

APPENDIX 1

Street lighting LED lantern replacement programme – Frequently Asked Questions

Please see below some Frequently Asked Questions about the new LED lights and the programme.

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18. **What is the colour temperature, in degrees kelvin, of the LEDs to be used?**
19. **Are LED Street lights considered environmentally friendly?**
20. **How safe are LED street lights?**

Please see below some Frequently Asked Questions about the new LED lights and the programme.

1. Why are you spending all this money to replace the Street lights?

A: Shropshire Councils (SC) Street lights are of aging stock, energy inefficient and becoming unreliable requiring considerable maintenance investment. By replacing 15,700 (80%) of the older conventional lanterns to the newer LED type, SC will save approximately £500k a year in energy, £390k in maintenance costs and enable us to meet our obligations under the government's Carbon Reduction Commitment (CRC) Policy.

Electricity consumption on the affected lighting stock is estimated to reduce by 56% as a result of the LED conversion project, with energy prices forecast to rise we are taking this opportunity to replace the existing street lighting network with more efficient LED equipment. This will allow us to continue to provide a quality street lighting service at an affordable price and will mitigate any future rises in electricity costs.

2. How much will it cost?

A: SC is investing £6.8m into the project, £3.1m of which will be forward funded by an interest-free Government loan. Once all Street lights are replaced with LED lanterns, SC will save approximately £900k a year in future revenue savings which will support the Highways Service Revenue Budget.

It is expected that the LED replacement project will deliver financial payback over six years.

3. When will this be happening in my area?

A: The lantern replacement programme will be over 3 years commencing in April 2020 with completion in March 2024. As we are at pre-project start, no commitment can be given over which areas will be upgraded when, this will change as the project develops and the programme updated.

4. How many street lights are there in Shropshire, of different types?

A: There are approximately 19,500 units of various types owned by SC, of which 3,339 have already been upgraded to LED technology.

A total of 8,336 lanterns or 42.5% of the stock use the older SOX lamps of varying wattages which are no longer manufactured soon requiring full lantern replacement on lamp failure.

5. Will every Street light be replaced with an LED type lantern?

A: All SC owned street lighting will be converted to LED as part of the three-year lantern replacement programme. Firstly, we will focus on the replacement of standard lanterns, although decorative and heritage lighting will be addressed at some point.

It is not our intention to replace heritage style equipment with modern LED lanterns. Our proposal is to fit LED equipment into existing heritage lanterns wherever possible so the only noticeable change will be the switch from yellow light to a white light.

6. Will the Street lighting columns be replaced as part of this programme?

In almost all cases the new LED lantern will simply replace the existing lantern on any given Street lighting column.

In a very small number of cases a Street lighting column will be replaced if it is found to be in poor condition however it is unlikely that the position of the street light will be changed. In these circumstances a single sodium light may be left in situ for a short period of time until the lighting column can be replaced.

We do have a separate street lighting column replacement programme which targets the oldest, most decrepit equipment around the county. This programme will continue to operate concurrent with the proposed LED scheme and will take advantage of the new efficient lanterns.

7. Will the streets lit with LEDs look any different?

A: Each area where the new LED lanterns are to be installed will be designed in accordance with the British Standard. Visibility for drivers and other road users will be better in all cases. Residents will notice a difference to the light, which may take some time to adjust to.

8. Are there any other advantages to LED street lights?

A: Yes, particularly because they last much longer than conventional sodium lights, other benefits include: -

- Greater energy savings – up to 73% in comparison to the conventional sodium units SON and SOX lamps.
- Better colour rendering, making colours more natural
- Longer life – up to 100,000 hours, resulting in less maintenance
- Uniform, high quality white light. LED lighting provides better facial recognition for security and CCTV cameras and therefore helps to make areas safer.
- LEDs can be dimmed when light is not needed, resulting in additional energy and carbon savings.

9. How long do LED's typically last?

The life span of a quality LED Street light is typically designed to operate for around 100,000 hours, which is significantly (around 6 times) longer than that of most incandescent, fluorescent or High Intensity Discharge (traditional street lighting) lamp sources.

Street Lights switch on when the ambient light falls to a certain level, typically 35 lux and will operate for shorter hours in the summer months and longer during the winter months, to reflect the changes in the seasons.

Therefore, over a typical year a street lighting unit operating in these conditions will be switched-on for around 4,100 hours. Based on these annual hours of operation, the LED street lights are expected to operate between 20-25 years

10. What is the cost per street light of replacing with LED?

A: The average cost should work out at just over £250 per unit. The cost includes the price of the LED lantern itself, the installation cost, any traffic management and the design work and other project management costs. Because the council is buying large numbers of similar units, they will achieve significant bulk discount from the manufacturers.

11. How quickly can you install these LEDs once you start?

A: It is estimated that where there are no major issues, such as prolonged inclement weather, we would envisage around 100 lanterns to be installed per week. The target is to install approximately 6,400 (40%) LEDs lanterns in year 1, with the first year ending in March 2021. Year 2 will look to replace 4,800 lanterns, similar numbers in year 3 with all upgrades completed by March 2024.

12. What will you do with the old lanterns that are removed?

A: These will be properly disposed of with materials being re-used where possible.

13. How did you choose which areas to do first?

A: The higher wattage lanterns which require more energy to light (main roads) will be converted first to maximise both energy and carbon savings in the first year, followed by the lower wattage Street lights such as those on residential estates.

14. Will you still keep repairing faulty (sodium) all-night lanterns when they fail?

A: We will try to be as financially efficient as possible, where safety is not at risk, so if a light is out and economically repairable we will do so. If the cost to repair exceeds its economical worth, consideration will be given to replacement with a new LED lantern.

15. Will the current Part-night lit Street lights be converted to All night lighting?

A: No, The LED lantern replacement project will not change the current Part-night lighting policy. Where Part-night lighting has been introduced into a Street light, the switch on and off times will be unchanged in line with the Part-night lighting risk assessment criteria. Although LED lanterns will provide significant savings, Part-night lighting will contribute to the overall energy savings and enable us to meet our obligations under the government's Carbon Reduction Commitment (CRC) Policy.

16. Why does the new Street light not switch on and off at the times specified?

A: When fitted, each Part-night photocell requires nine to 14 days to calibrate properly. The longer they are in situ the more accurate they become. The calibration process can be interrupted by a number of variables, including adverse weather conditions, local power disruptions and the switch between BST and GMT.

The streetlights work on the available light (via their photocell) and do not have an inbuilt clock.

When everything is working perfectly there is still a +/- 15min variation possible in the switching times. However, only a very small proportion of lights would be affected to this extent. Of more than 12,000 units installed to date only a handful have experienced these timing issues over an extended period.

Any timing issues will resolve themselves as the photo cells continue the calibration process without manual intervention. However, if the issue persists (outside the +/- 15min) for longer than the 14-day calibration period we will consider replacing them.

If lights continue to operate outside of this 15 minute window, please report a streetlight fault and we will investigate.

17. Will or can the new LED street lights be dimmed?

A: Yes, there is some existing dimming of LED's, which is dependent upon location and an individual risk assessment.

18. What is the colour temperature, in degrees kelvin, of the LEDs to be used?

A: The colour temperature will vary depending on its location, running from 2700k for residential estates to 4000k on main roads and areas of conflict (pedestrian crossings, major junctions etc) which is a neutral white light source not a high CCT.

19. Are LED Street lights considered environmentally friendly?

Yes, LED's are considered to be environmentally friendly in a number of ways.

Firstly, they are designed to have a long-life span which can offer around 20 years of near maintenance-free service. Unlike conventional street lighting units, there is no lamp to change which means no waste.

Assuming a conventional street light is re-lamped every three years, that's over six re-lamping cycles over a 20-year period. As such, there is: -

- reduced disposal of old lamps containing harmful mercury;
- reduced fuel used and the accompanying pollution to service those fixtures;
- reduced potential for congestion on the highway network through lane closures or road works;
- less natural resources and energy used to produce the replacement lamps;
- less fuel used to transport the lamps from the factory (most likely overseas), to the distributor, to the contractor, to the job site

20. How safe are LED street lights?

A: The street lights we will be installing are designed for the exact local environment they are placed in to ensure the right luminance (light) on the road whilst minimising glare.

Expert reports show:

Public Health England - Public Health England's report concluded that to damage your eyesight you would need to be less than 2 metres away with steady fixation for 2.5 hours!

European Commission Report - SCHEER (scientific committee on Health, Environment and emerging risks) The Committee concluded that there is no evidence of direct adverse health effects from LEDs emission in normal use (lamps and displays) by the general healthy population.

The Lighting Research Centre paper concludes that LEDs present no special concerns for the blue-light hazard over some other common sources in typical use cases because photophobic responses limit exposure to bright sources.

All the above reports show that street lighting should not have an adverse effect on the circadian (daily sleeping and waking) rhythm. It might be noted that office and home lighting and the use of laptops and mobile phones is more likely to have an effect.

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