

Title of meeting: Cabinet Meeting & Council Meeting

Date of meeting: 29th June 2017 (Cabinet), 11th July 2017 (Council)

Subject: LED Replacement Programme

Report by: Alan Cufley, Director of Transport, Environment and Business Support

Wards affected: All

Key decision: Yes

Full Council decision: Yes

1. Purpose of report

- 1.1.** To gain approval to fund the installation of LED Street Lighting apparatus, and a Central Management System (CMS) across the City.

2. Recommendation

- 2.1.** That Cabinet approve the Report for submission to Full Council to approve a change to the Capital Programme as set out in 2.2.
- 2.2.** That Council give approval to increase the currently approved LED Residential Street Lighting Replacement Capital budget of £3.04m by a further £2.21m to £5.25m in order to upgrade the City Council's Street Lighting with LED lighting and a Central Management System.
- 2.3.** That the additional capital budget requirement of £2.21m be financed from Prudential Borrowing.

3. Background

- 3.1** In 2005 the City Council entered into a PFI Highways Maintenance Contract with Ensign Highways Ltd, with services delivered by Colas Ltd. The Contract required the Service Company to invest in the Network to bring the Highways up to a certain standard and then maintain this over a 25 year period. The first 5 years of the Contract included a Core Investment Period which included upgrading the City Council's street lighting. During this period 10,000 of the City Council's 15,000 street lights were replaced and upgraded with Sodium Discharge lighting this included both the replacement of columns and luminaires. The remaining 5,000 lighting columns were deemed to comply with the standards as set out in the Contract and Highways Standards.

- 3.2** Although the Service Company bear the risk for the maintenance of the Street Lighting apparatus the price risk for electricity remains with the Council, as does the volume of energy consumed.
- 3.3** The Council's Street Lighting apparatus currently consumes around 6.5m kilowatt hours (kwh) of electrical energy per annum at a cost of 12.196p per kwh, amounting to an annual cost of £797,000 per annum. This figure excludes electrical energy consumed for illuminated traffic sign lighting, subways and other illuminated furniture on the project network.
- 3.4** In 2013 the Council approved a budget of £3.04m to upgrade the City's Street lighting apparatus in residential areas of the City only. This project progressed to the Procurement stage but was put on hold. This new project to which this report refers to looks at replacing all Street Lighting on the network and this is why a further £2.21m is being sought. However the project does not include Heritage and Ornate lighting as the current costs of either replacing these luminaires or retrofitting them outweighs the benefits of replacing them. The Council does intend to investigate this further in the future on a case by case basis.
- 3.5** Since 2013 the technology associated with LED lighting has vastly improved and there are now more manufacturers in the market place, this has meant that for a like for like comparison had this scheme been completed in 2013 it may have cost the Council an additional £1.5m.
- 3.6** Back in 2013 the Council carried out a pilot street lighting installation scheme to test the energy saving capabilities of LED lighting, and to ensure that current lighting levels could be achieved using this type of apparatus. The energy savings achieved using LED lighting were around 40% to 50%. The Service Company have now carried out Soft Market Testing with a number of different luminaire suppliers, and these suppliers are now claiming that savings of around 60% are achievable from the introduction of LED street lighting.
- 3.7** The new proposed project is to replace all the street lighting on the project Network, this will involve replacing all of the existing luminaires, and hopefully without the re-siting or replacement of any additional lamp columns. If any lamp columns do need replacing because of their structural condition, then the cost of this will be met by Ensign under the PFI Highways Maintenance Agreement. This allows the Council to reduce the capital cost of the project whilst maintaining the City's lighting levels to those set out in Highways Standards.

4. Reasons for the recommendation

- 4.1** The investment of £5.25m in the Council's lighting stock will significantly reduce the Council's ongoing electricity consumption and generate significant savings, even after taking account of the cost of borrowing.
- 4.2** Following soft market testing the Council has been able to better understand the type of energy reductions it should expect to achieve. The scenario below suggests that if

the implementation of the LED project saved 37% of the energy currently consumed over a 20 year period, the saving in energy is expected to total approximately £7.77m, assuming energy prices were to grow by 3% per annum over this period. The table below shows detailed cost and savings generated by the project over a 20 year period.

	£m	£m
Capital Cost		5.25
Energy Savings	(7.77)	
Carbon Tax Savings	(0.51)	
PFI Service Payment Savings	(2.62)	
Total Saving		(10.90)
Borrowing Costs (3.8% over 20 years)		0.94
Net Saving		(4.75)

- 4.3** A detailed and robust Financial Appraisal has been carried out that demonstrates that the project is expected to be fully paid back after 11 years, delivering a favourable NPV of approximately £3.5m over the 20 year term.
- 4.4** As mentioned above, the appraisal assumes annual energy increases of 3%, however, since the start of the contract in 2004 energy prices have actually increased by around 6% per annum. The government Department for the Environment and Climate Change are forecasting that this trend will continue in the future, which would increase the energy savings from £7.77m to £11m over the life of the project. The financial appraisal has been carried out on a prudent basis to demonstrate that the project is still viable even at half the anticipated increase in energy price.
- 4.5** The table below shows the range of savings that could be made if the cost of energy increased or if the Council explored initiatives such as dimming and trimming and further decreased it's energy consumption. However this will not be implemented until such time as a full impact and risk assessment has been carried out.
- 4.6** Dimming is where you can choose to dim the light omitted from a Street Light, often at periods of low traffic movement. Trimming is where you can choose the lights to come on later in the evening or earlier in the morning

	Increase In Energy		
	3%	6%	9%
% of Energy Saved 40%	£ 331,000	£ 371,000	£ 415,000
% of Energy Saved 50%	£ 412,000	£ 446,000	£ 472,000
% of Energy Saved 60%	£ 506,000	£ 536,000	£ 566,000

- 4.7** As a result of moving to an LED lighting solution, and Central Management System, the Council anticipates that it will be able to reduce the cost of maintaining the current street lighting stock. The Council is in talks with its Highways Maintenance Contractor with a view to reducing its current annual payments to the Contractor by approximately £200,000.
- 4.8** Additionally there are a number of other advantages that the Council is likely to enjoy as a result of this investment:
- a) The CMS system will identify lamp outages so where the only way to detect when a light is faulty is to employ a night time scout, the system will automatically monitor, detect, and report these faults.
 - b) Currently because the street lighting stock mainly consists of Sodium lighting the lamps need replacing every 4 years, this involves a programme of bulk lamp replacement, and in some cases lamps which are still working are removed and replaced with new. With the LED lighting this has a greater lifespan of 20 years plus, and has a very small failure rate, and so this bulk lamp replacement is no longer required.
 - c) The Central Management System will allow the Council to control its lighting timings and levels remotely for the first time. In future the Council could choose to reduce lighting levels at certain points during the night, and even change when the lights come on and go off. However this will not be implemented until such time as a full impact and risk assessment has been carried out. The CMS system also allows the Council to increase lighting levels for special events being held or if there was a major incident, the current lighting apparatus does not offer this same flexibility.
- 4.9** Additionally based on the appraisal above, the City Council is able to apply for Salix loan funding of £2.7m. This is a short term interest free loan facility that reduces the need for the Council to borrow from its usual provider, the Public Works Loans Board. The Council always seeks to maximise the amount funded by this Salix facility.

5. Equality Impact Assessment

- 5.1** A full equality impact assessment is not required as the recommendation has a positive impact for Disability groups, and does not have a negative impact on any of the remaining protected characteristics as described in the Equality Act 2010. These include Age, Race, Gender, Sexual orientation, Religion or belief, the relationships between these groups, and other socially excluded groups.

6. Legal Implications

- 6.1** The Highways Act empowers local authorities to light roads, but does not place a duty to do so. The City Council has a duty of care to road users, and has an

obligation to light obstructions on the highway. The City Council has a statutory duty under the Highways Act, to ensure the safety of the highway, and this includes any lighting equipment placed on the highway. The Electricity at Work Regulations imposes a duty on the owners and operators of electrical equipment to ensure its safety.

- 6.2 Installation and maintenance costs/obligations are to be considered in line with the City Council's PFI Contract and that all reference to energy usage is updated in accordance with the energy efficient infrastructure being proposed.
- 6.3 The recommendations set out above would help secure best value for the City Council and in accordance with the Local Government Act 2003
- 6.4 The City Council is under a general Duty of Best Value to *"make arrangements to secure continuous improvement in the way in which its functions are exercised, having regard to a combination of economy, efficiency and effectiveness" in accordance with Section 3 of the Local Government Act 1999 (as amended by s137 of the Local Government & Public Involvement in Health Act 2007).*
- 6.5 The City Council should consider overall value, including economic, environmental and social value in regards to the above recommendations.
- 6.6 The City Council is under a duty to consult representatives of a wide range of local persons; this is not optional. In the interests of economy and efficiency, it is not necessary for authorities to undertake lifestyle or diversity questionnaires of suppliers or residents.
- 6.7 It is within the City Council's powers to approve the recommendations set out above.

7. Director of Finance's comments

- 7.1 The Director of Finance comments are included within the main body of the report.

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Signed by:
Alan Cufley
Director of Transport, Environment and Business Support

Background list of documents: Section 100D of the Local Government Act 1972

The following documents disclose facts or matters, which have been relied upon to a material extent by the author in preparing this report:

Title of document	Location
None	

The recommendation(s) set out above were approved/ approved as amended/ deferred/ rejected by on

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Signed by:
Councillor Donna Jones
Leader of the Council

(End of report)