

External Artificial Lighting

Foreword

Huntingdonshire District Council is concerned at the increasing number of proposals for external artificial lighting, often in sensitive locations, and the need to consider in general and technical terms their impact on the environment in the determination of planning applications, which involve lighting schemes.

The Supplementary Planning Guidance is based on the information currently available from a range of organisations that are actively interested or involved in lighting matters.

It is intended to provide advice and guidance to applicants contemplating a lighting scheme or proposal on what factors will be taken into account by the District Council in determining planning applications for such schemes.

The guidance acknowledges the technical nature of lighting schemes and the requirement for expertise in selecting and installing a system. Reputable manufacturers and suppliers of such systems should be prepared to provide appropriate technical specifications to demonstrate that their product not only maintains the levels of illumination required for the intended use, but also does so with the minimum level of obtrusive light.

1.0 Introduction

1.1 This Supplementary Planning Guidance (SPG) has been produced in order that those proposing external artificial lighting schemes (referred to as lighting schemes), either as part of a development proposal or as a planning application in its own right, may have a clearer understanding of the planning and technical issues involved.

1.2 Lighting in itself is not a problem; it only becomes a problem where it is excessive, poorly designed, badly installed or poorly maintained. The Local Planning Authority will consider the positive benefits to be gained from any lighting proposal, particularly for safety of movement, security of property, extension of working practices, extension of sporting and leisure activities, advertising of commercial enterprises and enhancing the amenity value of important buildings and settlements. The Local Planning Authority will seek to balance the need for any such proposal against the implications it may have on the environment in terms of obtrusive light.

1.3 This guidance sets out the criteria that will be taken into account when the District Council, as local planning authority, assesses and determines proposals which include external artificial lighting. The criteria will be applicable to lighting schemes for a range of development proposals including recreational facilities, commercial and retail developments and highway schemes.

1.4 The guidance also shows what an applicant will need to provide in terms of technical information in order that the District Council may have sufficient information to determine proposed lighting schemes. Also identified are the various conditions that the Local Planning Authority may apply to a lighting scheme when granting planning permission.

1.5 Appendices to the guidance provide standards for lighting; additional information relating to lighting for sports facilities, useful contacts and addresses for applicants to contact to gain advice on lighting matters and a glossary of terms.

2.0 Planning Policy Context

2.1 Central government guidance on lighting is contained in various Planning Policy Guidance Notes (PPG's) listed below.

2.2 PPG 1 (1997): General Policy and Principles gives guidance on the role of design considerations in planning (paras 13-20) and advises that development plans should set out design policies against which development proposals are to be considered. It also advises that supplementary design guidance may usefully include advice about matters such as lighting, where these are likely to have a significant impact on the character or quality of the existing environment (Annex A).

2.3 PPG 17 (1991): Sport and Recreation suggests that local planning authorities should seek adequate information as a basis for making decisions on applications involving the installation of floodlights (para 31). It also advises that it may

be possible to grant permission subject to conditions, for example limiting the hours during which the lights may be switched on, or requiring the installation of some sort of shielding.

2.4 PPG 23 (1994): Planning and Pollution Control permits local planning authorities to take account of the possible obtrusive impact of lighting in preparing local plan policies (para 2.18). In addition (para 3.25) it permits the use of conditions or planning obligations to meet planning goals to protect the environment, where these are relevant to the development proposed.

2.5 The Huntingdonshire Local Plan (1995) does not contain specific policy guidance relating to lighting although in general terms all planning applications must take account of the impact of the development on the environment. There are several policies that exist in the current Local Plan which relate to the protection of residential amenity (Policy H37 states Housing development will not be permitted in locations where there is a known source of environmental pollution which would be detrimental to residential amenity...), the rural landscape (Policy En21 states The District Council will not normally grant permission for development which would adversely affect the character of the Area of Best Landscape) and nature conservation (Policy En22 states wherever relevant, the determination of applications for planning permission will take appropriate account of the interests of nature and wildlife conservation). This Supplementary Planning Guidance gives weight to the various policies with specific reference to obtrusive light and its environmental effects.

2.6 Obtrusive light does not under current legislation constitute a statutory nuisance on which the District Council can take action on. It must, therefore, ensure that conditions imposed on any planning consent for lighting provide an adequate level of control that can be enforced. The District Council however, acknowledges that many lighting installations, which may cause obtrusive light, do not require planning permission.

3.0 Will your Lighting Scheme Require Planning Permission?

3.1 The carrying out of maintenance, improvement or other alterations of any building works, which affect only the interior of the building or do not materially affect the external appearance of the building, does not require planning permission. Most work involving lighting particularly of the householder DIY type will fall within this category, for example home security lights. However, the installation of a lighting scheme of such nature and scale that it would represent an engineering operation and typically be undertaken by specialist lighting engineers could be deemed "development" and as such is likely to require planning permission. Large-scale lighting installations such as the floodlighting of a football stadium or public tennis courts are clearly a form of development, which comes within this statutory definition and would require planning permission. Listed building consent is required for lighting schemes if it is deemed that the character of the building would be materially affected by the lighting.

3.2 We would advise prospective applicants to check with the Local Planning Authority before installing any lighting scheme. When checking with the Local Planning Authority you should be able to confirm the nature and extent of the scheme proposed, i.e. number of lights and their likely output, the height of the lighting columns (if applicable) and the area to be lit, to enable the officer to give you informed advice.

4.0 The Issues Relating to Obtrusive Light

4.1 It is recognised that there is an increasing demand for artificial lighting for safety (road schemes etc.), crime prevention (security lighting) and for leisure activities (floodlighting of sports facilities), etc. Linked with this increasing demand has been a rise in the number of complaints about obtrusive light received by local authorities. The combination of circumstances has raised the profile of obtrusive light as an environmental issue.

4.2 Obtrusive light is generally a consequence of poorly designed or insensitive lighting schemes. The three main problems associated with obtrusive light are:

Sky glow - the orange glow we see around urban areas caused by a scattering of artificial light by dust particles and water droplets in the sky;

Glare - the uncomfortable brightness of a light source when viewed against a darker background; and

Light trespass - light spilling beyond the boundary of the property on which a light is located.

Each of the three types presents very different problems for the general public and for the environment as a whole.

4.3 Sky glow is the result of wasteful and ill-directed lighting and reduces the ability of people to see the natural night sky. This is a problem found not only in urban areas but also in rural areas where dark skies at night are one of the special and intrinsic qualities of the rural landscape. Artificial lighting can also destroy local character by introducing a suburban feel into rural areas. Disability glare and insensitive lighting can have serious implications for motorists who

may become distracted or blinded by glaring lights spilling out on to the highway. Bright or inappropriate lighting in the countryside can also have severe ecological implications. Obtrusive light in rural locations can affect the natural diurnal rhythms amongst a wide range of animals and plants. Light trespass is a common problem and can intrude on the residential amenity in both urban and rural settings causing stress and anxiety for people affected. In addition to these specific problems, obtrusive light represents a waste of energy, resources and money.

4.4 Whilst recognising the environmental problems associated with artificial lighting, the District Council also appreciate the modern-day concerns of reducing crime, improving road safety and providing leisure opportunities. Research has shown that lighting helps to reduce the fear of crime, and in certain locations can reduce the number of road accidents. The safety and security of the general public is of the utmost importance and this supplementary planning guidance does not suggest that lighting should not be allowed as part of a new development. What the guidance does suggest is that lighting should be carefully directed and sensitively designed so as to reduce obtrusiveness.

4.5 This Supplementary Planning Guidance clarifies what the District Council, as local planning authority, will take into account when considering proposals for lighting. It also sets out what information the applicant will need to provide in support of such a proposal.

5.0 General Factors to be taken into Consideration

5.1 The District Council has identified a number of factors that will be taken into consideration in the determination of planning applications for proposals that include lighting. These are:

5.2 An Assessment of the Need for Lighting

The Local Planning Authority will require the applicant to assess the need for the lighting scheme proposed, taking into consideration whether the development could proceed without lighting, whether the benefits of lighting outweigh any drawbacks and if there are any alternative measures that may be taken. No lighting is ultimately the best solution in sensitive locations and therefore the Council will ensure that only lighting schemes that are necessary to the general use of the development are considered. The Local Planning Authority will also take account of the requirements of the Highway Authority with regard to proposals relating to highway safety.

5.3 The Location of the Proposal in Relation to Neighbouring Uses

The Local Planning Authority has identified the following environmental zones against which impacts of external artificial lighting will be judged.

EZ 1: Lighting proposals that neighbour or are near enough to significantly affect areas of nature conservation importance, e.g. Sites of Special Scientific Interest, National Nature Reserves and County Wildlife Sites will only be permitted in exceptional circumstances. External artificial lighting can have severe implications for the natural diurnal rhythms in a range of animals and plants and therefore sites, which are deemed important in terms of their provision of wildlife, should not be in anyway affected.

EZ 2: Lighting proposals within the open countryside will only be permitted if the applicant can demonstrate to the Local Planning Authority that the scheme proposed is the minimum needed for security and/or working purposes and that it minimises the potential for obtrusive light from glare or light trespass to an acceptable level. Artificial lighting in the open countryside can have a demonstrable effect on 'dark skies', one of the special qualities of the rural landscape.

EZ 3: Lighting proposals that are within or adjoining residential or commercial areas will only be permitted if the applicant can demonstrate to the Local Planning Authority that the scheme proposed is the minimum needed for security and/or working purposes and that it minimises the potential obtrusive light from glare or light trespass to an acceptable level. Obtrusive light can have a significant impact on the amenity of residential areas in towns and villages.

The Institution of Lighting Engineers has provided guidance on acceptable levels of illumination for specific environmental zones, which relate to the areas we have identified above. The Local Planning Authority will require any applications for lighting schemes to adhere to the following guidance for the relevant environmental zone (see Appendix One, Obtrusive Light Limitations for External Lighting Installations).

5.4 The Nature of the Use of the Lighting Proposed

For all lighting proposals, the applicant will identify the purpose and use of the lights, the potential users of the lighting scheme (e.g. for recreation facilities) and the hours the lights will be in operation (summer-time and winter-

time). All lighting schemes hours of operation will be expected to be kept to a working minimum, and applicants will be expected to show this in their application. Keeping the use of the lighting to a minimum will reduce the impact the lighting may have on the environment.

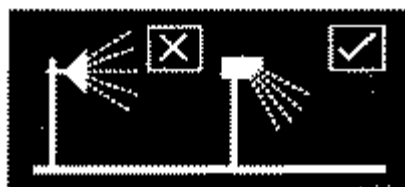
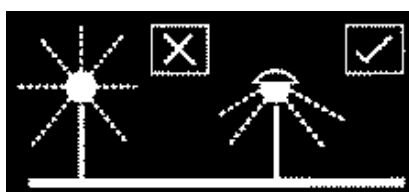
5.5 The Design of the Lighting Proposed

To achieve the necessary minimising of obtrusive light the applicant should adhere to the following general principles taken from the Institute of Lighting Engineers, Guidance Notes for the Reduction of Light Pollution, 1991.

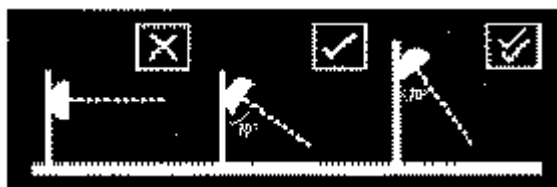
Lighting is directed downwards wherever possible to illuminate its target (see image below). If there is no alternative to up lighting, then the use of shields and baffles will help reduce spill light to a minimum. Up lighting is a particularly bad form of obtrusive light and contributes to sky glow.



Lighting is designed so as to minimise the spread of light near to, or above the horizontal (see image below). Again any light that shines above the horizontal line of the light adds to the sky glow effect.



Lighting should be designed to the correct standard for the task and should not over light. (See Appendix Two, Relevant Publications for Standards for Lighting). 'Over' lighting is a cause of obtrusive light and also represents a waste of money and energy.



The main beam angle of all lights proposed directed towards any potential observer is kept below 70 degrees (see image below). It should be noted that the higher the mounting height, the lower the main beam angle could be. This will help reduce the effect of glare and light spill on neighbouring dwellings, passing motorists, pedestrians, etc. Lighting should be directed to minimise and preferably avoid light spillage onto neighbouring properties. Wherever possible use floodlights with asymmetric beams that permit the front glazing to be kept at or near parallel to the surface being lit. The lights used should be the most efficient taking into account cost, energy use, colour rendering and the purpose of the lighting scheme required. All lighting schemes should meet British Standards.

6.0 Specific Factors to be taken into Consideration for Various Land Uses

6.1 Different development proposals will warrant more specific guidance. It is the Local Planning Authority's policy that this more specific guidance is complied with as relevant. These extracts have been taken from the Department of the Environment and the Countryside Commission publication, Lighting in the countryside: Towards good practice, 1997.

6.2 Advertisement Control

- ▶ Acceptable lighting levels for illuminated signs are given in 'Brightness of Illuminated Advertisements' - Technical Report Number 5 produced by The Institute of Lighting Engineers. All advertisement applications should conform to the recommendations set out in this report.
- ▶ Position promotional lighting/signs so that they are not visible from open countryside i.e. concentrate at public

entrance to buildings;

- ▶ Consider timing of lights – avoid any lights being left on during daytime and turn off all lights after working hours.
- ▶ ‘Sky beams’ and ‘upward laser displays’ will be treated as advertisements and controlled as such.

6.3 Commercial Developments

- ▶ Avoid use of lights simply to create a ‘presence’ at night.
- ▶ Concentrate lights where they are needed and establish a clear hierarchy, with minimum lighting around the outer, perimeter of the complex.
- ▶ Reduce the scale of street/road lighting and consider height and spacing of lights in relation to buildings, if other requirements like visibility, glare, etc. permit it.
- ▶ Position promotional lighting/signs so that they are not visible from open countryside i.e. concentrate at public entrance to buildings.

6.4 Decorative Building Lighting

- ▶ Keep lighting understated and aim to enhance rather than swamp architectural character.
- ▶ Ensure light is directed only at the structure, resiting lights and using baffles and shielding where possible.
- ▶ Minimise uplighting where it distorts architectural detailing.
- ▶ Consider timing of lighting to maximise the visual beauty of the building to the public at night-time but not to floodlight the building at dusk or nightfall.
- ▶ Consider the choice of surface materials being illuminated, the reflectance value may be high causing reflected light to generate excessive sky glow.

6.5 Farms and Market Garden Centres

- ▶ Mount lights below the roof height of buildings and direct light downwards, to where it is needed reducing light spillage.
- ▶ Avoid use of sensors that can be tripped by animals.
- ▶ As far as possible, position lights so that they are shielded by buildings and are not visible from the surrounding countryside.
- ▶ The potential impact of light from glasshouses will be considered as part of the planning application.

6.6 Lighting Railway Stations and Road/Rail Interchanges

- ▶ Design the lights for the station as a whole, balancing the need for lighting in different areas and considering the impact of light in views from the surrounding countryside.
- ▶ Concentrate on lighting to enhance the architectural character of the station building rather than on creating an ‘urban’ level of light on the platform and in the station forecourt.
- ▶ Direct car park and security floodlights downwards and to where the light is required.

6.7 Mineral Extraction

- ▶ Mount lights below the roof height of buildings, and perimeter fencing, and direct light downwards, to where it is required.
- ▶ Position lights so that they are shielded by buildings or permanent plant and are not visible from the surrounding countryside.
- ▶ Avoid lights mounted on the side of the buildings that shine directly out, dazzling users of the facility.

6.8 Petrol Filling Stations

- ▶ Canopy lights should be positioned to avoid light spill from the sides of the canopy.
- ▶ Avoid the use of dish diffusers, which cause additional glare.
- ▶ Reduce lighting or avoid it during daylight hours.
- ▶ Integrate design for promotional signage with that of the canopy.
- ▶ Avoid lighting internal fascia around canopy.
- ▶ Design and position signs so that they are visible only from the carriageway and not from the surrounding landscape.

6.9 Residential Development

- ▶ Consider whether lighting is required at all, and where it will be most effective.
- ▶ Keep lighting in new residential areas in balance with that of the village as a whole and lighting on adjacent road

junctions.

- ▶ Consider views from the surrounding countryside and avoid a line of lights, defining the edge of the village.

6.10 Road Junctions and Accesses

- ▶ All designs for road junctions and accesses must meet British Standards.
- ▶ Keep number of columns to a minimum - a single column may be sufficient on small roundabouts.
- ▶ Consider colour of lighting columns in relation to surrounding landscape.
- ▶ Use the most efficient lighting possible in terms of cost, energy use and colour rendering whilst meeting British Standards.
- ▶ Use of horizontal cut-off luminaires which emit less than 1.0% upward light.
- ▶ Carry out a visual appraisal and design lighting scheme to minimise visual intrusion of light at night and day.

6.11 Rural Car Parks

- ▶ Direct lighting downwards and design equipment to control levels of light spill and glare.
- ▶ Site lighting equipment carefully, making use of the backdrop provided by any existing vegetation and introducing new planting within the car park to help integrate the lighting structures and minimise the visual impact of both equipment and lighting.
- ▶ Use new hedgerows or tree planting to help minimise the impact of car park lights around the car park boundaries.
- ▶ All vegetation needs to be maintained and trimmed once it has been established otherwise it will block out the light.

6.12 Security Lighting

Passive infrared detectors should control lighting. Avoid sensors that can be tripped by road or footway users, see image below.



A 150W (2000 lumen) tungsten halogen lamp is more than adequate for domestic security lighting. Lamps of higher intensity create too much light, more glare and darker shadows. For all-night lighting at low brightness use a compact fluorescent porch light of 9W (600 lumen).

- ▶ Lighting should be directed down to illuminate its target and mounted below the property boundary height so as to reduce light spill.
- ▶ Develop an integrated approach to security lighting, balancing levels of light with other lighting in and around the site to avoid glare and light spill as well as dark spots.

6.13 Sports Facilities

- ▶ Design lighting to be as directional as possible using the minimum number of lights required reducing light pollution.
- ▶ Consider the colour of lighting poles; light colours should be used if lights are generally seen against the sky, or dark if there is a backdrop of vegetation.

(Additional information is given in Appendix Three, Guidance for Lighting Schemes for Outdoor Sports Facilities)

7.0 Information Required

7.1 Any proposal for artificial lighting will need to be accompanied by that information normally required for any other planning proposal and additionally the information set out below.

- ▶ A statement setting out why a lighting scheme is required, the proposed users, and the frequency and length of use in terms of hours of illumination (see paragraph 5.4).
- ▶ A site survey showing the area to be lit relative to the surrounding area, the existing landscape features together with proposed landscaping features to mitigate the impacts of the proposed lighting.
- ▶ A technical report prepared by a qualified Lighting Engineer or the lighting company setting out the type of lights, performance, height and spacing of lighting columns. The light levels to be achieved over the intended area, at the site boundaries and, for large schemes, 50m outside of the boundary of the site should be superimposed on a map of the site and its surrounding area.

7.2 Any proposal for the display of illuminated advertisements will need to be accompanied by that information normally required for any other planning proposal and additionally the information set out below.

- ▶ Details of the proposed location, positioning and dimensions of the sign face.
- ▶ The sign face maximum luminance in candelas per square metres.
- ▶ The number, size and type of light sources and details of the sign face materials.
- ▶ The type of illumination - internal or external; static or intermittent.
- ▶ Details of the make and catalogue number of any luminaires/floodlights.
- ▶ Size, type and number of lamps fitted within any luminaire or floodlight.
- ▶ The mounting height of the luminaires/floodlights specified.
- ▶ The location and orientation of the luminaires/floodlights.

Provision of this information may require professional advice and potential advisors can be found in Appendix Four, Useful Addresses and Contacts. For significant lighting schemes professional advice from a lighting manufacturer or from a qualified lighting engineer is recommended.

8.0 Types of Planning Conditions Applied

8.1 Where the District Council grants planning consent for a development proposal it may impose conditions controlling the lighting scheme provided. These may include:

- ▶ Limiting the time of use of the lighting;
- ▶ Limiting the light levels to a designed uniformity;
- ▶ Limiting the use of lighting schemes to identified uses or users;
- ▶ Specifying lamps, luminaires and columns;
- ▶ Specifying the need for full horizontal cut-off;
- ▶ The design, height and position/angle of the lighting;
- ▶ The retention of screening vegetation;
- ▶ The use of planting and bunding to contain lighting effects;
- ▶ The future maintenance of the lighting schemes and post-installation checks in accordance with the original design and planning approval; and
- ▶ In exceptional circumstances, the granting of temporary planning permission to enable a review of lighting impacts after installation.

These conditions will be applied as necessary by the local planning authority to help reduce obtrusive light from new proposals, particularly glare and spillage, from areas of wildlife importance, open countryside and residential amenity.

Appendix One - Obtrusive Light Limitations for External Lighting Installations

Environmental Zone	Sky Glow UWLR (Max. %)	Light into Windows		Source Intensity		Building Luminance L (cd/m2)*** Average, Before Curfew
		Ev (lux)		I(kcd)		
		Before	After	Before	After	
		Curfew	Curfew	Curfew**	Curfew	
EZ 1	0	2	1*	0	0	0
EZ 2	5	5	1	50	0.5	5
EZ 3	15	10	5	100	1.0	10

Notes

UWLR (Upward Waste Light Ratio) = Maximum permitted percentage of luminaire flux that goes directly into the sky.

Ev = Vertical Illuminance in LUX.

I = Light Intensity in Candelas

L = Luminance in Candelas per Square Metre.

Before/After Curfew = An agreed time, usually late evening, at which the level of artificial lighting should be reduced in the interests of maintaining residential amenity.

* Acceptable from public road lighting installations only.

** Source Intensity - This applies to each source in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some medium to large sports lighting applications with limited

mounting heights, may be difficult to achieve. However, if the aforementioned recommendations are followed then it should be possible to lower these figures to less than 10kcd (kilocandela).

*** Building Luminance - This should be limited to avoid over lighting, and relate to the general district brightness.

Appendix Two - Relevant Publications for Standards for Lighting

British Standards	BS 5489 & BS EN 13201-1:2003	Road Lighting.
	BS 4533	Luminaires.
CIBSE:	LC1	Code for Interior Lighting.
	LG1	The Industrial Environment.
	LG4	Sports.
	LG6	The Exterior Environment.
CIE Publications:	1	Guidelines for minimising Urban Sky Glow near Astronomical Observatories.
	17.4	International Lighting Vocabulary.
	83	Guide for Lighting of Sports Events for Colour Television and Film Systems.
	92	Guide to the Lighting of Urban Areas.
	94	Guide for Floodlighting.
	115	Recommendations for the Lighting of Roads for Motor and Pedestrian Traffic.
	126	Guidelines for Minimizing Sky Glow.
	129	Guide for Lighting Exterior Work Areas. Road Lighting and the Environment 1993.
Department of Transport:		
ILE Technical Reports:	TR5	Brightness of Illuminated Advertisements.
	CP2	Festive Lighting and Lasers in Public Places.
Royal Fine Art Commission:		Lighten our Darkness 1994.

CIBSE = Ch. Institution of Building Services Engineers

CIE = International Commission on Illumination

ILE = Institution of Lighting Engineers

Appendix Three - Guidance for Lighting Schemes for Outdoor Sports Facilities

Introduction

Sport plays an increasingly important role in the everyday lives of people today. There is now a greater need for more sports facilities provided to better specification levels than existing facilities and many older facilities are also being refurbished to improved specification levels. Most new sports facilities now have outdoor play areas, which to meet the demands of the modern consumer need to be open both during the daytime and the evening. Therefore, new sports facilities are almost always accompanied by artificial lighting schemes. Whilst recognising the advantages that lighting can bring in making more effective use of recreational facilities, the District Council is also conscious that such proposals can have an adverse environmental impact in terms of obtrusive light.

This guidance only gives a brief background to the nature of artificial lighting for sports facilities and the District Council would advise the applicant to refer to more technical guidance from The Chartered Institution of Building Services Engineers, Lighting Guide for Sports, LG4, 1990. Lighting Schemes for sports facilities require considerable technical expertise. Reputable manufacturers and suppliers of lighting schemes should be prepared to provide appropriate technical specifications to demonstrate that their product not only maintains the levels of illumination required for the intended use, but also does so with the minimum of visual intrusion or obtrusive light.

Specific Guidance on Design and Illumination

Most sporting facilities require lighting of a uniform level over the whole playing area. This is normally best provided by downward facing lights mounted on columns. The Institution of Lighting Engineers recommends that the most effective way of achieving this and preventing light spillage into surrounding areas is to use floodlights with an asymmetric beam that, while producing the main beam at around 60-70 degrees, permits the front glass to be kept horizontal. The upper limits to the beam will also need to be specified depending on circumstances but should normally not exceed 70 degrees from the downward vertical.

Different sporting activities require different light levels on the playing surface. Sports such as hockey, with a fast moving small ball, require a much higher level of illumination than, for example, netball. It is usually the case that the higher level at which a sport is played, for example County or National standard, the higher the level of illumination required. Training or more informal use may be undertaken with a lower level of illumination. For guidance on the relevant illuminance for particular sports see the Sports Council's Fact file Two, Floodlighting for Sport.

Some sports facilities such as golf driving ranges present particular difficulties for floodlighting. Most sites tend to be in open countryside and have floodlights aimed either horizontally or slightly above the horizontal plane to enable players to follow the flight of the ball. These lights, which are often of considerable intensity and with a wide beam, can cause inconvenience to neighbours and can be a safety hazard; particularly where dazzle affects highway users. Golf driving range lights are probably one of the most polluting forms of floodlighting in that they invariably illuminate a much larger area than is required. The only circumstances where a horizontal beam of this nature may be permitted are where the natural landform or a permanent natural or manmade landscape feature can effectively contain the light. For further guidance see Suggested Standards for Floodlighting Golf Ranges, taken from The Future for Golf - Review, Eastern Council for Sport and Recreation 1993/4.

Careful consideration needs to be given to the positioning and height of lighting columns if an even light distribution over the playing surface is to be achieved whilst maintaining light spillage into adjacent property to a level below that indicated in Appendix One. Floodlighting columns may vary in height from around 5m to 25m depending upon the type of illumination required and the area to be lit. The higher the lighting columns, the easier it is to ensure that the beam is directed downwards as indicated above, and to minimise light spillage to surrounding areas. A judgement in all cases will need to be made on the visual impact of the lighting columns during daylight hours as well as the impact of the floodlighting system when in use.

Floodlighting systems can utilise a number of different light sources each with its own particular characteristics in terms of colour rendering, operating costs, and the amount of glare produced. The type of light source will need to be carefully matched with the level of illumination required and the height and positioning of columns, the visual impact of which will be a material planning consideration. It is also essential that the fittings are sufficiently robust to ensure that the carefully aimed lamps necessary to minimise light spillage outside the floodlit site are not knocked out of alignment by high winds or the weight of snow.

In coming to a decision on the merits of a particular proposal, the District Council will take into account the use of the facility and the likely benefits to the general public. By definition, floodlighting allows sports facilities to be used for longer hours and throughout the winter. Floodlights must be operational for long hours to justify their initial capital

cost and provide for the community's needs. The English Sports Council recommends a curfew time of 10pm for floodlighting. Consideration will be given to the relationship between the use of the facility and the interests of conservation, amenity and safety. Where the impact of a proposal is considered to be unacceptable or cannot be mitigated through ameliorative measures, the protection of those recognised interests will prevail.

Appendix Four - Useful Addresses and Contacts

<p>British Astronomical Association</p> <p>Burlington House, Piccadilly, London, W1V 9AG</p> <p>Tel: 0171 7344145</p>	<p>British Standards Institution</p> <p>389 Chiswick High Road, London, W4 4AL</p> <p>Tel: 0181 9967000</p>	<p>Ch. Institution of Building Services Engineers</p> <p>(Lighting Division) 222 Balham High Road, London, SW12 9BS</p> <p>Tel: 0181 6755211</p>
<p>Council for the Protection for Rural England</p> <p>Warwick House, 25 Buckingham Palace Road, London, SW1W 0PP</p> <p>Tel: 0181 9766433</p>	<p>Dept of Environment, Transport and Regions</p> <p>DoE & DoT Publication Sales Unit, Government Building, Block 3, Spur 2, Lime Grove, Eastcote, HA4 8SE</p>	<p>International Commission on Illumination (CIE)</p> <p>Central Bureau, Kegelgasse 27, A-1030 Wien, Austria.</p> <p>Tel: 001 431 714 3187</p>
<p>Institution of Lighting Engineers</p> <p>Regent House Regent Place Rugby CV21 2PN</p> <p>Tel: 01788 576492</p>	<p>Lighting Industry Federation</p> <p>Swan House, 207 Balham High Road, London, SW17 7BQ</p> <p>Tel: 0171 6755432</p>	<p>Royal Fine Art Commission</p> <p>7 St. James's Square, London, SW1Y 4JU</p> <p>Tel: 0171 8396537</p>
<p>Sports Council</p> <p>16 Upper Woburn Place London WC1H 0QP</p>		

Appendix Five - Glossary of Terms Used in External Lighting

The definitions and explanations given in this Glossary are intended to help readers to understand the Guidance.

Asymmetrical Beam - floodlights giving a fan shaped lighting pattern - available in wide, medium and narrow beams.

Beam Angle - the angle formed by the centre of the beam of light from a lamp relative to the vertical. When light is emitted from a lamp it forms a cone from the light source. The shape of this cone will depend on the reflector design in the lamp.

Candela - the unit of luminous intensity of a light source in a given direction.

Front Glazing - The front face of the lighting unit through which the light passes.

Glare - the discomfort or impairment of vision, which is experienced when part of the visual field is excessively bright in relation to the general surroundings. Direct glare normally occurs when the viewer can see the light source. Glare can cause discomfort or disability to see detail.

Illumination - the process of lighting an object or surface.

Light Trespass - any light which illuminates beyond that which needs to be lit, particularly into residential areas or properties, which is perceived to be a nuisance.

Lumen - the unit of luminous flux (light) emitted by a light source or falling on a surface.

Luminance - a term which expresses the intensity of the light emitted in a given direction by unit area of a luminous or reflecting surface. It is the physical equivalent of what is subjectively called brightness. The unit most commonly used is the candela per square metre.

Luminaire - formerly known as a lighting fitting. The apparatus which controls the distribution of flux from a lamp or lamps, and which includes all the components necessary for fixing and protecting the lamps and for connecting them to the local supply circuit. Floodlights and some other luminaires retain their individual names.

Luminous Flux - the light emitted by a source or received by surface. The unit is the lumen (lm).

Luminous Intensity - the power of a source or illuminate surface to emit light in a given direction. The unit is the candela (cd).

Lux - a measurement of illumination. One lux equals one lumen per square metre.

Main Beam Angle/Horizontal Cut-Off - a term applied to a luminaire. The angle measured from the downward vertical upwards to the first line of sight at which the lamp(s) or surface of high brightness is no longer visible. This angle is usually measured from the downward vertical or, for a floodlight, from the beam axis. Horizontal cut-off refers to the limiting of light above an imaginary line at horizontals with the luminaire.

Mounting Height - the vertical distance between the luminaire and the ground or floor.

Obtrusive Light - any light, which illuminates areas beyond that, which needs to be lit can be considered to be a form of light pollution. The extent to which it is perceived as being a nuisance will often depend on the background light from other sources and the intensity of the light.

Sky Glow - a phenomenon where light - usually from a major light source such as an urban area or industrial/recreational floodlight installation is seen, often from many miles distance, as a glow in the sky. Some of the light is reflected from the illuminated surfaces although most is emitted directly skyward from poorly designed lighting systems. Sky glow resulting from poorly designed systems is particularly noticeable in dark landscapes where there are few other light sources. Most rural areas and in particular the Area of Best Landscape would fall into this category.