



Executive Summary

The report “A bright Idea?” was prepared by the charity LightAware. It looks at the installation of LED street lighting and measures councils have taken to ensure the health and safety of residents and minimise environmental damage. It is based on a Freedom of Information request sent to councils, academic research, and a survey of light-sensitive people.

Most councils have introduced LED street lighting to achieve savings and reduce carbon emissions without taking account of its adverse health and ecological impacts. Although over 97 per cent of councils have installed LED street lighting:

- only 30 per cent consulted their residents beforehand
- less than half piloted its introduction
- only 17 per cent of councils conducted a Health Impact Assessment
- only 22 per cent an Environmental Impact Assessment.

LightAware believes that councils that introduce LED street lighting without

proper consideration of its adverse impacts are infringing the human rights of light-sensitive people whose health and well-being is adversely affected.

The long-term health effects of LED lighting are untested and several problems are becoming apparent. Very bright, blue-rich street lights have been shown to have significant negative impacts on public health, road safety and the environment. The main health risks associated with LED-street lighting are:

- extreme brightness which causes glare and eye pain for some
- flicker, which can cause migraines and distress for some people on the autistic spectrum
- a spike at the blue wavelength which disrupts sleep and causes health problems for some people suffering from lupus and certain skin conditions.

This is the executive summary of our report “A bright idea?” available free of charge from our website www.lightaware.org

Over half of councils (55 per cent) use solely LEDs with a colour temperature of 4000K or above, which have the greatest negative impact on human health and the environment (Colour temperature is a way to describe the light appearance provided by a light bulb),

- Only nine councils have installed a significant number of lower colour temperature LED street lights, which have less impact on people's health and on the environment.
- Many councils installed blue light rich LEDs after the publication of scientific reports warning of their health and environmental impacts.
- Procurement Guidelines recommend that 'warm white' street lighting of 2700K and below should be installed in residential areas. Most councils ignore this guidance and continue to install cheaper 'blue rich' LED street lights.

LightAware believes that there is a sufficient risk that people and the environment being harmed by LED street lighting to invoke the 'precautionary principle'. This states that if an action or policy has a suspected risk of causing harm to the public, or to the environment, in the absence of scientific consensus (that the action or policy is not harmful), the burden of proof that it is not harmful falls on those taking that action.

To be effective, health and environmental policies require a holistic multidisciplinary approach that considers the health, social, economic, public safety, and ecological impacts of the introduction of new technologies such LED lighting. The main difficulty with LED street lighting is that, so far, its introduction has been driven by financial savings and carbon reduction

targets without regard to its wider social, health and environmental impacts. It is time for councils to remedy this shocking state of affairs.

Key recommendations

Public Health England (and its successor body the National Institute for Health Protection) should support research to find out why LED street lighting is causing ill-health in light-sensitive people.

Councils should introduce a moratorium on the roll out of new LED street lighting and maintain current street lighting until it reaches the end of its useful life or such time that safe replacements can be found. Councils should retain a supply of parts to help them maintain current street lighting.

Where street lighting has come to the end of its economic life and needs to be upgraded, councils should consult communities about replacement street lighting, including:

- an assessment to ensure that it meets the Public Sector Equality Duty
- undertaking Regulatory Impact Assessments covering equalities, health, disability, and the environment
- identifying light sensitive residents and taking steps ensure they are not socially excluded, including retaining conventional street lighting in their neighbourhood
- in rural areas, encouraging the creation of 'Dark Skies' areas and having referendums as to whether to have street lighting at all or to switch it off after a particular time.

If (after public consultation and regulatory impact assessments have been completed) alternatives LED lighting are not available, councils should retain non-

LED street lighting in the neighbourhoods of light-sensitive people by re-using lighting removed when LED lighting has been installed in other areas.

Where LED lighting is installed, councils should be aware of, and consider current guidelines. Councils should also be aware that lighting complying with these guidelines may trigger fewer health problems in the general public (and for some light sensitive people), they will still infringe the human rights of light-sensitive people and lead to ill-health and social exclusion for many. Current guidelines include:

- an upper CCT limit of 2700K on residential roads
- an upper CCT limit of c.2400K in eco-sensitive areas

- limits on flicker, requiring compliance with IEEE PAR1789.

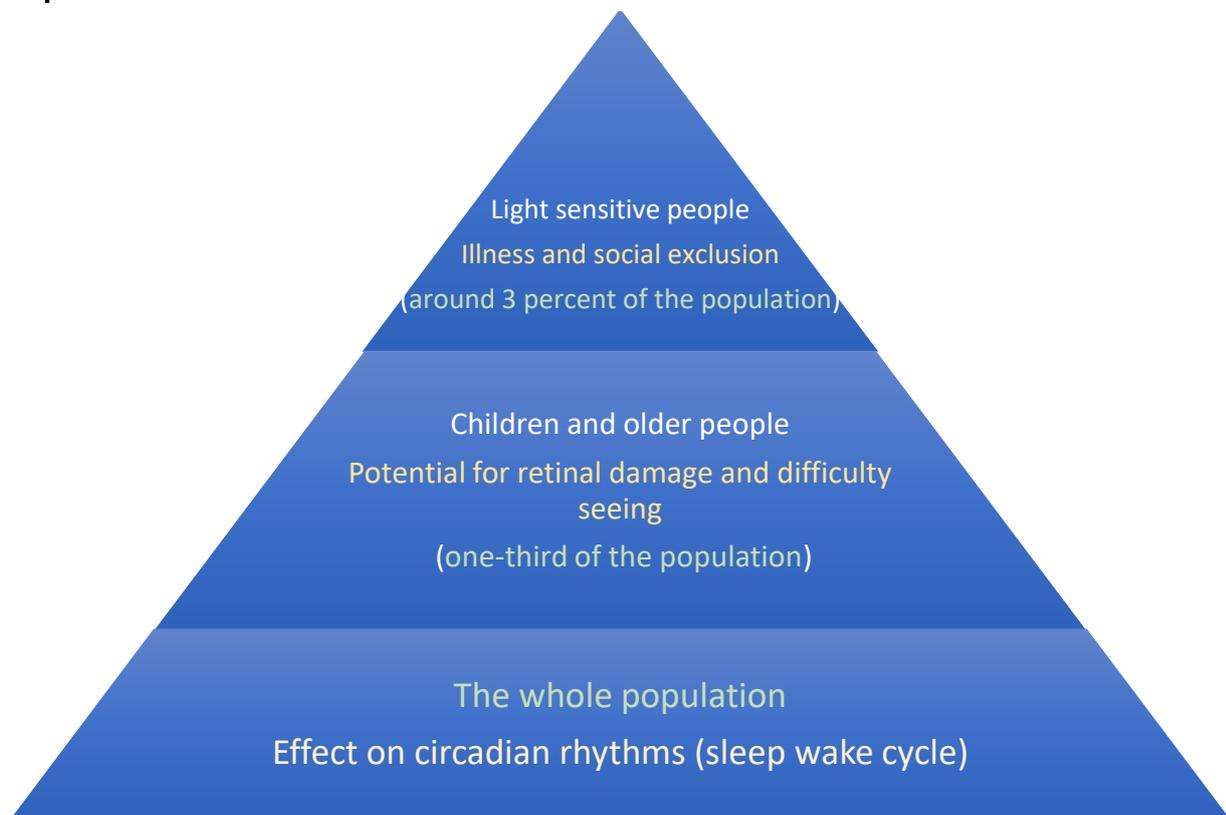
Fitting diffusers to all LED luminaires where the peak luminance exceeds a given threshold of cd/m² to prevent glare.

To begin to repair the damage to public health and the environment councils should:

- remove of all street lighting with a CCT greater than 5000K within 2 years
- remove of all street lighting with a CCT greater than 4000K within 5 years
- remove all street lighting which does not comply with IEEE PAR 1789 within 5 years.

The 'hierarchy of harm'

Although some people are severely affected, high blue content LED street lighting has health impacts on us all.



Questions that councillors should ask about LED street lighting

Key issue	Key question	Yes / No
LED street lighting option appraisal, procurement, and monitoring	<ul style="list-style-type: none"> • Did your council's procurement process take into account the findings of key reports into the health and safety of LED lighting, in particular EU Procurement Guidance for LED street lighting, the EU SCHEER report on LED safety and the ANSES report on LED safety? • Did the procurement financial assessment include the cost of scrapping current lighting before its scheduled replacement date and did it include alternatives other than using LEDs? • Did the calculation of CO2 emissions savings include the emissions from manufacturing of new LEDs and the disposal of old units? • Do you get regular reports about whether the promised energy and maintenance savings from LED installations are being made? 	
Consultation with residents and complaints	<ul style="list-style-type: none"> • Were residents consulted before the LED street lighting was introduced? • Did your council pilot the introduction of LED street lighting? • Has your council had complaints about LED street lighting and do you receive a report about complaints? • Are light sensitive people listened to and protected? 	
Regulatory and environmental assessments	<p>Before introducing LED street lighting did your council undertake:</p> <ul style="list-style-type: none"> • An assessment to ensure that it meets the Public Sector Equality Duty? • An Equality Impact Assessment? • A Disability Impact Assessment? • A Health Impact Assessment? • An Environmental Impact Assessment? • Was the introduction of LED street lighting in line with inclusive by design principles? • Did you receive a copy of these assessments? 	
Protection of the environment and sensitive species	<p>What actions were proposed to mitigate the environmental impacts of LED street lighting and have they been implemented in sensitive areas?</p> <p>How is their effectiveness monitored?</p> <p>Does the chosen lighting minimise light pollution?</p> <p>Has the council consulted people in rural areas to find out if street lighting is needed or could be switched off or dimmed after a particular time?</p>	

About LightAware

LightAware (SC046160) is a charity which was founded in 2015 to respond to the needs of those whose lives and health have been profoundly affected by the ban on incandescent lighting and the development of new forms of light, including LED technology. LightAware's charitable objectives are:

- To raise awareness about the effects of artificial lighting on human health and wellbeing.
- To stimulate discussion and investigation into the effects of artificial lighting on human health and wellbeing.
- To promote equality and diversity through encouraging provision of access to civic life for those excluded by sensitivity to artificial lighting.

About light-sensitivity

Some people with pre-existing health issues, such as migraine and lupus find their conditions exacerbated by LED street lighting. Others with no previous health issues also experience problems including searing eye pain, debilitating headaches, skin burning and rashes, dizziness, fainting and vomiting.

For some, the symptoms are milder: anxiety, eczema, edginess or just a sensation of discomfort or 'wrongness' that is hard to locate. Senior doctors have expressed concerns about the effect of new lighting technology on human eyes, skin, circadian rhythm, and nervous system. But there are many questions still unanswered:

- How does artificial lighting affect human health and wellbeing?
- How many people are adversely affected by new forms of lighting?
- How does one type of light bulb cause different problems in different people?
- Why are some people affected by some forms of lighting and not others?

LightAware believes these questions, and many more, urgently need addressing. We seek to stimulate research and investigation into the effect of artificial lighting on human health, and to compile the information currently available.

Cover photograph: *We would also like to thank Darren Toogood, Editor and Publisher of the Island Echo for permission to use the photograph used on the cover of the report.*
