

Department for Environment, Food and Rural Affairs

Artificial Light in the Environment

Policy Update

December 2013

Contents

Background.....	2
Defra action on light.....	5
Dark skies	5
Review of statutory nuisance legislation.....	6
Information for the public on minimising light pollution	8
Research projects	8
Energy saving and climate change	9
Wider Government action on light.....	10
Department for Communities and Local Government: planning policy and guidance	10
Highways Agency.....	11
Home Office	11
Conclusion and next steps.....	13

Background

Artificial light offers valuable benefits to society. It is an essential aid to safety and facilitates a thriving night-time economy. However, if used incorrectly, artificial light can contribute to a range of problems, with the potential to become light pollution. Artificial light can not only be a source of annoyance to people, it can be harmful to wildlife, waste energy and detract from the enjoyment of the night sky. Artificial light refers to all light made by humans. The terms 'light pollution' and 'obtrusive light' are used interchangeably to mean light shining where it is not intended or wanted.

As the department responsible for protecting and enhancing our urban and natural environment, Defra leads on and co-ordinates policy relating to light pollution across Government.

A decade ago, the escalating issue of light pollution was highlighted by the House of Commons Select Committee on Science and Technology when they examined the impact of light pollution on astronomy.¹ Shortly before, Defra had consulted on whether to make artificial light a statutory nuisance (see text Box 1) following media attention and a rise in complaints to local authorities about the issue².

Box 1: Artificial light as a statutory nuisance

Defra is responsible for the legislation relating to statutory nuisance, a regime for environmental protection that has existed for over 150 years to prevent situations that unreasonably interfere with the personal comfort or amenity of those nearby.

Under section 79(1)(fb) of the Environmental Protection Act 1990, local authorities have a duty to take reasonably practicable steps to investigate complaints of 'artificial light emitted from premises so as to be prejudicial to health or a nuisance'. If satisfied that a statutory nuisance exists or is about to occur or recur, the local authority must serve an abatement notice under section 80 of the Act requiring that the nuisance is abated or restricted to prevent its occurrence or recurrence.

Local authorities take into account a number of things when assessing complaints including the reasonableness of the activity being carried out, the time of day of the occurrence, its duration, its frequency of occurrence and whether or not best practicable means was being employed. There is also guidance published by Defra on the legislation which is available to local authority environmental health officers.³

The Select Committee report recommended that artificial light be made a statutory nuisance. This was enacted by the Clean Neighbourhoods and Environment Act 2005, which amended the Environmental Protection Act 1990.

¹ House of Commons Select Committee on Science and Technology (2003). *Light Pollution and Astronomy*. Seventh Report of Session 2002-03. Volume I. HC 747-I. TSO, London.

² Defra (2002), *Living Places: Powers, Rights and Responsibilities*.

³ Defra (2006), *Statutory Nuisance from Insects and Artificial Light*, <http://archive.defra.gov.uk/environment/quality/local/legislation/cnea/documents/statnuisance.pdf>.

In 2007, the Royal Commission on Environmental Pollution (RCEP) examined general local environmental quality in urban areas.⁴ This report identified light pollution as a significant factor affecting local environmental quality but didn't look into the issue in depth. However, in recognition of the increasing pervasiveness of outdoor artificial light and concerns that its effects were becoming progressively more significant, RCEP went on to examine the specific issue of artificial light in the environment.

The subsequent 2009 RCEP special report on artificial light in the environment⁵ highlighted a range of known and potential impacts of artificial light on human health and on wildlife. It has strongly influenced Defra's subsequent work on light pollution and additional focus was directed to the issue, in order to follow up on the RCEP recommendations. The reports and their recommendations have informed our policy development in this area and fed into the development of the Government's Natural Environment White Paper (NEWP), published in 2011.⁶

Box 2: Defra's Natural Environment White Paper commitments on artificial light

The Natural Environment White Paper is a bold and ambitious statement outlining the Government's vision for the natural environment over the next 50 years, backed up with practical action to deliver that ambition. It aims to place due emphasis on the value of nature and seeks to strengthen connections between people and nature. As part of our commitments:

(70) Defra will work with industry and other bodies to reduce the negative impacts of artificial light and protect existing dark areas.

(71) In 2011 Defra will consult relevant organisations on whether the exemptions from artificial light statutory nuisance continue to be appropriate and then take action if necessary.

These commitments have been met and were reported in the November 2013 update on implementation of the Natural Environment White Paper:

<https://www.gov.uk/government/publications/natural-environment-white-paper-implementation-updates>.

Interested groups on the issue of light pollution, such as Campaign to Protect Rural England, Campaign for Dark Skies and the Institution of Lighting Professionals, have also highlighted specific issues and brought them to our attention. Their positive engagement has helped to shape policy in this area and raise its profile.

Policy affecting artificial light is a complex issue that falls across a number of central Government departments, the devolved administrations and, on a local level, local authorities and highways authorities. Defra plays a co-ordinating role across Government.

As well as light interest groups, we work positively and collaboratively with a range of other Government departments to meet our objective of promoting good health and a good quality of life through the effective management of artificial light within the context of

⁴ Royal Commission on Environmental Pollution (RCEP) (2007). *26th Report: The Urban Environment*. TSO, London.

⁵ Royal Commission on Environmental Pollution (RCEP) (2009). *Artificial Light in the Environment*. TSO, London.

⁶ Defra (2011), *The Natural Choice: Securing the Value of Nature*, TSO, London.

sustainable development. The Department for Transport sets overall standards for street lighting, which are applied by local highways authorities. The Highways Agency is an Executive Agency of the Department for Transport and is responsible for operating, maintaining and improving the strategic road network in England; this includes minimising environmental impacts of road lighting. The Home Office's and police force's crime prevention policy reflects the complex relationship between lighting and crime levels and its impact on fear of crime. Defra helps to ensure that all of these areas of artificial light policy join together consistently. We are grateful for the valuable assistance and ongoing contribution of interested parties to tackle the issue of light pollution.

This update seeks to lay out what steps Defra and other Government departments have taken to address the issue of light pollution since the RCEP report was published. It will also outline how we plan to continue to keep the issue of artificial light under review in the future.

Defra action on light

The RCEP short report was published in 2009 and the Government formally responded in March 2010.⁷ Since then, Defra has worked proactively to address the recommendations in the RCEP report, as well as taking other opportunities to act on the issue of light pollution. The following sections discuss what we have done since the Government responded to the RCEP report.

Dark skies

Dark skies are an important part of the overall issue of light pollution because artificial light can obscure the natural beauty of the night sky, which is one of the most visible consequences of poor lighting. Due to concerns raised in the RCEP report about a perceived increase in light pollution and its detrimental effects on the night sky, Defra stated in the NEWP that we “will work with industry and other bodies to reduce the negative impacts of artificial light and protect existing dark areas.”

The protection of dark skies through both reducing light pollution and protecting existing dark areas is an important part of policy on artificial light. As an example, we’ve continued to promote dark skies within National Parks and Areas of Outstanding National Beauty (AONBs). The Government Circular on English National Parks and the Broads⁸, published in March 2010, encouraged the protection and restoration of dark skies and the reduction or elimination of unnecessary artificial light within Parks.

Box 3: Dark Sky Status

An International Dark Sky Park is a location of exceptional night-time beauty, dark skies education and preservation of the night-time environment. National Parks, Areas of Outstanding Natural Beauty and other areas with especially dark skies can apply for Dark Sky Status, an accreditation for locations that meet strict guidelines, awarded by the International Dark Sky Association.

A Dark Sky Reserve is “public or private land possessing an exceptional or distinguished quality of starry nights and nocturnal environment that is specifically protected for its scientific, natural, educational, cultural, heritage and/or public enjoyment mission of a large peripheral area”.

As well as showing that there is little light pollution in these areas, applicants are required to demonstrate an ongoing commitment to reducing lighting levels and maintaining equipment. Dark Sky Status has been shown to have economic benefits, for example, in terms of increased tourism.

⁷ Defra (2010), *The Royal Commission on Environmental Pollution (RCEP) Report on Artificial Light in the Environment: Government Response*, <http://archive.defra.gov.uk/environment/quality/local/nuisance/light/documents/rcep-artificial-light-report.pdf>.

⁸ Defra (2010), *English National Parks and the Broads: UK government vision and circular 2010*, <https://www.gov.uk/government/publications/english-national-parks-and-the-broads-uk-government-vision-and-circular-2010>.

Two of our National Parks have applied to receive Dark Sky Park and Dark Sky Reserve status. Defra Ministers have encouraged these applications by writing letters of support. Exmoor National Park was successfully designated the first International Dark Sky Reserve in Europe in November 2011. In December 2013, Kielder Water and Forest Park and Northumberland National Park jointly achieved designation of Dark Sky Park, becoming the largest in Europe.

Exmoor National Park Authority is working with local astronomical groups and partner organisations to arrange events to raise awareness and encourage the enjoyment of the darker skies of Exmoor. It provides information and education about astronomy, dark sky conservation and enhancement. Dark Skies are part of the essential character and tranquillity of Exmoor.

Several AONB partnerships have worked on projects to promote dark skies, engage the public interest, monitor darkness and seek measures to reduce light pollution. The Mendips AONB partnership works with its local authorities to reduce light pollution as part of its Dark Skies work and the Isle of Wight has produced a leaflet to promote its dark skies. The Isles of Scilly and North Pennines each have five designated Dark Sky Discovery Sites. Many more locations have been designated as Dark Sky Discovery Sites to facilitate stargazing⁹.

We will continue to promote the protection and restoration of dark skies and the reduction of unnecessary artificial light within our National Parks, AONBs and other areas, where possible. We will also continue to work with National Park Authorities and others that plan to apply for Dark Sky status.

Review of statutory nuisance legislation

Under section 79 of the Environmental Protection Act 1990 (EPA), local authorities have a duty to take reasonably practicable steps to investigate complaints of “artificial light emitted from premises so as to be prejudicial to health or a nuisance”.

Under section 79(5B) EPA a number of exemptions from the statutory nuisance provisions exist for certain premises. Such premises are of strategic importance owing to their nature and importance to the community and exterior lighting may be necessary to prevent crime and disorder and for safety reasons (see text Box 4).

⁹ Dark Sky Discovery Sites. <http://www.darkskydiscovery.org.uk/dark-sky-discovery-sites/map.html>.

Box 4: Exemptions from artificial light nuisance action

The existing exemptions from action for statutory nuisance are for artificial light emanating from:

- airports
- harbour premises
- railways premises
- tramway premises
- bus stations and any associated facilities
- public service or goods vehicle operating centres
- lighthouses
- prisons

In 2009 the RCEP noted the disparity between the Scottish exemptions, that apply only to lighthouses and premises used for defence purposes, and the English exemptions that cover a wider range of facilities. The RCEP report recommended that the legislation be kept under review.

In response to the recommendation, the NEWP stated our intent that “in 2011 we will consult relevant organisations on whether the exemptions from artificial light statutory nuisance continue to be appropriate and take action if necessary.” This review was carried out along with a public consultation and the Government response was published in June 2012.¹⁰ Although arguments to remove the exemptions were valid, the consultation responses provided very little additional data on the costs or benefits of both the current situation and of removing the exemptions. This lack of additional data, when considered alongside low complaint figures, did not provide a strong case for legislative change. Therefore, the exemptions for certain premises from the artificial light statutory nuisance regime in England have been retained.

In line with best practice in policy-making, we stated our intention to keep the legislation under review. The Chartered Institute of Environmental Health agreed to provide a passive web survey for environmental health officers to enable them to report complaints about lights from any of the exempt premises in order to help improve the level of data available. This passive survey data will be reviewed periodically to see if there is a significant rise in complaints which would indicate that policy on the exemptions may need re-evaluating.

¹⁰ Defra (2012), *Artificial light statutory nuisance - continued utility of the current exemptions for certain premises*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86542/artificial-light-summary-responses.pdf.

Information for the public on minimising light pollution

A Defra research project¹¹ looking at artificial light nuisance complaints (see section on research below for more information) found that outdoor security lights were a common source of complaints to local authorities. The project concluded that this is likely to be because security lights can be very intrusive, especially when poorly designed, directed, operated or maintained.

So earlier this year Defra, the Campaign to Protect Rural England, the Campaign for Dark Skies and the Institution of Lighting Professionals worked together to draw up and circulate an information leaflet explaining best practice in using external security lighting. It is designed to clearly and simply inform consumers how to install their security lights effectively to reduce light pollution. The leaflet, 'Getting Light Right', has been distributed to retail organisations and publicised to local authorities, and is also available online.¹²

We hope this will reduce the potential for customers to annoy their neighbours, helping them save energy and money, and helping them make the most efficient use of their light.

Research projects

In the course of its recent policy work, as well as in response to the RCEP recommendations for further studies on the impacts of artificial light, Defra has conducted a number of research projects.

In 2010, we published a report investigating artificial light nuisance complaints and associated guidance available to local authorities.¹³ The report examined how the statutory nuisance legislation on artificial lighting was working three years after its introduction, in line with standard practice in reviewing new legislation. It found that, of the local authorities responding, the overall numbers of complaints made about artificial light sources were low; since the introduction of the legislation, there were around 12 complaints per authority per year about light nuisance. For comparison, complaints about noise nuisance in 2010-11 were around 908 complaints per local authority per year (75 times more).¹⁴ The researchers recommended several areas where additional information on light nuisance for local authority officers could be helpful. In light of the very small scale of light statutory nuisance complaints and competing pressures for resources with work on other statutory nuisances, no further guidance was issued.

In September 2011, Defra published a project which reviewed street lighting trials and initiatives at 15 local authorities in order to provide information and share lessons learnt

¹¹ Defra (2010), *An Investigation into Artificial Light Nuisance Complaints and Associated Guidance*, <http://archive.defra.gov.uk/environment/quality/local/nuisance/light/documents/artificial-light-nuisance-report2010.pdf>.

¹² Defra (2013), *Getting Light Right*, <https://www.gov.uk/Government/publications/getting-light-right>.

¹³ Defra (2010), *An Investigation into Artificial Light Nuisance Complaints and Associated Guidance*.

¹⁴ Chartered Institute of Environmental Health (2011), *Survey of Local Authority Noise Enforcement Activity 2010-11*.

with other local authorities considering similar schemes.¹⁵ The report was widely disseminated to local authorities with the help of stakeholders. This supported the RCEP recommendation that local authorities should take note of the outcome of trials to examine the impact of reducing or turning off lighting in quieter areas and consider the lessons learnt.

Defra's Noise and Nuisance and Biodiversity teams jointly commissioned research to examine impacts of artificial light on night flying animals such as bats, which are protected under European legislation. The projects aim to assess the impacts of old lighting as well various types of new lighting technologies at a larger spatial scale than typically studied. The projects will complete in 2014 and 2015, respectively.

Overall, the research we've commissioned confirms that the amount of policy resource currently being directed to the issue of light (and that proposed in the future) is proportionate. We will continue to reassess this, based on emerging evidence.

Energy saving and climate change

A potential additional benefit in relation to reducing light pollution is the energy saved (and therefore money saved) which also helps reduce carbon emissions. The potential financial savings and targets are some of the main reasons behind local authority switch-offs.

As part of the suite of measures to reduce energy consumption and thereby help with actions against climate change, the energy consumption and efficiency of a range of products is being improved through the EU Ecodesign and energy labelling directives. Measures under each directive will progressively improve the energy efficiency of lighting in homes, offices and street lighting, by removing the least efficient lights from the market, and encouraging the uptake of the most efficient lighting through labelling.

¹⁵ Defra (2011), *A Review of Local Authority Road Lighting Initiatives*, [http://randd.defra.gov.uk/Document.aspx?Document=LAStrreetLightingInitiatives\(Final140911\).pdf](http://randd.defra.gov.uk/Document.aspx?Document=LAStrreetLightingInitiatives(Final140911).pdf).

Wider Government action on light

Department for Communities and Local Government: planning policy and guidance

The Government recognises that artificial light is an important issue in the context of planning and sustainable development. Lighting schemes can be costly and difficult to change if they are found to cause a problem, so getting the design right and setting appropriate conditions at the planning stage is crucial. Artificial light provides vital benefits to society but not all modern lighting is suitable in all locations, which is why careful and sustainable planning is essential.

As part of the Government's reforms to make the planning system less complex and easier to understand, the Department for Communities and Local Government (DCLG) published the National Planning Policy Framework (NPPF) in March 2012. The NPPF sets out the Government's planning policies for England and provides a framework within which local communities can consider planning decisions in the context of their own needs and priorities. Reflecting the concerns set out in the RCEP report, Defra worked closely with DCLG to ensure that the NPPF policies included consideration of the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.¹⁶

Later in 2012, DCLG began a comprehensive review of all planning practice guidance (some 7,000 pages) led by Lord Taylor of Goss Moor. Lord Taylor's report made recommendations as to what guidance should be provided by Government to support effective planning.¹⁷ It identified artificial light as an important issue on which Government could issue further guidance in order to ensure appropriate development.

As a result, Defra have worked with DCLG to support the review of planning practice guidance and to develop new guidance on light pollution. The main message of the guidance is to consider where, when and how much artificial light shines, as well as the possible impacts of lighting decisions. It also draws planners' attention to the RCEP report. This guidance is part of a new web-based resource which will be available very shortly.

The guidance will support the implementation of the NPPF and assist both developers and planners in considering the impact of artificial light in future development.

¹⁶ DCLG (2012), *National Planning Policy Framework*,

https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf at para 125.

¹⁷ Lord Matthew Taylor of Goss Moor (for DCLG) (2012), *External Review of Government Planning Practice Guidance*, https://www.gov.uk/Government/uploads/system/uploads/attachment_data/file/39821/taylor_review.pdf.

Highways Agency

The Highways Agency has an obligation to minimise the environmental impact of the strategic road network. Consequently, it has a perpetual programme of work to review the cost effectiveness of its 130,000 road lights, to remove cost-ineffective lights and to minimise the obtrusive light emitted by new or replacement road lighting schemes.

Against a 2009 baseline, the Highways Agency has reduced the light output of its road lighting asset by more than 10%. This has been achieved by:

- switching off 59 miles of motorway lights usually between midnight and 5am; and
- permanently switching off 62 miles of motorway lights.

The Highways Agency has only ever invested in new lighting where it is needed, but new requirements currently being drafted will result in investment based upon both need and excellence of design. These changes will deliver better outcomes:

- for the taxpayer, in terms of reduced whole life costs, but no change in road user safety;
- for the citizen, in terms of less carbon emissions and less light pollution; and
- for roadworkers, in terms of a safer working environment due to a reduced need for on-road maintenance.

The Highways Agency will continue to optimise the operation of its road lighting asset and reduce light pollution by:

- lowering light levels on motorways to those used in the rest of Western Europe;
- lowering light levels when traffic flows are low; and
- switching off motorway lights when traffic flows are very low.

Home Office

A systematic review of existing international evidence on the effectiveness of improved street lighting on crime ¹⁸ found that it significantly reduces crime - both during the daytime and night, suggesting that it is more complex than simply the amount of lighting. The review also concluded that improved street lighting should be considered as a potential strategy in any crime reduction program in coordination with other intervention strategies. Home Office crime prevention policy reflects these findings.

In 2011, the police launched their 'Secured by Design' initiative and the Institute of Lighting Professionals published guidance on "Lighting Against Crime". ¹⁹ These publications help police and others involved in designing the built environment to understand some of the

¹⁸ Farrington, D. and Welsh, B. (2008): Effects of improved street lighting on crime. Campbell Systematic Reviews: The Campbell Collaboration.

¹⁹ <http://www.securedbydesign.com/professionals/publications.aspx>.

terminology used when discussing external lighting systems, and the recommended levels of illumination used to reduce crime, the fear of crime and antisocial behaviour.

Conclusion and next steps

The 2009 RCEP report 'Artificial Light in the Environment' raised concerns about the increasing pervasiveness of outdoor artificial light and the increasing significance of light pollution in the UK. As a result, Government has actively worked to address the RCEP recommendations. The proactive and positive contributions of other interested parties have also influenced policy and helped shape our work on artificial light. As a result, the profile of light pollution as an issue to be tackled has been raised. Consideration of the issue has become part of wider Government policy-making; for example, within the planning system.

The RCEP recommendations that Defra is directly responsible for have been completed. Therefore, we believe that now is the time to return to 'business-as-usual' policy work in this area, especially given other statutory nuisance priorities, such as noise nuisance.

Defra will continue to lead and co-ordinate cross-Government policy on artificial light and we remain committed to our objective of promoting good health and a good quality of life through the effective management of artificial light within the context of sustainable development. To achieve this, we plan to:

- continue to work on our commissioned research projects, support our ongoing NEWP commitment and to monitor light pollution and artificial light nuisance issues in the same way as we do for other nuisances.
- continue to work with other Government Departments and other organisations to deliver further recommendations from the RCEP report, where appropriate;
- continue to promote the protection and restoration of dark skies and the reduction of unnecessary artificial light within our National Parks, Areas of Outstanding Natural Beauty and other areas, where possible, working with National Park Authorities and others that plan to apply for Dark Sky status;
- work with the Chartered Institute of Environmental Health, to continue to monitor complaints about light nuisance (in particular the exempt premises) to ensure the current statutory framework remains fit for purpose;
- continue to work with DCLG and others to keep the Government planning guidance on light pollution updated as and when required;
- disseminate the results of our research projects, highlighting them, as necessary, to Research Councils etc; and
- keep in touch with practitioners, researchers and other interested parties to monitor whether any new, major issues are emerging that may require Government intervention.

© Crown copyright 2013

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit www.nationalarchives.gov.uk/doc/open-Government-licence/ or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.uk

This document/publication is also available on our website at:

www.gov.uk/defra

Any enquiries regarding this document/publication should be sent to us at:

Neighbourhood Noise and Nuisance Team
Department for Environment, Food and Rural Affairs
Area 2C Nobel House
17 Smith Square
London
SW1P 3JR

Email: noise@defra.gsi.gov.uk

PB14108