

**Environment
Scrutiny Committee**

Hertfordshire County Council

LIGHT POLLUTION

REPORT OF THE STREET LIGHTING TOPIC GROUP



Introduction

In January 2003, the Hertfordshire County Council Environment Scrutiny Committee considered the problem of light pollution in Hertfordshire. Light pollution caused by street and other lighting causes the “glow” in the night sky that we see over large settlements. It means that astronomers and stargazers find it difficult, or sometimes impossible, to see the stars and many people feel that an increase in light pollution can adversely affect the character of rural areas.

Great Britain has one of the biggest problems of sky glow in Europe. The Scrutiny Committee recognised that there are legitimate concerns about light pollution in Hertfordshire but also that there are conflicting interests, most notably the importance of lighting roads to prevent accidents and the role of lighting in crime prevention.

The Committee decided to set up a small Topic Group to look at this issue in more detail and make some suggestions about how the situation could be improved. This is the report of that Topic Group.

The Topic Group met between January and September. The Members of the Topic Group were:

Mary Bayes (C) (Chairman)

Sherma Batson (L)

Nigel Copping (C)

Doug Drake (C)

Sue Jones (L)

Background

The Street Lighting Topic Group met 7 times (See Appendix – 1, list of meetings) and considered the issue of light pollution from a number of angles. These can be summarised as:

Lighting and Safety – including crime and accident prevention, lighting for CCTV (Closed Circuit Television) and lighting for youth congregation sites.

The Impact of Light Pollution – including the effects on animals and plants, lighting conservation areas and lights at sports facilities.

Preventing Light Pollution – including reducing light pollution on a countywide scale, Lighting installation design, planning controls, and policy and guidance on street lighting.

As a result of the work of the Topic Group, the County Council has produced an information booklet (Appendix 2) on lighting which explains the problem of light pollution and provides guidance for anyone – including householders – who may be installing lighting to enable them to minimise light pollution whilst meeting their needs.

Lighting and Safety

Designing for Safety

Research and practical examples show that addressing security at the design and pre-planning stage can reduce the risks and fear of crime – this includes lighting.

The Crime and Disorder Act 1988 (Section 17) makes it an **obligation** on local authorities to take account of community safety in all that they do.

The Topic Group met with John White, the Architectural Liaison Officer of Hertfordshire Constabulary and Allan Howard the Operations Manager (Lighting) from Hertfordshire Highways. John White introduced “Secured by Design”, which is a police initiative to guide and support people in designing safer environments. Using the principles will help local authorities to meet the Crime and Disorder Act requirements. “Secured by Design” covers many aspects of environmental design of which lighting is just one.

Better lighting does not in itself reduce crime but can help to encourage “natural policing” in turn helping to reduce crime. Natural policing occurs with better lighting as it can encourage more people to frequent an area, thereby deterring criminal activity. It has been shown that this is not a “displacement” effect where crime is simply shifted from one area to another.

Police experience and research has revealed that in most cases improved lighting can be more effective than CCTV in reducing crime – studies have shown that it is 7% more effective. CCTV will not have any value in tracing or convicting criminals caught on camera unless there is good lighting in the area covered. In car parks, CCTV is more effective with a well-designed quality lighting scheme, than lighting alone.

Accidents and Fear of Crime

Lighting is also very important in reducing the fear of crime. Home office statistics show that 34% of people feel unsafe at night if they are alone in a rural area and 50% if alone at night in a city. Fear of using public transport at night is high, especially when waiting at a vandalised bus stop. Lighting can be an important and cost effective contribution to an area's regeneration as it is relatively cheap to maintain.

Lighting also contributes to safety through the prevention of accidents. Street lighting, especially at road junctions, is an important factor in the prevention of road accidents. Hertfordshire Highways have design standards for planning effective road lighting. The main consideration in designing road lighting is safety at night for motorists and pedestrians.

The Effects of Light Pollution on Wildlife

It has been shown that artificial lighting does have an effect on wildlife and can cause a significant impact on the behavioural patterns of mammals, birds, insects and other wildlife. In contrast to temperature, the natural length of the day is always the same each year for a given season and latitude. It has long been known that it is the length of the night – the period of uninterrupted darkness rather than day length – that governs many biological rhythms. Consequently, flowering, feeding, breeding and migration can be driven in part by light, and artificial disruption of this can induce unnatural activity in plants and animals.

In general, the 'whiter' the light, the greater the potential effect it has, but all external lighting will create artificial environments conditions, thus introducing another pressure on the local ecology. However, the issue is extremely complex, as some species will be attracted to artificial light – where they can both feed and be fed upon – or they can be deterred from using or resting in areas by such lighting.

Consequently, a precautionary approach is needed when dealing with ecologically sensitive areas and sites. Where lighting is required, it should be well controlled with consideration given to location, minimum levels, days and hours of use, with appropriate controls to achieve this where possible.

Prevention of Light Pollution

The British Astronomical Association are currently running a "Campaign for Dark Skies" which aims to encourage people and organisations to design lighting installations so that light pollution is minimised. This includes careful siting of lighting, making sure that lights are aimed to where illumination is needed (i.e. pointing downwards), lights are shielded to prevent unwanted light escaping and consideration is always given as to whether the lighting is really necessary.

Street Lighting

Road lighting is provided in accordance with BS 5489 Road Lighting. The Standard aims to provide a clear and consistent standard of lighting which includes measures to minimise light pollution. It also requires that there should be special light control measures in some circumstances. These include environmentally sensitive areas, the vicinity of astronomical observatories and rural areas.

Various different mechanisms can be used to control the switching on and off of streetlights. Photoelectric cells are sensitive to the level of light in the environment and will switch on lamps when the lighting drops below a specified level; this may contribute to controlling light pollution by switching lights on only when needed. Conventional thermal cells operate lights by time settings.

The Topic Group examined the practicality and cost implications of converting all of the County's street lamps to photoelectric cells. Photoelectric cells have a longer life than thermal contact cells and use less energy, but are more expensive. The Group concluded that, whilst it would not be cost effective to replace all lights, the Council should continue to replace all lights with photoelectric cells as individual lights failed.

Regulation and Guidance

In the course of its work, the Topic Group gathered the views of Hertfordshire's District Councils.

Nigel Gibbs from Dacorum Borough Council gave a presentation to the Group on the proactive work to control lighting that has been taken in Dacorum. They have introduced a zoning system designed to make sure that lighting is appropriate to the environment.

ENVIRONMENTAL ZONES

It is recommended that Local Planning Authorities specify the following environmental zones for exterior lighting control.

Category Examples

E1: Intrinsically dark areas National Parks, Areas of Outstanding Natural Beauty, etc

E2: Low district brightness areas Rural or small village locations

E3: Medium district brightness areas Small town centres or urban locations

E4: High district brightness areas Town/city centres with high levels of night-time activity

The Topic Group also received responses from Hertsmere, St Albans, East Herts and Watford. All of these Councils were aware of the problem of light pollution and were taking active steps to address it – usually through their local planning function.

Measures in local planning guidance include:

- Only approving planning applications for floodlighting where light pollution considerations have been addressed
- A preference for non-illuminated signs
- Not permitting floodlighting of golf courses

A number of suggestions for improvement were also made by one of the District Councils:

- That consideration be given to moving the lamp post rather than removing or heavily pruning the tree where trees obscure lamp posts
- Slavish application of lighting levels is too inflexible for conservation areas
- Always consider a solution that does not involve increasing the level of lighting when changing road layouts in areas where there is currently no highway lighting

The Institution of Lighting Engineers (ILE) has produced a guidance note for the reduction of light pollution showing how light pollution can be reduced without compromising safety. The ILE have also produced a handy DIY guide for householders wishing to install security lighting.

Conclusions and Recommendations

The Topic Group concluded that there were conflicting priorities in preventing light pollution and maintaining a safe environment. Where the County Council is responsible for lighting, there are measures in place to minimise light pollution. It is recognised that the type and sighting of streetlights could also add to visual pollution in the daytime.

The District Councils who responded to the Topic Group's requests for information also demonstrated a good awareness of the problems of light pollution and thoughtful and realistic measures to minimise the problem.

The Topic Group recommends that:

- Hertfordshire Highways should include lighting explicitly in its emerging design guidance
- The County Council investigate ways in which it could hasten the changeover from thermal switching cells, to photoelectric switching, other than at replacement due to cell failure
- The County Council ask all District Councils, as Local Planning Authorities, to exert maximum possible influence in controlling light pollution throughout the planning process, particularly in conservation areas and Sites of Scientific Interest
- That the information leaflet produced by the Topic Group should be made widely available including through libraries, the County Council's Internet site and in the Hertsdirect newspaper

- The County Council contact lighting manufacturers and suppliers and urge them to ensure that:
 - they supply appropriate guidance on minimising light pollution to all those installing exterior lighting
 - that all the products they manufacture are designed to minimise light pollution
 - that they manufacture an appropriate range of products

Appendix 1

DETAILS OF TOPIC GROUP MEETINGS

Date	Reports Received	Expert Witness(es) Present
7 January 2003		
10 February 2003		John White, Architectural Liaison Officer, Hertfordshire Constabulary
	<ul style="list-style-type: none"> ▪ Legislation and design guidelines used by Herts Highways when designing street lighting ▪ Investigation into the cost implications and cost savings of converting all of the County's streetlights to photoelectric cells 	Allan Howard, Operations Manager Lighting, Mouchel
11 March 2003		Nigel Gibbs, Dacorum Borough Council
		Allan Howard, Operations Manager Lighting, Mouchel
13 May 2003		Allan Howard, Operations Manager Lighting, Mouchel
10 July 2003	<ul style="list-style-type: none"> □ Street lighting energy management/reduction 	Allan Howard, Operations Manager Lighting, Mouchel
10 September 2003	<ul style="list-style-type: none"> □ draft final report □ draft information leaflet 	Colin Fish, Principal Engineer, Herts Highways
25 September 2003	<ul style="list-style-type: none"> □ draft final report □ draft information leaflet 	Colin Fish, Principal Engineer, Herts Highways Martin Hicks Countryside Conservation Officer at the Herts Biological Records Centre (HBRC)