

# Supplementary Guidance: Dark Sky Lighting



Image courtesy of The Scottish Dark Sky Observatory – Dr James Silvester

*south*  
**AYRSHIRE**  
COUNCIL

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Developed in partnership with





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## Supplementary Guidance: Dark Sky Lighting

### Introduction

#### What is the Dark Sky Park?

The Galloway Forest Park received Gold Tier Dark Sky Park Status from the International Dark Sky Association in 2009 due to the exceptional quality of the night sky. The IDA is a non-profit organisation who are an internationally recognised authority on light pollution. Their sole purpose is to combat light pollution and protect our night skies for present and future generations. Dark Sky Parks can be either publicly or privately-owned spaces protected for natural conservation that implement good outdoor lighting and provide dark skies information for residents and visitors. This award highlights how clear the night environment is in the Park and gives international recognition to its unique qualities. Due to the continuing increase in light pollution nationally, it is estimated that 80% of the UK's population will never see a true dark sky. The Dark Sky Park is therefore an important and unique natural resource that should be protected from light pollution.

The Dark Sky Park provides a tourist attraction for the south west of Scotland, particularly in winter months due to its unique and clear astronomy viewing opportunities. There is a considerable opportunity to boost tourism further and planning policies in the LDP encourage sustainable and sympathetic development to provide facilities for tourists and strengthen and expand rural businesses within the Park and an area of 10 miles outwith of the Park, referred to as the 'Transition Zone'.

The Park is home to a large variety of nocturnal wildlife species which thrive on the intrinsically dark landscape. Studies have found that human health and ecosystems can be adversely affected by excessive artificial lighting. Maintaining the quality of the Dark Sky Park will therefore have significant wider benefits for our natural environment.

Lighting and the power it uses is a significant contributor to the carbon emissions we create. The Scottish Government is encouraging reduction of energy use and promoting more energy efficient lighting to reduce Scotland's overall carbon emissions. A reduction in light usage and an emphasis on using the correct type of lighting for a particular task will help reduce light emissions and help the south west contribute to targets for reducing carbon emissions.



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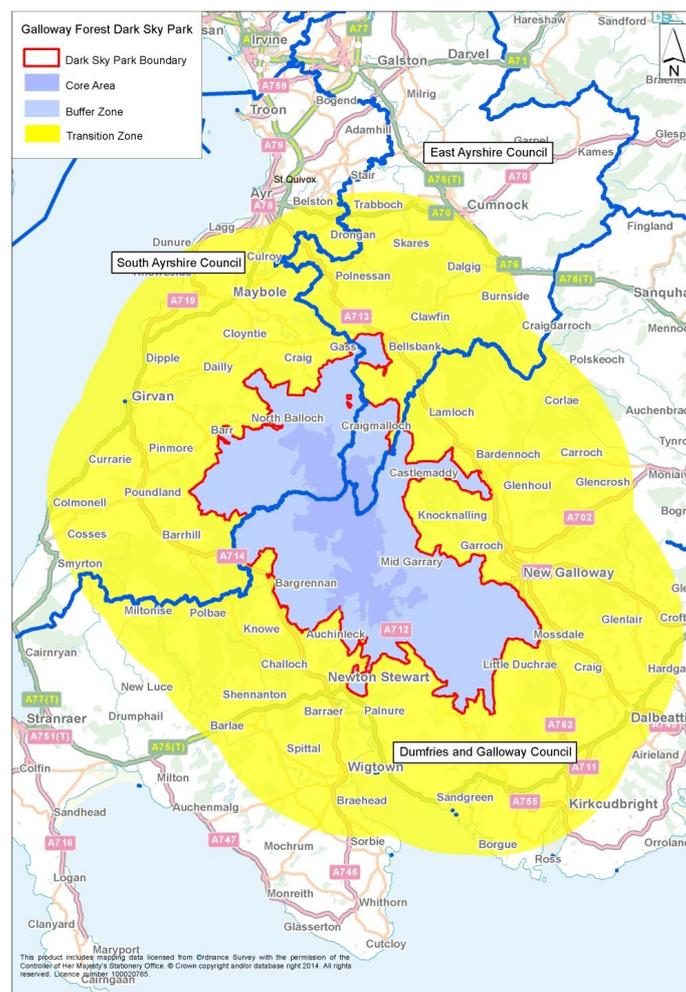
Image courtesy of The Scottish Dark Sky Observatory – Dr James Silvester

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The purpose of this Dark Skies policy within South Ayrshire Council's Local Development Plan (LDP) is to protect the dark sky quality and, therefore the status of the Park, from development which would result in light spillage or lighting levels that would adversely affect that quality or status, as highlighted within the diagram in Poorly Managed Lighting of the Dark Sky Environment section.

### Policy

#### Where is the Dark Sky Park (DSP) and Transition Zone?



Dark Sky Transition Zone

#### Dark Sky Park

The Dark Sky Park boundary is highlighted in red on the Plan and is made up of a core area (darkest sky) and a buffer area. The Dark Sky Park includes land mostly within the Galloway Forest Park and the Craigengillan Estate which contains The Scottish Dark Sky Observatory. The area extends to 75,743 hectares and has few properties or businesses within its boundaries. Therefore any light within the area, depending on the topography, can be particularly conspicuous even from several miles away. Where necessary, a condition to ensure lighting is Dark Sky compliant will be applied to planning permissions granted for developments in the Dark Sky Park.

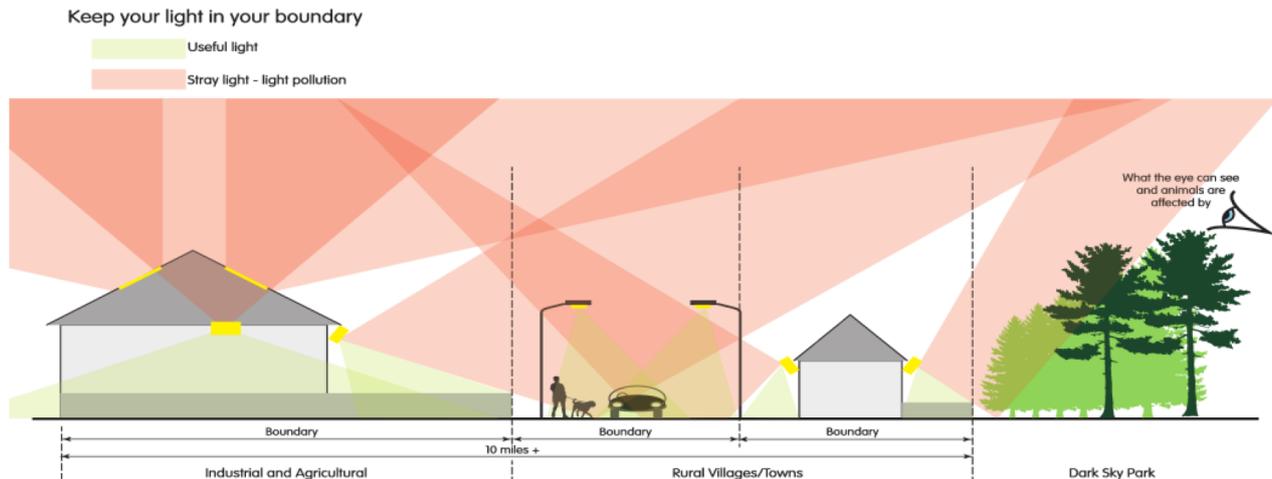
#### Transition Zone

Outwith the Dark Sky Park, a Transition Zone has been identified with a radius of 10 miles from the Park's boundary. This transition zone is advisory and intended to protect the dark skies night environment within the Dark Sky Park from light pollution emanating from this Zone. Lighting in this transition zone can directly impact

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on the quality of the dark sky within the Park, therefore advisory notes will be issued to applicants for planning permissions within this Transition Zone to encourage all external lighting to be designed and installed to be “dark Sky friendly”. For example, a farm complex with “dark sky friendly” lighting may have no impact on the quality of the night sky, but a small house with poorly designed lighting could have a significant impact across a wide area.

### Poorly Managed Lighting of the Dark Sky Environment



Lighting which is Dark Sky Friendly will not only prevent light pollution but could also reduce energy wastage, which can offer significant cost savings to businesses and individuals.

The Scottish Government are encouraging reduction of energy use and promoting more energy efficient lighting to reduce overall carbon emissions. A reduction in light usage and an emphasis on using the correct type of lighting for a particular task will help reduce light emissions and help south west Scotland contribute to targets for reducing carbon emissions. Furthermore, good lighting should reduce individuals' and businesses' running costs in the longer term and help reduce their carbon footprint.

### New development within the Dark Sky Park that requires planning permission and signage with illumination that requires advertisement consent

The Council will support the status of the DSP by requiring external lighting associated with development proposals or illumination associated with external signage proposals to have no significant adverse impact on the overall night sky and natural environment. This SG sets out the type, level of technical and supporting information that is required to be submitted with a planning application, so as to enable a proper assessment of the potential impacts of proposals on the Dark Sky Park (DSP).

All development proposals falling within the Dark Sky Park boundary and requiring planning permission will be required to include the following information for any external lighting associated with an application proposal:-

- An explanation of the purpose of the external lighting
- A layout plan highlighting location of light(s) within the application site with beam orientation indication for each elevation
- Light spillage analysis for each external light
- Light design type- details of light fitting and casing (including details of any cowling to prevent spillage of light above the horizontal)
- Mounting Height
- Light angle
- Luminaires
- Hours when lighting shall be in operation

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In some instances additional information may be sought to assist assessment such as an independent consultant's lighting assessment of the proposals if necessary.

When planning permission or advertisement consent is approved within the Dark Sky Park a condition will be imposed to ensure that external lighting / illumination is implemented in accordance with the scheme as submitted and that any altered scheme or additional lighting receives the prior written approval of the planning authority. Example conditions can be found in Appendix 1.

### New Development and Illuminated signage within the Transition Zone / Permitted Development and Retro-light fitting

Where there are developments proposals that require planning applications and signage requires advertisement consent in the Transition zone the Council will encourage the external lighting / illumination proposals to be "dark sky friendly" and will issue advisory notes with permissions.

Within the Transition Zone, any new external lighting should be "dark sky friendly" where possible, in order to help safeguard and enhance the quality of the Dark Sky Park. With correct lighting, even proposals very close to the Park boundary may have no impact on the quality of the night sky but a small house several miles from the park with poorly designed lighting could have a significant impact across a wider area.

Where planning permission is not required, individuals and businesses are encouraged to consider the questions in section 7 and the impact of their new and replacement lighting on the Park and the wider night time environment and implement lighting proposals that adhere to the Good Lighting Practice Guidance in Section 8.

This will help support the success of the Dark Sky Park, benefit the natural environment and enhance this local tourism asset which will in turn boost the local economy of the South West of Scotland.

An example of the Advisory note which will be attached to planning permissions within the Dark Sky Transition zone can be found in Appendix 2.

### Checklist for External Lighting

In most instances, external lighting will not require planning permission, for example, where it is associated with a domestic dwelling house. The Planning Service would be pleased to assist with any queries as to whether planning permission is required.

Although planning permission may not be required, this supplementary guidance encourages the use of low emitting external lighting within the Park and Transition zone.

It is recognised that external lighting is important for undertaking everyday tasks and therefore it is not feasible to have no lighting within the Park. Rather, lighting should be designed to ensure the best solution for the purpose required and prevent unnecessary light pollution which could impact, adversely on the DSP status.

Within the DSP and transition zone the following points should be considered when choosing or designing external lighting or considering replacing external lighting.

A)	Is the proposed lighting necessary at this location? Could the development proceed without external lighting? Are there alternative measures which may be less intrusive?	Yes/ No
B)	Will there be any upward light pollution from the proposed light?	Yes/ No
C)	Can the proposed light be turned off when not required?	Yes/ No
D)	Is/Are the proposed wattage/Luminaires the minimum required to serve its/their intended purpose?	Yes/ No

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E)	Is the proposed lighting in the correct location and height to light the required area?	Yes/ No
F)	Does the proposed lighting impact on other properties or user groups?	Yes/ No

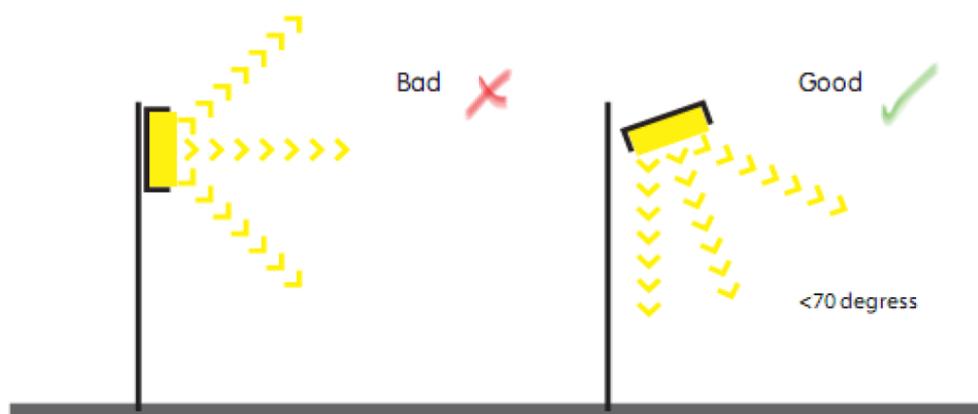
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### Good Lighting Practice Guidance

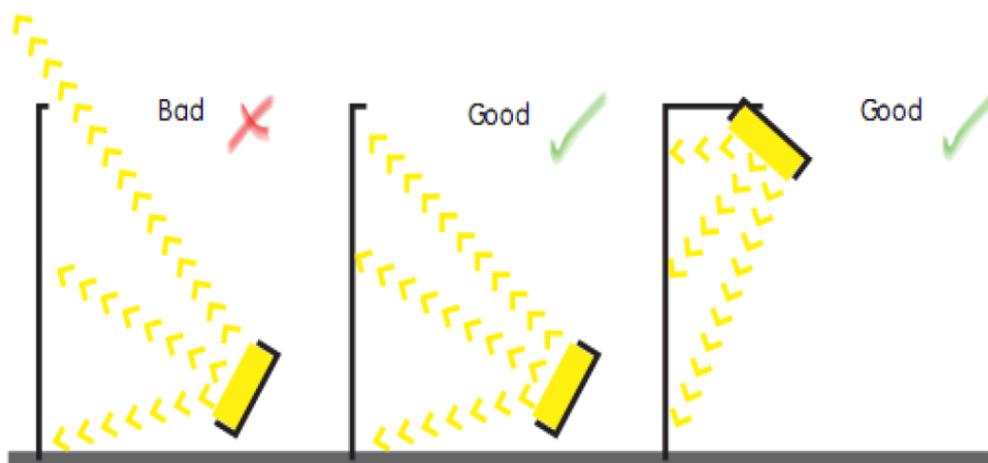
When selecting external lighting and preparing information to accompany a planning application, the following key aspects should be taken into account:-

- Light Angle- The light angle of a light is the angle at which the light is distributed or emitted. The light **angle** you use for any **light** fitting can make the difference between an appropriately lit object or space and insensitive **lighting**, which lights a wider space causing light pollution and energy waste. Light angles can be reduced through fitting shields and hoods to ensure only the required area is lit.

#### Luminare aiming angles



#### Facade Illumination



- Light cover- Only flat glass covers should be used to prevent the light spreading over a wider angle than is necessary.
- Location of light fitting–The height and position of the light fitting on a building or post in relation to the space the lighting is trying to illuminate is critical to avoid light spillage.
- Installation of light fitting – correct angle and location to ensure no light pollution- light spillage, sky glow or light glare.
- Lighting proposed should be the most efficient taking into account cost, energy use and colour rendering.
- Additional good practice guidance can be found in Appendix 3

Further useful information on the Dark Sky Park and lighting design can be found in Appendix 4.

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### Appendix 1 - Conditions

#### Condition relating to general development

Lighting associated with the proposed development shall be installed and operated in full accordance with the submitted layout and specification hereby approved.

The approved scheme shall not be altered or other lighting installed without the prior written approval of the planning authority.

**Reason:** In order to ensure that external light(s) do not adversely impact upon the interests of the Dark Sky Park and to safeguard this national tourism asset.

#### Condition relating to advertisement signage

The illumination of signage hereby approved shall be installed in compliance with the submitted and approved designs and sited in the approved locations. The approved scheme shall not be altered or other lighting installed without the prior written approval of the planning authority.

**Reason:** In order to ensure that any lights/ illumination associated with signage does not adversely impact upon the Dark Sky Park and safeguard this national tourism asset.

Due to the height of some wind turbines and meteorological masts, the Council has a specific condition for these types of developments to reduce their impact on the Dark Sky Park, where required to ensure aviation safety.

#### Condition relating to Wind turbines/Meteorological Masts:

Where it has been demonstrated to the satisfaction of the planning authority that aviation obstruction warning lighting needs to be installed on wind turbines or meteorological masts within the DSP and that such lighting will have no significant adverse impact on the dark sky quality of the Park, precise details of the proposed lighting shall be submitted to, and approved in writing by, the planning authority, before the turbines/masts are erected. Thereafter, the lighting shall be installed and operated in accordance with the approved layout and specification and retained in situ in an effective operating condition for the lifetime of the development.

### Appendix 2 - Advisory Note

The Council may attach an Advisory Note at pre-application stage and with planning permissions to ensure developers take cognisance of this supplementary guidance.

It is recommended your development is designed in accordance with relevant advice contained in "The Dark Sky Park Supplementary Guidance".

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### Appendix 3 - Good practice guidance

The table below provides a series of recommendations for lighting practice within the different zones of the DSP and the Transition Zone surrounding the Park. These guidelines will be taken into account for any lighting installation that forms part of a planning application and should also be followed for lighting that does not require planning permission to ensure no adverse impact on the quality of the Parks's night environment. These zones were developed by the Institution of Lighting Professionals (ILP), which is the recognised body for lighting in the UK.

Location and ILP Indicator	Dark Sky Park		DSP Transition Area
	DSP Core Area E0	DSP Buffer Area E1	
Agricultural buildings/historic buildings/Art structures	<b>No external lights</b>	<ul style="list-style-type: none"> <li>Fully cut off lights.</li> <li>Additional shielding</li> <li>Passive Infrared (PIR) systems or on/off switches.</li> <li>Switched off after work complete.</li> <li>Follow good design practice check list.</li> <li>No up lighting of buildings or structures or sky beams</li> <li>After 22:00hrs switch off</li> </ul>	<ul style="list-style-type: none"> <li>Fully cut off lights.</li> <li>Additional shielding</li> <li>PIR systems or on/off switches.</li> <li>Always switch off after work complete.</li> <li>Follow good design practice check list.</li> <li>No up lighting of buildings or structures</li> <li>Max 3,500 lumens after 22:00hrs</li> <li>After 22:00hrs switch off or reduce light illumination</li> <li>No sky beams</li> </ul>
New dwelling houses and extensions to dwelling houses	<b>No external lights</b>	<ul style="list-style-type: none"> <li>After 22:00hrs switch off or reduce light illumination</li> <li>No up lighting of buildings or structures</li> <li>Lights to be on PIR/switched off when you are not outside, like lights inside the house</li> <li>See diagrammatic tables for guidance on good illumination.</li> </ul>	<ul style="list-style-type: none"> <li>After 22:00hrs switch off or reduction in light illumination</li> <li>Lights to be on PIR/switched off when you are not outside, like lights inside the house</li> <li>No up lighting of buildings or structures</li> <li>See diagrammatic tables for guidance on good illumination.</li> </ul>
Business & Sport development	<b>No external lights</b>	<ul style="list-style-type: none"> <li>Follow Good Design Practice – 20 Point Checklist</li> <li>Fully Cut off lights with additional shielding</li> <li>PIR systems or on/off switches.</li> <li>Switched off after work complete.</li> <li>Max 3,500 lumens after 22:00hrs</li> <li>No up lighting of buildings or structures</li> <li>No sky beams</li> <li>Use infrared if security is an issue</li> </ul>	<ul style="list-style-type: none"> <li>Follow Good Design Practice – 20 Point Checklist</li> <li>Fully cut off lights and additional shielding.</li> <li>PIR systems or on/off switches.</li> <li>Switched off after work complete.</li> <li>Max 3,500 lumens after 22:00hrs</li> <li>Follow good design practice check list.</li> <li>No up lighting of buildings or structures</li> <li>No sky beams</li> <li>Use infrared if security is an issue</li> </ul>
Wind farm development (turbines and anemometer masts)	<b>Maximum of infrared lights</b>	<ul style="list-style-type: none"> <li>Maximum of infrared lights</li> </ul>	<ul style="list-style-type: none"> <li>Preferable for maximum of infrared lights to be used</li> </ul>

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### Appendix 4 - Useful Links

It is strongly advised that for full details of the Dark Sky Park and the impacts of light pollution you should follow link to the Forestry Commission Scotland website and the other websites below at [www.forestry.gov.uk/darkskygalloway](http://www.forestry.gov.uk/darkskygalloway)

In conjunction with this the Campaign for Dark skies has produced a lighting guide which can be downloaded at [www.britastro.org/dark-skies/guidelines.html](http://www.britastro.org/dark-skies/guidelines.html)

Scottish government links: [www.scotland.gov.uk/Publications/2007/03/14164512/0](http://www.scotland.gov.uk/Publications/2007/03/14164512/0) "Controlling Light pollution and Reducing Lighting energy consumption" (this contains the 20 point check list)

Institute of Lighting Professionals web links on security & other related topics:  
<https://www.theilp.org.uk/resources/free-resources/>

#### Local Development Plans

South Ayrshire Council's Local Development Plan  
[Local Planning Service South Ayrshire Council](#)

Dumfries and Galloway Council's Local Development Plan  
[Dumfries and Galloway Council: Local Development Plan](#)

East Ayrshire Council's Local Plan  
[Development plans and policies](#)

#### Other relevant websites

Ministry of Defence website in relation to low flying  
[www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/AirSafetyandAviation/LowFlying/](http://www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/AirSafetyandAviation/LowFlying/)

Dark Sky Scotland  
[www.darkskyscotland.org.uk](http://www.darkskyscotland.org.uk)

Campaign for Dark Skies  
[www.britastro.org/dark-skies](http://www.britastro.org/dark-skies)

International Dark-sky Association  
[www.darksky.org](http://www.darksky.org)

Artificial Light at Night (ALAN) Research Literature Database  
[www.darksky.org/resources/research/alan-database/](http://www.darksky.org/resources/research/alan-database/)

Text only versions of this publication are available in Polish, Chinese and Urdu.

For further Information please contact:

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