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**Report of:** Laraine Manley, Executive Director, Place  
**Report to:** Cabinet Member for Environment, Streetscene and  
Climate Change  
**Date of Decision:** 1<sup>st</sup> October 2020  
**Subject:** Highway Maintenance Service Changes -  
Reducing Carbon Emissions from Street Lighting

Is this a Key Decision? If Yes, reason Key Decision:-	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
- Expenditure and/or savings over £500,000	<input type="checkbox"/>	
- Affects 2 or more Wards	<input checked="" type="checkbox"/>	
Which Cabinet Member Portfolio does this relate to? Environment, Streetscene and Climate Change		
Which Scrutiny and Policy Development Committee does this relate to? Economic and Environmental Wellbeing Scrutiny & Policy Development Committee.		
Has an Equality Impact Assessment (EIA) been undertaken?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
If YES, what EIA reference number has it been given? 423		
Does the report contain confidential or exempt information?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
If YES, give details as to whether the exemption applies to the full report / part of the report and/or appendices and complete below:-		
<i>"The (report/appendix) is not for publication because it contains exempt information under Paragraph (insert relevant paragraph number) of Schedule 12A of the Local Government Act 1972 (as amended)."</i>		

**Purpose of Report:**

The report seeks the approval of the Cabinet Member for Environment, Streetscene and Climate Change to implement a new dimming approach for street lighting across the city following a successful trial carried out in August and September 2019. This will contribute to reducing carbon emissions in response to the declared climate emergency.

**Recommendations:**

It is recommended that the Cabinet Member for Environment, Streetscene and Climate Change:

- Agrees to the implementation of the city-wide approach to Street Light as set out in this report
- Notes and endorses the efforts to reduce carbon emissions by this positive action

**Background Papers:**

None

Lead Officer to complete:-	
1	I have consulted the relevant departments in respect of any relevant implications indicated on the Statutory and Council Policy Checklist, and comments have been incorporated / additional forms completed / EIA completed, where required.
	Finance: Chloe Parker
	Legal: Sarah Bennett
	Equalities: Annemarie Johnston
<i>Legal, financial/commercial and equalities implications must be included within the report and the name of the officer consulted must be included above.</i>	
2	<b>EMT member who approved submission:</b> Laraine Manley
3	<b>Cabinet Member consulted:</b> Mark Jones
4	I confirm that all necessary approval has been obtained in respect of the implications indicated on the Statutory and Council Policy Checklist and that the report has been approved for submission to the Decision Maker by the EMT member indicated at 2. In addition, any additional forms have been completed and signed off as required at 1.
	<b>Lead Officer Name:</b> Gillian Charters
	<b>Job Title:</b> Interim Head of Highway Maintenance
<b>Date:</b> 18 <sup>th</sup> September 2020	

## **Highway Maintenance Service Changes: Reducing Carbon Emissions from Street Lighting**

### **1. Proposal**

1.1 To contribute to further reductions in our carbon emissions, this report details a new approach of dimmed street lighting levels for Sheffield.

### **1.2 Background**

1.2.1 Following its declaration of a Climate Emergency in January 2019, the Council has been working to identify ways in which it can influence and directly reduce carbon emissions. Reducing energy consumption of Street Lighting was identified as such an opportunity.

1.2.2 From August 2019 we undertook a number of pilot trials for different approaches to Street Lighting to help inform our options for the City. The trial areas were in Endcliffe, Meersbrook and Crosspool.

### **1.3 Street Lighting Investment**

1.3.1 As part of the Streets Ahead contract with Amey, the Council is already benefitting from an upgraded Street Lighting network, having converted all the old sodium, yellow glow traditional street lights to lower energy consumption, bright white LED lights. (See appendix x for information on the benefits of LED lighting).

1.3.2 In addition to the new lights, we also have a new comprehensive control system (Telensa) which provides an enhanced capability to adjust the timing and intensity of lighting on individual lighting columns.

1.3.3 In the financial year 2013 /14, with the traditional sodium lights, street lighting resulted in 17,168 tonnes of CO<sub>2</sub> emissions. By 2017/18 when all the lights had been converted to the new LED lamps this had massively reduced to 6,848 tonnes of CO<sub>2</sub> emissions. Calculations indicate that the city-wide effect of introducing the new dimming approach will be a further reduction in emissions of 10%.

### **1.4 Highway Network Lighting Standards**

1.4.1 Historically, street lighting intensity has been set to accommodate the maximum amount of traffic density on a road. This maximum density may only occur for short periods of the day such as morning and evening rush hour. As a result there is a high likelihood that for long periods, streetlights are over lighting the highway and neighbourhoods and as a consequence, adding to carbon emissions and light pollution as well as wasting money, which the Council could spend on other front line services.

1.4.2 The British Standard Specification BS 5489-1 2013, dates back to 1952 when Street Lighting across the UK became more prevalent and to ensure consistency of standards. Most recently updated in 2013, the changes made provide more classes of lighting locality; recognising different standards are appropriate for different roads/ locality. This

means a more appropriate level of lighting to the locality is now possible, with the potential to reduce carbon emissions and light pollution.

## 1.5 Trial and New Approach

1.5.1 After reviewing data on current traffic flows and photometric testing (this means the level of light detected by the human eye) of the new street lights it has been established that Sheffield highways can be lit to a lower lighting class within BS 5489-1 2013. This was trialled in the pilot areas in 2019.

1.5.2 With the Telensa management system we still retain the capability to change and increase lighting levels as necessary due to local conditions such as a planned event or in response to a local incident.

1.5.3 Following the successful outcome of the trial it is now proposed to dim street lighting across the city as shown in the tables below. The values in the table represent the light intensity levels from our street lights.

Table 1: Traffic Routes

	Sunset to 8pm	8pm to 6am	6am to sunrise in winter
Traffic routes - current level	84%	54%	84%
Traffic routes – pilot level	<b>80%</b>	<b>40%</b>	<b>80%</b>

1.5.4 Traffic routes are our primary and secondary road network in the city.

1.5.5 For traffic routes the proposal is to reduce the light intensity from 84% to 80% in the evening between sunset & 8pm and in the morning from 6am & sunrise, during the winter. During the summer period (May – Oct) there is no morning street lighting.

Table 2: Residential Areas

	Sunset to midnight	Midnight to 6am	6am to sunrise in winter
Residential roads - current level	84%	54%	84%
Residential roads – pilot level	<b>80%</b>	<b>40%</b>	<b>80%</b>

1.5.6 For residential areas the proposal is to reduce the light intensity from 84% to 80% in the evening between sunset & midnight and in the morning from 6am & sunrise, during the winter. During the summer period (May – Oct) there is no morning street lighting.

1.5.7 The greatest saving is made from 8pm to 6am on Traffic Routes and from midnight to 6am in Residential Areas when the lighting intensity will reduce from 54% to 40%.

- 1.5.8 A map will be available on our website, detailing all lighting columns and the level of lighting they will operate at  
<https://www.sheffield.gov.uk/home/roads-pavements/faulty-street-lights>
- 1.5.9 In addition to the cost savings and reducing carbon emissions a further additional benefit of lower street lighting is reduced light pollution. Excessive light pollution has several negative effects including adverse effect on nocturnal wildlife and some plant species and on people's enjoyment of the night sky.

## **2. HOW DOES THIS DECISION CONTRIBUTE?**

- 2.1 No one area of the city or section of the community will be affected specifically or disproportionately by the changes proposed.
- 2.2 This proposal supports the first priority of the 2018 Green City Strategy which is;  
"Leading by example, we will put in place a plan which enables the Council to reduce its carbon emissions"
- 2.3 Reducing our spend on Street Lighting will also enable us to prioritise more funding to other front line services.

## **3 HAS THERE BEEN ANY CONSULTATION?**

- 3.1 The consultation strategy for our new approach to Street Lighting levels has included engagement with a diverse range of stakeholders:
- Discussions with the Access Liaison Group.
  - Discussions with the Community Safety Partnership and local South Yorkshire Police Officers.
  - Information sessions were held in Highfield and Broomhill libraries during the pilot period.
  - All properties in the trial areas were sent a leaflet explaining the trial and how their opinions could be expressed.
  - On line consultation was made available on during and after the trial via the Citizen Space facility.

### **3.2 Access Liaison Group**

- 3.2.1 We presented the parameters for our pilot of reducing street lighting levels to the Access Liaison Group (ALG) at their September 2019 meeting. They were generally supportive of the proposal but raised a question about the impact on partially sighted people and suggested changes to the Equality Impact Assessment (EIA) to recognise this. The EIA is revised to incorporate these comments. The dimming is within guidelines and only after midnight in residential areas.

### **3.3 Community Safety Partnership/South Yorkshire Police**

- 3.3.1 The Community Safety Partnership (CSP) was consulted in August 2019. The feedback being that they considered the positives would outweigh

any negatives and they would report back any concerns directed to them. After the conclusion of the trial, the CSP were able to feedback no issues had been reported.

3.3.2 As a further awareness raising/ endorsement the Community Safety Partnership Manager requested we contact the local Police Inspectors as consultees, which we did and this resulted in no concerns raised or expressed.

3.3.3 A further update was received from the CSP in October confirming that as there were no reports on increased issues during the trial their view was that the proposed dimming had no impact on the work of the CSP.

### **3.4. Library Sessions**

3.4.1 During the trial public consultation events were arranged at Highfield and Broomhill libraries. These were publicised in the trial areas by the letters to residents and on the Council website. Attendance at both events was low with only a handful of visits and generating a few actual comments being submitted which we were able to respond to directly.

### **3.5 Letters to Residents in Trial Areas & Online Consultation**

3.5.1 To raise awareness of the trial and subsequent consultation opportunities, properties in the trial areas all received a letter outlining the nature and scope of the trial and how to give their views by phone, letter or by accessing the Citizen Space consultation online.

3.5.2 The online consultation targeted residents of the three trial areas, but was available on the Council's website to anyone. We received 711 responses. 42 reported they lived in Meersbrook trial area, 30 reported they lived in Endcliffe trial area and 32 for Crosspool.

3.5.3 Across all the responses, over 69% either supported or strongly supported the dimming approach as undertaken in the trial areas and proposed in this report.

3.5.4 The top reason for supporting the proposal was '*using less electricity would help reduce carbon emissions*' followed by '*it would save money that can be spent on other council services*' with '*it would reduce light pollution and make the night sky more visible*' being third.

3.5.5 The main concerns to the proposal were; it could feel less safe walking on a street with lower lighting levels, 296 respondents recorded this, 255 respondents noted concerns about crime and 245 respondents noted concerns about anti social behaviour.

3.5.6 Further analysis of the consultation responses are contained within the Equality Impact Assessment in understanding the impact of the proposal across our communities.

3.5.7 We are proposing to re-open online consultation to capture comments and feedback from the implementation of the dimming approach. This

will be closed in June 2021 but reviewed quarterly together with complaints data (see below).

3.5.8 Complaints will be monitored on a quarterly basis once the dimming approach is implemented.

3.5.9 Through the EIA we have committed to review the impact of the proposal with the consultation and complaints data from June 2021 to inform any changes ahead of the next winter season.

#### **4. RISK ANALYSIS AND IMPLICATIONS OF THE DECISION**

##### **4.1 Equality of Opportunity Implications**

4.1.1 An Equalities Impact Assessment (EIA) was prepared before the trial. A new EIA has been prepared following the trial and incorporating the feedback from our consultation. The key elements are summarised below:

4.1.2 Through the Equality Impact Assessment we have identified there is potential, low negative impact from the proposal relating to **age**, being older people due to reduced mobility and sight and teenagers/ students who proportionately may be bigger users of the network during the hours when the street lights are dimmed on the network.

4.1.3 Our consultation included responses from all age groups, although fewer from the under 34 years and overall support for the proposal is 75% with no significant variations across age groups

4.1.4 Only 26% of respondents noted a change in the reduction in lighting. The highest by age group seeing a reduction was 45-54 years old but this was not significantly higher than the other age groups.

4.1.5 In relation to disability we have identified there is potential, low negative impact from the proposal relating to **disability**, being the impact to those who are partially sighted.

4.1.6 Analysis of our consultation from respondents identifying as having a disability (17% of respondents) is detailed in the EIA and includes; 60% supported the changes and the majority at 62% saw no reduction in lighting.

4.1.7 In relation to race we have identified there is potential, low negative impact from the proposal relating to **race**. This is because there are possible community safety concerns that reduced light levels could increase the potential for 'hate crime' in known areas for anti-social behaviour.

4.1.8 Of the respondents to the consultation, 14% did not provide information about ethnicity, whilst 4% indicated being BAME and 82% white.

4.1.9 Our mitigations for the potential increased but still low impact to these

groups are:

- 4.1.10 The Community Safety Partnership (CSP) was consulted and feedback as noted in section 3.3 above.
- 4.1.11 Nationally, The Department for Transport (DfT) commissioned a review in 2009 of the methodology for quantifying the benefits of improved street lighting schemes (Maintenance of Street Lights and Roads (MOSLAR) Guidance Note: Street Lights). The review concluded that there is no clear evidence that the provision of street lighting reduces incidence of crime, and only moderate evidence demonstrating a reduction in fear of crime.
- 4.1.12 It remains that we have the ability to increase lighting intensity on a relatively local basis in response to any issues. We have outlined as part of the Equality Impact Assessment there will be an ongoing consultation and review of complaints.

## **4.2 Financial and Commercial Implications**

- 4.2.1 The anticipated saving in energy costs following city-wide implementation of the dimming approach is estimated at £260,000 per annum at current prices.

## **4.3 Legal Implications**

- 4.3.1 Section 97 of the Highways Act 1980 provides the Council, as the Highway Authority, with the power to provide lighting for the purposes of any highway or proposed highway for which it is, are or will be the Highway Authority. The Council has discretion as to whether and how it exercises that power. Sheffield City Council, as the Highway Authority, exercises its discretionary power under S.97 of the Highways Act 1980 to provide street lighting on roads for which it is responsible.
- 4.3.2 Case law does require Highway Authorities to take into account the risk of items it has placed or caused to be placed in or around the highway (for example signs, bus shelters. Lighting columns) becoming a danger to the public. Our proposal to dim the street lighting does not compromise our position with this. The proposed intensities in section 1.5 of this report provide sufficient levels of light for such items around the Highway to be suitably visible.
- 4.3.3 Where the Highway Authority chooses to exercise its power to light a highway, BS EN 13201:2003 can be used as guidance for lighting class, or hours of operation. Consideration should be given to the implications of Section 17 of the Crime and Disorder Act 1998 (as amended by the Police and Justice Act 2006) and the potential impact of lower light levels on crime and disorder. Consideration should also be given to the Council's equalities duties under the Equalities Act 2010. Our proposals to reduce the light intensity of street lighting does not compromise any of these duties.
- 4.3.4 In exercising this power the Council generally provides lighting that

exceeds British Standard Specification BS 5489-1 2013 which is the code of practice followed by Highway Authorities across England. This British Standard was first drafted in 1952 updated in 2013 to reflect more energy efficient technologies available and our proposal is within the parameters of this standard.

## **5. ALTERNATIVE OPTIONS CONSIDERED**

5.1 An alternative would be to leave the lighting levels as they are. This is not recommended due to the potential benefits for the environment of reducing the lighting levels.

5.2 A further alternative could be to consider switching street lighting off overnight leaving residential areas without lighting. Whilst this would maximise the financial and carbon savings it would increase the impacts identified within the Equality Impact Assessment.

## **6. REASONS FOR RECOMMENDATIONS**

6.1 The proposed dimming of Sheffield's street lighting ensures we continue to provide a level of light suitable to the volume of traffic and Highway use whilst realising a financial and carbon saving for the city.

## Appendix 1 Benefits of LED Street Lighting

The LED Street Lights installed in Sheffield greatly exceed the conventional lights they have replaced, LED lighting products produce light approximately 90% more efficiently than incandescent light bulbs.

LEDs are up to 50 percent more energy efficient than traditional sodium bulbs and can last 15 to 20 years. They have much greater colour recognition and significantly reduce lighting pollution.

By design, LEDs emit their light in one direction rather than all around. This helps reduce energy consumption because no light is wasted or trapped within reflectors and diffusers, which can keep over half the generated light from exiting the bulb. The directional nature of their output makes LEDs ideal for applications such as Street Lighting and recessed downlights.

Ever-improving technology allows for more flexibility in the variation of lighting level on all classifications of road dependent upon usage at any one time. As the usage is reduced, typically the lighting level can be reduced, unless there are over-riding reasons not to do so (such as a high accident or crime rate).

Variable lighting is often referred to as dimming, but more appropriately is lighting to the correct lighting class to meet specific road parameters at a particular time. It might be that the highest lighting level an installation can achieve is only used on rare occasions, where traffic density is higher than normal (such as match days near to a football stadium), while the everyday lighting level might in reality be when the installation is operated at a lower lighting class.

There are additional environmental benefits of using variable lighting levels, including reduced light intrusion, light pollution, electrical energy consumption and carbon emissions.