

REPORT TO: Executive Board
DATE: 26th March 2015
REPORTING OFFICER: Strategic Director Policy and Resources
PORTFOLIO: Transportation and Resources
SUBJECT: Invest to save proposal – Street Lighting
WARD(S) All

1.0 PURPOSE OF THE REPORT

To report on the findings of a Street Lighting Asset review to assess the feasibility of switching all or part of the non-LED lighting stock to LED technology

To seek approval for an Invest to Save proposal and funding to cover the costs of an LED Conversion Programme.

2.0 RECOMMENDATION That

- 1) a programme of work to replace the current conventional street lighting with energy saving Light Emitting Diode (LED) Units be approved;
- 2) Council be recommended to include this £4.7m scheme within the 2015/16 Capital Programme, to be funded as outlined within the report;
- 3) the Strategic Director Policy and Resources in consultation with the Operational Director Finance be authorised to determine the most financial advantageous method of financing the Conversion Programme; and
- 4) subject to 3 above the Strategic Director, Policy and Resources in consultation with the Operational Director, Finance and the relevant Portfolio holders, be authorised to seek prudential borrowing of up to £4.7m to cover the costs of the LED Conversion Programme.

3.0 SUPPORTING INFORMATION

- 3.1 There are currently 19,000 street lamps in Halton operating with traditional high energy sodium lanterns. These lanterns cost the Council approximately £730,000 per year to illuminate and this cost has been rising by approximately 8-10% per year. In addition to the energy costs, traditional lanterns need to be replaced approximately

every 4-5 years incurring additional cost to the Highway maintenance budget.

3.2 To date approximately 2000 lanterns have been switched to LEDs. These are in mainly residential areas. The key benefits of LEDs are

- Reduced energy costs: This would impact positively on the Council's revenue budget, as well as the commitment to reduce carbon emissions and the Corporate Social Responsibility agenda. Energy use reductions are cited to be between 50% and 80%, resulting in energy cost reduction of a similar level (notwithstanding utility standing charges), and CO2 emission reductions of a potential 30%.
- Increased reliability and longevity: LEDs are guaranteed to last a minimum of 10 years with an expected life of 20 years. Currently the Council changes its lighting stock every five years on a rolling maintenance programme. This could result in reduced frequency of lamp replacement, reduced resource requirements in relation to 'scouting', and potentially a reduced call on contracts in place linked to street lighting.
- Meeting the Council's commitments to sustainable practices and reducing carbon emissions.

3.3 **OPTIONS AND ANALYSIS**

3.4 The Council currently uses a mix of High Pressure Sodium and SOX lighting. The residential areas are mainly lit by lamps below 70w of which there are 9566 or 54% of the stock. The main through routes are mainly lit by lanterns between 90w and 150W of which there are 5428 or 29% of the stock.

3.5 The unit costs of LEDs is changing rapidly as product designs are refined, more manufacturers enter the market and as production facilities are scaling up. Over the last two to three years there has been a dramatic reduction in price. There are now an increasing number of projects in delivery or completed and it is expected that more standardised products will become available. At the same time reliability is improving and manufactures are providing longer warranties as standard. The current cost of LEDs lights range from £290 - £300.

3.6 The cost of energy has risen by approximately 30% since 2010 and whilst energy price increases are difficult to predict DECC forecast that costs will rise by an average 8% -14% annually.

3.7 The Review looked at three options

- 1) a bulk change of the residential lights only,

- 2) a bulk change of main roads and through routes only
- 3) a bulk change of both residential and main roads and through routes

3.8 Each of the above different scenarios have been assessed as follows:-

Do nothing - to test the impact if no investment was made and lamps were replaced on a like for like basis

Replacement of all lamps in residential areas within 2 years

Replacement of all lamps in residential areas with 4 years.

The approximate capital costs of a conversion programme are

Option 1 - Residential only - Capital cost £2.7m

Option 2 - Main Roads only - Capital costs £1.9m

Option 3 -Residential and Main Roads Capital costs £4.6m

It is anticipated that the costs would be reduced if the Council embarked on a bulk conversion programme.

3.9 The estimated potential savings after the repayment of the Capital Investment based on varying energy price increase for a two or four year conversion are relatively similar and are set out below.

Electricity Increase	Residential (69w & 90w) Capital cost £2,771,240	Highways (100w & 150w) capital cost £2,771,240	All Capital cost £4,672,175
0%	-334,305	-762,192	-1,096,497
3%	-2,015,553	-2,124,957	-4,140,510
5%	-3,558,834	-3,375,890	-6,934,725
7%	-5,563,637	-5,000,917	-10,564,553
10%	-9,759,870	-8,402,245	-18,162,116

Based on electricity prices increase between 5-7% the potential savings would be in the region of £6.9 to £10.5m over a 20 year period.

The scheme represents an approximate 8-9 year payback.

The do nothing option indicates that the Council's energy bill for street lighting would increase from £730,000 to £950,000 by 2020 and £1.8m by 2030.

Alternative options for saving electricity costs include the removal of street lighting and switching street lighting off between certain hours. Whilst these options would save money there would be capital costs involved and this would also lead to a reduction in current service provision and impact negatively on residential areas and highway safety.

Funding

Various methods for funding the upfront investment have been considered.

Green Investment Bank

The Green Investment Bank provides loans to local authorities to fund green infrastructure projects. Analysis of the costs savings against those for using prudential borrowing indicated that the interest charges offered compared unfavourably with the cost of Prudential Borrowing.

Prudential Borrowing

This option provides a low interest solution and would give the Council maximum flexibility to optimise its debt portfolio.

Salix Energy Efficiency Loan Scheme

Salix provides zero interest loans to public bodies to fund initiatives to reduce carbon emissions. Loans need to be repaid in five years which is less than the payback of the scheme. Sensitivity testing indicates that utilising Salix funding may give the Council higher up front savings providing prudential borrowing rates do not increase above 4.8%.

Having considered the above options it is recommended that prudential borrowing is the preferred route for securing the required capital but utilising Salix fund if appropriate.

4.0 POLICY IMPLICATIONS

- 4.1 There would be no adverse impact on the standard of street lighting as a consequence of this proposal. However, LED lighting produces a white light as opposed to the yellow light from the current lanterns. Consideration will have to be given at the design stage to ensure there is no negative impact on lighting current lighting levels.

5.0 **FINANCIAL IMPLICATIONS**

5.1 The Capital cost of replacing all lanterns in residential areas and on the main through routes is estimated to be £4.6m. The analysis of the various funding options indicates that prudential borrowing is the preferred option for meeting the initial upfront capital costs. Savings over a 20 year period after repayment of the capital and interest is in the region of £6.9 and £10.5m based on average price increase in electricity of 5-7% over the period of the investment.

Any conversion programme will need to consider whether to replace ageing columns and cabling. The review assumes that columns over 40 years will be replaced. The Council currently has 2700 columns over forty years. It is estimated that these would cost £1.8m but this is a cost that the Council would have to meet whether or not it embarks on a conversion programme.

The Council has been awarded approximately £30,000 from a recent Department of Energy and Climate Change funding scheme aimed at reducing the energy demand of the grid capacity. This funding will contribute to the first phase of any conversion programme.

6.0 **IMPLICATIONS FOR THE COUNCIL'S PRIORITIES**

6.1 **A Healthy Halton**

None

6.2 **A Safer Halton**

The proposals would allow the Council to maintain current street lighting levels, therefore there should be no adverse impact crime and road safety

6.3 **Halton's Urban Renewal**

The proposal will reduce energy consumption and the Council's carbon footprint. It is estimated that there will be an annual reduction in CO2.

7.0 **RISK ANALYSIS**

7.1 A risk assessment has been undertaken and details are set out below.

Risk	Issue/impact
Energy prices	Issue While energy consumption is proven to

	<p>be significantly lower for LEDs meaning that a certain level of saving will be achieved the actual level of saving will be a function of future energy prices. Energy price escalation may be either higher or lower than assumed in the modelling</p> <p>Impact – Energy costs are a key driver of the invest to save proposal. An increase in prices above those assumed would improve the business model. Conversely, price rises lower than those assumed would weaken the business model</p> <p>Comment The model assumes price increase in line with DECC estimates which are generally considered conservative.</p>
LED costs	<p>Issue – The cost of LEDs is likely to reduce over the next 2-3 years as market expansion takes place and supplier competition increases.</p> <p>Impact – LED costs are a key driver to the business case. Higher than assumed costs would weaken the invest to save case.</p> <p>Comment – The model is based on the current price the Council pays for LEDs. Greater tender data will become available over the next 12 months which can be used to verify assumptions. A soft marketing testing exercise could be undertaken</p>
LED efficiencies	<p>Issue - Energy efficiency of LED lamps is expected to improve over the next 2-3 years as lantern design for retrofit projects develops.</p> <p>Impact - If these improved efficiencies are not realised the business case is weakened.</p> <p>Comment – The model is based on current efficiencies gain from lamps already replaced so these should be achievable</p>
LED Life Cycle	<p>Issue - LED are predicted to have a long maintenance free operational life as reflected in the guarantees provided by a number of manufacturers .However, as they are new technologies they have not yet been fully tested in the field for this duration (15-25 years)</p> <p>Impact - If contractual arrangements do</p>

	<p>not pass on the risk of the full replacement cost of the lantern failings before the end of the guarantee period , the Council may be liable for additional costs</p> <p>Comment – The extent that the manufacturers and contractors will cover all costs within the guarantee period is expected to be standardised</p>
Column Renewals	<p>Undertaking a major lantern replacement programme may bring forward the logical date to renew columns with deteriorating condition.</p> <p>Impact Accelerating column renewals may change the affordability of the programme.</p> <p>Comment Further work needs to be undertaken to fully understand the condition of the columns included in the replacement programme</p>

8.0 EQUALITY AND DIVERSITY ISSUES

8.1 None

9.0 LIST OF BACKGROUND PAPERS UNDER SECTION 100D OF THE LOCAL GOVERNMENT ACT 1972

9.1 None