



Draft Wicklow Town – Rathnew LAP Submission - Report

Who are you:	Group
Name:	Dark Sky Ireland
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Topic

Any other issues

Submission

Light pollution aspects, encompassing energy use, light reduction, climate change, biodiversity and the environment, human health, culture & history, tourism and impacts on future Wicklow Dark Sky areas.

File

Wicklow_CDP_LP_DSI_final.pdf, 0.21MB

Preamble

This submission is on behalf of Dark Sky Ireland (<https://www.darksky.ie>) which is an all-island voluntary body dedicated to the improvement of the night-time environment for all species. We support the commitment to the development of dark sky areas and dark sky friendly communities in Wicklow, as embodied in the County Development Plan.

Improvement in the light levels in the night-time environment within the Wicklow-Rathnew area will have impact on all three of the cross-cutting themes highlighted in the LDP namely Healthy Placemaking, Climate Change, and Economic Opportunity, and align more precisely with the goals of the CDP by protecting the wider environment.

In January 2019 the EU revised its Green Public Procurement (GPP) Criteria for Road Lighting and Traffic Signals, known as the GPP, to give attention to reducing light pollution. The revised EU GPP advises stakeholders on implementation once they decide to install new lighting. It covers new lighting installations, retrofitting of different luminaires, light sources, or controls in existing installations, and simple replacement on a like-for-like basis in existing installations. The GPP update employs an 'As Low As Reasonably Achievable' (ALARA) principle which is consistent with the Low Impact Lighting (LIL) standard promoted by German, Italian and Slovenian members of the European Environmental Bureau over the past decade. ALARA sets appropriate light levels for road lighting and traffic signals and is consistent with the overall EU approach to the precautionary principle of avoiding harm. There are allowances for reducing light levels when traffic flow is anticipated to be lower through the use of dimming, or the reduction of the hours of operation (trimming). Of course, ALARA comes with challenges since what is light pollution for one person can be acceptable or even desirable to another. Moreover, as the night has become brighter, people's conception of normal levels of light has changed and the precautionary principle approach requires that the lighting be justified, rather than the reverse. When the additional cost of installation, operation and maintenance is taken into account, a conservative approach to lighting also has real-world benefits for the council in terms of balancing budgets and reducing charges to its citizens, as well as a win for the environment.

The development plans for urban areas, particularly with the requirement for more housing and associated development, requires that lighting be explicitly incorporated in planning across Wicklow so that its impact on biodiversity and the environment can be mitigated, a vitally important goal if we are to develop a sustainable future across the county more generally. Wicklow can be one of the leaders in this future.

Current Light Levels in Wicklow-Rathnew

Quantitative satellite data show that the light from the Wicklow-Rathnew area emitted to space has decreased by approximately 14% since 2013, or roughly 1.3% per year. This improvement is likely due to the installation of LED public lighting, demonstrating an improvement in energy use with accompanying savings in terms of cost and carbon use. While this decrease is to be applauded, we note that these measurements do not represent the street level light level and the emission towards lower angles, particularly just sub-horizontal (in lighting parlance, at 80° – 90° relative to the lantern's nadir) which can cause glare and also travel out into the surrounding environment.

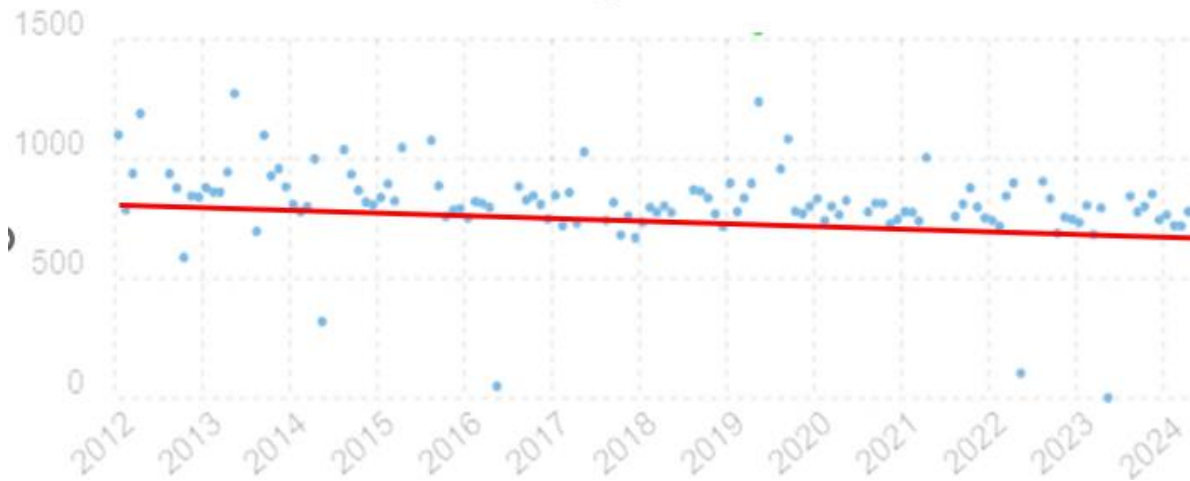


Figure 1. Satellite measurements of the light emitted to space from Wicklow-Rathdown showing a decrease over the past decade.

While marginal improvements are to be applauded, as noted in Dark Sky Ireland’s submission to the CDP, Wicklow town is the largest contributor in Wicklow to the skyglow visible over Glendalough, even more than the much closer village of Laragh (pop. 445). As Glendalough is likely to be incorporated in a future dark sky area, the lighting policy of Wicklow’s urban areas has a knock-on affect on rural plans, including tourism, sustainability and environment.

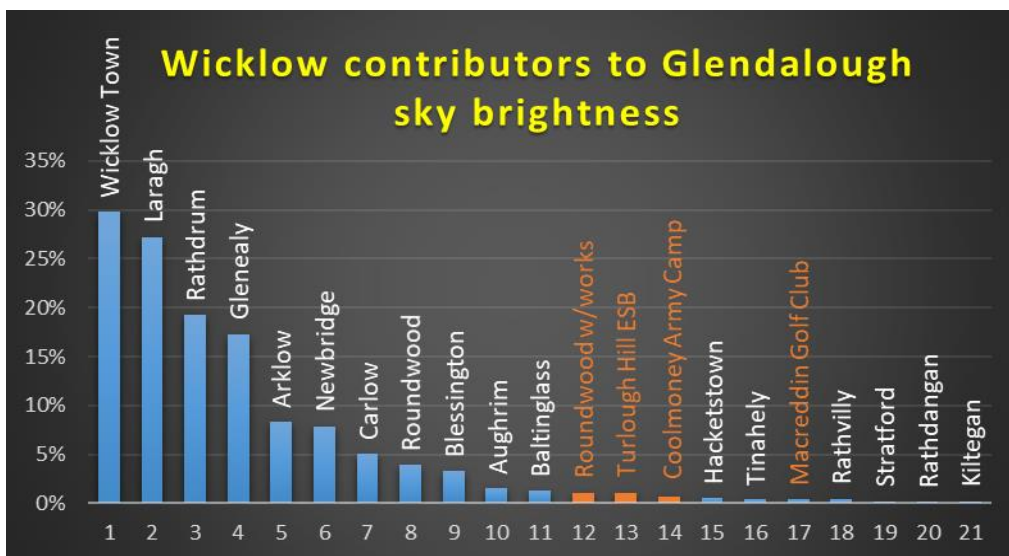


Figure 2. Estimates of the light contribution of individual locations to the sky brightness seen overhead at Glendalough. Note that Wicklow town has the largest impact of any location, despite being 20 km away, roughly four times further away than nearby Laragh.

As noted above, the reduction in light output from Wicklow-Rathdown is likely due to improvements in public lighting. As this light becomes increasing due to diffuse reflected light from dark road surfaces, this improvement can be easily overwhelmed by small amount of mis-directed direct light which increases the skyglow close to the urban area. Our estimates of light pollution at Glendalough

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are based on an assumed light distribution, which risks being overtaken by the increasing use of LED lighting, particularly that which involves light directed to the horizon.

Warmer lighting

The awareness of the disruptive nature of the blue content of lighting, the increased perception of glare from such sources, and the rapidly-improving efficiency of lower correlated colour temperature (CCT) has led to an increasing adoption of warmer-coloured lighting with a drive towards “warm white” lighting with a CCT of 3000 K or less, and this was also a stated outcome of the EU GPP review mentioned above. In the UK such lighting is becoming more the norm, particularly for residential areas, and even lower CCT lighting is likely to be progressively adopted. Warm white lighting is similar to the temperature of halogen light as used in shops to provide better colour discrimination and has safety benefits in low-visibility conditions and where older people (who suffer from eye conditions such as cataracts) are concerned. This light is also perceived as more “friendly” and is therefore worthy of consideration in terms of making the outdoor environment more welcoming, particularly with the growth in outdoor dining and the push to boost service industries and attracting people back into town centres post-Covid.

The national Road Management Office (RMO) provides for measure of local autonomy in terms of move to lower CCT lighting. As an example, Mayo has adopted 2700 K LED lighting on a number of routes, including on the N59 via Newport town to improve the environment as well as to reduce light pollution. In consultation with the NPWS, adoption of warmer lighting – including, potentially, amber lighting in more sensitive areas – as well as “trimming and dimming” of lighting levels should be considered for more environmentally-sensitive areas.

Environmentally sensitive areas

Light pollution has impacts on a wide range of living things, including plants and trees, animals, fish, insects and humans. Light spill from neighbouring light sources should be considered when lighting areas adjacent to residential and, especially, sensitive areas such as SEAs. Aside from specifically designated areas, thought should also be given to the wider impact, including on the aquatic environment (ponds, streams, rivers and coast). Light has been identified as potentially as important as climate change in terms of its impact on biodiversity, hence care of the night-time environment completes the 24-hour protection of Biodiversity and Green infrastructure.

Residential areas

The growth of residential areas provides the opportunity to think anew of the liveability of the local environment. Reduction in obtrusive light and glare and the reduction of the bluer forms of LED lighting can radically improve the quality of the night-time environment as well as reduce potential health impacts including sleep disruption, diabetes, obesity and cancers.¹ Under the EU’s precautionary principle, the potential impact of lighting installations which have a potential

¹The American Medical Association recognised in 2016 that the blue content of light at night - including outdoor lighting - might have a range of health effects and has published a recent summary: <https://tinyurl.com/49vj2nmr>

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longevity of two decades should be carefully considered and best practice applied. Similarly, post-midnight dimming produces a more restful environment and also has cost, energy, and carbon savings for the Council (and rate payers). A better, more welcoming, environment can improve community feeling and also has benefits for tourism as increasing white light levels can end up producing a generally more uniform appearance of town centres worldwide.

Night-time economy & tourism

Aside from the specific benefits to human health and environment, lower colour temperature lighting creates a warmer, more welcoming, ambience where people want to spend time, which can benefit the night-time economy and tourism by creating an area that stands out relative to more brightly lit, less welcoming town centres. As part of this process, a reduction in glare and indiscriminate overbright retail & commercial lighting is also required to produce a homogenous ambience.

Recommendations

The County CDP includes reference to light and dark sky areas, particularly with relevance to the development of a proposed dark sky area in 2027 and the development of dark sky towns. We commend such plans, but point out that while this may be seen as a rural-only issue, urban areas such as Wicklow-Rathnew also have an important part to play so need to be considered as part of an integrated whole.

Our specific recommendations are as follows:

- The use of “warmer” (lower CCT) lighting should be more generally adopted to improve the night-time environment. Such light has a lower blue content and is shown to be both less environmentally intrusive as well as less disruptive of human sleep and, potentially, health. In Newport, Mayo, lighting on the primary road has been reduced to a CCT of 2700 K, producing a more friendly environment, with dimming after midnight. Such changes have become more common in the UK, without any evidence of negative effects and positive opinions from local councils. Residential lighting with a CCT of 2200 K is planned for Newport in order to produce a more restful and healthy environment. Such lighting can also be beneficial to make the town more attractive to tourists now that brighter and bluer lighting is becoming the norm worldwide.
- The contribution of light emission at near-horizontal directions (for shielded public lighting, at 80-90 degrees to a lantern’s nadir position) as light in these directions is particularly deleterious to the surroundings and propagates into the wider environment, increasing light pollution. The use of light sources with primary emission near the horizontal, e.g. 2-D LED displays and/or retail & commercial signage should be restricted, with a curfew on light after midnight when activity is low. Sports lighting can also be tailored to restrict light spill into adjacent neighbourhoods, improving on-pitch levels with reduced energy. Existing floodlighting installations should be reconsidered and more strict planning requirements put in place to reduce the intensity and colour temperature. Historic buildings were not built to be illuminated at the intensities currently used (if at all), but lighting can be chosen which directs light downward to reduce the loss to the sky, and can also better demonstrate historic building texture, e.g. brick or stonework and detail. While historic and cultural

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buildings have been floodlit, there is little footfall after midnight, so any such floodlighting should be subject to a midnight curfew. Examples include churches, including St. Patrick's church and Black Castle (which lies beside an environmentally sensitive coastal area). In Newport, Mayo, improvements to the church floodlighting have led to significant improvements in the night-time environment, including for nesting swifts, and a better appreciation of the Harry Clarke stained glass windows, thus improving both cultural and heritage aspects.² Measurements show that this change, together with some road lighting improvements, has led to a drop in energy use and a 50% reduction in light emitted to space. Cultural and historical monuments in Wicklow-Rathdown can be similarly assessed and improved.

- LED advertising installations should be strictly controlled at the planning stage and the environment of the lighting should be considered, e.g. when in proximity to residential or environmentally sensitive areas.
- Searchlights should be banned as they are particularly bright and energy intensive, producing a bright white (generally moving) light and accounting for light waste direct to space, as well as directing it to locations far from the source. Locally, these lights disorient insects, impact on bats (protected species), and birds. These lights have impacts beyond their immediate location and affect not just nocturnal birds, but also daytime species which migrate along the coastline at night when predators are few.
- The design of the general environment should be considered when installing new lighting, as existing lighting, e.g. road lighting, may provide sufficient lit level for adjacent footpaths or cycleways, thereby removing the necessity to add additional light which, by its location, will also have an effect of neighbouring hedgerows or water courses.
- Late-night light from Council buildings should be reduced through a curfew on floodlighting and signage, other than that essential for night-time operation (e.g., Garda stations, emergency & essential health services), with light from office windows curtailed after the last staff leave – this policy has been adopted elsewhere and is the current practice in France.
- In summary: light what is necessary, for the minimum time, at a minimum level and with a warm continuum light source.

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²<https://www.mayodarkskypark.ie/news/newport-lighting-master-plan-launched/>