

CABINET ITEM COVERING SHEET PROFORMA

AGENDA ITEM

REPORT TO CABINET

31 OCTOBER 2013

**REPORT OF CORPORATE
MANAGEMENT TEAM**

CABINET DECISION

Regeneration and Transport – Lead Cabinet Member – Councillor Mike Smith

STREET LIGHTING – INVEST TO SAVE OPPORTUNITIES/BENEFITS

1. Summary

The Medium Term Financial Plan (MTFP) reflects a significant reduction in Government Funding over recent years, and provides the Council with a significant financial challenge. In order to tackle this there are three big ticket items, one of which is Waste and Energy. As part of this we are considering how we can transform the Borough's street lighting in order to reduce the energy/maintenance costs associated with it.

This report details the need for and implications of investment in the energy efficiency of our street lighting stock. The need for change within the street lighting service is made more pressing by the significant budgetary pressures facing the Council, with on-going maintenance costs and anticipated increases in energy prices coupled with the need to secure energy efficiencies to reduce carbon emissions all significant driving factors. It is also necessary to improve the condition of some of the street lighting stock to meet the public and political expectations in relation to street lighting standards.

The biggest financial expenditure associated with street lighting is the cost attributed to the amount of energy that is currently consumed. Based on the performance of our existing lighting stock and predicted energy price increases our energy consumption costs associated with street lighting are expected to increase by in excess of £418,000 per year by 2021. Historically, street lights within the Borough have used a combination of high and low pressure sodium lanterns but these consume significantly more energy than other viable alternatives. The mass replacement of lanterns and, where necessary, lighting columns, would result in significant savings in our energy consumption and ongoing maintenance costs.

Lighting levels are determined via criteria laid down in the British Standard, with traffic flow, crime levels and night time activity all taken into consideration. In many streets, this can be achieved by replacing ageing lights with new energy efficient equipment incorporating technology which dims the lamp burning hours. A project to replace approximately 8,000 street lights has recently been completed in the Borough, reducing the total energy cost by approximately £200,000 a year.

In response to the increasing energy and maintenance costs associated with the street lighting service, a business case has been produced detailing a large-scale project which would involve a mass lantern replacement programme spread over a number of years and utilising modern Light Emitting Diode (LED) technology.

LED's utilise white light at various intensities and at very low wattage levels, offering greater energy efficiency to significantly reduce the amount of energy consumption associated with street lighting. Long life is also a key benefit when utilising LED's, with some having an operational life expectancy of 100,000 hours. This equates to eleven years of continual operation, or twenty years of 50% operation compared with a life expectancy of four and five years respectively for the traditional lamps that are currently used. As such, traditional lamps require far more human involvement and incur greater costs over an average LED unit lifetime.

A further benefit arises from the LED light source unit being made up of many different light source elements, making it extremely unlikely that it will suffer a total light outage and therefore significantly reducing routine maintenance issues/costs and the need for a robust and ultimately costly monitoring system.

In addition to mass lantern replacement, it is also proposed to replace light columns where appropriate. This will be undertaken using a risk-based approach, on a street by street basis with replacement depending on a range of criteria including column age, condition and location.

Climate change is described as one of the biggest challenges mankind has ever faced and carbon dioxide is one of its main causes. As an energy user and a community leader Stockton Borough Council has an important role to play in reducing its own carbon emissions and setting an example for others to follow.

If the scheme is successful in gaining Cabinet's approval an Implementation and Communication Plan will then be formulated and presented to Cabinet at a later date. In addition, a revised Stockton Borough Council Street Lighting Policy document is being drafted detailing future direction in this field, which will also be presented at a future Cabinet meeting for approval.

It is proposed to fund this replacement scheme by utilising Council reserves established for the specific purpose of funding 'invest to save' schemes. The savings generated by undertaking the replacement detailed in the aforementioned paragraphs will significantly reduce both the energy and maintenance costs attributed to street lighting, which will ultimately result in a shorter payback period.

2. Recommendations

1. Cabinet approve the principle of invest to save in Councils street lighting stock in order that the preferred option of replacing all lanterns with LED, and replacement of columns over 25 years old.
2. Cabinet note that an updated Street Lighting Policy and Implementation/Communication Plan will be brought to a future meeting.

3. Cabinet note that different options of delivery will be considered as part of the procurement process.
4. Cabinet note the request for funding to support the scheme totalling £14,000,000 as set out in paragraphs 14 and shown in **Appendix B**. This will be considered by Council as part of the 2014/15 budget setting process.

3. Reasons for the Recommendations/Decision(s)

Approving the principle of the invest to save process will enable mass lantern/column replacement works to be undertaken to ensure significantly reduced energy and maintenance costs associated with the street lighting service are forthcoming.

4. Members' Interests

Members (including co-opted Members) should consider whether they have a personal interest in any item, as defined in **paragraphs 9 and 11** of the Council's code of conduct and, if so, declare the existence and nature of that interest in accordance with and/or taking account of **paragraphs 12 - 17** of the code.

Where a Member regards him/herself as having a personal interest, as described in **paragraph 16** of the code, in any business of the Council he/she must then, **in accordance with paragraph 18** of the code, consider whether that interest is one which a member of the public, with knowledge of the relevant facts, would reasonably regard as so significant that it is likely to prejudice the Member's judgement of the public interest and the business:-

- affects the members financial position or the financial position of a person or body described in **paragraph 17** of the code, or
- relates to the determining of any approval, consent, licence, permission or registration in relation to the member or any person or body described in **paragraph 17** of the code.

A Member with a personal interest, as described in **paragraph 18** of the code, may attend the meeting but must not take part in the consideration and voting upon the relevant item of business. However, a member with such an interest may make representations, answer questions or give evidence relating to that business before the business is considered or voted on, provided the public are also allowed to attend the meeting for the same purpose whether under a statutory right or otherwise (**paragraph 19** of the code)

Members may participate in any discussion and vote on a matter in which they have an interest, as described in **paragraph 18** of the code, where that interest relates to functions of the Council detailed in **paragraph 20** of the code.

Disclosable Pecuniary Interests

It is a criminal offence for a member to participate in any discussion or vote on a matter in which he/she has a disclosable pecuniary interest (and where an appropriate dispensation has not been granted) **paragraph 21** of the code.

Members are required to comply with any procedural rule adopted by the Council which requires a member to leave the meeting room whilst the meeting is discussing a matter in which that member has a disclosable pecuniary interest (**paragraph 22** of the code)

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STREET LIGHTING – INVEST TO SAVE OPPORTUNITIES/BENEFITS

SUMMARY

This report details the need and the implications of investment in the energy efficiency of our street lighting stock. The need for change within the street lighting service is driven by the significant revenue budgetary pressure facing the Council, along with the on-going maintenance costs, and anticipated energy price increases, coupled with the need to secure energy efficiencies to reduce carbon emissions, thus raising the environmental profile of the Council. It is also necessary to improve the condition of some of the street lighting stock to meet public expectations in relation to street lighting standards.

The biggest financial expenditure associated with street lighting is the cost attributed to the amount of energy that is currently consumed, which is likely to continue to increase on an annual basis. Historically street lights within the Borough have been implemented using a combination of high and low pressure sodium lanterns but these no longer represent the best use of Council resources as they consume significantly more energy than other viable alternatives. In addition to savings on energy consumption there is also significant savings to be made in terms of reducing on-going maintenance costs by considering mass replacement of lanterns with LED alternatives, which have been found to be a lot less problematic, and where necessary upgrading the column stock with more robust, modern columns.

RECOMMENDATIONS

1. Cabinet approve the principle of invest to save in Councils street lighting stock in order that the preferred option of replacing all lanterns with LED, and replacement of columns over 25 years old.
2. Cabinet note that an updated Street Lighting Policy and Implementation/Communication Plan will be brought to a future meeting.
3. Cabinet note that different options of delivery will be considered as part of the procurement process.
4. Cabinet note the request for funding to support the scheme totalling approximately £14,000,000 as set out in paragraph 14 and shown in **Appendix B**. This will be considered by Council as part of the 2014/15 budget setting process.

DETAIL

Background

- 1 The Highways Act 1980 empowers local highway authorities to provide and maintain lighting on highways for which they are responsible, and where street lighting is provided by the Council there is a duty of care to ensure that it is maintained in accordance with all the legal obligations. The fundamental purpose of public lighting is to help create a better environment, and the increased safety, greater security, and the enhancement of the night-time visual scene provided by modern public lighting help's to achieve this objective. Street lighting has always been well maintained but not always had the best investment, and guiding policies that enable us to ensure that it performs to the best of its ability.
- 2 The street lighting assets have been installed and developed over many decades, with some of the stock now becoming very old, and it is likely that they have had components replaced or renewed completely. At the time of writing this report there are 27,926 lamp columns within Stockton Borough, with 80% of those having a steel or galvanised column, and a further 10% of the stock having a concrete column. Over 90% of the columns utilise a sodium light source (either high or low pressure), and the lighting provided by this method would generally be deemed as 'yellowish' in colour. Columns range in height from between 5 and 14 metres depending on location, and have an age profile from anywhere between 1 and 83 years. Despite there being a sustained investment in the street lighting infrastructure by the Council over recent years it has still not been sufficient. A more detailed overview of the lighting stock within the Borough can be seen at **Appendix A**.
- 3 In 2009 Highways, Lighting and Network Management were subject to an Efficiency, Improvement and Transportation (EIT) review. Several recommendations were made at that time and the outcome is summarised below:-
 - (a) Pursue the application for a Private Finance Initiative
 - PFI cancelled by government in 2010.
 - (b) If PFI not successful considered in house arrangement
 - was considered at the time and will be revisited.
 - (c) Explore partnership working with other Tees Valley Authorities
 - has been done over last year but no plans to take forward any collaborative working or joint contracts.
 - (d) Funding mechanism be explored to bring forward replacement of obsolete stock
 - previously this did not deliver savings but coupled with LED installation there are financial reasons to do so, hence this report.
 - (e) De-commissioning of lit road signs to provide revenue saving
 - has been delivered in part but new DfT guidance is enabling an accelerated approach.
- 4 The existing contract in place for provision of a street lighting service is between Stockton Borough Council and Bouygues (formally ETDE, and David Webster Limited), and was originally signed in 2005, and has been extended for its maximum period up to the end of March 2012. However, due to significant on-going works being undertaken by appropriate officers to ensure a more streamlined service was delivered going forward agreement was secured meaning the existing contract could be further extended on a temporary basis.
- 5 Within the current contract arrangement the significant emphasis is on achieving a quick response to faults, reducing customer input, and achieving a high level of on-age, with these elements driving one of the key performance indicators of achieving a high level of customer satisfaction. However, the existing contract makes no mention of either value for money or long-term financial sustainability within it, and the change in the current economic climate means that these areas must now be at the forefront of every service that the Council deliver.

- 6 As mentioned previously street lights within the Borough have been implemented using a combination of high and low pressure sodium lanterns but they are now outdated and consume more energy than other white light alternatives. Due to the large increase in energy charges, which is likely to continue there has been a change in the policy context and an increasing drive for the Council to improve energy efficiency which is significantly impacted by the street lighting service. In fact figures show that during 2012/13 the actual energy costs associated with street lighting was £1,542,151, which represented 65% of the overall Council energy bill (excluding schools).
- 7 In lieu of the above earlier this year a trial commenced which involved implementing LED within five residential streets across the Borough. This was undertaken following consultation with appropriate Ward Councillors, and informing residents of intentions. The purpose of the trial is to gauge residents, and officer's perception of 'a switch' from the traditional sodium style light to a modern LED system of street lighting. Thus far there has been very few concerns highlighted by residents and a full consultation exercise will be undertaken and results formulated and presented in November.
- 8 In addition to the above another significant cost attributed to the street lighting service is on-going maintenance costs which relate to the number of times contractor's staff are required to visit faults and deal with issues such as light outages, in addition to other routine maintenance required. This cost is increased due to the stringent performance indicators from the contract and policy currently being adhered to, which results in a large amount of maintenance visits. Figures for 2012/13 show that in excess of £830,000 was paid out on maintenance costs.
- 9 During 2012/13 joint work was undertaken by appropriate officers from four of the five Tees Valley Authorities (this didn't include Redcar and Cleveland as they were already part of a private finance initiative) to ascertain if a collaborative approach towards street lighting procurement, investment and direction could be agreed. However, despite significant effort it became clear that each authority had a different perception in terms of what direction they would envisage this service taking and therefore a joint approach to street lighting is no longer being pursued.
- 10 Due to the breakdown of the collaborative approach the mass replacement of existing lanterns with LED's, and column replacement has been progressed in isolation. Following detailed discussions with street lighting professionals from partnering consultant Arup it was decided to utilise a Street Lighting Toolkit that had been devised to support the development of similar business cases in other parts of the Country. Existing street lighting infrastructure is implemented in to the toolkit which then provides an initial, feasibility assessment to be undertaken of the potential impact depending on the level of investment to upgrade the energy efficiency of the street lighting asset.
- 11 Three options were initially assessed using the toolkit, and these were:
- (1) All lanterns in the Borough replaced with LED, no column replacements.
 - (2) All lanterns in the Borough replaced with LED, along with the replacement of approximately 3000 concrete columns.
 - (3) All lanterns in the Borough replaced with LED, along with the majority of the columns over 25 years old (approximately 8500).
- 12 When utilising the toolkit it was necessary to make some general assumptions based on sound technical knowledge. These included capital costs to replace existing lanterns for LED and appropriate columns, a lighting design resource, a budget allowance from future Local Transport Plan allocations. In addition the toolkit does not allow for future dimming of

LED which could bring about further savings, and does not show savings in energy and maintenance during the install period but only on completion of the project. Detailed financial breakdown of each option can be seen at **Appendix B**.

- 13 As the introduction of the LED lanterns and columns are introduced there will inevitably be an on-going reduction in both associated energy and maintenance costs, with the reduction continually increasing as more lanterns and columns are implemented.
- 14 Option 1 of replacing all lanterns with LED but no column replacements whilst significantly reducing energy costs would not improve the overall condition of the columns. This option would still leave the Council having to make further large scale investment and on-going maintenance costs in the future to replace, and repair the older/obsolete columns.
- 15 Option 2 of replacing all lanterns with LED, along with the replacement of approximately 3000 concrete columns would again significantly reduce on-going energy costs, in addition to replacing the oldest columns within the Borough. However, this option would not address the problem of replacing some of the older style steel columns which due to design issues would not be able to incorporate an LED lantern therefore meaning further investment would be necessary to deliver the mass lantern replacement.
- 16 Option 3 is favoured by officers and it is proposed to replace all lanterns with LED along with the majority of columns over 25 years old. This option will reduce costs associated with energy and maintenance which will result in a revenue saving somewhere in the region of £1.8M per annum. The rationale behind the decision to spend more funds on column stock is that over the years there has limited investment in this area meaning that we now have an ageing stock some of which is in poor condition. Investment now would significantly improve a large percentage of the older columns meaning all could incorporate a modern LED lantern. In addition replacement of the older columns would effectively future proof them for around 25 years reducing future column maintenance going forward.
- 17 Due to the magnitude of this project there will be an opportunity to utilise some of the local businesses, supply chain and labour, who specialise in these areas, which will in turn provide a real boost to the local economy. In addition the implementation of approximately 28,000 LED's will provide an avenue to introduce a local labour apprentice scheme giving young people the chance to develop and enhance skills in areas such as electrical engineering.
- 18 Approximate timescale to deliver a project of this magnitude would likely be between three and five years, and would mean a rolling programme of between 200 and 300 hundred lanterns a week being replaced, in addition to the requisite columns. Delivery would be carefully managed and planned, likely on a 'street by street' basis commencing in the residential roads as this is where the biggest energy savings will likely be.
- 19 Subject to approval an implementation plan will be developed by officers and presented to Cabinet before fully informing all members of the intended works within their respective wards. In addition a detailed communication plan will be formulated detailing key messages to residents, and other stakeholders on the principles of LED street lighting and the benefits implementing it will bring.
- 20 Officers have been working on two potential project delivery options in tandem, one being a traditional external tender process, and the other investigating whether the Council would be able to deliver this internally. Once the most efficient/effective way of delivering the project is identified this option will be taken forward in isolation.

FINANCIAL IMPLICATIONS

- 21 The preferred option would see all lanterns replaced with an LED unit, and all columns over 25 years replaced. This option would require Capital funding of almost £14,000,000. Upon completion of the three year programme the predicted annual savings from reduced energy and maintenance are approximately £1,800,000 per year against projected future expenditure. This results in an 8 year payback period. Therefore this amount is required from one off resources and will need to be considered by Council as part of the 2014/15 budget setting process.

LEGAL IMPLICATIONS

- 22 Highways Act 1980.

RISK ASSESSMENT

- 23 This report is categorised as low to medium risk.

SUSTAINABLE COMMUNITY STRATEGY IMPLICATIONS

- 24 This scheme if progressed would assist in contributing towards one of the key ambitions in the Environment and Housing theme of tackling climate change and assisting the Council in reaching the commitment to achieve a 21% reduction in carbon emissions by 2020. LED lighting contains no toxic materials and is 100% recyclable, and could potentially assist in reducing the carbon footprint by up to one third. In addition the long operational life time span means LED can save material thus helping towards a 'greener' future.
- 25 In addition the implementation of LED lighting would also assist in the theme of safer communities and the ambition of reduced crime and fear of crime, as white light helps people feel safer and more secure. Through superior colour rendering and a higher perceived brightness, it makes it easier to distinguish objects, colours, shapes and other details. In particular facial recognition is easier, even from a distance, which goes a long way towards removing anxiety. White light also gives the most even illumination with no intimidating areas of shadow.

EQUALITIES IMPACT ASSESSMENT

- 26 None.

CONSULTATION INCLUDING WARD/COUNCILLORS

- 27 Subject to approval a programme of works will be developed by officers and presented to Cabinet before fully informing all members of the intended works within their respective wards. A detailed communication plan will also be formulated to ensure members, residents and other appropriate stakeholders are kept up to date on progress with key messages.

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Education related

No

Background Papers

Ward(s) and Ward Councillors:

All

Stockton Borough Council Age Profile

Column Height	Age (years)				Totals
	0-10	11-20	21-30	Over 30	
Up to 5m	592	998	1537	2758	5885
6m	5225	5505	1956	1788	14474
8m	697	948	581	618	2844
10m	1033	1607	739	1127	4506
12m & above	46	77	28	66	217
				Total	27926

Column Material	Age (years)				Totals
	0-10	11-20	21-30	Over 30	
Concrete Columns	0	0	0	2771	2771
Steel/Galvanised Columns	6981	8674	3883	2549	22087
*SBMS Columns	567	260	637	518	1982
Other - Cast/Wood/Aluminium etc	45	201	321	519	1086
				Total	27296

* SBMS (shot blasted mild steel – no galvanised protection)

In addition to the lighting columns we also maintain the following

Illuminated Bollards	823
Illuminated Signs	1813
Feeder Pillars	218
Subway Lighting Units	92
Car Park Lights	97

Appendix B

The costs are shown as the same for each option but this does not reflect the asset condition after investment and is therefore be read in context with paragraph 16 of the report.

Option	Option Description	Analysis Period (Years)	Length of Installation (Years)	SBC Capital Funding	Total Capital Investment	Year 1 Total Savings 2017/18	Year 2 Total Savings 2018/19	Year 3 Total Savings 2019/20	Payback Period (Years)
1	All lanterns with LED units, no column replacements	20	3	£9,389,235	£9,389,235	£1,647,218	£1,708,832	£1,771,006	6
2	All lanterns with LED units, replacing all 3000 concrete columns	20	3	£11,034,235	£11,034,235	£1,647,218	£1,708,832	£1,771,006	7
3	All lanterns with LED units, replacing all columns > 25 years old (approx 8500)	20	3	£13,995,460	£13,995,460	£1,647,218	£1,708,832	£1,771,006	8

Model assumes that full year 1 savings for schemes with a 3 year installation period will occur from the 2017/18 financial year

PREDICTED SAVINGS

	2014/15	2015/16	2016/17	2017/18	2018/19
Estimated Annual Electricity Savings	£11,021	£461,015	£834,015	£1,139,839	£1,186,269
Estimated Annual Maintenance Savings	£50,738	£202,951	£370,387	£507,379	£522,563

NOTE

- Electricity savings have been calculated based on predicted energy charges but these could be subject to change
Maintenance savings are only for street lighting lamp & lantern replacements. Maintenance for illuminated signs & bollards, underpass lighting, repairing cable faults and attending emergency call outs will remain unaffected

