REPORT FOR: CABINET

Date of Meeting:	4 April 2012
Subject:	Street Lighting Policy
Key Decision:	Yes [Affects all Wards in the borough]
Responsible Officer:	John Edwards, Divisional Director Environmental Services
Portfolio Holder:	Councillor Phillip O'Dell, Portfolio Holder for Environment and Community Safety
Exempt:	No
Decision subject to Call-in:	Yes
Enclosures:	Appendix 1 – Street Lighting Policy Appendix 2 – Public Consultation document Appendix 3 – Annual Cost per Km Appendix 4 – Total lifetime Costs per Km

Section 1 – Summary and Recommendations

This report sets out the case for a new policy in the street lighting of highways and residential roads.

Recommendations:

Cabinet is requested to:

- note the results of the public consultation
- adopt implementation of Option 1 and 3
- adopt the new Street lighting policy which will be introduced progressively subject to funding
- note that concrete columns will be replaced through the Capital Programme over the next 4 years

Reason: (For recommendation)

Harrow signed up to the Climate Change Strategy which requires us to reduce our carbon footprint and reduce energy consumption. Street lighting accounts for 25% of the council's electricity consumption and 12% of its carbon emissions. The continued application of the existing policy on lighting levels and technology would lead to a significant increase in this consumption as old lighting stock is replaced. It is proposed to introduce a new policy reflecting commitments to reduce the impact of climate change by new approaches to lighting levels, embracing the new technology available.

Section 2 – Report

2 INTRODUCTION

Street lighting is provided as a safety measure on highways to enable users of the highway to see better during hours of darkness. The quality of street lighting will also impact on crime and the fear of crime. The proposed change in policy will continue to ensure that there is good lighting of public areas, but that advances in technology are used to reduce the amount of energy used. This would be through the use of Light Emitting Diodes (LED) technology, as well giving more consideration to design and the lighting needs of an area. For example the lighting requirements of a residential will feature a lower level of light than that designed for main roads in the borough.

Street lighting accounts for 25% of the council's overall electricity consumption and 12% of its carbon emissions. Implementation of the council's existing policy on lighting levels and technology would lead to a significant increase in these figures through old lighting stock replacement. This is because the traditional approach to replacement has been to light areas as brightly as possible. The council's climate change strategy seeks an annual decrease of carbon emissions of 4%, and measures to reduce the energy consumption through street lighting will be an important aspect of meeting this target.

There have been a number of technological advances in lighting in recent years, of which the most significant is the introduction of LED (light emitting diode) lighting. These offer longer life and lower levels of energy consumption but are currently more expensive to install.

Street lighting consumes 7,544,870 kWh of electricity, equivalent to the emission of 3900 tonnes of carbon annually. Much of the current stock does not meet modern lighting standards, is old and requires replacement. Some of the lamp columns are a priority for replacement because they are becoming structurally unstable.

The current policy option would be to continue with the present replacement practice on lighting levels and type of technology used, in which case electricity consumption would increase to approximately 10,000,000 KWh and CO_2 emissions would rise to 5200 tonnes annually.

This report concentrates on street lights as this represents the major energy use. We will also be addressing options for signs and bollards including de-energising (by considering de-Illuminated) where possible.

The policy aims to reduce energy consumption year on year through a number of options including reduction in light levels and use of new technology. This will be achieved progressively as new schemes are developed.

Major technological changes are taking place in the lighting industry. LED lighting is being introduced, which offer the following advantages; -

- Lower energy consumption
- Extended lamp life (12 years plus)
- Reduced maintenance and cleaning costs

As with all new technologies the initial capital cost has been very high compared to conventional lighting methods, but the difference is being reduced as the technology is improved and production capacity grows.

3 ASSETS BASE

Harrow has a lighting stock of 15,500 street lights and 3,500 illuminated items (bollards, road signs, etc). Harrow utilises an asset management system, which provides an inventory of all street lights and illuminated street furniture.

3.1 Current Condition

Harrow's asset base is very diverse with columns being a combination of concrete or steel on mounting heights of 5, 6, 8 and 10 metres. The concrete columns are now unsafe and require replacing. The lamps we use are equally diverse and range from Low Pressure Sodium (SOX) discharge lamp (yellow light), High Pressure Sodium (SON) discharge lamp (golden white light), mercury vapour to fluorescent lamps.

In general, a significant proportion of Harrow's street lighting is now beyond its economic life and provides lighting levels that do not meet modern lighting standards.

There are three main issues:

- the structural integrity of existing units, with associated risks of collapse, especially in concrete columns,
- the maintenance problems relating to deterioration and obsolescence associated with old lighting units.
- the standard and quality of lighting; approximately 72% of which does not meet current lighting standards and needs to be replaced.

Replacement of all concrete columns will be undertaken within a 4 year period to ensure compliance with current regulations and according to Harrow's lighting standards.

The tables below provide an indication of the lighting stock in Harrow.

Table: Age Profile of columns

Age	Concrete	Steel	Total	% of Total	Estimated new column Total	Replacement Costs (m)
0-10 years	0	4,175	4,175	27.14%	4,175	Nil
11-20 years	0	1,885	1,885	12.25%	2,467	5.4
21-30 years	0	7,948	7,948	51.65%	10,720	22.7
30+ years	1,340	38	1,378	8.96%	1,984	3.9
Total	**1,340**	**14,046**	**15,386**	**100%**	**19,346**	**32.0**

Table: Lamp Profile

Light Source	%
SOX	22.9%
SON	75.5%
COSMOPOLIS	0.21%
MERCURY VAPOUR	1.0%
FLUORESCENT	0.44%

4 Consultation

To this end and in ensuring we take into account the preferences of residents, we consulted with residents to determine what they would like to see going forward, whilst being fully aware of the constraints and targets we are working within and to. Their input is critical in defining how the Borough will appear in the hours of darkness in the future.

Having met with the Councils communications team and discussed the requirements, we were advised that to get the best outcome we should go for a number of consultation options.

The Harrow Borough Chief Inspector of the Metropolitan Police understood the options we were offering and the reasons for us to have to make the proposed improvements and made practical suggestions about particular locations. The apparent link between lighting and perception of fear and crime was discussed and we agreed that there was no direct link. In future, we will take into considerations amongst other criteria, crime statistics when designing schemes and consult the police on crime hotspots areas.

A public consultation was carried out in October to December 2011 to determine public opinion on a range of options to reduce energy consumption in the street lighting service. Four options/proposals were identified and respondents were asked to indicate their level of support

4.1 Proposals and Options Considered

Option 1 *Decrease lighting levels*	*Reduce current lighting classes, resulting in lower light levels by up to 20% with an option to introduce a "whiter" light.*
Option 2 *Light Trimming*	*Reduce the duration lights are ON by maybe an hour a day meaning darker periods in the evenings and mornings. They will come on later in the evening and off earlier in the morning.*
Option 3 *Light Dimming*	*Lower lighting levels by up to 50% during the quietest period of the night, typically midnight to 4am, perhaps longer in the winter months.*
Option 4 *Part night lighting*	*Turn off lights completely for a period during the early hours of the morning, say midnight to 4am, longer during the winter months.*

The consultation documents were publicised: -

- Using Harrow's web site, run a poll
- Advertised in Harrow People to publicise the poll and link to the web page
- Place questionnaire in libraries and Access Harrow
- A presentation was also made to Greener Harrow
- Email and telephone calls to Harrow Equalities Centre, Age UK Harrow, Harrow Association of Disabled People, Harrow Lesbian, Gay, Bisexual, Transgender Forum, Harrow Inter Faith Council for feedback

Consultation results

We received responses from individuals and a number of organisations.

	Option 1 *Decrease lighting levels*	*Option 2* *Light Trimming*	*Option 3* *Light Dimming*	*Option 4* *Part night lighting*
1st Preference	45%	23%	47%	14%
2nd Preference	26%	17%	37%	11%
3rd Preference	19%	43%	14%	12%
4th Preference	10%	16%	2%	63%

From the results above, the most favourable options as 1st and 2nd preference are Options 1 (decrease lighting levels) and Option 3 (dim lighting during quieter night periods). There is a potential to save 112,000 to 350,000 kWh per annum (2.1 to 6.6% of existing consumption)

Option 2 may be considered after we do some further investigations on the possible timings we can introduce.

Option 4 has not been supported and at this stage we do not recommend it.

We have undertaken 5 demonstration projects this year based on lighting class S4. Subject to final approval we will confirm these.

4.2 Financial Implications

The 2012/13 Capital budget provides an allocation of £1m. The intention is to use this to prioritise replacement of concrete columns as well as addressing lighting standards. Concrete columns are an urgent health and safety priority. The proposed budget provision in following years will allow the replacement of the majority of the existing 1350 columns.

The vast majority of the concrete columns are equipped with low pressure sodium lamps. It is anticipated that their replacement with LED will result in a small reduction in maintenance costs. It is difficult to evaluate this as the cost of maintenance is not separately identified.

The current annual energy consumption for street lighting is 7,544,870 kWh. These proposals will reduce consumption by 89,205 kWh per year

The current energy cost for street lighting is £733,000. Prices are expected to continue to rise as European and National climate change policies are implemented and primary energy costs continue to increase. The reduction in energy consumption will help to mitigate these rises.

At present carbon emissions from Harrow's street lighting is not included in the Carbon Reduction Commitment – Energy Efficiency Scheme. It is anticipated that this will change in the near future. Current carbon emissions from street lighting are 3900 tonnes pa. With the investment of 1m per year we would expect a 4% reduction in carbon usage. From April 2013 the carbon price will be £16/tonnes – giving a potential cost of £62,400 pa (for streetlighting). Reducing energy consumption will help to mitigate these potential costs.

The Table in Appendix 3 shows the energy consumption, maintenance costs and figures for savings over a 12 year period.

Appendix 4 shows the total cost of energy and maintenance over a 10, 15 and 20 year life cycle for different types of lamps and lighting levels. Whole life costings clearly show that energy costs are an order of magnitude greater than the initial capital cost of the column. There is therefore a clear business case to fund more efficient lighting even where this involves higher installation costs.

There are no proposals for growth in funding for this area of work; therefore the changes that take place will be introduced progressively over a number of years. Should the benefits of the policy be required to be realised earlier, we will require further investment.

4.3 Performance Issues

1. This policy will contribute directly to the Corporate priority of clean, safe and green streets.

2. Whilst the Council does not measure and report the former NI 185, the Government is indicating that it would like Councils to future record

    - Percentage reduction of CO_2 from council operations,
    - Reductions in energy consumption from street and public lighting will contribute towards the council's target to reduce carbon emissions by 4% annually.

3. There are two national indicators associated with performance on the number of lights that are functioning, and the time taken to restore failed lamps. The contractor is contracted to a performance of 98.75% in lighting and 2.75 days for repair. Average performance for year 10/11 has been 98.87% and 2.26 days.

4. The implementation of the policy will have no negative impact on the performance and we would require the current KPIs to be maintained.

Environmental Impact

Street lighting accounts for 25% of the council's electricity consumption.

The development of a new Street Lighting Policy is a major element of the Climate Change Strategy (Section 9 – reducing the council's footprint).

Reducing carbon emissions from street lighting is also an important element in delivering the Carbon Reduction Commitment targets

Risk Management Implications

Risk is not currently on the Directorate register. A separate risk register will be prepared once the policy has been agreed.

Equalities implications

An Equality Impact Assessment was carried out with the conclusion being no group is adversely affected.

If no, state why an EqIA was not carried out below:
N/A at this stage and will be part of proposals following the policy consultation

Corporate Priorities

- Deliver clean, safer and green streets

Section 3 - Statutory Officer Clearance

Name: Kanta Hirani Date: 20/03/12	x	on behalf of the Chief Financial Officer
Name: Matthew Adams Date: 14/03/12	x	on behalf of the Monitoring Officer

Section 4 – Performance Officer Clearance

Name: David Harrington Date:20/03/12	x	on behalf of the Divisional Director Partnership, Development and Performance

Section 5 – Environmental Impact Officer Clearance

Name: John Edwards Date: 20/03/12	x	on behalf of the Divisional Director (Environmental Services)

Section 6 - Contact Details and Background Papers

Contact: Dave Masters, Head of Engineering Services, Ext 2580

Background Papers:

Call-In Waived by the Chairman of Overview and Scrutiny Committee	**NOT APPLICABLE** ***[Call-In applies]***

Street Lighting Policy

1 INTRODUCTION

This policy outlines the basic principles and standards applying to street lighting and illuminated signs in Harrow. The term “street lighting” includes lighting, bollards and belisha beacons.

2 OVERVIEW

British Standard for the Lighting of Highways

- To achieve a structured and coherent approach to the provision of lighting on the public highway the correct levels and associated parameters for the lighting for each specific class of road, street, footpath, cycle track etc. must be determined. Such determination should take account of: -
    - the use of the road, for vehicular, cycle and pedestrian traffic
    - local amenities such as leisure centres, schools, churches, village halls, shops, public houses, doctors surgeries etc. which may affect the night-time use of the road
    - The location of the road, rural, urban etc.
    - the environmental aspects
- Each category of road, street, footpath, cycle track etc. will have its own specific requirements, which will affect the level of lighting to be provided. The current British Standards for Road Lighting are, BS 5489 2003 and BS EN 13201 2003.
- BS 5489 contains guidance and recommendations that are intended to support BS EN 13201 and to enable designers of lighting systems to comply with that standard.
- BS 5489 consists of two parts:
    - BS 5489-1 gives guidance and recommendations for the lighting of roads and public amenity areas
    - BS 5489-2 gives guidance and recommendations for the lighting of tunnels.
- BS EN 13201 consists of three parts:
    - BS EN 13201 part 2 – Details performance requirements
    - BS EN 13201 part 3 – Details calculation of performance
    - BS EN 13201 part 4 – Details methods of measuring light performance

3 MAIN OBJECTIVES

This Street Lighting Policy aims to:

- meet the Corporate Priority, 'keeping neighbourhoods clean, green and safe'
- meet the objectives of the Council's Climate Change Strategy
- address the objectives of the Local Transport Implementation Plan (LIP)

In addition the following key issues will be taken into account when considering lighting issues:

- Highway safety for road users
- Cost effectiveness.
- Energy efficiency
- Perception of safety
- Protection of the night-time environment
- Night-time appearance, better optical control
- Reliability and maintenance of equipment
- Whole-life costs including future investment need in the lighting infrastructure
- review existing light sources and lighting levels to address energy consumption
- reduce energy consumption through the use of new technology, including remote monitoring
- consider trimming and variable lighting

4 LIGHTING LEVELS

We will follow the guidelines below:

- New lighting schemes will assess as part of the overall design process the use of new technology and ways of reducing energy consumption.
- New lighting levels will be S4 unless other criteria deem the road not suitable for lower lighting levels.
- Lighting standards

Road type	Lighting Level
Principal Traffic Routes	Class ME3
Shopping Areas, Road Junctions	Class CE1
Residential Roads	Class S3/4

Appendix 2

Public Consultation

In the development of this policy such a policy we engaged with residents to determine what they would like to see going forward, whilst being fully aware of the constraints and targets we are working within and to. Their input is critical in defining how the Borough will appear in the hours of darkness in the future.

Having met with the communications team and discussed the requirements, we have been advised that to get the best outcome we should go for a number of consultation options.

- Using Harrow's web site, run a poll for a defined period maybe 6 weeks
- Run a page in Harrow People to publicise the poll and link to the web page
- Place questionnaire in libraries and Access Harrow

Have Your Say on Street Lighting in Harrow

Street lighting is an essential part of Harrow's highways infrastructure, protecting the safety of motorists and pedestrians while reducing crime and fear of crime.

Harrow has almost 20,000 lighting units such as signs, street lights, lit bollards, and beacons. They account for a quarter of the Council's total electricity consumption and 12% of our carbon emissions. Powering these lights costs the Council £730,000 a year and as Harrow households will know, energy prices are rising sharply.

In order to protect the services residents rely on, the Council is looking at innovative ways to reduce its costs. Reductions in government funding, inflation and other pressures mean the Council has to find £62m of savings over four years.

The Council has also adopted a Climate Change Strategy. Keeping neighbourhoods green is one of the Council's top priorities so this strategy includes a plan to reduce our carbon footprint through emission and energy reduction targets. Street lights are one of our biggest consumers of energy.

We therefore want to find a smarter way to light the borough's residential streets, without compromising safety, to reduce our impact on the environment and ensure that as much taxpayers' money as possible can be spent on key front-line services.

Street Lighting: The options

We want your input to help us decide a new way of lighting our residential streets.

We have developed four different options that will help us reduce costs and energy consumption. All of these will require some investment to secure long term savings. We want to know what you think about them. Doing nothing is not an option.

Please pick your options 1 to 4, with 1 being your first choice:

Option 1 *Decrease lighting levels*	*Reduce current lighting classes, resulting in lower light levels by up to 20% with an option to introduce a "whiter" light.*	
Option 2 *Light Trimming*	*Reduce the duration lights are ON by maybe an hour a day meaning darker periods in the evenings and mornings. They will come on later in the evening and off earlier in the morning.*	
Option 3 *Light Dimming*	*Lower lighting levels by up to 50% during the quietest period of the night, typically midnight to 4am, perhaps longer in the winter months.*	
Option 4 *Part night lighting*	*Turn off lights completely for a period during the early hours of the morning, say midnight to 4am, longer during the winter months.*	

If you have further views please comment below:

The closing date is 31 December 2011
Please return this form to the Library desk or alternatively post to Room 432, P.O Box 39 Harrow, Middlesex, HA1 2XA
If you need further information about the Street lighting consultation please contact us on 020 8736 6526.

You can also complete this online by visiting: http://www.harrow.gov.uk/streetlighting

Responses to the consultation will be available on Harrow Council's website http://www.harrow.gov.uk/

Typical Annual Cost for a Km of Residential Lighting

Lamp Type	No of Columns	Total Circuit (W) per lamp	Energy (kwh)	Energy cost	Maintenance	Indicative Installation Cost/Column	Total Installation Cost
70w SON Electronic Control Gear)							
Lighting Level (S2)	57	90	260,604	£26,636.33	**£632.23**	£719.66	£41,020.62
Lower Lighting Level (S3)*	52	90	237,744	£24,299.81	**£576.77**	£550.33	£28,617.16
60w Cosmopolis (Electronic Control Gear)							
Lighting Level (S3)	50	66	167,640	£17,134.48	**£554.58**	£502.64	£25,132.00
Lower Lighting Level (S4)	45	66	150,876	£15,421.04	**£499.13**	£502.64	£22,618.80
40 LED (Electronic Driver)							
Lighting Level (S3)	48	68	165,811	£16,947.54	**£532.40**	£855.35	£41,056.80
Lower Lighting Level (S4)	43	68	148,539	£15,182.17	**£476.94**	£855.35	£36,780.05

Note:

Calculations are based on am 10m wide road, 1.5m footways, 6m mounting height, luminaires over kerb edge.
Energy cost based on current rates of 10.221p/kwh

TOTAL COST for a Km of Residential Lighting

Lamp Type	Energy cost/km/yr	Maintenance cost/km/year	Total running costs 10 years	Total running costs 15 years	Total running costs 20 years	Total Installation Cost/km
70w SON Electronic Control Gear)						
Lighting Level (S2)	£26,636	£632	£272,590	£408,885	£545,180	£41,020.62
Lighting Level (S3)*	£24,299	£576	£248,780	£373,170	£497,560	£28,617.16
60w Cosmopolis (Electronic Control Gear)						
Lighting Level (S3)	£17,134	£554	£176,890	£265,335	£353,780	£25,132.00
Lighting Level (S4)	£15,421	£499	£159,200	£238,800	£318,400	£22,618.80
40 LED (Electronic Driver)						
Lighting Level (S3)	£16,947	£532	£174,800	£262,200	£349,600	£41,056.80
Lighting Level (S4)	£15,182	£476	£156,590	£234,885	£313,180	£36,780.05

Note:

Calculations are based on am 10m wide road, 1.5m footways, 6m mounting height, luminaires over kerb edge.
Energy cost based on current rates of 10.221p/kwh