
Briefing: Performance and Value for Money Committee

Date: 28th June 2018

Subject:
Council Motion – Street Lighting

For Discussion/

Report of:
Carol Brown

Portfolio holder:
Councillor Arooj Shah

Sign-off:
Helen Lockwood

Summary of the issue:

The purpose of this report is to respond to the issues raised through the motion agreed at the meeting of full Council on the 13th December 2017.

The motion proposed and agreed was as follows:

“This Council notes:

There are an estimated 7.5 million street lights in the UK. In 2014, the Green Investment Bank reported that only 10% of these are LED. It is estimated that switching all street lights to LED would:

- Save Councils over £200 million per year, paying for half a million children to have free school meals each year or for an extra 12 million hours of social care.
- Prevent over 600,000 tonnes of carbon dioxide from being emitted into the atmosphere every year, the equivalent of taking 400,000 cars off the road.
- Take 0.5 GW off peak electricity demand, the equivalent of a coal fired power station.
- Reduce light pollution as they are more directional and can employ sensors which determine when they are most needed and when they are not.

Further cost reductions can be provided through the use of LED lighting within Council buildings. Affordable financing is available to Councils to make the change to LED street lights through the Public Works Loan Board, the Salix Energy Efficiency Loans Scheme and the Green Investment Group amongst others. That the change is possible even in a situation where the street lighting service is provided via a Private Finance Initiative model

That the 10:10 climate change climate group is asking Council to sign up to the Lighten Up pledge and make a commitment to going fully LED within 5 years.

As a local authority committed to reducing its carbon footprint and providing residents with value-for-money services, Council recognises that a change to LED has merit, is worth investigating, and that a proposal to do so was approved by Performance and Value For Money sub-committee when it was presented as part of the alternate budget proposed by the Liberal Democrat Group in 2017.”

Recommendations:

It is recommended that Members note the report and the investment in energy efficient street lighting which has taken place to date.

It is also recommended that Members support the current approach to replace street lighting with LED as part of the ongoing maintenance programme which has been negotiated within the current PFI contract arrangements.

1 Report Details

- 1.1 Full Council resolved to ask the Performance and Value For Money Committee to examine:
- The practicality and affordability of replacing street lights and lighting in Council buildings with LEDs in whole or in part; and
 - The possibility of the Council making a commitment to replace all street lights with LEDs within five years and to making the Pledge as a signatory to the Lighten Up campaign
- 1.2 The Council has made a significant investment in the street lighting infrastructure from 2011 to 2016 which has seen 80% of the street lighting assets replaced with energy efficient lanterns having modern optics which have reduced light pollution. They also have the functionality to dim, this has substantially reduced both the energy consumption and CO2 Emissions.
- 1.3 The Council have a number of LED units installed including 1633 street lights, 483 illuminated bollards, 959 sign lights and have also de-illuminated 329 bollards.
- 1.4 The Council has recently carried out a high level review based on the current energy efficient apparatus as against replacing all apparatus with LED requiring a Capital investment of £ 6.5 Million. This model shows the payback on the investment to be 15 years.
- 1.5 In addition a review has also been undertaken to examine the most appropriate replacement lantern to be used within the contract as the original model has been superseded with more energy efficient lamps including LED's. A copy of the report presented to the Portfolio holder is attached at Appendix A.

2 Options (including recommended option)

- 2.1 The street lighting specification has been reviewed with the current provider and it has been agreed that LED technology will be used for both new installations and maintenance going forward. This approach is entirely consistent with the PFI
- 2.2 Approach the service provider with a view to investing circa £6.5m to replace all current lamps with LED lanterns.

3 Financial implications

- 3.1 The high level review, referred to in paragraph 1.4 above, was performed prior to the completion of the replacement program in 2016. It is predicated on a number of assumptions and data reflecting the position at that time. The key assumptions and comments relating thereto are set out in Appendix B.

-
- 3.2 The current lighting estate comprises mainly energy efficient Cosmoplis lighting but also contains a growing number of LED units as outlined in paragraph 1.3. There have also been changes in the overall size of the lighting estate as equipment has been added/ removed from service.
- 3.3 The model solution indicated that it would cost £6.5m to convert the Council's lighting estate to LED technology. This in turn produced a payback period of 15 years before the investment paid for itself. Given the passage of time since the model was prepared, the results must now be considered, indicative rather than definitive. Increased accuracy would only be gained by re-modelling the data using current information.
- 3.4 A review was performed of the model in its current form. It is considered to provide reasonable support to show that the Council would need to invest a significant capital resource to convert the rest of its lighting to using LED lanterns. It also points towards a lengthy payback period before that investment pays for itself (in a financial rather than environmental context). If anything, the model probably understates the payback period. This is because it utilizes a higher cost per Kilowatt hour for electricity than the Council currently pays which would tend to overestimate the efficiency saving achievable from LED conversion.
- 3.5 There is no provision within the capital programme at present to fund such a proposal. This would require the preparation and subsequent approval of a full Business Case for this project.
- 3.6 In any case, this paper recommends the Council avoids injecting capital resources into a full LED solution at this time. Furthermore, such a move is likely to bring with it significant risk/liability on the part of the Council because it impacts the running of the PFI contract.
- 3.7 The paper outlines a preferred way forward that involves a steady step by step approach to the replacement of lanterns at no additional cost to the Council. This accords with the existing PFI contract terms and thereby mitigates the likelihood of increased contractual risk. The time-line for completing the whole exercise, however, is not certain and is impacted by the following:
- The Service Provider is already programmed to replace 20% of the lighting estate using LED lanterns in 2023/24 as part of the PFI contract and at no additional cost to the Council;
 - As stated in Paragraph 2.1, existing non LED lanterns will be superseded by LED equivalents as part of the routine and reactive maintenance programme. By its nature, the programme of maintenance will be spread over a number of years.

(Nigel Howard)

4 Legal implications

When considering whether or not to reduce the level of luminosity for the street lighting in the borough the Council has a statutory duty to consider the impact of its decision on crime and disorder - section 17 Crime and Disorder Act 1998: "Duty to consider crime and disorder implications:

(1) Without prejudice to any other obligation imposed on it, it shall be the duty of each authority to which this section applies to exercise its various functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent,

(a) crime and disorder in its area (including anti-social and other behaviour adversely affecting the local environment); and

(b) the misuse of drugs, alcohol and other substances in its area; and

(c) re-offending in its area

Furthermore the Council has a responsibility to consider the evidence available with regard to lighting levels and road safety to ensure that the Council is acting reasonably in making its decision to reduce the lighting levels to ensure that its decision is capable of withstanding legal challenge by means of judicial review.

The Council will have to use the change control mechanism in the PFI Project Agreement to make an authority request for change and follow the procedures set out in the Agreement to effect the required change in lighting levels

(Elizabeth Cunningham –Doyle)

5 HR/people implications

5.1 N/A

6 Link to Co-operative Values

6.1 Energy street lighting provided by the Council and residents report faults to enable early repairs.

7 Strategic Links

7.1 The Council is committed to providing energy efficient street lighting

Street Lighting – Lantern Options Appraisal

Briefing note

Contact Officer: John McAuley ext. 1669

Date: 28th June 2017

1 Introduction

- 1.1 In March 2017 Urbis Lighting ceased production of their Evolo lantern which was the preferred lantern within the street lighting PFI contract and has been installed on 80 % of the street lights within the Borough, although the manufacturer has confirmed that they will supply spares for the lanterns for the remainder of the contract, however they will not be producing lanterns of this type for future sales.
- 1.2 There is a need to find a replacement lantern for usage within the Borough where we can get the benefit of current technology, there are various types of lantern available with a range of light sources including high pressure sodium, Cosmopolis and LED.
- 1.3 The Urbis Evolo is the current lantern which has a Cosmopolis light source and was widely used at the time of the contract being awarded in 2011, this light source in the main has been superseded by an LED light source throughout the United Kingdom.

2 Strategic Aims and Objectives

- 2.1 Providing high quality street lighting complying with the relevant British Standards
- 2.2 Improving the social wellbeing of the area through the reduction in local accidents and crime
- 2.3 Minimise light pollution
- 2.4 Maximising energy efficiency
- 2.5 Achieving value for money by optimising whole life costs of apparatus

3 Lantern Key Elements

- 3.1 The lanterns will have a thirty (30) year guarantee and are constructed so they can be easily dismantled for recycling at the end of their working life.
- 3.2 Energy efficient Luminaires, with a high level of recyclability and produced in a green ISO 14000-approved factory will contribute significantly to its' carbon reduction efforts.
- 3.3 Remote Monitoring System and Variable Lighting System for the Project, for all Lanterns. The Remote Monitoring System is a hosted system managed by the manufacturer and will communicate real time information for each item of Illuminated Apparatus. The system will immediately recognise any fault condition in any item of Illuminated Apparatus and flag this via the MIS.
- 3.4 Variable Lighting System will also provide the ability to vary lighting levels for all lanterns equipped with suitable ballasts.
- 3.5 To support the Authority in reducing its overall carbon footprint, the Service Provider will install a white light solution, for residential routes, operating on highly energy-efficient electronic control gear, thereby reducing consumption.
- 3.6 Luminaires will be sourced from manufacturers registered with a WEEE compliant scheme

4 Options Appraisal

- 4.1 A market evaluation has been carried out on various types of lantern where three types have been selected and will give a good overall appraisal of the lanterns to potentially be included in the street lighting PFI where a number factors have been considered.

Option 1 – Philips Iridum CPO Lantern



Pros:

- Established manufacturer.
- Already the reserve lantern on the project.

-
- Satisfies the current PFI contractual spec.
 - Full lantern family in various different sizes to accommodate all street lighting requirements.

Cons:

- CPO light source energy efficiency compared with LED.
- High maintenance regimes compared with some lanterns.
- Life Span of production, with LED replacing CPO lamps in most major manufacturers.

Option 2 – Orangetek Arialed Led Lantern



Pros:

- LED technology energy efficiency.
- Control of upward light spill.
- Satisfies most of the PFI contractual spec.
- Full lantern family in various different sizes to accommodate all street lighting requirements.

Cons:

- Relatively new manufacturer compared with others.
- Warranties may require to be extended (purchase option).
- Type approval to be investigated.

Option 3 Holophane V max LED Lantern



Pros:

- LED technology energy efficiency.
- Satisfies current PFI contractual spec.

- Established manufacturer.
- One Lantern fits all with the availability of adding and detracting banks of LED's to accommodate all street lighting requirements.

Cons:

- Initial purchase costs to be investigated (Service Providers Risk)

Whilst the above pros and cons are not exhaustive we have outlined these to give an idea of the types of lanterns available and to give a comparison

Indicative Energy Savings

These are based on AIP original lighting columns being replaced with the units, with the control of these units turning on and off at 20 lux rather than 30 lux on and 70 lux off. They are also only indicative savings over the original units which can only be clarified once a lighting design as taken place and are for the total of the AIP construction phase. The details below also take into account dimming to 75% during the hours 12:00pm until 05:00am in residential areas only

Lantern Type	Indicative Energy % savings
Philips Iridium (Option 1)	44
Orangetek Arialed (Option 2)	54
Holophane Vmax (Option 3)	55

5 Recommendation

- 5.1 There are various lantern types available throughout the UK, with a range of different light sources of which the main types include high pressure sodium, Cosmopolis and LED. At the present time the Evolo lantern is using a cosmopolis light source and while this was the most widespread used lamp at the time of the contract being awarded, this lighting source has now been superseded by an LED light source throughout the UK
- 5.2 We need to consider which lantern complies with the current PFI specification and gives the best overall solution for the Council including the most energy efficient, with all criteria and factors considered we would recommended that the Holophane max LED be used as the preferred lantern on the street lighting PFI project in the future.

Appendix B

1 Key Points Underlying the LED Replacement Model

- 1.1 The model was developed prior to the replacement program in 2016
- 1.2 Full replacement of the existing lighting units would be on a phased basis and take three years to complete.
- 1.3 The Council receives the full benefit of Energy savings from changing to LED technology.
- 1.4 The Service Provider derives the full benefit of any reduction in lowered equipment maintenance costs.
- 1.5 The number of lighting units used in the base model was 22,845. This is likely to have increased overall as more new equipment has been added than has been deleted.
- 1.6 The unit cost of electricity was computed at 15p per Kwh against a current rate of about 12.7p per Kwh. Substituting in the current rate would likely increase the length of the payback period beyond 15 years.