

Dark Skies:

Reducing Light Pollution

Speuran Dorcha:

A' Lùghdachadh

Truailleadh

Solais

**Planning Guidance
and Future Policy**



Photo © Alan Rankin

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1.1 The Guidance is intended to reduce existing and potential future light pollution across Highland via establishing and encouraging good practice, a supportive policy framework and the application of planning control to developments that are of a scale and/or location most likely to have harmful light pollution effects. Once implemented, this suite of measures should assist any Highland community wishing to pursue a Dark Sky area bid. Its intended audience is any individual, business or other organisation who/which has or intends to provide exterior artificial lighting within Highland. The Guidance is not intended to apply to temporary (up to 28 days in any calendar year) lighting such as at Christmas or at outdoor events. Dark Sky status or designation/certification is bestowed by an [international body](#) ⁽¹⁾ subject to an application process and compliance with a range of criteria. Currently (September 2026) there is one designated Dark Sky area in Highland, The Isle of Rum. This Guidance will be applicable to any and all existing and future designated Dark Sky areas. A mapped list of Dark Sky areas is available via [this website](#) ⁽²⁾.

1.2 In Scotland, the statutory framework for the topic is provided by the Environmental Protection Act 1990 and Public Health etc (Scotland) Act 2008, which established artificial light pollution as a statutory public nuisance if excessive light unreasonably and substantially interferes with the use or enjoyment of a home or other premises, and/or injures health or be likely to injure health. Military, transport and other essential infrastructure facilities are exempted from this requirement. Outdoor sports facility lighting is not exempted. Court decisions on this issue have taken account of the necessity for lighting and whether all reasonable steps have been taken to mitigate the adverse effects of such lighting. Currently, there is no legal justification for controlling light pollution that does not constitute a statutory public nuisance. This Guidance has been prepared taking account of this legal framework, what is within the control of the Council, and what can be achieved by establishing and encouraging good practice.

1 <https://darksky.org/>

2 <https://darksky.org/what-we-do/international-dark-sky-places/all-places/>

- 2.1** This is the consultative draft version of the Guidance. It is issued for a period of 6 weeks with online comments invited. All comments received will be considered by the Highland Council and the relevant committee will approve a finalised version, which will be placed on the Council's website. Following its approval it will become a material consideration for development management purposes.
- 2.2** The approved Guidance will provide the supporting detail of, foundation for, and will be cross-referenced within, a Reducing Light Pollution policy in the forthcoming Highland Local Development Plan (HLDP), which will be published in 2027. Once this HLDP is adopted then the Guidance will be cross-referenced in this part of the statutory approved development plan and gain enhanced decision-making status from such.

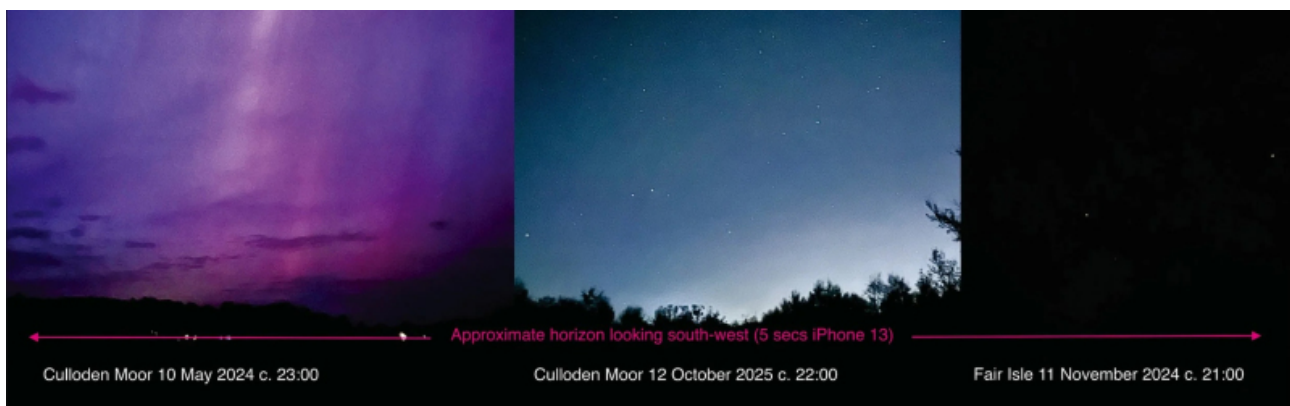


Picture 1 Dalnahaitnach (Cottage near end of Station Road, beyond Sluggan Bridge, facing South-West): Exemplifies genuinely dark skies with minimal light pollution, allowing a clear view of Orion and the Pleiades low to the horizon alongside the dense star field above. ©

Alan Rankin.

3 Benefits of reducing light pollution | Buannachdan de bhith a' lùghdachadh truailleadh solais

- 3.1** Currently, not all exterior artificial lighting is necessary, wasting energy, emissions and money. Many lights are brightening areas that don't need highlighted, on at times of day when not required, and illuminate excessively relative to their intended purpose.
- 3.2** Many local residents and visitors derive enjoyment from looking up at or more formally observing the night sky. It represents a visual asset of tourism, educational and scientific value that is worthy of protection from unnecessary light pollution which can reduce and obscure the quality of that asset.
- 3.3** Light pollution can have a negative impact on certain species particularly nocturnal animals and amphibians affecting sleep patterns, feeding, reproduction and migration.
- 3.4** Similarly, human sleep can be disrupted by light pollution close to residential properties thereby negatively impact health through increasing tiredness, fatigue and stress.
- 3.5** This Guidance recognises that exterior artificial lighting is appropriate in certain circumstances to reduce crime, allow sporting and business activity to continue during winter darkness hours and protect public safety which is why the geographic extent of application of the policy will be limited as described in 5 'Future policy | Poileasaidh an ama ri teachd' and 6 'Developer requirements | Riatanasan luchd-leasachaidh'. Public safety in this context means a purpose not related to crime prevention, such as road safety.



Picture 2 This montage contrasts a Bortle 1 sky on Fair Isle with the effects of artificial light over Inverness, which forms the main image. © Gael Hillyard.

4.1 Policies and guidance are more easily understood, applied and enforced if they are written in clear and unambiguous language. The topic of light pollution requires the use of certain jargon which can be defined as follows:

- **Light pollution** – artificial outdoor/exterior lighting that exceeds its required purpose and is deemed obtrusive because of its of splay, illuminance, glare, hours of operation, and/or results in other harmful effects.
- **Sky glow** – the brightening of the night sky from artificial and natural sources.
- **Illuminance** - the amount of light falling on a surface and is measured in lumens per square metre.
- **Luminance** - the amount of light the human eye sees radiating or reflecting from an object measured in candelas per square metre.
- **Glare** - uncomfortable brightness of a light source when viewed against a darker background.
- **Luminaires** - fittings into which lamps/bulbs are placed to protect against weather and physical damage. They may also incorporate optical devices to control and direct the light to reduce uncontrolled light escape. They are generally either fixed like a lamp post) or variable angle (like a security light).
- **Spillage** – light that misses its intended target and function. Also sometimes called light trespass.



Picture 3 Different external lighting designs to minimize light pollution

- 5.1** As stated above, it is intended that the forthcoming Highland Local Development Plan (HLDP), which will be published in 2027, will contain a Reducing Light Pollution policy. This policy will cross-reference this Guidance and therefore give it greater decision-making legitimacy by, on adoption of the HLDP, affording it a “hook” in the statutory approved development plan.
- 5.2** An Integrated Impact Assessment screening has been carried out in respect of the Guidance which determined that only neutral or positive effects were likely to occur from its implementation. However, all policies in the new HLDP will need to be subject to a Strategic Environmental Assessment which will provide a fuller opportunity to consider environmental effects and if necessary, mitigation.
- 5.3** Similarly, the future HLDP will be subject to a statutory representations phase and an “Examination” of any unresolved objections by a Scottish Government appointed Reporter. This independent hearing and judgment of objectors’ concerns with any future HLDP policy will also offer an opportunity, if required, formally to consider any concerns about the detail of this Guidance.



Picture 4 Lochindorb (West shore looking North): While this image captures the core of the Milky Way, the light spill from the Inverness–Nairn corridor along the northern horizon is unmistakable. © Alan Rankin.

6.1 Within the current Highland or any future designated Dark Sky area, all applicants for planning permission will be required, via application of a planning condition, to submit a Lighting Assessment. Additionally, outwith any designated Highland Dark Sky area, a Lighting Assessment will be required for any national or major scale planning application which, in the opinion of the Council, is likely to increase light pollution within any designated Highland Dark Sky area. The Lighting Assessment should be proportionate to the scale of the proposal. For example, for householder applications, there may be no exterior lighting proposed or it may be of very small scale. In these cases, a short, written statement from the applicant will suffice.

6.2 The Lighting Assessment must include:

- A justification of the necessity of the lighting proposed; e.g., personal or business security, health and safety to allow safe operational use of the site/property in hours of darkness, or to enhance the appearance of a historic building or other structure.
- A lighting plan specifying all exterior lighting types (intended lamps/bulbs and their illuminance level, beam width, colour of light, luminaires, whether a timer/dimmer control is fitted, and the intended hours of operation) and their locations (intended mounting height, orientation and tilt angle relative to horizontal).
- A sensitive receptor plan specifying the location of any nearby residential properties, public spaces and viewpoints, and habitats and species likely to be adversely affected by light from the proposed development.
- A written description of any mitigation within the wider application proposal that will reduce light pollution such as existing or proposed tree planting, bunding or other site structures such as fences that will reduce light spillage and glare.

6.3 This Lighting Assessment requirement will be applied and if necessary, enforced via a planning condition which will be attached to any relevant permission. That condition will address or may prescribe, depending on the specifics of the development and/or location:

- operational hours of the lighting;

- illuminance levels;
- mounting/column heights;
- types of bulbs, lamps and luminaires;
- tilt/beam angle of lighting relative to the horizontal;
- no interference or distraction to transport movements (aviation or road traffic);
- a maximum acceptable quantitative increase in luminance experienced by nearby dwellings;
- provision or retention of screening vegetation, bunding, fencing or other structures to contain light spillage;
- erection of demonstration luminaires and a review of their impacts after installation.

6.4 An example planning condition is described here:

Example Planning Condition

Prior to the commencement of the development, the applicant shall submit for the written approval of the planning authority a Lighting Assessment (as described in the Council's approved Guidance). This should demonstrate how the lighting proposed is the minimum necessary for the development to operate safely, productively and securely. The Assessment will also demonstrate how the lighting proposed and any associated mitigation will eliminate or reduce any light pollution effects.

Reason for condition: To ensure the correct implementation of lighting, to prevent or reduce light pollution and to reduce energy use and its associated emissions.

6.5 The Highland Council already applies a model planning condition in respect of aviation lighting on tall mast structures including wind turbine generators. This condition is aimed at aviation safety not light pollution. The UK legal and policy framework for onshore wind turbine

generator lighting comprises the Air Navigation Order 2016 ('ANO'), Article 222 and Civil Aviation Authority publication CAP 764: "Policy and Guidelines on Wind Turbines and Policy Statement DAP124: Lighting of Onshore Wind Turbine Generators in the United Kingdom with a maximum blade tip height at or in excess of 150m Above Ground Level. These prescribe 5 red lights for each turbine structure. These lights are to be fitted with control devices to allow them to be turned off or dimmed during daylight hours with good meteorological visibility. Recommendations are made for illuminance levels but not for light splay and therefore the good practice element of this Guidance may encourage lighting manufacturers and developers to adopt better practice on this topic.

- 6.6** The good practice element of the Guidance is intended for universal application within Highland whether or not a particular lighting proposal requires planning permission.
- 6.7** The Council has considered formulating policy and guidance on light pollution that has a multi-level spatial or zoning dimension. For example, other public authorities have identified buffer zones around Dark Sky areas where an intermediate level of control applies. These zone boundaries are easier to identify, justify and defend where there is a clear divide between urban and rural areas. Within Highland, there is a more nuanced transition from urban to rural because of its history of dispersed rural settlement in particular within crofting areas which would challenge the identification and defensibility of definitive dividing lines between areas that should be subject to a control policy and those which should not. Instead, the Council intends to apply the control policy within the current and any future designated Highland Dark Sky areas and outwith those areas to any major or national scale application that may, in the Council's opinion, adversely impact on any designated Dark Sky area.
- 6.8** However, this is a consultative draft document and therefore views are invited on potential alternative approaches. Other planning authorities have used a simple fixed distance buffer from a designated Dark Sky area boundary to apply a lower degree of policy protection. This offers the benefit of simplicity but is arbitrary and not evidence based and could therefore be subject to challenge.

- 7.1** Most lighting proposals are outwith the control of the planning system and therefore this Guidance is aimed at encouraging anyone choosing and implementing exterior lighting in Highland first to consider its necessity and if required its number, type, siting, design and operation.
- 7.2** The choice of lamp, bulb and luminaire is critical to minimising light pollution. Those wishing to choose and implement a lighting scheme may be more interested in cost, decoration, light colour, energy efficiency, weight and durability rather than light pollution. Pages 111 to 113 of Appendix 2 of the [Guidance to accompany the Statutory Nuisance Provisions of the Public Health etc \(Scotland\) Act 2008](#)⁽³⁾ give further details on the pros and cons of the choices available. For example, excessive illuminance lighting can be counter-productive for security purposes by creating glare and dark shadows that obscures CCTV footage. Infrared lighting and cameras may be far more effective security solutions and ones that don't cause visible light pollution. The Institution of Lighting Professionals has also produced a comprehensive [Guidance Note on The Reduction of Obtrusive Light](#)⁽⁴⁾.
- 7.3** The Council encourages all those who have or intend to provide exterior artificial lighting within Highland to consider the issue of light pollution in making the choice of lamp, bulb and luminaire. In particular, the Council wishes to encourage lighting with: a sensor or other control mechanism to minimise its duration; a lamp/bulb that maximises energy efficiency but minimises illuminance only to that necessary; and, a luminaire that directs light downwards and minimises spillage and glare.
- 7.4** The choice of location and direction of lighting affects light pollution. Even if light is directed downwards it can be reflected upwards if projected on to a lightly coloured or wet surface. Historic buildings and other structures are often lit during hours of darkness which can

3 <https://www.gov.scot/binaries/content/documents/govscot/publications/advice-and-guidance/2009/01/guidance-accompany-statutory-nuisance-provisions-public-health-etc-scotland-act/documents/0076564-pdf/0076564-pdf/govscot%3Adocument/0076564.pdf>

4 <https://theilp.org.uk/asset/D008B204-4EEC-4EC8-997B08F2BECAC6EE/>

enhance their appearance and visual accessibility to the general public but from a light pollution point of view could better be illuminated from the top of the structure by downlighters of darker surfaces rather than ground mounted uplighters. Similarly, maintenance of lighting is relevant. Poorly maintained lighting that flickers can cause light nuisance to adjoining residential properties.

- 7.5** Table 1 'Specific Advice on Lighting for Typical Tasks and Operations' offers advice to assist in purchasing lighting that will have sufficient but not excessive illuminance for typical tasks and operations. No specific quantitative standards are recommended because this will vary by development and location but general principles such as the hours of operation (a curfew between 10pm and 8am) and no direct light splay above the horizontal are suggested.



Picture 5 Dulnain River (South to South-East): The Milky Way stands vertical in the sky. To the east (left), light spill from Aviemore overpowers the horizon, whereas to the west (right), the darker horizon allows significantly more stars to remain visible. © Alan Rankin.

Illuminance level and lighting type	Other advice
Domestic property lighting	
• 500 lumens are generally sufficient brightness to navigate within property boundaries; • 1000 lumens are generally sufficient brightness for parking and getting keys into the door; • 1500+ lumens are unrequired for domestic use. Lighting above 500 lumens should have a light shield.	The lumens, watts and colour temperature can be found on the lighting box. It is better to use multiple lights that are lower lumens than one of extreme brightness.
Security lighting	
• 2000 lumen tungsten halogen lamp utilising infra-red detectors; • For domestic security lighting, low-level lighting e.g. 600 lumen fluorescent; • Bulkhead or porch lights are a better alternative to domestic security lights because they have lower light pollution and energy consumption.	Other security measures like CCTV that uses infrared lighting and cameras meaning visible lighting is not required should be considered first. Any visible lighting system should be turned off when not in use. Each property's lighting requirements should be looked at holistically to reduce the likelihood of glare, light intrusion or dark spots.

Illuminance level and lighting type	Other advice
	Any sensor-controlled lighting should be positioned appropriately to ensure it is not activated by the movements of people or wildlife outwith the area being secured.
Sport facility floodlights	
• Generally, horizontal illuminance at ground level should be between 100-500 lux; • Vertical illuminance is dependent on the sport as it should be taller than where the ball is expected to reach; • The midpoint of the light's main beam, when measured from a downwards vertical position, should not exceed 70°; • Each lamp should generally not exceed 1kw; • Internal louvres should be fitted to help prevent light spilling upwards or horizontally and ideally double asymmetric beams, to ensure the lighting is being pointed downwards and then reflected across the sports area.	Hours of operation: floodlighting should not be used between 22:00-08:00, to reduce disturbance to neighbouring properties. To reduce glare and spillage beyond the area intended to be lit all luminaires should incorporate lighting shields. Generally, lighting should be mounted as high as possible to ensure the ability to direct light downwards.

Table 1 Specific Advice on Lighting for Typical Tasks and Operations



