

# AND CAN'T LOOK UP AND SEE THE STARS

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## 1. Introduction

Various events have served to bring the issue of light pollution back to the general environmental legal agenda, these include the publication of the Energy White Paper on 24 February 2003<sup>1</sup> the slightly earlier document from the Office of the Deputy Prime Minister (ODPM), *Living Places: Cleaner, Safer, Greener*,<sup>2</sup> and most recently the Seventh Report of the House of Commons Science and Technology Committee for the Session 2002–03 *Light Pollution and Astronomy*, hereafter referred to as 'the Committee Report'.<sup>3</sup>

The ODPM paper stated (at pp 55–6) that one option for reform was 'creating new powers for local authorities to deal with the detrimental impact of light pollution'. The Energy White Paper further admitted that as a nation we waste energy, inter alia, because of poor regulation of lighting and went on to state that the 'cheapest, cleanest and safest way of addressing our energy policy objectives is to use less energy'.<sup>4</sup> Though most of these energy savings will have to come from the private, commercial and industrial sectors, the government acknowledged that it has an obligation to take action to improve energy efficiency in the public sector, even though that sector only accounts for 5% of UK Carbon Dioxide (CO<sub>2</sub>) emissions. Even so the White Paper stated that 'since 2002/3 local authorities have been required to benchmark their energy use in operational property and street lighting and will set local improvement targets from 2003/4'.<sup>5</sup>

In October 2002 the Department of the Environment Food & Rural Affairs (DEFRA) produced a wide ranging consultative document 'Powers, Rights and Responsibilities: Options for Reforming the Legislative Framework'.<sup>6</sup> This referred to

\* De Montfort Law School, De Montfort University, The Gateway, Leicester LE1 9BH. Our title is a misquotation from Sir John Betjeman's 1937 polemic on the cheap and tawdry, 'Slough'. One line is: 'And daren't look up and see the stars'. What would the poet say now about the whole A4/M4 'Western Corridor'? We prefer not to speculate!

<sup>1</sup> *Our Energy Future: Creating a Low Carbon Economy* (2003) Cm 5761, Department of Trade and Industry (London: DTI).

<sup>2</sup> (2002) ODPM, London, <http://www.urban.odpm.gov.uk>

<sup>3</sup> HC 747-1 (London: HMSO, 2003).

<sup>4</sup> DTI, op cit, para 3.2.

<sup>5</sup> DTI, op cit, para 3.42.

<sup>6</sup> DEFRA (London, 2002).

the review of the legislative framework for providing and maintaining clean and safe public spaces: an exercise led by DEFRA to accompany the *Living Places* report.<sup>7</sup> In particular the document was part of an initiative to clarify and improve the statutory powers, rights and responsibilities of various bodies with regard to achieving cleaner and safe public spaces and local environments. The paper detailed deficiencies in the existing legal framework with regard to a number of issues, with particular regard to the obtaining of redress by citizens.

Many of the issues dealt with are well established matters of environmental concern and have been the topic of previous legislative activity, for example litter, fly tipping, dogs, noisy burglar alarms and private land adversely affecting the quality of public open spaces. Some of the issues have not, however, been the subject of recent legal attention, and it is one of these matters with which this paper is, in part, concerned, namely 'nuisance lighting', though that term is used here with a wide meaning.<sup>8</sup> This particular matter arose under that part of the document devoted to considering whether local authorities need an amended regulatory framework so that they have a greater degree of flexibility in achieving local environmental improvements. This restriction, so far as proposed action is concerned, must be borne in mind throughout the subsequent discussion. Light pollution, we shall argue, is a national and indeed an international problem, yet the DEFRA document is concerned with what *local* authorities can do. This could, however, become a problem if any flexibility of approach adopted by authorities in the wake of legislative change resulted in wide variations in practice.

Section F<sub>4</sub> of the document stated the problem, though in a somewhat limited form, pointing out that external lighting, other than street lighting, is a commonly complained of nuisance—in a non technical sense—which causes detriment to local amenity and local environments. This problem, as identified by the document, is acute in rural locations. The document then somewhat lamely accepted that such lighting can be a general contributor to light pollution problems overall.

## 2. The General Current Legal Background

At the moment there is hardly any legal regulation with regard to the issue of light pollution. Planning conditions may be imposed under the Town and Country Planning Act 1990 where an act of development otherwise takes place, but this, as the DEFRA document admits, gives rise to no duty on the part of local authorities to investigate, much less resolve, light pollution problems. In addition the installation of small scale security lighting is hardly likely to be considered as a material affectation (thus constituting an act of 'development' of any building or fence to which it is attached) and hence is unlikely to require planning permission in itself. Similarly excessive or misdirected security light does not currently fall within the definition of a 'statutory nuisance' under the Environmental Protection Act 1990.

<sup>7</sup> Op cit, Summary, p 1.

<sup>8</sup> The matter was, however, previously examined at some length by P. Jewkes in *Light Pollution: A Review of the Law* (1998) JPL 10–22, P. Jewkes, *Light Pollution and the Law: What Can You Do?* (1998) 108(5) *J Br Astro Assoc* 258–60; and M.M. Taylor, *And God Divided the Light from the Darkness: Has Humanity Mixed Them Up Again?* (1997) 9(1) *Environmental Law & Management* (ELM) 32.

Local authorities thus lack a clear regulatory framework within which to act. But, it may be asked what is the real issue and why is it a problem?

### 3. Light Pollution: The Problem

Light pollution is not currently legally defined, but one definition is 'every form of artificial light which is dispersed outside the areas it is dedicated to, particularly if directed above the horizontal'.<sup>9</sup> It is astronomers who have been particularly active in promoting the notion that light may be a form of pollution, especially as it is the object of their studies (i.e. the night sky) which may be most immediately affected by light.<sup>10</sup> The problem has been growing for some years. In 1990 a private study of amateur astronomers found 90% were affected by light pollution to some degree.<sup>11</sup> Such affectation can easily be observed by anyone who goes out into dark rural areas away from towns and cities. It has since been claimed that two thirds of the world's people no longer see truly dark starry skies because of the light pollution phenomenon. In western Europe and in the continental USA the figure rises to 99%. In the USA 40% of live people in areas where it is never dark enough at night for their eyes to become adapted to night vision—this also applies to one sixth of the population of the EC and one tenth of the world's population generally.<sup>12</sup>

ODPM issued in July 1997 *Lighting in the Countryside: Towards Good Practice*.<sup>13</sup> This defined various terms:

- Light Pollution: a general expression relating to the effect of overlighting resulting from both poorly designed lighting schemes and excessive light levels.
- Skyglow is a component of the above and is the glow caused by artificial light being scattered by dust and water droplets in the atmosphere. This is the orange glow seen for miles around urban areas and is related to the notion of 'upward light waste ratio' (ULWR).
- Glare is the product of an uncomfortably bright light source against a dark background. This can result, for example, from floodlights.
- Light trespass occurs when light spills beyond the boundary of the property on which it is located.

The brightly lit areas of England are more extensive than any others in Europe, save the Netherlands. Whilst light is commonly associated with all sorts of activities and, controversially, with security, the increase in light levels, particularly over the past fifty years, has tended to obliterate the natural night sky and intrudes the town into the countryside. Light may also have deleterious effects on wildlife and upon human

<sup>9</sup> <http://www.astro.cz/darksky/>

<sup>10</sup> In this connection the efforts of the Campaign for Dark Skies (CfDS) and the International Dark Sky Association may be particularly mentioned, their websites are <http://www.dark-skies.org> and <http://www.darksky.org/> respectively. CfDS was begun by the British Astronomical Association in 1990, being joined in that campaign by the Council for the Protection of Rural England (CPRE) in 1994. Note also B. Mizon, *Light Pollution, Responses and Remedies* (London: Springer-Praxis, 2002).

<sup>11</sup> See M.M. Taylor, op cit at 33.

<sup>12</sup> P. Cinzano, F. Falchi and C.D. Elvidge, 'The First World Atlas of the Artificial Night Sky Brightness', *Man.Not.R.Astron.Soc.*000.1-16, available on-line at [http://arxiv.org/abs/astro-ph\(2001\)0108052](http://arxiv.org/abs/astro-ph(2001)0108052)

<sup>13</sup> <http://www.planning.odpm.gov.uk>, and see also the Committee Report, paras 42-7.

beings. As long ago as 1993 a survey by the Chartered Institute of Environmental Health found that some 80% of local authorities had received complaints about light pollution in one form or another. Most complaints were then concentrated in non-metropolitan counties. A further survey in 1996 indicated that complaint levels had risen by 44%. These matters are detailed at length in the ODPM Good Practice Guide alluded to above. The authors of this paper are concerned that the overall issues as defined in 1997 should not be lost sight of whilst governmental and legislative attention is directed to intrusive security lighting. It is our contention that the wider issue of light pollution gives rise to a number of discrete problems.

1. Energy wasted by the use of inefficient/poorly angled light fittings which emit light above the horizontal. This can arise in connection with street lighting and results in 'skyglow'. This is the glow that is seen over towns and cities which is due entirely to wasted light and energy, and to which we have already alluded.
2. Nuisance/danger caused by 'security' lighting (both commercial and domestic) which is angled outwards rather than fully downwards and which results in the glare of the filament causing either nuisance by shining into windows, or danger by distracting or dazzling motorists. These lights are usually far more powerful than what is warranted by the situations into which they are introduced.
3. Skybeams used as advertising which direct light upwards and cause a danger to air traffic. They may distract motorists and add to the skyglow problem. They have no security value and merely create pollution.
4. The energy needed to power all the above forms of light pollution results in the wasteful generation of electricity and the emission of CO<sub>2</sub> and other resulting atmospheric pollutants.

#### 4. The Emissions Issue

The Campaign for Dark Skies has graphically illustrated the effect of light escaping from the earth into space on its website,<sup>14</sup> and it should be remembered that the energy implications of such a wasteful activity have been the subject of *no* UK governmental activity comparable to various attempts to wean the public away from private cars and onto public transport, or to campaigns to persuade us to be more efficient in our use of energy at home by installing insulation and double glazing, by using energy efficient light bulbs and by turning down central heating levels. This may be because the energy implications of lighting, and its consequent polluting effects with regard to CO<sub>2</sub> production, are little known and appreciated. However, it is known that generating 1 KW/hr of electricity produces 2Lb of CO<sub>2</sub> emissions. A standard domestic floodlight is rated at 500W. One such light on during the hours of darkness throughout the year uses 1320 KWhr of electricity (one 500W light on for 4,400 hours per year). We have pointed out that each of those KWhrs of electricity produces 2lb of CO<sub>2</sub>—if produced from fossil sources, of course. On that assumption, our 500W floodlight would, in effect, 'produce' 2640lb or 312 stones/2000 kg of CO<sub>2</sub> per annum. This is the equivalent in one year of the amount of CO<sub>2</sub> emissions coming from a diesel engine car travelling for 13,000 km (150g CO<sub>2</sub> per km).

<sup>14</sup> <http://www.dark-skies.org> click on 'star, starry night' link. See also <http://www.lightpollution.it/dmsp/> for further images of light pollution.

The pollution effects are even worse when one considers the wastage from old street lighting. It must be emphasised that the issue is not whether there should be street lighting, but with the installation of inefficient lighting. Older types of light fitting emit light above the horizontal, producing skyglow in addition to wasting energy. It was estimated in 1993 that the central and local government waste £53 million per annum due to the use of old lights.<sup>15</sup> The Canadian city of Calgary, by way of contrast, has recently begun to change all of its street lighting to full cut-off light fittings which do not emit light above the horizontal. The energy saving per year is \$2 million and the fittings will pay for themselves in six to seven years. The wattage of the bulbs has been reduced without a reduction in ground illumination as the new fittings are more efficient. Beginning in March 2002, by November 2002 11,000 streetlight fixtures in north west Calgary were retrofitted, and the programme will extend to most of the city's residential roads over a period of four years. In addition to energy costs saved it is calculated the 'Enviro Smart Streetlights' project will reduce CO<sub>2</sub> emissions by 16,000 tonnes p.a.; glare will also be reduced. Calgary's previous record with regard to light pollution was not good, with some of the highest street lighting levels in North America along with Edmonton, and comparing very badly with other cities such as Portland, Seattle, Vancouver and Victoria.<sup>16</sup>

## 5. The Plant and Wildlife Issue

Deciduous trees may retain their leaves in winter if subjected to high powered artificial light. Evidence of a threat to zoological species is also to be found at both the national and international levels. Many animals are affected by stray light intruding into their world at night, confusing their natural patterns, migrating habits and breeding cycles. Lights attract and disorientate animals, increasing the mortality rates of wild birds. The length of daylight hours affects the behaviour of birds and insects and can also affect some fish species by stimulating them into early breeding which may result in higher mortality rates among progeny and weakened adult populations.<sup>17</sup>

In the USA and Canada there is growing concern over the increasing number of migrant birds dying as a result of hitting illuminated buildings at night. Most song birds have evolved so that they migrate at night, when predators retire and winds subside. Chicago's Hancock Centre has doused its ornamental nighttime lighting to save the nearly 1,500 birds that—*nightly*—meet abrupt deaths when they crash into the tower during migration season, mistaking its illumination for stars or the moon.

Where birds are killed or wounded as a consequence of light disorientation or direct collision they may well be scavenged by predators, such as cats, racoons, crows, rats and seagulls whose populations may thrive as song bird populations diminish. In 2002 volunteers in Toronto gathered over 3000 dead or wounded birds from 138 species.<sup>18</sup>

<sup>15</sup> B. Mizon, op cit at 63.

<sup>16</sup> <http://content.calgary.ca/CCA/City+Hall/Business+Units/Roads/Street+Lights/Envirosmart+Street+Light+Retrofit+Program.htm>

<sup>17</sup> P. Jewkes, *Light Pollution: A Review of the Law* (1997) JPL 10 at 11, and also: M.M. Taylor, 'And God Divided the Light from the Darkness': Has Humanity Mixed Them Up Again?' (1997) 9(1) ELM 32 at 33.

<sup>18</sup> B. Mizon, op cit at 54, and see <http://www.flap.org/new/nocturn.htm>

## 6. The Road and Air Safety Issue

It is submitted that excessive light may pose a threat to domestic aircraft. In Australia, two planes collided as they approached the runway at Moorabin airport. A commercial pilot with 200 hours' flying time died after her plane hit the runway in a ball of flame. Poor visibility because of the impact of surrounding lights was a factor in the crash. An optics consultant argued that bright surrounding lights at the airport wash out the small amount of light emitted from small aircraft's navigation lights: 'You have this enormous collection of lights shining uselessly into the sky and it is becoming increasingly difficult to see the airport and surrounding planes.' A member of the Aviation Medical Society was more blunt. 'It's bloody hard to see over Moorabin now. There are many lights surrounding the airport that are blinding to look at. If a pilot fixates on those lights, you can lose a lot of depth perception and the ability to judge distance . . . close to the airport runway lights and navigation lights, which are vital to safe flying, can be very difficult to find.'<sup>19</sup> Bad lighting also affects shipping. As shown in the Thames Barge Sailing Club bulletin: 'The Medway at night is not easy to navigate; the buoy lights disappear into the bright orange streetlights and powerful jetty lights that are everywhere . . . [We now use a] compass to guide us to the next buoy, which often was invisible until we got very close to it.'<sup>20</sup>

The authors submit that there is ample evidence that what is generically known as 'light pollution' is not a phenomenon limited to local difficulties arising from intrusive security lighting, neither is it an issue which affects rural areas only. If action is needed, and it is our contention that it is, then it needs to address a far wider range of issues. Some nations and regions have responded to this issue already.

## 7. Other National and Regional Responses

The Czech Republic recently became the first country to enact national anti-light pollution legislation with provisions aimed at eliminating light pollution. Known as the 'Protection of the Atmosphere Act', the Bill passed both houses of the Czech Parliament (Chamber of Deputies and Senate) and was signed into law by President Vaclav Havel on 27 February 2002. It took effect on 1 June 2002 and addresses light and other kinds of air pollution. The law defines 'light pollution' as 'every form of illumination by artificial light which is dispersed outside the areas it is dedicated to, particularly if directed above the level of the horizon'. Under the law Czech Republic citizens and organisations are obliged to 'take measures to prevent the occurrence of light pollution of the air'.

In June 2002 the Czech Republic introduced the Protection of the Atmosphere Act, 'defining light pollution as "every form of artificial light which is dispersed outside the areas it is dedicated to, particularly if directed above the level of the horizon"'. Citizens are now obliged to "take measures to prevent the occurrence of light pollution in the

<sup>19</sup> 'The Age' (3.8.02) at <http://theage.com.au/articles/2002/08/02/1028157844148uhtml>

<sup>20</sup> Stated on <http://www.star.le.ac.uk/astrosoc/cfds/theproblems.html>

air” or face fines of up to £2,800. Authorities are now required to use fully shielded lights to control the spread of light, and use flat rather than curved glass to prevent light dispersing upwards and sideways. Advertising billboards will have to be lit from above, with their lights pointing downwards. Fully shielded light fixtures not only help preserve the beauty of the starry sky, but they also illuminate more efficiently and allow people to see better at night’.<sup>21</sup>

Whilst the Czech Republic is the only country to introduce such an act, similar legislation has been adopted at a regional level in other countries. In Italy the Lombardy Parliament passed a Light Pollution Bill in February 2000 which would make it illegal to install light fixtures emitting a light directly above the horizontal, and near amateur and professional observatories all the lighting should be replaced within four years. Similarly, Catalonia produced the Law on Environmental Planning of Outdoor Lighting for the Protection of Night Darkness,<sup>22</sup> published 12 June 2001, preventing excess light pollution from escaping into the sky.

In September 2002, the 2nd European Symposium on the Protection of the Night Sky took place in Lucerne, Switzerland. It was signed by all attendees, unanimously requesting all European governments and the EU to take immediate action to control light pollution. These actions, they suggested, should include educational campaigns, new legislation and research.

In the USA there are both federal and state policies which attempt to discourage the waste of energy. A number of states have laws which require utility companies to minimise energy wastage and harm to the environment. In Maine, for example, there is a provision prohibiting public spending on outside lighting unless it is of the full cut-off type, i.e. it angles light downwards only. Maine also favours reducing speed limits or installing reflecting roadway markers over the installation of new highway lighting and has further legislated against light trespass and glare.<sup>23</sup> The Clinton administration also introduced a ‘US Green Lights Programme’ as part of its policy on Climate Change which aimed to replace existing light fittings with those which are more economical and less ecologically harmful.<sup>24</sup>

## 8. The Current Legal Position in England and Wales

It is currently possible to attempt to control the excesses of lighting by a number of legal methods. The ODPM Good Practice Guide pointed out that planning controls may be used to ‘influence lighting proposals’.<sup>25</sup> The document further stated that both development plans and supplementary planning guidance have a role in addressing lighting problems as part of the development control process. Such local documents, of course, function against the background of national policy which has historically tended to consider lighting as an issue in security and the control of crime.<sup>26</sup>

<sup>21</sup> Ibid, n 18 at <http://www.star.le.ac.uk/astrosoc/cfds/successes.html>

<sup>22</sup> <http://www.am.ub.es/contaminacio-luminica/plapilot-eng.html>

<sup>23</sup> See M.M. Taylor, op cit at 37.

<sup>24</sup> M.M. Taylor, loc cit, and see the Committee Report Annex 1 for a full list of the control of light pollution in other jurisdictions.

<sup>25</sup> *Lighting in the Countryside: Towards Good Practice*, para 5.1.

<sup>26</sup> See DoE Circular 5/94 ‘Planning Out Crime’ (London: Department of the Environment, 1994).

Furthermore, national policy is not a statutory framework and serves primarily as guidance and exhortation. It must be remembered, however, that under the current legislative proposals before parliament—The Planning & Compulsory Purchase Bill 2002—achieving ‘sustainable development’ will become a statutory objective of the planning system.<sup>27</sup> Might that impose on local planning authorities an obligation to ensure that lighting proposals take account of the amount of CO<sub>2</sub> produced in the electricity generation process?

With specific reference to the impact of lighting on the countryside, the ODPM Good Practice Guide pointed out that development plan policies should preserve the character of the countryside and should minimise the use of lighting and its impacts. The Countryside Commission, English Nature and English Heritage have produced guidance on distinctive features of the countryside needing protection,<sup>28</sup> and this may be supplemented by local assessments so that necessary changes can be accommodated without sacrificing local character. Where areas of ‘dark sky’ still exist, and they tend to correspond, though not exclusively so, with areas such as National Parks and Areas of Outstanding Natural Beauty, these need to be recognised. In addition the intrusive character of lighting installations has to be considered as part of the development control process. Planning control needs to focus attention also on lighting schemes which are not essential to the operation of proposed developments or which are otherwise excessive or inappropriate to the development. In addition the impact of lighting proposals on roads and areas adjoining developments needs to be considered. The ODPM Good Practice Guide accepted, however, that currently ‘Planning policies on lighting are relatively new, and so far a small proportion of planning authorities have specific policies in place’.<sup>29</sup> It is possible, however, to have both structure and local plan policies which indicate either that development will not be permitted if it causes unacceptable visual damage or pollution by way of light, or where lighting schemes will have an adverse effect on the locality or on amenity. Such policies may be augmented by Supplementary Planning Guidance which can give detailed information regarding the control of upward waste lighting and light levels generally, particularly with regard to glare and spillage of light.

Artificial light, as such, is not within the definition of development for control purposes consequent on Section 55 of the Town and Country Planning Act 1990, though individual lighting installations and structures may require permission if they are substantial and affect a building’s external appearance or are new erections in their own right. Thus in *Westminster City Council v Verjee*<sup>30</sup> a hotel company which installed festoon harness lighting which was visible from a conservation area was held to have undertaken an act of development as they had materially affected the external appearance of a building. Furthermore the illumination was considered to detract seriously from the character of the building and its surroundings. In *Kensington and Chelsea Borough Council v CG Hotels and Another* the attachment of ground floor flood lights to a hotel and the positioning of other floodlights on the first floor balcony did not, however, amount to ‘development’ as it was argued the installations were

<sup>27</sup> See Part 3 of the Bill.

<sup>28</sup> ‘The Character of England: Landscape, Wildlife and Natural Features’ (London: English Nature and the Countryside Commission, 1996).

<sup>29</sup> ODPM, *op cit*, para 5.2.2.

<sup>30</sup> (1992) 7 PAD 572 *Current Law Yearbook* (London: Sweet & Maxwell, 1992) at para 4200.

effectively invisible during daylight hours. Moreover the effect of the lighting on the building was the consequence of electricity passing through the installation rather than the installation itself. In this case Donaldson LJ was of the opinion that further legislation would be needed to bring the application of light within the definition of development.<sup>31</sup> New development may also give rise to light pollution issues and these may be addressed at the development control stage. Particular controls may apply when lights are fitted to a listed building, and, of course, further considerations apply in the case of advertisements, a matter to which we shall further return later. The ODPM Good Practice Guide particularly counsels consideration being given to the following issues at the development control stage whether:

- a statement has been made about why particular lighting is required, its frequency of use and the hours of illumination;
- there is a site plan showing the area to be lit relative to its surroundings;
- there are details of the number, location and height of the proposed lights, and the type and specification of these lights; their beam angles and the upward light ratio for each light;
- there is a diagram showing predicted illuminance levels at critical locations, e.g. where residential properties are affected;
- there is a prediction of the vertical illuminance at key points;
- alternatives to the lighting proposals have been considered;
- the relationship of the proposed light levels to published lighting standards;
- the effects of the lighting on areas or sites of special countryside character or interest;
- the effects on local amenity;
- there are opportunities to remove or redesign inappropriate or intrusive existing lighting.

Conditions may be imposed as part of a grant of planning permission to restrict the obtrusive effects of lighting, particularly with regard to the intrusion of light into the windows of existing buildings. These may follow the guidelines laid down by the Institution of Lighting Engineers.<sup>32</sup> However, as Jewkes argues: 'care must be taken because conditions can fall on the grounds of uncertainty or unenforceability ... conditions specifying illuminance levels (measured in lux) should specify from which part of the property that reaching should be taken'.<sup>33</sup>

Where it is considered desirable to impose legal controls on lighting as part of the development control process this may, inter alia, be achieved by the imposition of planning conditions relating to the hours of illumination; light levels; lighting column heights; specification and colour treatment for lamps; the need for full horizontal cut off of lighting so that upward spillage does not take place; the eradication of highway distractions; the level of impact on nearby dwellings; use of demountable columns; retention of screening vegetation; use of planting and bunding to contain the effects of lighting. Interestingly enough the ODPM Good Practice Guide also suggests that conditions may be imposed to require a review of lighting impact after installation.

The authors argue that there is nothing in any of the foregoing that is solely applicable to rural areas: similar considerations apply within towns and cities.

<sup>31</sup> (1981) JPL 190 and see generally M. Grant, *Permitted Development* (London: Sweet & Maxwell, 1998) at 159 et seq.

<sup>32</sup> *Guidance Notes for the Reduction of Light Pollution* (Rugby: Institute of Lighting Engineers, 1994).

<sup>33</sup> P. Jewkes, op cit at 13.

## 9. Environmental Impact Assessment

In some cases, as the ODPM Good Practice Guide points out<sup>34</sup> though a formal environmental impact assessment is 'seldom likely to be necessary' with regard to a lighting scheme, nevertheless the impact of lighting may have to be considered as part of the formal assessment of relevant developments. In this connection particular regard has to be had to the night time effect of lights, the appearance of the equipment during daylight hours, and the impact on local communities and important landscape, historic or wildlife features likely to be affected. Light emissions may therefore figure in the information included in an Environmental Statement at the beginning of the assessment process. At the assessment stage not only should the factors mentioned above be considered but additional attention should be given to both local dark landscapes and existing lighting, the character and sensitivity of landscapes, those areas, roads and dwellings which will be receptive of light, and the views of those likely to be affected by the light. It is specifically stated that 'it should be borne in mind that astronomers and the elderly are particularly sensitive to the effects of light glare and trespass'.<sup>35</sup> Impact prediction of the lighting scheme in its various aspects is also appropriate at this stage, while 'The environmental assessment as a whole should assist in determining whether and how a lighting scheme should be installed; it should also indicate how its impacts need to be mitigated through improved scheme design or specific control measures.'<sup>36</sup>

## 10. Planning Practice

An idea of how actual practice is developing may be gained by considering the particular issue of lighting used for advertising purposes, especially the phenomenon known as 'sky beams'. Outdoor advertisements of any type are controlled under The Town and Country Planning (Control of Advertisements) Regulations.<sup>37</sup> In general advertising displays without consent from the local planning authority are prohibited, and in granting consents authorities are required to have regard to both amenity and safety issues. Some advertisements are either exempt from control, or are given deemed consent, subject to a power to order discontinuance in cases of substantial injury to amenity or public danger. Some illuminated displays are permitted under these exemptions, though not within Conservation Areas, National Parks or Areas of Outstanding Natural Beauty, and subject to controls on the maximum luminance of illumination, size and siting.

Sky beams are laser or other strongly powered lights projecting upwards into the sky, but whether they constitute advertisements for the purposes of control is dependent on the presence of some commercial element in their creation and use. It has been

<sup>34</sup> Op cit, para 6 et seq, and see also *Environmental Assessment: The Treatment of Landscape and Countryside and Recreation Issues* (London: Countryside Commission, 1991) and *Guidelines for Landscape and Visual Impact Assessment* (London: Institute for Environmental Assessment and the Landscape Institute, 1995).

<sup>35</sup> Op cit, para 6.3.

<sup>36</sup> Op cit, para 6.6.

<sup>37</sup> SI 1992/666 as amended by SI 1994/2351, and see also Planning Policy Guidance Note (PPG) 19.

held in the High Court that a beam of light which amounts to a sign indicating the presence of a commercial undertaking is an 'advertisement', there was no need for a tangible physical object.<sup>38</sup> His Honour Judge Rich stated 'The beams projected into the sky were clearly intended for the purpose of indicating the presence of the premises from which they were projected.'<sup>39</sup> Also, however, relevant to the judge's thinking was the fact that in one of the instances before him the 'owners of the display distributed leaflets which contained the admonition to those who received them to follow the light in order to find their premises. It was as clear an indication as there could be, in my judgment, that the light was being used for the purposes of advertisement ...'.<sup>40</sup> However, as Jewkes argues: 'A creation of light beams with no commercial element, solely for the purpose of artistic or religious expression, would probably not constitute an advertisement.'<sup>41</sup>

Sky beams have become, the present authors would argue, a particularly intrusive form of advertisement. In 1999 a sky beam in Guildford was considered to be an advertisement and therefore subject to control, as was a similar beam in Bristol in 2001.<sup>42</sup> In this latter instance objections to the beam included the impact of the beam on visual amenity and the alien nature of the beam when seen from surrounding rural areas. The application for permission in this instance was withdrawn. Material from the Inspector's report into the Guildford sky beam application appeal is worthy of note.

At a public enquiry held at the Guildford (Surrey) council offices in December 1999, HM Planning Inspector Ava Wood heard arguments from a Guildford night club appealing against the denial of permission under the Control of Advertisements Regulations to shine two searchlights into the sky over the town. The lights were visible from great distances, and opposing arguments came from Campaign for Dark Skies committee members Bob Mizon and Graham Bryant. Bob Mizon said:

Half of our environment is above the horizon. Half of our environment is not protected by the force of law. The night sky, by its very nature a site of special scientific interest and an area of outstanding natural beauty, has been quietly and gradually taken away, over the last fifty years, from those dwelling in towns and urban fringe areas, throughout the developed world. Skyglow and obtrusive waste upward lighting also detract from the character of the night-time scene and are detrimental to local amenity, not just for astronomers, but for the public in general.

The Inspector refused the nightclub's appeal to continue using the searchlights, even though there was no 'advertising' as such (e.g. distribution of leaflets or publicity linking the beams with the club).

It is submitted that the following extracts from the Inspector's report are important statements with regard to planning controls over light pollution.

Para 78 The impact of the lights is however not restricted to its urban surroundings ... generally, the lights of the town do not impose themselves in the surrounding countryside, whereas the beams extend, in an arc, over a wide area and the shafts of light pierce the dark skies above the hills. They appear to extend the commercial

<sup>38</sup> *Newport Borough Council v Secretary of State and Hexapoint Ltd (trading as Heights 2000); Great Yarmouth Borough Council v Secretary of State for the Environment and De'ath* (1997) JPL 650.

<sup>39</sup> (1997) JPL 650 at 658.

<sup>40</sup> *Loc cit*.

<sup>41</sup> P. Jewkes, *op cit* at 8.

<sup>42</sup> <http://www.dark-skies.org> (news section).

nature of the town centre well beyond its urban confines, across rural villages and into dark, undisturbed areas of the countryside. Outside the context of an illuminated urban environment, I have to say that the beams are unwelcome intrusions. They are alien features, disturbing to those who appreciate the countryside for its non-commercial aspects, and others that wish to maintain dark skies for observation purposes or for its own sake.

Para 81 It is this far-reaching impact that is unacceptable, as the beams are detrimental to the amenity of the surrounding rural areas ... it must follow that the advertisement breaches planning policies that seek to prevent harm to the Area of Outstanding Natural Beauty, and to the countryside.

Para 84 A recurring theme among objectors is the fear that permitting such an advertisement would set a precedent and the skies would be awash with similarly obtrusive beams ... it is open to the Council or other decision-maker to judge each case on its merits, and look at the cumulative impact that other such applications may bring to bear.

Para 85 Whether or not the owner's motives are altruistic is a matter for conjecture. My view is that he is partly motivated by his own creative ambitions, and partly by a need to draw attention to Guildford and its attractions. Intentionally or not, the expansive manner in which he chooses to express such motives has far-reaching and detrimental effects and falls within the definition of an advertisement under section 336(1) of the Act.

Para 89 I recommend that advertisement consent be refused.<sup>43</sup>

It is submitted on the basis of the ODPM Good Practice Guide coupled with the material cited above with regard to sky beams that planning controls have an important role to play with regard to the light pollution issue, and not just in relation to those areas of the nation where dark skies are still to be found. However, as is always the case with planning controls the following warnings have to be sounded:

- light pollution issues may be only one of a number of material considerations which a local planning authority has to take into account in coming to a decision, and other factors may tell in favour of a light polluting development;
- much may well depend on local practice and the awareness of officers and members of the light pollution issue;
- equally much may depend on the existence of local pressure groups who are aware of light polluting development proposals and who have the time and expertise to press objections at the planning application stage;
- if a light polluting development is consented there is no right of appeal for disappointed objectors, their only legal remedy being to follow, if possible, the costly and uncertain path of judicial review.

## 11. Other Forms of Legal Control

As stated above DEFRA's *Powers, Rights and Responsibilities* document in addition to examining the role of planning controls also addressed the issue of whether the law of statutory nuisance could be developed as a means of dealing with light pollution issues. This was as an alternative to voluntaristic initiatives at local levels such as adoption of codes of practice concerning the positioning of external lighting.

<sup>43</sup> Ibid.

Extending regulatory powers to deal with external lighting (other than street lighting) so that statutory nuisance abatement proceedings could be commenced against those owners or occupiers of land or property with non-compliant lighting would meet the public's current belief that authorities currently possess such powers. There are a number of problems, however, inherent in pursuing such a proposal:

- what would be the relationship between the regulatory mode and other forms of light pollution control, such as planning controls?
- what would the technical issues be in proving that non-compliant lighting is 'prejudicial to health or a nuisance', for example what would be acceptable as fair and accurate assessment techniques, and what would their costs be bearing in mind arguments of a technical nature about lighting angles, horizontal cut-offs, peak intensity of lights, lumens and upward light waste ratios?
- what provision could be made for trials of alternative lighting schemes?
- what other practical and technical difficulties might arise, for example, establishing the points at which technical measurements are to be taken?
- what would the jurisdictional position be with regard to alleged lighting nuisances arising in one local authority area and yet adversely affecting the areas of other authorities?
- could conflict arise with other policies dependent on lighting, e.g. crime prevention?

Current central guidance on this last issue now, however, counsels against the use of high powered security lighting and instead promotes low energy, efficient and well directed lights. The employment, as is very common, of 250 or 500 watt tungsten halogen floodlights which are activated by passive infra red (PIR) movement sensors is now officially regarded as unfortunate and inappropriate.<sup>44</sup>

To the specific issues addressed by the DEFRA document the current authors would also add the question of whether and how publicly promoted sources of light pollution such as street lighting could be adequately regulated within the framework of statutory nuisance. Could there, for example, be a somewhat strange situation in those parts of the country where local environmental health authorities form a separate tier of local government from highway authorities whereby one authority might prosecute another for light pollution emanating from highway lighting schemes? The issue is not as bizarre as it might appear for if regulatory curbs are to be placed on the light polluting activities of citizens, then surely the state in its various manifestations should address its own polluting activities if it is to speak and act with moral authority.

So far as some of the technical issues of the law of statutory nuisance are concerned, it might be that analogies could be drawn, certainly so far as measurement and assessment issues are concerned, with the current law and practice of noise nuisances. Just as it is now firmly established that noise can undermine the physical integrity of those subject to it, so too light pollution may affect the physical and psychological well being of residents, for example by making sleep difficult.

With regard to Civil Liability there is some authority from the courts that intrusive lighting may amount to a nuisance. Jewkes<sup>45</sup> claims that where lighting is excessive it can amount to a nuisance at Common Law and cites two cases from New Zealand and one from Scotland as authority for the proposition. One of the New Zealand cases, *Bank of New Zealand v Greenwood*<sup>46</sup> is actually concerned with reflected sunlight glare, so

<sup>44</sup> <http://www.crimereduction.gov.uk/burglary45.htm>

<sup>45</sup> P. Jewkes, *op cit* at 18–19.

<sup>46</sup> [1984] 1 NZLR 525.

rather more to the point are *Racti v Hughes*<sup>47</sup> and *Stonehaven and District Angling Association v Stonehaven Tennis Club*.<sup>48</sup> These cases concerned excessive floodlighting.

The current authors also draw attention to a relatively recent case in Brighton County Court, *Bonwick v Brighton and Hove Council*.<sup>49</sup> In July 1998 the council erected high powered security lighting on adjacent property, shining directly into Mr Bonwick's house and other properties in the road. Mr Bonwick wrote to the council identifying the problem the lights posed to him. The Council did not consider that the lighting had a detrimental effect on Mr Bonwick and therefore refused to rectify the problem. Finally, after no progress with correspondence, Mr Bonwick took the matter to the County Court in August 2000. His solicitor's letter states: 'on the basis of loss and damage, interference with enjoyment of the property ...'. The council denied that the light shone on the property, and relied on a letter from an electrical engineer that he did not consider the claimant experienced difficulty. The judge made a site visit, and ordered that 'the defendant cease the nuisance caused', and awarded Mr Bonwick damages and costs of several hundred pounds.

Private court cases are, however, of course rare, due to the uncertain outcome and the high cost. Most people would not have taken the matter so far, especially given the Council's attitude in this case.

In addition it has to be remembered that all the well known technicalities of the Law of Nuisance will have to be satisfied. Thus, excessive light would have to be shown to be of such a kind, quality or quantity as would seriously disturb a landowner of ordinary sensibilities. It would have to be shown to either affect the use and enjoyment of land to an unacceptable degree, bearing in mind its location, or to be deleteriously affecting the property in question or some right in connection with it.

## 12. The Past Record of UK Law and Policy on the Light Pollution Issue

There have been attempts in the past to enact regulatory controls over light pollution. When the Environmental Protection Act 1990 was before Parliament as a Bill, Baroness Hilton tabled an amendment to include 'light emitted from premises so as to be prejudicial to health or the environment'. This was at that time resisted by the Government on the basis that it was more appropriate to deal with light pollution issues by way of education and guidance. Attention was drawn in the House of Lords to DoE Circular 5/94 *Planning Out Crime* which, however, confines its remarks on lighting to two paragraphs which merely warn that badly designed and installed security lighting may be a nuisance to neighbours. Baroness Hilton withdrew her amendment, but it is interesting that the Committee Report once again resurrects the suggestion, a matter we shall return to below. The issue of light fittings was also not addressed by the Home Energy Conservation Act 1995.

Indeed the attitude of central government to the light pollution issue generally, as opposed to specific local nuisance problems, continues to place reliance on policy guidance and education. Thus local authorities and the Highways Agency are

<sup>47</sup> Unreported, Supreme Court of New South Wales, October 1995.

<sup>48</sup> Unreported, Stonehaven Sheriff's Court, January 1997.

<sup>49</sup> Brighton County Court Claim Number BN 906 721, Judgment 9 August 2000.

expected to follow the guidelines of the Institution of Lighting Engineers which, however, distinguish between various areas of the country in laying down how much light output should go directly upwards.<sup>50</sup>

In 1996 there was a governmental conference on the issue of light pollution and the possible regulation of lighting schemes. The then Secretary of State for the Environment, Mr John Selwyn Gummer, recognised that there was real environmental issue and stated he would review the current law to see whether planning law and policy could assist in reducing the incidence of poor quality lighting schemes.<sup>51</sup> Little seems to have resulted from that review (possibly because Mr Gummer and his colleagues fell from power in 1997) apart from the issue of the ODPM Good Practice Guide by the incoming government.

In the debates on what was to become the Pollution Prevention and Control Act 2000 in House of Commons Standing Committee A attempts were made to bring light pollution within the purview of the legislative provisions.<sup>52</sup> It was pointed out that though there are many complaints about security lighting, the most significant form of light pollution comes from street lighting. Ministers were asked whether the legislation would extend to require local authorities and the Highways Agency to mitigate light pollution. The Minister in charge of the Bill in the Standing Committee debate, Mr Michael Meacher, argued that light pollution did not fall into the same category as those issues dealt with by the proposed legislation, namely noise, vibration, waste, raw material consumption, waste and energy efficiency. He stressed that the piecemeal approach to the issue which has characterised government policy for so many years would continue, i.e. planning controls and good practice guidance. However, he then went on to acknowledge that the greatest source of light pollution is not individual buildings but street and road lighting. He promised action with regard to the design of street and road lighting, especially with regard to new lighting schemes on new or improved roads, but also pointed out the cost implications of retrofitting existing road lighting schemes. The proposal to extend the term of the legislation to cover light pollution was defeated.

Ministers took a similarly restrictive line in written answers to Parliamentary Questions in April 2000.<sup>53</sup> It was again repeated that planning controls apply to some external lighting schemes, while other controls can be achieved by the following of good practice guides. Furthermore Ministers stated they had no plans to restrict the sale of domestic floodlighting bulbs to a 150 watt maximum. A few days later Ministers, again in written replies to questions, indicated that though the Highways Agency has an objective of minimising the impact of the trunk road network on the national and built environment, new lighting of a less polluting type will only take place where renewal is due or where it can be done in association with other improvement works. The issues of cost and disruption were stated to be the reasons for the piecemeal approach.<sup>54</sup> The Committee Report is quite properly scathing in its condemnation of the Government's attitude, pointing out that whilst the remedies for different types of

<sup>50</sup> *Guidance Notes for the Reduction of Light Pollution* (Rugby: Institute of Lighting Engineers, 2000).

<sup>51</sup> *Independent* (26.11.96) 3, *The Times* (26.11.96) 7.

<sup>52</sup> Hansard (17.6.99) <http://www.parliament.the-stationery-office.co.uk>

<sup>53</sup> Hansard (4.4.00) House of Commons Written Answers Part 13, Col 432W  
<http://www.parliament.the-stationery-office.co.uk>

<sup>54</sup> Hansard (7.4.00) House of Commons Written Answers Part 1, Col 605W  
<http://www.parliament.the-stationery-office.co.uk>

light pollution may differ, the problem has but a single cause, the misuse of light, and the confusion in law and policy is 'indicative of the Government's disjointed treatment of the problem of light pollution'.<sup>55</sup> The Committee Report further urges Government to make it a priority to reduce the consumption of electricity used for home, street and public lighting, and concludes, 'the Government fails to take the issue seriously and does not consider light pollution in its full context—with its effect on everyone', and records its disappointment at the Government's 'inconsistent' approach to the issue.<sup>56</sup>

### 13. Conclusion and Recommendations

In view of the foregoing and of the very limited terms of reference of the DEFRA consultation exercise identified at the start of this paper one can hardly be confident that the issue of light pollution is going to be addressed in a comprehensive fashion. Nor can one be hopeful that leads taken in other places to which we have made reference are likely to be followed in the United Kingdom. Furthermore it has to be accepted that there are substantial lobbies who are vociferous in support of lighting for anti crime and road safety purposes, even though there is evidence to suggest that at least some of their zeal is misplaced.<sup>57</sup> There is, moreover, the issue of whether a government would have much moral legitimacy in using the Law of Statutory Nuisance to criminalise the employment of lighting schemes by private individuals and companies when it is light pollution from road schemes (for which central and local government is responsible) that is the prime source of the whole problem. It is probably also unwise to resort to legislative action alone without employing other policy and educational measures to lead the public to accept the need for energy efficiency in lighting and curbs and restrictions on the use of lighting.

Certain recommendations for reform of the law can, however, be put forward and these, we submit, should be in the form of a new licensing regime for lighting. We believe this to be preferable to trying to adapt the Victorian concept of statutory nuisance and the mid twentieth century concept of planning controls to deal with what is a growing problem in the twenty-first century. Overall what is needed is legislation which restricts the power consumption and output of both domestic commercial and recreational exterior floodlighting. All light fittings should be designed to an approved standard so that they point downward, do not emit light above the horizontal and minimise glare and spillage of light, most certainly in an upward direction. The maximum wattage of domestic floodlighting should be limited to 150 watts. Installing any relevant lighting should be subject to a license/authorisation or permitting scheme similar to that currently operating with regard to IPC and IPPC, and it should be an offence to install relevant lighting without appropriate permission.

Such a licensing regime should also apply to laser and other similar lighting schemes used in 'sky beams' as part of non commercial activities, e.g. during particular

<sup>55</sup> Committee Report para 49.

<sup>56</sup> Committee Report paras 55, 57 and 67.

<sup>57</sup> See further M.M. Taylor, *op cit* at 36.

festive seasons. Such a scheme should not just apply to new lighting schemes but should be applied to existing schemes, though with some flexibility here to allow for any costs to be met, even though over time such costs are more than likely to be offset by energy savings. The analogy for such temporary 'derogations' would be with the discharge consent system which exists under the Water Regulation Act 1991.

We are encouraged to put forward these proposals by the successful passing, following its introduction on 11 December 2002 as a Private Member's Bill into the House of Commons by Mr Bill Tynan, of the Fireworks Act 2003.<sup>58</sup> This was originally drafted by the Department of Trade and Industry, and it enables ministers to issue detailed regulations on the use and supply of fireworks with, inter alia, regard to preventing injury or distress to animals and persons, which includes alarm or anxiety to persons. In particular curbs may be introduced on the sale to, or possession by, persons below a certain age, of fireworks, while their use during specified hours may be banned, though exemptions may be granted, for example, for particular religious and public festivals such as New Year's Eve and Diwali. The sale of fireworks may be restricted to persons and outlets licensed under the legislation, whilst organisers of public firework displays would be required to demonstrate appropriate levels of training, experience and insurance.

We submit that a similar pattern of regulation and licensing on the lines we have proposed is equally appropriate with regard to intrusive lighting, and we are therefore somewhat surprised that the Committee Report favours dealing with intrusive security lighting by means of the statutory nuisance route as opposed to an outright ban on the sale of unnecessarily powerful light fittings.<sup>59</sup> Whilst satisfied that the technical means exist for Environmental Health Officers to deal with lights as a statutory nuisance, the Committee Report contains no real discussion of the drawbacks inherent in adopting this approach, in particular: criminalisation of behaviour previously considered not only legal, but actually desirable, i.e. the promotion (albeit on false assumptions) of the need for security; the imposition of yet more regulatory tasks on local authorities, and the very real possibility of different enforcement practices emerging between authorities. The present authors therefore prefer their preventative proposals as opposed to the merely reactive and curative approach of the Committee Report.

Existing planning controls should also be retained, but particular thought needs to be given to clarifying the law so as to introduce curbs on the floodlighting of buildings where the sole or a predominant purpose is to draw attention to the building's presence as a centre of commercial or leisure trading. The Committee Report also calls for more coherent and forceful planning guidance and a more proactive attitude to the problem by planning authorities.<sup>60</sup>

Finally, both central and local authorities should set publicly declared timetables for the retrofitting of less polluting forms of lighting for highways. What has happened in Calgary should, arguably, happen in the United Kingdom.

We began our paper with a misquotation from Sir John Betjeman: we close with one from Lord Macaulay's 'The Armada'. This tells how Elizabethan England was alerted to the arrival of the Spanish fleet by beacons, closing with the memorable lines:

<sup>58</sup> See also *The Times* (1.3.03) 2, and <http://www.publications.parliament.uk/>

<sup>59</sup> Committee Report paras 137 to 146.

<sup>60</sup> Committee Report paras 116, 123, 127 and 134.

Till Belvoir's lordly terraces the sign to Lincoln sent,  
And Lincoln sped the messages on o'er the wide vale of Trent;  
Till Skiddaw saw the fire that burned on Gaunt's embattled pile,  
And the red glare on Skiddaw roused the burghers of Carlisle'.

Given modern lighting conditions one might re-phrase that as:  
'And the red glare on Skiddaw was lost in the orange glare from Carlisle'.

Perish the thought!