

Report To:	Environment & Regeneration Committee	Date:	8 March 2018
Report By:	Corporate Director Environment, Regeneration & Resources	Report No:	ERC/ENV/WR/17.328
Contact Officer:	Steven Walker	Contact No:	714828
Subject:	LED Strategy – Design Procedures		

1.0 PURPOSE

- 1.1 The purpose of this report is to advise the Committee on the procedures adopted during the design of the LED replacement strategy.

2.0 SUMMARY

- 2.1 Street lighting as a benefit to the local community, contributes to night time road safety, a reduction/prevention role in terms of street crime, provides for a feeling of general security, and helps to promote economic development by supporting a 24 hour economy. Street Lighting is provided in accordance with the requirements of the Roads (Scotland) Act 1984
- 2.2 The Council approved its Street Lighting Investment Strategy in early March 2015 and, since this date, the Council has invested in significant works to its street lighting lantern infrastructure.
- 2.3 The lantern replacements have been designed in accordance with Standards BS 5489 (2013) and BS EN 13201 (2015); this is supplemented by a number of codes of practice issued by the Scottish Government and Institution of Lighting Professionals.

3.0 RECOMMENDATIONS

- 3.1 That the Committee note procedures adopted during the design of the LED replacement strategy.

Willie Rennie
Head of Environmental and Commercial Services

4.0 BACKGROUND

- 4.1 Street lighting as a benefit to the local community contributes to night time road safety, has a reduction/prevention role in terms of street crime, provides for a feeling of general security, and helps to promote economic development by supporting a 24 hour economy. Street Lighting is provided in accordance with the requirements of the Roads (Scotland) Act 1984; this is supplemented via guidance provided by relevant British and European Standards, and that of the professional body involved with this work, the Institution of Lighting Professionals.
- 4.2 A review of existing street lighting installations was carried out previously during 2014 to identify areas where energy savings could be realised. This was done in conjunction with a review of lighting standards and technologies currently available to identify potential energy and maintenance savings. In addition, a column condition survey was carried out to identify lighting columns which need replacement in the shorter term. This review resulted in the development of an outline business case and final business case.
- 4.3 This work culminated in this Committee approving a Street Lighting Investment Strategy in early March 2015. The aim of this strategy, which remains unchanged, is to provide an optimum way forward for the Council in terms of investment in street lighting such that good quality lighting is provided which meets specified requirements, provides for roads safety considerations, continues to assist with the reduction/prevention in street crime, reduces the carbon footprint of the Council and, in turn, minimises the costs of electrical power consumption and exposure to rising electricity prices, reduces maintenance costs, and reduces light pollution.
- 4.4 The thrust of the original lantern replacement strategy was a phased programme involving white light across the majority of the Council's lighting stock, and using in the main, LED technology, but with alternative white light sources (fluorescent or "Cosmopolis") to suit specific locations where LED may not be suitable. Taking into account the parallel need to commit funding to column replacement, it was determined that the monies available for the lantern conversion programme would be taken forward on the basis of conversions of those streetlights which were non-white and which used, in the main, older technologies such as low and high pressure sodium lamps (some 75% of the lantern stock); existing white lanterns, which comprised around 25% of the overall stock at that time, would remain in-situ and be converted to LED in later years. The existing white non-LED lanterns already provided a degree of energy saving compared to the older non-white lanterns.
- 4.5 Since the approval of the Strategy, the Council has invested in significant works to its street lighting lantern infrastructure and the conversion of 5,532 older non-white type lanterns to white LEDs has been completed by the end of December 2017.
- 4.6 With the ongoing and rapid technological developments in lantern technology which continues to deliver more efficient lanterns, and taking into account the possibility of further driving down energy consumption, and thus revenue expenditure on both electricity costs and maintenance costs, it was considered appropriate to re-assess the viability of a further possible spend to save project ("LED Work Package 5") involving the conversion of the remaining white non-LED lanterns on the Council's road network. This project received approval of this Committee in January 2018, and is programmed for delivery by the end of March 2019.
- 4.7 The ongoing delivery of the lantern conversion programme has raised occasional enquires from members and the public with regard to the new lantern types, and this report outlines the design procedures adopted and what this means for the road network.

5.0 DESIGN PROCEDURES

- 5.1 Road lighting design is carried out to BS 5489 (2013) and BS EN 13201 (2015). There are a number of codes of practice issued by the Institution of Lighting Professionals providing advice on the interpretation of the standards, and which have also been considered.
- 5.2 The latest Standards offer a more flexible approach to lighting design classes to account for differing traffic flows, usage, crime levels etc. These new standards along with improved lantern technology enable lighting levels to be more effectively controlled using less energy, which assists

with reductions in carbon use and light pollution – controlling light pollution follows Scottish Government guidance issued in 2007. Additional guidance on the required design standards are provided by the Association of Chief Police Officers and the Institution of Lighting Professionals. In addition, data analysed by the Royal Society for the Prevention of Accidents (ROSPA) highlights the reductions in fatal accidents in areas which have street lighting.

- 5.3 The new technologies also use “white” light providing good colour recognition and clarity; this is also of advantage in terms of the Council’s CCTV installation. BS5489-1:2013 takes greater cognisance of the different types of light now available for road lighting, the types of road, and the environment in which lighting is to be provided. Correct use of the guidance will allow the type and level of lighting to be used more accurately with a resultant saving in energy. This is of importance to our street lighting strategy as due to the use of white light, which allows greater colour recognition, in many cases we can light a scheme to a lower level resulting in greater energy savings.
- 5.4 Light Emitting Diodes (LED) have seen a steep rise in their efficacy, the amount of light they produce against the energy used (lumens/watt), rising from around 30 lumens/watt in 2002 to over 150 lumens/watt today. While this figure will continue to rise over the next few years, it is projected to be more of a more gradual increase. The maintenance requirements for LED lanterns will be greatly reduced over the lifetime of the lantern as the LEDs themselves do not require the frequent replacement that is the case with individual lamps. LED’s have the advantages of long life, ‘white’ light, easy to control, reductions in obtrusive light, low maintenance.
- 5.5 A Lighting Plan has been developed for Inverclyde and which takes into account the various design consideration noted above, the characteristic of the road network hierarchy and geometry, traffic flows, crime considerations and maintenance factors. A key issue from the Lighting Plan is that different streets, often adjacent, will have different lighting levels depending on the various factors noted in the above table. For example, a village residential street designed to meet a P4 standard, whereas a village distributor road is designed to meet a M4 standard with corresponding higher levels of illumination. It should be noted that the design of the replacement lanterns will always comply with the appropriate design class for each street to ensure that the specified maximum, average, and minimum illumination levels are met.
- 5.6 Modern lanterns and especially LED types have the ability to focus the lighting where required (on to the road carriageways and footways/footpaths), and to minimise backspill of light into adjacent land/properties and upwards towards the sky. This does mean that lighting levels within the boundary of adjacent land (e.g. residential property) may reduce upon the installation of the new lanterns due to the reduced backspill. It is important to note that the duty of the Council, as Roads Authority, is to light only the public road network, and it is good environmental practise to minimise backspill on to adjacent land. The responsibility for any lighting within the boundary of a property adjacent to the road lies with the property owner.

6.0 IMPLICATIONS

6.1 Finance:

This is an update report on the procedures adopted during the design of the LED programme only, all Financial implications relating to the programme are reported regularly to this Committee in both the Revenue budget and Capital Programme update reports.

One-off costs:

Cost Centre	Budget Heading	Budget Years	Proposed spend this report (£000s)	Virement from	Other comments
N/A					

Annually recurring costs:

Cost Centre	Budget Heading	Budget Years	Proposed spend this report (£000s)	Virement from	Other comments
N/A					

Legal

6.2 There are no legal implications arising from this report.

Human Resources

6.3 There are no specific HR implications arising from this report.

Equalities

6.4 As this report does not involve a new policy or a new strategy, there are no equalities issues arising.

Repopulation

6.5 The quality of the roads network and its associated street lighting is an influencing factor in the perception which people have of the area and the work associated with this report will have a positive benefit to the Council's Repopulation Strategy.

7.0 CONSULTATIONS

7.1 The Chief Financial Officer, Head of Legal & Property Services, and the Corporate Procurement Manager have been consulted on the contents of this report.

8.0 LIST OF BACKGROUND PAPERS

8.1 None.