BEDFORD BOROUGH COUNCIL

Engineering Services

Lighting Policy (ENG/009)

April 2021

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Revision Date	Description	Author	Checked by	Approved by
Jan 2012	First draft	PW	MP	BH
July 2015	Section 7.16 amended	PW	MP	BH
May 2018	Section 7.18 added	DH	JS	MS
April 2021	Revised to reflect current standards/practises	JS	MS	MdA

1. Introduction

1.1 This policy outlines the basic principles and standards applying to street lighting, surface car park lighting, amenity and illuminated signage in Bedford Borough.

1.2 The term “street lighting” encompasses lighting and all other items of illuminated street furniture provided on the public highway (whether or not adopted by the Council), except traffic signals and electrically-operated vehicle information signs.

1.3 Well-designed and installed public lighting which is effectively maintained and operated can play a substantial part in a Local Authority’s duties to its Council Tax payers by:

- Improving safety.
- Reducing crime.
- Improving commerce.
- Improving the night scene.
- Making sustainable and non-motorised transport more attractive and friendly.
- Reducing energy costs and consumption.

1.4 Street lighting has many benefits if designed, installed and as importantly, maintained correctly. In the past some areas have been over-lit, and on occasion poorly-maintained. This street lighting policy aims to reflect current guidance on street lighting, lighting of traffic signs and updates the Council’s policy to reflect the aspirations of the Council’s Carbon Management Plan by taking into account the most recent advances in available technology and also external market pressures on the Council’s energy budgets.

2. Purpose & Key Implications

2.1 This policy has been created to outline the requirements for the installation and maintenance of all types of external public lighting owned or to be adopted by the Council. It should be read in conjunction with the Highways Design Guide and used as a master plan for all new installations, conversions, upgrades, refurbishments and day to day maintenance.

2.2 It further defines the standards to which all personnel must work; whether employed directly by the Council, as contractors working on behalf of the Council, or as private contractors constructing a new highway intended for adoption.

2.3 Legal Issues

2.3.1 The Council does not have a specific duty to provide street lighting but has a general duty of care to road users and the general public to ensure their safety. Provision of street lighting may reduce the risk of road accidents, discourage criminal activity and improve how safe people feel.

2.4 Policy

2.4.1 The street lighting policy supports many of the aims of Bedford Borough's Sustainable Community Strategy 2009-2021 (SCS). Those of particular relevance to street lighting are:

- Minimise carbon emissions and adapt to the impacts of climate change.
- Focussing on transport, business and homes.
- Reduce burglary, robbery and other serious acquisitive crime and criminal damage.
- Tackle anti-social behaviour.
- Tackle the fear of crime.
- Increase public confidence in the Partnership's delivery of community safety.

2.4.2 The Local Transport Plan for Bedford Borough (LTP3) has set out policies for delivering wider aims such as strengthening the economy and tackling social deprivation. Street Lighting is an integral part of delivering Local Transport Plans. In particular this street lighting policy has a role in supporting the following objectives of the LTP:

- Reducing road casualties through local safety schemes.
- Ensuring substantial improvement of opportunities for walking and cycling together with safer use of high quality public transport.
- Providing good illumination at bus stops and on walking routes.
- To address social exclusion, in aiding regeneration of disadvantaged areas.
- To protect and where possible enhance the quality of the environment in urban and rural areas.

2.5 Resource Implications

2.5.1 Repairs to street lighting faults and energy costs are primarily funded from the Council's revenue budgets. Column replacements are carried out in accordance with calculations aligned to GN22 Asset management Toolkit: Minor Structures (ATOMS) and structural test results.

2.5.2 A key aim of this policy is to decrease the Council's financial commitment for street lighting maintenance and increase value for money.

2.6 Risk Implications

2.6.1 The Council would be at risk of defaulting upon its statutory duties as Highway Authority if it did not have robust highway maintenance and transportation strategies in place. Effective policies, such as street lighting, support them.

2.7 Environmental Implications

2.7.1 Poorly-designed street lighting can cause light pollution, increase the fear of crime and be inefficient in its energy consumption.

2.7.2 This policy has been produced to identify areas where the Council can change existing work patterns to reduce the energy consumption of its existing and future street lighting. It will review technologies to ensure the most suitable equipment is specified to ensure the Council's objectives are achievable and sustainable.

2.7.3 The Council has replaced its lantern stock with new LED lanterns. These lanterns consume far less energy than previous installations and also provide a greater control of light spill, reducing light pollution. This project was completed in March 2018. All new LED lanterns will be compatible with the Council's Central Management System which will enable further energy savings through dimming, trimming and accurate energy reporting.

2.8 Equalities Impact

2.8.1 The design and maintenance of external lighting can potentially have a wide and varied impact upon equality issues. Issues that need to be considered as part of any policy changes or scheme designs include:

- Personal and property security issues.
- Possible reduction in community involvement after dark.
- Potential for increase in road traffic accidents.
- Possible increase in crime or fear of crime.

2.8.2 Community / personal safety fears are more acute within certain groups. When reducing the lighting in residential areas it is appreciated that residents may be concerned about the fear of crime in their immediate environment. It is also recognised that all local authorities have a duty under Section 17 of the Crime and Disorder Act 1998 to do all they can to reasonably prevent crime, disorder and anti-social behaviour. As such the effect of the removal of street lighting will need to be assessed in terms of this.

2.8.3 People from certain socio-economic backgrounds can also be acutely affected, for example shift workers who may walk / cycle to work could be adversely affected by proposals to reduce lighting levels.

2.8.4 Changes to street lighting may affect those who are elderly or disabled, including wheelchair users, those that are unable to walk unaided, and partially sighted people all of whom would find it increasingly difficult to get around with less lighting.

2.8.5 Surveys carried out by national charities also suggest that young women could be particularly at risk, and would feel more vulnerable if appropriate street lighting was not provided.

2.8.6 Modern well-designed street lighting can have positive effects on some of the issues mentioned above. For example, white light assists with colour rendering and an enhanced distribution (uniformity) of lighting can have a positive impact on those with visual impairments.

2.8.7 A Detailed Equality Impact Assessment (EIA) was carried out as part of the DfT Challenge Bid. The April 2021 revision of the policy was checked against this EIA and no changes resulted.

3. Legislation and Regulations

3.1 Street lighting systems installed and maintained within the Council area shall be guided by the following:

- Highways Act, 1980.
- The Management of Health and Safety at Work Regulations, 1999 and amended 2006.
- Electricity at Work Regulations, 1989.
- BS 7671 18th Edition Wiring Regulations.
- Traffic Signs Regulations and General Directions, 2020.
- The (Highways) Road Hump Regulations, 1999.
- New Roads and Street Works Act, 1991.
- BS 5489-1:2020 Design of Road Lighting.
- Well Managed Highway Infrastructure (ACoP).
- LTN 1/20 Cycle Infrastructure Design.
- PLG23 Lighting for Cycling Infrastructure.
- GN 01/20 Guidance Note for the Reduction of Obtrusive Light.
- Commuted Sums for Maintaining Infrastructure Assets.

4. Main Objectives

4.1 The purpose of lighting is to help create a better environment in which to live, work and play. Street lighting supports this by increasing safety, security and enhancing the night-time environment.

4.2 Between 2015 and 2018 all highway lanterns were replaced with new energy efficient lanterns and a Central Management System was installed for the majority of the Council's lighting stock, approximately 16,000 lights. The system reports faults directly and allows the council to control the light output of the lanterns. Some of the advantages of using a CMS with LED lanterns are as follows:

- Reduced energy bills. Replacing older lighting units with more modern energy efficient units (LED lights).
- LED lanterns are anticipated to last between 20 and 25 years with less maintenance requirements than traditional street lighting types.
- The functionality of the CMS system also allows other energy saving innovations such as dimming of lights or part night lighting to be introduced, trialled or modified in specific locations without the need for any works at street level.
- Reduced energy consumption by use of CMS. Precise wattage figures and precise lighting times can be used to calculate the energy used rather than traditional national average times.
- Lighting faults are reported directly to Bedford Borough Council's Highways Street Lighting department by the CMS . This improves our ability to maintain lights and has reduced the number of helpdesk calls and complaints about lights not working.

4.3 Delivery of this project was essential for the council as the majority of lighting stock was life expired and used significantly more energy in comparison to LED solutions. The Council's main objectives are:

- Provide a safe road network for all highway users.
- Help reduce crime and the fear of crime.
- Provide a cost-effective public lighting service.
- Energy conservation and sustainability in line with the Councils Carbon Management Plan.

4.4 The main considerations when taking into account the above objectives are:

- Avoid unnecessary lighting (All Environmental Zones).
- Avoid over-lighting.
- Reliability and maintenance of equipment.
- Whole-life costs.
- Co-ordinated street scene approach
- Electrical, structural and other safety issues.
- Location and accessibility of equipment.
- Structural and electrical testing.
- Passive safety.
- Use of innovative and maturing technology such as part-night lighting, variable lighting levels with electronic gear.
- Lighting for closed circuit television (CCTV).
- Local Action plans (Parish Councils) and BBC Policy.

5. General Statements

5.1 All street lighting work undertaken by the Council or on behalf of the Council will embrace the ten general statements listed below:

G1	Street lighting will be “all night” unless there is community support for part-time lighting.
G2	Light sources will be LED white light. 2700k, 3000k and 4000k will be used where applicable.
G3	The visual impact of lighting systems will be minimised and where possible the local environment enhanced.
G4	Lighting systems shall minimise pollution to the night sky.
G5	The Council will seek to reduce the street lighting maintenance burden by providing appropriate levels of lighting, and by trimming or dimming lights where it is appropriate to do so.
G6	Waste from lighting systems shall be eliminated, reduced or recycled.
G7	Lighting systems shall minimise the use of energy.
G8	Energy will be procured by the most advantageous means.
G9	The Council will continue to work with the Energy Provider (Distribution Network Operator, DNO) to ensure good provision of electrical services to our apparatus.
G10	All staff shall be competent to carry out the duties of their role.

6. Lighting Stanrds

6.1 The Council uses an internationally recognised environmental zoning system to define the lighting standards applicable to an area, setting out where street lighting is provided and the types to be specified:

Zone E0	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places.	E.g. Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places.
Zone E1	Country Parks, Sites of Special Scientific Importance and other Dark Areas.	E.g. areas that currently have very low population densities and with no or very intermittent lighting.
Zone E2	Areas of Low District Brightness (Rural Locations outside Zone E1).	E.g. where housing estate roads are constructed in a village where the existing lighting does not meet current standards, unless there is a road safety requirement which cannot be mitigated satisfactorily by other means i.e. signage and road lining.
Zone E3	Areas of Medium District Brightness (Urban Location).	E.g. areas that have medium / high population densities and most roads should already be lit to current standards.
Zone E4	Areas of High District Brightness (Urban Location).	E.g. areas that have high population densities and all roads should be lit to a current lighting standard. In urban centres with high vehicle or pedestrian use during hours of darkness, carefully designed lighting will not only provide adequate illumination for the motorist but where possible also provide an interesting and attractive ambience for people to enjoy themselves.

6.2 All new street lighting installations within the Council area shall be challenged as to whether it is required at all, but if so, shall be designed in accordance with the latest BS5489 and EN13201 and, wherever practicable, using the zone definitions below. Areas where illumination is proposed below the recommended standard will require approval from a Chief Officer.

The detailed requirements for the five zones are set out below:

6.3 Zone E0 – Dark – Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places

6.3.1 This situation is not present within the Borough.

6.4 Zone E1 Natural – Dark – Country Parks, relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.

6.4.1 Additional lighting should not be provided unless a safety audit recommends it.

6.4.2 The provision of lighting in accordance with BS5489:1-2020 and EN13201 will not be required, and a more strategic approach to locations adopted.

6.4.3 Where lighting is to be repaired or replaced, consideration should be given to the possibility of lowering the wattage or removing it altogether.

6.4.4 Light pollution must be kept to a minimum and suitable lanterns specified.

6.5 Zone E2 Rural – Low District Brightness (Rural Locations outside Zone E1)

6.5.1 The introduction of lighting into rural areas will be considered if it will encourage alternative modes of transport and reduce the dependency on private motor vehicles. This shall be considered alongside safety and environmental factors when deciding upon the need for lighting. However, lighting is also synonymous with urbanisation and may be unsupported by stakeholders. In rural locations where the existing lighting does not currently meet a standard then a risk based approach will be taken. It may be possible to consider deviation from the standards if this can be justified with engineering judgement.

6.5.2 In rural areas alternatives to lighting such as improved carriageway delineation, use of reflective studs, signing and lining should all be considered. An integral approach should be used to develop proposals which balance safety with environmental considerations and the concerns of local stakeholders.

6.6 Roads between Settlements

6.6.1 The general expectation is that street lighting should not be provided on roads between settlements in Zone E2 unless there is a known night-time road safety problem, which cannot be controlled by other methods.

6.7 Junctions

6.7.1 Complex junctions in Zone E2 areas shall only be illuminated if it has been shown that there is significant night-time traffic flow and that no alternative road safety measures would be effective. New lighting should be provided to the lowest level recommended by the relevant standard after a detailed risk assessment by the designer. This will then be applied to the minimum area necessary to address road safety risk.

6.7.2 Rural roundabouts shall be provided with a lighting system designed to the minimum recommended level in the relevant standard.

6.8 Villages

6.8.1 Villages and settlements within Zone E2 area would generally be provided with lighting in accordance with the relevant minimum standard applicable to the type and use of the highway. Where the surrounding lighting system does not meet a standard we will carry out a risk assessment of the site. This will consider the hazards particular to the area to assess whether lighting to the current standards is required. Consideration shall be given to the provision of lighting where any of the following circumstances apply:

- Lighting of footpaths and cycle tracks with high night-time use.
- Where there are a high proportion of pedestrians who may be vulnerable, such as women, children, the elderly and people with disabilities. In this instance a Non-Motorised User (NMU) Audit shall be carried out to establish the need for lighting.
- High personal crime areas identified by the Police.
- Potentially dangerous locations due to the terrain or other hazards.
- Areas identified by the Police as suffering significant and repeated antisocial behaviour or vandalism.

6.8.2 The height of columns installed with Zone E2 areas shall be kept to the minimum which is able to illuminate the area appropriately, without increasing the number of columns beyond that which is reasonably practicable.

6.8.3 It should be noted that there is no requirement for the provision of lighting solely for personal security; although it is reasonable to consider if lighting is justified on other grounds.

6.9 Zone E3 Suburban – Medium District Brightness (Urban Location)

6.9.1 New developments within Zone E3 shall be lit to maintain consistency with the surrounding area.

6.9.2 Category A, B and C roads will be classified as traffic routes and shall be lit accordingly. Lanterns shall be restricted to CEN Luminous Intensity Class G2/3 (or equivalent Ti) but Class G5/6 (or equivalent Ti) will be used if possible.

6.9.3 Local Roads (unclassified): Lanterns shall be well controlled and be restricted to CEN Glare Index Class D3 or above. Consideration will be given to whether lighting is required in all cases.

6.10 Zone E4 Urban – High District Brightness (Urban Location)

6.10.1 Lighting to be provided in Zone E4 areas shall be flexible in order to illuminate the area for motorists and also provide an interesting and attractive ambience for people to enjoy.

6.10.2 Zone E4 areas are generally bright and lively, however due care shall be undertaken to control glare.

6.10.3 The provision of well-designed and integrated lighting in our towns can provide added amenity whilst increasing the value of our towns in terms of visitors, civic pride, safety, security and economic regeneration. To maximise these values lighting must be strategically planned.

6.10.4 A plan showing the lighting zones within Bedford Borough is shown in Appendix A.

7. General Design Requirements

7.1 The Council's key principles for successfully managing and maintaining its electrical highway assets are set out below and in Section 6.

7.2 All street lighting design work undertaken by the Council or on behalf of the Council will embrace the design statements listed below:

D1	Street lighting design will seek to minimise obtrusive glare.
D2	Traffic calming features will be illuminated.
D3	Pedestrian crossings and pedestrian subways and underpasses shall be illuminated.
D4	Car parks will be illuminated to the standards set out in BS5489.
D5	All new light sources shall be LED. 2700k, 3000k and 4000k where applicable.
D6	All new installations shall have lanterns equipped with LED drivers and CMS equipment.
D7	All columns installed on the highway shall be galvanised steel except in specified exceptions.
D8	Attachments to lamp columns (e.g. banners, signs or communications equipment) shall not normally be permitted without written permission from the Senior Lighting Engineer.
D9	Installing CCTV, ANPR and / or wireless equipment will require prior written approval from the Senior Lighting Engineer.
D10	Design of lighting for Conservation Areas will require the approval of the Council's Conservation Officer and Senior Lighting Engineer.
D11	Hinged lighting columns will be used where vehicular access is limited/not possible.

7.3 Obtrusive Light – environmental issues

7.3.1 The effects of obtrusive light are:

- Unwanted illumination of premises.
- Impairing the view of the night sky.
- Keeping people awake during the night or disturbing sleep patterns.

7.3.2 These effects shall be minimised by the selection of the correct column heights and lanterns for the specific application.

7.3.3 Where obtrusive lighting can be foreseen, a shield should be specified as part of the design process where possible. However the illumination of the highway shall remain the priority.

7.3.4 Customer reports of obtrusive lighting shall be considered on an individual basis, and alternatives explored before any installation of a shield.

7.3.5 This shall be assessed as per ILP Guidance Note 1 for the reduction of obtrusive light 2020 - GN01-20.

7.4 Traffic Calming

7.4.1 It is the recommendation of the Institution of Lighting Professionals that, as a minimum, a system of road lighting is designed to the level specified in BS5489 or EN13201 for the particular use of the road on which traffic calming is placed. This will also cover the approaches and all the traffic calming features.
The lighting of the traffic calming shall also be designed in accordance with the ILP's 'TR25 Lighting of Traffic Calming Features.'

7.5 Cycle Tracks

7.5.1 Cycle tracks shall be illuminated in accordance with BS5489 and EN13201 if the necessity for lighting has been identified.

7.6 Pedestrian Crossings and Subways

7.6.1 All pedestrian crossings shall be illuminated in accordance with the ILP's 'TR12 Lighting of Pedestrian Crossings', BS5489 and EN13201.

7.7 Signal Controlled Crossings (PELICAN, PUFFIN & TOUCAN)

7.7.1 A Street lighting scheme designed to the requirements of EN13201 and BS5489 should provide satisfactory illumination for use in conjunction with signal-controlled pedestrian crossings.

7.8 Zebra Crossings

7.8.1 If the existing street lighting in the vicinity of the crossing does not meet the recommendations specified in the EN13201 and BS5489 it should be brought up to the correct standard. The distance either side of the crossing should relate to the traffic speed and local circumstances and should extend for at least the maximum permitted length of the controlled area.

7.8.2 All zebra crossings shall be illuminated in accordance with the BS5489, EN13201 and the ILP's 'TR12 Lighting of Pedestrian Crossings.' New zebra crossings shall be installed with LED beacon units. Shrouds and shields for the beacon and associated luminaire will be installed where required.

7.9 Pedestrian Subways / Underpasses

7.9.1 The lighting of subways and underpasses shall be designed in accordance with the BS 5489: Road Lighting, Part 7.4.7, Code of Practice for lighting for urban centres and public amenity areas and in consultation with the Structural Engineer responsible for the subway / underpass. These will utilise LED light sources in line with the highway lighting policy.

7.10 Car Parks

7.10.1 Car parks shall normally be illuminated in accordance with BS5489.

7.11 Light Sources

7.11.1 The required light source for all new highways street lighting installations is Light Emitting Diode (LED) with a colour temperature of 4000K. If ecological restrictions/ condtions apply to a proposed lighting scheme then other colour temperatures will be considered i.e 2700/3000k.

7.12 Lantern Specifications

7.12.1 The type of lantern used will vary according to the area and the type of lighting provided. All lanterns shall have a RAL 9005 Jet Black finish.

7.12.2 All new installations shall have lanterns fitted with a 7 PIN NEMA socket, Telensa Telecell (GPS incorporated) and LED drivers which are compatible with the Council's Central Management System, for the purposes of reducing power consumption, increasing lantern life, dimming and part-night lighting.

7.12.3 Lanterns shall have at least a ten year warranty.

7.13 Column Specifications

7.13.1 All columns manufactured for use on the Council's highway network shall be manufactured in accordance with the BS5489 and EN40 and have a galvanised finish.

7.13.2 All "raise and lower" columns will be of mid-hinged type, to allow for ease of maintenance.

7.13.3 Passively-safe lighting columns will be considered in line with current standards/ guidance and their use shall be determined on a site by site basis.

7.13.4 Column positions shall be consistent throughout any new scheme of work. The design shall take into account tree canopies, bedroom windows, driveways, telecommunication lines, overhead power lines, underground apparatus or any other influencing factor.

7.14 Attachments

7.14.1 Attachments to lamp columns are not normally permitted, although the Council is supportive of the erection of Christmas decorations. For any installation, on or over the highway, the Authority shall issue a formal Section 178 license indicating the conditions under which such apparatus may be installed on each occasion. A Section 178 Application form can be provided upon request.

7.14.2 Where it is known that lighting columns are proposed as support for loads such as traffic signs, flower baskets, banners / flags or Christmas decorations then the column should be designed to carry the additional load. Columns designed and manufactured to the Department of Environment, Transport and Regions Memorandum BD 26/94 are designed to carry a traffic sign of up to 0.3m² at a mounting height of 2.1m above ground level.

7.14.3 Permission to erect items on existing columns shall not be granted unless it has been proven that the column design is capable of withstanding the additional load by the manufacturer of the particular column. The column must also be in a structurally sound condition on-site.

7.14.4 All works associated with the provision of decorations shall be carried out in accordance with the requirements of the Professional Lighting Guide 06 – Guidance on Installation and Maintenance of Seasonal Decorations and Lighting Column Attachments.

7.14.5 Some attachments (e.g. advertising banners) may require planning approval. The applicant is responsible for ensuring that the necessary permissions have been obtained.

7.15 CCTV, ANPR or Wireless Communication

7.15.1 The erection of equipment on street lighting columns may only take place after the Council's Senior Lighting Engineer has granted approval with a licence or agreement which confirms the suitability of those columns affected.

7.15.2 The requirements are:

- Equipment shall be the sole responsibility of the installing body.
- The installing body has adequate public liability insurance to indemnify the Highway Authority.
- The installing body to ensure compliance with any planning or communications equipment licensing requirements.
- Equipment shall be removed immediately upon request by the Highway Authority, or be removed by the Highway Authority at the owner's expense if there is concern about the safety of the system.
- Equipment shall be manufactured with supports and mounting points capable of supporting the equipment.
- For protection against electric shock all systems shall be rated at 25v SELV. However, for systems sited a minimum of 3.5 metres above the highway, mains voltage (230v) may be used. In all such systems the installer must ensure that the requirements of BS 7671 are met and supplementary protection by the use of a 30mA RCD shall be given.
- All apparatus shall be erected in compliance with the following statutes and regulations or their successors:
  - Health and Safety at Work Act 1974.
  - The Construction (Design Management) Regulations 2015.
  - Electricity-at-Work Regulations 1989.
  - BS 7671 18th Edition Wiring Regulations.
  - New Roads and Streetworks Act 1990.
  - Traffic Management Act 2000.
  - Traffic Signs Regulations & General Directions 2020.
- Each installation shall be tested and the electrical test certificates and test results passed to the Highways Department.
- Power supplies to installations should not be derived from adjacent buildings, but from within the street lighting column acting as the support. On-going costs for the power supply are to be agreed.
- All temporary fixings used to attach the CCTV equipment to street lighting columns must be free from corrosion at all times and must be removed at the end of the licence period.
- Any damage to the protective surface must be made good immediately after the removal of the apparatus.
- Catenary supported lighting will not be permitted to cross the highway without permission of the Council's Highway Department.

7.16 Conservation Areas

7.16.1 Every opportunity should be taken to reduce visual impact upon the street scene. The designer should note the historical period in which a conservation area belongs and consider lantern, light output, column heights and styles which may be appropriate.

7.16.2 Careful consideration shall be given when selecting suitable locations for lighting equipment; every effort should be made to reduce street clutter.

7.16.3 Columns shall not be positioned where they block important views of historical buildings / areas.

7.16.4 Existing historic lamp columns shall be preserved until they become life expired at which point they will be replaced in accordance with this policy.

7.16.5 LED light source with minimum ten year warranty period shall be specified and should be compatible with Bedford Borough Council's Central Management System.

7.16.6 The design of lighting schemes in conservation areas should be referred to the Council's Conservation Officer and Senior Lighting Engineer for approval.

7.16.7 The DW Windsor Street luminaire and DW Windsor Cardiff column are typical examples of units currently specified within the Authority's Conservation Areas. Other similar columns and lanterns can be specified, if approved by the Council's Conservation Officer and Senior Lighting Engineer. All columns and lanterns in Conservation Areas shall be of RAL 9005 Jet Black finish unless otherwise agreed.

7.16.8 Columns 6m and below in conservation areas will be replaced with heritage style columns and lanterns.

7.16.9 Columns above 6m in height will be replaced with Bedford Borough Council's standard specification.

7.16.10 Lanterns being replaced in conservation areas will be replaced with the Council's standard LED lantern if the column it is positioned on is of a standard modern nature. If the column is heritage style the lantern will be replaced with a heritage style lantern.

7.16.11 Lighting within conservation areas will take consideration of BS5489 7.4.10 - Lighting within Conservation Areas.

7.17 Town Centre and Amenity Areas

7.17.1 Lighting improvements within the town centre and amenity areas will be considered on a site-by-site basis. Equipment specified will be in keeping with the area.

7.17.2 Lighting within urban and rural parks will be designed as per the recommendations of BS5489 7.4.11 and as per the general guidance within CIBSE LG06 and the ILP Outdoor Lighting Guide.

7.18 Requests for Additional Lighting

7.18.1 Any requests for additional lighting will be considered and assessed using the Authority's Lighting Assessment Matrix, which includes the following factors:

- F1 – If the footpath is enclosed (e.g. walled either side).
- F2 – Crime rate of the Police Beat area over the previous year.
- F3 – Footpath Hierarchy.
- F4 – Existing lighting levels and their compliance with the British Standards.
- F5 – Alternative routes.

7.18.2 There is only a small amount of annual funding available for such sites and so it is only intended to address localised priority areas, such as those including vulnerable persons or victims of crime. It is not intended to cover long lengths of paths that are currently unlit or lit below standard or relighting entire streets that are currently lit below standard. Requests of this nature will be put forward for future capital funding and delivered on a priority basis as and when this is made available.

7.19 Parish Council adoptions

7.19.1 The Borough Council is willing to consider the adoption of existing Parish Council owned highway lighting subject to it being to suitable standard/condition. Once any initial upgrades have been completed at Parish Council expense the Borough Council would take on the ownership and maintenance of these assets. The process for this is included in Appendix B of this document.

7.20 Risk assessment

7.20.1 All sites will be individually risk assessed as per the requirements of BS5489 - A.3 Specific situations.

8. Maintenance Issues

8.1 Budget pressure is increased by failures in electrical components which have exceeded their service life. Such failures are unpredictable and exert pressure on the other components in the electrical circuit.

8.2 Beginning in 2015, a three-year programme of work replaced the Council's 16,000 streetlights with new LED lanterns. The new lanterns are mounted on existing columns where tests prove they are structurally sound, or on new columns where they were not. This programme has stabilised asset condition for many years to come, providing demonstrable best value.

8.3 As these assets age, a rolling programme of column and lantern replacement will maintain the condition of the street lighting asset in a steady state.

8.4 All street lighting work undertaken by the Council, or on behalf of the Council, will embrace the maintenance policy statements listed below:

M1	All systems of public lighting shall be maintained to a standard that ensures their safe, economic, effective, reliable operation.
M2	All lamp columns were electrically tested by 2018 and will continue in a cycle of testing in accordance with BS7671.
M3	All lamp columns will be structurally tested in accordance with GN22 Asset management Toolkit:Minor Structures (ATOMS).
M4	All maintenance activities must be recorded on the Council's Highways Insight asset management system.
D5	Under normal conditions columns will not be straightened unless specified conditions are met.
M6	Lamps columns will not be painted.
M7	Emergency faults will be attended to within 2 hours; non-emergency faults will be dealt with as specified in this policy.

8.5 Electrical Testing

8.5.1 Electrical testing of all Council assets will be completed in accordance with BS7671 at a maximum of six-yearly intervals. Parish Councils will also be expected to follow the same procedure for electrical highway assets.

8.6 Structural testing

8.6.1 Once columns go beyond their service life the rate of corrosion accelerates and increases the risk of falling, becoming a hazard to the public and property. In 2015 a programme of non-destructive structural testing was carried out, these columns will be retested as required on a cyclic basis depending upon the initial test result. Newly-installed columns will have a testing regime in accordance with GN22 Asset management Toolkit:Minor Structures (ATOMS).

8.6.2 Columns identified as having serious defects will be inspected within 10 working days and programmed for replacement within 12 weeks. If upon inspection the column
is deemed to require immediate removal, the column will be stumped at door level and made safe. Stumped columns will be scheduled for replacement as resources allow, but within 12 weeks.

8.6.3 All structural test data is recorded on the highways asset management system.

8.7 Transport Asset Management Plan - Inventories and Record Systems

8.7.1 An up-to-date electronic-based inventory is vital. This is to ensure satisfactory management of maintenance, enable the annual assessment of the energy charges, and tendering for electrical energy.

8.7.2 Inventory information, including position and DfT risk assessment data will be gathered and maintained in accordance with the GN22 Asset management Toolkit:Minor Structures (ATOMS)..and the UK Roads Liaison Group (UKRLG) document “Well Managed Highway Infrastructure: A Code of Practice.”
All maintenance activities must be recorded on the Council’s asset management system for highways.

8.8 Fault Detection

8.8.1 Faulty lighting equipment will be identified by the following methods:

- Reported by the public
- Ad-hoc inspections by Highways staff
- Remote fault monitoring through Central Management System (CMS) – faults reported by the CMS will be automatically generated within the asset management system.

8.8.2 The combination of these methods will mean a significant increase in the Council's ability to quantify the condition of its street lighting asset and respond either with a swifter attendance onsite or by referral to a future programme of work. Programmes themselves will be compiled in accordance with asset management principles. The CMS in particular will allow an improved dialogue with our public owing to its ability to identify streetlight outages in real time, and cascade them to the correct team. It will also allow a greater degree of reporting transparency and an attendant increase in public satisfaction.

8.8.3 The following number should be provided on all columns as part of the identification tag:

01234 718003 – this number will enable members of the public to ring through faults for the maintenance team to rectify within the given time periods.

Members of public can also log faults using the following systems:

- Web: www.bedford.gov.uk
- E-mail: highways.helpdesk@bedford.gov.uk
- Report it App

8.9 Cyclic Maintenance

8.9.1 Cyclical maintenance will include the following tasks:

- Lantern inspection, maintenance and cleaning.
- Visual inspection and minor repairs to electrical equipment and wiring.
- Mechanical inspection and maintenance including door security.
- Visual inspection of the structural condition of the lighting column or illuminated traffic sign post, bracket, lantern and any attachments.
- Programmed electrical inspection and testing.
- Programmed structural testing.
- Programmed group component replacement at best value, once life expired.
- Inventory data verification.

8.10 Reactive Maintenance timescales

8.10.1 The Council's target response times for reactive maintenance activities are shown in Table 8.10.1 below but, with the exception of emergency faults, these are subject to materials supply timescales and other network demands:

Table 8.10.1: Maximum response times for reactive maintenance activities

Nature of Fault(s)	Response Time
Emergency faults, including the removal of unauthorised attachments that pose as safety hazard.	2 hours
Non-emergency faults involving rectification of non-operating Belisha beacons and flashing school warning signs.	1 working day
Non-emergency faults requiring the removal from apparatus of any offensive graffiti.	5 working days
Non-emergency faults requiring the replacement of mandatory traffic signs and illuminated traffic bollards, including those made safe as emergency faults.	5 working days
Non-emergency faults involving the replacement of lighting apparatus, including those made safe as emergency faults.	10 working days
Non-emergency faults requiring the replacement of warning signs and vehicle activated signs, including those made safe as emergency faults.	30 working days
Non-emergency faults requiring the removal of all other graffiti and/or any unauthorised attachments from apparatus.	6 months

8.10.2 It should be noted that non-emergency faults requiring the repair or replacement of any Distribution Network Operator (DNO) equipment are reliant upon performance of third parties and are outside the direct control of the Council.

8.10.3 Single faults on minor or residential roads may be withheld from the response times in Table 8.10.1 and collected into batches for non-emergency repairs unless they are:

- At a junction, roundabout, stop line or traffic calming feature.
- Immediately in the vicinity of a school or nursery.
- A column providing dedicated lighting for a zebra crossing.
- On footpaths in urban areas that are 'links' between roads and streets in some cases 'confined' areas (where the exit from the path is restricted).

9. Carbon Management and Energy

9.1 The Council's Carbon Management Plan (CMP) can be viewed on the Council's website: http://www.bedford.gov.uk/environment_and_planning/sustainability/what_is_the_council_doing/carbon_management_programme.aspx

9.2 Energy Procurement

9.2.1 The Council's Corporate Energy Management Unit (EMU) maintains a database of the Council's energy consumption within all council-owned property, assets and schools including street lighting.

9.2.2 Subject to the Council's Standing Orders unmetered energy will be procured by the Council's EMU to obtain the best value for money.

9.2.3 The EMU is to procure green energy if sufficient is available and when this is competitively priced.

9.2.4 Introduction of the Central Management System (CMS) will deliver energy metering according to actual consumption rather than assumptions via half or hourly unmetered supply.

9.2.5 Unmetered Supplies (UMS) exist in the half hourly and non-half hourly Supplier Volume Allocation (SVA) markets. The UMS process is governed by BSCP520 – Unmetered Supplies Registered in SMRS. The Unmetered Supplies Operator (UMSO) provides the UMS service on behalf of a distributor.

9.2.6 Energy cost calculations for unmetered energy supplies are carried out by a 'meter administrator'. This role is currently carried out by Power Data Associates.

9.2.7 The energy consumption, measured in kilowatt hours (kWh), will be used to calculate the Council's carbon emissions from Street Lighting and illuminated apparatus. This will be monitored based on inventory data submitted to the Council's electricity supplier. At present this includes approximately:

- 16,000 street lighting units.
- 365 illuminated bollards.
- 1,847 illuminated traffic signs.
- 75 Vehicle Activated Signs (VAS).

9.3 Energy and Efficiency Measurement & Savings

9.3.1 The Council will continue to investigate new technologies in its drive to reduce consumption.

Proposals may include:

- Encouraging developers to minimise street lighting provision where safe and practicable to do so.
- Removing non-essential street lighting, illuminated bollards and illuminated signs.
- CMS equipment will be used on all new works to provide operational flexibility and save energy.
- Upgrade inefficient electrical assets to more modern reliable and energy-efficient options.

9.3.2 The current number of hours that street lighting is lit is 4,100 hours per year. This is used for our baseline measurement to set future savings against per year.

9.3.3 The Council's policy for lighting is to end the use of traditional orange and yellow light sources in favour of white light. There are many advantages from white light which will reduce energy consumption and reduce carbon emissions. Advances in optical technology, together with white light, have improved the performance of street lighting via improved colour recognition.

9.3.4 It is the Council's policy to consider all options to reduce energy consumption.

9.3.5 Scheme designs must comply with the general design requirements provided in Section 7 above.

9.4 Removing Street Lights

9.4.1 Removing street lights yields the highest benefits in terms of energy saving, reducing maintenance costs and carbon emissions. Such proposals can be controversial and raise many issues for debate; stakeholders expressing concern for road safety and crime as a consequence of saving energy, reducing maintenance costs and carbon emissions.

9.4.2 Switching off street lights either on a localised area or street-by-street basis will only be considered following a written request from Parish or Community Councils, and approval to investigate from the ward Councillor and Portfolio Holder.

9.4.3 If a scheme to remove lighting is approved then lighting will be switched off for a minimum 28 day period, during winter, on a trial basis. The trial will enable the community to test the effect of street lighting being removed; part of this being to experience 'full darkness' where unpredictable light from the moon may have less affect.

9.4.4 Requests to remove street lights will not be considered in the following circumstances:

- On main urban roads.
- At complex rural junctions on A and B roads.
- Where traffic calming is in place.
- Where lighting was introduced as part of a highway collision reduction scheme or where collision records suggest that the continued presence of lighting will be beneficial.
- On footpaths that are 'links' between roads and streets and in some cases 'confined' areas (where the exit from the path is restricted).
- In areas where the Police have identified high risk crime or community safety issues.

9.5 Reviewing lighting levels and switching off parts of the Street Lighting

9.5.1 The adoption of a Central Management System makes it possible to switch off a percentage of street lights so they are permanently unlit at all times, this can be done in any combination in parts to all of a road or area.

9.5.2 The benefits of this option are that landmarks, bus stops and anti-social locations can remain lit; although risks may be increased with this strategy dependent on the hazards that are present within the area.

9.5.3 If the risks are low then switching street lighting off would save energy; however, the deterioration of the asset would still continue and would still require a maintenance regime to monitor it or remove in the future.

9.5.4 As with complete removal of lighting systems discussed above, careful consideration must be applied to this strategy before implementation, and any changes would involve a trial period to properly asses the impacts of any scheme.

9.5.5 Such schemes may be introduced following requests by local representatives or as part of the Council's programme of highways improvement schemes.

9.5.6 Street lights will be dimmed during periods of reduced highway usage. Dimming of areas will be reviewed in the light of any significant changes to accident or crime numbers.

9.6 Part Night Lighting

9.6.1 Part night lighting provides an effective way to save on energy costs while limiting the impact on the user. Switch times can be controlled via the Central Management System.

9.6.2 Part night lighting is more suited for villages or rural traffic routes (excluding conflict areas) where there are fewer pedestrians.

9.6.3 Part night lighting schemes will not be considered in the following circumstances:

- On main urban roads.
- At complex rural junctions on A and B roads.
- Where traffic calming is in place.
- Where lighting was introduced as part of a highway accident reduction scheme.
- On footpaths that are 'links' between roads and streets and in some cases 'confined' areas (where the exit from the path is restricted).
- In areas where the Police have identified high risk crime or community safety issues.

9.6.4 Such schemes may be introduced following requests by local representatives or as part of the Council's capital programme of highways improvement schemes.

9.7 Illuminated Traffic Signs and Bollards

9.7.1 The Council will actively follow DfT advice on de-cluttering the highway network where resources allow.

De-cluttering initiatives will focus on:

- Improving the streetscape by identifying and removing unnecessary traffic signing.
- Rationalising remaining signs to provide signing only where they are required.
- Minimising environmental impact through the careful selection of signing, including the design, siting, size and colour.
- Reviewing under current legislation any lit signs that are knocked down to determine whether the sign is still required, and / or if illumination is required.

9.7.2 All new signs and bollards will be installed in accordance with the latest TSRGD. Where bollards are installed unilluminated they will be of a reboundable nature and reflectorized.

9.7.3 Warning signs are placed at the discretion of the Council. As part of an initiative to de-clutter its highways network the Council will consider, via a risk based approach and current guidance, whether a sign is needed at all, and if so, whether it must be illuminated.

9.7.4 The revised regulations remove the requirement for regulatory signs to be placed on both sides of the road indicating the beginning of the restriction, requirement or prohibition. As part of initiatives to de-clutter the highways network the Council will undertake a risk-based analysis and individual site assessments when considering placing only one of the safety critical signs, such as "no entry" and "no motor vehicles".

9.7.5 Common practice within the Bedford urban area has been to place the prescribed signs for “keep left” or “keep right” at the ends of central islands and refuges and kerb build-outs to warn road users of the obstacle in their path. They are often mounted on bollards. There is no regulatory requirement to provide bollards or traffic signs and the Council will review the need for such signs as part of de-cluttering initiatives.

9.7.6 If it is the requirement of the TRSGD that a sign must be illuminated it shall be lit using an LED sign light with dedicated photocell operating at a 35/18 lux switch regime and supplied from the nearest suitable lighting column. The supply details shall be recorded on the asset register.

10. Highways Development Control

10.1 All proposed developments should be provided with a street lighting system and illuminated traffic signs / bollards, as appropriate, and in accordance with this policy. Where street lighting is required to be adopted by the Council it will form part of the associated Section 38 or Section 278 Agreement.

10.2 Adoption Procedure

10.2.1 For a new development to have the highway adopted, the design and specification of the proposed lighting requires Technical Approval by the Council prior to installation. The design shall be in accordance with this Lighting Policy and shall not be started until a lighting scheme briefing has been issued. A lighting scheme briefing sheet, which shall include the outline standards being designed to, shall be requested from the Council to gather the current specification of equipment being used. All highway electrical equipment shall be identified with a unique reference number within the design submission.

10.2.2 Prior to adoption all lighting systems on new developments shall undergo an inspection regime to ensure the equipment is in full working order, can be maintained and has been installed according to the approved design. Lighting will not be adopted until all defects are corrected to the Council's satisfaction. Any changes to the standard galvanised column finish or RAL 9005 Jet Black lantern finish requested through planning requirements will be subject to review and commuted sums if they apply. The only exception to this shall be that all columns in Conservation Areas shall also have a RAL 9005 Jet Black finish unless otherwise agreed.

10.2.3 Electrical Test Certificates are also required before adoption can proceed – the certificates must not be greater than 3 years old. If they are greater than 3 years old, the original installation certificate will be required along with a new electrical condition report (periodic inspection).

10.2.4 All columns must be in a structurally sound condition before adoption takes place. All columns therefore must be structurally tested and reports provided before adoption, if the development has been installed for a period of 5 years or greater prior to adoption. Tests must be carried out and categorised in accordance with GN22. Any units not categorised as in a sound condition shall be replaced or repaired before adoption takes place. The test reports shall be provided to the Authority.

10.2.5 Where street lighting is to be adopted under a Section 38 agreement and is not adopted within 3 years of the street lighting design receiving Technical Approval, the Council reserves the right to review the lighting design and specification in accordance with the prevailing street lighting policy and will require the developer to carry out works to install lighting to the required standard prior to adoption.

10.2.6 All new assets in privately owned, non-highway and publically accessible areas (ie. parks and open spaces, car parks and driveways) shall have a vinyl sticker listing the asset owner and contact details.

10.3 10.3 Commuted Sum

10.3.1 Any installations that do not use the Council's standard equipment will incur a commuted sum to provide for future maintenance for the lifetime of the equipment installed. Commuted sums shall be calculated in accordance with the ADEPT (Association of Directors for Environment and Transport) document titled "Commuted Sums for Maintaining Infrastructure Assets".

10.4 Technical Approval

10.4.1 For technical approval to be granted by the Council the following information must be provided:

- Carriageway lighting report and calculations to illustrate the optimum/minimum column spacing for the specified design criteria (Lighting Reality is the preferred software).
- Area report and calculations to illustrate lighting levels over the site (ISO-LUX contour drawing).
- General layout drawing to a recognized scale (Column position and spacing).
- Volt drop calculations for any privately-fed supply and circuit schematics.
- Highways Agency Manual of Contract Documents for Highway Works [Volume 2] (www.standardsforhighways.co.uk/mchw/index.htm):
  - Appendix series 1300 - [13/1, 13/2, 13/3]
  - Appendix series 1400 - [14/1, 14/2, 14/3, 14/4, 14/5]
  - Appendix series 1900 - [19/1, 19/2, 19/3, 19/5]
- Compliance where applicable with the latest British and European Standards BS7671 / BS5849 / EN13201 including all parts and revisions.
- CDM 2015 regulations must be adhered to. The designer shall submit copies of risk assessments and hazard checklists to the Council with final design.
- The designer must carry out site survey before design is issued to the Council.
- Raise and lower columns should be used where vehicular access is restricted or where overhead lines may be in close proximity. (These must be mid-hinged).
- Once a scheme has been installed the contractor shall supply copies of the Electrical Installation Test certificates with schedule of inspections and schedule of test results and an as-built drawing showing all lighting equipment and cable routes (private supplies).
- All columns and illuminated signs must be numbered with a Z prefix; each road must also be numbered individually starting from Z001 etc. As soon as practical after installation, a vinyl sticker showing the column number in 50mm high text shall be applied to the asset.
- Asset inventory information is to be provided. An inventory sheet will be provided with the scheme briefing sheet.
- Telecell bar codes.

10.4.2 The design must also be in accordance with the brief issued by the Council.

11. Competence

11.1 General

11.1.1 All persons working in the vicinity of a DNO supply shall have attended and passed the HEA – Highway Electrical Academy – G39 Assessment Course.

11.2 Design Staff

11.2.1 All persons involved with the management and design of the public lighting service shall have had training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

11.3 Operational Staff

11.3.1 All persons involved with the management, maintenance and installation of public lighting equipment shall be registered with the National Highway Sector Scheme (NHSS8).

11.3.2 They shall also be assessed for competency and undertake a recognised training course, leading to an NVQ or similar qualification to agreed national occupational standards.

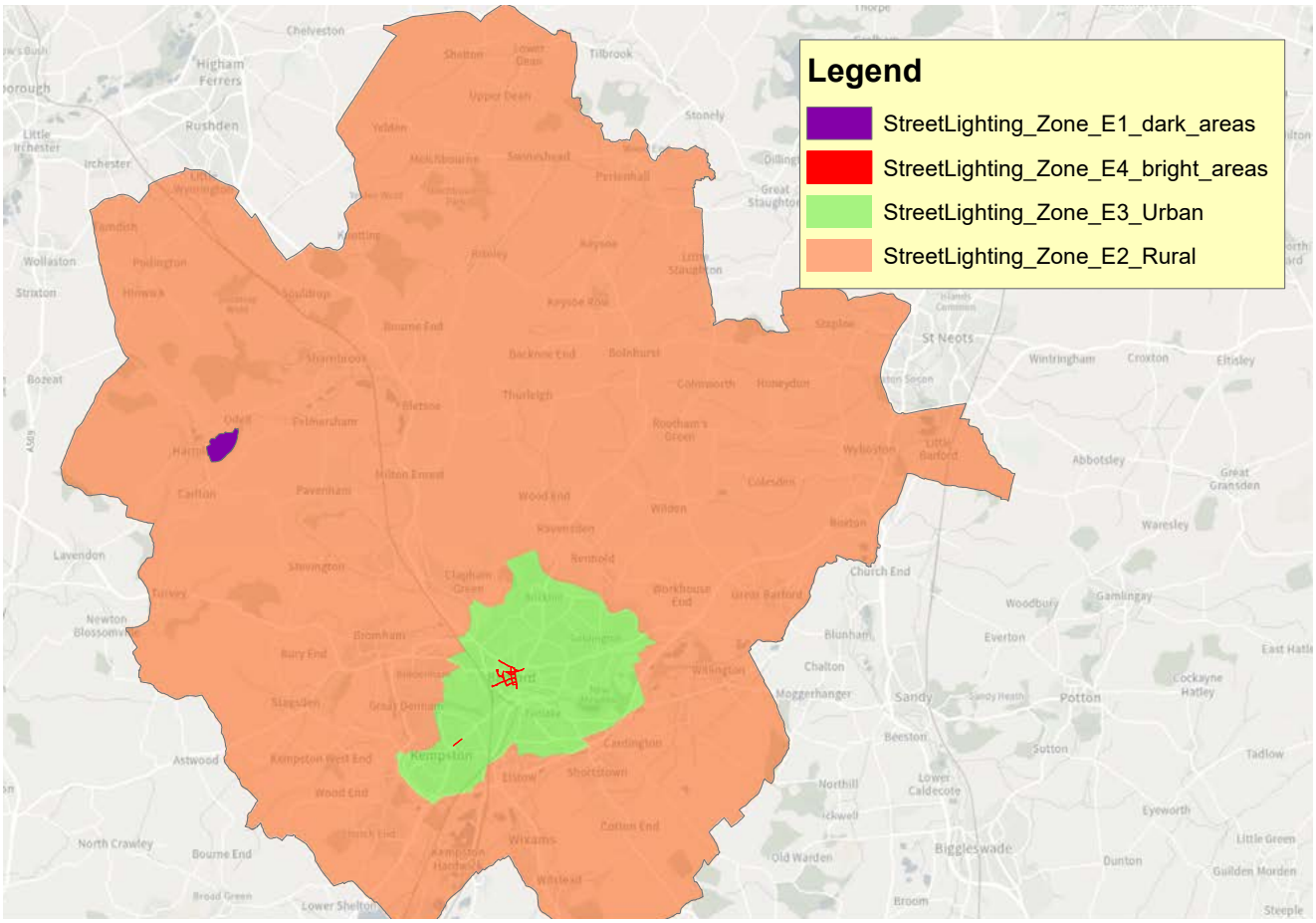
11.4 Supervisors

11.4.1 Supervisors should be NHSS8 / HERS qualified and be trained to a level appropriate to the required tasks; typically this would be to an NVQ / SVQ level 3 or similar. In addition they should have sufficient experience to enable them to discharge their responsibilities, such experience being for a period of not less than two years.

12. References

1. TR12 Lighting of Pedestrian Crossings (Institution of Lighting Professionals)
2. GN22 Asset management Toolkit:Minor Structures (ATOMS)..– Institution of Lighting Professionals
3. TR24 A Practical Guide to the Development of a Public Lighting Policy for Local Authorities – Institution of Lighting Professionals
4. TR25 Lighting for Traffic Calming Features – Institution of Lighting Professionals
5. TR26 Painting of Lighting Columns – Institution of Lighting Professionals
6. TR27 Code of Practice for Variable Lighting Levels for Highways – Institution of Lighting Professionals
7. TR29 White Light – Institution of Lighting Professionals
8. Well Managed Highway Infrastructure – UK Roads Liaison Group
9. Framework for Highway Asset Management – County Surveyors' Society
10. BS5489 Code of Practice for the Design of Road Lighting
11. EN13201 The Selection of Lighting Classes for Road Lighting
12. ILP Lighting Diploma Module 1 Lectures Notes
13. ILP Lighting Diploma Module 2 Lectures Notes
14. Artificial Light in the Environment – The Royal Commission on Environmental Pollution
15. ILP Guidance Notes on Obtrusive Light
16. ILP Document 'Towards Understanding Sky Glow'
17. LTN 1/20 Cycle Infrastructure Design
18. PLG23 Lighting for Cycling Infrastructure
19. GN 01/20 Guidance Note for the Reduction of Obtrusive Light
20. Commuted Sums for Maintaining Infrastructure Assets

Appendix A – Environmental Zone Plan



E1 Natural
Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty. No Highway Lighting.

E2 Rural
Sparsely inhabited rural areas, village, or relatively dark outer suburban locations. Highway Lighting to be assessed at Planning stage.

E3 Suburban
Well inhabited rural and urban settlements, small town centres of suburban locations. Highway Lighting Required.

E4 Urban
Town/city centres with high levels of night-time activity. Highway Lighting Required.

Appendix B – Parish Council lighting adoption process

1. Check recent structural testing records (as defined in GN22 ATOMS) of all Parish owned lights to develop a scheme plan and costs for any necessary upgrades (to lanterns and/or columns), as any adopted lights will need to be of a suitable standard and condition prior to adoption.
2. Borough Council and Parish Council to agree a payback period for the scheme.
   NB. This can only be for a maximum of 7 years.
3. Borough Council will programme and carry out works if agreed.
4. Borough Council will invoice the Parish Council as a debtor for "x" number of years.
   NB. This can only be for a maximum of 7 years.
   If there are any wall mounted or wooden pole mounted assets then the Parish Council would have to cover the costs for any asbestos testing required, plus its subsequent removal, prior to stage 1 above.

ENVIRONMENT DIRECTOR – Delegated Decision Note						
Decision:	**Lighting Policy**					
Type of Decision:	**Operational**		Key		Non-Key	✓
Delegated Function that this decision relates to:	In accordance with section 6(e) of the current scheme of delegation each Director, Assistant Director, Assistant Chief Executive and Head of Service is authorised to determine operational issues concerning the provision of any services including those provided to external bodies/organisations. In this case the decision relates to a general operational policy.					
Portfolio Area that decision relates to:	Highways	✓	Planning			
	Transport		Housing			
	Environment		Regulatory Services			
	Community Safety		Open space			
Background *include options considered and rejected, and consultation process:* **Please refer to policy statement attached**						
Decision Date						
Wards Affected:	Local Highways policy affecting all wards and parishes.					
Comments/Observations						
DECISION:						
Signature:						
Decision Made By:	Director for Environment					
Contact Details:	Environment Directorate, Borough Hall, Cauldwell Street, Bedford					

Notes

Notes

Finding out more

If you would like further information about us and our services, please telephone, email or write to us at our address below.

Për Informacion

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Informacja

ਜਾਣਕਾਰੀ ਲਈ

برای اطلاع

Za Informacije

Per Informazione

তথ্যের জন্য

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