



DUMFRIES AND
GALLOWAY COUNCIL

**Local
Development
Plan**

**Supplementary
Guidance**

Adopted 5th AUGUST 2015



*Dark Sky Park
Friendly Lighting*



DUMFRIES AND GALLOWAY LOCAL DEVELOPMENT PLAN SUPPLEMENTARY GUIDANCE

Dark Sky Park Friendly Lighting

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1. Introduction

1.1 This Supplementary Guidance (SG) provides guidance on good lighting practice within the Galloway Forest Dark Sky Park (DSP). It provides further details on the implementation of LDP Policy ED12: Dark Sky Park and aims to ensure that external lighting is designed and installed correctly in order to protect the quality of the dark sky within the park.

1.2 It sets out the type and level of technical information that should be submitted to Dumfries and Galloway Council to enable a proper assessment of the potential impact on the DSP of lighting associated with development proposals. Example conditions relating to the control of lighting are also included in the SG which may be attached to planning permissions where considered appropriate.

1.3 In some circumstances, external lighting will not require planning permission and those installing external lighting within the DSP should seek confirmation from the Council whether this is the case. Even if planning permission is not required, or if existing fixtures are simply being replaced, those installing the lights are strongly encouraged to read this guidance and adopt Dark Sky-friendly lighting practice. Replacement of existing lights or the installation of new ones offers an opportunity to introduce good lighting practice which will enhance the night environment and reduce energy wastage. In addition, the Council also support good lighting practice beyond the DSP and encourage those considering installing lighting outwith this area to refer to the non-statutory guidance on good lighting practice which is also available on the Council's website at www.dumgal.gov.uk/LDP.

1.4 The guidance reflects the policy advice given in Scottish Planning Policy and the support given to the DSP in National Planning Framework 3. The SG has been prepared in collaboration with the Forestry Commission, along with South and East Ayrshire Councils (as parts of the DSP fall within their remit).

1.5 Dumfries and Galloway Council will monitor the effectiveness of the SG and review its content at regular intervals to ensure that it remains relevant and compliant with Scottish Government policy and advice and any relevant strategies adopted by the Council.

Local Development Plan policy context

ED12: Dark Sky Park

The Council supports the designation of the Galloway Forest Dark Sky Park, and will presume against development proposals that produce levels of lighting which adversely impact on the Dark Sky status of the Park. Development proposals will require to comply with supplementary guidance on lighting for development proposals within the Galloway Forest Dark Sky Park.

2. What is the Dark Sky Park and why is it important to adopt good lighting practice within it?

2.1 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 in this area. This award demonstrates 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 pollution will never see a true dark sky. The DSP is therefore an important and unique natural resource that should be protected.

2.2 DSP status helps attract tourists to the region, particularly in winter, helping to extend the region's visitor appeal beyond the summer months. A report in 2013/14 indicates that the Park has made a direct contribution of over £500,000 a year in additional income to the local economy. There remains a considerable opportunity to further boost DSP-related tourism so sustainable and sympathetic development is encouraged to provide facilities for tourists and strengthen and expand rural businesses.



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

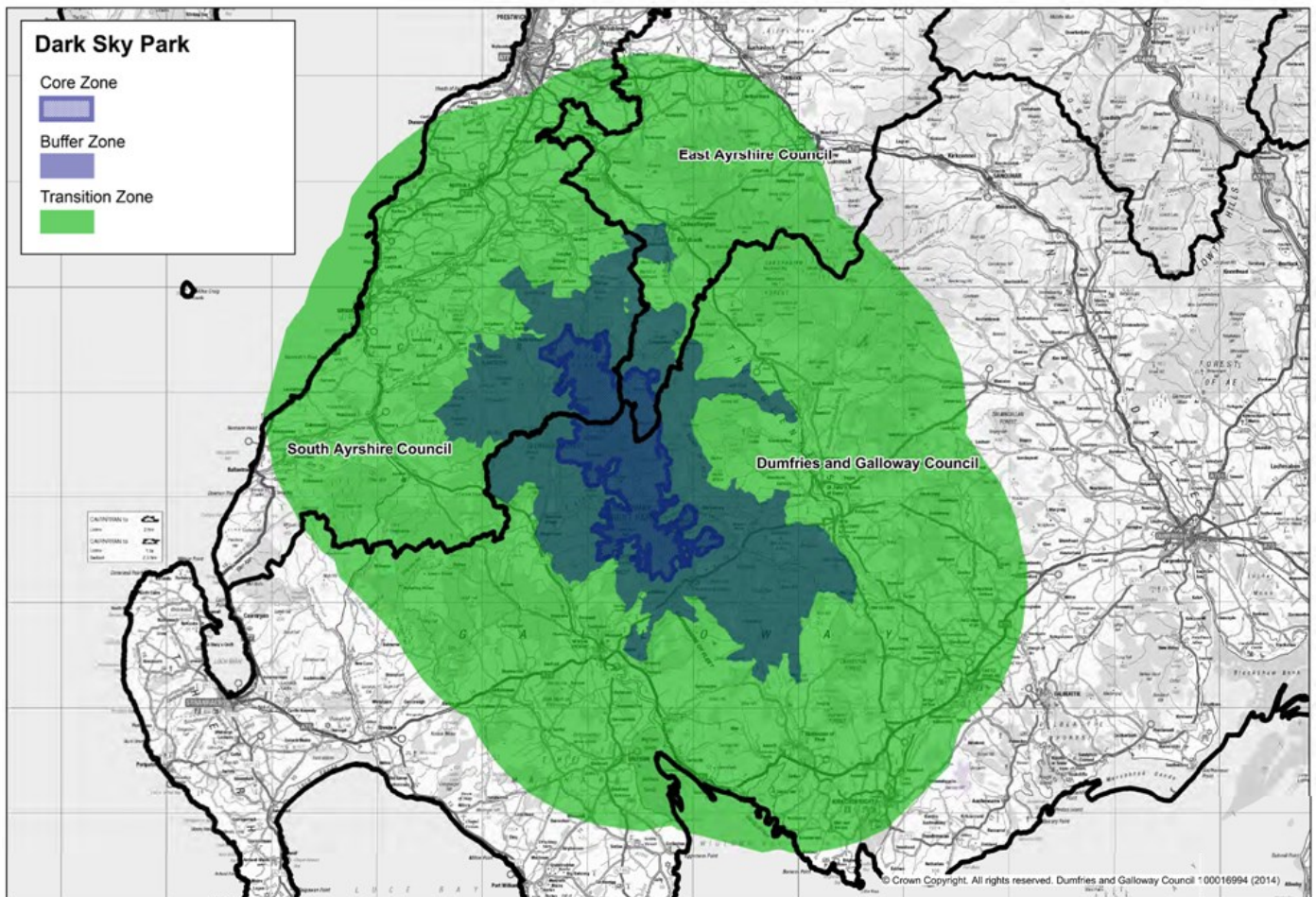
2.4 Lighting and the power it uses is a significant contributor to the carbon emissions we create. Lighting which is Dark Sky-friendly will not only prevent light pollution but could also reduce energy wastage, which can offer significant cost savings to businesses and individuals. The Scottish Government is 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.

3. Dark Sky Park and Transition Zone



Dark Sky Park

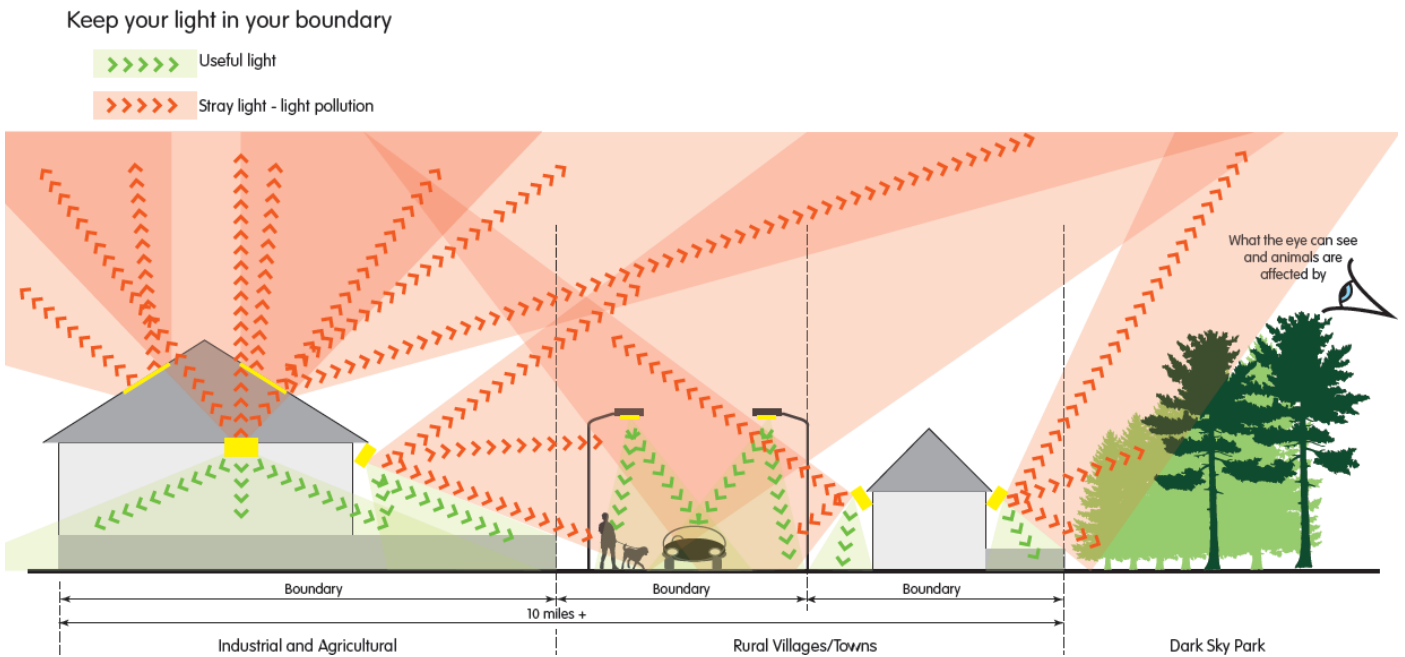
3.1 The DSP itself comprises a Core and Buffer area and includes land mostly within the Galloway Forest Park, as well as Craigengillan Estate which contains the Scottish Dark Sky Park Observatory. The Park covers an extensive 75,743 hectares and straddles three local authority areas (Dumfries and Galloway, East and South Ayrshire). It has few properties or businesses within its boundaries and, therefore, any light within the area (depending on the topography) can be particularly conspicuous.

Transition Zone

3.2 Outwith the DSP, a Transition Zone has been identified within a radius of 10 miles of the Park's boundary. Lighting within this zone can directly impact on the quality of the dark sky within the Park. Therefore it is desirable that all external business and domestic lighting being installed within this zone is dark sky friendly. With the correct lighting, even relatively large developments should not have a detrimental effect on the night sky but with poorly designed lighting, even the smallest house could have a significant impact across a wide area.



Diagram Indicating the Effects of Poorly Managed Lighting



4. Initial Checklist for External Lighting

It is recognised that external lighting is important for undertaking everyday tasks and therefore it is not the intention to insist on no lighting within the park. Rather, this SG aims to ensure the best lighting solution for the purpose required and to prevent unnecessary light pollution which could impact the DSP award. Within the DSP, the following points should be considered when choosing or designing external lighting or replacing existing external lighting:

1. Is the proposed lighting necessary at this location? Could the development proceed without external lighting? Are there alternative measures which may be less intrusive?
2. Will there be any upward light pollution from the proposed light?
3. Can the proposed light be turned off when not required?
4. Is the proposed wattage / lumens the minimum required to serve its intended purpose?
(lumens - denoted by *lm* - are a measure of the total amount of visible light, to the human eye, from a light source; the higher the lumen rating, the "brighter" the light will appear)
5. Is the proposed lighting in the correct location and height to light the required area?
6. Does the lighting impact on other properties or user groups?



5. New Development which requires planning permission within the Dark Sky Park

5.1 Development within the DSP will only be approved if any lighting proposals associated with them are designed to have no adverse impact on the overall night sky and natural environment and comply with the DSP lighting guidance set out in this SG.

5.2 All development proposals which fall within the boundaries of the DSP and which may have potential adverse impacts upon its status may be required to include the following information to enable a proper assessment of their planning application:-

- Justification for lighting;
- Layout Plan with beam orientation indication for each elevation (if applicable);
- Lighting type - details of light fitting and casing (including details of any cowling to prevent spillage of light above the horizontal);
- Mounting Height;
- Light Angle;
- Hours of lighting operation.

5.3 In some instances additional information may be sought by the Council to assist assessment. Where appropriate, when planning permission is approved for development within the DSP, conditions may be imposed to ensure that lighting does not have unacceptably adverse impacts upon the DSP. Example conditions can be found in [Appendix 1a](#).

6. Transition Zone / Permitted Development and retro-light fitting

6.1 Within the Transition Zone, new external lighting should be Dark Sky-friendly where possible, in order to help safeguard and enhance the quality of the adjacent DSP. With the correct lighting, even proposals which

are very close to the Park boundary may have no impact on the quality of the night sky but with poorly designed lighting, even development several miles from the edges could have a significant impact. An example of the Advisory Note which will be attached to planning permissions within the DSP Transition Zone can be found in [Appendix 1b](#).

6.2 For those proposals where planning permission is not required, whether in the DSP or Transition Zone, individuals and businesses are encouraged to consider the impact of new and replacement lighting on the DSP and the wider night time environment and implement lighting proposals that adhere to good lighting practice as set out below.

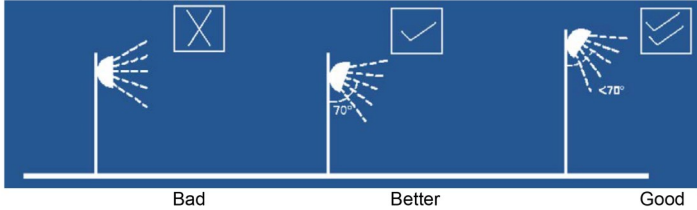
7. Good Lighting Practice Guidance

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

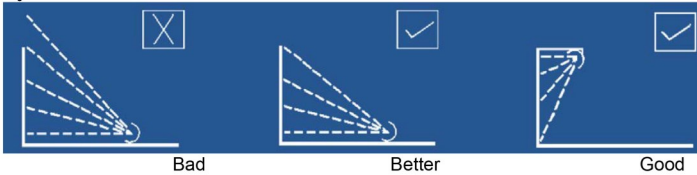
- Light Angle – this is the angle at which the light is distributed or emitted. The angle used for any light fitting can make the difference between an appropriately lit object / space and insensitive lighting, which illuminates a wider than necessary space causing light pollution and energy wastage. Light spread can be reduced by fitting shields and hoods to ensure only the required area is lit.
- Light cover - only flat glass covers should be used to prevent the light spreading over a wider angle than is necessary and installed horizontal for source lumens > 1,000 within the DSP and > 3,000 lumens in the Transition Zone;
- 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 ensure no light spillage;
- 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 2](#) which makes reference to a more detailed 20 point checklist which can be found in a guide prepared by the Scottish Government.



Luminaire aiming angles



Façade illumination



7.2 Further useful information on the Dark Sky Park and lighting design, including a link to the Scottish Government’s lighting guide, can be found in Appendix 3.

Appendix 1a: Example conditions to be attached to relevant planning permission

Condition relating to general development:

That no development in respect of this planning permission shall take place unless details of any proposed external lighting to be installed within the application site have been submitted to and approved in writing by the planning authority. Such lighting shall be compliant with the lighting advice as contained in the Dark Sky Park Friendly Lighting Supplementary Guidance. Thereafter, all the external lighting shall be installed in full accordance with such details as may be so approved. Should any external light or lights within the application site be shown to cause unacceptable light levels or spillage, the planning authority shall be allowed to require the said light or lights to be either removed, relocated or realigned as appropriate, for the lifetime of the development.

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 Wind turbines / Meteorological Masts:

That no development in respect of this planning permission shall take place unless and until precise details of aviation lighting to be installed on the mast have been submitted to and approved in writing by the Council as planning authority (in consultation with the Ministry of Defence). The said lighting shall be 25 candela equivalent brightness infra-red lighting at the highest practicable point. The mast hereby granted planning permission shall not be erected or brought into operation unless the required aviation lighting as so approved has been installed on the mast. Thereafter, the said lighting shall thereafter be retained in situ for the lifetime of the development in an effective operational condition.

Reason: In order to ensure that external light (s) do not adversely impact upon the interests of the Dark Sky Park, whilst safeguarding aviation interests and public safety.

Appendix 1b: Example advisory note for relevant planning permissions in the DSP transition Zone

Advisory Note Dark Sky Park Friendly Lighting

It is recommended your development is designed in accordance with relevant advice contained in the Dark Sky Park Friendly Lighting Supplementary Guidance.



Appendix 2: Detailed Considerations for New and Replacement Lighting

The table and illustrations below provides a series of recommendations for lighting practice within the different zones of the DSP. 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 which does not require planning permission. These zones cover the entire UK and have been developed by the Institution of Lighting Professionals (ILP), which is the recognised body for lighting in the UK. The zones relevant to this SG have been defined as follows:

ILP Indicator	Night Time Environment	Typical Environment
E0	Designated Dark Sky Park	This area is presently unique to the Galloway Forest Dark Sky Park and relates to the very core of the Park
E1	Intrinsically dark landscapes	Predominantly rural, lightly populated areas which already have a good nocturnal night time dark habitat, which should not be diminished. Includes some smaller settlements
E2	Areas of low district brightness	Rural towns and villages, where there is recognition that light is required for day to day business and life. E2 zone ends where the street lighting ends and E1 begins. Restrictions still apply and certain lights should not be used. Most of the towns and villages surrounding the DSP will fit in to this

The table overleaf lists a number of lighting guidelines for these zones within the DSP and Transition Zone:



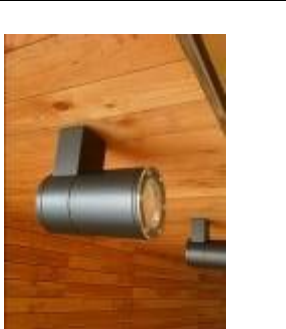
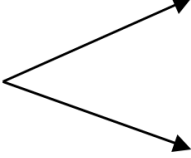



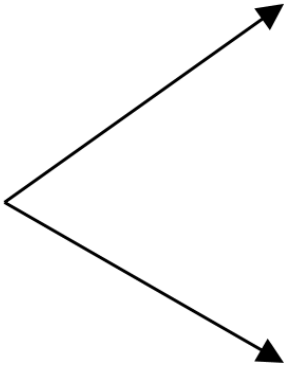

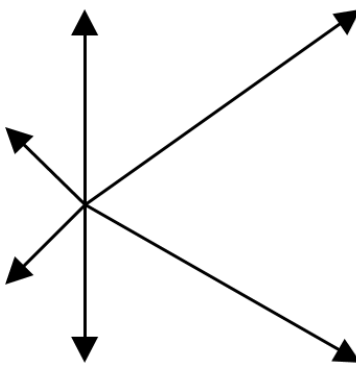
		Dark Sky Park		
Location and ILP Indicator	DSP Core Zone EO	DSP Buffer Zone E1	DSP Transition Zone E1	DSP Transition Zone E2
Agricultural Buildings / Historic Buildings / Art Structures	No Lights	Fully cut off lights (fully cut off the lamp and reflector is positioned well up in the fitting, the glass protection is completely flat and installed with the glass horizontal); Additional shielding PIR (PIR (passive infrared) detect motion and only switch on when activated by movement, they remain switched off if no motion is detected) systems or on / off switches; Switched off after work complete; Follow good design practice checklist; No up-lighting of buildings or structures or sky beams; After 22.00 switch off.	Fully cut off lights; Additional shielding; PIR systems or on / off switches; Always switch off after work complete; Follow good design practice check list; No up-lighting of buildings or structures; Max 3,500 lumens after 22.00 hours; After 22.00 hours switch off or reduce light illumination; No sky beams.	Fully cut off lights; PIR systems or on / off switches; Always switch off after work complete; Follow good design practice check list; No up-lighting of buildings or structures; After 23.00 hours switch off or reduce light illumination; Maximum 3,500 lumens after 23.00 hours; No sky beams.
New Dwellinghouses and Extensions to Dwellinghouses	No Lights	After 22.00 hours switch off or reduce illumination; No up-lighting of buildings or structures; Lights to be PIR / switched off when you are not outside the house, like lights inside the house; See diagrams in SG for guidance in good illumination.	After 22.00 hours switch off or reduction in light illumination; Lights to be PIR / switched off when you are not outside like lights inside the house; No up-lighting of buildings or structures; See diagrams in SG for guidance on good illumination.	After 23.00 hours switch off or reduction in light illumination; Lights to be PIR / switched off when you are not outside, like lights inside the house; No up-lighting of buildings or structures; see diagrams in SG for guidance on good illumination.
Business and Sport development	No Lights	Follow good design practice - 20 point checklist; fully cut off lights with additional shielding; PIR systems or on / off switches; Switched off after work complete; Max. 3,500 lumens after 22.00 hours; No up-lighting of buildings or structures; No sky beams; Use infrared if security is an issue.	Follow good design practice - 20 point checklist; fully cut off lights with additional shielding; PIR systems or on / off switches; Switched off after work complete; Max. 3,500 lumens after 22.00 hours; No up-lighting of buildings or structures; No sky beams; Use infrared if security is an issue.	Follow good design practice - 20 point checklist; Fully cut-off lights; PIR systems or on / off switches; Preferably no all-night lighting in villages; Switch off after work complete; No up-lighting of buildings or structures; Max 3,500 lumens after 23.00 hours; Designated industrial areas (e.g. Castle Douglas sized town)



	Dark Sky Park			
Location and ILP Indicator	DSP Core Zone EO	DSP Buffer Zone E1	DSP Transition Zone E1	DSP Transition Zone E2
Business and Sport development				Can have 70w lights on all night if full cut-off; Only use higher wattages to meet published standards when work is being done outside; No sky beams; Use infrared if security is an issue.
Wind farm development, turbines and anemometer masts	Maximum of infrared lights.	Maximum of infrared lights.	Preferable for maximum of infrared lights to be used.	Preferable for maximum of infrared lights to be used.

Regardless of the zone, the lights that are chosen and how they are installed is of critical importance:

	<p>This floodlight has a double asymmetric light distribution which is less commonly used but is the preferred option in all cases. If installed pointing directly downward (zero degrees of upward tilt) then there will be no upward light at all and the light is forced down and outwards across the area that requires lighting. The glass cover is completely flat with no rigging or curve. The light fall when installed at zero degrees upward tilt is as illustrated.</p>	<p>Light fall: Perfect</p> 
	<p>A fully cut-off light fitting making a downward cone of light with no stray light. This fitting illuminates a doorway only. This light fitting does not have additional shielding and therefore viewed light may be seen from a distance if in a rural setting but may not be problematic if the light source is less than 1,000 lumens. Front facing shields are available if needed.</p>	<p>Light fall: Perfect</p> 

	<p>This floodlight has a bi-symmetric light distribution and is commonly purchased from DIY stores. The light from this type of fixture, if not installed correctly, can be extremely intrusive. This type of light fitting should be installed pointing directly downward. Any tilt above zero degrees will result in intrusive light heading unnecessarily into the sky. The usefulness of this flood light is extremely limited. The light fall when installed at zero degrees upward tilt is as illustrated.</p>	<p>Light fall: Ok</p> 
	<p>Many rural properties such as steadings, milking sheds, yards and even houses have flood lights such as this and they often give off a bright orange light. The reflector unit held within the light fitting is bi-symmetric and should be installed facing directly downward. However, the unit also has a curved glass panel on the front to aid with light spread which means even pointing directly downward it will still have an upward stray light content. This is not supportive of the Dark Sky Park.</p> <p>The flood light shown on the left hand side is wrongly installed with a 60 degree upward tilt which is not supportive of the Dark Sky Park. The light fall when installed at zero degrees upward tilt is as illustrated.</p>	<p>Light fall: Poor</p> 



Appendix 3: Useful Links

Information on Galloway Forest Dark Sky Park: Forestry Commission Scotland website
www.forestry.gov.uk/darkskygalloway

The Campaign for Dark Skies has produced a lighting guide which can be downloaded at www.britastro.org/dark-skies/guidelines.html

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

Institution of Lighting Professionals web links on a variety of lighting topics:
<https://www.theilp.org.uk/resources/free-resources/>

Ministry of Defence website in relation to low flying www.mod.uk/DefenceInternet/AboutDefence/WhatWeDo/AirSafetyandAviation/LowFlying/

Dark Sky Scotland
www.darkskyscotland.org.uk

Campaign for Dark Skies
www.britastro.org/dark-skies

International Dark-Sky Association
www.darksky.org

East Ayrshire Council's Development Plans and Policies
<http://www.east-ayrshire.gov.uk/PlanningAndTheEnvironment/Development-plans/DevelopmentPlans.aspx>

South Ayrshire Council's Local Development Plan
<http://www.south-ayrshire.gov.uk/planning/planlpdocuments.aspx>

Dumfries and Galloway Council's Local Development Plan
<http://www.dumgal.gov.uk/LDP>