

The Vale of Glamorgan Council

Cabinet Meeting: 22 January, 2018

Report of the Cabinet Member for Neighbourhood Services and Transport

Street Lighting Energy Reduction Strategy - Salix Application for Loan Funding

Purpose of the Report

1. To advise Cabinet of the current position with the 'Street Lighting Energy Reduction Strategy' and to agree further measures to support the transition to full LED street lighting.

Recommendations

1. That Cabinet notes the current position with the 'Street Lighting Energy Reduction Strategy' and agrees to the submission of an interest free loan application to Salix Finance Ltd. for funding to convert main road lighting to LED with a Central Management System (CMS), as outlined in Option 1 of this report.
2. That delegated authority is granted to the Director of Environment and Housing Services in consultation with the Cabinet Member for Neighbourhood Services and Transport to accept any successful funding offer in respect of Option 1.
3. That the Director of Environment and Housing Services is granted delegated authority to implement and manage the proposed project to convert main road lights to LED with CMS subject to obtaining the necessary Salix funding.
4. That the Head of Legal Services is authorised to agree the terms of, and to execute the Salix loan agreement.
5. That a virement is agreed from the Asset Renewal Highways Structures budget (£276,647) and the Dimming of Street Lighting Budget (£110,105) to the Carbon Management Fund to fund the Councils contribution to this work.
6. That for recommendation 1 above use of Article 14:14 of the Council's Constitution (urgent decision procedure) be authorised.

Reasons for the Recommendations

1. To obtain agreement on the current position of the street lighting energy reduction strategy and obtain authority to submit a bid to Salix Finance Ltd for future funding.

2. To provide authority to accept any successful grant funding offer in respect of Option 1 of this report.
3. To enable the project to be progressed in accordance with the proposed works identified in respect of Option 1 of this report.
4. To ensure that the appropriate terms and conditions are agreed in relation to the funding.
5. To ensure the correct budget is established to fund this initiative.
6. To meet the funding application deadline of 31st January 2018.

Background

2. In order to address increasing street lighting energy costs since 2011/12, Cabinet considered a report entitled 'Street Lighting Energy Reduction Strategy', at its meeting of 20th October 2014 (minute No. C2497). At the meeting it was resolved to implement a full move to LED lighting over time and as funding became available, with part-night lighting to be introduced immediately for all appropriate areas of conventional street lighting in the interim. It was identified in the report that this Strategy would provide the Council with the greatest savings, estimated at £371,862.71 per annum in street lighting energy costs and 1,338 tonnes per annum of CO².
3. Part-night lighting is when identified street lights are switched off for part of the night. In the Vale the affected residential street lights were proposed to be switched off between the hours of midnight and 6:00 a.m. Whilst the Council has no statutory duty to provide public lighting as local highway authority, it does however have a statutory duty of care under the Highways Act to ensure the safety of the highway and this includes any lighting equipment placed on it.
4. To ensure the Council appropriately considered its duties and responsibilities, the implementation of part-night lighting involved the establishment of a Part Night Lighting Project Board comprising officers from Highways and Engineering, Road Safety, Community Safety and the Police, as well as the development of a robust risk assessment criterion and methodology to determine which lanterns could safely be turned off, thereby allowing safe implementation of part-night lighting throughout the Council's local highway network.
5. The move to part night lighting was implemented between June 2015 and December 2015 throughout the Vale of Glamorgan's local highway network. Whereas, the Cabinet report of October 2014 envisaged that 70% of the Council's conventional street lighting stock at the time could be converted to part-night, following the development of risk assessment criterion and methodology, it only proved possible to part-night 65% of conventional lighting stock equating to some 6,819 units. As a consequence, the projected full year energy cost saving is now £217k with a reduction in CO² emissions of 1042 tonnes. The implementation costs were however considerably less than those predicted, resulting in the payback period reducing from 0.9 years to 0.65 years. Whilst the part night lighting strategy has been successful in terms of energy reduction, there have been a number of complaints received from residents who feel that the absence of lighting after midnight increases opportunities for crime disorder, whilst also reducing the safety of some highway routes. Whilst no evidence has been identified to substantiate such claims, it remains the perception of

some residents that the absence of lighting after midnight in certain areas is having a negative impact.

6. Cabinet considered a further report entitled 'Street Lighting Energy Reduction Strategy Update and Next Steps', at its meeting of 25th April 2016 (minute No. C3160). This report updated in detail the part-night lighting position briefly summarised above and considered a series of further measures aimed at supporting the transition to full LED lighting and the achievement of increased energy savings. At the meeting it was resolved to agree a strategy to dim existing LED lights at midnight and invest £1.2m in 2016/17 and £100k in 2017/18 and 2018/19 in LED residential street lighting which were also to be dimmed at midnight (Option 3). The payback period for this investment was identified as 7.54 years. Cabinet further resolved that the report be referred to the then Scrutiny Committee (Economy and Environment) for information.
7. Scrutiny Committee (Economy and Environment) subsequently considered the report on 17th May 2016 agreeing that Option 3 was the Committee's preferred option as it would be a more comprehensive strategy for the Council to follow, for the reasons of enhancing safety. Cabinet agreed to proceed with Option 3 and its subsequent meeting of 6th June 2016 (Minute No. C3198 refers).

Relevant Issues and Options

The current position

8. The Council currently has 15,812 street lighting units throughout its local road network. The number of street lighting lanterns currently converted to LED is 5,304 units which represents some 33% of the Council's total street lighting lanterns. Of these the majority 5,015 are located on residential roads. In accordance with the Council's current Street Lighting Strategy all lanterns converted to LED will be exempt from part-night lighting.
9. There are currently some 6,819 units throughout the Council's local residential highway network converted to part-night lighting. This figure has reduced from the previous estimate of 7,400 due to a lack of stock of part-night lighting cells required to convert lights to part-night operation when existing cells fail or malfunction. The Council has not purchased any additional part-night lighting cells as these would represent abortive costs with the imminent commencement of the project to implement LED in all residential streets throughout the Vale (Option 3) as resolved by Cabinet at its meeting of 25th April 2016.
10. The proposed project to dim LED lights at midnight and convert all residential street lighting to LED (Option 3) is nearing the installation stage. The project involves the conversion of a total of 6,277 conventional street lanterns to LED in residential streets comprising of some 5,366 standard lanterns and a further 911 ornamental or decorative street lighting lantern units.
11. A detailed and robust procurement for the new LED lanterns was progressed during financial year 2016/17 with the successful supplier appointed in April 2017. In order to address ongoing issues in relation to the colour temperature of the new LED lanterns a trial installation was subsequently planned in July 2017 of two variants of the LED lantern with different levels of blue light, i.e. cool white or warm white light, to establish which is the most visually advantageous to install.
12. The trial and consultation in the Pencoedtre area for two types of LED lantern was extended to the end of August 2017 to allow residents adequate time to observe the

lighting and respond to the questionnaire. Following completion of the trial, the Council received only four responses from some 20 households who were asked to take part along each street involved, however, the majority of respondents identified a preference for neutral white colour temperature of the LED lanterns. This low response rate was attributed to the fact that residents likely recognise LED lanterns, which are exempt from part-night lighting, to offer a significant benefit over street lights being turned off between midnight and 6am under part-night lighting and are therefore generally ambivalent to the minimal difference in the colour temperature of lighting afforded by the two lanterns trialled.

13. Out of the four responses received there were three, representing the majority of respondents, which identified a preference for neutral white colour temperature of the LED lanterns with no adverse comments made regarding dimming. This neutral white LED lantern is also consistent with previous LED lanterns that have been installed throughout various areas of the Vale and is considered to offer better colour rendition within the street scene as well as providing optimum energy savings and reduced CO² emissions.
14. The procurement process for appointing a suitable contractor to install the new LED units has recently concluded and the contract is due to be awarded before the end of January 2018. This will enable the Council to proceed with the move to full LED throughout all residential areas in accordance with the Council's previously agreed Street Lighting Energy Reduction Strategy, using the neutral white LED lanterns with dimming to 50%, between 12 p.m. and 6 a.m. which will create a significant improvement in the quality of light in residential areas. A detailed installation programme is being developed with the successful installation contractor and will be distributed to all Ward Members to advise of the installation schedule, which is planned to be undertaken from February 2018 through to May 2018.
15. The street lighting energy costs paid by the Council via the South Wales Authorities Purchasing Consortium in 2016/17 was £0.105461 per Kwh and in 2017/18 this cost has increased to £0.120386 per Kwh, representing an increase of over 14% in energy costs over the last year. It is anticipated that this increase in energy prices will continue into the future resulting in ever increasing energy costs to maintain the Councils street lighting stock. The introduction of the Carbon Reduction Commitment Energy Efficiency Scheme (CRC) in 2014 will also result in ongoing annual costs for street lighting as a result of the levy charged for each tonne of CO² produced as a result of energy used to power street lighting lanterns.
16. The Council therefore needs to consider these ongoing cost pressures for street lighting and further ways to achieve increased energy savings for the future.
17. The Council currently has some 550 'Sox' or low pressure sodium lamps within its existing street lighting infrastructure. These 'Sox' lanterns are being phased out by lantern suppliers and therefore it is becoming increasingly difficult to purchase replacement lamps to maintain these street lighting units. The short supply of 'Sox' lamps is also resulting in the cost of new stock rising exponentially and, as such, the cost of maintaining these units is becoming increasingly expensive.

Future Options

18. On completion of the residential LED street lighting scheme there will be 3,895 standard conventional type street lanterns remaining to convert to LED, located on main roads throughout the Vale's highway network. There will also be some 675 ornamental or decorative street lighting units on main roads with non LED lanterns.

19. As identified above, the financial challenges for the Council associated with maintaining street lighting infrastructure in the future remains a concern with some 4,570 street lighting lanterns on main roads representing close to 30% of the Council's lighting stock remaining as old style high energy usage street lighting units. Whilst some 2,022 of these street lights will be subject to energy savings from part-night lighting, the number of old style high energy use lanterns will continue to add to the financial burden of the Council in future years unless measures are identified to fund the future replacement of these units to complete the conversion of all street lighting within the Vale of Glamorgan's local highway network to LED.
20. As well as significant benefits in energy consumption from conversion to LED, this technology also offers long-life maintenance savings. Typically energy savings of 50 to 80 per cent can be achieved compared to conventional lantern technologies resulting in reductions in energy costs and CO² emissions. A well designed LED lantern can last for some 20 to 25 years or 100,000 hours compared to conventional lighting which generally will have a life span of 3 to 6 years. The move to full LED will therefore provide further essential energy savings and reduced maintenance costs allowing the street lighting maintenance service to be delivered in a more cost efficient and effective manner in the future. As an added benefit, CMS for smart LED lighting control allows remote dimming and monitoring and offers further efficiencies.
21. The Council does not however have sufficient funds to implement conversion of the remaining main road lanterns to LED in the short to medium term and the need to maintain progress in street lighting cost savings is imperative given the potential increase in street lighting energy prices. Therefore alternative options for funding full LED lighting arrangements to achieve the necessary energy and maintenance efficiency improvements have been under consideration for some time.
22. Welsh Government is currently working with Salix Finance Ltd to provide interest-free loans for energy efficiency projects in the public sector. Loans are provided for energy efficiency measures, subject to meeting certain lending criteria, which include maximum payback periods for projects. The closing date for the next round of applications for this funding is 16th March 2018, though Welsh Government officers have indicated that a funding application prior to the end of January 2018 would be preferential to ensure the best opportunity of success in the forthcoming funding round. Council borrowing is governed by the Prudential Code for Capital Finance in Local Authorities, which requires Councils to consider the most efficient way of delivering outcomes. The access to funding through Salix Finance Ltd complies with the Prudential Code and is considered an excellent opportunity to deliver the funding necessary for the Council to move to full LED lighting arrangements within the next two to three years. The lending criteria will require a business case to provide a payback period of a maximum of 8 years.
23. The Council submitted an expression of interest to Salix Finance Ltd on 20th September 2017 to seek funding to replace an estimated 4,728 existing street lighting lanterns with LED lanterns on main roads under the abovementioned funding proposals with no commitment on the Council to submit a formal application. At the time of submission, this represented the estimate of the remaining street lights within the Council that are not already being converted to LED. The project figures for capital investment were estimated at £3.74m and the project was to be delivered over a 2 year period with provisional completion in February 2020. The expression of interest also included the replacement of some 610 'end of life' street lighting columns on main roads to safely accommodate new LED lanterns, and the installation of a CMS to enhance dimming regimes further improving energy

efficiency savings associated with the proposal. The expression of interest identified the intention to submit a formal application by 31st January 2018 to allow further refinement of the business case and accurately determine lantern, CMS and replacement columns costs within the whole project package.

24. Two business case options to support a proposed bid for funding to Welsh Government via Salix Finance Ltd have subsequently been developed and are detailed below.

Option 1 – Change to full LED with CMS System

25. This option includes replacing 3,895 standard conventional type street lighting lanterns with LED lanterns on main roads, and incorporates a CMS system. The proposal also requires the replacement of some 669 end of life street lighting columns on main roads to safely accommodate new LED lanterns. It is also proposed that the newly installed LED lanterns on main roads would be dimmed between 10pm and midnight by 25% and then from midnight to 6am by 50%.
26. The total cost of the project is estimated at £2,302,832 (including 1.5% consultant and project management fees) and will achieve an estimated energy saving of £239,510 per annum based on a projected 3% increase in energy cost each year over the payback period and a saving of some 730 tonnes of CO² per annum. This results in a payback period of 9.61 years for the Salix loan and therefore requires match funding by the Council to achieve the required maximum 8 year payback period to meet the Salix funding criteria and qualify for the loan. The contribution required by the Council to achieve the 8 year payback period is estimated at a total of £386,752.
27. The cost of the lantern and CMS system proposed to be installed will include a ten year plan for full customisation and remote access of the new LED lantern units to allow remote dimming and monitoring over that period. At the end of the ten year period there will be an additional registration cost with the manufacturer of the lanterns to continue the full operation of the CMS system. If this option is not taken then the Council will lose the flexibility and remote access offered by the CMS system. The cost of additional registration after ten years is not known at present but is not anticipated to be prohibitive in terms of the future management and maintenance of the street lighting apparatus.

Option 2 – Change to full LED without CMS System

28. This option includes for replacing 3,895 standard conventional type street lighting lanterns with LED lanterns on main road, excluding a CMS system. The proposal still requires the replacement of some 669 end of life street lighting columns on main roads to safely accommodate new LED lanterns as well as incorporating the dimming proposals identified in Option 1 above.
29. The total cost of the project is estimated at £1,991,231 (including 1.5% consultant and project management fees) and will achieve an estimate energy saving of £239,510 per annum based on a projected 3% increase in energy cost each year over the payback period and a saving of some 730 tonnes of CO² per annum. This will result in a payback period of 8.31 years for the Salix loan and a total Council contribution of £75,152 to achieve the 8 year payback period required.
30. Neither of the above options incorporate any potential maintenance efficiency savings that may be achieved by converting to full LED lantern technology as it is difficult at this time to estimate the level of any maintenance savings that will be achieved. The project also excludes the replacement of the remaining 675

ornamental or decorative street lighting units on main roads for which future funding opportunities will need to be considered to convert these particular lanterns. These ornamental or decorative street lighting units will remain on their current switching regime to maintain any previously implemented energy saving initiatives.

31. Both Options 1 and 2 are shown, for illustration purposes, to have the same energy and CO² savings, however in practice this will not be the case as, Option 1, which incorporates the CMS system, will be of significant future benefit to the management and maintenance of the street lighting infrastructure and will assist in making further energy savings by allowing remote access to vary the dimming options / lighting levels as required by the service, with the possibility of dimming levels greater than those shown for certain locations. It is estimated that by reducing the lighting levels of certain new LED lanterns using the CMS system an additional energy saving of some £300,000 could be achieved over the 8 year payback period offsetting the additional Council contribution required to progress Option 1 rather than Option 2. It is therefore preferable to progress with Option 1 for a change to full LED with a CMS System and it is considered that the match funding required by the Council will ultimately be recouped in future years by enabling adjustments to the LED units to achieve future energy and CO² savings as may be required. The CMS system will also reduce the costs associated with ongoing management of the system which would otherwise have to be met by the authority.

Resource Implications (Financial and Employment)

32. The preferred option (Option 1) requires Council funding over the 8 year payback period of the proposed project and it is suggested that this be provided from a current underspend in the Visible Services asset renewal budget plus a saving in project costs for the ongoing investment project to convert all residential street lights to LED. The project will be managed internally with any design work procured externally during the two year project implementation period. The supply of LED lanterns and installation will be tendered in accordance with the Council's Procurement rules.
33. Financial savings of circa £239,510 will be realised per annum based on energy and CO² should either option be chosen and this will be used to pay back the Salix funding over the period agreed as part of any funding approval.

Sustainability and Climate Change Implications

34. The proposed option reduces the Council's CO² emissions by 730 tonnes per annum and this represents a major contribution towards the Council's greenhouse gas reduction targets.

Legal Implications (to Include Human Rights Implications)

35. The Council has a legal duty to protect users of the public highway and its liabilities in respect to the proposed project will have to be assessed and carefully managed to avoid any additional third party risks resulting from the lighting changes.

Crime and Disorder Implications

36. By moving to a full LED lighting arrangements and removing the majority of part-night lit street lighting infrastructure, it will assist in alleviating perceived resident concerns regarding increases in crime and disorder which were received as a result of existing part-night lighting arrangements.

Equal Opportunities Implications (to include Welsh Language issues)

37. An assessment will be required as to whether the strategy proposed detrimentally affects any members of the public with protected characteristics, although due to the arrangements proposed it is not considered at this stage that this will be a major issue.

Corporate/Service Objectives

38. Environment - Current and future generations of Vale residents and visitors enjoy the built and natural environments of the Vale of Glamorgan and actively protect and maintain them. E3 - Review and update the Council's Carbon management plan to reduce emissions from Council buildings, street lighting and Council vehicles.

Policy Framework and Budget

39. This is a matter for Executive decision by Cabinet.

Consultation (including Ward Member Consultation)

40. As this is a Council wide matter no individual ward member consultation has been undertaken.

Relevant Scrutiny Committee

41. Environment and Regeneration.

Background Papers

None

Contact Officer

Michael Clogg - Operational Manager, Highways and Engineering

Officers Consulted

Legal - Committee Reports
Accountant - Environment and Housing Services
Head of Legal Services
Section 151 Officer
Policy Officer Procurement
Energy Manager

Responsible Officer:

Miles Punter - Director of Environment and Housing Services