

		AGENDA ITEM 6
		PSEG/32/16
Committee:	Place Services and Economic Growth Scrutiny Committee	
Date:	24 November 2016	
LED LIGHTING		
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On 22 September 2016 (Minute 9) the Committee sought a briefing on LED Lighting for this meeting.

Consequently a briefing paper is attached at the Appendix on the topic, and there will be a presentation at the meeting itself.

Action required by the Committee:

To receive a briefing on LED Lighting.

Briefing Paper on LED Lighting

For the Place Services and Economic Growth Scrutiny Committee meeting on 24 November 2016

Prepared by David Forkin and Keith Tovee, Essex Highways, on behalf of the Cabinet Member for Highways and Transport

- **LED Technology**

An LED street light is an integrated light that uses light emitting diodes (LED)¹ as its light source. This street light source provides a more efficient delivery of light for the energy used and an extended life compared to the existing discharge lighting currently deployed in Essex.

LED lighting has been developed over many years and with the technology becoming more of a standard design its costs have also reduced to levels, which now compare with traditional discharge lighting.

During this period of development LED lantern manufacturers produced various LED lanterns which, in general, are now no longer recommended. As Essex waited for technology to develop it has avoided expenditure on the lanterns that were available 3 to 5 years ago that are now not suitable for use as they do not provide the efficiencies and savings we enjoy today.

The LED technology continues to develop and driverless lanterns are now available (albeit in the smaller size) where the routine replacement of the driver (8 to 10 years) expected to be carried out during a cleaning programme is not required.

- **Phase 2**

LED phase 2 programme was developed following the phase 1 pilot carried out in the following towns/districts where 1562 lanterns were converted to LED technology.

- Stansted Mountfitchet
- Burnham Town
- Maldon Town
- Great Dunmow
- Saffron Walden
- Colchester Town

For phase 2, the street lights which operate “all night” were chosen as they would maximise energy and maintenance savings due to their type and location (For the A127, a decision has been taken early on in the planning process to convert all of the street lights to LED technology due to the type and location of this lighting).

The all night lights are a result of the roll out of the exception criteria for part night lighting. This identified certain lights to remain on all night as they are typically in conflict or sensitive areas.

The phase 2 programme is to invest £9.222m on the replacement of approximately 19,000 existing street lanterns with the more efficient LED technology. For 2016/17 approximately 9,500 street lights will be converted in the following areas.

- Castle Point
- Rochford
- Basildon
- Uttlesford
- A127
- Chelmsford

As of 27 October 2016; 2104 have been completed in the following areas:

- Castle Point
- Rochford
- Basildon
- Uttlesford

• **Phase 3**

The options are currently under discussion but initial thoughts are looking at high energy street lights which also attract high maintenance costs. These currently operate a part night protocol.

• **LED in Maintenance Operations**

LED technology is currently being fitted in illuminated sign lights, approximately 40% should be completed 2016/17. Essex County Council / Essex Highways (ECC/EH) are currently planning to convert the remaining sign lights to LED in 2017/18. The majority of the illuminated traffic bollards were converted to LED technology in 2015/16. The remaining traditionally lit bollards which experience engineering difficulties are being reviewed and, where applicable, replaced with reflective/self-righting bollards due to the change in traffic sign regulations (TSRGD 2016). Where ad hoc defects occur on street lights, not part of the phase 2 programme, which have access issues i.e. major traffic management required or on remote footpaths, the lanterns are being replaced with LED technology.

Other areas where LED technology is being considered is the replacement gear trays in subways/underpasses and ad hoc lamp replacements for beacons.

• **LED Effects on Maintenance**

LED technology helps to resolve lamp and control gear issues. A recent review showed this could be in the region of 50% of the defects received when compared to the existing technology.

Due to less energy being used by LED lanterns ECC/EH could see a benefit with the private cable networks owned by ECC as the electrical “stress” placed on the aging cable is reduced. This could lead to less cable faults compared to conventional lighting.

Notes

1. A light-emitting diode (LED) is a semiconductor light source. It is a p–n junction diode, which emits light when activated. When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons. This effect is called electroluminescence, and the colour of the light (corresponding to the energy of the photon) is determined by the energy band gap of the semiconductor.
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