Isle of Wight Green Party Briefing no. 1

Street lighting: are we in the dark? April 2016

Over 12,000 new LED street lights have been installed on public roads on the Isle of Wight,[1] an island near the south coast of England, by the Island Roads PFI (private finance initiative).[2]

The Isle of Wight Green Party supports saving energy, but these street lights have proved controversial. We believe the PFI, which local people have little democratic oversight of, has deployed inappropriate technology. We regret that the Philips 'Luma' and 'Stela' LED lights as fitted cannot be replaced now, without great expense and waste.

This briefing has been prepared to warn Green Party councillors and activists in other communities to scrutinise proposed street lighting replacements with care.

New street lights can save energy, and last longer than conventional sodium bulbs, if correctly specified. Light technology is developing quickly, and so recent LED designs may already be obsolete. The principal criticisms of the LED street lights fitted on the Isle of Wight are:

1. Some LED fittings (known as 'luminaires') have too narrow a beam, so that streets at night now alternate between being over-lit directly beneath the lamp-post and darkness between lamp-posts (the 'zebra effect'). This could affect pedestrian and driver safety, especially in fog

2. The colour of the artificial light has changed from a warm orange-white to a cool blue-white which mimics daylight, affecting human and animal circadian rhythms, and aesthetics, including the view of the night sky

Colour is expressed as a 'temperature' on the Kelvin scale, using the symbol 'K'. Temperatures over 5,000K are described as cool (the blue end of the spectrum) while colours below 3,000K are called warm colours (yellow through to red). Sodium street lights are in the range 1800-2200K. To approximate the colour of sodium lamps, LEDs should be specified as *warm-white* (red rich) with a CCT (Correlated Colour Temperature) no higher than 3000K, ideally 2700K.

The Council for the Protection of Rural England (CPRE) produced the document "Shedding Light" in 2014 (http://www.cpre.org.uk/resources/countryside/dark-skies/item/3608-shedding-light). Its recommendations include:

- *Local authorities should give careful consideration to the type of Light-Emitting Diode (LED) lighting they use and consider the potential impacts that higher temperature blue rich lighting has on ecology and on human health*

1 See http://www.lighting.philips.co.uk/cases/cases/parks-and-plazas/isle-of-wights-street.html

2 PFIs are privatisation schemes for services formerly delivered by local or national government, including highway maintenance. Forms of PFI have been introduced by both Labour and Conservative governments.

- *New street lighting should be tested 'in situ' before a lighting scheme is rolled out across a wider area to ensure that it is the minimum required for the task and does not cause a nuisance to residents*

We recommend that councillors, technical staff and lighting contractors read "*The Future of Outdoor Lighting*" by Bob Parks, written for the American Planning Association (http://volt.org/wp-content/uploads/2014/09/PAS-Memo_MayJune2014_cr.pdf).

Below follows this document's main conclusion, reproduced with permission:

"It should be clear to planners that outdoor lighting has a multitude of often detrimental effects on the built and natural environments as well as on our health. New lighting technologies offer exciting advances in energy efficiency and cost savings, but also come with potential costs. If existing standards are not adjusted to account for the spectral characteristics of the LED lighting being created and promoted by the lighting industry today, we could, ironically, be faced with higher levels of light pollution, glare, and overlighting."

"Outdoor lighting should be installed to minimize its effect on the environment. Good, ecologically responsible outdoor lighting will employ colour temperatures that are as 'warm' as feasible, while also eliminating glare and light trespass. While consumer preference may favour 'white' light over high pressure sodium (HPS) and low pressure sodium (LPS) light sources, evidence also clearly shows that the public dislikes blue-rich white light. Fortunately, LED technology is capable of providing all of these requirements efficiently."

"Good LED lighting design illuminates the night-time environment while reducing light pollution and energy waste. LED technology allows us to dynamically 'tune' the spectrum of the fixture to minimize its impact on the environment, including human health. Therefore, a reasonable balance between maximum energy efficiency and adverse ecological impact can be achieved."

"Being 'green' is not just a question of energy savings. New ecologically responsible developments in LED include amber LED and filtered LED that removes blue light by eliminating wavelengths below 500 nanometers. These technologies, along with the use of fully shielded LPS, should be used in and around ecologically sensitive areas, optical astronomy facilities, and in communities with a high degree of awareness and concern for the environment."

"The choice is clear: we can use responsible standards to guide lighting design, or we can continue to allow uncontrolled lighting to degrade our quality of life and negatively impact human health and ecology. Planners have important roles to play in making the former scenario a reality in their communities."

For more information, please contact the **Isle of Wight Green Party** via our website: https://isleofwight.greenparty.org.uk/