

## REPORT TO SUSTAINABILITY COMMITTEE – 15 JUNE 2022

### STREET LIGHTING LED UPGRADE PROGRAMME - UPDATE

#### 1 Executive Summary/Recommendations

1.1 This report advises the Committee on progress in implementing the street lighting LED upgrade programme. It provides information on units upgraded, energy reduction, and carbon reduction. Figures are also presented on the cumulative costs and savings arising from the programme to date. A significant milestone has been reached in that the total capital expenditure on the programme has now been matched by savings in electricity costs which will continue to increase in the future.

#### 1.2 The Committee is recommended to:

1.2.1 **Acknowledge the progress that has been made in the Street Lighting LED Upgrade Programme to date;**

1.2.2 **Endorse the completion of the programme to cover the remainder of the Council's street lighting stock; and**

1.2.3 **Note that the process applied effectively to street lighting can produce a substantial carbon reduction and a good financial rate of return.**

#### 2 Decision Making Route

2.1 On 29 November 2012 Infrastructure Services Committee considered a report on options to reduce energy consumption from street lighting and approved a policy for Aberdeenshire Council. This included the following:

- A long-term programme to upgrade the Council's street lighting stock to the most economic units meeting nationally recommended minimum lighting levels, whenever new or replacement lanterns are installed.

2.2 At that time, LED lanterns were not the most economic option owing to their high cost. However, by 2015 the situation had changed and a programme to upgrade the Council's street lighting stock to LED units was started. Councillors were updated on progress with Briefing Notes made available through the Ward Pages, most recently in April 2019. The programme has now reached a significant milestone, and so it is felt appropriate to report formally on this to the Sustainability Committee.

### 3 Discussion

- 3.1 Our highest street lighting energy consumption was in 2013-14 with 18,539,894 kilowatt-hours. Prior to the commencement of the LED replacement programme, some other energy saving measures were implemented and the consumption in 2014-15 was down to 18,312,528 kwh. The energy cost in that year was £1,995,398 and 9,834 tonnes of carbon were emitted. These figures have been used as a base against which the impact of the LED energy reduction programme has been evaluated.
- 3.2 The timing and phasing of the LED energy reduction programme were critical in obtaining the best return for the Council. When consideration was first given to the project in 2012, LED lanterns cost upwards of £500 each and a full replacement programme would have cost around £30 million. The technology was in a phase of rapid development with prices falling and efficiency improving year on year. The annual reduction in price was roughly double the potential annual saving at this stage, so early implementation would have come at a high price. The Service decided to start the programme when the price reached about £200 per lantern and to phase it over 5 years to benefit from further price reductions on the prediction that it would fall further to a stable rate of around £100 per lantern. The Service concentrated on straightforward sites where it would be easy to make a saving in the early years and saved the sites where savings would be more difficult to achieve, for instance those with heritage lanterns, for the later years when we could benefit from the lower prices and higher efficiencies. To maximise the benefits, the Service designed each scheme from first principles to achieve the minimum recommended lighting levels rather than simply swapping to a unit giving the same light output as that being replaced. This meant that we exceeded our initially predicted savings, as more locations had previously been over-lit than under-lit.
- 3.3 The price threshold for starting the programme was reached in 2015, so it commenced in 2015-16. It was planned as a 5-year programme to upgrade all our streetlights to LED costing a total of £6 million and saving 50% on our energy consumption. The programme has had a few setbacks, notably when work had to stop during Covid 19 restrictions and subsequently with worldwide shortages of various key components. However, the Service is getting back on course and now anticipate completion in 2023-24.
- 3.4 By 2021-22 the Service had spent a total of £4,724,596 on LED upgrades and 72.05% of our lanterns were LED units. The Council's annual energy consumption had reduced by 45.96% to 9,856,296 kwh, the cost had fallen by 17.87% to £1,636,860 and carbon emissions by 76.3% to 2,331 tonnes. Over this period, the unit cost of electricity had increased by 51.98% and the carbon emissions per unit of electricity had reduced by 56.27%. Bar charts showing the change in energy consumption and carbon emissions since 2013 are provided in **Appendix 1**.

- 3.5 Electricity cost savings have been calculated by comparing the actual cost for each year with that which would have been incurred had the energy consumption remained at its 2014-15 level. The cumulative savings by the end of 2021-22 on this basis amount to £4,705,665. These savings continue so by the date of this meeting the Council will have more than recovered its cumulative investment of £4,724,596. Having passed this break-even point, the savings will continue to mount up and in a year's time the Service anticipates that the savings will have exceeded the expenditure by over £1 million.
- 3.6 The estimate of the benefits above are very conservative as since 2014-15, the total number of streetlights has increased by 7.62% from 43,516 to 46,831. This has arisen partly from the adoption of street lighting in new developments and partly from the new roads transferred to the Council when the AWPR and Balmedie to Tippetty schemes were opened. This will have increased the Council's energy consumption, so an alternative calculation of savings has been done based on the number of lamps remaining at its 2014-15 level. On this basis, the cumulative savings by the end of 2021-22 would amount to £5,211,751, well ahead of cumulative expenditure.
- 3.7 Electricity prices are currently rising fast. This will further enhance the value to the Council of the energy savings arising from the Street Lighting LED upgrade programme.
- 3.8 The programme is continuing and there is a lag between installing the new lights and updating our inventory. The Service estimates that on work completed around 76% of our network is now upgraded to LED. The Council's inventory is being updated to reflect this. The Service has scheduled the upgrading of the remaining lights over the next two years and anticipate completion by the end of 2023-24. The Service does not recommend any acceleration of the work at this stage. World supply problems continue and having saved the most difficult sites to last, the design resources will be fully occupied in meeting this timetable.
- 3.9 The Service now has a well-established and effective process for designing and implementing LED upgrades to external lighting system. On completion of the programme to upgrade the street lighting stock, it may be worth extending the process to other external lighting within the service.

#### **4 Council Priorities, Implications and Risk**

- 4.1 This report helps deliver the Strategic Priority "Infrastructure" within the Pillar "Our Environment" by minimising the impact of our street lighting infrastructure on the key principle of "climate and sustainability" and delivering the key principle of "responsible finances" by phasing the programme to give the maximum financial benefit to the Council.

4.2 The Street Lighting LED upgrade programme will help the Council to achieve its carbon reduction target by cutting energy consumption to less than half its previous level.

4.3 The table below shows whether risks and implications apply if the recommendations are agreed.

<b>Subject</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>
Financial	<b>X</b>		
Staffing		<b>X</b>	
Equalities and Fairer Duty Scotland	<b>X</b> [IIA attached as Appendix 2]		
Children and Young People's Rights and Wellbeing		<b>X</b>	
Climate Change and Sustainability	<b>X</b> [IIA attached as Appendix 2]		
Health and Wellbeing	<b>X</b> [IIA attached as Appendix 2]		
Town Centre First	<b>X</b> [IIA attached as Appendix 2]		

4.4 The financial implication will be to protect the Council from what would otherwise have been a very substantial rise in annual electricity costs. In 2021-22 the energy cost for street lighting would have been around £1.4 million greater had the LED upgrades to date not been completed. The programme has a further two years to run and electricity prices are still rising so the financial benefits to the Council will continue to grow.

4.5 An integrated impact assessment has been carried out as part of the development of the proposals set out above. It is included as **Appendix 2**. The main impact is a net benefit to Climate Change and Sustainability arising from a substantial reduction in carbon emissions. There are more marginal net positive impacts on Equalities and Fairer Duty, Health and Wellbeing and Town Centre First.

4.6 The following Risks have been identified as relevant to this matter on a Corporate Level:

- ACORP001 Budget Pressures: The Street Lighting LED Upgrade Programme will help to mitigate the risk of budget pressures arising from rising electricity prices

- ACORP010 Environmental Challenges: The Street Lighting LED Upgrade programme will help to mitigate the risk of climate change by reducing CO2 emissions.
- [Link to risk register page on website](#)

## **5 Scheme of Governance**

- 5.1 The Head of Finance and Monitoring Officer within Business Services have been consulted in the preparation of this report and their comments are incorporated within the report and are satisfied that the report complies with the Scheme of Governance and relevant legislation.
- 5.2 The Committee is able to consider this item in terms of Section R.1.1 of the List of Committee Powers in Part 2A of the Scheme of Governance as it relates to the approval, review and monitoring of the Council's work in respect of sustainable development and climate change in order to ensure compliance with relevant statutory duties, with particular reference to the Climate Change Action Plan.

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### **List of Appendices:**

Appendix 1 - Histograms plotting energy consumption and carbon emissions over time  
Appendix 2 - Integrated Impact Assessment