

# Dark Sky Ireland

## Toolkits and Guidelines For Local Authorities:

### TYPE & COLOUR

Local authorities should give careful consideration to the type of Light- Emitting Diodes (LED) lighting they use and consider the potential impacts that higher temperature blue-rich lighting has on ecology and on human health. New LED streetlights should have a correlated colour temperature of 2,700 kelvins or less as a default specification with exceptions justified, and all lights should be fully shielded. Fully shielded lights mean that light is not radiated above the horizontal from the light source.

### TESTING

Include lighting impacts in all Environmental Impact Assessments. Testing new street lighting 'in situ' (i.e. after-dark) before new schemes are rolled out in wider areas to ensure that it is the suitable for the task and does not cause a nuisance to residents.

### POLICY

Local authorities should have a policy to control light pollution in their Area/Local Development Plans. This policy should include identifying existing dark areas that need protecting.

### ZONES

Local authorities should consider adopting Environmental Lighting Zones into their lighting policy to ensure that the appropriate lighting levels are used in each zone, with very strict requirements applying in identified dark areas.

### TIMING

Set a preference for trimming (part-night lighting) schemes over dimming, in consultation with communities.

### PUBLIC EXAMPLES

All public buildings and car parks should lead by example; lighting only where and when necessary and using responsible, dark-sky friendly lighting. Lighting on new buildings should take account of light trespass, glare and with maximum correlated colour temperature of 2,700 kelvin.

### PROTECT

There should be a strong presumption against new lighting in naturally dark areas. With commitment to preserve and protect existing dark sky areas.

## Toolkits and Guidelines

### For Residential and Commercial Lighting:

Before installing new lighting fixtures, it is important to identify exactly what area you are intending to light, how often it needs to be lit and for how long the light needs to be turned on.

Mis-directed or excess light can often mask the area it is intending to illuminate, sometimes even assisting criminals to conduct their activities. However, lights that are correctly positioned without glare, can enhance property features and provide just the right amount of light at the right time.

Traditionally most people are used to buying light bulbs (lamps) with the light output graded in units of watts (W). Watts are a measure of electrical power, not light intensity. With a larger range of lamp types, a better measure is the 'lumen' (lm) output of a bulb as provided by the manufacturer. This is a measure of the total amount of light emitted from a source that lies in the most sensitive part of our vision. Dark Sky Friendly domestic lighting should be no more than 600 lumens and often around 150-200 is perfectly adequate.

The conversion table below identifies the approximate lumen output emitted from light sources of varying wattages. Note that more efficient lamps emit the same amount of light with less electricity used.

Approximate lumen output emitted from light sources of varying wattages

<b>BRIGHTNESS</b> (lumen)	<b>220+</b>	<b>400+</b>	<b>700+</b>	<b>900+</b>	<b>1300+</b>
<b>Standard Bulb</b> 	25 W	40 W	60 W	75 W	100 W
<b>Halogen Bulb</b> 	18 W	28 W	42 W	53 W	70 W
<b>CFL Bulb</b> 	6 W	9 W	12 W	15 W	20 W
<b>LED Bulb</b> 	4 W	6 W	10 W	13 W	18 W

**Light Bulbs** ← **< 600 is better**

Figure 1: Northumberland National Park Lighting Guidelines

## Floodlights and Security

Floodlights are expensive to run and very inefficient, shining light over a wide area rather than just where it is required and, in some cases, creating dark shadows in the illuminated areas. Home security lights are often 10-20 times the power required in a typical domestic setting. In most cases a 10w power is perfectly sufficient and lumens is the measure of brightness output.

## Garden Lights

Artificial light at night can impact nocturnal pollinators, mis-directing them away from their role in the eco-system and thus affecting biodiversity. The colour of outdoor lights is especially important and we recommend avoiding those with high blue-rich colour content (eg over 2,700kelvin).

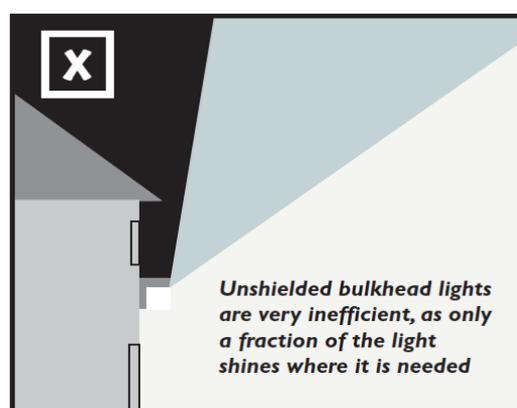


Use low level fully shielded lights to illuminate pathways with warm rich colour and ensure all outdoor /ornamental lights are not left on overnight.

Subtle fairy lights are typically low in luminosity and add to atmosphere, however, again we would recommend only opting for warm coloured light and avoiding blue/purple/bright white lights with a high correlated colour temperature.

## Fully Shielded Lights

Fully shielded lighting fixtures prevent light being wasted into the sky and are becoming increasingly popular due to their efficiency and because they direct light to its intended purpose only, allowing less power to be used. Fully shielded lights mean that light is not radiated above the horizontal from the light source.



Examples of Dark Sky friendly (fully shielded outdoor lights):



In both the above cases the lights illuminate the area intended, subtly and without glare. Both use very low wattage power and a welcoming warm light.

### Bulkhead Lights

Unshielded bulkhead lighting (wall packs) should be avoided, since the majority of the light actually shines into people's eyes, causing glare, which can actually make an area less visible and also light pollution and light trespass.

Examples of non Dark Sky Friendly unshielded lights commonly seen:



In both of the above cases, light escapes in all directions, creating glare, dark shadows and allowing light to travel behind its intended use. These types of lights are a common cause of neighbourhood complaint.

### **Commercial Premises**

Lighting on shop fronts and on commercial premises is more effective if directed downwards to illuminate window contents and the name of premises. Strip lighting is not recommended as it is often harsh and uninviting for the onlooker.

### **Recommendations for domestic/commercial lighting:**

- Low wattage, well-directed lights save money and do a better job.
- Home security lights – less than 600 lumens and maximum 150W (higher power creates more glare & dark shadows)
- Use fully shielded fixtures so light does not escape above the horizontal - Unshielded bulkhead lights, no matter how low their luminosity, should never be installed.
- LED Lighting – chose warm temperature colour tones “warm-white” (less than 2,700 kelvins)
- Consider using a Passive Infra Red (PIR) motion sensor light to illuminate an area only when needed.
- Angle the light downwards, make sure it only illuminates your property and does not trespass to your neighbour.
- Do not "over" light. This is a major cause of obtrusive light and is a waste of energy.
- Dim or switch off lights when the task is finished. Generally a lower level of lighting will enhance the night time scene required for safety and security.

## Toolkits and Guidelines For Heritage/Façade & Public Buildings:

The use of artificial lighting, particularly flood lighting, on historical heritage buildings can be excessive and a significant contributor to light pollution and light waste. In some cases the architectural beauty of the buildings design is literally overshadowed by excessive lighting and some poorly placed light fittings can have an adverse impact on protected wildlife species such as swifts and bats.

Ornamental lighting of public buildings, bridges, monuments and public spaces must prevent light from falling beyond the area intended to be lit, and should never be directed skywards. Architecturally sensitive tones such as passive, warm coloured lights should be considered before blue-rich white lights, and only where deemed necessary.



Figure 2: Well designed heritage lighting

Lights should be adapted to the size and location of the object intended to be lit. If necessary, visors, shields, deflectors and cowls should be installed to guarantee lighting is limited to only the area of focus (see illustration below). The use of floodlights on heritage buildings is not recommended, not only do they bleach the façade and architecture, but they often dazzle visitors exiting the building with excess glare.

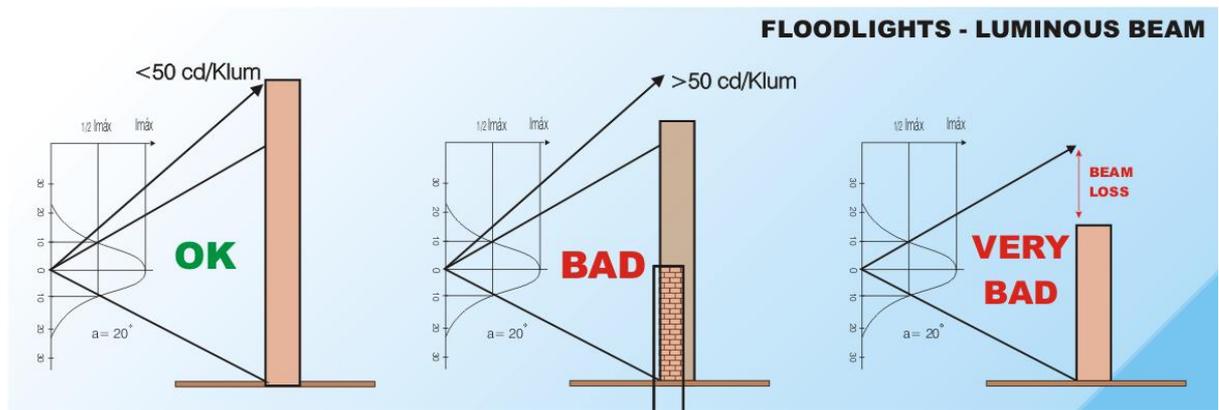


Figure 3; Designing ornamental & Decorative Lighting

### Considerations for Lighting Heritage /Public Buildings

- Avoid flood lighting buildings. Light should be designed as part of an architectural feature and used creatively.
  - Consider the distance and general direction from which the object or building is typically observed.
  - The light source (eg fixture bulb) should not be visible if light is installed correctly to enhance the features of a building.
  - Avoid potential inconveniences to other users of the surrounding area (intrusive light, glare).
  - Consideration for Wildlife (eg. bats, moths, swifts and other species impacted by artificial lighting).
  - Ornamental lighting position, aiming and optics.
  - Lighting levels according to recommendations and the colour of the object to be lit.
  - Energy saving, timers and installation switch-off.
  - Light fixtures installed near rivers and waterways will need special attention to take account of water reflection and the impact of light on marine life.
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Thank you for taking the time to review this information, we hope you have found it useful. Our group contact and document reference materials are below:

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Kerry Dark Skies Group  
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**Sources:**

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