

Southend-on-Sea Borough Council

Report of Corporate Director for Place

to
Cabinet
on

23 June 2015

Report prepared by: Jeremy Martin, Energy Projects Manager
and Paul Mathieson Group Manager Major Projects and
Strategic Transport Policy

LED Street Lighting and Illuminated Street Furniture Replacement Project

Relevant Scrutiny Committee(s) Place Scrutiny Committee
Executive Councillor: Councillor Terry
Part 1 (Public Agenda Item)

1. Purpose of Report

- 1.1. The purpose of this report is to seek approval to accelerate the project to replace the street lighting lanterns within Southend with LED units and as a result address issues relating to maintenance, compliance and budget pressures, whilst still making a saving to the Council. It is also proposed to replace a third of the street lighting columns and bring all the illuminated street furniture in line with proposed new traffic sign regulations. A computer controlled Central Management System (CMS) will be introduced to enable the Council to manage the street lighting efficiently. This proposal is an Invest to Save project with all costs including funding fully funded from revenues within the project.

2. Recommendations

That Cabinet approves:

- 2.1. **To proceed with the £13.5m project to replace the existing street lighting project, by completing the rollout of LEDs on street lights and street furniture, replacing light columns and installing a computer management system by March 2018**
- 2.2. **That this is funded by a 25 year reducing balance 'invest to save' finance from the Green Investment Bank (GIB) of £8.5m and a £5.09m Grant from Department for Transport.**
- 2.3. **That the necessary changes to the capital programme and its financing are made in line with the content of this report.**

- 2.4. That the necessary changes to the revenue budgets and earmarked reserves are made as set out in paragraphs 5.3 and 5.4.**
- 2.5. That Cabinet notes that an annualised saving of £440,000 will be generated from this invest to save project and that this will form part of the savings proposed for the 2016/17 budget.**

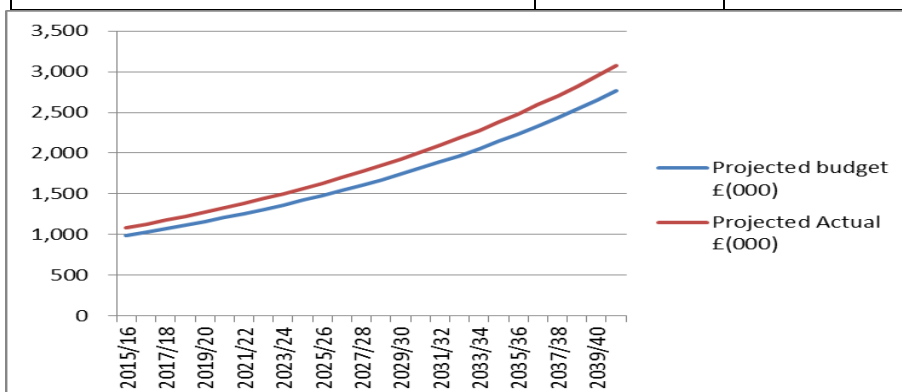
3. Background

- 3.1.** In early 2013, Cabinet approved a £2.5m project to replace all streetlights in the Borough with LEDs over a 5 year period.
- 3.2.** The trials that commenced at the start of the LED project revealed a number of issues that were unforeseen including early failure of the proposed lanterns. A large scale trial and test of subsequent lanterns was undertaken where a number of important lessons were learned that made the proposition robust.
- 3.3.** In the earlier trials some of the lanterns failed within the first 6 week trial period. In addition, some of the lanterns failed to provide adequate light coverage to meet expected standards. New trials were commissioned with alternative lanterns from a different supplier which were successful and three standard lanterns have been chosen as the preferred option.
- 3.4.** The new LED lanterns are heavier than the current lanterns which has exacerbated a situation which did to some extent pre-exist in respect to maintenance. These maintenance problems include compliance with current electrical regulations in respect of all of the cast iron columns. Some of the concrete columns are structurally unable to take the weight and require replacement, whilst others can be modified by the addition of a new sleeve with a smaller reach arm.
- 3.5.** Up to the end of May 2015, the Council has changed over 1,500 lanterns in the extended trial to demonstrate the process to manage the LED conversion and to fully investigate and understand the operational issues of managing the project. As part of this work, other local authorities have been consulted on their experience with LED lanterns and with CMS. This supports the approach outlined in this report, where a comprehensive solution is required tackling both LED replacement and old columns in one programme. The introduction of CMS would achieve further energy savings and maintenance efficiencies.
- 3.6.** The Council has over 17,000 items of street lighting and street furniture using over 7 million kWh electricity at a cost of nearly £800k each year including carbon taxes.
- 3.7.** Over 50% of the energy used, and associated carbon taxes, would be saved by changing the street lighting lanterns to LEDs, whilst much of the street furniture can be either changed to LED or can be converted to reflective signs with no energy use.
- 3.8.** LED lanterns will last an average of 20-25 years compared to 3-6 years for current technology. The quoted average lamp lifetime is the period by which

50% of lanterns are expected to have failed with some lanterns likely to fail sooner and others which will last twice as long.

- 3.9.** CMS are available providing central control and monitoring. This will allow easy control of light levels, on lighting times and on future compliance with new regulations relating to light levels. Very accurate energy consumption metering can also be carried out.
- 3.10.** From experience gained with the extended trial it became apparent that there would be financial implications in proceeding with the original project for total LED and column replacement. Looking for an innovative and creative solution whilst avoiding the need to seek further Council funding led to the application, in early 2015, to the DfT Challenge Fund for a grant. Discussions with the Green Investment Bank also took place around “invest to save” funding. A funding package was put together that addresses these challenges and creates a saving back to the Council as well as delivering an extensive public benefit. The application to DfT was successful and the Council was awarded £5.09m. The grant application can be found at www.southend.gov.uk/info/200447/better_southend/563/challenge_fund_-_street_lighting_upgrade.
- 3.11.** The project proposes that the capital grant from the Department for Transport be used to support a final application to the Green Investment Bank for the remaining amount. Indicative approval from the Green Investment Bank has been received.
- 3.12.** In 2014/15, there was significant pressure on the street lighting budget which was absorbed by compensatory savings in other areas of the Place Department’s budget. However as the Government’s austerity measures continue to constrain the Council’s budget over the coming years, this pressure is far harder to manage. The table and graph below shows how the budget pressure will accumulate over 25 years if the LED lighting project was not to be carried out with an overall projected budget pressure of £4.8m (11%).

Projected totals over next 25 years (including inflation):	Total £k	Energy £k	Maintenance £k
Budget	44,801	30,954	13,847
Spend	49,589	37,632	11,957
Budget pressure	4,788	6,678	(1,890)



4. Proposal

4.1. The project comprises a number of linked activities to address ongoing maintenance pressures, ensuring street lighting and furniture complies with the latest regulations, including the implementation of a central control system and the continuation of the replacement programme of all the LED lanterns across the entire Borough.

4.1.1. Columns. Replace all cast iron columns, sleeve or replace all concrete columns and re-use over 90% of the steel columns.

4.1.2. Lanterns. Generally, replace all current lanterns with one of three standard units, with special attention given to conservation areas and any special lighting that may require more bespoke lanterns.

4.1.3. CMS. Install a central management computer system to all street lights and investigate opportunities to roll this out to other Council lighting assets.

4.1.4. Fit new lamps or disconnect all items of street furniture where lighting is not now required to meet the new regulations.

4.1.5. Install additional lighting to car parks where required as these are currently lit by the overspill from streetlights. LEDs tend to produce less overspill and this may leave car parks without adequate lighting if no additional lighting is installed.

5. Financial Implications

Financial Benefits

5.1. Finance and operational teams have worked together with the Green Investment Bank on the benefits and on the funding proposals. The overall Finance assessment of the project is contained at Section 10.2.

5.2. Savings are available from three sources totalling an estimated £25.9m over 25 years:

5.2.1. There are 55% energy savings with associated carbon taxes including street furniture.

5.2.2. There will be a temporary maintenance saving from a general replacement linked to extended equipment life.

5.2.3. CMS. An additional 3% energy saving off set by hosting costs as a result of introducing CMS.

5.3. Overall, savings are expected to be £25.9m over a 25 year period (52% of expected costs of energy and maintenance). Of this, a significant portion will be required to cover the financing costs of the GIB invest to save finance package leaving net budget savings of £11.5m as shown in the table below. The calculated budget pressure detailed in paragraph 3.12 will initially be dealt with

as part of the budget process for 2016/17 to ensure that the budget for energy and maintenance for street lighting is aligned correctly to anticipated spend.

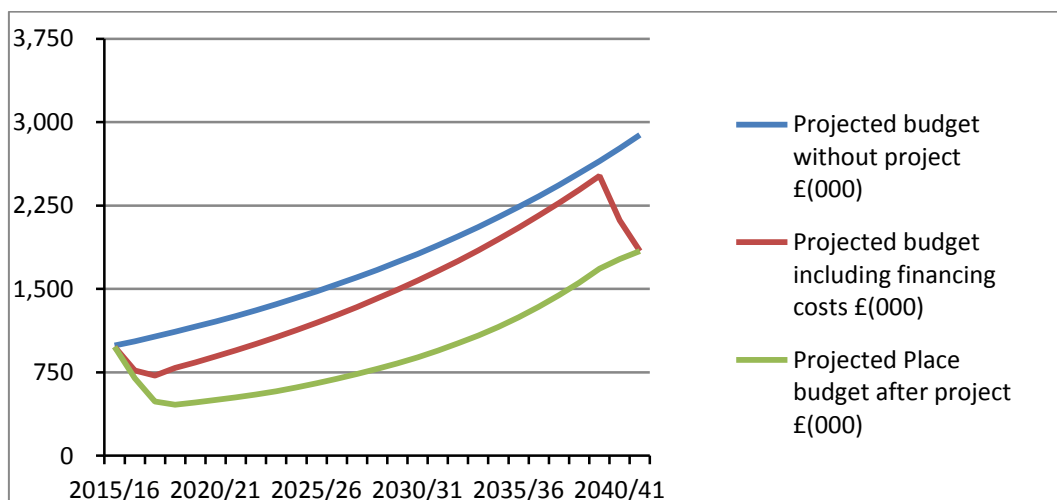
Projected totals over next 25 years (including inflation):	£k
Predicted savings *	(25,903)
Used to meet financing costs of GIB funding	£14,445
Corporate savings	(11,458)

5.4. The current budget within Place over 25 years, is £44.8m accounting for inflation. After the base budget is amended to reflect the current budget pressure, the base budget will then be £49.6m, inflated over 25 years. This project will reduce that budget to £23.7m with an associated budget in Finance to repay the loan, as follows:

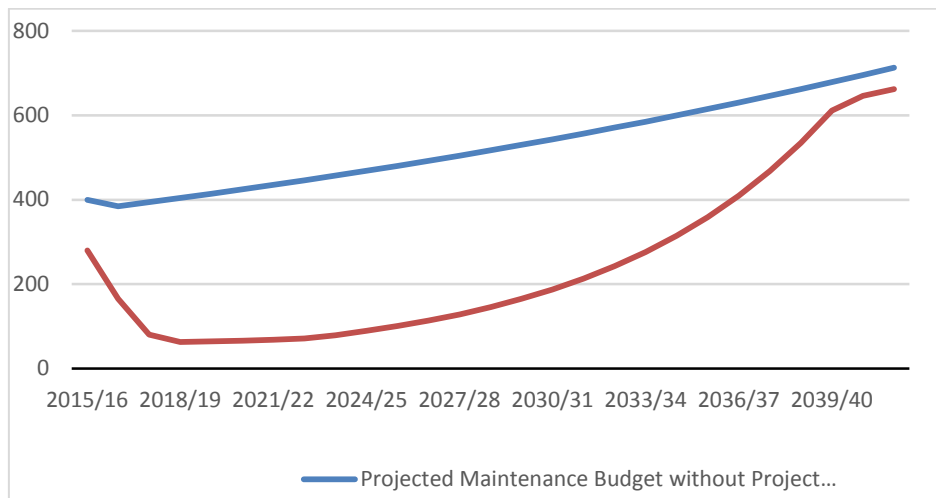
Projected totals over next 25 years (including inflation):	£k
Budgets – energy and maintenance (after dealing with budget pressures)	49,589
Removal of financing costs to the corporate budget to fund the financing costs of the GIB funding	(14,445)
Removal of savings as part of the budget process	(11,458)
Revised budgets – energy and maintenance	23,686

As a result an annualised sum of £440k can be removed from the energy and maintenance budgets as part of the 2016/17 budget process to contribute to the 2016/17 budget gap. This will necessitate the use of an energy saving earmarked reserve and based on the estimated figures, £105k would be contributed to the reserve in 2015/16 and £74k of the reserve to be used in 2016/17 to smooth the first couple of years as the savings stabilise.

5.5. The effect on the energy and maintenance budgets is shown below including budget year 2041/42 when the full impact of the project is shown after the finance is fully paid when the saving is projected at over £1m per annum:



5.6. It should be noted that the maintenance element of the Place budget will fall dramatically at the start of the project but will need to be restored over the life of the project to account for the temporary nature of the saving, as shown in the graph:



Funding

5.7 A grant of £5.09m has been awarded towards the costs of this project by DfT. The remaining £8.5m would need funding to be identified by the Council. It is recommended that this funding be provided through finance from the Green Investment Bank.

5.8 This proposal assumes an interest rate set at 3.86% from GIB financing. The expected returns have been calculated net of funding cost and repayment over a 25 year period.

5.9 Six options for funding were considered:

5.9.1 PWLB Maturity Loan. Maturity Loan from Public Works Loan Board (PWLB) is a loan where the capital is repaid in a lump sum at the end of the period. Interest is paid on the whole of the loan for the whole of the term and the Council accrues capital during the term of the loan, and earns interest on it. Most of the Council's borrowing uses this facility, because it provides the flexibility required by the Council cashflows and accounting rules. Interest is fixed at drawdown so in this project, the Council would be exposed to some interest rate risk for the first 2 years of the term.

5.9.2 PWLB Reducing Balance Loan. PWLB offer a loan in which capital payments reduce the balance owed, thereby lowering the funding cost. The terms of this loan are very rigid and given the revenue streams in this project and the accounting needs of the Council, it is too inflexible to be able to be used. Interest is fixed at drawdown so in this project, the Council would be exposed to some interest rate risk for the first 2 years of the term.

5.9.3 GIB Invest to save finance. GIB offer finance on a flexible reducing balance basis at similar rates to PWLB. The funding cost would be approximately 25-26% lower than the PWLB maturity loan whilst providing the flexibility needed.

Interest rates are fixed at financial close thus eliminating interest rate risk. GIB also conduct a due diligence review on the technical aspects of the project within their costs which provides a comfort level when the finance is agreed.

- 5.9.4 Private Sector Finance. Compared with PWLB and GIB, private sector finance will be more expensive and less flexible for the Council's needs
- 5.9.5 PFI. A number of PFI type schemes could be available but feedback from the market indicates that these are expensive and transfer both risk and reward to the private sector. The PFI would also require maintenance to be included driving up revenue costs compared with the tendered maintenance contract.
- 5.9.6 Reserves. Use of reserves could be considered but this has been ruled out as earmarked reserves are not available and general reserves would be depleted by too much if they absorbed this size of funding requirement.
- 5.10 The most viable funding options were compared with GIB finance where 100% of the savings were used to make repayments initially to minimise funding costs. The summary of these calculations is presented in the table below. The different funding paths include costs which are added to the finance package and the profile of the repayments means that some of the savings are used to lower the capital, therefore the total project size and the amount of finance required varies from option to option.

Funding Option	GIB 25 Years	GIB repaid early	PWLB 25 Years
Capital incl Fees	£13,457,669	£13,468,520	£13,295,958
Funded by			
Externally Funded Grant	£5,090,000	£5,090,000	£5,090,000
Gap to be financed	£8,247,264	£7,675,254	£8,205,958
Revenue Contributions (from savings generated)	£120,405	£703,265	-
Funding Costs			
Total repayments	£14,325,070	£10,348,171	£15,974,470
Interest	£6,077,806	£2,672,916	£7,768,512
Capital Repaid	£8,247,264	£7,675,254	£8,205,958
NPV (6.09%, 25 years)	£5,216k	£4,384k	£4,552k

- 5.11 Against the NPV analysis, the 25 year GIB finance was judged to offer the best value. It should be noted that the option to repay the loan more quickly offers a cheaper option but the NPV analysis shows that due to the savings being used

to repay the finance in the earlier years the benefit is delayed and is worth less than the savings in funding cost.

- 5.12 This project replaces the current LED street lighting project within the approved capital programme. This means that the remaining £1.9m of the old project will be removed from the Capital Programme and the £1.4m reserves allocated for this project will be released either for other council capital projects or to reduce more expensive borrowing. The balance was external funding and will be used to finance the Department of Place capital programme. If this proposal is approved these adjustments to the financing of the capital programme will be made.

6 Other Benefits

- 6.1. Substantial non-financial benefits will accrue from this project relating to maintenance, compliance, reliability and future proofing.
- 6.2. The requirements for lighting columns and street furniture have changed and the standards have also changed over the years. In particular, the cast iron columns do not conform to electrical safety regulations. New street furniture regulations will require a change to reflective signs rather than illuminated ones in many cases. An estimated £7m capital spend and associated annual financing costs of circa £0.56m will be avoided by completing this project which includes updating the assets. Whilst a proportion of this capital would be provided under grant, the annual grant will still be required keeping up with future replacements of assets not changed in this project.
- 6.3. CMS allows light levels to be controlled remotely.
- 6.4. CMS will allow remote monitoring of energy costs and of luminaire failure. Currently failures are reported by members of the public or are spotted by Council staff. The CMS will automate this process allowing faster response to outages and reducing costs.
- 6.5. LED lighting is designed to be much more directional than current technology. The benefit of this is reduced overspill of light into homes which can be a hindrance to sleep patterns and reduced light pollution.
- 6.6. The project will result in annual reduction of CO2 emissions of 2,109 tonnes, 0.26% of all CO2 emissions from all sources within the Borough. The financial benefit of the associated tax on the CO2 emissions will be £1.3m over the 25 years and is included in the savings totals
- 6.7. The project will also enable the replacement or removal of street light furniture reducing maintenance and energy costs, improving reliability and road safety.
- 6.8. Improved night-time visibility will enhance the visitor experience, reduce the risk of falls, improve security and help to reduce traffic collisions and crime.
- 6.9. LEDs will reduce the dispersion of light upwards reducing light pollution and helping to preserve dark skies. There will also be less annoyance to residents of nearby properties.

7. Risks

- 7.1. This project is designed to accelerate the rollout of the LED street lighting project as well as to accelerate column replacement. The project is planned to be complete by August 2017 and the terms of the Grant require it to be complete by March 2018, allowing a 7 month contingency period for delays. The recent extended trial has shown that this rate of installation is possible and discussions with installers and manufacturers are on-going with all parties agreeing that the project is achievable.
- 7.2. This project would install on over 17,000 items of lighting and street furniture over a period of 2 – 2.5 years. To ensure that resources are available for this rollout, the Council plans to engage contractors appointed under the term highways contracts that have recently been awarded. A comprehensive plan for installation each week from August 2015 is being compiled allowing progress to be managed and early corrective action if necessary.
- 7.3. The project was included within the recent street lighting maintenance tender and two installation suppliers are available with pre-tendered costs available. These costs have been used to estimate the overall costs of the project. If possible, the tendered costs will be renegotiated based on the higher volume. The CMS will require a tender to be completed and is in the procurement plan.
- 7.4. There is a risk that the tender for the CMS is slow causing repeat work to retrofit lanterns completed by the time that the CMS is chosen. This is inevitable for the 1,190 lanterns already changed. To reduce this risk, the project is currently concentrating on filling in the gaps in the installation already completed where column changes were required. The project team will have the CMS tender prepared for issue as soon as approval for the project is granted.
- 7.5. Project management resources are included within the overall costs of the project. An operational project board will be appointed to manage progress and to report to the Corporate Delivery Board.
- 7.6. The proposal assumes that RPI over the 25 year period will be 2.5% per annum, energy inflation will be 5% and that carbon taxes will rise by 3%. If inflation is lower, the savings will be lowered against an overall lower cost for all energy and related services. If inflation is higher, the project savings will be greater but this will be in an environment where all costs are higher.
- 7.7. An interest rate of 3.86% has been assumed in the modelling, 0.5% higher than is currently available. Short term interest rates are expected to rise over time but the interest rate for this proposition would be set against gilts at the time of financial close if the project is funded through the GIB as recommended.
- 7.8. If the costs of the project when complete are lower than £13.6m, the savings from the cost underrun must be shared with DfT in proportion. The grant is 32% of the total project and therefore any cost savings must be shared with DfT in that proportion.

8. Assumptions

8.1 The following key assumptions are included:

- Future years electricity price inflation will be 5% per annum with Carbon Reduction Commitment (CRC) carbon taxes rising at 3%.
- The previous year electricity price has been used as a baseline for year 1 rather than the current price because prices are expected to fall slightly in October 2015 offsetting the rise seen in October 2014. This is likely to be a cautious estimate given that wholesale prices of electricity have been rising since early in 2015 having fallen in late 2014.
- Hosting fees for the CMS will rise at RPI +0.5%, estimated at 3% per annum.

9. Other Options

9.1 Other options considered include:

- Do nothing. Doing nothing will leave the Council unable to complete the LED street lighting project throughout the Borough. The Council will lose the potential energy savings and will retain its current budget pressure and the requirement to change columns and street furniture to meet regulations.
- Reduce the size of the project. The only viable options to reduce the project would be to omit the CMS or the street furniture. Removing the street furniture mean that the Council will still have to fund compliance with new regulations whilst removing the CMS lowers the non-financial benefits substantially.

10. Corporate Implications

10.1 Contribution to Council's Vision & Corporate Priorities

- The proposition will support the delivery of the Council's Low Carbon Energy and Sustainability Strategy which was adopted by the Council in late 2014.

10.2 Financial Implications

This is an invest-to-save project and the predicted revenue streams cover the financing costs of the project, the current budgetary pressures and give a net benefit. The recommended funding option for this project is flexible reducing balance finance from the Green Investment Bank (GIB) over 25 years at similar rates to PWLB.

The funding costs will comprise the interest payable (which reduces over time as the loan is repaid) and the loan repayments. The budgets for these items will be removed from the energy and maintenance budgets to the corporate financing budget. As the interest rates are fixed at financial close this eliminates interest rate risk.

There are risks associated with the revenue returns and if circumstances transpired where they were not sufficient to cover repayments, then the Department of Place would need to supply the shortfall from their budgets. However, the GIB also conduct a due diligence review on the technical aspects

of the project within their costs which provides a comfort level when the finance is granted.

Finance consultation has been restricted to funding and accounting relating to the project proposals and not to the underlying capital costs or energy generation modeling.

10.3 Legal Implications

The Council will need to enter into a finance agreement with Green Investment Bank (GIB). Once completed, the agreement can then be reused for future projects that meet the GIB criteria.

10.4 People Implications

To deliver the project will require a project team. An operational project board will be created to manage the delivery reporting to Corporate Delivery Board. Specific project managers will be recruited funded by the project management element of the capital project.

10.5 Property Implications

This has no implications for Council property.

10.6 Consultation

Consultation has been completed with residents as part of the trials, with Finance, with other Councils operating CMS and LED street lighting as well as with manufacturers and installers.

10.7 Equalities and Diversity Implications

There are no equalities implications.

10.8 Risk Assessment

The risks are set out in detail in section 7 but the largest risks are:

- If the Council does not deliver the scheme efficiently through its project team and delivery partners.
- Financial if interest rates rise beyond the 0.5% before financial close. This is seen as unlikely.

10.9 Value for Money

The project has already been procured through the street lighting maintenance framework tender completed in 2014. In addition, the project is a significant invest to save financing proposal, which is identified to make a return on investment that can contribute towards savings required by the Council's budget process.

10.10 Community Safety Implications

Community safety will be increased by this project because there will be fewer lanterns not working, faults will be recognised sooner and the CMS will give the ability for light levels to be increased if requested by police or other authorities.

11. Environmental Impact

The proposal will save up to 2,109 tCO₂ per annum, 0.26% of the total CO₂ emissions within the Borough.

12. Background Papers

There are no background papers with this report

13. Appendices

There are no appendices with this report