CPRE/NORFOLK AND NORWICH ASTRONOMICAL SOCIETY (BAA)
Night Blight Campaign Team's submission on light pollution for the Broads Authority's Design and Management Handbook: March 2005

Introduction

Darkness at night is one of the things which - up to now, at least - has defined the countryside and made it so different from towns and cities. The Broads is a region that contains some very special dark tranquil rural night time landscapes which contribute much to the character of the area and are deserving of protection. The dark nights of the Broads are threatened, as never before, by the increasing problem of light pollution. Satellite maps, published by the CPRE, show a big increase in light pollution in the Broads area between 1993 and 2000.

What is light pollution?

Light pollution consists of a number of elements:

1) **Skyglow** - the pink or orange glow that overhangs towns, cities and many main roads at night and which spreads deep into the countryside. It is caused by a scattering of artificial light by airborne dust and water droplets.
2) **Glare** - the uncomfortable brightness of a light source when viewed against a darker background.
3) **Light spillage** - light spilling beyond the boundary of the property on which a light is located.

Why is light pollution a problem?

1) Light pollution robs astronomers of their view of the heavens. It is estimated that 55 per cent of the UK's population cannot see the Milky Way from where they live. Even in Norfolk, a relatively dark county, only 12% of its area experiences truly dark night skies. Some of these dark places are in the Broads National Park and they offer a wonderful view of the heavens to both residents and visitors alike. They are a very special feature of the Broads.

2) Light pollution destroys the character and tranquillity of the countryside. Sodium lights, be they low-pressure (orange) or high pressure (pink), introduce an urban atmosphere into the rural night and because they are visible over great distances, particularly in lowland areas such as the Broads, they not only affect their immediate location, but they also suburbanise places far removed from the light source. Halvergate Marshes may seem remote in daylight but they certainly don't at night - brightly lit Yarmouth seems far too close. Nothing more obviously announces the arrival of suburbia into the rural landscape than the erection of a dusk-to-dawn sodium light.

3) When people's bright lights shine into neighbouring homes at night this can seriously harm the quality of life of those suffering from the glare of Light trespass.

4) All light pollution is wasted energy; light shining where it is not wanted or needed. The great majority of that wasted light is made by burning fossil fuels and so light pollution contributes towards air pollution, acid rain and global warming. Global-warming will of course impact heavily on the Broads - rising sea levels could flood large sections of the National Park.

A 100 watt bulb left on throughout the hours of darkness on every night of the year causes the power station that generates the energy for that bulb to produce one quarter of a ton of carbon dioxide emissions.

5) There is a growing body of evidence that shows that outdoor lighting can have a detrimental effect upon flora and fauna. The following thought provoking quote, from the Institution of Lighting Engineers is of particular relevance to an area like the Broads, with its special mix of plants and animals. It reads, "All living things adjust their behaviour according to natural light. Man's artificial light, which is now powerful enough to turn night into day, can create stress and confusion. If not properly controlled obtrusive light could present serious physiological and ecological problems not just for the present but for future generations."

What can be done to reduce the impact of light pollution in the Broads?

While a dramatic reduction in light pollution will probably only be achieved through central government passing legislation enabling local authorities to bring all outdoor lights under planning controls, individual householders, farmers, businessmen, tourists, parish and town councils can make an impact through thinking carefully about their use of outdoor lights.

Some practical tips:

<u>1) Switch lights on only when needed</u>

There is no denying that exterior lighting can be useful but the current presumption in favour of permanent dusk-to-dawn lighting needs to be questioned. Such lights are the basic cause of light pollution and waste (collectively) copious amounts of energy. Movement sensors and time switches are practical alternatives and they enable lights, for example if required for health and safety reasons, to be switched on only when needed.

2) Shield all outdoor lights so that the light is directed downwards only on to the area where it is required

The use of full cut-off flat glass lamps, when mounted horizontally to the ground, directs light downwards below the horizontal and reduces the chances of light spillage beyond the boundary of the property being lit. Lamps with glass bowls that extend below the exterior shield, even when the bowls are very shallow, allow light to escape horizontally and vertically and therefore causes light pollution.

Local authorities can purchase full cut-offs, to replace existing poorly shielded light polluting street lamps, when lamps need replacing. Full cut-offs are also available for sporting applications and for use by householders and businesses. Everyone should at least make sure that their outdoor lights are tilted downwards and not upwards and outwards (Link here to diagrams showing types of lights).

3) Consider if lights are really necessary

Much outdoor lighting is provided for security purposes. However in rural areas there is no convincing evidence that so-called security lighting acts as a deterrent to criminals.

The House of Commons Science and Technology's Select Committee's recent report into Light pollution (2003) noted that: "The evidence relating to the correlation between lighting and crime is not conclusive." It also quoted examples of recent lenghty electricity blackouts in North America and New Zealand during which crime levels fell. The committee received many submissions which stressed how lighting at night enabled criminals to do their work more effectively.

A study carried out in West Sussex, and reported in the Home Office publication crime Prevention News, showed that introducing lighting into rural areas: "May actually result in more crime. This is because security lighting can help burglars find entry points and leave dark shadows in which to hide."

Norfolk police recommend PIR movement sensor lights for security purposes. These illuminate only when approached and therefore draw attention to an area when an intruder is present - permanent lighting does not do this. Much of the light pollution that reaches deep into the heart of the countryside, suburbanising and ruining countryside character in the process, results from poorly directed dusk-to-dawn sodium security lamps positioned in rural farm farmyards and on rural businesses.

4) Consider using white light sources

Low energy white light sources are available for exterior lighting, for example fluorescent and ceramic metal halide. While these can cause light pollution they are less offensive in the rural night time landscape and they do not paint the night sky pink or orange.

5) Local authorities in Broadland can take action to reduce light pollution

Norfolk County Council has an Environmental Lighting Zones policy which acknowledges that Norfolk is one of the "darkest counties in England and and that the resulting ability to see the stars clearly against the night sky is appreciated by the both residents and visitors alike." This policy defines most of Norfolk, including most of Broadland, as Rural Dark Landscape and although it only applies only to the county council's street lamps it can be adopted by district, parish and town councils. The Environmental Lighting Zones policy recommends the use of full cut off lamps.

Parish councils, of villages without street lamps, can continue to protect the unlit nature of their villages and resist calls for street lighting. A CPRE/Norfolk survey (2004) of all parish and town councils in Norfolk found that the majority of parish councils were very protective of their rural dark nights and valued the contribution that their unlit villages made to the rural tranquillity and countryside character of their area.

Parish councils can request that controls on outdoor lighting be applied to all planning applications that come before them and district councils can include policies on light pollution in their local plan - South Norfolk do this.

6) **Visitors can play their part**

Tourists visiting Broadland, instead of asking for urban style lights, should realise that their introduction would destroy the very nature of the rural place that they have chosen to visit. Do not expect every staithe to be lit, especially those located deep in the heart of the countryside. Enjoy instead a wonderful view of the Milky Way, because you probably cannot see it from where you live for most of the year.

7) **Resist the spread of outdoor lighting**

We can all play a part in resisting current trends to put lights everywhere. The development of solar-powered lighting frees lights from their reliance on an electricity source and will allow them to invade every corner of countryside.

Garden lights are cropping up all over the place and increasingly historic buildings, such as church towers, are being lit. While such lighting can give a building, or a garden, a different perspective, if it used too often this effect is lost. A church tower that is lit occasionally is interesting but if it is lit all night every night it just becomes a familiar sight and loses its impact. And, what really is more impressive, a gorgeous Broadland church tower set against a star filled sky, or one that is lit up by an orange sodium lamp that blots out our view of the heavens?

In conclusion, dark skies and dark landscapes are special and deserve protection