

A Lighting Strategy for Gloucester



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Contents

Introduction	5
Aims of the Lighting Strategy	7
Objective 1: Promote and Strengthen Gloucester's Local Distinctiveness	8
Objective 2: Reduce Crime and the Fear of Crime	13
Objective 3: Promote Light as an Art Form within the City	16
Objective 4: Improve the Urban Design Qualities of the City	19
Objective 5: Ensure that Lighting Schemes are Sustainable	25
Lighting Fund	28
General Design Principles	29
Lighting and the Planning System	31

Appendices

Appendix 1: Institute of Lighting Engineers: Guidance Notes for the Reduction of Obtrusive Lights	
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Photographs

Front Cover: Mariners Chapel, The Docks	-
Photo 1: Church of St Nicholas and Dick Whittington's pub (Westgate Street)	8
Photo 2: Westgate Street at Night (towards St Nicholas Church)	10
Photo 3: Café Rene, Greyfriars	13
Photo 4: Bishop Hooper's Monument and St Mary de Lode Church	14
Photo 5: HSBC Bank (The Cross) during daytime	21
Photo 6: HSBC Bank (The Cross) during night-time	21
Photo 7: Bearland House (Longsmith Street) during daytime	22
Photo 8: Bearland House (Longsmith Street) during night-time	23

1.0 Introduction

1.1 Lighting need not be merely bulky streetlights, or the yellow and orange glow from sodium floodlights. The science and technology behind the process of not only street lighting, but also architectural lighting and design has developed rapidly over the last ten years. It is now possible to utilise an array of low energy consumption products, which can create an infinite number of effects and colours.

1.2 Lighting strategies, such as this one, can be used to take advantage of these technologies as cities move towards a 24-hour economy. Lighting strategies are often aimed at making the most of what the city structure, architecture and communities have to offer, enhancing this through the medium of light. Lighting is now recognised as a tool for helping to unlock the potential for urban renaissance and the interpretation of a city's culture and built heritage.

1.3 Light can be used in almost endless exciting ways to illuminate the best bits of a city, adding another dimension to the city experience. Lighting can be used to:

- Guide people around
- Bring new life to the skyline and city centre attractions
- Create a feeling of safety and well being
- Define main routes
- Highlight our important landmarks
- It can also be used to disguise the less attractive bits of a city!

1.4 Throughout the day, Gloucester is a busy city, accommodating large numbers of shoppers and visitors. However, at night the picture could not be more different. The streets are often empty, unwelcoming places, which are dominated at the weekends by alcohol related activities that appeal to only a small section of the community.

- 1.5 It is the aim of the city council, through its 'Evening and Night-time Economy Strategy', to improve what the city has to offer, and to encourage a wider mix of people and families into the city centre after dark.

- 1.6 One of the key elements in achieving this desire is to improve lighting within the central area, not just to improve public safety and to help reduce crime and the fear of crime, but also to build on Gloucester's distinctive local identity as a vibrant historic city.

2.0 Aims of the lighting strategy

2.1 The overall aim of the Lighting Strategy is to produce a co-ordinated approach to lighting, which will seek to improve the evening and night-time economy.

2.2 This will be realised through the following five objectives:

- Promote and strengthen Gloucester's local distinctiveness;
- Reduce crime and the fear of crime;
- Promote lighting as an art form within the city;
- Improve the urban design qualities of the city;
- Ensure that lighting schemes are sustainable.

2.3 Within each of the objectives a number of Key Physical Areas have been identified, along with some Key Principles for dealing with these areas. Also listed are some Key Projects that the strategy hopes to implement.

2.4 The strategy also provides general planning and design advice for proposed lighting projects and schemes.

Objective 1: Promote and strengthen Gloucester's local distinctiveness

- 2.5 There are many elements to Gloucester as a place that positively contribute to its unique distinctiveness. A large part of this distinctiveness is formed by Gloucester's connections with its past.
- 2.6 Gloucester has a wealth of historic buildings that help to form a large part of Gloucester's identity as an historic city. It is this historic identity, which attracts many tourists to the city, whether it is to see the Cathedral, the Dock buildings, the remnants of medieval buildings or lanes, or the wealth of other historical architecture, which the city has to offer.



Photo 1: Church of St. Nicholas and Dick Whittington's pub (Westgate Street)

- 2.7 The historic elements of the city are a treasured visual commodity, which are currently severely under-utilised after dark. Promoting the historic identity of the city will have a positive impact on a number of areas. It will help to raise interest in the city centre, which in turn will help to promote and sustain the night-time economy. It will also serve to highlight the best of the city's architecture which in turn will assist in strengthening pride in the city centre, demonstrating to people that Gloucester has a lot to offer.

Key Physical Areas

- Listed buildings
- Conservation areas
- Scheduled Ancient Monuments (SAMs)
- Historic street patterns (Gate Streets, the cross, medieval lanes)
- Via Sacra route

Key Principles

- 2.8 All lighting schemes shall be sympathetic to Listed Buildings and SAMs - Listed buildings and SAMs are considered to be of national importance and must be treated with extreme care. Lighting designs should be produced and executed by lighting designers and engineers who have a successful record of dealing with historic fabric. Careful consideration must be given to the selection of appropriately styled luminaries, colour, their method of fixing, and cable supply routes, to ensure that there is minimal damage to the visual appearance and the historic fabric of the Listed Building or SAM.
- 2.9 Listed buildings and buildings in the Conservation Area (particularly on the Gate Streets) shall be lit with white lights, except at festival times or in the case of temporary art installations. - White light is the best light to show architectural features. (Please note that white light is available in many different tones ranging from cool blues to warm yellows although still predominately white). However, temporarily lighting historic buildings and monuments in stronger colours can provoke renewed interest and help to create a different atmosphere within the city. This approach may be used during festival times and times of celebration. All fixtures and fittings should be removed promptly after use to ensure there is no harm to the daytime visual appearance of the historic core of the city.

Key Projects

- 2.10 Light key historic buildings, particularly those landmark buildings at the end of key vistas - to make the most of our historic buildings by showing them

off to their best. To help to encourage an appreciation of the wealth and quality of historic buildings and SAMs that Gloucester has to offer. Lighting key historic landmark buildings will help to improve legibility whilst reinforcing our heritage.



Photo 2: Westgate Street at Night (towards St Nicholas Church)

- 2.11 Remove the functional lighting from the buildings on the Gate Streets and create a separate creative scheme - At the moment the existing street lights mounted to the building facades are very good at providing the required levels of lighting for highway safety and the functioning of the city's CCTV system. Unfortunately the location of these lights does not allow for the installation of a creative scheme that is designed to maximise the night-time visual appearance of the buildings. It is therefore recommended that traditional streetlights be reintroduced in the gate streets to provide the practical lighting required for highway safety in a more traditional way. This will strengthen the city's identity as an historic city, whilst freeing the buildings of the floodlights so that they may be subject to a more creative and sensitive lighting scheme.
- 2.12 Emphasise the Historic Street Pattern - It is important both in terms of improving the legibility of the city, and in promoting its local

distinctiveness, to highlight the differences in the historic street hierarchy in a cohesive way. This will not only help people to identify where they are, which in turn will help them to feel more comfortable in moving around the city. But it will also positively promote the historic grain of the city.

- 2.13 Gloucester has an historic street hierarchy that broadly consists of the Cross, the Gate Streets, and Medieval Lanes. Each of these should be lit in different ways to emphasise this important historic network.
- 2.14 This could involve lighting the cross as the brightest feature in a different tone of white light. The intensity of the light and tone could increase as you move up the Gate Streets towards the Cross. This would mean that the bottom ends of the Gate Streets are lit less brightly in a cooler tone, which will provide a neutral backdrop for lighting key landmark buildings at the ends of the Gate Streets. It is expected that the Medieval Lanes will be lit in white light to improve security, but the buildings themselves could be lit in warm colours of light, particularly those with red undertones, which can help to make spaces feel more enclosed yet welcoming. This will help to greater emphasise the differences in the street hierarchy.
- 2.15 Emphasise the Historic grain and variety - The Gate Streets are very diverse architecturally and all contain buildings from a range of historical periods. Therefore any creative lighting scheme for the Gate Streets should reflect this diversity by highlighting in some way the variations in building heights and plot widths. This will help to positively emphasise one of Gloucester's locally distinctive qualities and strengthen its identity as an historic city.
- 2.16 Lighting Via Sacra - Buildings and monuments along the Via Sacra route should be lit sensitively and in a way that clearly articulates any features of historic importance. The route itself should be lit imaginatively, in order to draw people around and create interest. This could also include the buildings and monuments, which may benefit from being illuminated in a different way to surrounding buildings, in order to identify them as part of the Via Sacra route. The design of the lighting of the Via Sacra and its buildings and monuments is the type of project which should be opened up

to an international competition in order to get an imaginative scheme produced by an expert team of lighting engineers and artists.

- 2.17 Lighting SAMs - Scheduled Ancient Monuments that are in the public domain, such as the remains of the Eastgate or Greyfriars Priory, should be lit in a way that seeks to attract and engage users of the public realm. Like, the lighting of Via Sacra, this could also benefit from a design competition to generate creative and innovative solutions.

Objective 2: Reduce crime and the fear of crime

2.18 A key attribute in the lack of a healthy and diverse evening and night-time economy is crime and the perceived fear of crime. Good lighting can help to reduce crime and the fear of crime, by deterring criminal activity and creating a sense of safety. This is due to the fact that criminals obviously do not wish to be seen, whilst everybody else feels safer if they can be seen, see all around them and see where they are going.



Photo 3: Café Rene, Greyfriars. The lighting here could be improved.



Photo 4: Bishop Hooper's Monument and St. Mary de Lode Church

Key Physical Areas

- Main pedestrian routes
- Linkages between attractions
- Transport nodes

Key Principles

2.19 White lighting should be used on all main pedestrian routes - White lighting is important on key pedestrian routes, as it is efficient at illuminating roads and footways, making them safer to use. Coloured light can alter spatial perception and reduce contrasts between surfaces, and changes in level. This can have obvious negative implications for pedestrians and cyclists. Coloured light also distorts the colour of the object it is reflected on, and therefore makes it difficult for those who may need to report a crime to identify the colour of clothing and vehicles.

- 2.20 Transport nodes (car parks, bus stops and taxi ranks) - Those who do not live in the city centre will travel to it in a variety of ways. In improving the evening and night-time economy it will be important to address transport nodes in the same way as key pedestrian routes. Transport nodes are places where people may wait to catch buses, taxis, or where they may leave their cars. It is important that these transport nodes feel welcoming and safe. This can be enhanced through the implementation of sensitively designed, predominantly white lighting schemes.
- 2.21 Lighting schemes should not interfere with the Closed Circuit Television System (CCTV) - The centre of the city is covered by a CCTV system, which has a vital role to play in the policing of the area. Any lighting scheme shall be designed so that it does not interfere with the system by causing obstructions or unnecessary glare to the camera units. All proposed lighting schemes must be designed in consultation with Gloucestershire Constabulary.

Key Projects

- 2.22 Lighting key transport nodes and main pedestrian routes with white lights - replacing older style sodium streetlights and floodlights for high specification lighting columns or lanterns that have a cool white light source, and are appropriately designed to be sympathetic to their location.
- 2.23 Lighting linkages between attractions - This will help to improve legibility by clearly highlighting the routes between places of interest and attractions. It will also go some way to increasing footfall on these routes by making them safer and more attractive to use.

Objective 3: Promote lighting as an art form within the city

- 2.24 Lighting is a medium that can be used by the art community, in conjunction with local residents, to produce temporary or permanent art installations. Public art can bring a number of benefits to the city. It can help to enhance the visual environment and strengthen community identity and pride.
- 2.25 Some cities such as Lyon, France hold regular lighting festivals in which many lighting engineers and artists come together to light the city with fabulous displays. Such festivals have become very popular drawing tourists from all over the world.

Key Physical Areas

- Node sites
- Gateway Sites
- Edges
- Lighting columns

Key Principles

- 2.26 Promote innovative and creative projects - The city council will run national and international competitions in order to get the most innovative and creative designs of the highest quality for the city, utilising experts in the fields of art, lighting engineering and design.
- 2.27 Permanent installations - These can be useful in defining key sites within the city such as nodes (meeting places, road junctions, focuses of activity), gateway sites (where there is a sense of arrival, such as at the start of the main Gate Streets), and edges (such as the site of the old city wall, or the current city boundary). Permanent installations will need to be sensitive to their surroundings, particularly in the Conservation Areas or adjacent to Listed Buildings or SAMs. They can however be 'strong' in the sense that they should usually be statement pieces, which can be used to physically define nodes, gateways or edges.

- 2.28 Temporary installations - As with all lighting schemes in the Conservation Areas, any temporary art installation will need to be sympathetic to the historic environment and not negatively impact upon the fabric of any Listed buildings or SAMs. However, due to their temporary nature, it would be more acceptable for these art installations to be adventurous and contemporary in exploring and exploiting the juxtaposition of modern lighting techniques and the historic setting of Gloucester. Temporary installation will need to be removed promptly after their use to avoid cluttering the streetscene.
- 2.29 Involving the local community - Public art has a social role in a city and can help to contribute to the creation of a real sense of community and place. In order to create a sense of ownership and appreciation of public art works, it is essential that they are developed with the involvement and co-operation of the local community. As such, all consultation and community involvement for lighting art installations, must comply with the advice given in the emerging Public Art Strategy.

Key Projects

- 2.30 Lighting columns and lanterns - There is potential in node, gateway and threshold locations for lighting columns and lanterns to be individually designed by artists and lighting engineers in collaboration with the local community. This could also apply to key pedestrian routes and historic areas.
- 2.31 Temporary or permanent installations in key locations - There are many potential sites that could greatly benefit from permanent or temporary art installations. Perhaps some of the more important sites at this time, for the night-time and evening economy are:
- The routes between the docks and the city centre
 - Modern buildings such as GL1 Leisure Centre, which also has a prominent location on the inner ring road, and acts as a gateway to lower Eastgate Street

- Unattractive or disused buildings in order to bring new life to them and improve the visual aesthetics of the city such as: dock-side warehouses

2.32 There are many other lighting projects, which potentially could be informed by an artist. This may include lighting SAMs, edges, key nodes and routes. The city council will encourage the use of an artist where appropriate.

Objective 4: Improve the urban design qualities of the city

- 2.33 Legibility is about improving people's understanding and experience of the city. This can be done through building on the city's identity, and at night this will involve the use of lighting to show the city at its best.
- 2.34 Improving the urban design qualities of the city will help to improve legibility by giving people a sense of where they are in the city, and providing a sense of direction to guide them to other places and attractions within the city. This is particularly important for visitors and tourists who may not be familiar with the area.

Key Physical Areas

- Landmarks
- Key routes
- Vistas
- Edges
- Gateways
- Nodes
- Districts

Key Principles

- 2.35 Historic landmark buildings - These should be treated extremely carefully as set out in section 1 above.
- 2.36 Modern landmark buildings - Modern buildings can provide much more scope for bold, vivid and exciting permanent lighting schemes than historic building, as there are less obvious impacts in terms of affecting the precious historic fabric. However modern landmark buildings within conservation areas should be designed sensitively to help to preserve or enhance the historic image of the city. It is important that any schemes for lighting modern building should not visually compete with or spoil the overall aim of promoting and strengthening the historic identity of the city.

- 2.37 Key routes - Routes come in a variety of forms, from ring roads to pedestrianised streets. Each type of route will have its own requirements in terms of lighting, however these should be lit to a level which makes them safe and attractive to use without causing unnecessary glare, particularly to highway users and any nearby residential properties. In terms of highway safety white light shall be used on key pedestrian routes. There is however potential to create temporary art installations along key routes providing there is due regard given to highway safety.
- 2.38 Lighting edges - There are two clear edges in the city centre. These are the line of the old city wall and the inner ring road that runs around its perimeter. Either side of an edge should be lit in a different way in order to strengthen the edge and define different areas. This will not only add visual interest to any lighting scheme, but will also help to improve the legibility of the city by creating a different atmosphere and experience in different areas of the city.
- 2.39 Lighting gateways - Gateways can be seen to be the transitions between the main edges of the city. These gateways should be strengthened with the use of creative lighting. The input of an artist and/or the local community will be encouraged where appropriate.
- 2.40 Co-ordinated schemes for districts - Districts are larger areas that are easily distinguishable from surrounding areas and from one another. It is imperative that individual strategies are produced for districts to ensure that a consistent approach is provided to lighting. This will help to strengthen and define the individual districts, which in turn will improve their visual appearance and the legibility of the city.

Key Projects

- 2.41 Landmark buildings and trees in the Gate Streets - There are many attractive buildings and trees in the city centre that could potentially benefit from sympathetic lighting. Priority will be given to landmark buildings and trees, which form important vistas, at the ends of the Gate

Streets and in the Medieval Lanes. This will help to draw people around the city centre whilst highlighting the historic character of the city.



Photo 5: HSBC Bank (The Cross) during daytime



Photo 6: HSBC Bank (The Cross) at night-time

- 2.42 Landmark buildings and trees on approaches to the city centre -Buildings and trees on the approaches to the city centre may benefit from modern contemporary lighting schemes, as they are located outside of the historic core. Given that these landmark buildings and trees tend to be located alongside main roads, great care will be required to ensure that lighting schemes do not cause glare to highway users and nearby residents.
- 2.43 Routes between city centre and docks - The city centre and the docks are two of the city's main attractions. At the moment the links between the two are poorly and unimaginatively lit. There is the possibility for these routes to be lit creatively in ways, which would lead pedestrians between the city and the docks in a pleasant and safe manner.



Photo 6: Bearland House (Longsmith Street) during daytime



Photo 7: Bearland House (Longsmith Street) during night-time

- 2.44 Routes between city centre and the surrounding residential areas - In order to promote sustainable modes of transport and encourage cycling and walking, it is important that routes from nearby residential areas are well lit with white light in order to create safe and secure routes.
- 2.45 Creating features of edges - In order to positively emphasis the two edges of the city (the inner ring road and the city wall) individual schemes should be designed for the lower parts of the Gate Streets (outside of the old city walls) and the pedestrian parts of the Gate Streets (within the old city walls). These schemes shall be designed in a way that clearly distinguishes between the areas, whilst creating two schemes that work comfortably and harmoniously together.
- 2.46 Creating features of gateways - The main gateways into the city are the transition between the ring road and the lower Gate Streets, and the transition between the lower Gate Streets and the main pedestrianised Gate Streets. Each should be marked in a way to positively highlight this transition in order to improve legibility across the city.

2.47 Co-ordinated schemes for districts - These are required to ensure consistency, improve the visual appearance of the districts and improve legibility. Co-ordinated schemes should therefore be produced with the input of lighting engineers, landscape architects, and conservation specialists (where appropriate) for the cities main districts including: the Docks, the Gate Streets and the Cross, the Cathedral, Kings Square and the Bus Station. These individual district schemes should be produced in a format that will allow for their adoption by the City Council in order to ensure consistency through their implementation.

Objective 5: Ensure that lighting schemes are sustainable

- 2.48 Whilst lighting various elements of the city can potentially have a dramatic positive effect on the evening and night-time economy, over-lighting can ruin the overall visual effect, cause light pollution and be a waste of resources.
- 2.49 Artificial lighting may have many benefits, such as reducing the fear of crime, increasing security, improving road safety and enabling access to community facilities at night. However, excessive, poorly designed or poorly implemented lighting may have a number of detrimental effects, for example, it may present a danger for drivers, may be a source of disturbance for home-owners/occupiers or detract from the appearance of historic areas.
- 2.50 Care must therefore be taken to ensure that lighting is sensitive to the wider community and avoids light spill beyond the area to be lit.
- 2.51 It is therefore a key aim of this strategy to ensure that lighting does not excessively contribute to light pollution, cause a nuisance to city centre visitors and residents, and is implemented in the most sustainable way possible.

Key Principles

- 2.52 Reducing and preventing light pollution - Light pollution occurs when light is misdirected or poorly controlled. There are three possible effects that can occur as a result.
1. **Sky glow** - This is a visible glow that occurs when stray or poorly directed light reflects off particles in the atmosphere. It is largely visible from long distance views of the city, but it does also have local impacts. Lighting energy directed into the sky serves no useful purpose, impedes astronomy and wastes energy.

2. **Glare** - A visible or over-bright light source is often the cause of glare. Glare can be a danger to safe movement. It can also reduce visibility by causing sharp contrasts in lighting levels that may help to conceal objects or people that could cause a danger or appear threatening. Glare can be avoided through the use of properly controlled and directed lighting of an appropriate brightness.
 3. **Light Trespass** - When light strays beyond the boundary of property or into an area where it is not desired or required, light trespass occurs. Light trespass can be a nuisance; a danger and in some cases can also have a negative impact on wildlife.
- 2.53 The city council will expect all lighting projects to be designed in such a way that they minimise sky glow, glare and light trespass. Fittings should be mounted at an angle to the subject sufficient to ensure a good lighting effect without detriment to the surrounding area. Directing light downwards can help minimize sky glow. If there is no alternative to up lighting, then the use of shields, baffles and louvers will help to reduce light spill. Provided they are not detrimental to the appearance of the building.
- 2.54 Fittings should also be positioned to minimise street clutter, and so that they are not likely to attract vandalism or accidental damage that alters the focus of the lighting thus contributing to light pollution.
- 2.55 Further advice on reducing light pollution can be found in The Institution of Lighting Engineers (ILE) Guidance Note located in appendix 1 of this strategy.
- 2.56 Minimising Energy Consumption - Acceptable lighting uses only the energy necessary for the purpose. Time clocks and photoelectric controls should be used to ensure that the lighting is not in operation during daylight and to ensure that lighting schemes are not operated during those darkness hours when they serve no useful function. Each lighting scheme will be assessed on its individual merits to establish these principles.

- 2.57 The power consumption and output of a lighting scheme should be an integral part of the design process and must relate to the ambient night-time levels surrounding the site to be illuminated. This will help to ensure there is not sharp contrast between illuminated subjects.
- 2.58 Internal Lighting of Commercial Properties - Previously the city council, has encouraged commercial properties with shop windows to leave on their internal lights and display lights. This has provided a short-term solution and has helped to enliven the streetscene. In the future, where new lighting projects are implemented in proximity to commercial properties, it will be necessary to encourage the commercial properties to switch off or dim their lights. This will help to save energy and stop the background lighting of the shop displays competing with the lighting projects and schemes.

3.0 Lighting fund

- 3.1 Following the initial consultation stage of this draft guidance, a list of priority lighting projects will be developed by the city council. Priority will be given to those projects that contribute to the evening and night-time economy and conform to the aims of this strategy.
- 3.2 The Council intends to use a variety of means to secure lighting related improvements within the city and to support the implementation of this strategy. This will include partnership working and bidding for sources of external funding.
- 3.3 The City Council will to seek to agree section 106 agreements and to use other planning powers to secure lighting improvements on appropriate schemes, through the development control process.
- 3.4 This may also involve seeking contributions through the percent for art policy and the emerging Public Art Strategy.

4.0 General design principles

4.1 In many lighting installations, people make recommendations and decisions without specialist knowledge or a full understanding of the impact of their decision. This section of the strategy aims to provide some further design principles for lighting projects and schemes.

Purpose

4.2 The purpose of the lighting should always be clearly defined and it must be provided for a specific purpose, either to illuminate a building or given area to mark out routes, or to highlight obstacles or objects of interest within an area. Clearly, the effectiveness and acceptability of the installation can only be measured/assessed after the purpose is defined, and this should be the starting point of any design.

Context

4.3 Consideration should be given to the lighting effect to be created in relation to the surrounding night-time environment and the subject itself.

4.4 The object or area to be lit should not be viewed in isolation, but should be seen as part of a larger area with its own individual lighting environment. The relative brightness, lighting style and prominence of surrounding illuminated elements should be taken into consideration as context for the proposal.

Views

4.5 An assessment of the distant and close-up views should be made to determine lighting priorities and the consideration of the relationship of the building and its lighting to neighbouring buildings and features.

4.6 Within a generally darker environment the object, building or area to be lit will have a visual impact from further a field and will have a greater impact

on the use and character of surrounding areas or buildings. This impact needs to be assessed.

- 4.7 Consideration should be given to the surface of the subject in terms of colour and texture and the effects this might have on any lighting plans.

Subject

- 4.8 The size, detail, colour, construction materials and mass of the subject to be illuminated all need careful consideration to ensure a successful lighting result.

5.0 Lighting and the planning system

- 5.1 PPS 23 sets out the Government's advice on pollution and planning control. In terms of light pollution, the document refers to; '*...the need to limit and, where possible, reduce the adverse impact of light pollution, e.g. on local amenity, rural tranquillity and nature conservation.*' This should be considered in the preparation of development plan documents and may be material in the consideration of individual planning applications. Further advice specifically relating to the floodlighting of sports developments, is contained within PPG 17 'Planning for Sport, Open Space and Recreation.'
- 5.2 The daytime appearance of light fittings and cabling can have a negative effect on the appearance of streets and individual buildings, particularly if the buildings are listed or fall within a conservation area. Under the Planning (Listed Buildings and Conservation Areas) Act 1990, the Council has powers to refuse consent for a lighting scheme based upon the impact the light fittings would have.
- 5.3 Light fittings elsewhere may also require consent due to their scale and impact and should be of high quality design and in keeping with the character of their surroundings. Care should be taken in positioning fittings to ensure a good lighting result and the minimal visual impact of the fittings during daylight hours.

Making a planning application

- 5.4 Artificial light is not classed as 'development'. However, planning permission is likely to be required for the structures and installations associated with lighting, especially if they are substantial and affect the external appearance of a building.
- 5.5 The maintenance, improvement or other alteration of a building that does not materially affect its external appearance, does not require planning permission. This means that planning permission for security lights on houses is not usually required.

- 5.6 The installation of lighting for larger developments including car parks, residential schemes, industrial estates, sports fields, shops, signs and light fittings not attached to houses is likely to require planning permission.
- 5.7 Listed Building Consent is required for lighting attached to Listed Buildings, as it may alter the character of the building and physically affect it's fabric. Other consents may also be necessary depending on the circumstances.
- 5.8 We advise prospective applicants to check with the Council before installing any lighting scheme. When contacting the planning department you should give information on the nature and extent of the proposed scheme, i.e. - number of lights and position, their likely output, the height of the lighting columns (if applicable) and the area to be lit. This will enable us to give informed advice.
- 5.9 In addition to the information normally required for the submission of a planning proposal, applications that involve artificial lighting should also include the following information:
- A statement of why the lighting is required; the proposed frequency of use, and the hours of illumination.
 - A site plan showing the area to be lit relative to the surrounding area, indicating parking or access arrangements where appropriate, and highlighting any significant existing or proposed landscape or boundary features.
 - A technical report, prepared by a qualified lighting engineer, setting out the types of lights, intended angles of the light units and any proposed shields, their performance together with the height and spacing of lighting columns, the light levels to be achieved over the intended area, and the site boundaries.
 - An assessment of the likely impact of the lighting scheme on the surrounding area, by that qualified engineer.
- 5.10 The type of lamp should be chosen with care to ensure an appropriate lighting result. The choice of an appropriate lamp would involve a

consideration of the importance of the subject, the ambient lighting condition, the power of the lamp and its colour properties.

- 5.11 The Institute of Lighting Engineers Guidance (in Appendix 1 of this strategy) gives advice on acceptable levels of illumination in different zones of lighting control, from rural locations to city centres with high levels of night-time activity. Applicants should demonstrate that this guidance has been considered when submitting a planning application.

Planning conditions

- 5.12 Where the Council grants planning permission for a development, conditions controlling the lighting scheme may be applied. These may include:

- Limits on the hours of illumination
- Lighting levels
- Column heights
- Specification and colour treatment for lamps and luminaries
- The need for full horizontal cut-off
- No distraction to the highway
- Use of demountable columns
- Retention of screening vegetation
- Use of planting and bunding to contain lighting effects
- Erection of demonstration luminaries
- Review of lighting impacts after installation.

- 5.13 The conditions will be applied as necessary by the Council to help minimise the negative effects from the lighting schemes of new proposals, particularly from glare and light trespass, in areas of wildlife importance, historic importance, and where a residential use is predominant.

- 5.14 Lighting schemes to be adopted by the county council are likely to attract a commuted sum for future maintenance.

Appendix 1 of Lighting Strategy



The Institution of Lighting Engineers

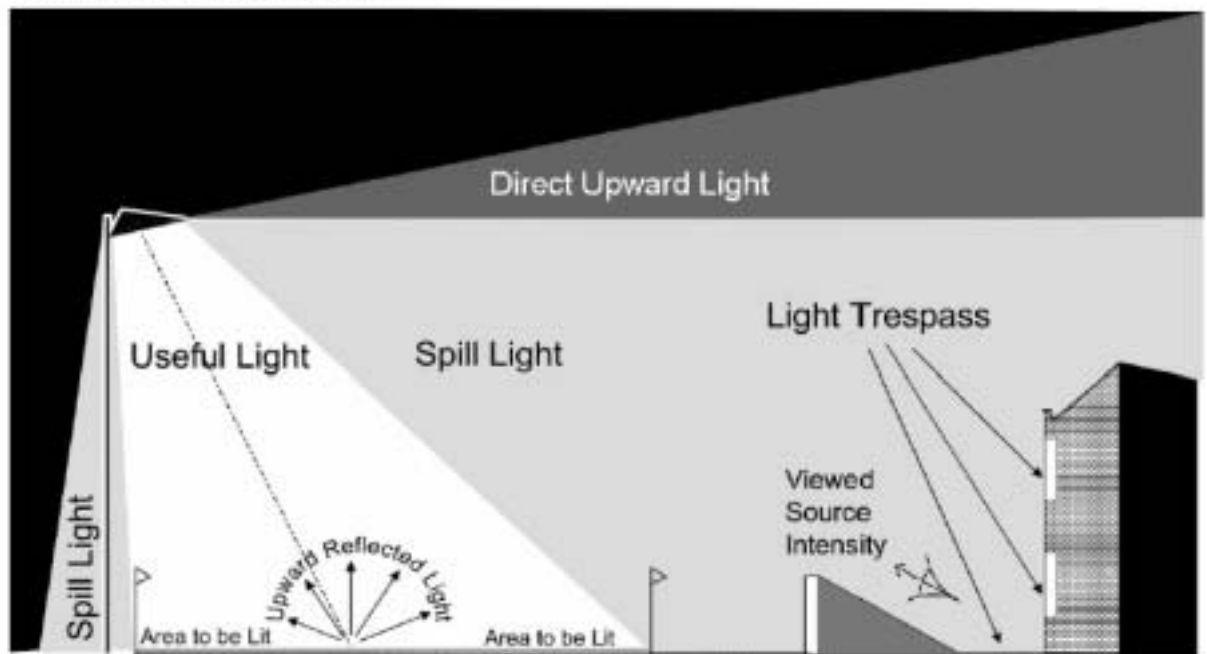
E-mail ile@ile.org.uk Website www.ile.org.uk

GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

ALL LIVING THINGS adjust their behaviour according to natural light. Man's invention of artificial light has done much to enhance our night-time environment but, if not properly controlled, obtrusive light (commonly referred to as light pollution) can present serious physiological and ecological problems.

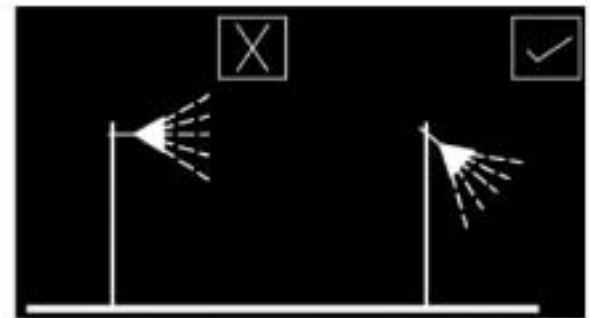
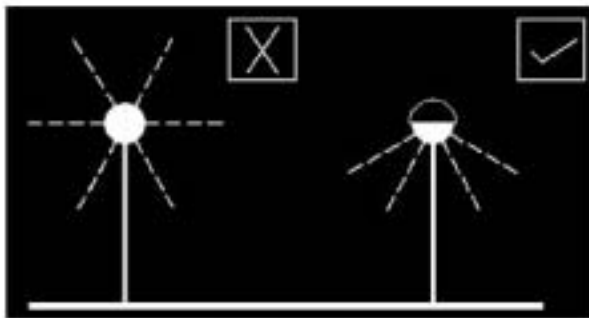
Obtrusive Light, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution and can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky above our towns, cities and countryside, Glare the uncomfortable brightness of a light source when viewed against a dark background, and Light Trespass, the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others, waste money and electricity and result in the unnecessary emissions of greenhouse gases. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can I minimise the problem?



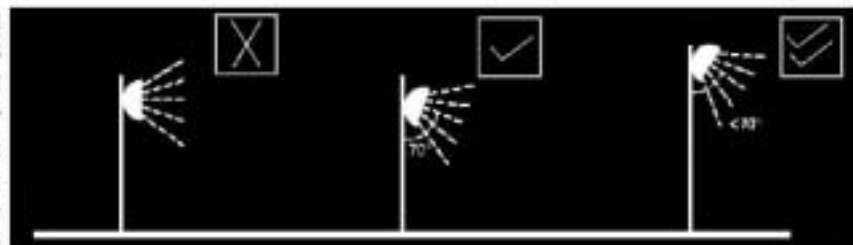
Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light. Organisations from which full details of these standards can be obtained are given on the last page of this leaflet.

Dim or switch off lights when the task is finished. Generally a lower level of lighting will suffice to enhance the night time scene than that required for safety and security.



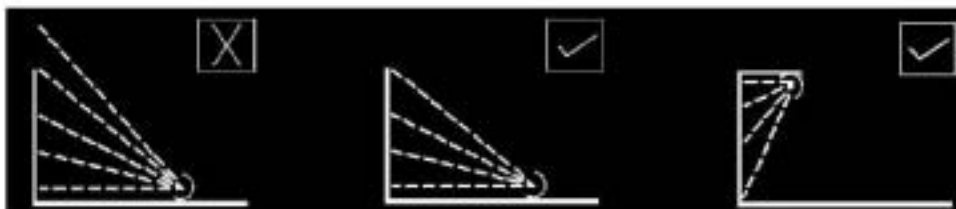
Use specifically designed lighting equipment that minimises the upward spread of light near to and above the horizontal. Care should be taken when selecting luminaires to ensure that appropriate units are chosen and that their location will reduce spill light and glare to a minimum. Remember that lamp light output in LUMENS is not the same as lamp wattage and that it is the former that is important in combating the problems of obtrusive light

Keep glare to a minimum by ensuring that the main beam angle of all lights directed towards any potential observer is not more than 70°. Higher mounting heights allow lower main beam angles, which can assist in reducing glare. In areas with low ambient lighting levels, glare can be very obtrusive and extra care should be taken when positioning and aiming lighting equipment. With regard to domestic security lighting the ILE produces an information leaflet GN02 that is freely available from its web site.



The UK Government will be providing an annex to PPS23 Planning and Pollution Control, specifically on obtrusive light. However many Local Planning Authorities (LPA's) have already produced, or are producing, policies that within the new planning system will become part of the local development framework. For new developments there is an opportunity for LPA's to impose planning conditions related to external lighting, including curfew hours.

For sports lighting installations (see also design standards listed on Page 4) the use of luminaires with double-asymmetric beams designed so that the front glazing is kept at or near parallel to the surface being lit should, if correctly aimed, ensure minimum obtrusive light. In most cases it will also be beneficial to use as high a mounting height as possible, giving due regard to the daytime appearance of the installation. The requirements to control glare for the safety of road users are given in Table 2.



When lighting vertical structures such as advertising signs direct light downwards, wherever possible. If there is no alternative to up-lighting, as with much decorative

lighting of buildings, then the use of shields, baffles and louvres will help reduce spill light around and over the structure to a minimum.

For road and amenity lighting installations, (see also design standards listed on Page 4) light near to and above the horizontal should normally be minimised to reduce glare and sky glow (Note ULRs in Table 1). In sensitive rural areas the use of full horizontal cut off luminaires installed at 0° uplift will, in addition to reducing sky glow, also help to minimise visual intrusion within the open landscape. However in many urban locations, luminaires fitted with a more decorative bowl and good optical control of light should be acceptable and may be more appropriate.

ENVIRONMENTAL ZONES:

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

Category	Examples	
E1:	Intrinsically dark landscapes	National Parks, Areas of Outstanding Natural Beauty, etc
E2:	Low district brightness areas	Rural, small village, or relatively dark urban 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

Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.

DESIGN GUIDANCE

The following limitations may be supplemented or replaced by a LPA's own planning guidance for exterior lighting installations. As lighting design is not as simple as it may seem, you are advised to consult and/or work with a professional lighting designer before installing any exterior lighting.

Environmental Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Trespass (into Windows) Ev [Lux] ⁽²⁾		Source Intensity I [kcd] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre- curfew	Post- curfew	Pre- curfew	Post- curfew	Average, L _(0.9m²)
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1.0	10
E4	15.0	25	5	25	2.5	25

ULR = Upward Light Ratio of the Installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.

Ev = Vertical Illuminance in Lux and is measured flat on the glazing at the centre of the window

I = Light Intensity in Cd

L = Luminance in Cd/m²

Curfew = The time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of use of lighting applied by the local planning authority. If not otherwise stated – 23.00hrs is suggested.

* = From Public road lighting installations only

- (1) Upward Light Ratio** – Some lighting schemes will require the deliberate and careful use of upward light – e.g. ground recessed luminaires, ground mounted floodlights, festive lighting – to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.
- (2) Light Trespass (into Windows)** – These values are suggested maxima and need to take account of existing light trespass at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light trespass into the window down to the after curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.
- (3) 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 sports lighting applications with limited mounting heights, may be difficult to achieve.
- (4) Building Luminance** – This should be limited to avoid over lighting, and related to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires or luminaires fixed to the building but used to light an adjacent area.

Light Technical Parameter TI	Road Classification ⁽⁵⁾			
	No road lighting	ME5	ME4/ ME3	ME2 / ME1
	15% based on adaptation luminance of 0.1cd/m ²	15% based on adaptation luminance of 1cd/m ²	15% based on adaptation luminance of 2 cd/m ²	15% based on adaptation luminance of 5 cd/m ²

TI = Threshold Increment is a measure of the loss of visibility caused by the disability glare from the obtrusive light installation

(5) Road Classifications as given in BS EN 13201 – 2: 2003 Road lighting Performance requirements
Limits apply where users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and for viewing directions in path of travel. See CIE Publication 150:2003, Section 5.4 for methods of determination. For a more detailed description and methods for calculating and measuring the above parameters see CIE Publication 150:2003.

RELEVANT PUBLICATIONS AND STANDARDS:

British Standards: www.bsi.org.uk	BS 5489-1: 2003 Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas BS EN 13201-2:2003 Road lighting – Part 2: Performance requirements BS EN 13201-3:2003 Road lighting – Part 3: Calculation of performance BS EN 13201-4:2003 Road lighting – Part 4: Methods of measuring lighting performance. BS EN 12193: 2003 Light and lighting – Sports lighting
Countryside Commission/DOE www.odpm.gov.uk	Lighting in the Countryside: Towards good practice (1997) (Out of Print)
CIBSE/SLL Publications: www.cibse.org	CoL Code for Lighting (2002) LG1 The Industrial Environment (1989) LG4 Sports (1990+Addendum 2000) LG6 The Exterior Environment (1992) FF7 Environmental Considerations for Exterior Lighting (2003)
CIE Publications: www.cie.co.at	01 Guide lines for minimizing Urban Sky Glow near Astronomical Observatories (1980) 83 Guide for the lighting of sports events for colour television and film systems (1989) 92 Guide for floodlighting (1992) 115 Recommendations for the lighting of roads for motor and pedestrian traffic (1995) 126 Guidelines for minimizing Sky glow (1997) 129 Guide for lighting exterior work areas (1998) 136 Guide to the lighting of urban areas (2000) 150 Guide on the limitations of the effect of obtrusive light from outdoor lighting installations (2003) 154 The Maintenance of outdoor lighting systems (2003)
Department of Transport www.defra.gov.uk	Road Lighting and the Environment (1993) (Out of Print)
ILE Publications: www.ile.org	TR 5 Brightness of Illuminated Advertisements (2001) TR24 A Practical Guide to the Development of a Public Lighting Policy for Local Authorities (1999) GN02 Domestic Security Lighting, Friend or Foe
ILE/CIBSE Joint Publications ILE/CSS Joint Publications	Lighting the Environment - A guide to good urban lighting (1995) Seasonal Decorations – Code of Practice (2005)
Campaign for Dark Skies (CDFS) www.dark-skies.org	

NB: These notes are intended as guidance only and the application of the values given in Tables 1 & 2 should be given due consideration along with all other factors in the lighting design. Lighting is a complex subject with both objective and subjective criteria to be considered. The notes are therefore no substitute for professionally assessed and designed lighting, where the various and maybe conflicting visual requirements need to be balanced.

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