

Review of Street Lighting

1.0 BACKGROUND

- 1.1 As part of the Transformation Programme & Revenue Budget review for 2012 – 2015, a street lighting consultation has been undertaken on the Council's website. The consultation commenced on 24th May 2012 and ended on 28th September 2012. The consultation reference number is 732.
- 1.2 Sefton currently has 31,500 street lights, 1,100 illuminated bollards and 1,963 illuminated traffic signs. These account for 30% of the Council's electricity bill and 23% of baseline carbon emissions. In terms of saving energy costs and reducing carbon emissions taking action on street lighting is a priority.
- 1.3 Sefton's Carbon Management Plan has a target to reduce energy costs and emissions of green house gases by 25% by the year 2016. Current deficit reduction plans imposed by central Government make finding savings in terms of energy costs imperative. As a result, consultation was undertaken in order to ascertain the views of the communities of Sefton on a range of options related to securing energy cost savings while continuing to provide street lighting that meets the needs of our communities.
- 1.4 A copy of the consultation document is provided below.

2.0 REVIEW TERMS OF REFERENCE

- a. To ensure compliance with the Sefton Carbon Management Plan target of a 25% reduction in emissions of the gasses that cause climate change by 2016.
- b. To determine future sufficiency for effective and efficient management of Street Lighting, illuminated Bollards & traffic signs, as required by the Highways Act 1980 with reference to the Department for Transport published 'Well-maintained Highways Code of Practice for Highway Maintenance Management'.
- c. To develop a funding model that delivers long term cost efficiencies in terms of energy usage and reduced maintenance requirements.
- d. To foster and strengthen partnerships, particularly in relation to SALIX* (Salix Finance Ltd is an independent, not for profit company, funded by The Department for Energy and Climate Change, who's aim is Driving Energy Efficiency in the Public Sector), in future networks with a focus on innovation in energy efficient technologies.
- e. To demonstrate Value for Money in relation to future proposals
- f. To ensure that the Council's statutory duty to maintain a highway network which is safe for the highway user is upheld.

3.0 CONSULTATION

3.1 The key basis of the consultation was to seek public opinion regarding the options for revising the existing street lighting delivery regime including the consideration of switching street lights off at certain times, resulting in subsequent cost and carbon savings. The public were asked their views about under what conditions residents would find the proposed revisions to the street lighting regime acceptable, in respect of options set out at 3.2 (below).

3.2 The Council is currently considering a number of options to reduce electricity consumption, and hence costs, from its lighting stock. These include:

- Switching to Light Emitting Diode (LED) lighting Proposal 1 in Survey
- Installation of more energy efficient bulbs Proposal 2 in Survey
- Switching off street lights between certain times Proposal 3 in Survey

3.3 Not all areas would be suitable for lights being switched off between certain hours. Any proposals would be influenced by factors such as traffic flow, personal safety issues, night-time activity and environmentally sensitive areas.

4.0 CONSULTATION OUTCOMES

4.1 522 responses were received. Of these, two were identified as being outside Sefton, so were discounted from our analysis. Of the 520 responses, 272 (52.31%) were identified as being from PR8 / PR9 postcodes, i.e. Southport / Ainsdale / Churchtown / Banks areas, so this must be borne in mind when considering whether this is truly representative of the overall Sefton response. The breakdown of responses from each area is given below:

<u>Postcode</u>	<u>Area</u>	No of Respondents	% of Total
Blank	Unknown	6	1.15%
L10	Aintree	5	0.96%
L20	Bootle	32	6.15%
L21	Litherland	22	4.23%
L22	Waterloo / Seaforth	30	5.77%
L23	Crosby / Thornton	69	13.28%
L30	Netherton /Ford	15	2.88%
L31	Maghull / Lydiate / Melling	34	6.54%
L37	Formby	29	5.58%
L38	Hightown	4	0.77%
L39	Ormskirk	2	0.38%
PR8	Southport / Ainsdale	133	25.58%

PR9	Churchtown / Banks	139	26.73%
		520	100.00%

4.2 The responses to the three main proposals were as follows:

- **Proposal 1: (Q7) Replace existing bulbs with Light Emitting Diode (LED) lighting:**

83.82% (435) “Strongly agree” or “Agree” with this proposal.

- **Proposal 2: (Q8) Replace existing bulbs with energy efficient bulbs:**

69.17% (359) “Strongly agree” or “Agree” with this proposal.

- **Proposal 3: (Q9) Switching off street lights, in areas where it would be safe to do so, between midnight and 6am:**

52.02% (270) “Strongly disagree” or “Disagree” with this proposal.

4.3 The survey also asked two questions relating to street lighting being used as a potential deterrent against anti social behaviour, and one regarding whether respondents felt safe to walk in their road at night with the current street lighting. The three questions were:

- Q.2: How would you rate the current lighting levels in your road / street, such that you feel safe to walk in it alone at night?
- Q10: "The current lighting level in your road / street, performs well as a deterrent of anti social behaviour?"
- Q11: "Good quality lighting can be used as a potential deterrent of anti social behaviour?"

	Q10: "The current lighting level in your road / street, performs well as a deterrent of anti social behaviour?"		Q11: "Good quality lighting can be used as a potential deterrent of anti social behaviour?"		Q2: "How would you rate the current lighting levels in your road / street, such that you feel safe to walk in it alone at night?"		
Strongly Agree	102	19.65%	195	37.57%	130	25.05%	Excellent
Agree	153	29.48%	204	39.31%	212	40.85%	Good
Don't Know Neither Agree or Disagree	12	2.31%	1	0.19%	126	24.28%	OK
	137	26.40%	59	11.37%			
Disagree	65	12.52%	32	6.17%	34	6.55%	Poor
Strongly Disagree	41	7.90%	19	3.66%	12	2.31%	Very Poor
BLANK	9	1.73%	9	1.73%	5	0.96%	BLANK
	519	100.00%	519	100.00%	519	100.00%	
		49.13%		76.88%		65.90%	90.17%

	Strongly agree / agree	Strongly agree / agree	Excellent / Good and OK
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- 4.4 Interestingly, although 76% of respondents believe that street lighting **can** be used as a deterrent against anti-social behaviour, only 49% of them say they believe that the **current** lighting performs well as a deterrent. However, in response to Question 2, “How safe is it to walk down their street with the current lighting”, 65% felt it was “Excellent” or “Good”. In addition a further 24% felt that it was “OK” – giving a total 90% positive response with regard to this issue. Given the limited scope of information available for Question 10 - with regard to how they believe it could perform better as a deterrent - we don’t believe there is any further action we can take in this respect. However, it is important to note that 76% of respondents feel that it **can** be used as a deterrent, and 90% feel that the current lighting is Excellent / Good or OK in relation to how safe it made them feel whilst walking in it alone at night.
- 4.5 A section was also given for respondents’ “Comments”. Not surprisingly, many of the people who completed the “Comments” sections felt strongly that switching the lights off would be a “Burglars Charter”, lead to more crime, etc. Some commented that replacing existing lights with LEDs would need fewer lamps to be lit, given that LEDs are brighter. There were also suggestions about motion sensor lamps, and installing the new “Cats Eyes” is dark cul-de-sacs.
- 4.6 Q12 asked “It is a good idea to request more help from the public to advise the Council of street lighting problems?” In response to this 462 - 89% of all respondents - “Strongly agree” or “agree”.
- 4.7 One of the respondents who were excluded from the survey – because he lived in Kent – took it as a marketing opportunity for “Induction Lighting”. He said (sic) “Whilst LED lighting is 'in vogue' for new street lighting installations, it is neither the most efficient, nor the most cost-effective solution currently available. Induction lighting has a lamp life approximately double that of LED, it has lower energy consumption than LED, and far simpler and cheaper end-of-life disposal costs. I would wish Sefton Council to commit itself to new lighting that is more expensive, less energy efficient, and with lower maintenance costs, than lighting technology and products now becoming available.
- 4.8 A further question was “If you would like to receive feedback on this consultation or to be contacted regarding any of the issues raised please give your contact details below”. 192 (37%) of the respondents gave contact details of a postal address or E Mail address in relation to this question. (Of the 192 requesting feedback, 96 of them “Disagreed” or “Strongly disagreed” with switching the lights off.) A response will, therefore, need to be created for these 192 respondents.
- 4.9 Further questions were answered as follows:-

		Excellent	Good	OK	Poor	Very Poor	Don't know	BLANK	Excellent & Good & OK
Q3	How well are the street lights maintained in your road / street, (i.e. are they kept lit)?	31.35%	43.08%	19.81%	3.08%	1.35%	0.58%	0.77%	94.23%
Q4	What do think of the visual condition of the street lighting columns in your road / street? (i.e. Rust, Damaged Concrete..... etc)?	12.88%	39.23%	34.04%	8.08%	2.50%	1.92%	1.35%	86.15%
Q5	In the event that the street lights are not working, how would you rate the services for ensuring repairs are undertaken promptly?	10.58%	32.88%	24.04%	7.31%	1.73%	21.92%	1.54%	67.50%
		Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	BLANK	"No trees in my street"	Strongly Agree & Agree
Q6	How well does the current street lighting in your road / street allow you to see people & colours clearly?	12.50%	31.92%	33.27%	16.92%	4.04%	0.19%	1.15%	77.69%
Q15	Street Lighting can often be obstructed by trees when they are not cut back, is this the case in your street?	6.73%	16.92%	15.96%	20.96%	8.46%	6.54%	24.42%	23.65%

4.10 Questions 1, 13, and 14 related to contact details and comments which, whilst not reported in this report are available

5.0 POTENTIAL FUTURE DELIVERY INITIATIVES FOLLOWING CONSULTATION

5.1 In summary the analysis has shown that the overall street lighting delivery service is held in high regard from the responses received. It has been a worthwhile exercise to determine levels of satisfaction with the current service whilst eliciting opinion on some possible future delivery proposals. With the future financial pressure it will be critical to ensure resources are allocated on a priority risk basis, which may unfortunately bring about some reduction in perceived service delivery. The key highlights were that;

- Good quality lighting helps residents feel safe to walk alone at night
- The implementation of LED's was slightly preferred to energy efficient lamps.
- Turning lights off in areas where it was safe to do so received a majority negative response rate.

5.2 **Possible sites for turn off 12 - 6am (Proposal 3)** – This possibility received a high negative response. Cabinet may wish to consider that two local authorities are known to have switched off a proportion of their street lighting recently. Bingham and Keyworth in Nottinghamshire and Milton Keynes in

Northamptonshire have both subsequently reinstated the lights following strong representation from residents and the latter following a death which was claimed to be as a result of the lights being turned off. Turning off all lights on Urban Motorways appears to have been accepted by the public generally. However, whether such an option would be acceptable in respect of the local road network, given the wide range of obstructions that may be experienced, is a key issue.

However, should Cabinet be minded to approve it would require a low to medium investment to implement with circa a 4-year payback period. It is recommended that any pursuance of this proposal should be subject to local acceptance and on trial basis only to establish any detrimental associated effects. Depending on the output of the lamp, this proposal would save between £10 and £103 per column per year in energy saving terms.

It is worthy of note that the electricity providers are currently reviewing tariffs to mitigate any potential losses due to the changing market usage of street lighting requirements. It is possible therefore that future Tariff changes will reduce / negate savings secured via turning off street lights.

The potential savings to be secured via turning off street lights are illustrated below using the example of the A565 / A59;

Apart from peak traffic times i.e. 16:00 to 20:00 hours, substantial sections of the A565 and the A59 carry limited vehicular or pedestrian traffic and yet the total energy consumption for both installations is circa 770,000KWh at a cost of £71,800.00 per year.

Based on current tariffs by reducing or switching off the power between 24:00 and 06:00 hours it could save up to £31,000.00 per year by simply replacing the photo electric cell at a cost of £42.00 per unit. Alternatively, consideration could be given to switching off every other light thereby leaving half the installation operational outside of peak times. Turning off half of the lights would offer half of the saving above. Another advantage of such a system is that the payback period would be less than one year.

- 5.3 The A565 / A59 could act as a pilot scheme for alternate extinguishment, with the pilot reviewed prior to the 2014/15 financial year in order to assess impact on public perception and also to quantify accurately, cost savings.
- 5.4 **Convert High Pressure Sodium (HPS) to CDO-tt & control gear. (Proposal 2)** - Medium investment required to implement with circa a 5-year payback period. There was strong support for this initiative with 69.17% either agreeing or strongly agreeing however this should be read in association with 5.4 below.

There are approximately 4500 high pressure sodium lamps that remain in residential areas that are suitable for conversion to Ceramic Discharge Outdoor lighting (CDO-tt). As well as delivering white rather than orange light, CDO=tt will cut energy consumption by up to 40%. Replacement of sodium

lighting will require investment of £231,000 and yield a saving of £46,000 in energy costs and £3,000 in Carbon Tax costs per annum, thus achieving payback during year 5.

5.4 Light Emitting Diode (LED) 35w & 50w with Control gear (Proposal 1) –

The unit cost would be high with a significant investment required to replace existing luminaires with LED alternatives, although they would yield greater savings than alternatives in terms of energy costs and maintenance requirements. However, the initial investment will mean that payback is achieved only during year 12 at the earliest.

6.0 CURRENT AND FUTURE INITIATIVES OUTWITH THE SCOPE OF THE REVIEW

6.1 Current Initiatives due for Completion 2012/13

- 70w Son to 50w CDO-tt 9192 replacement
- LED illuminated Bollards 1181
- LED illuminated Traffic Signs 1963
- LED Pilot Projects 164 various Watt outputs

All of the above have been undertaken to make energy savings and also assist with the consultation process. They have been the subject of previous reports and approvals.

6.2 Structural testing programme – Circa 1800 steel columns are to be structurally tested to establish a risk based approach for the strategic replacement of ageing stock and ensuring best value and minimised future maintenance where applicable. This has been established using Technical Report 22 guidelines and it is hoped this representative sample of testing will highlight any risks the Council needs to mitigate. Based on the ongoing results of this testing, potential removal of lighting columns may be inevitable until sufficient funding is established for a strategic replacement programme. In the event of any column removal, the cost of individual removal would be **£460** however subsequent savings per column would be circa **£30** per year in energy and maintenance expenditure. By not replacing lamp columns, the Council will save circa £580.00 + energy and maintenance costs of £30.00 per year per column.

Current revenue allocations allow approximately 225 lighting units to be replaced each year. If we continue, it will take over 40 years to clear the backlog of age expired equipment and this doesn't allow for future equipment exceeding their action age by which time it is likely all stock will require replacement.

To clear the current backlog of age expired lighting equipment within 5 years, the Council would need to replace approximately 2000 lighting columns per year until 2018 at an annual cost of £2.2M

6.3 Possible Variable Lighting Levels - This is a possible option for inclusion in both lamp replacement and LED programmes. It may increase savings by an

additional circa 15% but installation costs are still high with pay back period around 8 to 10 years. It is worthy of note that the electricity providers are currently reviewing tariffs to mitigate any potential losses due to the changing market usage of street lighting requirements. Cabinet should note that this particular question was deliberately omitted from the consultation for two reasons. Firstly, the level of dimming would not be so substantial as to be particularly noticeable over a given area, and secondly, there was concern that inclusion would jeopardise the integrity of the results regarding lighting switch off.

- 6.4 **Structural replacement programme, possible use of Slipper Columns -** Circa 10,000 columns are beyond the TR22 suggested life expectancy period. These columns may still have serviceable life and will be subject to the structural testing programme identified in section 6.2 above. There may be an opportunity to replace defective columns using an innovative column which will negate the need for Distribution Network Officer (DNO) disconnection & reconnection at circa £800 per unit, therefore potentially allowing 2 units to be installed for the price of one currently. This system allows for a new sleeve to be 'slipped' over the existing column over the base of the existing column following removal of its shaft. In this way, a section of the existing failed column can remain in-situ with the protective sleeve around it so there is no requirement to pay the electricity company to disconnect and reconnect the supply. The Council is not allowed to undertake the disconnection and reconnection itself. The cost of bringing all columns to TR22 standard within 5 years is circa £10m, however based on the current level of investment circa 15,000 columns will be beyond the TR22 suggest life replacement period in 5 years time.
- 6.5 **Cast Iron / Conservation Area replacement programme -** Circa 70 columns are beyond the suggested life expectancy period. There may be an opportunity to replace defective columns using refurbished Cast Iron columns with integral doors. The cost of bringing these to the current TR22 standard is circa £80k.
- 6.6 **Further Research and Development of new products in the marketplace.** Officers will continue to investigate the market, seeking innovative ways to maximise efficiency and minimise the Councils Risk. This will include further investigation into 'induction lighting' as identified in section 4.7

7.0 **RECOMMENDATIONS**

- 7.1 It is recommended that selected lengths of the A565 / A59 be subject to a 12 month pilot during 2013/14 where alternate columns are switched off outside of peak traffic flow times. During the pilot, public perceptions and cost savings can be assessed. Further activity will be undertaken during the pilot to identify further stretches of road across the borough where off peak traffic flow is such that alternate extinguishment is viable. This option will secure a saving during 2013-14 of £15,000.

- 7.2 In addition, it is requested that officers be authorised to further explore the potential for varying the lighting levels at the appropriate locations throughout the borough, on a trial basis, to establish the effects, opinion, costs and potential savings of this option.

Due to the multiple variations that exist and depending on what type of mechanism is required to affect reduced power, it is difficult to be precise on actual costs and savings without identification of a particular area or scheme. By way of an indication, individual costs per unit will vary between £25.00 and £200 with potential savings of up to £107 per year per lighting point per annum based on current tariffs. If approved, this will be the subject of a further report.

- 7.3 A programme of LED replacement luminaires would require investment of £4,13m with a payback period of 15 years. Given that the energy saving over the CDO-tt lamps is not significant and the 'lead in' cost of LED replacement, it is recommended that the ongoing programme of LED replacement in bollards and street signs only should continue, but there be no introduction of a programme of LED replacement of street lighting.
- 7.4 Works to replace the remaining 4500 high pressure sodium lamps with energy efficient CDO-tt lamps has many advantages. As well as providing white light, this method has potential to reduce energy by a further 460,000 KWh per year with a payback period of circa 5 years. The cost to convert the remaining 4500 units would be £231K with a subsequent annual energy saving of £46.3K with a further smaller saving related to Carbon tax. It is requested that Officers identify the funding source required to deliver this programme in one year thus achieving total annual savings of £49,000, thus achieving payback during year 5.
- 7.5 A successful trial has now been carried out in the Formby area using the "slipper lighting column" described in section 6.4 of this report. The main advantage of this method is that it will reduce the cost of replacing a lighting column by at least 50%. Whilst this method will not be suitable for all lighting columns, it is estimated that it can be used for at least 60% of existing age expired equipment with a potential to save several million pounds against conventional methods of replacement during future years. It is recommended that Officers be authorised to further explore potential sites for the initiative and report back with potential costs for limiting the current risk to the Council in more effective maintenance of existing lighting stock.
- 7.6 In terms of columns that require removal due to being defective / dangerous, it is recommended that where it is considered that removal represents no significant additional risk, and then the existing column is removed and not replaced, thus saving the cost of installation, re-connection and energy / maintenance costs. (circa £825 per column in year 1 and a recurring £25 saving per column in future years).
- 7.7 Recommendations 7.5 and 7.6 will not deliver energy savings or indeed reduce overall expenditure. However, they will ensure that the council can

deliver a larger annual programme of essential column replacement, thus mitigating the risk of column failure and potential legal action i.e. personal injury/ insurance claims.