opinion being final.

6.2.12 Signs shall be stiffened such that post fixings may be positioned at any point across the width of the sign without the need for drilling of the stiffening to permit erection onto posts of unspecified spacing.

Part B Specification and Requirements

7 Introduction

7.1 The Application of This Specification

7.1.1 This Specification shall apply to carriageway, highway and associated electrical equipment installed on any authority owned infrastructure, road, link path, cycle route, or any element thereof, constructed or installed as part of a residential development, industrial estate, retail park or any area which is intended for adoption by the Council as Highway Authority. Throughout Part B of this document references to 'The Street Lighting Engineer' shall include any other officer designated to act on behalf of the Street Lighting Engineer.

7.2 British Standard and British Standard European Specifications

7.2.1. The current British Standard or British European Standard Specifications shall apply in respect of all materials referred to in this Specification, including their storage and installation. Materials shall, where appropriate, be stamped with a third party verified product certification mark e.g. CE mark, together with the appropriate reference number. All equipment shall also be handled and installed in reference and regards to the manufacturers recommendations or if this specifications exceeds those, as directed by the specification or street lighting engineer.

7.3 Testing

7.3.1 Testing of the electrical and structural installation is deemed to be the responsibility of the developer or it's representative and shall be carried out in accordance with the current, relevant, British Standard or British European Standard Specifications by a competent person. In addition, full compliance to this specification and the street lighting engineer requirements.

7.3.2 Where a British Standard or British European Standard Specification requires that materials are tested to ensure compliance with the relevant specification then an approved independent testing laboratory shall carry out such testing. All such tests will require a

certification which will be passed to the street lighting engineer for confirmation of testing and that of meeting the needs of this specification.

7.4 The Effects of the Works on Existing Highways

7.4.1 Wherever electrical or structural works associated with a new road, link path or cycle route are to be carried out in an existing highway the developer or it's representative shall establish, in advance of the commencement of works, the full requirements of the Highway Authority. It is advisable to undertake this exercise at least 12 weeks in advance of the intended starting date so that, if required, agreements under Section 278 of the Highways Act, 1980 can be prepared otherwise delays may be experienced. Concurrently, the Highways Department can advise on the Highway Authority's requirements in respect of the method of working, traffic control and signing.

7.4.2 The developer's attention is drawn to the need, on his part, to ensure compliance with the requirements of the New Roads and Street Works Act, 1991. Before excavating in any existing highway, developers shall obtain any necessary licence(s) and must establish whether there is any existing statutory undertaker's plant which will be affected. Developers are advised of the need to comply with the requirements contained in the publication "Health and Safety at Work Act – Avoiding Danger to Underground Services" [HS(G)47]. Any apparatus located is to be protected at the developer's expense and no pipe or cable shall be disturbed without the approval of the statutory undertaker. Traffic management, incorporating appropriate safety measures, shall be carried out in accordance with Chapter 8 of the Traffic Signs Manual.

7.4.3 Highways in the vicinity of the works shall be kept free from mud, dust and debris as far as is reasonably practicable. Where contamination of a highway is unavoidable, appropriate signage and regular cleaning will be required. Such applications will be monitored by the street lighting engineer and if appropriate signage and regular cleaning is not undertaken and following dialogue and requests to the developer or it's representative are made and not either applied or undertaken by the developer or it's representative as directed by the street lighting engineer then such applications will be actioned by the street lighting engineer with all reasonable costs recharged back to the developer or it's representative.

Failure to either comply or reimburse following the requests or undertaking of the street lighting engineers actions may result in further actions or cancelation of the approval and installations.

7.4.4 Noise and vibration caused by the works shall be minimised by the best practicable means. It shall be the developer or it's representative responsibility to ascertain and ensure compliance with any specific requirements in this regard.

7.4.5 Existing public highways shall not be used for the stockpiling and storage of materials and plant unless prior written agreement is sought and given by the street lighting engineer.

7.4.6 Blasting operations will not normally be permitted where they will have an effect on an existing adopted highway but where the developer or it's representative has no practicable alternative to the employment of such techniques, the prior approval of the Highway Authority must be obtained through the Private Street Works Engineer. Adherence to any, and all, requirements imposed shall be strictly observed. The developer or it's representative will remain entirely responsible for ensuring compliance with all statutory requirements in respect of blasting operations.

7.4.7 In the event of default on the part of the developer or it's representative in respect of any of the foregoing sub-sections, or any damage caused to an existing adopted highway, the

developer or it's representative shall be entirely responsible for the costs of rectifying the results of such default or damage and for meeting the costs of any claims which may result from the default, damage or rectification and/or repair.

- 7.4.8 The developer or it's representative shall hold public liability insurance cover to a minimum of £10,000,000 in respect of any one third party claim. Where work is to be carried out in a highway maintainable at the public expense, the Private Street Works Engineer may require a copy of the developer's safety policy and insurance certificate.

7.5 Non-compliance with the Specification

- 7.5.1 If the developer or it's representative fails to comply with **any** requirement of this specification, adoption of the works will be prejudiced unless and until the non-compliance is rectified to the satisfaction of the street lighting engineer.
- 7.5.2 Where the developer has entered into a Section 38 agreement or similar, non-compliance may result in the default procedures being invoked.

8. Street Lighting Specification

8.1 General

- 8.1.1 All materials and workmanship shall be in accordance with this specification and to the satisfaction of the street lighting engineer.
- 8.1.2 The installer of the electrical and lighting installation must be NICEIC or ECA registered, be experienced in the installation of public lighting equipment and qualified to provide official completion and test certificates. It is further required that HER's accreditation is required for all applications and undertakings on, over or for any proposed adoptable installation or infrastructure.

Where such applications and accreditations are not available for certain and specific undertakings such as structural testing, ducting installation etc proof of competence, qualifications and accreditation to a relevant awarding bodies will be required and at the discretion of the street lighting engineers requirements. As such, the street lighting engineer will require a full method statement and if not satisfied with the application and material supplied the street lighting engineer has the authority to reject and deny applications and works.

- 8.1.3 Where works are carried out to an adopted lighting installation e.g. as part of works under a Section 278 agreement, any new lighting units installed must be brought into use before the disconnection and removal of any existing lighting units. Where this is not practicable the developer or it's representative shall arrange for some form of temporary lighting to be installed in order to maintain the existing lighting levels unless prior agreement has been sought and agreed between the developer or it's representative and the street lighting engineer.

Any such breach of this shall be at the developer or it's representative cost to rectify. The street lighting engineer shall give appropriate notice to carry out the relevant action as directed by the street lighting engineer. If the appropriate action is not met to the satisfaction of the street lighting engineer by the developer or it's representative then the street lighting engineer shall arrange and recharge all reasonable costs back to the developer or it's representative following rectification of the issue.

8.2 Lighting Columns and Brackets and Traffic Sign Posts for Illuminated Signs

- 8.2.1 Columns and brackets shall:

- ❖ Comply with all relevant parts of BS 5489-1:2020 and BS EN 40 and the particular requirements of this specification.
- ❖ Only be purchased from manufacturer's who are registered with either BSI Quality Assurance or Lloyds Register Quality Assurance Ltd., for the manufacture, supply and verification of lighting columns and bracket arms under their Quality Management Schemes (QAS5020/304, QSS 5020) to BS EN IS 9002. Certificates of Conformity may be required in support of all columns used.

- 8.2.2 All columns and brackets shall carry a unique identification mark which indicates the name of the manufacturer, year of production and manufacturer's batch number. The identification mark shall be permanent, legible and clearly visible and shall be located within the base compartment of the column.

- 8.2.3 Unless stated, in residential roads the preferred method of mounting lanterns is post top however where brackets are required they shall be integral with the column ('hockey stick' type or similar approved by the street lighting engineer). On other road types where a separate bracket is fixed to a column, the assembly of the column shaft and bracket shall incorporate a mechanical locking system in addition to high tensile socket headed securing screws and it shall be possible to fix the bracket in any of 4 x 90° positions relative to the door opening. When correctly fixed, the design of the bracket shall not allow any movement of the bracket either vertically or horizontally with respect to the column. At the point of interconnection, the cross-section of the bracket shall, preferably, equal that of the column shaft. Brackets shall blend with their columns, in material, finish and colour and shall be as short as practicable.
- 8.2.4 Columns and brackets shall be designed by the manufacturer to meet the following parameters. The developer shall insert where appropriate the required site specific information as shown in Appendix 2 to enable the manufacturer to design the columns in accordance with BS EN 40 and shall when requested submit standard column data sheets to the street lighting engineer.
- 8.2.5 Base compartments shall afford easy access to cable terminations and wiring. All electrical equipment mounted in the base compartment shall be securely fixed to a 15mm minimum thickness backboard which shall be of a non-hygroscopic material of sufficient size to accommodate any control gear and cable termination units. Doors, which shall be sealed to minimum IP33, shall be provided with a substantial and positive, triangular-headed, tamper proof lock.

The locking mechanism shall be lubricated with grease immediately following installation and if necessary prior to adoption. One key per 16 columns, with a minimum requirement of two keys shall be provided to the street lighting engineer prior to adoption of the development. The earthing terminal provided for steel columns and their doors shall comprise a brass or stainless steel bolt, size M8, complete with nuts and washers. The column shall have a cable entry slot of 75mm in width.

- 8.2.6 Columns and brackets shall be manufactured from Steel or Aluminium and approved by the street lighting engineer on a site by site basis. All columns shall be of a minimum of medium to heavy duty with a requirement of heavy duty or higher subject to siting and application or weight bearing requirement.

❖ Circular tubular steel manufactured from cold-formed hollow sections without heat treatment with constant shaft diameter above the base compartment.

❖ Continuously tapered steel with either circular or polygonal cross-section (minimum 8 sides). Multisided tapered columns shall be press-folded then submerged arc welded down the joint. These style shall not be the norm and only approved in agreement with the street lighting engineer.

❖ Circular hollow tubular aluminium extruded from a solid block of alloy AlMgSi_{0.5} with a satin brushed finish. These style shall not be the norm and only approved in agreement with the street lighting engineer.

Where road conditions require the use of passive safe lighting columns discussions should be held with the street lighting engineer to agree the material to be used. It shall be the designers responsibility to provide proof of application and suitability to agree a suitable solution between all parties and the street lighting engineer.

Steel Columns and Brackets

8.2.7 Steel columns and brackets shall be protected against corrosion at the fabricator's works by the following system:

❖ Surface preparation: the complete column and/or bracket shall be hot-dip galvanised to comply with the requirements of BS EN ISO 1461, the minimum coating thickness to all faces is to accord with Table 2.

❖ Further treatment - after hot-dip galvanising:

- Internal and external surface of planted root only, to 250mm above ground level to be degreased and treated with 'T' wash.
- 2nd coat: item 150 Pitch Epoxy (2 packs) AS, mdf, 100microns, black [As D.O.T./W.A.G. approvals]

8.2.8 In general, galvanised steel columns shall be left unpainted, however, where columns require painting the developer or it's representative shall submit details of the proposed paint system to be used to the street lighting engineer for approval before undertaking any application or installation.

Aluminium Columns and Brackets

8.2.9 The bases of aluminium columns, up to a minimum of 250mm above the proposed ground level, shall be protected by a factory applied system approved by the street lighting engineer.

8.2.10 Door openings shall be reinforced in accordance with BS EN 40-3-1. Flush fitting doors, which shall be sealed to minimum IP44, shall be provided with two stainless steel triangular-headed locks. The locking mechanism shall be lubricated with grease immediately following installation and if necessary prior to the end of the defects correction period. The earthing terminal provided for aluminium columns and their doors shall comprise a stainless steel bolt, complete with nut and two washers. The copper earthing wire shall be installed between the two washers to ensure that the copper cable does not come in contact with the aluminium

Traffic Sign Posts for Illuminated Signs

8.2.11 Posts for illuminated traffic signs shall generally comply with the requirements stated for lighting columns. Posts shall conform to BS873 and BS EN 10210.

All such applications shall also comply with previous instructions, specification and in line with 6.0.

General

8.2.12 The developer or it's representative shall excavate and provide concrete ST2 mix complying with BS 5328, foundations of sufficient thickness to firmly locate the column in the ground having regard to the ground conditions encountered and the column manufacturer's recommendations. Any concrete foundation shall be finished 150mm below finished surface level.

- 8.2.13 Unless agreed with the street lighting engineer the developer or it's representative shall install a sleeve foundation comprising a twin wall 300mm black pipe set vertically in the ground into which the column is set. See Standard Detail drawing.

The sleeve is to be secure within the ground and to have a 50mm orange duct entering via a chamber at the appropriate height to be placed within the column as previously explained within this specification documentation. The entry slot to the sleeve where the ducting is to be installed within the sleeve shall not exceed 10mm circumference surrounding the orange 50mm sleeve.

- 8.2.14 50mm dia. Orange PVC service ducting tubes shall be incorporated in all lighting column foundations entering the sleeve and then the column cable entry slot terminating just below the cut out or earthing block arrangement. This is to enable the supply cable to enter the column and to provide a fully ducted private cabled system.

The ducts shall be black for a DNO service or orange for a private supply service. A stranded polypropylene or equivalent rot-proof material draw rope of 20KN breaking load shall be left through the ducting tube to enable the electricity supply cable to be drawn through at all entrances and exits of all ducts.

- 8.2.15 Lanterns and brackets (where required) shall not be attached to the column until 24 hours after the concrete foundations are laid unless prior agreement has been granted by the street lighting engineer.

- 8.2.16 Any damage caused during installation to the protective systems applied by the column manufacturer shall be made good immediately following column erection or when the lantern is fitted. All such applications and undertakings shall have photographic evidence of the repair and shall be forwarded to the street lighting engineer for approval.

- 8.2.17 Where it is necessary to provide flanged base rather than rooted columns, the developer or it's representative shall submit details of the concrete foundation and fixing details to the street lighting engineer for approval prior to any work being undertaken on site.

- 8.2.18 All columns shall be provided with identification numbers as detailed on the approved plan. The number shall comprise of at least a 50mm (75mm on roads subject to a speed limit greater than 40mph) high white numeral on a square or rectangular background. The number shall be located approximately 3m above ground level (2m on roads with little pedestrian usage) and facing onto the carriageway. Flintshire County Council Streetscene have a specific column numbering scheme which the developer or it's representative can either purchase direct or request and reimburse the authority to supply and erect.

- 8.2.19 Columns sited on footpaths, or in any area which does not have vehicular access, shall be of the hinged or folding type, as stated in Appendix 3, in order that the column can be lowered into a safe area and maintained at ground level. The developer shall submit to the street lighting engineer for approval details of the type of folding column he proposes to use.

8.3 Lanterns and Illumination Sources

- 8.3.1 Lanterns shall be:

- ❖ Manufactured from marine grade aluminium, totally enclosed and shall conform to BS 4533 and BS EN 60598 and have a minimum degree of protection rating of IP 65 to BS EN 60529. Where a separate gear compartment exists, this shall have a degree of

protection of at least IP 43. Where heritage or decorative lanterns are proposed the type of material used shall be approved by the street lighting engineer.

- ❖ Fitted with a photo-electric control unit (Photocell or PECU/NEMA) socket located on the canopy for the installation of a one-piece electronic PECU or be drilled to accept a miniature two-part electronic PECU. On all standard lanterns the arrangement is to be a 7 pin NEMA socket arrangement with a 35/18 lux photocell with a 12 year warranty period. All other applications and locations shall be proposed by the developer or it's representative and agreed by the street lighting engineer.
- ❖ Fitted with integral electronic control gear and complete with fuse holder and an appropriately rated cartridge fuse located adjacent to the terminal block which shall be capable of accepting a conductor of 2.5mm².
- ❖ Installed in accordance with the manufacturer's instructions with no gap between the lantern and the shoulder of any bracket arm. The lantern shall also be installed at the correct design tilt and horizontal alignment and to ensure that the design 'IP' rating is maintained. All fixing bolts shall be mechanically tight and installed as per the manufactures guidance. Where a torque setting is recommended for the fixing screws/bolts, a torque wrench shall be used to ensure that the requirements are met.
- ❖ Provided with vandal-resistant (polycarbonate or similar approved) glazing for those lanterns mounted below 8m.
- ❖ Of the side entry or direct column mounting type wherever possible. However, consideration may be given to the use of post top decorative lanterns in certain installations subject to compliance with the light output restrictions and the prior approval of the street lighting engineer.
- ❖ All lanterns installed on a 6m or below column shall be post top arrangement with all 8m or above installations being installed on a 1.5m bracket arm any deviations or additional requirements to this shall be forwarded with a full explanation for consideration and approval from the street lighting engineer.

8.3.2 All lamp based lanterns shall be fitted with the appropriate electronic control gear with at least an 8 year warranty period. All such lamp based applications shall be pre approved by the street lighting engineer.

8.3.3 Side entry lanterns shall have a positive locking device so as to prevent the lantern turning on its axis.

8.3.4 The lamps, light engine, reflectors, refractors and bowl etc shall be clean and free from obscuring film after installation and the lamp or light engine shall be correctly positioned within the lantern. The bowl or any access panel should be seated uniformly on the gasket seal and the toggle catches secured so that the whole of the unit is dust and weatherproof to the appropriate IP rating.

8.3.5 The upward wasted light ratio [UWLR] of lanterns shall not exceed the recommended maximum for the environmental zone within which the development is located. All current installations shall be of zero upward wasted light and shall be at least class 4 for illumination seating/distribution. Any deviations or installation recommendations outside of this shall require pre approval from the street lighting engineer with certain units requiring shielding to be fitted and or shielding to be fully supplied for future use.

- 8.3.6 Lanterns installed within 3km of the coast shall be fitted with an approved anti-seagull device to prevent seagulls from settling on the lantern if required and suggested by the street lighting engineer.
- 8.3.7 In order to assist with future maintenance, the Council requires that the lanterns used on roads which are covered by this specification shall be chosen from the approved list of lanterns given in Appendix 2. Any options or suggestions outside of these shall require the approval from the street lighting engineer.

8.4 Traffic Sign Luminaires

- 8.4.1 Traffic sign luminaires shall comply with BS EN 60598-1, BS 4533-102.1 and EN 60598-2-1 and shall provide a light distribution in accordance with BS EN 12899. In order to assist with future maintenance, the Council requires that the lanterns used on roads which are covered by this specification shall be chosen from the approved list or pre approved by the street lighting engineer.
- 8.4.2 Control gear shall be suitable for operation on either an electrical supply of 230 Volts, 50Hz ac or 24 Volt dc as required by the street lighting engineer.
- 8.4.3 Gear trays shall be provided with a means of electrical isolation and/or disconnection by means of a cable restrained plug and socket which ensures that the earth terminal is the last to disconnect and the first to reconnect without removal of the gear tray unless pre approved by the street lighting engineer.
- 8.4.4 Control gear for the lamps/light engines shall be securely attached to a galvanised steel or pre approved gear tray, by means of stainless steel nuts, bolts and shake proof washers to ensure sound earth continuity and easy replacement.
- 8.4.5 In twin lamp or light engine units, the control gear shall be independent and separate so that in the event of a unit failing, at least one unit should continue to function.
- 8.4.6 Type 'A' luminaires shall be supplied complete with a miniature one-piece electronic photocell unit as stated in Clause 8.6.1 unless a previously agreed (by the street lighting engineer) arrangement is supplied.
- 8.4.7 Traffic sign luminaires shall be obtained from manufacturers approved by the street lighting engineer in order to assist with future maintenance.

8.5 Lamps and Light Sources

- 8.5.1 Highways which are considered to be traffic routes shall generally be lit using Light Emitting Diodes (LED's) or if approved by the street lighting engineer, High Pressure Sodium (SON) lamps complying with BS EN 60662. Where these routes pass through commercial areas the street lighting engineer may require the use of "white light" in order to improve facial recognition in the adjacent pedestrian areas.

The currently installed lantern range for light output, CRI (Colour rendition) shall be no less than 60 and Ra (colour temperature) is within the 4,000k range and can be reduced to a minimum of 3,200k in certain locations on the approval of the street lighting engineer. Such locations are areas of outstanding natural beauty, national parks or sites of specific significance. This change of lamp or light source type also reinforces to the motorist the change in character of the highway or footpath at that location.

- 8.5.2 Highways which are located in residential areas should be lit using "white light" sources.

- 8.5.3 Preferred “white light” sources are shown in Appendix 2.
- 8.5.4 All lamps shall comply with the appropriate British or European Standard i.e. BS or BS EN and shall be manufactured within the E.U. by a manufacturer approved by the street lighting engineer.
- 8.5.5 All lamps shall be marked to show their suitability for operation at the standard supply voltage provided by the DNO.
- 8.5.6 Lamps used in traffic sign luminaires shall be either PL or LED as stated in Appendix 2.
- 8.5.7 All lamps shall be from an approved manufacturer as stated in Appendix 2.
- 8.5.8 Lamps shall be guaranteed for at least 2 years or 8,000 hours of operation. All SON lamps shall be guaranteed for at least 5 years or 20,000 hours of operation. Where lamps have been in service for a period in excess of 2 years, the developer shall install a replacement lamp prior to adoption.
- 8.5.9 Lamps shall be compatible with the lantern used and must not be fitted in the lantern until the lantern has been correctly fixed to the column/bracket.
- 8.5.10 Luminaire correlated colour temperature shall be 4,000K or if agreed 3,200K if agreed by the street lighting engineer.
- 8.5.11 Luminaire’s shall have a CRI of no less than Ra. 60.
- 8.5.12 LED drivers shall be replaceable throughout the design life of the luminaire and have a warranty of no less than 10 years. LED luminaires shall have a warranty of no less than 20 years on all parts including luminaire body including the Light engine. Confirmation of the warranty is required prior to adoption.
- Luminaires shall be Class I insulation and be of Aluminium Construction Marine Grade alloy with Luminaires for road lighting having a degree of protection rating of at least IP66 to BS EN 60529 for luminaires, LED optics and LED drivers.
- 8.5.13 Luminaires shall be of a totally enclosed design, shall be of sound construction and be capable of being easily dismantled for maintenance.
- 8.5.14 LED drivers shall be supplied with Constant Light Output (CLO) to an agreed level or shall have an agreement between the developer or its representative and the street lighting engineer.
- 8.5.15 Luminaires shall be supplied with a 7 pin NEMA socket suitable for the CMS system used on the network where the luminaires will be installed.
- 8.5.16 The part of the luminaire providing access to the interior of the luminaire shall, when in the closed position, be firmly attached to the fixed part of the lantern. In the open position it shall be attached so that it may not become accidentally detached or blow against the fixed part of the luminaire, bracket or the column.
- 8.5.17 The canopy, hinges, toggle catches, captive screws and nuts shall be of a cast aluminium or similar noncorroding material.

- 8.5.18 The luminaire shall have a tilt adjustment of -10 to +5 degrees to enable adjustment when fitting to the existing bracket arms.
- 8.5.19 In relation to the Maintenance Factor, the luminaire should be provided with the following:
- ❖ Light Loss: L70 or better
 - ❖ Cleaning Frequency: 72 Months
 - ❖ LED Design Life: 100,000 Hours
- 8.5.20 IK Rating (Impact Resistance) shall be IK08 or better with all luminaires to be EMC Test Compliant / RoHS Compliant / CE compliant / WEEE compliant.
- 8.5.21 Luminaire LED modules must be capable of being simply removed and replaced at a later date to enable replacement for failure or to upgrade as improvements are made in LED technology.
- 8.5.22 Luminaires are to be supplied with approved unmetered supply charge codes (ELEXON Codes) and all LED's shall be tested in accordance with IEC/PAS 62717(LED Modules) and 62722(LED Luminaires) performance requirements.

8.6 Control Gear

8.6.1 Photo-electric control units (PECU's) shall:

- ❖ Be provided for all lighting units including traffic signs.
- ❖ Comply with BS 5972 and be manufactured to a quality level of ISO9002 or equivalent.
- ❖ Provide class 2 protection against electric shock and shall be either:
 - A one-part unit to fit a NEMA socket or grommet fixing.
 - A two-part unit with a separate detector and controller incorporating a test switch.

In either case the detector unit shall be constructed to provide protection to IP67 against the ingress of dust and moisture and shall be secured to the lantern with an effective weatherproof seal of at least IP65.
- ❖ Be fully electronic with a switching mechanism capable of controlling a reactive lighting load of 10 amps on a 240V 50 Hz supply.
- ❖ Be designed, in so far as is practicable, to fail in the on mode. If a triac or other semiconductor switching device is fitted, a method of ensuring that the load remains switched to the on state must be provided in the event of an overload destroying the device.
- ❖ Have a minimum guaranteed life of 6 years from their date of manufacture and this date shall be indicated on each individual unit to the street lighting engineer's satisfaction. The guarantee shall not be insurance based and shall be based on testing and component mean time between failure rates. The supplier shall, when requested, provide such supportive testing records and/or written evidence, to support such life-expectancy claims. Any units failing within the guarantee period shall be replaced, free of charge, by the developer, on a one-to-one basis inclusive of all costs associated with their replacement.

- ❖ Be manufactured by a manufacturer approved by the Street Lighting Engineer, see Appendix 2.
- ❖ Have a UV Stabilised Polycarbonate and an LED pulse-encoded to indicate current operating status if required by the street lighting engineer.
- ❖ Be one part for 7 pin NEMA socket type or (where agreed by the street lighting engineer) miniature type mounted on the luminaire canopy.
- ❖ Be fully solid state with a self-test on initial power up with an output via a bi-stable relay and a filtered silicon photo diode sensor.
- ❖ Have a power consumption of less than 0.25 watts and be capable of switching a 5A load.
- ❖ Include a delay device so that the lamps or light source are not switched on by transient changes in the illuminance, proposed switching delay of 10 - 20 seconds.
- ❖ Have sensor drift of zero over a 10 year period and have a guarantee period of 12 years. Proof of warranty will be required and submitted to the street lighting engineer prior to adoption.
- ❖ Comply with BS EN 60068 and EN 50081-1 Emissions and EN 61000 Immunity and have an operational temperature range of -20 °C to + 80 °C.

8.6.2 The switching regime shall be as stated in Appendix 2. All units must be indelibly marked with the switch setting, the manufacturer's identification mark, model number and the date of installation.

8.7 Electronic Ballasts and Drivers

8.7.1 Electronic ballasts and drivers shall be:

- ❖ From a manufacturer approved by the street lighting engineer, see Appendix 2, for use in highway electrical equipment and shall be suitable for operation at the standard supply voltage provided by the DNO.
- ❖ Suitable for use with the lamp or light engine used. The terminals to which the lamp/light engine and supply connections are made shall be clearly marked.
- ❖ Mounted in the gear tray fitted to the lantern with terminals shrouded so that no live metal parts are exposed.

8.7.2 All electronic ballasts and drivers shall have the ability to be dimmed and remotely monitored. These shall conform to the requirements as stated within the street lighting policy and shall be agreed on a site by site basis between the developer or its representative and the street lighting engineer.

8.7.3 Control Gear shall conform to IEC 61347-2-13.

8.7.4 The installer must ensure that the equipment is not connected to electrical supplies unless they comply with the requirement of BS EN 50160.

8.7.5 The insulation test shall be carried out in accordance with the requirements of EN 60598-1.

8.8 Cut-Outs, Isolators, Fuse Holders and Fuse Links

8.8.1 A list of approved manufacturers may be stated in Appendix 2.

8.8.2 Cut-outs and fuse holders shall have moulded drip-proof housings.

8.8.3 Cut-outs for cable terminations shall:

- ❖ Comply with BS 7654
- ❖ Have sufficient separate terminals for all live, neutral and earth conductors. They shall be clearly labelled to differentiate circuits and phases.
- ❖ Incorporate a fuse carrier and be designed primarily for use in street lighting columns and suitable for terminations or looped services.
- ❖ Be complete with any necessary extension box, glands or clips to enable the cable to be terminated and the steel wire armouring to be properly fixed and connected.
- ❖ Must be double pole, have an insulated gland plate with grommets and be rated at 25A
- ❖ Consist of a substantial moulded-plastic enclosure with separate terminals for live and neutral conductors, incorporating a BS88 fuse. Be designed primarily for use in road lighting columns or similar applications and be suitable for terminations or looped services.
- ❖ Have terminals large enough to accommodate the supply cables specified, in single cable or looped cable terminations.
- ❖ Be securely fitted to the backboard by means of at least 3 No stainless steel screws.
- ❖ Labelling and layouts shall be in accordance with the Standard Details or approved drawings.
- ❖ Cut-outs shall be used when the cable termination is located below ground level (bollards).
- ❖ Isolators shall be used when the cable termination is located above ground level (Columns, signs, etc...)
- ❖ Be designed and tested in accordance with BS 7654 and EN 60947-Part 1.
- ❖ Be fitted with a BS88 fuse LST type 23 fuse or similar approved by the street lighting engineer.

8.8.4 Isolators shall:

- ❖ Be designed and tested in accordance with IEC/EN 60269-1, IEC/EN 60947
- ❖ Be fitted with a BS88 fuse MD type

- 8.8.5 Cut-outs on private supply cables shall incorporate a lockable double pole isolator. In all other cases a lockable double pole isolator shall be incorporated within or installed immediately after the DNO cut-out.
- 8.8.6 Fuse links shall be cartridge fuses complying with the requirements of BS 88, BS 646 or BS 1361. They shall be of high breaking capacity type and be of a value appropriate to the circuit requirements.

8.9 Wiring and Earthing

- 8.9.1 All cable must be BASEC approved. Wiring within the electrical unit shall have copper cores and shall be PVC/PVC sheathed 300/500V grade to BS 6004 unless otherwise agreed with the Street Lighting Engineer.
- 8.9.2 Conductor sizes shall be in accordance with the recommendations contained in the ILP Code of Practice for Electrical Safety in Highway Electrical Operations. The connection between the REC cut-out and the double pole isolator shall be made using double insulated 'tails' – minimum 2.5mm² csa.
- 8.9.3 Circuit protective and equipotential conductors shall comply in all respects with the requirements of BS 7671.
- 8.9.4 A circuit protective conductor shall connect the earth terminal on each luminaire to the main earth terminal block mounted on the column back board.
- 8.9.5 An earth terminal block shall be fixed to the baseboard adjacent to the cut-out and shall be a three-way type capable of accepting a cable size up to 25mm².
- 8.9.6 A main protective bonding conductor shall have a cross-sectional area not less than half the cross-sectional area required for the earthing conductor of the installation and not less than 6 mm². (BS7671, Section 544.1.1).

Where PME conditions apply the earthing conductor of a street electrical fixture shall have a minimum copper equivalent cross-sectional area not less than that of the supply neutral conductor at that point or not less than 6 mm². (BS7671, Section 559.10.3.4).

- 8.9.7 All exposed conductive parts, as described in BS 7671, shall be bonded to the main earth terminal using an equipotential bonding conductor of not less than 6 mm² cross sectional area. This shall be increased, if necessary, to conform to the DNO's requirements. Access doors shall be bonded using flexible or tri-rated cable.
- 8.9.8 All earth conductors shall be insulated with green and yellow PVC.
- 8.9.9 All street lighting and other electrically supplied street furniture shall be earthed and bonded in compliance with BS 7430. On all private network cables it is suggest that the end of each circuit run is earthed.
- 8.9.10 A permanent label to BS 951, with the words "Safety Electrical Connection – Do Not Remove" shall be permanently fixed in a visible position as stated in BS 7671 Section 514-13.
- 8.9.11 Connections between the cut-out and Distribution Network Operator's (DNO) apparatus shall be sheathed single core cable (double insulated). With cable for wall mounted solutions shall be HI-TUF, PVC/PVC multicore Copper Cable 70°C to BS5497 rated 600/1000V. But note the intention is that for new installations not to use third party building

mounted luminaires unless prior approval is sought and agreed by the street lighting engineer.

8.10 Electricity Supplies

8.10.1 Unless stated, lighting units shall be fed via a private ducted system and have individual phase supplies on a circuit arrangement from the DNO within a private feeder pillar. The supply service at nominal 230V, AC 50Hz, single – phase shall terminate at a cut-out which complies with Electricity Supply Industry Standard 12-19. Flintshire County Council requires a private ducting and supplied cable management system with any column installation exceeding 2 or more installations.

8.10.2 Where columns are remote from DNO mains **and** following approval by the street lighting engineer, supplies shall be taken at convenient points (feeder control pillars) and distributed to lighting units by private cables or modern and new technologies can be discussed and if agreed by the street lighting engineer installed as instructed.

The DNO will provide a supply within the highway boundary but normally not to a central reserve or traffic island. Lighting units (either columns or signs) sited in these areas will require a private cable supply which can be readily isolated in the near vicinity regardless of number of installations.

8.11 Private Underground Cables

8.11.1 When authorised for use by the street lighting engineer, private underground cables shall:

- ❖ Be PVC or XPLE insulated, steel wire armoured, PVC sheathed with stranded plain copper conductors, 600/1000V grade to BS 6346, or split concentric cable as agreed with the Street Lighting Engineer. All conductors shall be of equal cross sectional area and of such size as to carry the designed load and ensure that the voltage drop at the lamp column terminals shall not exceed 3% of the voltage at the supply points. Where a 24 volt supply cable is installed to feed bollards or traffic signs the minimum conductor size may be reduced to 2.5mm² subject to the approval of the street lighting engineer.
- ❖ Unless agreed with the street lighting engineer all cables shall be 3 core (live, neutral and earth). The cable shall be special “Street Lighting Cable” and shall be marked as such and shall have the cores coloured as brown (live), blue (neutral) and yellow/green (earth).
- ❖ Be manufactured by a ‘BASEC’-registered manufacturer.
- ❖ Loop between lighting units in a circuit arrangement, feeder pillars, illuminated signs etc. with no underground jointing being permitted. Illuminated signs or bollards shall be fed by cables from lighting columns or feeder pillars. Under no circumstances must cable feeding a lighting column be looped through a sign or bollard.
- ❖ Buried cable shall have a minimum length of 2m left as a loop at all feeder pillars and at least 1m within the ducting chambers at column entry points.

8.11.2 No more than three cables shall terminate at a lighting unit and no more than two at an illuminated sign or bollard.

8.11.3 Private 5 core, three-phase sub mains may be laid between feeder pillars.

- 8.11.4 All cables and cable ducts shall be laid on a bed of sand 100mm deep and covered with a sand layer of equal depth. A yellow, self-coloured PVC or plastic tape, not less than 0.1mm thick and 150mm wide with the wording "STREET LIGHTING CABLE" printed along the full length occupying not less than 75% of its available length and occurring at least at 1m intervals, shall be laid within the backfilling material approximately 250mm vertically above the cable or duct line.
- 8.11.5 The street lighting engineer shall be advised, at least 15 working days in advance, by the developer of any proposed installation of cable or cable ducts in order that inspection of the cable or duct may be undertaken before it is covered.
- 8.11.6 Cables shall be individually terminated and secured at switches, cut-outs and other electrical apparatus by means of an armour securing clamp or an aluminium compression-type gland complying with BS 6121 or BS EN 50262 and a gland plate. The armour securing clamp or compression gland and plate assembly shall incorporate at least one non-ferrous earthing terminal. All glands shall be shrouded overall with PVC sleeves and CET system terminations shall be suitably protected.
- 8.11.7 All cable terminations shall be provided with a non-ferrous label or tag onto which is indelibly marked the cable size and the origin or destination of the cable run.
- 8.11.8 Earth electrodes shall be provided at the penultimate unit of each private circuit and if necessary at additional points in order to obtain the necessary test results. They shall comply with Engineering Recommendation G12/2 published by the Electricity Association. The earthing system components shall comply with BS7430; the rods shall be cast gun metal with phosphor bronze bolts. The terminal point shall be protected by a purpose-made inspection pit complete with a heavy duty cover and frame.
- 8.11.9 In the event of cable damage, however slight, to any lighting or electrical unit the developer or it's representative shall immediately inform the street lighting engineer who will assess the damage and determine what action is required. The repair of the damaged cable shall be treated as directed by the street lighting engineer and shall be carried out at the developer or it's representative expense.
- 8.11.10 Failure to report and rectify such damage or defects will be treated as a noncompliance to the specification and approval and as such could result in further investigational works being instructed by the street lighting engineer with all required operations and works being carried out at the developer or it's representative expense.
- 8.11.11 Sheath damage shall be repaired by an approved sheath repair under instruction of the street lighting engineer.
- 8.11.12 If the damage to any cable extends into the cable armouring, then a new length of the same cable is to be installed, as follows:-

Jointed System, the existing 'tee' service joints for each column either side of the damaged area are to be cut out and a new length of cable jointed in. The new joints are to incorporate the straight joint connection between the existing cable and the new, together with a new cable to the lighting column laid adjacent to the original cable route. The old cable is to be removed.

Looped System, the existing cable 'loop' shall be replaced between adjacent columns.

All and any such defect and damage repair shall be carried out at the developers or it's representatives expense and in accordance with and satisfy the street lighting engineer.

8.12 Ducting Systems – Refer to Standard Details

- 8.12.1 The type of ducting system to be installed i.e. ducted or fully ducted together with approved manufacturers shall be stated in Appendix 9.
- 8.12.2 In order to facilitate future maintenance all private cables shall be installed in a ducted system which shall have draw chambers installed at major changes of direction and at the ends of each road crossing.
- 8.12.3 In fully ducted systems the arrangement of ducting and cable access chambers shall be so constructed that any cable can be installed or replaced without the need for any further excavation in the ground, carriageway or footway.
- 8.12.4 Cable ducts shall be a minimum of 100mm nominal diameter for road crossings with a minimum of four ducts for carriageways and a minimum of two for footways per run unless agreed with the street lighting engineer. 50mm orange flexi ducting shall be used connecting ducting and chambers to columns and sized in accordance with the recommendations in BS 7671. They shall be pliable, non rigid, plain, high or medium density, smooth bore polyethylene with a minimum wall thickness of 5mm or twin wall duct to BS EN 50086.2.4 and coloured orange with the words "STREET LIGHTING" painted in 9mm lettering along the length of the duct at intervals of not more than 1m. When laid, the wording shall be uppermost, and all lengths will be jointed or sleeved to give a continuous smooth bore.
- 8.12.5 Ducts should be impervious to water, impact resistant, capable of being laid at temperatures down to -10°C and sufficiently flexible to follow undulations in the trench bottom. They shall be of sufficient strength to not require concrete surround or granular or selected backfill at the depths laid.
- 8.12.6 Where ducts are installed for use by the DNO they shall be installed generally in accordance with this section however the duct shall be coloured black and no intermediate chambers are required between the DNO main or supply point and the cable termination point. However, a chamber will be required at the point in which the supply to the relevant feeder pillar is situated.
- 8.12.7 Ducts shall be swabbed through prior to drawing-in the cable(s). On completion of the cabling the duct shall be left with a pigmented stranded polypropylene or equivalent, rot-proof material draw rope of 20KN breaking load and having a design life of not less than 20 years. Ends of ducts not terminated at an access chamber shall be sealed to prevent the ingress of water along with all ducts within the relevant feeder pillars.

The street lighting engineer may require additional ducts to also be capped or terminated and these will be instructed on a site by site basis.

- 8.12.8 Access chambers (minimum dimensions 300 x 300mm) shall be modular and of sufficient size to enable easy access to the cables having regard to their depth. The units shall be manufactured from high-density polyethylene, stackable and with preformed cut-outs for the cable duct entries. The developer or its representative shall submit details of the type/manufacturer of the access chambers he proposes to use for approval by the street lighting engineer. Flintshire County Councils preferred stacking system is the Titan 1 D400+ range of chambers.
- 8.12.9 Chamber covers and frames shall be manufactured to BS EN 124 and shall be at least class B125 (please refer to Standard Detail for alternatives, depending on the location of the cover and frame). All covers and frames shall be designed to carry the loading

appropriate to the installed location. Cover frames shall be deep frame style and fully bedded on a concrete base, surround and accurately set for level and position, if necessary on a 225mm thick plinth, and aligned with the nearest adjacent kerb or building

8.12.10 Excavation around chambers and manholes shall be backfilled with fill material complying with BS 1377 Part 2, properly compacted. Where mechanical compaction is impracticable, the excavation shall be backfilled with mix ST2 concrete complying with BS 5328 and of 150mm minimum thickness. All such installations shall fully comply with the manufacturers guidance or shall have prior permission to defer from these from the street lighting engineer.

8.12.11 Any chamber installed within a soft verge, grass space or open space shall have a mowing strip installed at least 250mm surrounding the frame and have a slightly raised position with the concrete plinth/surrounding being taped away from the lid and frame towards the open or grass verge/space. All such installations shall fully comply with the manufacturers guidance or shall have prior permission to defer from these from the street lighting engineer.

8.13 Trenches for Cables and Cable Ducts - Refer to Standard Details

8.13.1 All excavations shall be made with vertical sides unless otherwise approved by the private street works engineer. The sides of trenches and pits shall be adequately supported at all times so as to maintain the stability of the adjacent ground. Support shall conform to CP 2003 Earthworks Part 2 - Trenches, Pits and Shafts.

8.13.2 Trenches shall be excavated to the depth shown on the standard detail in order to give a depth of cover of approximately 450mm in verges, footways and open ground and 750mm under carriageways. The width of the trench shall be kept to a minimum.

8.13.3 Adequate precautions shall be taken to prevent water collecting in excavations. Whenever water collects in an excavation it shall be pumped out and the bottom of the excavation allowed to dry before cable or duct laying commences. All chambers shall have a concrete base with adequate drainage and a covering of pea gravel.

8.13.4 Backfilling shall be undertaken immediately after the laying, inspection and surrounding of cables or cable ducts using fill material complying with BS 1377 Part 2.

8.13.5 The reinstatement of all trenches shall conform to the appropriate section of the New Roads and Street Works Act, 1991 Specification for the Reinstatement of Openings in Highways and the requirements of this document in respect of trench reinstatement except that the first 200mm depth of backfill shall not contain any material having a nominal size exceeding 40mm and that the developer shall spread and compact the backfill material evenly so as not to dislodge, disturb or damage the cable or cable duct. No power rammers shall be used within 300mm of any cable or cable duct.

8.14 Feeder Pillars

8.14.1 A list of approved manufacturers may be sought from the street lighting engineer.

8.14.2 The location of feeder pillars shall be agreed with the street lighting engineer on site prior to installation. Where the feeder pillar is sited in soft landscaping areas and it is not possible to park a vehicle immediately adjacent, the street lighting engineer may require the construction of a hardstanding for use by maintenance vehicles.

- 8.14.3 Feeder pillars shall be constructed from not less than 5mm thick steel. They shall be sealed to minimum IP65 on the doors and IP45 on the vent louvres. They shall include a full size marine backboard of varnished marine plywood at least 15mm thick or other approved non-hygroscopic material. Alternatively, a purpose-designed equipment mounting system may be used. The entry for cables shall be via the roof.
- 8.14.4 Doors shall be fitted with standard tri locks. The locking mechanism shall be lubricated with grease immediately following installation. Two sets of keys shall be provided to the street lighting engineer prior to the adoption of the installation if the key mechanism is of a different or non standard style, otherwise, the standard number of keys as previously explained shall be forwarded upon adoption.
- 8.14.5 Where directed by the street lighting engineer, ventilation shall be provided to prevent the build-up of condensation and in such cases the feeder pillar shall be protected by vermin-proof screens.
- 8.14.6 Protection against corrosion shall be by hot-dip galvanising to BS EN ISO 1461, the minimum coating thickness to be in accordance with Table 2 thereof.
- 8.14.7 All doors are to be provided with an earthing strap in accordance with clause 8.10.7, above.
- 8.14.8 The developer or it's representative shall submit details of the feeder pillars which are proposed for use in the installation to the street lighting engineer for approval before work on the installation commences.
- 8.14.9 Feeder pillars shall be mounted on a 250mm thick foundation of concrete ST2 mix complying with BS 5328. They shall be rooted or provided with fixing bolts to enable the unit to be securely located. Unless stated in Appendix 2, after completion of the cabling, any void under the feeder pillar base shall be filled to 25mm below the door with rounded aggregate, maximum size 14mm, and sealed overall with a cold pour compound of an approved type to prevent the ingress of moisture from below allowing for a drainage pipe to be installed. A minimum of x 1 spare 100mm diameter cable duct shall be provided through the concrete surround from the base of the feeder pillar.
- 8.14.10 For feeder pillars sited in grassed areas, a 600mm width of hard surfacing shall be laid with the surface flush with the ground across the width of the feeder pillar in front of the door. The other sides of the feeder pillar shall be similarly surrounded with hard surfacing 200mm. in width. All hard surfaced areas shall slope away from the feeder pillar.
- 8.14.11 The feeder pillar shall be a minimum of 110mm x 150mm x 700mm size but shall be sufficient to accommodate:
- ❖ The incoming supply cable including cut-out.
 - ❖ A lockable double pole isolator [if not included in the cut-out].
 - ❖ Any contactor and/or photocell relay.
 - ❖ A distribution board for all highway electrical feeds including sufficient spare capacity to accommodate at least one extra circuit.
 - ❖ All necessary fuses and the like.
 - ❖ At least 25% spare space on the backboard upon completion.

8.14.12 Where larger feeder pillars (where a distribution fuse board is installed) are required the following additional equipment shall be installed:

- ❖ Heater (inc of frost stat)
- ❖ RCD
- ❖ Interior light (low energy)
- ❖ 13A Socket
- ❖ Documentation wallet
- ❖ Isolator (preferred option is a rotary type)

8.14.13 Distribution fuse boards of the HRC type shall be provided with an external earth, phase barred and colour coded. They shall be fitted with the same number of live and neutral bus bar terminals as there are outgoing circuits plus at least one spare way.

8.14.14 A circuit diagram and labelling showing details of interconnection of equipment and the connection of cables to and from the pillar, all indelibly drawn or engraved on a material not subject to damage by the environment or normal use, shall be securely fixed internally to each feeder pillar after completion of the installation.

8.14.15 An earthing system shall be provided in each feeder pillar. It shall accept the incoming earth facility from the supply authority onto an earthing bar or terminal strip and interconnect all outgoing cable earth connections and the bonding of the feeder pillar. The earthing facility shall accommodate up to 25mm² conductors. Where required by the street lighting engineer, a suitably rodded external earthing system as specified previous, shall also be provided, independent of and in addition to, any earthing system provided by the incoming supply authority/company.

8.14.16 All feeder pillars shall be fitted with a durable warning sign, fitted externally and in a prominent position, indicating "DANGER 415 VOLTS" or "DANGER 240 VOLTS" as appropriate and a 'lightning flash' in black on yellow.

8.15 Electrical Equipment Fixed to Buildings

8.15.1 Where approval has been given under Clause 2.1.4 for highway electrical equipment to be fixed to buildings the following Clauses apply.

8.15.2 Cables fixed to the surface of a building shall be PVC sheathed cables or 'Hituf' cable or other alternative approved by the street lighting engineer. The colour of the cable sheath shall be such as to blend with the colour of the building or structure. In environmentally sensitive areas, cables may need to be painted to match the colour of the building. Surface cables shall be protected by means of galvanised steel conduit or cable shield up to 2.5m above ground level. Mains supplies shall be terminated in mini feeder pillars sited in the highway and the conduit made off into this.

8.15.3 All terminations of surface cable are to be completed using glands of approved manufacture. The making-off of such glands shall only be carried out by suitably qualified personnel.

8.15.4 The use of junction or termination boxes shall be restricted to those locations adjacent to the wall brackets where it is necessary to terminate the surface cable and to provide a heat resistant flexible cable [within a flexible conduit if necessary] from the box to the lighting unit.

8.15.5 Cables shall be supported on the building surface using approved saddles, the spacing of which shall conform to the recommendations of BS 7671.

- 8.15.6 The dimensions of the base plate of wall brackets must be kept to a minimum having fixed centres generally not greater than 200mm in the vertical or horizontal planes. All brackets shall be fixed with 4 bolts of sufficient size for the anticipated loadings. Fixing details and calculations of loading from a Structural Engineer must be submitted to the street lighting engineer prior to approval being given for the installation to take place and independent test certificates for the fixings shall be submitted after installation.
- 8.15.7 The internal surfaces of all fixing holes drilled into walls or other structures shall be sealed with an approved silicone sealant prior to the insertion of the fixing bolts.
- 8.15.8 All wall brackets shall be installed to provide the designed mounting height of the lantern above ground level.
- 8.15.9 Electricity supply cables shall be terminated in a weatherproof control box of minimum size to accommodate the cut-out and any control or isolation equipment.
- 8.15.10 Wiring between the control box and the wall bracket shall be carried out using cables specified in previously in the specification and they shall have a minimum conductor size of 1.5mm² or better. All cable glands shall be fitted with PVC shrouds.
- 8.15.11 Control boxes shall be constructed of galvanised steel or corrosion resistant alloy or ABS or GRP but shall be approved by the street lighting engineer for each application and location. They shall be sealed to a minimum IP54. Doors shall be fitted with tamper-proof locks of the same pattern as used for columns. The control box shall incorporate a backboard of hardwood or other non-hygroscopic material onto which the control equipment, service cable and cut-out can be firmly fixed.

8.16 Electrical Charging and Electrical Vehicle Charging Points

- 8.16.1 It is the responsibility of the developer or it's representative to notify the DNO of an electric vehicle charge point installation. To notify the DNO of an electrical vehicle charging point or electrical charger installation, you must complete an ENA application form and email it to the local DNO. Completion and submitting the form itself is not acceptance of the installation and if the installation effects the adoptable highway network or Flintshire County Council infrastructure then further consultation and approval will be required from the street lighting engineer.
- 8.16.2 EV charging cables can not crossing the adopted highway network including pavements, footways or paths. You cannot place any electric vehicle charging cable across the pedestrian footway, even if it is covered by a cable cover or mat.

This is because a power cable running across the footway, even if covered, is a potential hazard. It can also make access more difficult for disabled and vulnerable groups. If an injury occurs, this might result in a liability claim for the homeowner or occupier and the authority.

Flintshire County Council have a legal duty to ensure the safety of the highway in accordance with the Highways Act 1980 and the Health and Safety at Work Act 1974. Placing an obstruction such as a wire or cable across the highway in a way likely to cause danger is an offence under the Highways Act 1980. Any electrical equipment on the highway also must be certified and regularly tested as electrically safe.

- 8.16.3 To apply for such requests to install or have a charge point or cable in such locations the developer or it's representative must engage with the planning department and complete

the relevant applications from a planning aspect and also complete a Streetscene and Transportation application form for the approval of the erection of equipment onto street furniture and items in or above the Highway upon Flintshire County Council illuminated or non illuminated street furniture.

All applications for such installations will be viewed on a site by site basis and shall not proceed until the street lighting engineer has agreed and confirmed the installation. Certain installations may incur or have certain restrictions, timeframes and conditions applied upon them.

- 8.16.4 The installation and maintenance of such installations will require ongoing communication between the asset holder and Flintshire County Council (street lighting engineer) to ensure the safety of all. These requirements will be confirmed upon any approval and will be binding to the party or asset owner in question.

8.17 Defibrillator (AED)

- 8.17.1 The UK Government has announced that by the end of the academic year 2022/2023, all schools in England should have at least one AED on their premises. Employers are encouraged to consider providing an AED as part of their first aid risk assessment. In turn the Welsh Government recognises the value of defibrillators in certain circumstances and the Welsh Ambulance Trust (WAST) has introduced them into key public spaces.

A person's chance of surviving an out-of-hospital cardiac arrest decreases by an estimated 10% with every passing minute. Currently, every year in Wales around 6,000 people suffer sudden cardiac arrest. Therefore to increase a persons survival rate Flintshire County Council will consider the installation of defibrillators on the adopted highway network.

- 8.17.2 A defibrillator uses moderately high voltage (between 200 and 1,000 volts) to shock the heart, which essentially resets the SA node and forces it to resume its normal electrical activity. The voltage delivered to the patient depends on the presence of a heartbeat and how strong, fast, or slow it is.

In order to work properly, an AED does require some maintenance, or it may not work reliably in an emergency. Other than replacing parts as recommended by the manufacturer, this primarily involves regular testing and inspections as directed by the manufacture.

- 8.17.3 Who is responsible for the maintenance of defibrillators ?

The defibrillator would remain within the ownership of the organisation or community whom has installed or requested the installation. It would be their responsibility to ensure that it is checked regularly, to establish that it is in good working order and that the defibrillator pads are in date. It would also be their responsibility to ensure the safety of the unit and that it causes no danger to the public or wider user.

- 8.17.4 Do defibrillators have to be registered ?

It is important that the owner of the unit(s) make sure all machines are registered with the national defibrillator network, 'The Circuit' enabling the emergency services to locate and advise you where the nearest defibrillator is should a user need this, potentially, lifesaving piece of equipment.

- 8.17.5 How do I apply for the installation of a defibrillator (AED) on a Flintshire County Council asset/infrastructure or adopted highway network ?

As this is a new technology and only a small number of units have been installed, Flintshire County Council, Streetscene and Transportation are still reviewing and assessing the most practical and best solution for such installations.

It is therefore requested that early engagement and communication is made via the group, developer or it's representative with the street lighting engineer. Following this communication, a number of actions shall take place (subject to amendment during the process) and the following will be required to assess and confirm the suitability of the installation.

- ❖ Contact details (Owner/Location/Installer/Maintenance)
- ❖ Defibrillator type
- ❖ Shock profile (joules)
- ❖ Battery life (years if unused) and replacement process
- ❖ Electrode life (standby mode) and replacement process
- ❖ CPR information and guidance
- ❖ Child use (7 and under)
- ❖ IP rating
- ❖ Confirmation of language
- ❖ Weight and (windage if required)
- ❖ External communication and data connectivity
- ❖ Maintenance period
- ❖ Energy use and confirmation of payment process of the units energy
- ❖ Installation location (proposed)
- ❖ Cabinet unit to be used along with electrical standard classification
- ❖ Cabinet information

8.17 Vehicle Activated and Messaging Signs

8.17.1 The Road Traffic Regulation Act (RTRA) defines a traffic sign as: “any object or device (whether fixed or portable) for conveying to traffic on roads or any specified class of traffic, warnings, information, requirements, restrictions or prohibitions of any description...”. Lawful traffic signs must either be prescribed by regulations or authorised by the Secretary of State.

The Traffic Signs Regulations and General Directions (TSRGD) define a variable message sign as: “a device capable of displaying, at different times, two or more aspects...”. These aspects may take the form of a sign prescribed by TSRGD, a legend in accordance with Schedule 15 to TSRGD, a non-prescribed temporary sign or a blank grey or blank black face. Thus, the expression “variable message sign” (VAS) encompasses all types of variable sign from simple flap-type fixed signs to complex light-emitting panels.

8.17.2 A VAS may only be placed on or near a road if it is of a type approved by the Secretary of State. This type approval applies to the equipment in its entirety, including the content of all instructions stored in or executable by it, and any equipment used in connection with the sign. The requirements and approval process are set out in Highways Agency document TR 2516B5, “Performance Specification for Discontinuous Variable Message Signs”.

All parts of the sign other than those facing traffic should be coloured in a dark colouring such as grey or black and/or be in a nonreflective metallic finish. Any lettering required for identification purposes should be no more than 25mm high on the sign housing or, if applied by means of a label, should be printed on a label that is either transparent or the same colour as the sign housing. On no account should any label or any part of the sign housing comprise retroreflective material. VAS must conform to the requirements of BS EN 12966-1:2005+A1:20096.

Any such deviations or additional requirements outside of these will require an appropriate method statement which will require full approval from the street lighting engineer in be in accordance with the Welsh Government Procedure & Advice Guidance (PAG) 106/16.

8.17.3 It is important to recognise that the use of VAS and VMS they are not only utilised for speed management initiatives but also for aspects such as

- ❖ The use of appropriate speed limits with the associated signing
- ❖ Specific speed awareness and campaigns
- ❖ Speed education and driver awareness
- ❖ The use of physical and non physical traffic calming measures
- ❖ To educate road users
- ❖ To identify a specific hazard (Cattle Crossing, School Crossings etc)

8.17.3 All locations which require such installations are required to be fully assessed by the street lighting engineer and then approved prior to erection or installation regardless of permanent or temporary requirements. Such applications will require complete adherence to the relevant standards and a method statement for erection from the proposer, the developer or its representatives.

The method statement and request shall include the following

- ❖ The rationale for the installation
- ❖ Date range of the installation
- ❖ Supply requirements and supply point including the relevant UMSUG code
- ❖ Confirmation to the relevant standards
- ❖ Confirmation of compliance of the unit to be installed to Flintshire County Council Standards
- ❖ Installation requirements and proposal
- ❖ Funding stream and or commuted sum

8.18 New Technologies and Out of Scope Installations

8.18.1 Any new or proposed technologies and out of scope developments, apparatus or equipment will be assessed subject to service and Flintshire County Council requirements and service needs.

All such applications and requests should be presented directly to the street lighting engineer for consideration. All and any such proposed technologies will be subject to full approval form the street lighting engineer and may be rejected. This equipment, if approved may require an increased commuted sum and will be calculated and agreed by the street lighting engineer and the proposed developer or its representative.

Reasonable additional requirements maybe imposed by the street lighting engineer subject to the proposed equipment and its location in which it is to be utilised and operated at and for.

Appendix 1 – Schedule of Proposed Lighting Equipment
(to be completed by the Developer or its Representatives for approval prior to any installation work)

Proposed Development at: _____

Developer: _____

Address: _____

Contact Details: _____

Agent / Contractor: _____

Address: _____

Contact Details: _____

DETAILS OF PROPOSED PUBLIC LIGHTING INSTALLATION

- Does this development form part of a larger development? _____
 If so, Please provide additional details _____
- Will the street lighting on this development be installed in phases? _____ No. of Phases _____
- No. of lights: on this phase _____ on whole development _____

COLUMNS

Mounting Height	Material	Manufacturer's Name	Catalogue Name / Ref.	Bracket Type	Outreach

LANTERNS

INTERNAL WIRING

Type (Side Entry etc.)	Manufacturer's Name	Catalogue Ref	Bowl Material	Cable Size	Type

LAMPS/LIGHT ENGINE

ELECTRONIC BALLAST

Type	Wattage	Manufacturer	Manufacturer	Model / Cat. No.

SWITCHING CONTROL

Group or Individual	P.E. Cell	Type	Manufacturer	Cat. No.	Location of Switch Points if Group Control

LOCKABLE DOUBLE POLE ISOLATORS

Manufacturer	Model / Cat No	Rating

FEEDER PILLARS

Manufacturer	Model / Cat No	Location

ELECTRICITY SUPPLY

No. of Lights on Direct Mains	No. of Feeder Pillars	Type and Size of Loop Service Cable		No. of Lights On Circuits	Material of Feeder Pillar	Manufacturer of Feeder Pillar
		Circ. 1				
		Circ. 2				
		Circ. 3				

ADDITIONAL INFORMATION

I agree to comply with / to the Flintshire County Council Street Lighting Specifications and adhere to it's content

SIGNED _____

NAME _____

ON BEHALF OF _____

DATE _____

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 2

Flintshire County Councils preferred Lanterns, Illuminated Traffic Signs, Bollards, Centre Island Lamps and Traffic Signs

All lanterns are to be fitted with electronic ballasts or drivers with a warranty of 10 years for ballasts and 12 years for drivers, PECU of 12 years, Son lamps 5 years and CPO lamps 4 years. These shall be given to Flintshire County Council in writing prior to adoption with an installation date.

In order to assist with future maintenance, the Council requires that the lanterns used shall be chosen from the current approved list or unless approved by the Street Lighting Manager in writing.

Functional and Modern Lanterns

Residential Roads, Industrial Estate Roads, Primary Roads, Principle Roads, Town Centres and Public Areas

Vision Lockheed / Valiant Range (Nema, AKZO900 Aluminium Body).

Functional and Modern Lanterns

Paths and Footways

Vision Lockheed / Valiant Range (Nema, AKZO900 Aluminium Body).

Alternative Functional and Modern Lanterns

To be approved by the Street Lighting Manager.

1930's Lantern or Heritage Lantern and Other Lanterns

All Areas

To be approved by the Street Lighting Manager.

Dimming or Remote Monitoring Equipment

All Areas

To be approved by the Street Lighting Manager.

Type A and B traffic Sign Lighting, Bollard and Other Traffic Sign Lighting

All Areas

LED (To be approved by the Street Lighting Manager)

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 3

Flintshire County Councils preferred mounting height and type of Columns

Residential Roads and Subsidiary Roads

6 Meters steel galvanised, tubular column heavy duty (CU Phosco R2506T01H5030 or similar approved)

Paths and Footways

5 or 6 Meters steel galvanised, drop down, tubular column heavy duty (CU Phosco RM505T01H50 DL2 / RM506T01H50 DL2 or similar approved)

Industrial Estate Roads and Car Parks

6 or 8 Meters steel galvanised, tubular column heavy duty (CU Phosco R2506T01H5030 / R2608T01H5040 or similar approved)

Main Traffic routes

8, 10 and 12 Meters steel galvanised, tubular column heavy duty (CU Phosco R2608T01H5040 / R26010T01H5040 / R2612T01H5040 or similar approved)

High speed and Dual carriageways

12 and 15 Meters steel galvanised, tubular column heavy duty (CU Phosco R2612T01H5040 or similar approved)

Miscellaneous and other locations

To be submitted for approval by the Street Lighting Manager.

Alternative Column Sizes

To be submitted for approval by the Street Lighting Manager.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 4

Energy and Maintenance

- 1 Prior to adoption by the County Council, the Developer will place with Flintshire County Council a commuted sum equivalent to 10 years of energy consumption for the system being adopted and for maintenance of the system for a period of 10 years. These commuted sums will be communicated to the Developer during the pre-adoption process.
- 2 The Developer shall otherwise remain responsible for the whole installation including three yearly cleaning and lamp changing as required (evidence to be retained and made available on request) replacement in the event of accident or vandal damage, etc., until the date of formal adoption of the installation.
- 3 If adoption isn't agreed within 2 years from the date of the approval, then a full bulk lamp (where lamps are used), ballast / driver, photocell and associated parts change will be required. If adoption isn't agreed within 8 years from the date of the approval then a complete lantern and associate parts change will be required, this may at the Street Lighting Manager discretion also include columns and posts. If adoption isn't agreed within 10 years from the date of the approval then a complete column/post replacement scheme shall occur.
- 4 In the event of an emergency situation arising prior to adoption, such as vehicular accident damage, column doors missing etc, and when the Developer cannot be contacted within 15 minutes, the Council reserves the right at its sole discretion to arrange for its Street Lighting Department to be dispatched to make safe and to recharge the Developer with the costs incurred.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical
Infrastructure

APPENDIX 5

Painting

1. When required or instructed painting shall comply with the following:

Any access doors shall be removed to enable the edges of the door and the exterior of the item normally covered by the door to be painted. All removable attachments to items to be painted shall be removed prior to painting and replaced upon completion of painting. Generally these will comprise column number plates, litter bins, banding tape and small signs and notices. The correct unit number plate must be replaced within one working day of completion of painting.

2. Preparation

All surfaces to be painted must be free of dampness, grease, frost etc, and shall be cleaned down by scrubbing using a stiff bristled brush, clean cold water and a detergent and finally rinsed down with clean cold water. All areas of rust, scaled and flaking paint must be scraped, wire brushed and abraded to bright metal, if necessary using mechanical tools to firm a tight edge and a patch prime coat applied before the two main coats. All preparation work shall be completed to the satisfaction of the Council's Representative before the application of a further coat of paint.

3. Paint Application

All paint shall be applied by brush only and should be well brushed into the surface of the metal and all parts shall be completely covered with a film of the specified systems and thickness. Application shall be as recommended in the paint manufacturer's Product Data Sheets. Product data sheets are to be submitted at the time of formal adoption or on request. Paints shall comply with the appropriate British or European Standard. All work involving a particular coat of paint shall be completed to the satisfaction of the Council's Representative before the application of a further coat of paint. Each coat of paint shall be of a different colour but the same colour shall be consistently used for any particular coat.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 6

Competence and Accreditation

1. The installer of the lighting and electrical installation must be NICEIC or ECA registered, National Highways Sector Scheme accredited and experienced in the installation of highway electrical equipment and qualified to provide official completion and test certificates.
2. The installer shall provide method statements including risk assessments and copies of the relevant cards as requested to the Street Lighting Manager before any works be undertaken for proposed adopted civil, electrical and illuminated works including any traffic or signalisation works within Flintshire.
3. All other miscellaneous operations (Contractor, Installers, Maintainers etc) based and covered within this documentation shall hold the above qualifications and accreditations along with other requirements as required and directed by the Street Lighting Manager's instructions and requirements. Such requirements maybe, Chapter 8, IPAF, Working At Heights etc
4. For variations to this and the above an application for and to carry out works within the adoptable highway network, Streetscene and Transportation infrastructure or for applications which affect the above, prior approval must be sought and gained from the Street Lighting Manager.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 7

Remote Monitoring System, New Technologies and Energy Saving Equipment

- 1 Dimming is to be installed in all new developments where appropriate only after discussion and acceptance from the Street Lighting Manager in writing.
- 2 Further details will be provided by the Council when the design is submitted or upon request from the Street Lighting Manager.
- 3 New technologies and energy saving equipment maybe installed only after discussion and acceptance from the Street Lighting Manager in writing, in line with Flintshire County Council Policy.
- 4 All Photocells installed shall be 55/28 lux or 35/18 which will be confirmed by the Street Lighting Manager.
- 5 Following Flintshire County Councils Policy certain locations shall be part night switched. These locations will be advised to the installer and / or developer upon application and submission of design.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 8

Sign Plates and Banners

- 1 Sign plate(s) with a total projected windage area in excess of 0.3 sq.m shall not be affixed to lighting columns unless approval has been sought from the Street Lighting Manager in writing prior to the installation.
- 2 Banners shall not be affixed to lighting columns unless approval has been sought from the Street Lighting Manager in writing. Any banners installed without prior consent shall be removed with all costs incurred borne by the person or company who installed the banners.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 9

Flintshire County Councils preferred ducting arrangement

- 1 Titan 1 plastec range or similar approved by the Street Lighting Manager on site by site basis inc of deep frame lid and frame. Chamber to be a D400+ with a lid of B125.
- 2 A minimum of 2 Orange 100mm ducts to be installed (450mm) at all locations within a pathway or footway and a minimum of 4 Orange 100mm ducts to be installed at road crossing (750mm). With at least 2 Orange 100mm ducts spare for road crossings and 1 Orange 100mm duct spare for footways. No more than 4 cables to be installed within any duct without prior approval from the street lighting engineer.
- 3 1 Orange 50mm duct is to be installed from the duct box to the 300mm sleeve to the column entry port with a minimum of 300mm internally protruding upward towards the cut out within the column.
- 4 Drainage is to be installed in all chambers and feeder pillars with a bed of gravel. For clarification on installation please discuss and seek approval from the Street Lighting Manager.
- 5 The Street Lighting Manager shall be provided with a set of access keys from the developer or its representatives to and for the chambers at 1 set per every 16 chambers installed prior to final adoption.

Flintshire County Councils preferred feeder pillar arrangement

- 1 All feeder pillars are to be hinged and a minimum of 5mm thick, please discuss and seek approval from the street lighting engineer for feeder pillar requirement on a site to site basis.
- 2 Drainage is to be installed in all feeder pillars with a bed of gravel. For clarification on installation please discuss and seek approval from the Street Lighting Manager.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 10

Commuted Sums

1. A commuted sum shall be applied to all proposed Street Lighting, Traffic Signals and External Electrical Infrastructure which is placed forward for adoption. These shall be calculated by the Street Lighting Manager on a site by site basis and subject to and in line with the street lighting policy.
2. An agreement between the developer or its representative and the street lighting engineer will be discussed and agreed where a standard of materials exceeds the standard specification and as such, shall incur higher maintenance costs, a commuted sum shall be calculated and agreed prior to the granting of technical approval. This is discussed and explained within the documentation.
3. The commuted sum shall be payable to the authority prior to adoption of the completed scheme.
4. The commuted sums shall be calculated by the street lighting engineer which will include items and materials such as the following and their proposed life span/warranty period as defined by the Street Lighting Manager for example:
 1. Columns
 2. Brackets
 3. Lanterns
 4. Photocells
 5. Light engines/LED's/Lamps
 6. Cable and associated parts
 7. Feeder pillars
 8. Ducting chambers and associated parts
 9. Internal items within columns and feeder pillars
 10. Maintenance visits
 11. Electrical and structural inspections
 12. Energy use

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 11

Close Circuit Television (CCTV)

1. All CCTV applications and installations within and viewing over the adopted highway network or Streetscene and transportation infrastructure will require prior approval for erection and use from the Street Lighting Manager.
2. All relevant documentation in relation to the erection, maintenance and requirement shall be forwarded to the Street Lighting Manager for consideration and approval.
3. All contractors, installers, maintainers and appropriate users shall hold the relevant and required qualifications, experience and accreditation as required by the Street Lighting Manager.
4. All contractors, installers, maintainers and appropriate users shall adhere to the BS 7958 and Surveillance Camera Code of Practice.
5. All installations shall be in accordance with the Street Lighting, Traffic Signals and External Electrical Infrastructure Policy, Design and Requirement Specification. As such all requirements for installation, testing, maintenance and removal shall be adhered to.
6. All contractors, installers and maintainers shall hold the relevant qualifications, experience and accreditation to carry out the required operations within the highway and on the adoptable systems. These must be in accordance with the Competence and Accreditation section above.

FLINTSHIRE COUNTY COUNCIL
Design specification for Street Lighting, Traffic Signals and External Electrical Infrastructure

APPENDIX 12

Street Lighting, Illuminated Street Furniture or Items Erected Over the Adopted Network

1. Application for approval to the erection of materials, illuminated, festive or decorative items in or above the highway or Streetscene and Transportation infrastructure upon Flintshire County Council illuminated or non illuminated street furniture or buildings requires prior approval from the Street Lighting Manager in line with the above specification.
2. To request erection in line with the above the application must complete the Street Lighting, Illuminated Street Furniture or Items Erected Over the Adopted Network application form within 28 working days prior to erection. Failure to comply to and with this timeframe could result in the application being automatically refused.
3. All electrical installations must have a supporting BS 7671 electrical test certificate on completion of installation and a confirmation test certificate upon removal. All Mechanical installations shall also forward proof of load bearing and installation requirements along with any windage calculations subject to the installation type.
4. All installations must be carried out by a reputable and competent installer and approved by Flintshire County Councils Street Lighting department in line with Flintshire County Council Street Lighting Specifications.
5. Installations can only commence after an acceptance certificate has been issued by the Street Lighting Department to the relevant parties. Failure to comply to and with this will result in refusal of the installation and all associated costs recharged back to the relevant party.
6. Any installation found to be defective will be rectified by Flintshire County Council Street Lighting Department and any cost incurred, will be recoverable.
7. By either erecting and or signing the agreement you consent to the above requirements, those as laid down specifically and accept any and all reasonable costs if the items are defective and or costs are incurred by Flintshire County Council.
8. Flintshire County Councils Street Lighting Department reserves the right to withdraw the approval for any noncompliance, operational requirements or any other reasonable requests. Under such applications it will be determined by the Operational North & Street Lighting Manager if a recharge shall be applied.