DUMFRIES AND GALLOWAY COUNCIL

Local Development Plan

Non Statutory Planning Guidance

AUGUST 2015

Lighting Guidance

www.dumgal.gov.uk

Dumfries & Galloway COUNCIL

Introduction

This non-statutory planning guidance provides advice on good lighting practice across Dumfries and Galloway, with the aim of reducing obtrusive light and cutting energy use. It is complemented by separate Supplementary Guidance providing specific lighting guidelines for the Galloway Forest Dark Sky Park and surrounding area (see Dark Sky Park Friendly Lighting Guidance at www.dumgal.gov.uk/LDP). This region-wide guidance acknowledges that the adoption of good lighting practice is beneficial for all areas, not just those affected by the Dark Sky Park designation.

This guidance will help those proposing new or replacement external lighting schemes, either as part of a development proposal or as a planning application in its own right, to understand better the planning and technical issues involved.

The Council recognises that many lighting installations may not require planning permission. However, even if 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 enhance the night environment and reduce energy wastage.

The guidance acknowledges the technical nature of lighting schemes and the requirement for expertise in selecting and installing a system. Reputable manufacturers and suppliers of such systems should be prepared to provide appropriate technical specifications to demonstrate that their product not only maintains the levels of illumination required for the intended use, but also does so with the minimum level of obtrusive light.

Dumfries and Galloway Council will monitor the effectiveness of the guidance 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.

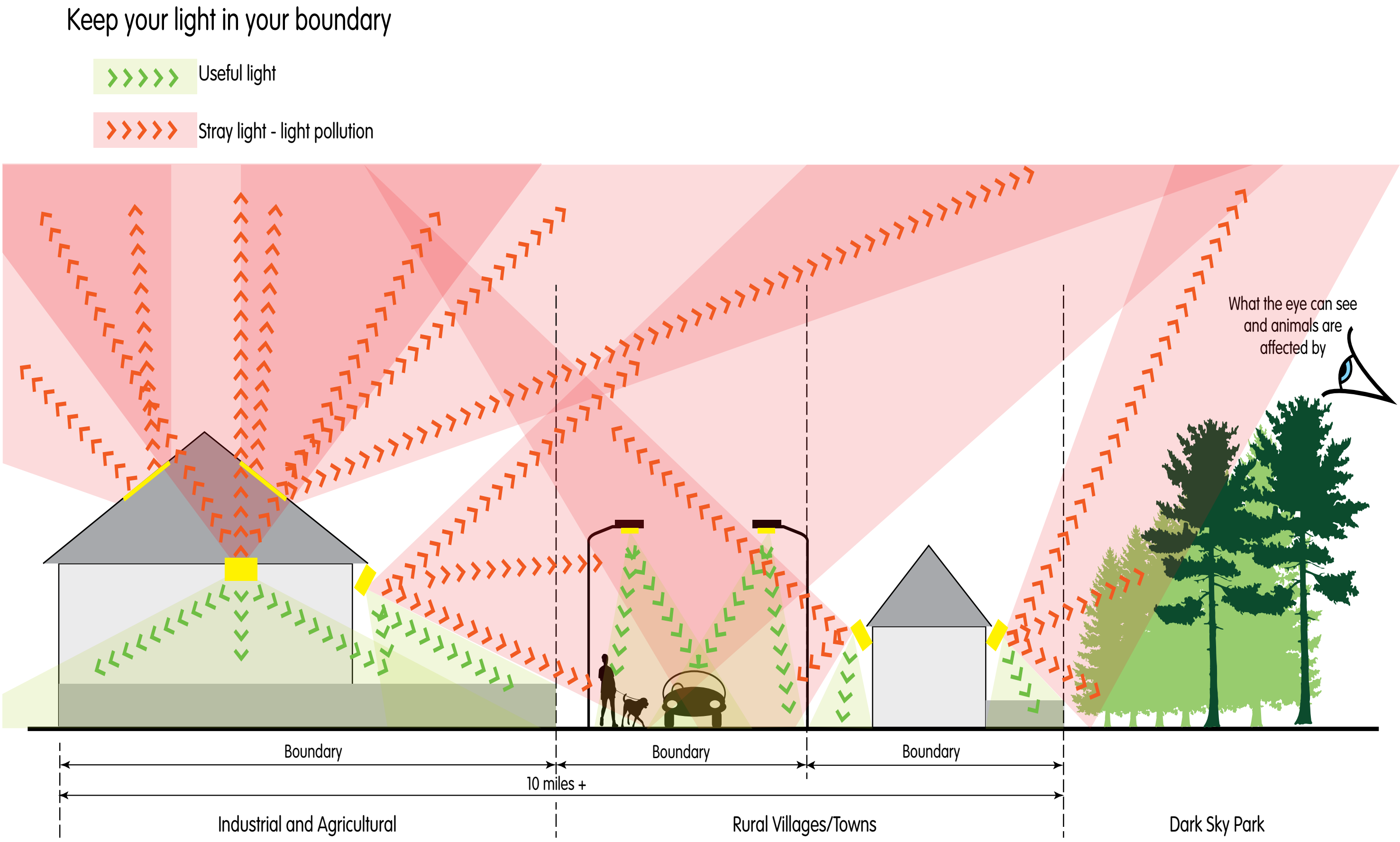
Why should we adopt good lighting practice?

The positive benefits to be gained from lighting can include safety of movement, security of property, extension of working practices and other activities, commercial advertising and enhancement of important buildings. Generally, lighting in itself is not a problem – it only becomes so if it is excessive, poorly designed, badly installed or inadequately maintained. The Council aims to balance the need for any lighting proposal against the negative effect it may have on the environment due to obtrusive light.

Dumfries and Galloway is fortunate in containing a large part of the Galloway Forest Dark Sky Park, one of only a handful of Gold Tier Dark Sky Parks in the world, designated because of the exceptional quality of the night sky in this area. The rest of the region also has relatively low levels of obtrusive light and this guidance wishes to emphasise that, even outwith the designated Dark Sky Park area, it is still important to preserve the current levels of darkness and reduce obtrusive light as much as possible. Such light creates a variety of problems, including effects on human health and wellbeing, erosion of tranquillity and disruption of ecosystems. This guidance therefore reflects an increasing interest in Dark Sky status within other communities, such as the Dark Sky Place initiative in Moffat.

Additionally, 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, offering significant cost savings to businesses and individuals. The Scottish Government encourages reduction of energy use and promotes 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.

Diagram indicating the effects of poorly managed lighting



Initial Checklist for External Lighting

This guidance aims to ensure the best lighting solution for the purpose required and to prevent unnecessary light spillage. 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[1] the minimum required to serve its intended purpose?
5. Is the proposed lighting in the correct location and height to light the required area?
6. Does the proposed lighting impact on other properties or user groups?

[1] 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.

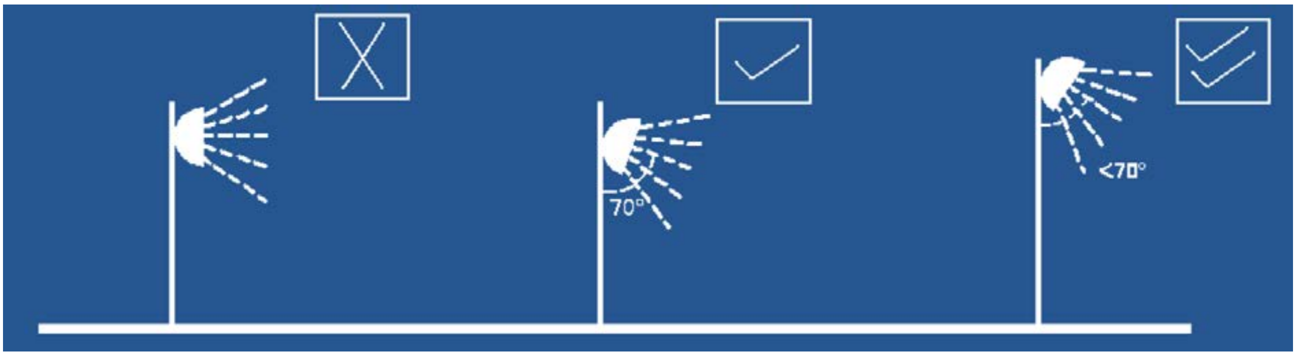
For those proposals where planning permission is not required, individuals and businesses are also encouraged to consider the impact of new and replacement lighting on the wider night time environment and implement lighting proposals that adhere to the good lighting practice set out in this guidance.

Good Lighting Practice Guidance

When selecting external lighting and, where relevant, preparing information to accompany a planning application, the key requirements set out below should be taken into account:

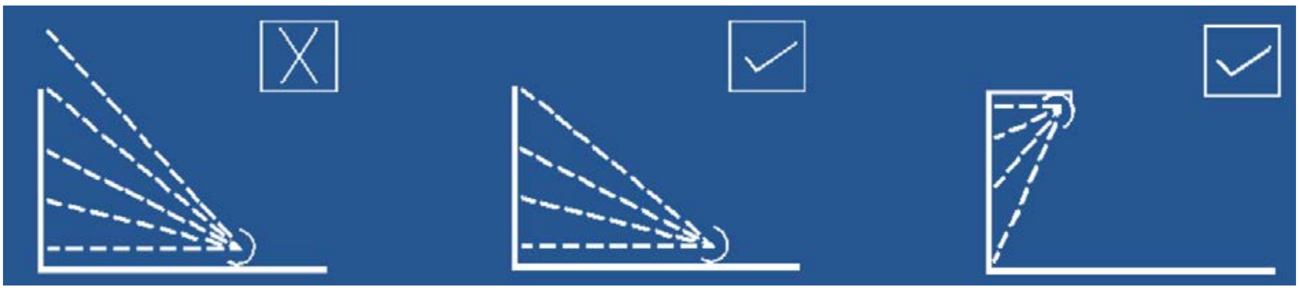
- Light Angle – this is the angle at which the light is distributed or emitted. You should ensure that the intensity and direction of light does not disturb others. This may be done by ensuring that beams are not pointed directly at windows of other houses. The angle used for any light fitting can also 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.

Luminaire aiming angles



Bad Better Good

Façade illumination



Bad Better Good

- 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 ensure no light spillage.
- Lighting proposed should be the most efficient taking into account cost, energy use and colour rendering.
- Security lights fitted with passive infra-red detectors (PIRs) and/or timing devices should be adjusted so that they minimise nuisance to neighbours and are set so that they are not triggered by traffic or pedestrians passing outside your property.
- It should be recognised that light from buildings in the rural setting - no matter how low the wattage - can be seen for many miles even with fully cut off fittings. If lights need to be on for significant periods, the use of additional shielding may be required.
- Additional good practice guidance can be found in Appendix 1 which makes reference to a more detailed 20 point checklist which can be found in a guide prepared by the Scottish Government.

Further useful information and links to good practice on lighting design, including a link to the Scottish Government's lighting guide, can be found in Appendix 1.

Detailed considerations for new and replacement lighting

The tables and illustrations below provide a series of recommendations for lighting practice within the region. 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. The lighting zones referred to 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 Dumfries and Galloway have been defined as follows:

Table 1: Light control zones as suggested by the ILP (2011)

Zone	Night-time Environment	Typical Examples
E0	Designated Dark Sky Park	This area is presently unique to the Galloway Forest Dark Sky Park (DSP) and relates to the very core of the Park where there are no lights (see Dark Sky Park Friendly Lighting Guide SG).
E1	Intrinsically dark	Predominantly rural, lightly populated areas which already have a good night time dark habitat (which should not be diminished). Includes some smaller settlements without street lighting.
E2	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.
E3	Medium district brightness	Urban locations - Dumfries, Stranraer
E4[1]	High district brightness	Urban centres with high levels of night time activity (e.g. centre of Dumfries)

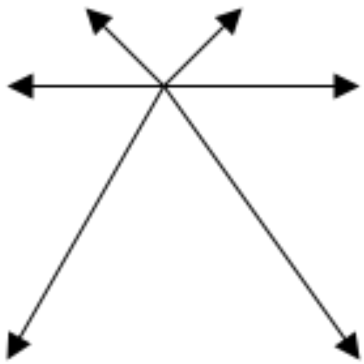
The table overleaf lists a number of lighting guidelines for these zones:

[1] In Dumfries and Galloway, only the centre of Dumfries is classed as E4; as the aim is to reduce levels of obtrusive light in the region, over time this zone should either reduce in size, or at least not increase any further.

Location / ILP Designation — Type of Development	E0: Dark Sky Park core	E1: outwith DSP but with little light	E2: outwith DSP Rural Towns & Villages e.g. Castle Douglas Newton Stewart, New Galloway, Thornhill, Annan	E3 Urban locations - Dumfries & Stranraer / E4 Centre of Dumfries
Agricultural buildings / historic buildings / art structures	No lights	• Fully cut off lights • Additional shielding • PIR systems or on/off switches • Always switch off after work complete • Follow Good Design Practice 20 Point Checklist (see Appendix 1) • No up lighting of buildings or structures • After 22:00hrs: max 3,500 lumens or switch off / reduce light illumination even further • No sky beams • Farms should not use unshielded dusk to dawn sodium lights or halogen lights	• Fully cut off lights • PIR systems or on/off switches • Always switch off after work complete • Follow Good Design Practice 20 Point Checklist (see Appendix 1) • No up lighting of buildings or structures • After 23:00hrs: max 3,500 lumens or switch off / reduce light illumination even further • No sky beams	
New dwelling houses and extensions to dwelling houses	No lights	• After 22:00hrs switch off or reduction in light illumination • Lights to be on 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 acceptable illumination.	• After 23:00hrs switch off or reduction in light illumination • Lights to be on 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 acceptable illumination.	• No up-lighting of buildings • Have lights on PIR/ switched off when you are not outside • See diagrams in SG for guidance on acceptable illumination.

Business & Sport development	No lights	• Follow Good Design Practice 20 Point Checklist (see Appendix 1) • Fully cut off lights and additional shielding. • PIR systems or on/off switches. • Switched off after work complete. • After 22:00hrs: max 3,500 lumens • Follow good design practice check list. • No up lighting of buildings or structures • No sky beams • Use infrared if security is an issue	• Follow Good Design Practice 20 Point Checklist (see Appendix 1) • Fully cut off lights. • PIR systems or on/off switches. • Preferably no all-night lighting in villages • Switched off after work complete. • Follow good design practice check list. • No up lighting of buildings or structures • After 23:00hrs: max 3,500 lumens • Designated industrial areas (e.g. Castle Douglas-sized towns) 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	• Follow Good Design Practice 20 Point Checklist (see Appendix 1) • Only use required wattage to meet recognised standards. Consider infrared in preference to all night lighting only in areas where necessary and PIR in all others • No uplighting or sky beams.

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

	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 ridging or curve. The light fall when installed at zero degrees upward tilt is as illustrated.	**Light fall: Perfect** 
	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.	**Light fall: Perfect** 
	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.	**Light fall: OK** 
	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. 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.	**Light fall: Poor** 

Appendix 1: Useful Links

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/

The British Astronomical Association's Campaign for Dark Skies Lighting Guidance:
http://www.britastro.org/dark-skies/pdfs/CfDS_guidelines.pdf