

THE VALE OF GLAMORGAN COUNCIL

CABINET: 6<sup>TH</sup> JUNE, 2016

REFERENCE FROM ENVIRONMENT AND REGENERATION SCRUTINY  
COMMITTEE: 17<sup>TH</sup> MAY, 2016

“ STREET LIGHTING ENERGY REDUCTION STRATEGY UPDATE AND  
NEXT STEPS (REF) -

Cabinet had referred the report on 25<sup>th</sup> April 2016 to the Scrutiny Committee for consideration. The Chairman also confirmed that the issue was an item on the Committees work programme. In presenting the report the Head of Service commenced by advising that in 2014 Cabinet had resolved “That the implementation of a street lighting strategy based on the principal of reduced energy consumption with part-night lighting reduced for all appropriate areas of conventional street lighting as an initial measure and as reported as Option 6 of the report be agreed.”

The current report before the Committee advised that the part-night lighting programme, under Option 6, had now been completed and the report also provided an update on the carbon and financial savings that were achieved and issues encountered as a result of the part-night lighting scheme. The report also detailed various options aimed at working towards full LED lighting along with possible changes of the operation for current and future light units aimed at obtaining a balance between carbon and financial savings, the views of residents and the appropriate illumination of the highway network. The Scrutiny Committee were therefore requested to consider the report, the options identified and to refer any comments to Cabinet before it made a final decision.

Although the strategic option identified as Option 6 in the previous report had recommended to retain LED stock and part-night 70% of remaining stock at 12 midnight, after extensive consideration by the part-night lighting board, comprising officers from Highways and Engineering, Road Safety, Community Safety and the police, it had been only possible to part-night 65% of the conventional lighting stock, being some 7,400 units. In making this decision the Board had used a risk matrix to analyse the stock and a copy of that risk matrix and associated explanatory information was attached at Appendix A to the report for Members' consideration.

The matrix had also included an assessment of highway and community safety impacts and wider social considerations. Whilst all part-night lighting decisions were well thought through, officers had however, received a number of complaints with the primary concern being overly dark areas in residential streets. As of 14th April 2016, 225 complaints and service requests had been received associated with the changes to part night lighting. Whilst the number of complaints was reported as relatively low for such a significant service change, it was evident that some of the issues raised were of concern and could require further consideration.

More of the existing conventional style lighting may be able to be changed to part-night lighting over time but the original figure did not include certain non-highway related hazards such as street lights close to areas of open water, where lights had to remain on. This was in part the reason why 65% had been achieved and not 70%. The projected full year energy saving from the part-night scheme was now £217k with 1042 tonnes of Co<sup>2</sup>. Whilst the financial and Co<sup>2</sup> savings were lower than the estimates detailed above, the implementation costs were considerably less than those predicted, meaning that the pay-back period had reduced from 0.9 years to 0.65 years.

Members were informed that at the end of 2015/16 there would be 10,789 conventional type street lamps remaining in the Vale. These would be a mixture of residential and main road units with a full LED replacement cost of approximately £4 million. The payback period for this level of investment was in the region of 13 years to 18 years which would be mostly due to the number of main road columns involved and the savings in changing these to LED being considerably less than those in residential areas. Although Members had previously agreed to the principal of a change to full LED street lighting over time the Head of Service advised it would not be prudent to suggest the utilisation of this level of reserves to replace the entire remaining conventional street lighting stock at this time. The payback period was too long and service resilience could be compromised. Instead it was proposed that a smaller amount of capital funding be utilised from the Visible Services and Transport reserve to change all the remaining conventional lighting in residential areas to LED.

Including a possible option to make no further changes to the current part-night lighting arrangements, other than the LED installations already earmarked within the capital programme, there were four possible options. A table indicating these was attached at Appendix C with a graphical representation of each option, compared to the budget available, attached at Appendix D. The various options detailed in the report were considered in more detail, as follows:

“Option 1 - "Consolidate the current part-night lighting arrangements and invest £100k per annum in 2016 / 2017 and 2017 / 2018 on LED replacement lamps". This option provides for financial savings of approximately £14k per annum but, as previously advised, this is insufficient to match the budget available for this period. Also, whilst the number of part-night lighting complaints has not been necessarily high, there is a need to review some of these complaints to ensure that the Council's position in terms of risk is properly managed. For residential areas only, this could mean that a small number of LED lamps may have to be installed to replace certain part-night conventional lighting units (this is more cost effective option than turning the conventional lights back on). This will require an element of funding and for the Part-night Street Lighting Board to be reconvened, so that each complaint can be technically considered on its relative merits. Until the Board sits to determine which, if any, part-night lights should be replaced estimating the increased cost of this option is difficult. As a guide, an additional £50k would enable a further 250 residential lighting units to be replaced on an individual basis.

The further savings in both carbon emissions and costs obtained from the £100k capital investment depend on the lamps that are to be replaced. In broad terms conventional street lights in residential areas that have not been subject to part night

lighting realise the greatest savings, where in contrast strategic highway route street lighting that has been subject to part night lighting could increase revenue costs if changed to dusk until dawn full power LED lighting. As any lower level investment such as this should firstly be aimed at obtaining the highest possible savings, lights that have been subject to part-night lighting should not be changed first. This would not assist with the complaints received to date as all these have been from residential part-night lit areas. This particular option, whilst very positive when compared to the previous costs and energy consumption for street lighting, is not sustainable due to costs from 2016 onwards. Further variations of this option could include either dimming or part night-lighting the existing and any future LED lights. However the additional savings associated with these options are relatively low at £11k and £16k per annum respectively. The latter option is also likely to be very unpopular with those residents who reside in LED lit areas, who are now used to low energy all night lighting.

Option 2 - "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, with existing residential and main road part-night light units retained as 'part-night' but LED." This option provides the second greatest savings when reductions in maintenance and carbon tax are taken into account and this is detailed in appendices C and D. The pay-back period for the investment associated with this work is 7.04 years and this is shown at Appendix E. However, the Council could be challenged for taking a decision which leaves the current LED lights on through the night, albeit dimmed, whilst all new LED installations are part lit. This would be difficult to defend as there is no technical justification for this differential, the main reason being to avoid criticism from residents who currently live in LED lit areas. This option also doesn't fully address the problems currently being experienced with part-night lighting. For these reasons this option is not considered appropriate.

Option 3 - "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 are also to be dimmed at midnight." This option provides the third greatest savings when reductions in maintenance and carbon tax are taken into account and this is detailed in appendices C and D. The pay-back period for the investment associated with this work is 7.54 years and this is shown at Appendix E.

This option is preferred as it provides considerable savings whilst also allowing for consistent and appropriate lighting levels to be achieved throughout the Vale. Existing LED units are able to be programmed to dim electronically at certain times of the evening / morning and to a range of power levels with no additional hardware required. The same will apply with all new LED units. The LED dimming calculations in the appendices are based on a half power option from midnight but this could be increased or decreased depending on the lighting circumstance. Complaints are likely to be less than all other options as there will be no unlit areas. It should not be forgotten that currently almost 50% of the Council's total street lighting stock is turned off at midnight. In any event complaints of poor lighting will be much easier to deal with, as increasing the lighting output from any column would be a simple matter of reprogramming the LED controls on a column by column basis via adjustments to the lantern controls.

Option 4 - "Part-night 70% existing LED lights at midnight and dim remaining LED lights at midnight, invest £1.2m in 2016/17 and £100k in 2017 / 2018 and 2018 / 2019 in LED residential street lighting which are also to be either part-night lit or dimmed." As identified within the costs comparison Appendices this option realises the greatest savings both in terms of energy costs and carbon emissions. It is however likely to be the most unpopular option with the public, especially with those residents who are currently residing in areas lit by LED street lamps.

The savings from this option are only £22k greater than option 3 in 2017 / 2018, though the implications to the public in terms of their required lighting levels are considered to be significantly greater. Whilst achieving the highest savings possible from street lighting continues to be the aim, it is felt that this option does not provide sufficient additional savings over option 3 to warrant the discord that the option would cause with the general public. At this stage it has therefore been discounted.

Options 2 to 4 above all assume that the considerable investment in LED lighting will result in a 25% saving in ongoing maintenance costs for street lighting as the expected life of an LED lantern is much greater than that of a conventional unit. The table below provides an extract of the expected costs of street lighting energy, maintenance and carbon tax over the next two financial years. As can be seen it is expected that the options 2 to 4 all provide a saving over and above that of the projected budget in 2017/18. The preferred option 3 estimates an additional saving of £134k. Any additional saving made may contribute to the overall Reshaping Services saving of £1.3million for Highways & Engineers however due to the volatility in energy prices this saving could change significantly. “

There had been some concern raised previously about the safety of LED lighting. However, the officer advised that it had been reaffirmed that the LED luminaires specified would be compliant with the 'Waste from Electrical and Electronic Equipment Directive 2002/96/EC', which aimed to minimise the impact of end-of-life electrical and electronic equipment on human health and the environment. The LED modules themselves were totally sealed and the lens was made from vandal resistant polycarbonate and due to the fact that LED's did not have a filament lamp or glass enclosure they were largely impervious to vibration. LED luminaires also did not produce infrared or ultraviolet emissions and were used to protect foraging areas to preserve the habitat for bats.

A number of Members stated that having considered all the options in their view Option 3 was the preferred option. It was also mentioned by a few Members that part-nighting was a retrograde step particularly in relation to the feeling of safety although acceptance was shown at the savings and carbon reduction made as a result. Members had received a number of complaints in relation to part-night lighting and in the main safety had been considered the most important especially in their view where roads and pavements may not be lit as they should be. Although the new LED lights were directional lights Members were reminded that the department's responsibility was to light the highways and pavements not people's personal properties. A number of members of the public had complained that they could not see their keys to unlock their front doors but as Committee was reminded personal property was not the remit of the Council. The Committee was further

advised that there was no proven link between street lights being turned off between 12 midnight and 6.00 a.m. and an increase in crime.

The Cabinet Member for Visible, Leisure and Regulatory Services commented that it was important for Members to note that not all lights had been 'switched off' as discussions had taken place with various services i.e. ambulance service in order to assess safety issues and where it was agreed important for lighting to remain on.

Although recognising that Option 3 was the preferred best option the Head of Service advised that a procurement exercise was also required to be undertaken, with the aim to implement the preferred option in the early part of 2017.

Having considered the report it was subsequently

**RECOMMENDED - T H A T** Cabinet be advised that Option 3 was the Committee's preferred option as it would be a more comprehensive strategy for the Council to follow.

Reason for recommendation

Having considered the report, the Options contained therein and in the interests of enhancing safety."