

SUSTAINABLE DEVELOPMENT SELECT COMMITTEE			
Report Title	Street lighting: variable lighting policy		
Key Decision	No		6
Ward	All		
Contributors	Sustainable Resources Group Manager		
		Date:	30 June 2015

1. Purpose

- 1.1 The purpose of this report is to provide the Sustainable Development Select Committee with an opportunity to consider the Council's approach to variable lighting for street lighting.
- 1.2 The report is an opportunity to discuss and highlight issues on variable lighting. The intention is that a final variable lighting policy will be tabled at Mayor and Cabinet for agreement.

2. Recommendations

- 2.1 The Sustainable Development Select Committee is asked to note the contents of this report, and in particular
 - The approach proposed to variable lighting levels outlined in section 5 below
 - The potential options in relation to variable lighting
 - The suggestion (5.17) to assess variable lighting levels in a field test

3. Policy Context

- 3.1 Shaping our future, Lewisham's Sustainable Community Strategy for 2008-2020, sets out a vision for Lewisham: 'Together, we will make Lewisham the best place in London to live, work and learn'. Shaping our future includes the priority outcomes relevant to street lighting:
 - Safer – where people feel safe and live free from crime, antisocial behaviour and Abuse
 - Clean, green and liveable – where people live in high quality housing and can care for and enjoy their environment.
- 3.2 The Council also has ten corporate priorities which support delivery of the Sustainable Community Strategy. Street lighting is particularly relevant to three of these corporate priorities:-
 - Clean, green and liveable – environmental management, cleanliness and care for roads, pavements and a sustainable environment.

- Safety, security and a visible presence – partnership working with the police and others to further reduce crime levels, and using Council powers to combat anti-social behaviour.
- Inspiring efficiency, effectiveness and equity – ensuring efficiency, effectiveness and equity in the delivery of excellent services to meet the needs of the community.

3.3 The Council's Strategic Asset Management Plan 2015-2020 describes the Council's approach to management of its assets, including street lighting. It includes four interlinked objectives:

- Compliance with regulation and responsiveness to risk
- Improving the quality of services delivered by the corporate asset function
- Reducing expenditure associated with the Council's assets
- Increasing the level of income generated by the Council's assets

4. Lewisham and Croydon Street Lighting PFI

4.1 The Croydon & Lewisham Street Lighting PFI is a joint procurement project that has been developed to replace the ageing street lighting stock of both London Boroughs. This aims of the project are:

- Improving efficiency, including energy savings and reduced carbon emissions;
- Improving overall safety;
- Providing a better living and working environment;
- Providing value for money;
- Improved street lighting standards;
- Reduction in crime and the fear of crime; and
- Supporting the night-time economy.

4.2 The project scope includes the replacement of approximately 46,000 street light and traffic signs over an initial 5-year Core Investment Programme, with an on-going 25-year maintenance and repair liability for a total of 50,000 lights and signs.

4.3 The contract was awarded in December 2010 and financial close was achieved in April 2011. The original programme for the Lewisham network was 3 years from service commencement. While there have been delays to the overall programme it is forecast that the Lewisham network will be complete by summer 2015.

4.4 Lewisham and Croydon Councils have put in place agreed governance and joint working arrangements for the project, with a Joint Committee to discharge on their behalf the functions set out in the Governance Agreement. Day to day operations are undertaken by a joint co-located Client Monitoring Team consisting of officers from each of the Authorities.

4.5 Decisions or actions which are not set out or referred to in the agreement as having been delegated to the Joint Committee are reserved for the Authorities themselves (Reserved Decisions). Variable lighting is one of the reserved decisions requiring specific agreement of Lewisham and Croydon Councils individually.

5. Variable lighting

5.1 The Street Lighting PFI project includes the installation of a centrally managed control system connected to each street light, this system is called the Central Management System (CMS). The CMS will be installed on all street lighting but not illuminated traffic signs, school crossing lights and illuminated bollards.

- 5.2 The Central Management System will enable:
- Energy consumption and performance data to be collected remotely;
 - Automatic fault reporting;
 - Lights to be switched off or on or the level of lighting to be adjusted remotely
- 5.3 The ability to vary lighting intensity and times creates an opportunity to mitigate the pressures on Council budgets from rising energy costs. It is also an opportunity to reduce the carbon emissions associated with energy consumption. Dimming lighting levels will also reduce light pollution levels and consequently may have potentially beneficial effects for biodiversity. Anecdotal evidence suggests that in practice even a 50% reduction in lighting in a location would not necessarily be obviously noticeable to most people if introduced gradually.
- 5.4 Any decision to reduce lighting levels also needs to consider the potential impacts. Street lighting plays an important role in relation to crime prevention including the operation of CCTC, and well-lit streets are likely to reduce fear of crime. Street lighting also has an important role to play in relation to traffic management and road safety. Lighting is also a factor in relation to promoting the night time economy for example in town centres.
- 5.5 The CMS system creates the opportunity to deploy variable lighting that takes account of the characteristics of different areas, helping to maximise the potential benefits of dimming while reflecting the need to ensure other objectives are not compromised. Light level changes can be implemented quickly, if necessary instantly, without the need to be physically present at the site.
- 5.6 There are two approaches to saving energy available through the CMS:
- Variable light levels (also known as 'dimming')
 - A small adjustment to the switch on time and/or bringing forward the switch off time (also known as 'trimming')
- 5.7 The introduction of 'trimming' by 10 minutes would be relatively straightforward with minimal impact and expected savings no more than 1 or 2% per annum. 'Dimming' is more complex and requires a clear understanding of the potential opportunity and impact and decisions made in relation to implementation. This report focusses specifically on 'dimming'.

Options for variable lighting

- 5.8 There are three variables that need to be considered in determining the approach to dimming. These are:
- The characteristics of the locality
 - The timing of varying the lighting levels
 - The degree to which lighting levels are dimmed
- 5.7 The basic premise of the approach set out in this report is that the timing and degree of dimming should be determined by the requirements of the area the street light is situated. This is to mitigate against any adverse impacts, while retaining the opportunity to reduce energy consumption.
- 5.8 Table 1 shows how localities have been classified to show levels of expected night-time activity

Use	Type	Intensity of use
Town and district centres	Pedestrian only	High
	Mixed vehicular and pedestrian	High
Traffic routes	Strategic routes	High / medium
	Main distributors	High / medium
	Secondary distributors	High / medium
	Link roads	Medium
Residential areas	Cul-de-sacs	Low
	Rear access / back streets	Low
	Local footpaths	Low
	Cycle tracks	Low
	Residential access / through roads	Medium
Car parks	District centre areas	Medium
	Town centre areas	High/medium
	Amenity areas	High/medium

Table 1: locality characteristics by intensity of use

5.9 The Central Management System allows limitless options in terms of setting the timings for variable lighting and the level of dimming that can be achieved. Table 2 proposes options for switching times that could be implemented and table 3 sets potential options for dimming.

Step 1 – Before midnight		Step 2 – After midnight	
A	No variance	1	No variance
B	7pm-10pm	2	Midnight-5am
C	8pm-10pm	3	Midnight-5:30am
D	7pm-9pm	4	Midnight-6am
E	9pm-10pm		
F	9pm-11pm		
G	7pm-midnight		
H	8pm-midnight		
I	9pm-midnight		
J	10pm-midnight		
K	11pm-midnight		

Table 2: Options for timings

5.10 The table above assumes 7pm as the switch on time and 6am as the switch off time. All calculations used in estimating savings have taken account of seasonal changes. The model uses a two-step approach as a way of using the flexibility of the system to balance potential savings with wider impacts.

Variant 1	Dim down from 100% by 25%
Variant 2	Dim down from 100% by 50%
Variant 3	Dim down by 100% (switch off)

Table 3: Options for the level of dimming

5.11 Variant 3, turning lights off completely for a defined period, is not considered to be a viable option for any of the lit areas.

5.12 Based on the considerations above the following options are proposed:

Use	Option 1		Option 2		Option 3	
	9-12pm	12-5:30am	9-12pm	12-5:30am	9-12pm	12-5:30am
Low	25%	25%	25%	50%	50%	50%
Medium	25%	25%	25%	50%	50%	50%
High	0%	25%	0%	50%	25%	50%

Table 4: Three options for modelling

5.13 Table 4 sets out proposals for three options that align the characteristics of localities (table 1) with options for timings (table 2) and for dimming levels (table 3). The percentage shown in each case is the level of dimming introduced, with 0% meaning no dimming. Option 1 represents the most conservative approach and Option 3 involves the greatest degree of dimming.

5.14 The CMS will also allow pre-identified streets to be exempted. The following criteria are proposed for these exemptions:

- Lights at major junctions/ roundabouts.
- In town centres where there is CCTV, high security businesses such as banks, and/or lots of people at night, for example near night clubs and train stations.
- Areas where street lights are needed to reduce road accidents.
- Areas where there could be an increase in crime through reduced lighting, like pubs, clubs and specific night-time use in residential areas.
- Remote alleys linking residential streets.
- Near traffic islands, pedestrian crossings, footbridges, subways or where the Authority considers it has a specific duty of care.
- In public car parks adjacent to high night-time use amenity areas such as pubs, clubs, cinemas or theatres
- At bus stations and all night stops.
- At level crossings, speed humps, traffic lights.
- Where there is sheltered housing for the elderly.

Modelling of savings

5.15 Skanska has started modelling the impact of the different options in terms of energy consumption, however the final inventory has not been completed. Table 5 sets out indicative financial benefits forecast for each of the options set out in table 4.

	Energy reduction	Financial benefit
Option 1	8%	£50,000
Option 2	12%	£80,000
Option 3	15%	£100,000

Table 5: Financial benefit by model

5.16 The above forecast includes an estimate of a maximum of 15% of lights given an exemption, where there would be no dimming implemented. The model also assumes an average price per energy consumed of 9 pence, which is approximately the price the Council is currently paying. Any increase in energy costs will increase the financial benefit of dimming lights, but will also erode any budget saving that might be considered. Dimming therefore is an opportunity to reduce exposure to rising energy costs but may not result in achieving a cashable saving.

Proposed field trial

- 5.17 Before finalising a proposal for Mayor and Cabinet it is proposed that the dimming is trialled. In the trial the joint Lewisham/Croydon client monitoring team will select up to 3 streets in each ward and implement dimming based on option 2 between September and November. Sites will be selected on the basis of avoiding any potentially contentious locations including shopping parades, leisure centres, schools, public houses, churches, mosques and other social events that may take place after dark. The intention is to reduce the lighting levels gradually for the first hour and then a progressive upwards dimming of the columns for the last hour.
- 5.18 The trial will be carried out in consultation with the local police and a representative from the partially sighted community. At the end of the trial it is proposed that a further report is made to the Sustainable Development Select Committee.
- 5.19 Depending on the outcome of the trial and feedback from the Sustainable Development Select Committee a recommendation to Mayor and Cabinet will be made on a dimming policy to be implemented across the borough.

6. Financial implications

- 6.1 There are no specific financial implications arising from this report, although a key purpose of any dimming policy would be designed to reduce the Council's exposure to rising energy costs associated with street lighting. In 2014/15 the cost of electricity for streetlights was £698,200.

7. Legal implications

- 7.1 As the Highway Authority the Authority has a discretionary power under S.97 of the Highway Act 1980 to provide street lighting on roads for which it is responsible. However in exercising its powers as to the extent, nature, maintenance and operation of street lighting the Highway Authority must act reasonably and in the interests of road safety.
- 7.2 Case law suggests that a Highway Authority would not be negligent for accidents arising from a failure to light a highway unless an accident arises because the authority has failed to take reasonable steps to prevent a hazard it has placed or caused to be placed in or around the highway (for example signs, bus shelters, lighting columns) from becoming a danger to the public. It can therefore be concluded that it is within the Council's discretionary powers to modify the lighting levels on its streets.
- 7.3 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 on lower light levels on crime and disorder. Consideration should also be given to the Council's equalities duties under the Equalities Act 2010.

8. Crime and disorder implications

- 8.1 The dimming of street lights has the potential to give rise to crime and disorder implications, and as noted above consideration must be given to the implications of Section 17 of the Crime and Disorder Act 1998 (as amended by the Police and

Justice Act 2006). The views of Lewisham Police and the Council's Crime Reduction Service will be sought on the draft policy and proposals for implementation ahead of the planned test phase in September to November.

9. Equalities implications

- 9.1 The dimming of street lights has the potential to give rise to equality implications, particularly, in the context of the characteristics protected under the Equalities Act 2010, in relation to age, gender and disabilities. The planned test phase in September to November will seek to identify any equalities implications arising from dimming and will include liaison with a representative from the partially sighted community. Further equalities assessment will be considered depending on the outcome of the test phase.

10. Environmental implications

- 10.1 The dimming of street lights has the potential to support environmental objectives for reducing carbon emissions. Dimming street lights may also have a positive impact on light pollution and potentially benefit biodiversity.

11. Conclusion

- 11.1 The cost of street lighting is approximately £700k a year, and energy costs are expected to continue to rise over the coming years. The new street lighting infrastructure installed under the joint Lewisham and Croydon private finance initiative creates the potential to vary levels of street lighting using a central management system.
- 11.2 Dimming street lighting has the potential to reduce energy consumption by between 8-15% and this is something that a number of local authorities have already implemented including in Blackpool, Hackney, Waltham Forest, Coventry and Derby. A test phase is proposed that will help to identify issues arising ahead of a final proposal to Mayor and Cabinet.

If there are any queries on this report please contact **Martin O'Brien, Sustainable Resources Group Manager**, 020 8314 6605.

Background Documents

10 March 2015 Street Lighting PFI Contract report to Public Accounts Committee
<http://councilmeetings.lewisham.gov.uk/ieListDocuments.aspx?CId=123&MId=3442&Ver=4>