

CARDIFF COUNCIL

**Equality Impact Assessment
Corporate Assessment Template**



Policy/Strategy/Project/Procedure/Service/Function Title: Street Lighting
New/Existing/Updating/Amending: Retrofit Lanterns on main highway network to achieve energy savings circa 45 – 50%

Who is responsible for developing and implementing the Policy/Strategy/Project/Procedure/Service/Function?	
Name: Chris Jones	Job Title: Electrical Lead
Service Team: Electrical	Service Area: SPHT&T
Assessment Date: 25 th May 2016	

1. What are the objectives of the Policy/Strategy/Project/ Procedure/ Service/Function?

Objective

To achieve predicted energy savings and reduce CO² emissions on the higher street lighting wattages from 90Watt to 250Watt. Having considered a number of alternatives such as dimming existing assets, part night lighting etc. the decision was made to investigate a roll out of LED technology. As such dimming technology on the higher wattages was considered and trailed at Longwood Drive, however, the trial proved unsuccessful due to component reliability.

This will be achieved by retrofitting existing lanterns to LED equivalents.

Funding

Any loans to fund the capital required will be repaid from the energy savings. The capital investment required will be circa £7m and addresses approximately 14,000 lanterns on the main highway network. It is likely that the works will be carried out over two nine month periods – 7000 units each period. The project is predicted to achieve 45% savings in Energy and Carbon emissions and also significantly reduce maintenance costs.

Management of carbon emissions also has financial benefits for the Authority due to our involvement in the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme. A reduction in carbon emissions indirectly benefits the whole community by contributing towards mitigation of climate change. Our Carbon reduction Strategy set out our approach to reducing carbon emissions and managing the impacts of climate change.

Stakeholder - It is anticipated that whilst there will be no negative differential impact on stakeholders regardless of their protected characteristic, location and time of day / year and ambient light levels; consideration has been made towards a large range of stakeholders including local residents, cyclists, pedestrians, visitors to the local area,

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commuters, emergency services, bus and taxi operators and other transport operators.

2. Please provide background information on the Policy/Strategy/Project/Procedure/Service/Function and any research done [e.g. service users data against demographic statistics, similar EIAs done etc.]

Cardiff Council is historically committed to providing a sustainable environment for the residents and visitors to the city, seeking to create benefits for all stakeholders. Limited Environmental impact being experienced in relation to changes to street lighting.

Technology Background

LED Street lighting is a fast moving technology and there is recent evidence to suggest there are problems surrounding glare and the CCT (Core Colour Temperature) of the LEDs employed. LEDs are basically a blue light source with a phosphor coating to achieve the white light.

This is an area of concern ie. The amount of “blue rich” light not being filtered out. There is evidence to suggest that the higher most efficient colour temperatures currently being pushed by the large LED companies can effect melatonin levels in humans, effecting sleep patterns.

“Unfortunately, exposure to blue-rich light at night can lead to decreased melatonin secretion in humans. Melatonin is a hormone secreted at night by the pineal gland that helps balance the reproductive, thyroid, and adrenal hormones and regulates the body’s circadian rhythm of sleeping and waking. Lower Melatonin levels have been tenuously linked to increased risk of cancer. “(app 1,2,3)

The evidence also suggests that these “blue rich” LEDs also have an adverse impact on wildlife and the wider general environment.

There are three typical levels of LED; (app 4)

Cold White – above 4500Kelvin

Neutral White - 3500 to 4500 Kelvin

Warm White – 2700 to 3000 Kelvin

It is generally accepted that limiting the colour temperature to a “warm” 3000K CCT will remove these issues and also reduce glare to well within the current British Standard. (BS EN 13201-2:2003 – app 5, 6) Although this will reduce the energy saved over the harsher 5000K units by approx. 15%.

Engagement and Investigation

In order to investigate these possible issues further and select the best specification the Authority is presently erecting a “Test Bed” in the area behind City Hall which was considered as indicative of a typical Cardiff location, but one that could safely be used as a test location for all considered lantern types. (App 7, 8) Eight major manufacturers were approached, who offered up lanterns with an identical classification at 3000K CCT to be tested. An independent professional assessment was then carried out to establish from a technological perspective the most suitable and cost effective LED

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solution for the city.

Further, in November 2015 several focus groups comprising representatives from the broad community including those from emergency services, local councillors and officers with individually with a range of impairments e.g. mobility and visual / hearing impairments, was escorted around the "Test Bed" in order to assess the human factors and impact / effect of the different LEDs and gain public feedback.

This feedback completed during the focus group "Test Bed" visit comprised of a 3 stage qualitative questionnaire presented to over 25 participants.

Stage 1 designed to assess the individual's perceived experience of the lighting in given defined zones e.g. glare, brightness, spread of light etc.

Stage 2 was a scientific testing of individuals perception of colour interpretation.

And Stage 3 being a legibility test at distance of number plate style holdups.

In addition the same questionnaire was made available to all Cardiff residents via the Councils local media platform. This again offered another opportunity for the residents of Cardiff to feed back their opinions on the "Test Bed" and therefore, the decision making process.

In total 33 individual responses were gained from all activities and can therefore be considered as a statistically relevant sample response.

The findings of this investigation will be made public to ensure transparency of decision making prior to the project being rolled out.

3 Assess Impact on the Protected Characteristics

3.1 Age

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative/]** on younger/older people?

	Yes	No	N/A
Up to 18 years	X		
18 - 65 years	X		
Over 65 years	X		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

It is proposed that adoption of LED street lighting and the improvements in energy efficiency, financial savings to the Local authority and the overall reduction in CO² emissions to the environment will not have a negative differential impact on the protected characteristics.

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Indeed it is suggested that through the community based approach to choosing the most appropriate solution and lantern, the use of LED technology will significantly benefit the whole community not only in relation to financial savings, and the overall environmental benefit but also in practical terms. These practical terms will now be outlined in the next section.

What action(s) can you take to address the differential impact?

Good quality Street lighting is integral to the health of a community and its ability to socially interact.

The proposed LED project will have a positive impact on all protected characteristics for the below reasons.

- The human eye sees white light (in a different manner to the old “ orange glow” streetlights and in general
- Provides better visual guidance
- Reveals obstacles more clearly
- Allows pedestrians to easier recognise hazards
- Facilitates better pedestrian orientation and wayfinding
- Pedestrians recognise facial features easier which is of benefit in respect of security as well as communications
- Provides a feeling of security

(please see Appendix 9)

Research information used to inform the decision making process have shown that the whiter light nightscape benefits local communities -

- Reduction of street crime and the fear of street crime in residential areas.
- Lighting improvements can decrease crime by up to 30 per cent.
- Stimulating the night time economy and use of public amenities and transport.
- Development of safer routes to school. (app 10)

While research on the effects of improved street lighting on crime rates is not entirely definitive, an analysis of eight different studies found that improved street lighting—either through more lights or brighter lights— reduced crime by an average of 7%.¹ With improved visibility, potential offenders are more exposed and less likely to commit crimes. Enhanced lighting can signal more community investment, pride, and cohesiveness, which also can discourage crime.

There are two main theories of why Improved street lighting may cause a reduction in crime. The first suggests that improved lighting leads to increased surveillance of potential offenders (both by improving visibility, surveillance cameras etc., and by increasing the number of people on the street) and hence to increased deterrence of potential offenders.

The second suggests that improved lighting promotes community investment in the area and that the area is improving, leading to increased community pride, community

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cohesiveness, and informal social control.

Improved street lights can make a community feel safer. They allow safer operation of vehicles and bicycles at night, reduce accidents, and assist traffic flow. Better light can also promote the night time operation of businesses and increase pedestrian street use after dark, all of which leads to a more active, enhanced neighbourhood. (app 11)

It is envisaged the improved lighting will have a positive impact on social cohesion e.g. attendance at community groups such as WI, scouts, church, day centres, sports clubs etc.

It is recognised that in many instances the location of lighting is a consideration. As such this will be monitored as new lighting might be included in schemes, so as to alleviate any unforeseen differential impacts that may arise.

3.2 Disability

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on disabled people?

	Yes	No	N/A
Hearing Impairment	x		
Physical Impairment	x		
Visual Impairment	x		
Learning Disability	x		
Long-Standing Illness or Health Condition	x		
Mental Health	x		
Substance Misuse	x		
Other	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

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What action(s) can you take to address the differential impact?

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- Stimulating the night time economy and use of public amenities and transport.
- Development of safer routes to school. (app 10)
The impact on community safety has two core dimensions: prevented crime and the impact on fear of crime.
- People with visual or mobility impairments may find the improved street lighting helpful in assisting them to navigate and avoid hazards, as such, there is a potentially positive impact on risk of falling and accessibility.
- People with disabilities may feel less vulnerable to crime as a result of improved lighting, but much depends on the specific circumstances as well as other
- Deaf and hearing impaired individuals who lip read will benefit from improved lighting as they will be better able to distinguish facial features, lip read and see sign language at times of diminished light. This will improved communications and opportunities for social interaction for this community.
- factors such as localised crime rates, policing and quality of public spaces. (app 12)
- There may be potential for an increase in ‘hate crime’ against people with physical or learning disabilities as they will be more easily identified in the community. (app 13)
- Improved lighting will help alleviate carers fears about lower levels of lighting when attending a relative or service user late at night/early in the morning.
- Improved lighting will it is suggested lead to an improved recognition of any potential hazards in the walkway e.g. risen curbs, loose pavers etc. this reducing any potential harm from slips trips or falls.

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3.3 Gender Reassignment

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on transgender people?

	Yes	No	N/A
Transgender People (People who are proposing to undergo, are undergoing, or have undergone a process [or part of a process] to reassign their sex by changing physiological or other attributes of sex)	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

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The Transgender community may feel less vulnerable to “hate crime” as a result of improved lighting, but much depends on the specific circumstances as well as other factors such as crime rates, policing and quality of public spaces.

What action(s) can you take to address the differential impact?

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- Improved lighting will it is suggested lead to an improved recognition of any potential hazards in the walkway e.g. risen curbs, loose pavers etc. this reducing any potential harm from slips trips or falls.

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It is envisaged the improved lighting will have a positive impact on social cohesion e.g. attendance at community groups such as WI, scouts, church, day centres, sports clubs etc.

It is recognised that in many instances the location of lighting is a consideration. As such this will be monitored as new lighting might be included in schemes, so as to

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alleviate any unforeseen differential impacts that may arise.

3.4. Marriage and Civil Partnership

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on marriage and civil partnership?

	Yes	No	N/A
Marriage			X
Civil Partnership			X

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

No differential impact has been identified that may have a direct effect on the protected characteristic of marriage or civil partnership. This will be monitored and addressed if any are identified.

It is proposed that adoption of LED street lighting and the improvements in energy efficiency, financial savings to the Local authority and the overall reduction in CO² emissions to the environment will not have a negative differential impact on the protected characteristics.

Indeed it is suggested that through the community based approach to choosing the most appropriate solution and lantern, the use of LED technology will significantly benefit the whole community not only in relation to financial savings, and the overall environmental benefit but also in practical terms. These practical terms will now be outlined in the next section.

What action(s) can you take to address the differential impact?

Not Applicable

3.5 Pregnancy and Maternity

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on pregnancy and maternity?

	Yes	No	N/A
Pregnancy	X		

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Maternity	x		
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Please give details/consequences of the differential impact, and provide supporting evidence, if any.

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What action(s) can you take to address the differential impact?

In addition to the considerations already identified

Those who may be identify within the protected characteristic of pregnancy and maternity; will it is expected benefit from LED lighting in the following ways:-

- Feel less vulnerable to crime as a result of improved lighting, resulting in a positive impact on travel to services related to their characteristic e.g. access maternity unit/hospital care.
- Improved lighting will it is suggested lead to an improved recognition of any potential hazards in the walkway e.g. risen curbs, loose pavers etc. this reducing any potential harm from slips trips or falls.

3.6 Race

Will this Policy/Strategy/Project//Procedure/Service/Function have a **differential impact [positive/negative]** on the following groups?

	Yes	No	N/A
White	x		
Mixed / Multiple Ethnic Groups	x		
Asian / Asian British	x		
Black / African / Caribbean / Black British	x		
Other Ethnic Groups	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

Community safety is an important issue for all including people from minority ethnic backgrounds, with prevention of street crime and racially motivated crime being Particularly relevant.

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There are two main theories of why Improved street lighting may cause a reduction in crime. The first suggests that improved lighting leads to increased surveillance of potential offenders (both by improving visibility, surveillance cameras etc., and by

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The second suggests that improved lighting promotes community investment in the area and that the area is improving, leading to increased community pride, community cohesiveness, and informal social control.

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It is envisaged the improved lighting will have a positive impact on social cohesion e.g. attendance at community groups such as WI, scouts, church, day centres, sports clubs etc.

It is recognised that in many instances the location of lighting is a consideration. As such this will be monitored as new lighting might be included in schemes, so as to alleviate any unforeseen differential impacts that may arise.

3.7 Religion, Belief or Non-Belief

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on people with different religions, beliefs or non-beliefs?

	Yes	No	N/A
Buddhist	X		
Christian	X		
Hindu	X		
Humanist	X		
Jewish	X		
Muslim	X		
Sikh	X		
Other	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

People may feel less vulnerable to crime as a result of improved lighting, and it is recognised that this is particularly relevant to faith communities who may be at risk of hate crime e.g. anti-Semitism, Islamophobia, but much depends on the specific circumstances as well as other factors such as crime rates, policing and quality of public spaces

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3.8 Sex

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on men and/or women?

	Yes	No	N/A
Men	x		
Women	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

All genders will enjoy the benefits of improved lighting as outlined in previous sections however, it is anticipated that women may feel safer when in public areas during the hours of darkness, due to improved LED lighting and its associated benefits.

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Indeed it is suggested that through the community based approach to choosing the

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What action(s) can you take to address the differential impact?

Please see

3.9 Sexual Orientation

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on the following groups?

	Yes	No	N/A
Bisexual	X		
Gay Men	X		
Gay Women/Lesbians	X		
Heterosexual/Straight	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

In general those who may be considered within this protected characteristic group may feel less vulnerable to “hate crime” as a result of improved lighting.

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3.10 Welsh Language

Will this Policy/Strategy/Project/Procedure/Service/Function have a **differential impact [positive/negative]** on Welsh Language?

	Yes	No	N/A
Welsh Language	x		

Please give details/consequences of the differential impact, and provide supporting evidence, if any.

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What action(s) can you take to address the differential impact?

It is envisaged the improved lighting will have a generally positive impact on social cohesion e.g. attendance at community groups such as WI, scouts, church, day centres, sports centres, pubs and clubs etc.

This in turn should have a positive impact on the Welsh speaking community and media in relation to making all forms of evening travel easier to attend events, adult evening classes etc.

4. Consultation and Engagement

What arrangements have been made to consult/engage with the various Equalities Groups?

As outlined in section 2, the Authority has engaged and will continue to engage with a wide range of community groups focusing around the "LED Test Bed" constructed on King Edward 7th Ave and Museum Place (July 2015 – Present; Ongoing Evaluation) as

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well as the broader consideration as may be implemented.

As a location King Edward 7th Ave and Museum Place was specifically chosen for easy pedestrian and vehicular access and is geographically central as well as being a typical example of a street scape within Cardiff.

5. Summary of Actions [Listed in the Sections above]

Groups	Actions
Age	Please see specific protected characteristic
Disability	Please see specific protected characteristic
Gender Reassignment	Please see specific protected characteristic
Marriage & Civil Partnership	Please see specific protected characteristic
Pregnancy & Maternity	Please see specific protected characteristic
Race	Please see specific protected characteristic
Religion/Belief	Please see specific protected characteristic
Sex	Please see specific protected characteristic
Sexual Orientation	Please see specific protected characteristic
Welsh Language	Please see specific protected characteristic
Generic Over-Arching [applicable to all the above groups]	Please see specific protected characteristic

6. Further Action

Any recommendations for action that you plan to take as a result of this Equality Impact Assessment (listed in Summary of Actions) should be included as part of your Service Area's Business Plan to be monitored on a regular basis.

7. Authorisation

The Template should be completed by the Lead Officer of the identified Policy/Strategy/Project/Function and approved by the appropriate Manager in each Service Area.

Completed By : Chris Jones	Date:
Designation:	25 th May 2016
Approved By:	6 th June 2016
Designation:	
Service Area:	