



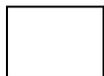
Report of the Director of City Development

Executive Board

Date: 18 May 2011

Subject: **Proposal to invest in additional energy saving measures for street lighting.**

Electoral Wards Affected:



Ward Members consulted
(referred to in report)

Specific Implications For:

Equality and Diversity

Community Cohesion

Narrowing the Gap

Eligible for Call In



Not Eligible for Call In



(Details contained in the report)

EXECUTIVE SUMMARY

Leeds City Council operates just over 92,000 street lights, which used approximately £3.4million of energy during 2010/11. The service is delivered through a Private Finance Initiative agreement with TVL lighting. TVL are responsible for the replacement and maintenance of the street lights over a 25 year period from July 2006 to July 2031.

The service is already providing significant efficiencies in energy consumption through the use of energy efficient lamps and new lantern technology. With recent increases in the financial and environmental cost of electrical energy and the need to seek efficiencies across the provision of all council services, an exploration of ways to further reduce street lighting energy is required.

Provision of lighting a highway is a discretionary power. It is recognised as good practice to install lighting in appropriate areas. The street lighting PFI endorsed this concept and was predicated on delivering a number of benefits for the city. The outline business case approved by Executive Board in May 2004 set out specific outcomes to achieve improved

road safety and a reduction in the fear of crime. Any proposals to reduce energy requirements need to be balanced with the ability of the lighting to meet these objectives.

This report presents opportunities for further savings in street lighting energy including the potential removal of street lighting together with a proposal for implementation of such measures. The savings that can be achieved depend on the extent to which lighting can be reduced without significant adverse effect on communities. This report includes estimates of savings which can only truly be tested by thorough assessment of the opportunities and community engagement.

The report presents a proposal to invest £334,700 from the Capital Programme over three years from 2011 to 2014 to realise a potential saving in energy costs over the next 10 years of £1,275,560 resulting in a net saving to the council of £940,860 by 2021 at current energy prices.

1 Purpose Of This Report

1.1 To purpose of this report is:

- (i) to provide an overview of the current energy saving initiatives embedded within the current street lighting service and explain the opportunities for further reductions in energy consumption with recommendations as to how they may be achieved.
- (ii) to seek approval to inject £334,700 into the Capital Programme for 2011 to 2014 to implement the proposed additional energy saving measures contained within this report.

2 Background Information

Context of the Street Lighting PFI and Current Energy Costs

- 2.1 Modern street lighting provides many benefits to the community, from reduced road accidents to reductions in street crime and the fear of crime. The recent increases in the financial and environmental cost of electrical energy and the need to seek efficiencies across the provision of all council services requires the exploration of ways to reduce the electrical energy demand for street lighting.
- 2.2 The street lighting service in Leeds is delivered under a Private Finance Initiative (PFI) agreement with Tay Valley Lighting (TVL). This contractual arrangement began in July 2006 and will continue until July 2031. The project has attracted £93 million PFI credits from the government and will deliver an initial 5 year core investment programme to replace 82,000 street lights by July 2011, followed by a 20 year maintenance and renewal service.
- 2.3 Provision of street lighting is not a statutory requirement. Once installed the lighting system must be properly maintained.
- 2.4 The street lighting PFI was predicated on delivering a number of benefits for the city. The outline business case approved by Executive Board in May 2004 set out specific outcomes to achieve improved road safety and a reduction in the fear of crime. Proposals to reduce energy requirements need to be balanced with the ability of the lighting to meet these objectives.

- 2.5 The current energy bill for street equipment is around £4.3 million. This is made up of approximately £3.4 million for street lighting and £0.9 million for other services such as traffic lights, bollards, signs and car parks. The vast majority of consumption is based on an estimate of use. The wattage of each lamp type is tested and burning hours are measured by a local array of metered photocells. Energy is purchased from Npower under a consortium contract with 71 partner organisations.
- 2.6 The current averaged tariff for energy paid by Leeds City Council for street lighting is 8.7 pence per kWh. An average domestic tariff would be between 13 and 16 pence per kWh.
- 2.7 When exploring energy saving initiatives it is useful to consider where the greatest energy is being consumed. Street lighting designs provide two distinct categories of lighting, traffic routes and residential streets. The requirements for lighting levels on traffic routes are much higher than for residential streets due to the number and speed of vehicles and the potential for pedestrian and vehicle conflict. The average consumption per street light on traffic routes and residential streets are 189 watts and 72 watts respectively. While there are around twice as many street lights in residential streets when compared to traffic routes the return on investment in energy saving measures is greatly increased with the higher wattage lamps.
- 2.8 'Traffic routes' include all of the more busy roads such as main roads, bus routes and busy estate roads. These can be in residential, commercial, urban and rural areas.
- 2.9 'Residential streets' include the quieter residential and estate roads and link footpaths in urban and rural areas.

Embedded Energy Saving Initiatives

- 2.10 The street lighting PFI is already making savings in energy usage. These measures continue to deliver conventional dusk to dawn street lighting systems which meet European design standards, but incorporate more efficient lighting units and smarter switching technology. The efficiency measures embedded within the PFI project include:

White light

- 2.11 The use of white light provides much better colour recognition than the traditional 'orange' lights. The design code recognises the improved rendition properties and provides for a lower level of light to be installed. The use of low energy white light in residential streets has reduced the average consumption of individual street lights from around 68 watts to 51 watts. By the end of the core investment programme in July 2011 there will be over 64,500 lamps of this type in Leeds.

Switching or "trimming"

- 2.12 Each street light is controlled by its own photocell within the lantern. The photocell measures the ambient light and switches the light on and off at the appropriate level at dusk and dawn. The photocells specified for the PFI project have reduced the light level at which the switch operates. This turns lights on around 2½ minutes later and off 2½ minutes earlier. By July 2011, 82,000 lights will be operating for around 30 hours less each year, saving in the region of £20,000 worth of energy per year.

The remaining 10,000 or so lights will be fitted with these cells over the next 10 years as part of routine maintenance.

Use of Light Emitting Diodes (LED)

- 2.13 LED street lights have been installed as part of a trial in Tavistock Close in Wortley. The trial was well received. The lights consume around the same amount of energy (51 watts) as the Cosmopolis lamp being used elsewhere in Leeds, but the cost of an LED lantern is more than twice that of a conventional lantern. This makes them uneconomical for widespread use at the moment but as the market matures and they develop to be more efficient they will be considered in future.
- 2.14 LED lighting offers greater benefits for lower level lighting such as that required for the illumination of signs. LED sign lights save around 16 watts over conventional fluorescent fittings. The PFI project has installed over 4,300 low energy LED sign lights saving in the region of £24,000 worth of energy per year.

Dimming

- 2.15 A more recent innovation introduced within the last year is the ability to dim street lights at pre-determined times. Dimming can be undertaken entirely in accordance with the standards for road lighting on roads where the traffic volume decreases dramatically at night. Approval has been given to install up to 1,500 dimming lanterns in appropriate locations during the remainder of the core investment programme. As there is now a desire for greater efficiency measures these proposals are being reviewed and it is anticipated that subject to approval of this report the number of dimming lanterns to be installed will be greatly reduced in favour of more beneficial measures.

Continuous improvement

- 2.16 The PFI contract is drafted to incentivise both TVL and Leeds City Council to generate efficiencies in both operations and energy consumption, with arrangements for sharing the benefits. The council is responsible for energy purchase for street lighting. The council is protected from unexpected increases in consumption by the agreement, but maintains a proportion of all savings. Both TVL staff and council officers maintain a current knowledge of developments within the street lighting industry and seek to employ beneficial changes within the service when it is appropriate to do so. Changes to the contract specification have already been made as more efficient lanterns have been developed, resulting in both operational and energy savings.

Further opportunities

- 2.17 The current street lighting system is designed to meet the minimum standards for road lighting. Opportunities to make further savings exist and these will have varying degrees of impact on the community and the ability of the lighting to meet current standards. The greatest energy savings result from reducing the provision of light in some way. The proposals discussed in part 3 below consider:
- Removing street lighting.
 - Switching lights off in the early hours of the morning (part-night switching).
 - Reducing the light output outside of peak periods (dimming lights).

Experience in other authorities

- 2.18 There are a number of authorities that have already implemented similar energy saving measures such as these. A summary of some examples are included in Appendix A.

3 Main Issues

Design proposals/scheme description

- 3.1 Any proposal for the reduction in street lighting delivery needs to balance the effects on the community, the investment required and the savings achieved.

Removal of street lighting (permanent or temporary switch-off)

- 3.2 The removal or complete switching off of street lighting would only be recommended where there has either been a significant change in the road layout or use of the road that would mean that the lighting is no longer required or where lighting has been provided where it is not absolutely necessary. The capital cost of removing the street lights is significant when compared to the savings in running costs. If the street lights were switched off but left in place the hazard to road users coupled with the degradation of the electrical equipment when not in constant use could lead to an additional maintenance burden in the long-term.
- 3.3 An example of the cost benefit of permanently removing street lights is shown in table 3.3 below.

	Cost to turn-off and then remove street light	Average annual energy saving (kWh)	Average annual energy saving (£)	Payback period
Traffic route	£388	785kWh	£68	5.7 yrs
Residential street	£388	300kWh	£26	14.9 yrs

Table 3.3 Cost benefit analysis of the permanent removal of street lights

- 3.4 The removal of street lighting will be considered, but the number of sites where this is possible is limited and is not expected to make a significant contribution to energy saving proposals.
- 3.5 Preventing street lights from operating is initially a simple task of removing the fuse in the base of each street light. However the ongoing maintenance cost of the electrical apparatus remains and the most appropriate permanent solution for road safety and to reduce the council's liability is to remove the street lights altogether. It is envisaged that there are some locations where lighting can be removed. These are:
- Rural roads where there are no junctions or properties
 - Rural roads where there is little demand for pedestrian use during the hours of darkness.
 - Roads in all areas where there is little need for any mode of travel during the hours of darkness.

But not where:

- There is an above average crime rate during the hours of darkness
- There is a history of road accidents during the hours of darkness.

3.6 Where removal of street lighting is proposed it is advised that the street lights are switched off, but not immediately removed. The location can then be monitored for crime and accidents for a period of 2 years. After which, subject to satisfactory results the apparatus would be removed.

3.7 A provisional assessment of the criteria where removing street lights on traffic routes is applicable suggests that there may be scope to remove around 150 street lights across the city. This would require very little immediate investment but would incur costs of £58,200 to remove the street lights after the initial 2 year monitoring period. Approximately £10,200 of energy per year could be saved.

3.8 A provisional assessment of the criteria where removing street lights on residential streets is applicable suggests that there may be scope to remove around 50 street lights across the city. This would require very little immediate investment but would incur costs of £19,400 to remove the street lights after the initial 2 year monitoring period. Approximately £1,300 of energy per year could be saved. The long payback period on the investment makes the removal of these lower wattage street lights unattractive for this current proposal.

Switch lights off for part of the night (Part-night switching)

3.9 A better return on investment is achieved from switching lights off for part of the night, where modifications to the photocell is much cheaper than complete removal. A typical part-night system would switch the lights off at midnight and back on at 5am. Widespread part-night switching is only recommended where there is a significant reduction in road use during these hours. Part-night switching is equally applicable to main roads and residential roads subject to individual assessment.

3.10 An example of the cost benefit of part-night switching is shown in table 3.10 below.

	Cost to install part-night switch (per light)	Average annual energy saving (kWh per light)	Average annual energy saving (£ per light)	Payback period
Traffic route	£41	313kWh	£27	1.5 yrs
Residential street	£25	120kWh	£10	2.5 yrs

Table 3.10 Cost benefit of the part-night switching of street lights

3.11 In order to continue to meet the outcomes of the street lighting PFI of improved road safety and a reduction in the fear of crime, part-night switching would be undertaken on a risk assessed basis. It is recommended that part night switching is avoided:

- On roads with a significant road traffic accident record during the proposed switch-off period.
- In areas with above average record of crime during the proposed switch-off period.

- In areas with a police record of frequent anti-social behaviour during the proposed switch-off period.
- In areas provided with CCTV local authority/police surveillance equipment.
- In areas with sheltered housing and other residences accommodating vulnerable people.
- Around 24hr operational emergency services sites including hospitals.
- At formal pedestrian crossings, subways, and enclosed footpaths and alleyways where one end links to a street that is lit all night.
- Where there are potential hazards on the highway such as roundabouts, central carriageway islands, chicanes and traffic calming features.

Part-night switching (traffic routes)

- 3.12 The greatest cost/benefit is achieved with the part-night switching of traffic routes with a payback period of 1.5 years.
- 3.13 A provisional assessment of the criteria where part-night switching may be applicable suggests that there is scope to install part-night switching to around 3,250 of the 27,000 street lights on traffic routes across the city. This would require an investment of £157,750 and save in the region of £87,750 per annum at current energy prices.

Part-night switching (residential streets)

- 3.14 Part-night switching of residential streets is slightly less beneficial with a payback period of 2.5 years. Nevertheless it is worth considering for widespread use.
- 3.15 A provisional assessment of the criteria where part-night switching may be applicable suggests that there is scope to install part-night switching to around 4,750 of the 64,000 street lights on residential streets across the city. This would require an investment of £118,750 and save in the region of £47,500 per annum at current energy prices.

Applying measures to alternate lights.

- 3.16 There is an expectation that to allay public fears of the darkness it may be preferable to only switch alternate street lights, leaving half on and half off. It is understandable that this may be seen as desirable to maintain at least some light in a street. However, it can be argued that lighting a street in this way with significant dark patches (bearing in mind that some street lights are around 50m apart) creates more of a fear of crime than switching off the whole street. There is also a concern for drivers that the eye is unable to adapt quickly enough to the rapid "on/off" difference in light levels leading to the potential for reduced night time visibility and a potential increase in accidents.
- 3.17 Alternate switching would provide significant operational difficulties. Efficiency of service delivery for street lighting is predicated on economies of scale and uniformity of application. A street with different operating mechanisms on each light and with lamps that will need replacing at different intervals due to different burning hours will

present an inefficient maintenance regime that over time may negate the savings in energy.

- 3.18 Alternate application of energy saving measures to street lights is therefore not recommended in this report.

Dimming

- 3.19 Where switching lights off at any time of the night is not recommended it may be possible to dim the lights. Similar to part-night switching this would be undertaken at times when the vehicle and pedestrian use is at its lowest. The big disadvantage with dimming over switching is that the dimming control equipment is expensive and the energy savings are much less than with switching off. A typical scheme would dim the lights by 20% at around 9pm, a further 30% at midnight and back to full brightness at 5am.

- 3.20 An example of the cost benefit of dimming is shown in table 3.20 below.

	Cost to install dimming control (per light)	Average annual energy saving (kwh per light)	Average annual energy saving (£ per light)	Payback period
Traffic route	£218	178kWh	£15	14.5 yrs
Residential street	Not yet available	-	-	-

Table 3.20 Cost benefit of the dimming of street lights

Dimming (traffic routes)

- 3.21 Some dimming is already being undertaken as part of the existing PFI arrangements (see paragraph 2.15). Retrospective installation of dimming of traffic routes has a payback period of around 14.5 years. Unless the cost of dimming equipment significantly reduces as demand increases, it is recommended not to pursue the retrofitting of dimming equipment unless as part of a maintenance regime the lanterns are being routinely changed.

Dimming (residential streets)

- 3.22 Residential streets are lit with metal halide white light lamps known as Cosmopolis. The technology to dim this type of lamp is not yet commercially available and cannot therefore be considered at this time. Further consideration will be given to the dimming of street lights in residential areas as the technology emerges.

Adaptation/mitigation measures

- 3.23 There are different standards of road markings and signing required on street lit and unlit roads. The switching off of lights at any time during the night or removal of lighting will require an assessment of the adequacy of road markings and signing. Where required it will be necessary to upgrade the road markings and signs and/or install reflecting road studs. An additional allowance of £10,000 should be made to provide adequate upgrading of road markings and the provision of reflecting road studs, particularly on traffic routes, where they were not previously required. The anticipated cost of this work in year 1 of the proposals is £5,000.

Fear of crime and community support

- 3.24 When reducing the lighting of residential areas it is appreciated that residents will be concerned about the fear of crime in their immediate environment. Advice from Safer Leeds has suggested that by working together, Street Lighting and Safer Leeds can offer advice and support to worried communities about precautions that can be taken to protect individuals and property during the hours of darkness. On-site assessments could be undertaken where there is a significant concern. In order to facilitate this partnership consideration of funding of approximately £12,000 to Safer Leeds is sought. The anticipated cost of this work in year 1 of the proposals is £3,000 and will be reviewed annually.

Providing warning to road users

- 3.25 In areas subjected to part-night switching it is reasonable to expect road users to be able to tell which street lights are to go off and at what times. It is proposed to erect signs at the start and end of part-night switching zones warning road users of the times of switching. Warning signs should also reduce the incidence of the reports of faulty lights during the period when they are deliberately turned off. Signs such as these have been used successfully in other local authorities to alert road users to the lighting times. An allowance of £10,000 should be made to deliver the indicative proposals. The anticipated cost of this work in year 1 of the proposals is £3,000.

Do Nothing

- 3.26 Members at budget time required officers to look into possible savings from dimming and turning off selected street lights. However, do nothing does exist but members need to be aware of giving up on potential savings of c£145,000 per annum. Members need to consider the effect of lights being turned off against the savings outlined in this report.

Summary

- 3.27 Table 3.27 below is a summary of the potential invest to save options in order of pay back.

	Lighting energy saving measure	Provisional number of street lights	Estimated investment required	Annual energy saving	Pay back period
1	Part-night switch-off (traffic route)	3,250	£157,750	£87,750	1.8 yrs
2	Part-night switch-off (residential street)	4,750	£118,750	£47,500	2.5 yrs
3	Remove lighting (traffic route)	150	£58,200	£10,200	5.7 yrs
4	Dimming (retrospective fitting) (traffic route)	Not recommended due to long payback period	*£218 (per street light)	*£15	14.5 yrs
5	Remove lighting (residential street)	Not recommended due to long payback period	*£388 (per street light)	*£26	14.9 yrs

Table 3.27 Summary of invest to save options

Proposals

- 3.28 It is proposed to implement the energy saving measures within this report in order of return on investment. The only exception being the removal of street lights on traffic routes where, as it is proposed to remove the apparatus after it has been switched-off for a period of two years the energy saving benefits are realised in advance of the removal costs.

Implementation

- 3.29 Subject to approval of this report assessment of streets will begin in July 2011. The numbers of street lights subjected to the energy saving measures will depend on the outcome of individual site assessments across the district and could vary from the numbers suggested. It is anticipated that following consultation, the earliest any measures can be installed will be October 2011.
- 3.30 It is anticipated that with current resources, assessment and consultation of proposals across the whole of the Leeds district will take around 3 years to complete.
- 3.31 Table 3.31 below shows the anticipated implementation programme of the proposed energy saving measures.

Programme	Lighting energy saving measure	Install to number of street lights (provisional)
October 2011 to April 2012	Part-night switch-off (traffic route)	1,625
April 2012 to September 2013	Part-night switch-off (traffic route)	1,625
April 2012 to March 2013	Part-night switch-off (residential streets)	3,315
April 2013 to September 2013	Part-night switch-off (residential streets)	1,435
September 2012 to March 2013	Remove lighting (traffic Route)	150

Table 3.31 Proposed programme of implementation

- 3.32 Appendix B shows the financial implications for the council of these proposals over a 10 year period.
- 3.33 A street lighting partnership group will be created to include representatives of the emergency services, crime reduction, community safety and road casualty reduction to ensure that the ongoing assessment of sites remains appropriate and to ensure appropriate and swift reaction to any adverse effects.
- 3.34 Every road in Leeds with an existing street lighting system will be assessed for suitability of energy saving measures. Roads will be assessed against the criteria set out in paragraphs 3.5 and 3.11 of this report. A programme of assessment will be developed that will follow roughly the same phased ward-by-ward approach of the PFI core investment programme. Traffic Routes will be assessed across the whole district first, followed by a programme of residential streets. Where lighting is

to be removed completely or subjected to part-night switching, signs will be erected at each approach to the area involved to alert road users to that effect.

Monitoring

- 3.35 Any changes in street lighting provision will be monitored for its effect on crime and road traffic accidents.
- 3.36 Reported crime and road traffic accidents will be monitored by the Police and Road Casualty Reduction. If at any time the records suggest that there is an unacceptable change in the incidence of crime or road traffic accidents and that the alteration to the street lighting is identified as the cause, then the energy saving measures will be terminated at that location.
- 3.37 Incidence of crime and road traffic accidents will be monitored at six monthly intervals for the first two years at all sites to determine general trends. Reviews will be undertaken by the street lighting partnership group to determine any cause for concern and action to be taken.

Potential to extend the proposals

- 3.38 The proposals within this report are based on an estimate of the application of the assessment criteria. If consultation and monitoring proves to be positive there may be the potential, subject to funding, to extend the proposals to larger numbers of street lights to achieve greater energy savings.

Consultation

- 3.39 The Executive Member for Development and Regeneration has been consulted on the proposals and has requested that this report be progressed to Executive Board.
- 3.40 Ward members: This is a city wide proposal and as such a specific ward member consultation has not yet been undertaken. Ward members will be consulted on any proposals to reduce the street lighting service in their ward. They will be specifically invited to comment on the local conditions that have led to the proposals in relation to the selection criteria within this report.
- 3.41 Parish Councils will be consulted on any proposals to reduce the street lighting service within their parish. They will be invited to comment specifically on the local conditions that have led to the proposals in relation to the selection criteria within this report.
- 3.42 Residents and businesses will be informed of any proposals to reduce the street lighting provision within 50m of their premises and asked for observations on the local conditions that have been applied to the selection criteria within this report. Notification will include advice from community safety representatives on how to limit the fear of crime in the location.
- 3.43 The stakeholders listed in paragraphs 3.44 to 3.49 below met with officers to discuss the proposals and were invited to respond formally to 12 questions about the proposals and appropriateness of the criteria for selection. They responded as follows:

- 3.44 Leeds City Council Leeds Watch: have no objections to the proposals and accept the criteria for application, with particular reference to maintaining lighting in areas covered by CCTV cameras.
- 3.45 Leeds City Council Safer Leeds: have no objections to the proposals and accept the criteria for application. They also felt that it was important to be able to reassure communities and individuals who believe that they are to be adversely affected by the proposals. They would welcome the opportunity to work in partnership with street lighting officers to deliver advice and guidance. They would also like consideration to be given to a funded domestic lighting scheme for vulnerable people.
- 3.46 West Yorkshire Police; had no objections to the proposals at the pre-meeting and welcomed the opportunity to be part of the process. The representative at the meeting is undertaking further consultation on the proposals within the Police on our behalf. A formal response to the consultation has been promised prior to the meeting of the Executive Board on 18 May. A verbal update will be provided by officers with this report at the Executive Board meeting.
- 3.47 West Yorkshire Fire and Rescue Service; have no objections to the proposals and accept the criteria for application. They also felt that alternate light switching was preferable to turning them all off (see paragraphs 3.16 to 3.18).
- 3.48 Ambulance Service; have no objections in principle to the proposals and accept the criteria for application. They have concerns about proposals affecting the lighting in specific areas of Leeds where there may be a risk to personnel and about the loss of lighting inhibiting the speed of response to incidents. The specific areas listed should be captured by the criteria relating to crime and anti-social behaviour. The effect on response times is to be monitored through the proposed project group, which they will be invited to attend.
- 3.49 Road Casualty Reduction; have no objections to the proposals and accept the criteria for application. They are keen to see accurate and timely monitoring of the effects of the energy saving measures and the ability to reverse the measures if an adverse effect is detected.
- 3.50 If the proposals within this report are approved, consultation and awareness sessions with further stakeholder representatives such as disabled groups will be offered.
- 3.51 Any objections that cannot be resolved during the consultation process will be reported to the Chief Officer of Highways and Transportation with proposals for resolution.

Equality, Diversity and Community Cohesion

- 3.52 An equality, diversity, cohesion and integration impact assessment was undertaken on the proposals on the 16th March 2011. The resulting actions from the assessment highlight the potential difficulties in applying energy saving measures within criteria that will create a different approach dependant on local conditions. The report recommends transparency of approach and sufficient consultation and communication to explain the process. The report also welcomes the proposal for street lighting officers to work in partnership with Safer Leeds and to put in place

robust monitoring of crime and road accidents. The final report will be published on 21 April 2011.

4 Implications For Council Policy And Governance

- 4.1 The proposals comply with the council's strategic outcome ENV-1 : "Reduced ecological footprint through responding to environmental and climate change and influencing others" and Business Plan outcome VfM-2: Efficiency/Value for Money.
- 4.2 The proposals comply with the Local Transport Plan objective S1; provide an appropriate road environment with facilities for each user group and AQ4; Measures to adapt to the effects of climate change.

5 Legal And Resource Implications

- 5.1 A highway authority has a discretionary power under the provision of section 97 of the Highways Act 1980 to provide lighting for the purposes of any highway for which they are or will be the highway authority
- 5.2 All local authorities have a duty under Section 17 of the Crime and Disorder Act 1998 to do all they can to reasonably prevent crime, disorder and anti-social behaviour in their area. Reduction in street lighting services needs to consider the effects on crime and work in partnership with related organisations.
- 5.3 Proposals to reduce the lighting may mean that the recommended standards for road lighting are not met. It has been established by case law that Section 97 Highways Act 1980 - does not impose a duty on the authority to light a highway it is a discretionary power and there is no liability for accidents arising from a failure to light. (Shepherd -v- Glossop Corporation [1921] 3 KB 132 and Fisher -v- Ruislip-Northwood UDC [1945] KB 584) - If an authority has however done something to make a road dangerous, the creator of the danger will be liable in negligence or nuisance for injuries caused by that danger if he has not taken reasonable steps to eliminate the danger.
- 5.4 Under the current PFI agreement TVL have taken responsibility for all liabilities arising from the street lighting provision and apparatus. The proposal to alter the routine functioning of the lighting system will result in partial liabilities, as the organisation making the decision in 5.3 above, being returned to the council
- 5.5 Unless provided by a separate order, the provisions of section 82 of the Road Traffic Regulation Act 1984 state that a road is a "Restricted road" (where a 30mph speed limit applies) if there is provided on it a system of street lighting furnished by means of lamps placed not more than 200 yards (183 metres) apart.. Complete removal of lighting columns in these areas will require a legal order and additional signing to reinstate the speed restriction.
- 5.6 Prior to the complete removal of any street lighting the authority will need to ensure that road markings and reflecting road studs are provided in accordance with current standards for unlit roads contained in the Traffic Signs Regulations and General Directions 2002.

5.7 The Electricity at Work Regulations impose a duty on owners to ensure the safety of the apparatus. Lighting systems will continue to require regular inspection, regardless of their operation.

5.8 The energy saving cost estimates included within this report are based on energy charges at current tariff. All indications are that energy costs are likely to increase in future. The measures proposed are saving energy in the early hours of the morning where energy demand is at its lowest. As energy demand varies, it is possible that energy suppliers look to increase the tariff for the evening peak period which will reduce the benefit of these energy saving measures.

5.9 Capital Funding and Cash flow

5.9.1 Funding: This report seeks funding of £334,700 from 2011 to 2014 to implement the proposals. This is made up from £78,785 in 2011/12, £161,750 in 2012/13 and £91,075 in 2013/14. The potential financial implications of the proposals over a 10 year period are shown in Appendix B. The 10 year plan demonstrates an overall saving to the council of £940,860 by 2021 at current energy prices.

5.9.2 Staffing: There are no implications for staffing resources as a result of the recommendations within this report. The phased approach to assessments over a 3 year period has been aligned to existing resources. Any acceleration of the programme would require additional staffing resources.

6 Conclusions

6.1 The street lighting service provided by TVL through a PFI agreement is already providing efficiencies in the consumption of electrical energy. There are greater opportunities to be gained from a number of measures such as removal of lighting altogether, part-night switching or dimming of street lights.

6.2 The greatest return on investment is achieved from part-night switching with traffic routes offering better returns over residential streets.

6.3 In order to provide adequate lighting the report recommends criteria for the selection of appropriate areas to implement these measures. In addition to ensure that any changes in lighting have not had an unforeseen adverse effect on the community, trends in crime or vehicle accidents should be monitored.

6.4 This report recommends implementation of the measures in order of return on investment with early implementation of part-night switching on traffic routes. The report seeks an injection of £334,700 into the Capital Programme to implement additional energy saving measures to save £940,860 in energy costs by 2020/21 at current energy prices.

7 Recommendations

7.1 Members of Executive Board are asked to:

- i) Note the content of this report and the efficiency measures already undertaken as part of the street lighting PFI.

- ii) Note potential annual savings of the proposed programme of implementation outlined in 3.30.
- iii) Approve officers to begin consultation on the proposed programme of implementation, with a view to an injection into the capital programme of £334,700 for 2011 to 2014 resulting in an estimated net saving from a reduction in energy consumption of £940,860 by 2021.

8 Background Papers

- 8.1 Equality, diversity, cohesion and integration impact assessment; Proposal to invest in increased energy saving initiatives for Street Lighting (Stage 1 proposals).

1. Essex County Council began part-night switching of street lights in 2006. In a trial involving 2,413 street lights, there was no evidence of a negative impact on crime statistics. There has been a reduction in the number of people who 'feel safe after dark' but not by as much as other areas where the lighting was unaffected. There were no road traffic accidents, where the cause was attributable to a lack of street lighting.
2. Buckinghamshire County Council have completely switched off 1,627 street lights in 46 rural and semi-rural locations. Trends in road traffic accidents at the trial sites are mixed. Collisions and casualties have increased at 14 sites, reduced at 16 sites and remained static at 16 sites. Some of the increases are at roundabouts (which are excluded from Leeds proposals). Correspondence relating to the trial is averaging over 200 letters per year. Only a small proportion relates to total opposition to the scheme.
3. Leicestershire County Council have 66,000 street lights and have developed a programme of part-night switching, dimming and removal of street lighting. The work started in June 2010 in rural villages and so far around 4,500 lights have been converted to part-night lighting. Data for crime or accident levels is not yet available but early indications are that there is no adverse effect.
4. Gloucestershire County Council have already installed part-night switching to 4,566 street lights, mainly in rural villages. Formal crime or accident data is not available but there are no indications of any significant problems.
5. Nottinghamshire County Council are in the process of developing a programme of street lighting removal, part-night switching and dimming. Work started in December 2010 and will continue until 2014. Crime and accident data is not yet available.

Year	Part - Night Switch Off Traffic Routes			Part - Night Switch Off Residential Streets			Lighting Removal			Total
	Cost	Savings	Net	Cost	Savings	Net	Cost	Savings	Net	
	£	£	£	£	£	£	£	£	£	
2011/12	78,875	-10,802	68,073	-	-	-	-	-	-	68,073
2012/13	78,875	-77,232	1,643	82,875	-16,764	66,111	-	-10,200	-10,200	57,554
2013/14	-	-87,750	-87,750	35,875	-44,463	-8,588	58,200	-10,200	48,000	-48,338
2014/15	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2015/16	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2016/17	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2017/18	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2018/19	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2019/20	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
2020/21	-	-87,750	-87,750	-	-47,500	-47,500	-	-10,200	-10,200	-145,450
Total Savings			-632,284			-274,976			-33,600	-940,860

Street Lighting Energy Saving Measures : Financial Implications
10 year period 2011 to 2021