# Environment and Infrastructure Select Committee 28 February 2018 Converting Street Lighting to LED SURREY

**Purpose of report:** To provide an overview of the Council's plans to reduce energy consumption through converting street lighting to LED and provide Members with the opportunity to inform specific aspects for Officers to explore as the technical solution is developed over coming months.

#### Introduction:

- 1) At its meeting on 30 Jan 18, Cabinet approved the principal of converting the Council's 89,000 street lights to LED to save energy.
- The Council's street lights currently consume approximately 23 million KwH of electricity each year which currently costs the Council £3.5 million in energy costs and a further £160,000 in Carbon Tax.
- 3) It is planned that investing an estimated £18.5 million to convert the street lights will reduce energy consumption by around 60% which will generate gross annual savings of £2 million. The annual reduction in energy of around 14 million KwH will reduce the Council's carbon footprint by 6,200 tonnes of CO2 and in turn this will lead to additional annual savings of £98,000 through avoided Carbon Tax.
- 4) The process for developing and agreeing the specification and technical solution and then agreeing contract amendments is estimated to take approximately 6 months. This period of development provides Officers with the opportunity to explore additional innovations and technologies now being used or developed.
- 5) The Cabinet report outlines the options considered to date which include retrofitting LED into existing lanterns where appropriate to do so to reduce costs and that different solutions may apply to different lantern types and different roads (notably residential roads and traffic routes).

# **Background and Current Position:**

# **Energy Consumption and Costs**

6) The Council currently spends £3.5 million each year on energy to power its 89,000 street lights. Recent projections indicate energy costs for street lighting will rise by between 5% and 14% each year over the next 10 years which could mean the cost increasing to nearly £15 million per year in that time and as high as £55 million per year in 20 years if prices rose by 14% each year. 7) Although energy price inflation is increasing at a significant rate, to ensure lights are operational when needed, there is little opportunity for the Council to control or reduce its energy costs – for example dimming lights further or increasing part night lighting are not viable.

# **Developments in Street Lighting Technology**

- 8) LED technology in street lighting has matured significantly in recent years while the costs have reduced. Many Highway Authorities have either embarked on an LED conversion programme or are in the process of planning to commence one within the next 2-3 years.
- 9) Converting to LED will reduce energy consumption by 60% delivering £2 million per year energy savings at today's prices as well as reducing carbon impact by 6200 tonnes and avoiding the Carbon Reduction Commitment tax otherwise payable on the avoided consumption.
- 10) A report published in 2017 by IoTUK on the "Future of Street Lighting" (included as Annex 1) outlines a number of areas where new technologies have been developed either as part of a lighting system (including control mechanisms) or in providing a communications network allowing other connected technologies to monitor, record and transmit data across that network to improve services being delivered by a wide range of bodies.
- 11) In addition to converting to LED street lighting and upgrading the Central Management System, Officers will be able to explore those additional innovations now being used or being developed for use with street lighting such as:
  - a) Motion sensor controls to turn lights on in residential areas when people or vehicles approach and, off once they have passed
  - b) Providing real-time traffic movement data to help understand and ease congestion
  - c) Environmental sensors to detect and monitor air quality
- 12) As described, the potential for these innovations may be in direct relation to street lighting (e.g. motion sensor controls) or in providing a communications network for other areas of the Council (and extending to partners in District and Borough Councils) to connect equipment to improve the services and outcomes they deliver.
- 13) Furthermore, these innovations may present grant funding opportunities through central Government departments and the Local Enterprise Partnerships (LEPs) which would reduce the borrowing requirement for the Council.
- 14) As a result of changing the specification and converting to LED, there are likely to be some savings in the cost of maintenance for example, currently the lamps are changed every 6 years and this is not required for LED. The extent of these savings have not yet been quantified but will be fully explored as part of the contract change process described below.

# Amending the PFI contract

- 15) The PFI contract allows for changes to the specification and service. Once a change notice is issued, the process of identifying an appropriate solution to meet the Council's needs begins which is expected to take 6-8 months to explore and agree before being presented back to Cabinet for approval which is expected to be in the autumn.
- 16) Under the terms of the PFI contract, the Council cannot conduct a separate tender and so require the existing Service Provider to develop a solution based on the Council's revised requirements and specification.
- 17) To ensure the contract and the LED conversion continues to provide the Council with value for money, the Service provider will conduct an open book tender with Officers from both Highways and Procurement involved in the process. This will allow Officers to scrutinise the product selection as well as prices to achieve that objective.

#### **Conclusions:**

- 18) The Council's 89,000 street lights consume over 22 million KwH of electricity each year currently costing the Council £3.5 million in energy costs and a further £165,000 in Carbon Reduction Commitment Tax.
- 19) Forecasts indicate that energy costs will rise at a much faster rate than overall price inflation and potentially as much as 14% per year over the next 10 years.
- 20) Having taken steps to reduce energy consumption in street lighting through increased dimming and turning off lights in residential hours between 0100 and 0500 each night, the Council has little alternative to reduce costs.
- 21) LED technology in street lighting has matured significantly in recent years while the costs have reduced. Many Highway Authorities have either embarked on an LED conversion programme or are in the process of planning to commence one within the next 2-3 years.
- 22) Implementing a change under the PFI contract presents an opportunity to explore other innovative technologies that might reduce costs, improve service outcomes or even generate income streams. These new ways of working may be in directly operating street lights such as motion sensors or in providing a communications network for the County Council and/or its partners to connect nonstreet lighting equipment to perform improved functions such as traffic counting and air quality monitoring.

#### **Recommendations:**

- 23) It is recommended that the Environment and Infrastructure Select Committee:
  - a) Note the contents of this report in conjunction with the 30 Jan 18 Cabinet report on conversion to LED

b) Provide comment on additional areas of innovation that Officers might explore as part of the development of the technical solution

#### Next steps:

Subject to Cabinet approval on 30 Jan 18:

- Officers will issue a change notice under the Street Lighting PFI contract in early 2018
- In conjunction with the Service Provider, Officers will then carry out a market test to select an appropriate manufacturer to provide suitable products to meet the Council's requirements to ensure the required levels of lighting in all roads and maintain the excellent operational performance
- Cabinet will be presented with a report including a more detailed business case to approve before the change agreement is agreed and implemented (expected to be Autumn 18)
- Subject to that Cabinet approval the replacements will commence in April 2019 and are expected to be completed over 3 years

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# Sources/background papers:

Cabinet Paper 30 Jan 18 IoTUK paper on "Future of Street Lighting"

# Glossary of acronyms:

KwH – Kilowatt Hours LED – Light Emitting Diode PFI – Private Finance Initiative