

**SURREY COUNTY COUNCIL****CABINET****DATE: 18 OCTOBER 2016****REPORT OF: MR JOHN FUREY, CABINET MEMBER FOR HIGHWAYS, TRANSPORT AND FLOODING****LEAD OFFICER: TREVOR PUGH, STRATEGIC DIRECTOR – ENVIRONMENT AND INFRASTRUCTURE****SUBJECT: STREET LIGHTING – INTRODUCTION OF A PART- NIGHT LIGHTING PROGRAMME****SUMMARY OF ISSUE:**

Surrey County Council's street lights consume nearly 25 million kilowatt hours of electricity and generate around 12,500 tonnes of CO<sub>2</sub> each year which currently costs the Council £3 million per annum.

Increasing energy costs and the significant environmental impact of street lighting consumption places a responsibility on the Council to ensure it is using its infrastructure efficiently and cost effectively. This includes ensuring the lights are on full power when needed but that lighting is adapted when this is less so – for example, the vast majority of Street Lights are currently dimmed by up to 50% power from 2200 – 0530 hours each night.

Following a consultation, in which over 75% of respondents expressed support, this report proposes that some street lights in Surrey are turned off for part of the night. Turning off 44,000 street lights in residential areas would save the Council approximately £210,000 per annum along with reducing its CO<sub>2</sub> "footprint".

**RECOMMENDATIONS:**

It is recommended that Cabinet:

1. approves the implementation of a part-night lighting policy across Surrey commencing with residential roads where assessed safe to do so. Lights in selected roads would be turned off from midnight to 0500 hours each night.
2. delegates authority to the Assistant Director for Highways and Transport in consultation with the Cabinet Member for Highways, Transport and Flooding to determine the final programme of roads included and in future to vary the road categories to be included and future timings of part-night lighting where assessed to be safe to do so.

**REASON FOR RECOMMENDATIONS:**

The introduction of the Central Management System for controlling street lights initially allowed the Council to introduce a dimming regime in 2010 but also provided the future flexibility to adapt lighting profiles including turning lights off. The expected £210,000 annual saving represents a 7% saving on the Council's electricity budget.

The reduction in CO2 output by 1250 tonnes per annum as a result not only contributes to the Council's objective to reduce its CO2 impact but achieves a further £22,500 saving in avoided Carbon Tax.

The recommendations follow a review of the increasing number of local authorities implementing part-night lighting and the outcome of the research by the LANTERNS project as described in point 8. Whilst the Council's public consultation identified concerns around personal safety and road safety with implementing part-night lighting, over 75% of respondents were in favour of switching off at least some street lights.

Building on good practice in other local authorities, the introduction of part-night lighting will only be implemented in locations where it is deemed safe to do so based on a combination of factors including a site visit and risk assessment and, consultation with the Council's Road Safety Team and Surrey Police to mitigate against the concerns highlighted.

## **DETAILS:**

### **Background**

1. In 2009, Surrey County Council awarded a PFI contract for the provision of a street lighting service for 25 years from 1 March 2010. Included in the service specification was the replacement of all the county's 89,000 street lights.
2. The street lighting replacement programme included provision of a Central Management System (CMS) – to dynamically control the operation of the street lights rather than relying on photocells to determine on and off times.
3. The installation of a CMS allows “dynamic” control of the lights' operation. Previously, lights could be dimmed by the installation of equipment with pre-set instructions to dim lights at a prescribed time by a prescribed amount – any decision to change this means you have to replace the equipment which is expensive and largely impractical. Whereas with the CMS, the profile could in theory be changed every day and if required be different for each light. In practice there are currently only 4-5 profiles covering two dimming levels and several time variances:
  - i. Lights on Traffic Routes are dimmed by 25%
  - ii. Lights in Residential Areas are dimmed by 50%

Most lights are dimmed from 2200 hours but there are several exceptions in town centres where lights do not dim until midnight, 0200 or 0300 hours based on the local night time economy.

The original dimming profile was to dim lights from 2300 to 0530 hours each night which will save an estimated £12 million in energy bills and 60,000 tonnes of CO2 over the 25 years of the contract. In October 2015, this was changed to commence at 2200 hours saving a further £90,000 in energy annually.

## Options Analysis

4. Over recent years, officers within SCC's Highways and Transport Team have been working on savings opportunities in street lighting in conjunction with other highway authorities and central government departments including the Department for Transport, HM Treasury, the Department for Energy and Climate Change and Local Partnerships.
5. Depending on the individual Authorities' Asset Management Strategy and current asset condition, there are a number of opportunities available to reduce energy costs for future years. These include installing LED to reduce energy consumption, installing a CMS to allow dynamic control of lighting, introducing dimming where enabled and switching off lights in certain locations.
6. In 2015, SCC officers carried out a review of the recommended energy saving initiatives that were available and applicable having already carried out a column replacement programme:

Option	Analysis	Outcome
Replace some (or all) lights with LED	<p>Replacing the existing lights with LED would reduce consumption by up to two-thirds where installed.</p> <p>The only way to achieve this would be to replace the whole lantern as retrofitting of the lamp element (bulb) is not currently available. The cost of replacing the lanterns including the borrowing costs would take in excess of 10 years to pay back.</p> <p>Whilst the reduction in energy consumption would reduce CO2, it will take significant capital investment (potentially diverting resources from other projects) and not deliver savings for many years.</p> <p>As the technology was not sufficiently developed at the time of the contract award this could not be adopted during the initial column replacement phase.</p>	<p>Monitor energy consumption and energy inflation and revisit the business case if energy inflation exceeds 10% in a single year or 5% consecutively for two years or more.</p> <p>Ensure new developments are fitted with LED where the Council will later adopt the road as Highway</p>
Further Dimming	<p>The lights on traffic routes have been designed to ensure even spacing, uniform minimum lighting across the carriageway and conform to the British Standard for Lighting designs. Dimming lights by 25% is approximately equivalent to reducing the lighting by one lighting class as defined in the British Standard. Current risk assessments determine that this could reduce the lighting level beyond a suitable standard for the types of road.</p> <p>The lights in residential areas are dimmed by 50% power. Tests carried out in 2013 demonstrated that the lights begin to flicker when operated at less than 50% power particularly in cold weather.</p>	Dimming the lights by a greater amount is not viable.
Dimming for Longer	<p>Looking at other authorities it is clear that there were a variety of regimes with some dimming the lights from 2100 and others at midnight. Many authorities are either introducing dimming or reviewing their current profiles. Dimming all the lights by the same percentage for a further hour was estimated to save approximately £90,000 per annum.</p> <p>Feedback from many residents indicate they are unable to notice the impact of dimming which in itself is positive.</p>	Dimming was changed from 2300-0530 to 2200-0530 from October 2015.
Remove Lights	Generally speaking the lights have been installed for good reason and the Council receives numerous requests each year for additional lights. The cost of disconnecting and removing a light is significant and the resultant energy saving would take many years to cover the costs.	Remove lights on a case by case basis only where this is demonstrated to be in the public interest.

Switch off every other light in a road	Whilst this would generate savings, it would also create uneven lighting in roads and potentially dark spots along sections of road – as some lights would be in operation, night vision would be impaired potentially increasing risks	This is not a viable option.
Switch off all lights in a road	<p>Many authorities are now implementing part-night lighting (where lights are turned off for part of the night). This reflects the significant reduction on use of roads by pedestrians and motorists during the middle of the night. Part-night lighting can be achieved either through a fixed decision using the equipment to control on and off times as with dimming (i.e. through photocells and electronic ballasts) or through a Central Management System – use of a CMS allows the Authority to make amendments to any regime either by individual light or to whole roads, areas or indeed the County.</p> <p>Officer estimate that switching off 44,000 street lights in residential roads will save approximately £210,000 per annum.</p>	Explore options to implement a Part Night Lighting Policy in 2016/17

### Proposal: Part Night Lighting in Surrey

7. Under the Highways Act (1980), Highways Authorities have the power to light the highway; however they are not obliged to do so. Where street lighting is present, the Authority has a duty of care to ensure it is safely operated and maintained.
8. In 2015, the London School of Hygiene and Tropical Medicine published a paper on research they carried out referred to as the LANTERNS project. The researchers obtained data from numerous local authorities including SCC and compared this to published data on both crime and road accidents. The study found no link between dimming and switching lights off with any increase in crime or road accidents. Full details of the study can be found at the following link: <http://lanterns.lshtm.ac.uk>
9. In areas where part-night lighting has been implemented elsewhere in the country, risk assessments have been carried out to ensure that roads selected are considered suitable for turning lights off. Using a checklist (now becoming commonly known as Avoidance Criteria), roads are assessed for suitability for part-night lighting. Based on best practice in other authorities, SCC officers have developed the following Avoidance Criteria:
  - a. Traffic Routes – this will predominantly be A, B and C classified roads, however some lower trafficked roads in this group may be included and equally some higher trafficked unclassified roads may be excluded by this criteria.
  - b. Town centres where this is a night time economy.
  - c. Where traffic calming measures (speed cushions or humps, chicanes etc) or formal pedestrian crossings such as zebra crossings are present and they require illumination.
  - d. Locations where Council or Police CCTV is in operation to reduce crime.
  - e. Locations where the Council's Road Safety Team or Surrey Police believe that implementing part-night lighting could have an adverse effect on either crime or road safety.
  - f. In cases where buses or trains run beyond the proposed switch off time, roads will be assessed and may either be excluded from part-night lighting or have a later switch off time.

10. If one or more of these Avoidance Criteria is present on a road, affected parts (in the case of traffic calming/pedestrian crossings), or all of the road, will not have the street lights switched off.
11. Officers have used the Surrey Priority Network hierarchy to determine where to implement part-night lighting and initially this will be focussed on the SPN 4a and 4b networks. The 4a and 4b networks are residential roads including some roads which link busier roads on the SPN 1, 2 and 3 networks.
12. It is proposed that subject to individual risk assessments, roads where part-night lighting is implemented will have the street lights switched off at midnight and switch back on again at 0500 hours every day<sup>1</sup>.

### **CONSULTATION:**

13. A public consultation was published via the Council's website ([www.surreysays.co.uk](http://www.surreysays.co.uk)) from 5 August 2016 to 2 September 2016. This was promoted through a variety of routes including emailing links via Residents' Panels and posters in the Council's Libraries.

Respondents were asked:

Are you in favour of the Council switching off street lights for part of the night where deemed safe to do so in order to reduce energy bills and reduce CO2 emissions?

They were provided with 3 options:

**Many      Some      None**

Respondents were also offered the opportunity to provide any additional information for the Council to consider.

### Analysis

14. There were 842 responses. The responses broke down as follows:

Answer	Number	Split
Many	390	46%
Some	253	30%
None	199	24%
<b>Total</b>	<b>842</b>	

15. As can be seen, nearly half of all respondents were in favour of switching off many lights and overall 76% were in favour of switching off at least some lights.

16. Many respondents left additional comments.

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<sup>1</sup> Lights will continue to be dimmed 2200 to 0530. In the summer months where dawn is before 0500, lights will not be switched on again.

As could be expected, people in favour of switching “many” lights off commented on it being a positive step with comments covering the positive impact on the environment, reducing costs or improving the night sky.

Many of those selecting “some” provided comments around ensuring the right lights were turned off. In these cases there was a mixture of focus with some respondents favouring traffic routes over residential areas and others the exact opposite.

A more detailed analysis can be found in Annex 1.

### **RISK MANAGEMENT AND IMPLICATIONS:**

There are several areas of risk associated with implementing a part-night lighting programme including:

17. The decision on which roads to include – for example a blanket approach to turn lights off in a whole area is unlikely to identify local risks. These risks may include an adverse effect on a night time economy, road safety or personal safety as well as the potential impact on other types of crime. Having investigated other local authorities’ approaches, the Council has developed a set of avoidance criteria (see paragraph 9) to identify these risks and lights will not be turned off in these locations.
18. The Council’s reputation could be adversely affected as a result of implementing a part-night lighting programme – whilst for some people this might be seen as a positive step to reduce costs, CO2 output and reduce light pollution, others might feel less safe. The public consultation has allowed the Council to gauge opinion from residents and road users in Surrey and whilst there were concerns raised particularly around road safety and personal safety, over 75% of respondents were in favour of switching off at least some street lights. The application of the avoidance criteria along with individual risk assessments by road and consultation with the Council’s Road Safety Team and Surrey Police will identify risks in each location and street lights will only be switched off where it is deemed safe to do so.

### **Financial and Value for Money Implications**

19. The street lights consume around 25 million KW/h each year which is currently costing £3 million and generating in the region of 12500 tonnes of CO2 each year. The Council’s unit price for electricity is currently 11.49 pence per hour. This has risen from 8.12 pence per hour in 2010 (41% increase).

20. The estimated savings are based on a reduction in energy consumption of 2.8 million KW/h per year.
21. It should be noted that the energy price is based on an averaged figure. The timing of consumption has an impact on the price and this is adjusted every six months based on actual consumption. For example, energy consumed 1900-0700 costs 30% less than the average price (i.e. currently 7.9p per KW/h) but during peak periods such as 1600-1900 October to March, the price increases significantly to around 35p per KW/h.
22. The revised operating “profile” of the lights can be updated in the CMS in bulk so there is no specific cost for implementing the changes. The site visits and risk assessments have been carried out with existing officer resource and, where possible, tied in to other activities to maximise efficiency.
23. The proposal will deliver savings in the region of £210,000 in energy costs and a further £22,500 in avoided Carbon Tax annually from 2017/18 through a 1250 tonne CO2 reduction. The savings for 2016/17 are estimated to be in the region of £50,000 in energy reductions and £5,300 in avoided Carbon Tax – these are subject to the implementation dates proposed and the outcomes of the site visits and risk assessments.

#### **Section 151 Officer Commentary**

24. The measures outlined in this report would be expected to deliver a saving of £210,000 in a full year, which is in line with the Council’s Medium Term Financial Plan. Due to the requirement for consultation, implementation has been delayed. This will create a financial pressure in 2016/17 and a review is under way to identify compensating savings.

#### **Legal Implications – Monitoring Officer**

25. The County Council as Highway Authority looks to the Highways Act 1980 in relation to many of its powers and duties. There is no statutory duty to light the highway. Section 97 of the 1980 Act gives every local highway authority a power to provide lighting for the purpose of any highway and the Council has to determine where it is necessary to provide and maintain lighting on the public highway.
26. Where highway lighting is installed s97 (2) provides that the County Council may alter any works constructed by them. The decision to implement part -night lighting does not require public consultation but given the change proposed to long-standing practice, in line with the common law duty of fairness, consultation was carried out to ascertain public reaction and any support for the proposals.
27. The public sector equality duty (Section 149 of the Equality Act 2010) applies to the decision to be made by Cabinet in this report. There is a requirement when deciding upon the recommendations to have due regard to the need to advance equality of opportunity for people with protected characteristics, foster good relations between such groups and eliminate any unlawful discrimination. These matters are dealt with in the equalities and diversity paragraph of the report.

### **Equalities and Diversity**

28. Community and personal safety concerns affect a number of groups including people walking alone, elderly and disabled people using the roads during the proposed switch off times. It is difficult to determine how the proposal directly affects the occurrence of crime given the research referred to in paragraph 8 above but it may increase fear of crime depending on the local circumstances. The public consultation raised some concerns as to personal safety and road safety. Known crime hotspots are excluded from the programme and a dialogue will be maintained with the Police to monitor this issue.
29. There is potentially a negative impact on road safety for some groups with protected characteristics, such as disabled and elderly people, if it is harder to identify trip hazards or when crossing roads. This is being mitigated by implementing the changes in a way sensitive to the local road network. Site assessments are being carried out to identify locations where traffic calming measures or formal pedestrian crossings are in place and lights will not be switched off in these locations.
30. Impacts on accessibility are likely to be minimal as the majority of changes will affect street lighting after 0000 hours when fewer people are around, although young people returning from pubs and night clubs may be affected. Impacts will be monitored through monitoring of crime and road accident trends and complaints from the public.

### **Climate change/carbon emissions implications**

31. SCC street lights generates approximately 12500 tonnes of CO<sub>2</sub> per year which accounts for approximately 23% of the Council's total CO<sub>2</sub> output and any changes to street lighting use will impact on that.
32. It is anticipated that switching off 44,000 lights in residential roads will result in a reduction on CO<sub>2</sub> of approximately 1250 tonnes each year, equivalent to just over a 2% reduction in the Council's total consumption. Furthermore, the Council will see a reduction in Carbon Tax payments of £22,500<sup>2</sup>.

### **WHAT HAPPENS NEXT:**

33. Subject to Cabinet approval, lists of roads that will be included in part-night lighting will be published for one month prior to implementation. Site visits will have been carried out by officers to assess each road to ensure they are suitable for part-night lighting against the avoidance criteria. These will have also been reviewed by SCC's Road Safety Team in conjunction with Surrey Police and by Surrey Police's Crime Prevention teams. The publication of the full lists is expected to be as detailed in the table below:

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<sup>2</sup> Carbon Tax is currently £18 per tonne of CO<sub>2</sub>

District/Borough	Part Night Lighting Implemented
Guildford	December 2016
Surrey Heath	December 2016
Waverley	December 2016
Elmbridge	January 2017
Epsom and Ewell	January 2017
Mole Valley	January 2017
Reigate and Banstead	January 2017
Runnymede	February 2017
Spelthorne	February 2017
Tandridge	February 2017
Woking	February 2017

**Contact Officer:**

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**Consulted:**

Surrey Police – Crime Reduction and Road Safety Officers  
Public Consultation – see Annex One

**Annexes:**

Annex One – Part Night Lighting Consultation Outcome

**Sources/background papers:**

- LANTERNS Study - <http://lanterns.lshtm.ac.uk>

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