

MUNICIPAL YEAR 2019/2020 REPORT NO. 7

MEETING TITLE AND DATE:

Council: 10th July 2019

REPORT OF:

Executive Director Place

Agenda – Part: 1

Item: 8

Subject: LED Conversion Project 2019 for Highway Street Lighting

Wards: All

Key Decision No: KD4863

Cabinet Member consulted: Cllr Dogan

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1. EXECUTIVE SUMMARY

- 1.1 In February 2019 cabinet approved a 2019/20 budget which included realising savings from energy efficient street lighting.
- 1.2 This report proposes a solution to realise energy consumption savings from the Council's street lighting stock through the introduction of LED technology and a SMART central management system.
- 1.3 The LEDs will produce a white light which is more aligned with the environmental appearance achieved in daylight. This improved lighting will help both motorists and pedestrians see more clearly at night and so could help reduce accidents, as well as improving the general feeling of safety.
- 1.4 LED lighting has a number of other significant advantages over the current lighting. It enables significant reductions in energy usage and carbon emissions to be achieved. The light source is more controllable and concentrates the light where it is needed thereby creating less light pollution. The LEDs do not require a warm-up period as do traditional sodium lights and they have a much longer lifetime thereby reducing ongoing maintenance costs.
- 1.5 The project is estimated to generate a net revenue saving of £382k per annum once fully implemented. This is made up of £434k of energy savings and £326k reduced operational and maintenance costs giving total savings of £760k offset by the financing costs of £378k pa.

1.6 The original estimated net savings included in the MTFP were £250k in 2019/20 and a further £250k in 2020/21. Now that the savings and borrowing levels and costs have been confirmed, the implications are set out below:

- 2019/20 revenue budget - energy and operational savings will be generated as the new system is installed; any shortfall against the original £250k budgeted saving in 2019/20 will be dealt with within existing Environment and Operations budgets.
- 2020/21 and future years MTFP - The MTFP will be updated to reflect the revised net savings of £382k as part of the budget process during this year and reflected in the final 2020/21 budget agreed in February 2020.
- 2020/21 capital programme budget will be updated to reflect the estimated capital cost of this project of £6.375m; subject to agreement of the capital budget at Council

2. RECOMMENDATIONS

2.1 To note that, on 12th June, Cabinet:

- i) approved a project to replace the existing street lights with LED lighting in line with current design standards and introduce a smart central management system.
- ii) approved, for recommendation to Council, the inclusion of the Street Lighting Project in the Council's approved Capital Programme at a cost of £6.375m.
- iii) approved, for recommendation to Council, funding arrangements as set out in the report being external borrowing of £6.375m of which there is a five year interest free loan of £4.09m from SALIX.
- iv) noted the updated net savings will be reflected in the MTFP for 2020/21 and future years.
- v) delegated to the Director of Environment and Operational Services, in consultation with the Director of Law and Governance, approval to make any necessary changes to the terms of the Street Lighting PFI contract.

2.2 For Council to approve:

- i) the inclusion of the Street Lighting Project in the council's approved Capital Programme at a cost of £6.375m.
- ii) funding arrangements as set out in the report being external borrowing of £6.375m of which there is a five year interest free loan of £4.09m from SALIX.

3. BACKGROUND

- 3.1 In 2002/03 a decision was taken to upgrade the Council's street lighting stock via a street lighting Private Finance Initiative (PFI) procurement process. The street lighting infrastructure and levels of lighting at the time were very poor with some 12,000 concrete columns in excess of 40 years old and beyond their residual life. At this time the majority of light provided was by low pressure sodium lighting units. These were low wattage and gave off a distinctive orange effect which did not meet European and British lighting levels.
- 3.2 The Street Lighting PFI contract was awarded in 2006 for a period of 25 years to Enfield Lighting Services (ELS). ELS subcontract the operational aspects of the PFI to Bouygues Energies and Services. The first 5 years were designated the Core Investment Period (CIP) where the vast majority of the borough's street lighting infrastructure was replaced.
- 3.3 The contract required the Council to transfer the street lighting stock to the successful Street Lighting PFI provider (Enfield Lighting Service) who took on responsibility for the street lighting stock and were required to improve lighting standards to British and European standards. This was achieved with the introduction of 100 watt High Pressure Sodium lighting units (SON) which produce yellow/gold light that is better for all road and footway users. An average increase of 18% in the number of lighting columns, across the borough, was required to achieve the standards.
- 3.4 The increase in the number of columns and the more powerful lighting units substantially increased energy usage by the Council by around 450,000Kwh per year. The impact of the high-pressure sodium lighting increased carbon emissions by 45% which was equivalent to £80,000+ pa of Carbon Reduction Commitment (CRC) taxation. In addition, over the period 2007 to 2012, energy prices increased by 40%.
- 3.5 Over this period energy costs to the Council were high due to the fact that the council did not have a dynamic energy measurement system and relied on a passive system of pre-agreed codes.
- 3.6 During the CIP lighting improvements the Council received a large number of complaints in relation to lighting levels being too high. This had particularly been the case in relation to small side roads and cul-de-sacs. Following completion of the CIP it became evident that there was significant scope to reduce lighting levels whilst preserving significant improvements over and above the existing system and ensuring a safe and secure environment.
- 3.7 Considerations given at that time were to do nothing which would have led to spiralling energy costs, to switch off or partially switch off the

Borough's street lighting infrastructure or to introduce new technology to reduce energy levels by 'Dimming or Trimming'.

- 3.8 A decision was made in 2012/13 for the Council to undertake a project to reduce the amount of energy used by its 21,000 street light stock through the introduction of a Central Management System that could reduce the level of emitted light from each street light lamp and thus reduce the amount of energy being used and adjust the switch on/off times. Through the introduction of this project the Council has reduced energy consumption by approx. 4million kWh of energy per annum, a reduction of 31% and resulting in an annual energy saving of approximately £340,000.
- 3.9 Street lighting is an important service to all of Enfield's residents and the Council occasionally receives requests to increase the current level of lighting from the current 'dimmed' levels, particularly in areas where crime, or the fear of crime, is high.

Current Proposal

- 3.10 The Council approached the Street Lighting PFI provider (Bouygues) to find a best value solution to reduce the energy consumed by the current street lighting assets. The Council sought cost saving options that also reduce carbon emissions and taxation, improve the quality of the street lighting and open up possibilities for "Smart" city technology capabilities.
- 3.11 As part of this review the Street Lighting PFI provider has investigated where the current financial commitments originate and has sought solutions to achieve savings. These include reducing the energy consumption by installing more efficient lighting, re-designing lighting to current design standards and implementing a dynamic monitoring system. They have also reviewed the unitary charge to potentially reduce maintenance costs through improved lighting materials and extended supplier warranties thereby reducing planned and reactive maintenance costs with reduced contractor risks. Finally, the annual maintenance costs for the current CMS are seen as an area where savings could be made through the installation of a combined LED CMS system with no additional annual maintenance cost.
- 3.12 As the project has identified significant energy savings and carbon footprint reduction, it meets the criteria associated with the Salix Funding Scheme, which seeks to invest in Energy Efficiency Schemes. On that basis, a funding application is being submitted to Salix. Salix have confirmed that this application has provisionally been approved with the award of a £4.09m five year interest-free loan to support the project. The award of such a large sum of funding support demonstrates the positive energy and environmental benefits that the project will realise.

- 3.13 The installation of LED white lighting will enable the borough's street lighting to comply with the latest lighting design standards and current codes of practice. Along with the new lighting source (LED), the current central management system will also be replaced. The new central management system will provide added benefits which will enable the Council to control the street lighting profiles and develop new opportunities for "SMART" technologies through the introduction of sensors and applications within the new Wi-Fi technology which may provide opportunities for other streams of revenue income in the future.
- 3.14 The white light provided by the LED light source will be well received by residents as it is generally considered that lighting appears to be improved and brighter when utilising a white light source. This is due to its ability to truly represent colours when lit after dark, whereas the existing light source does not have good colour rendition qualities. It is often considered that this enhances the aesthetics of an area and is considered to provide a safer feel to an area.
- 3.15 The Street Lighting PFI provider has produced a business case that identifies the capital cost of replacing the existing lighting stock with an LED solution at approximately £6.4m. However, through the evaluation of this project, savings have been identified that will contribute to the funding that Enfield will have to provide. These savings are a combination of energy savings, carbon savings and PFI contract operational savings. These gross savings total £760,000 per annum.
- 3.16 The table below details these savings

	Potential Savings (Feb 2019)
Energy Saving	£434,312
Carbon Saving	£33,442
Annual PFI Contract Saving	£246,000
Harvard CMS Charge Saving	£46,444
Total	£760,198

- 3.17 The existing central management system needs to be replaced as it would not otherwise be fully compatible with the new LED technology. This is included within the costs highlighted in this report.

- 3.18 The Street Lighting PFI service provider has indicated that the full installation of LEDs will take approximately 16 months to complete on a ward for ward basis. Given indicative timescales from the contractor we expect the installation to be completed by the end of December 2020.
- 3.19 Enfield's Street Lighting Client Team has been liaising with Barnet Council who also operate a Street lighting PFI with the same service provider. Both authorities are proposing to implement the same LED and CMS solution over a similar time period, which has enabled the PFI provider to source materials at reduced costs.

4. ALTERNATIVE OPTIONS CONSIDERED

- 4.1 To continue with the current lighting units and CMS system – with energy costs likely to continue to rise the financial impact upon the Council will grow year on year and place a significant burden on the Council's budget. This would not result in improvements to lighting quality and the consequent benefits to residents and motorists.
- 4.2 To partially or totally switch off the street lights in a road - considered not suitable for a London Borough environment as it creates 'black spots' and areas where residents feel unsafe, goes against one of the initial aims of the Street Lighting PFI contract to create a safe comfortable environment for all users of the highways and footpaths in Enfield. To achieve an equivalent annual saving, the Council would need to switch off the lights in half of the borough for the whole year.
- 4.3 Requesting alternative service providers to provide competitive prices for undertaking the project was not a viable option within the PFI. Alternative contractors would be less familiar with the operation and approval processes within the PFI, which would incur additional costs in order for the Street Lighting PFI Service Provider to determine that any equipment installed by third parties meets required standards. Any third party would also have to provide an extended 14-year warranty to the PFI Service Provider, all of which would lead to increased costs. This warranty would be required as the PFI Service Provider would not accept ongoing risk/responsibility in the continued operation of the LED lanterns that they did not install and this in contrary to the principles of a PFI contract which requires the Service Provider to hold the risk in all assets for the duration of the contract.
- 4.4 Officers have previously looked at other options of achieving this saving and have discounted the option to terminate the PFI on the basis that this would incur circa £20m in termination charges and no longer attract the government grant funding of £1.9m per year.

5. REASONS FOR RECOMMENDATIONS

- 5.1 Replacing all Enfield's street lights with LED fittings and introducing a SMART management system will achieve a reduction in energy charges and operating costs, improve feelings of safety across the borough, and reduce the Council's impact on climate change.
- 5.2 The installation of the LED's will produce a whiter light which means that the natural colours displayed will be properly represented under this light source. The new white lights are also more effective at directing light onto the roads and pavements, helping to reduce traffic accidents, crime (as well as the fear of crime) and are considered to provide a feeling of safety in an area.
- 5.3 The Street Lighting PFI contract can be varied during the contract term, enabling these changes to be made. The changes that are proposed will also have a positive impact on maintenance operations, in addition to the energy savings delivered by the project. In order to benefit from this, it is necessary to make amendments to various existing provisions contained within the PFI contract in the form of a Deed of Variation.
- 5.4 The street lighting industry recognises that LED lighting units provide a more reliable and energy efficient lighting source.

6. COMMENTS FROM OTHER DEPARTMENTS

6.1 Financial Implications

6.1.1 The introduction of LED technology and a SMART central management system is estimated to generate the Council a total net saving of £382k per annum. It should be noted that this saving does not include any assumptions regarding the benefit of cost avoidance in energy price increases arising due to lower energy consumption. The saving is made up of £760k operational savings, offset by £378k of capital financing costs as set out below. Following confirmation of the costs and savings, this net saving is less than initially anticipated (£500k in MTFP; £382k finalised). The detail and resulting actions are set out below.

Operational Savings

6.1.2 The introduction of LED technology and a SMART central management system is estimated to generate the Council a total gross MTFP saving of £760k per annum, for the duration of the asset's life (20 years) as set out below.

Saving Category	Gross Savings £
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Energy Saving	434,312
Carbon Saving	33,442
Annual PFI Contract Saving	246,000
Harvard CMS Charge Saving	46,444
Total Gross Saving Per Annum	760,198
Assets Life (20 Years)	
Total Gross Saving Over Assets Life (20 Years)	15,203,960

Estimated Capital and Capital Finance costs

6.1.3. The total estimated cost of the project is £6.375m, which is proposed to be funded through a five year interest free loan from Salix of £4.1m and PWLB borrowing of £2.3m.

6.1.4 The total annual average financing cost of this project is: -

Capital Financing Cost	£
Minimum Revenue Provision (MRP), i.e. notional repayment of the principal	318,773
Interest Cost	59,355
Total Capital Financing Cost	378,128
Gross cost over 20 years	7,562,560

6.1.5. No capital financing costs will be incurred in 2019/20.

Summary

6.1.6. The original estimated net savings included in the MTFP were £250k in 2019/20 and a further £250k in 2020/21. Following the finalisation of the savings and borrowing levels and costs, the implications are set out below

- 2019/20 revenue budget - energy and operational savings will be generated as the new system is installed; any shortfall against the original £250k budgeted saving in 2019/20 will be dealt with within existing Environment and Operations budgets.
- 2020/21 and future years MTFP - the MTFP will be updated to reflect the revised net savings as part of the budget process during this year and reflected in the final 2020/21 budget agreed in February 2020.
- 2020/21 capital programme budget will be updated to reflect estimated capital cost of this project is £6.375m; subject to agreement of the capital budget at council

6.1.7. This principle of capital investment to save revenue costs follows previously successful projects. The payback period for the capital investment is 10 years (i.e. total cost of the loan repayment over the asset life and the interest/annual savings).

6.2 Legal Implications

6.2.1 As the Highway Authority the Council has a discretionary power under s.97 of the Highway Act 1980 to provide street lighting on roads for which it is responsible. However, in exercising its powers as to the extent, nature, maintenance and operation of street lighting the Highway Authority must act reasonably and in the interests of road safety.

6.2.2 Case law suggests that a Highway Authority would not be negligent for accidents arising from a failure to light a highway unless an accident arises because the authority has failed to take reasonable steps to prevent a hazard it has placed or caused to be placed in or around the highway (for example signs, bus shelters, lighting columns) from becoming a danger to the public. Therefore, it is within the Council's discretionary powers to modify the lighting levels on its streets.

6.2.3 Where the Highway Authority chooses to exercise its power to light a highway, BS EN 13201-2:2015 can be used as guidance for lighting class, or hours of operation. This recognises and provides a more flexible approach to lighting classes than set out in BS 5489:2013 standard.

6.2.4 Consideration has been given to the implications of Section 17 of the Crime and Disorder Act 1998 (as amended by Police and Justice Act 2006) and the potential impact on lower light levels on crime and disorder and consultation by Highways with the appropriate authority has indicated that it will have no impact.

6.2.5 Consideration has been given to the Council's equalities duties under the Equalities Act 2010 and consultation by Highways has been had with vulnerable groups that may be affected by this decision.

6.2.6 Any loan agreement entered into by the Council for the implementation of this project will need to be in a form and on terms approved by Legal Services on behalf of the Director of Law and Governance

6.2.7 The recommendation is therefore considered to be within the Council's powers and duties.

6.2.8 Following approval of this report there will be a need to agree a formal variation to the PFI contract and in particular the contract performance clauses within the contract. The documentation implementing the variation must be in a form approved by Legal Services on behalf of the Director of Law and Governance.

6.3 Property Implications

N/A

7 KEY RISKS

7.1. Any delay in achieving this programme will jeopardise the achievement of the savings identified in this report.

8. INTERNAL DEPARTMENT IMPLICATIONS/CONSULTATION

Community Safety

8.1. The Community Safety Unit have been approached by several members of local communities to request increasing lighting levels to either reduce the chances of crime or the perception of crime. In addition to reducing actual costs the chance to swap out the current lighting for LED whiter lighting will meet some of what the communities have been asking for. The Team leading on this project have involved Community Safety from the earliest discussions and we have been given the opportunity to prioritise the areas of highest (crime) need to be replaced earlier in the installation process.

9. IMPACT ON COUNCIL PRIORITIES – CREATING A LIFETIME OF OPPORTUNITIES IN ENFIELD

9.1 Enfield's street lighting assets are one of the most visible community assets that the borough has to maintain and keeping these assets in good condition is fundamental to the economic, social and environmental well-being of the community.

9.2 The proposed changes within this report will enable the Council to deliver substantial energy savings whilst continuing to deliver street lighting throughout the borough.

9.3 In the Council's 2018 Residents' Survey street lighting was identified as one of the highest priority services provided by the Council.

- 9.4 These benefits support all three of the Council's priorities in providing good homes in well-connected neighbourhoods, sustain strong and healthy communities and build our local economy to create a thriving place.

10. EQUALITIES IMPACT IMPLICATIONS

- 10.1 Local authorities have a responsibility to meet the Public Sector Duty of the Equality Act 2010. The Act gives people the right not to be treated less favourably because of any of the protected characteristics. We need to consider the needs of these diverse groups when designing and changing services or budgets so that our decisions do not unduly or disproportionately affect access by some groups more than others.
- 10.2 The changes to the street lighting service being proposed are considered to provide benefits for the whole community whilst also delivering energy savings.
- 10.3 An initial Equalities Impact Assessment has been undertaken and this has identified that there are no significant equalities and diversity issues associated with this proposal. However, the white light LED with fuller spectrum range than other lighting sources, will give better colour rendering and visual recognition to all users, especially partially sighted pedestrians.
- 10.4 It is envisaged that this EIA will be reviewed and updated as the Project progresses, especially as the designs are produced as it is this stage of the Project when any adverse impacts may become apparent, although this is anticipated to be highly unlikely.

11. PERFORMANCE AND DATA IMPLICATIONS

- 11.1. These proposed changes will require the Council to renegotiate the performance management criteria within the PFI contract as part of the Deed of Variation.

12. HEALTH AND SAFETY IMPLICATIONS

- 12.1. The work will be planned and undertaken in accordance with current legislation to ensure the health, safety and wellbeing of the workforce undertaking the installation work and everybody affected by this project.

13. HR IMPLICATIONS

13.1. No HR implications have been identified.

14. PUBLIC HEALTH IMPLICATIONS

14.1. Providing a safe and comfortable outside environment is essential to residents' wellbeing as it enables residents to participate in physical activity, active travel and such like in the outside environment. Importantly residents' perceptions of fear of crime and personal safety have potential to significantly impact these healthy behaviours as well as influence residents' mental wellbeing and social isolation.

14.2. It will be important that during consideration of changes to street lighting, locations at which crime is more likely to occur is reviewed.

Background Papers

None