Committees: Streets and Walkways Sub-Committee Projects Sub	**Dates:** 21 Sept 2015 8 Oct 2015
Subject: Issue Report: Street Lighting Replacement Project	**Public**
Report of: Director of the Built Environment	**For Decision**

Summary

• Dashboard:

Project Status: Green
Timeline: Gateway 3 in Dec, Gateway 4/5 in Spring 2016
Total Estimated Cost: £2.5m to £4m
Spend to date: £77,826
Overall project risk: Amber

• Last Gateway approved: Capital bid

• Progress to date including resources expended:

The majority of the City's street lighting stock is over 30 years old and is reaching the end of its serviceable life. Maintenance costs are accelerating, energy costs are high and rising, and the Government has now introduced a carbon tax on energy for street lighting, further adding to the cost associated with operating anything less than the most efficient street lighting solution.

A technical equipment evaluation has been on-going in the City since 2011 as the street lighting industry settles on a proven, stable and sustainable Light Emitting Diode (LED) solution for more efficient and effective street lighting. £50k in capital funding and £50k in DBE Local Risk was approved to establish the trial, covering equipment, staff and consultant costs. Just under £78k of that £100k budget allocation has been spent so far, around half of which has been used for different types of trial equipment in the Guildhall area.

In parallel, the system the City uses to trigger and control its street lighting has similarly reached the end of its useful life and is vulnerable to the risks associated with the resilience of the equipment and the commitment of a small contractor maintaining a bespoke system. Technology has also been developing in this area over recent years, but only recently have suppliers of Central Management Systems (CMS) for street lighting been able to demonstrate alternatives suitable for the City's narrow street pattern and canyon effect. This new technology could also allow for dynamic control of the City's street lights, with different lighting levels tailored to meet the needs of different parts of the City at different times.

Given the long-term nature of the technological development and evaluation of

both LEDs and CMS', this is the first opportunity to bring the project back to Members through the Gateway structure with some certainty as to the direction of lighting technology. However, savings have already been included in the Service Based Review assessment for 2017/18 on the basis of moving to a more efficient street lighting operation, the Superfast City Programme Wireless Concession is partly reliant on the City having robust street lighting infrastructure, and aspects of this project are already contained within the City's overall Strategic Energy Review.

• Summary of issue:

In that context, Members are asked to approve a proposed way forward (see below), and to agree that the remaining £22k in the budget allocation be used as staff costs to bring the project to Gateway 3/4.

• Proposed way forward :
It is proposed that officers bring forward a Gateway 3/4 report that outlines the cost / benefit of a move to LED street lighting and, in parallel, the case for a central management system to control that lighting.

Recommendations

It is recommended that Members:

- Agree the general approach outlined above;
- Approve the reallocation of the project's remaining funds to cover staff costs in order to reach Gateway 3/4.

Main Report

1. Issue description	Background The majority of the City's stock of street lighting equipment is inefficient and beyond its natural life expectancy. Rising maintenance costs are placing increasing pressures on revenue budgets, which cannot afford to fund a bulk equipment upgrade and fail to account for an expected substantial increase in energy costs over the next 10 years. Members agreed a pre-Gateway capital bid report in 2010 that recommended an evaluation of the savings to be made from a capital investment programme of equipment replacement. This evaluation was to study various options including: • the savings from using new lighting technology, and; • the options for using different lighting levels at different times in different locations. Lighting Technology In terms of establishing the savings from new lighting technology, a series of trials have been undertaken to

	understand the visual impact, reliability, aesthetic appearance and energy usage of different sorts of lighting equipment. This has been instructive, but rapidly changing technology has meant that the lighting industry is only now settling on a proven, stable and sustainable Light Emitting Diode (LED) solution. As the market settles, the unit cost for this new technology has also started to move downwards, with units becoming more affordable. Even so, the City's trial has confirmed that the payback period from the necessary capital investment remains more than five years, which would exceed the City's standard guidelines for such investments. However, the lifespan of this equipment remains in the region of 25+ years, meaning the long-term investment potential remains sound, and the savings to be made through the reduction in energy usage and maintenance costs have been substantiated. <u>Lighting Control</u> In terms of the options for setting different lighting levels, the main barrier to dynamic lighting (and potential further savings) is the City's current system for triggering and controlling its street lighting. This bespoke system, called Cyclocontrol, copes with the City's complex lighting network by sending a pulse along the electrical wire from one of 16 substations spread around the City to trigger the street lights on and off. However, that equipment has similarly reached the end of its useful life and could require significant capital investment if it were to remain in use. Its capacity to control individual light units within an area is limited, and the City is vulnerable to the risks of relying on a small contractor maintaining such a key bespoke system. Technology in this field has also developed over recent years, but suppliers of Central Management Systems (CMS) have only recently proposed alternatives that cope with the City's narrow street pattern and canyon effect. Instead of relying on limited 'line of sight' communications, systems can now work on a mesh basis where units talk to each other by forwarding signals from base stations. This could facilitate dynamic lighting control in the City, with different lighting levels tailored to meet the needs of different parts of the City at different times, creating a highly efficient network delivering lighting that is truly fit for purpose. <u>Parallel Programmes</u> In anticipation of this project moving forward, potential savings from street lighting (from reduced energy use, repairs & maintenance and 'scouting' for failures by night-time inspectors) were proposed and accepted for the 2017/18 financial year as part of the Service Based Review. These savings of £275k pa

	can only be achieved if the project now progresses. In parallel, the Superfast City Programme Wireless Concession, currently being tendered by the Chamberlain, is potentially reliant on the integration of wireless technology with the City's street furniture. Modern street lights with stable communication capabilities are likely to be key aspects of the technical delivery of the concession, and there are further potential links to the City's Smart City agenda, so these projects are best progressed together as they are likely to be mutually dependent. Finally, the City Corporation's Strategic Energy Review identified this project as one that would help meet its objective of reducing the City's energy use by 40% by 2025. A programme board is expected to be established in the near future with the aim of delivering on this target.
2. Last approved limit	<u>Initial Trial</u> When the lighting trial was proposed in 2010, the Planning and Transportation Committee and the Resources Allocation Sub-Committee / Estimates Working Party authorised £100k to be used for an evaluation of street lighting equipment. Of that amount, £50k from City Fund capital funding was set aside for trials of new equipment, and £50k in DBE local risk funds was to be used for staff costs and consultant fees. So far, of the £50k capital funding, £42,826 has been spent, mainly on trial lighting units currently in place in the Guildhall area. Of the £50k DBE local risk, £35k has been spent on staff costs, but the remaining £15k, originally intended for potential consultant fees, is currently unspent. This makes total of £77,826 used on the project so far, leaving £22,173 remaining, £15k of which would be from DBE local risk and £7,173 from the capital side. <u>Full Project</u> In terms of the eventual investment project, funding was envisaged to come from City Fund, subject to Member approval. In 2010, that estimated cost was thought to be in the region of £2.5m, with a possible saving of £225k pa. From the subsequent equipment trials, as well as an initial assessment of the current condition of the City's lighting infrastructure (wiring, brackets etc), the cost of replacing <u>every</u> lighting unit in the City has been estimated to be around £4m (including staff, installation and CMS costs). However, this does not take into account those units that have been replaced and upgraded in the recent past, nor those that will be replaced under normal repairs and maintenance during the life of the project. In addition, it does not account for those units that will also be replaced at the expense of typical

	development activity or City environmental enhancement projects. As a result, the estimated cost is fully expected to be less than the £4m upper extent. The next report will seek to narrow this cost by establishing what percentage of lighting units are still fit for purpose and do not require replacement. Equally, those fittings that will be removed and replaced during normal development activity and street enhancements will also reduce this volume and cost.
3. Options	It is now proposed to bring forward a Gateway 3/4 report that formally reintroduces the project to Members for the first time since the initial capital bid approval. That report will outline the cost / benefit of a move to LED lighting and, in parallel, the case for a central management system to control that lighting. However, without using the remaining funds for staff costs, key officers cannot be committed to bring the project to that Gateway, and therefore there is a risk that the project will be delayed or progress too slowly to deliver the Service Based Review savings. Under the terms of the original capital bid, staff costs have been funded from DBE Local Risk. However, to progress the project to Gateway 3/4, a reallocation of funds within the project's agreed budget is necessary, as officers within the Highways Lighting Team and DBE's Environmental Enhancement team need to be dedicated to the task. A formal project structure also needs to be established, drawing in resources and expertise from a number of other City divisions and departments. Of the originally agreed £100k budget, approximately £22k remains unspent, of which £15k is DBE Local Risk and £7k is capital funding. This money was originally intended for further equipment and consultant fees, but neither is likely to be needed at this point in the project. Instead, it is proposed that these allocations be used this year to cover the staff costs needed to bring the project to the next Gateway. In particular, the DBE Local Risk amount can be met from staff underspends within the Highways team.

Appendices

N/A	

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