STREET LIGHTING REPLACEMENT PROGRAMME 2019-2020

BU6 – HIGHWAYS & ENGINEERING

UPDATE REPORT FOR CABINET

JULY 2020

BACKGROUND

In 2019 the Council approved £4.2m of funding (Cab.20.3.2019-15) for a programme of upgrades to the Street lighting stock (Group A) along the borough's main roads.

In addition to lantern replacement, the project included the testing and replacement of columns to provide greater lifecycle benefits and to future proof our lantern stock.

In total, 8,480 of the 33,091 lanterns were scheduled for replacement, with the remainder having already been upgraded as part of the previous Group B programme.

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DESIGN & PROCURMENT

- Two successful procurement activities were undertaken in 2019 to source our lantern provider and specialist installer.
- In May 2019, contracts were awarded to Urbis Schreder and Eon Ltd to deliver the key components of our upgrade programme.
- The AXIA 3 Lantern was selected as the primary product as it offered luminosity variations that would allow our columns to remain in situ, reducing the cost of column relocation and minimising disruption on the network
- The upgrade programme commenced in October 2019.

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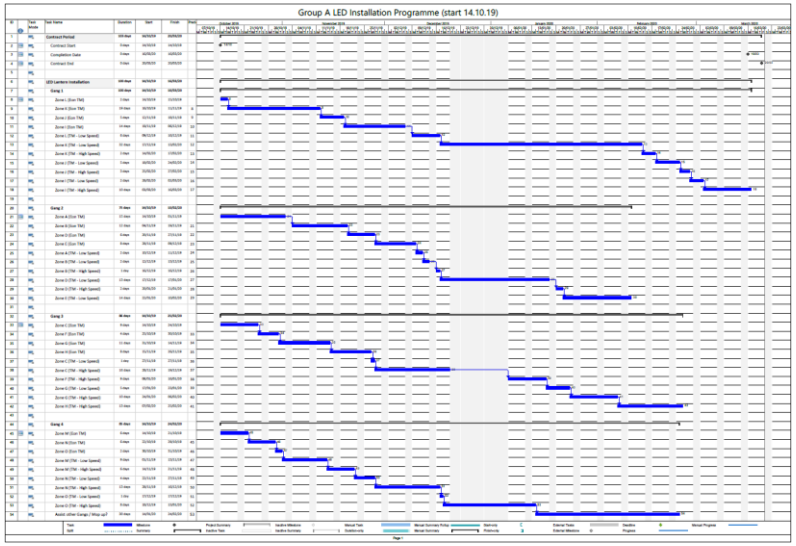
PROGRESS AGAINST THE PROGRAMME



- APRIL 2019 – 6 months prior to the installation of the new LED lanterns the electrical components on the base of our existing lighting assets had to be upgraded. This work was carried out by our in-house Street Lighting Engineers.
- OCTOBER 2019 – Phase 1 of the main programme commenced and focussed on the "simple" exchanges on easily accessible lanterns where simple traffic management would be appropriate. Phase 1 concluded in December 2019 but was delayed by severe high wind storm events in the latter part of 2019.
- JANUARY 2020 – Phase 2 of the main programme commenced on the remaining lantern stock. This allowed a lead in for more complicated traffic management, including lane closures to be safely programmed. Part of the programme switched to night time working to improve safety and reduce disruption on our network.
- MARCH 2020 – 7,000 lanterns had been exchanged prior to the COVID 19 pandemic. The programme was put on hold following Government Guidance across all sectors including the construction sector.
- JUNE 2020 – Main programme completed. C.150 lanterns remain outstanding. These are the more ornamental and difficult to access lanterns in the Borough.

BENEFITS OF THE PROGRAMME: INVESTING TO SAVE

The original Capital Allocation of £4.2M to deliver the project was put forward on an invest to save basis with an annual, year on year saving of around £500,000.

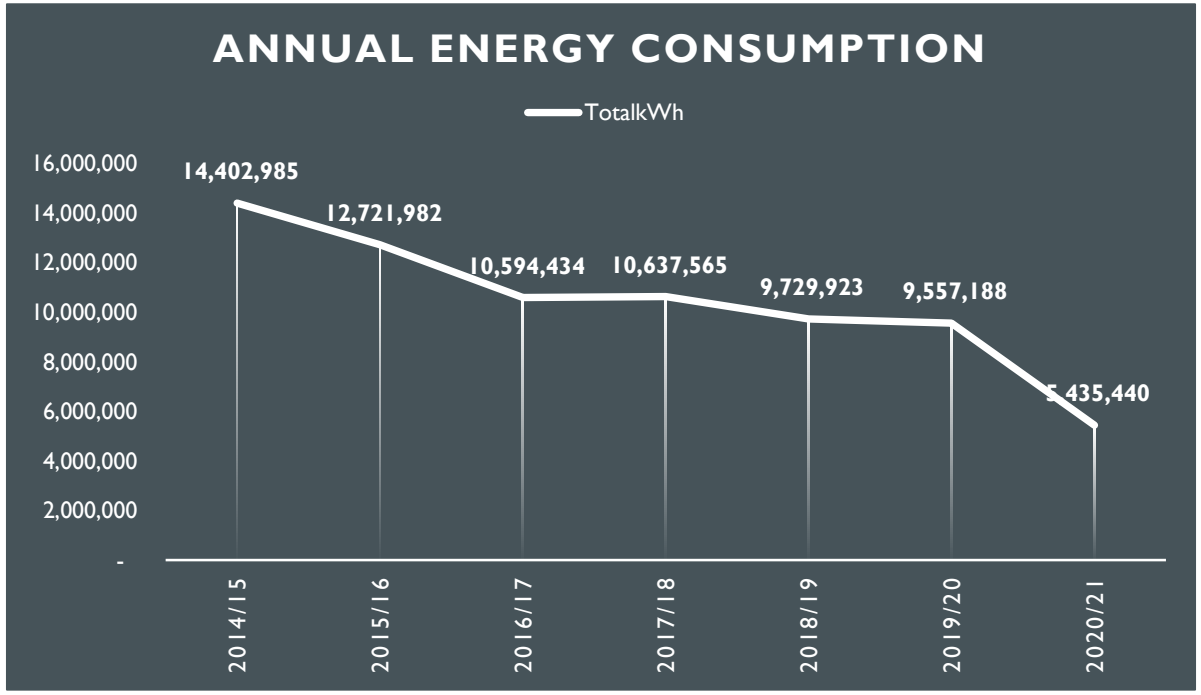
With a guaranteed lifespan of 10 years for individual LED units, (and an expected lifespan of 25 years) this investment will return around 3 times the initial project cost over the anticipated life of the asset.

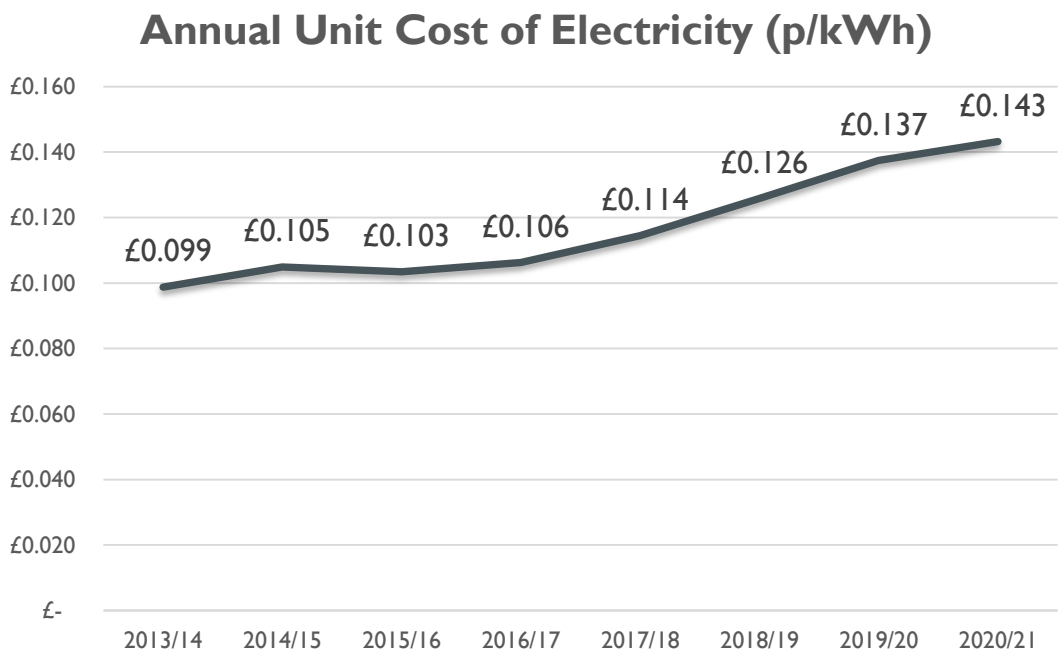
In addition, the reduced repair and maintenance burden of lantern inspection will create additional service capacity which can be re-invested into other areas

Rotherham Road – before the LED upgrade programme

BENEFITS OF THE PROGRAMME: INVESTING TO SAVE

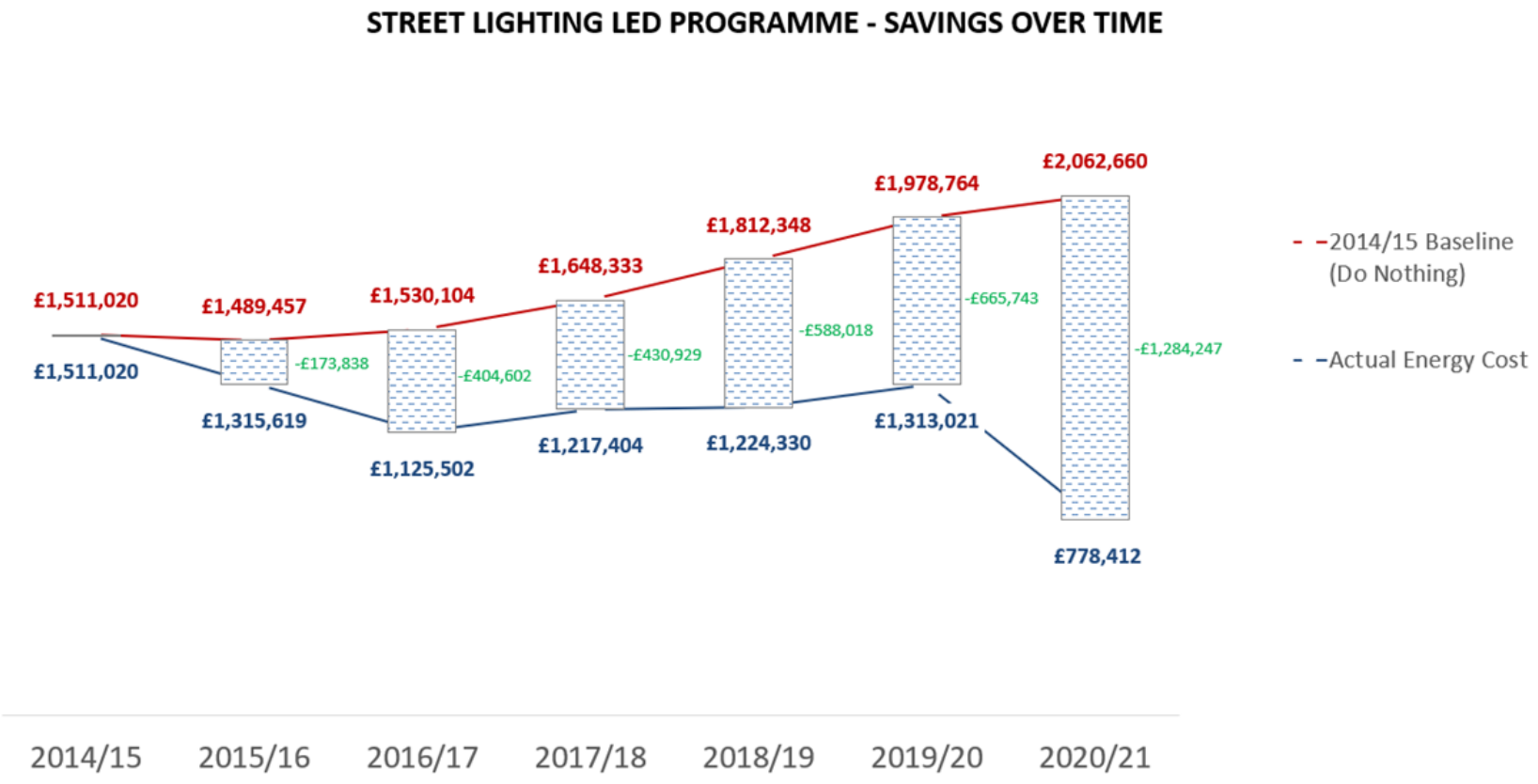
- The financial benefit to the Authority of switching to low energy street lanterns is made up of a combination of two factors;
  1. The direct saving from using less energy; and
  2. Avoiding the cost of annual energy price increases.





BENEFITS OF THE PROGRAMME: INVESTING TO SAVE

- The impact of the LED exchange programme has meant that not only have reduced the impact of annual energy price increases but our reduced overall usage of energy had led to a direct saving for the Authority.
- Had we "done nothing" in 2014/15 our forecast cost for energy would have been around £2M. Instead, our forecast energy cost for this financial year is around £780k.
- The cumulative cost avoidance of the Group B and Group A lanterns is around £3.5M between 2014 – 2021 when compared to the baseline "do nothing" scenario.



BENEFITS OF THE PROGRAMME: ENERGY & CARBON REDUCTIONS

All light emitting technology has an associated Wattage rating. This is the amount of energy it takes to produce a certain amount of light. In most circumstances, the higher the wattage the brighter the light but also the more power it uses. To demonstrate the energy and associated carbon savings of installing LED lanterns the following table highlights the substantial differences in wattages modern LED's are able to generate without ANY reduction in the amount of light actually being produced;

LAMP TYPE	WATTS	AXIA 3 LED REPLACEMENT WATTAGE	% WATTAGE REDUCTION
COSMO	90	32	64%
SOX	135	38	72%
SON-T	400	51	87%

When measured over the entire Group A lantern stock, this Wattage saving amounts to an annual saving of 4,1 Million KWh,

BENEFITS OF THE PROGRAMME: ENERGY & CARBON REDUCTIONS

A saving of 4.1 Million KWh, is the equivalent of;

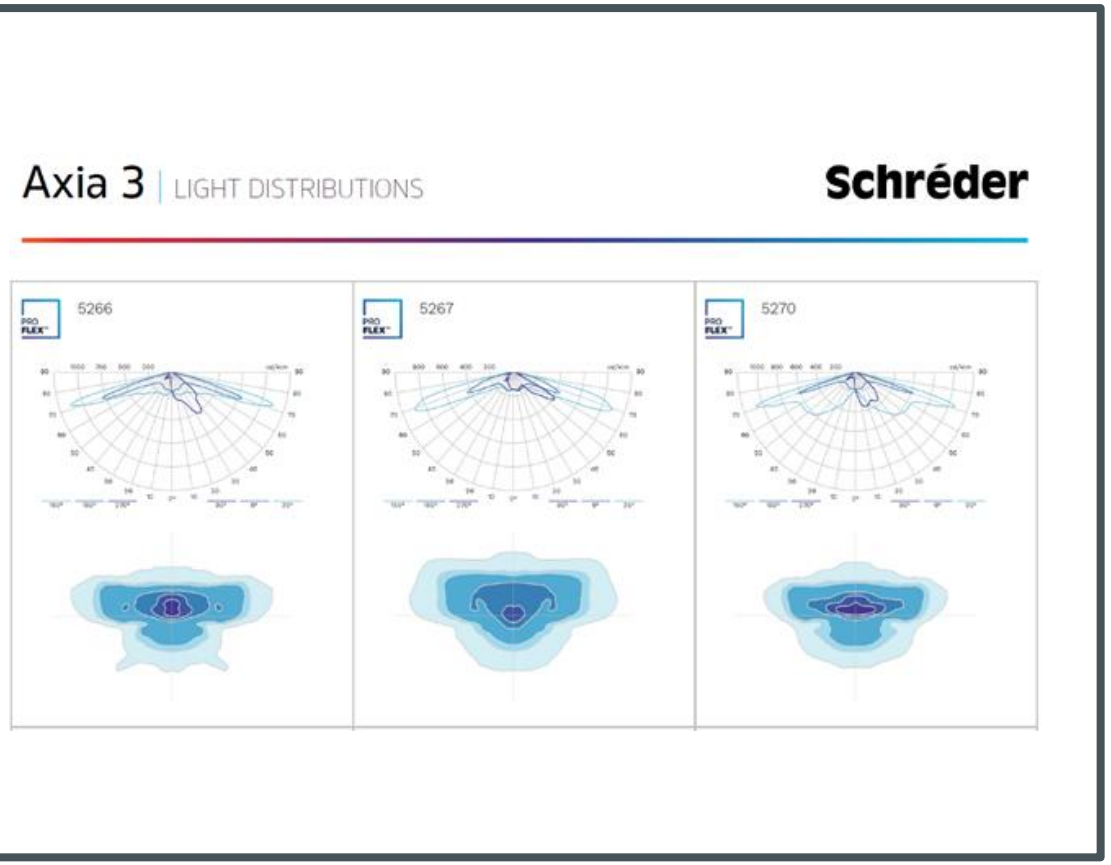
Running 280 Million LED TV's for 1 hour;

Powering 2.25 Million Electric Dishwashers loads;

Powering 80,000 Refrigerators for a month.

The Carbon equivalent of this annual energy savings is estimated at **1,200** tonnes of carbon per year. This makes a significant contribution to our ZERO40 Carbon Reduction Targets

BENEFITS OF THE PROGRAMME: REDUCED ENVIRONMENTAL IMPACTS



Modern LED lanterns allow the light emitted to be controlled in a number of ways with finite control.

This means the light generated is "thrown" down where it is needed most and "bleeding" to the side and above the lantern head is eliminated. This provides a number of benefits including;

- Improved road safety as black spots between lights can be improved;
- Well lit roads and streets encourage people to walk and cycle more, promoting improved health and well being
- LED's emit high quality white light making night time colours more natural. This provides better facial recognition for security and CCTV cameras therefore helping to make areas safer.
- Reduced light pollution benefits light sensitive species including some species of bats.

Our new lighting units also offer greater control with regard to when they switch on and switch off and light levels can be adjusted at source should greater or lesser levels of light be needed at specific locations.

BENEFITS OF THE PROGRAMME: LIFECYCLE IMPACTS

Conventional street light are re-lamped every 4 years where as our new LED lanterns have a guaranteed lifecycle of 25 years – that's a saving of 6 re-lamping cycles. As a result 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 lamps form the factory to the distributor, the contractor and to the job site.
- Additional capacity within the existing service which can be re-invested in other maintenance and repair work, for example, illuminated signs and bollards.

Rotherham Road – after the LED upgrade programme

BENEFITS OF THE PROGRAMME: SOCIAL VALUE – HMP LINDHOLME

- During the procurement phase questions were raised regarding safe and efficient disposal of the old, energy in-efficient lantern stock.
- Following a successful pilot project with Doncaster MBC we have been able to form a partnership with HMP Lindholm, who's residents have dismantled our old lanterns into their component parts so that the precious metals can be recycled.
- Not only does this work greatly reduce the amount of waste which would have traditionally gone to landfill but the recycling scheme teaches Lindholme residents "additional skills" and "promotes a positive work ethic".
- Recycling the lanterns in this way saves around £20,000 in disposal costs.
- In addition, to the social value opportunity provided by HMP Lindholme, our LED Supplier, Urbis Schreder, will contribute £20,000 toward a Schools Lighting fund which will improve the lighting around School premises. The detail and allocation of this is currently being explored.

NEXT STEPS: SMART STREET LIGHTING

In an effort to future proof our new lighting assets for the long term we invested in an LED product that would allow them to be enhanced as new and emerging technologies came to market.

As a result, our new Group A lantern stock can now be retrofitted in a number of ways to support the changing needs and priorities of the Organisation.

By thinking of our street lighting assets as more than just "lights" we will be able to unlock additional value for residents and visitors making the borough safer (CCTV), healthier (AQ/pollution monitoring), greener (EV charging) and better connected (Wi-FI and 5G). With the potential to monetise the asset in a way that see's them generate a financial return for the Authority.

Internal discussions have already started to explore what this potential could be and members will be updated accordingly in the future