



ASHFORD  
BOROUGH COUNCIL

Local Plan

## Dark Skies SPD

Preserving our skies: Light pollution and the need for darkness



Adopted July 2014

**Ashford**  
best placed in Britain





**Ashford Borough Council is concerned at the diminishing number of locations unaffected by light pollution in the South East region, within the borough in particular. There are sensitive locations where there is a need to consider in general and technical terms the impact of external lighting on the environment in the determination of planning applications.**

**The Borough's strategic economic advantage lies in its location within the EU's 'Golden Triangle' (the economic core between London, Paris and Dortmund), but one of the impacts is intrusive light levels. Conversely, there are parts of the rural areas of the Borough which enjoy some of the darkest skies in the region.**

**This Supplementary Planning Document provides advice to applicants contemplating a development involving a lighting scheme on what factors will be taken into account by the Council in determining planning applications, with reference to planning policy and conditions on development.**

**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.**

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# Introduction

## 1. Introduction

- 1.1. This Supplementary Planning Document (SPD) 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 clearly understand the planning and technical issues involved.
- 1.2. In general, lighting in itself is not a problem unless it is excessive, poorly designed, badly installed or poorly maintained. The positive benefits to be gained from a lighting proposal can include 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 aims to balance the need for any lighting proposal against the implications it may have on the environment in terms of obtrusive light.
- 1.3. Light pollution is a problem for various reasons, including energy wastage, effects on human health and psychology, erosion of tranquillity, and disruption of ecosystems. The Council recognises its responsibilities for environmental preservation and protection and the guidance in the National Planning Policy Framework (NPPF). The amenity value of dark skies and star visibility is intangible but important in supporting the wellbeing of local populations.
- 1.4. The Council's rural areas to the south and east of the urban area currently enjoy some of the darkest skies in the region, unaffected as yet by the effects of external lighting often brought by developmental pressures. The area around Woodchurch in particular, east of Tenterden, has been measured by global satellites as comprising one of the only areas in the Borough with no light detected, and thus is worthy of protection as an 'intrinsically dark' sky as alluded to within the NPPF (paragraph 125).

- 1.5. In terms of the outline of this document, Section 2 of this document outlines the issues related to obtrusive light (as opposed to necessary light for the fulfilment of tasks) highlighting the adverse impacts of light pollution in general and specific terms. Section 3 outlines the current Planning Policy Context which provides the basis for any efforts to restrict, guide and control lighting within the borough. Section 4 details the main tools the Council will use to define the limits of light pollution control areas within its jurisdiction. Section 5 provides specific advice to planning service users regarding the need for permission and other general issues to be considered when developing lighting schemes within development. Section 6 offers specific design guidance (including luminance and limits) relevant to specific zones within Ashford Borough.
- 1.6. The Council, as Local Planning Authority is keen to limit the adverse impact of artificial light through planning mechanisms where it can. But whilst the Council can play its part, such an undertaking requires cooperation of the local community, space users and other statutory authorities and groups.

# The Issues Relating to Obtrusive Light

## 2. The Issues Relating to Obtrusive Light

- 2.1. Light pollution is the light that is wasted upwards and reflects off the atmosphere, causing the visible blanket cover that hangs over major cities at night. This blanket is often coloured a lurid yellow thanks to ill-designed sodium street-lights. The response in humans is noticeable in that the iris shrinks over the lens to limit this back-scattered light, in its increased quantities, from causing retinal damage. This, while saving sight, prevents the viewer from seeing fainter stars. The darker the location, then, the more the pupil may expand and the wonders of the universe be enjoyed.
- 2.2. Today starry skies are denied to over 90 per cent of the UK population as a direct result of ill-directed lighting causing light pollution. Light pollution is also seriously undermining the ability of British based astronomers to take the lead in this continually expanding field of science.
- 2.3. 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. This combination of circumstances has raised the profile of obtrusive light as an environmental issue.
- 2.4. 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.



## The Issues Relating to Obtrusive Light

- 2.5. 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.
- 2.6. 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.
- 2.7. 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.
- 2.8. Whilst recognising the environmental problems associated with artificial lighting, the Council also appreciates the importance of reducing crime, improving road safety and providing leisure opportunities<sup>1</sup>. This supplementary planning document does not seek to prevent lighting as part of a new development. What the document does suggest is that lighting should be carefully directed and sensitively designed so as to reduce obtrusiveness, and that appropriateness will be judged on a case-by-case basis.

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<sup>1</sup> Research has shown that lighting helps to reduce the fear of crime, and in certain locations can reduce the number of road accidents. However, nocturnal switch-off trials in areas in Essex resulted in a halving of burglaries and, in general, road light switch-offs and dimming in many locations have served to increase driver attention while serving to mitigate energy wastage.



## 3. Planning Policy Context

- 3.1. Paragraph 125 of the National Planning Policy Framework identifies the need to minimise the impact of light pollution:

*“By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”*

The NPPF’s advice provides the baseline for planning policy and, thus, such consideration must be acted upon by the local authority.

- 3.2. Ashford Borough Council’s Core Strategy (2008) outlines the requirement for,

*“development proposals to demonstrate how it is intended to contribute towards minimising light pollution. Information on these measures must be submitted with applications. Developments should be designed to reduce the occurrence of light pollution and the Council will expect such schemes to employ energy-efficient forms of lighting that also reduce light scatter”* (paragraph 9.68, supported by policy CS10 focusing on sustainability).

- 3.3. 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 Core Strategy which relate to the protection of landscapes according to sustainable principles. Policy CS1 requires,

*“Development that respects the environmental limits that protect the high quality built and natural environment of the Borough, minimises flood risk, provides for adequate water supply, and protects water and air quality standards;”*

*“Protection for the countryside, landscape and villages from adverse impacts of growth and the promotion of strong rural communities;” and*

*“New places - buildings and the spaces around them - that are of high quality design.”*

None of these requirements would be met without due regard to the effects of external lighting and its potential pollution. This Supplementary Planning Document gives weight to the various policies with specific reference to obtrusive light and its environmental effects.

- 3.4. When a scheme that would potentially impact on light levels in an area, the use of conditions in planning permissions: circular 11/1995 allows Local Planning Authorities to place conditions on the granting of planning permission. For a list of Ashford Borough Council's standard conditions relating to external lighting please see Appendix 4.
- 3.5. Under the Clean Neighbourhoods and Environmental Act (2005), obtrusive light current legislation now constitutes a statutory nuisance on which the Council can take action. This applies to "artificial light emitted from premises so as to be prejudicial to health or a nuisance". Problems are best avoided at source by effective planning controls for new developments in particular, ensuring an adequate level of control that can be enforced.
- 3.6. The Council, however, acknowledges that many lighting installations, which may cause obtrusive light may not require planning permission and so it will complement this SPD with a public awareness campaign. Other light sources may be under the jurisdiction of other statutory bodies (e.g. Kent County Council; Highways Agency) and, thus, cooperation between these bodies is important for the maintenance of effective controls.

# General Factors to be taken into consideration

## 4. General Factors to be taken into Consideration

4.1. This guidance sets out the criteria that will be taken into account when the Borough 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 housing. A number of factors will be taken into account. These are:

### 4.2. The Location of the Proposal in Relation to Neighbouring Uses

#### 4.2.1. Environmental Zones

Local Planning Authorities are recommended to distinguish between broad areas that merit different levels of lighting control, as outlined in the Institution of Lighting Professionals (ILP), Guidance Notes for the Reduction of Light Pollution (2011). This can then be used to test the impacts of external artificial lighting will be judged.

**Table 1: Light control zones as suggested by the ILP (2011)**

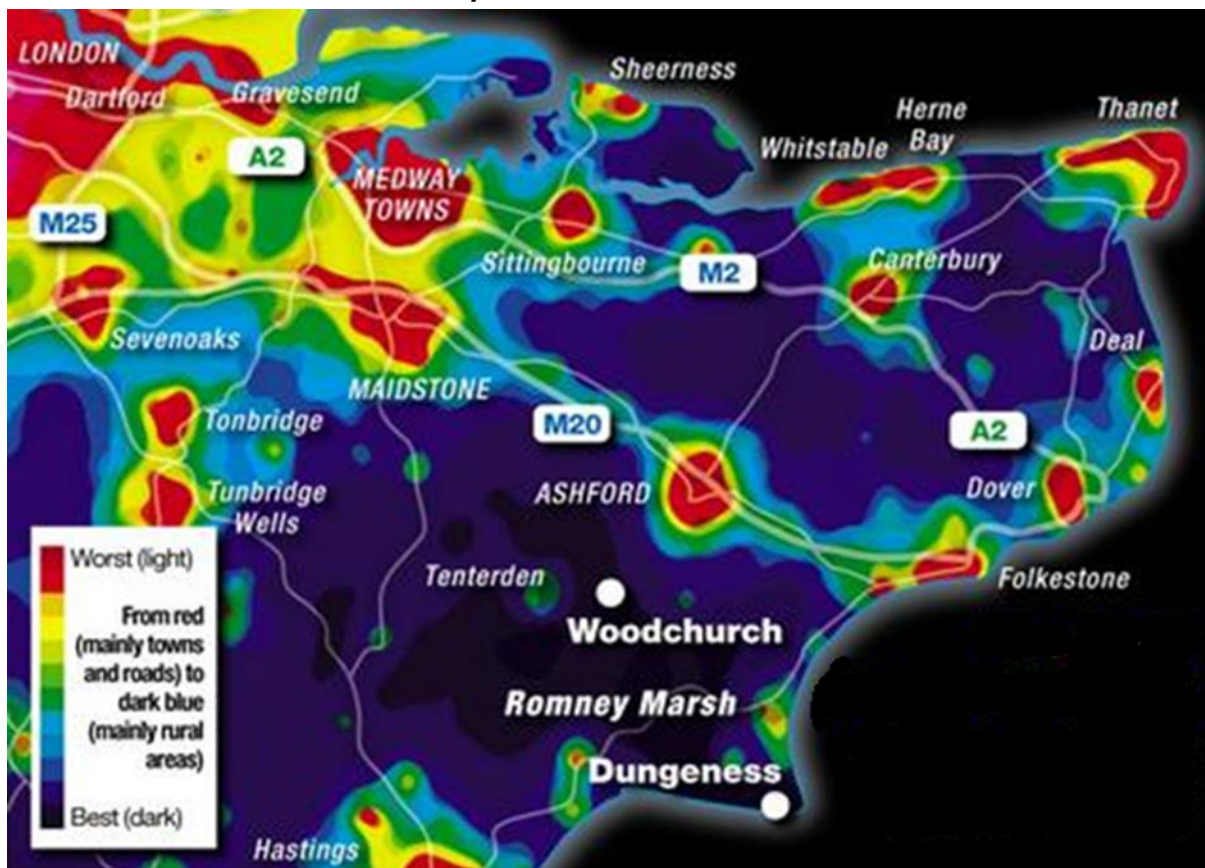
Zone	Surrounding	Lighting Environment	Examples
E <sub>0</sub>	Protected	Dark	Designated Dark Sky Zones
E <sub>1</sub>	Natural	Intrinsically dark	Areas of darkest skies (see plan, below). Rural areas.
E <sub>2</sub>	Rural	Low district brightness	Village or relatively dark outer suburban locations
E <sub>3</sub>	Suburban	Medium district brightness	Small town centres/ suburban locations
E <sub>4</sub>	Urban	High district brightness	Town centres with high levels of night-time activity

## General Factors to be taken into consideration

4.2.2. Ashford Borough does not yet contain any areas designated 'Protected'. It is possible that the area of 'intrinsic darkness' around Woodchurch can become a designated Dark Sky Protected Zone in the future. At this stage, planning applications within the area of darkest skies will be subject to E1 (AONBs; SSSIs; rural areas outside of settlement confines) or E2 (identified rural settlement confines) controls.

4.2.3. The map below, produced by the Ashford Astronomical Society, shows the extent of light pollution in Kent and how unique is the zone around Woodchurch on a county level. Further detailed survey work is underway to define an area for special protection more clearly.

**Plan 1: Showing areas of darkest skies in South East England (courtesy of Ashford Astronomical Society)**





## General Factors to be taken into consideration

**E1:** 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.

**E2:** Lighting proposals within the identified rural settlements 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.

**E3:** Lighting proposals that are within or adjoining residential or commercial areas within Ashford's urban extensions will need to demonstrate 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 residents in towns and villages.

4.3. The Institution of Lighting Professionals (ILP) has provided guidance on acceptable levels of illumination for specific environmental zones, which relate broadly to the areas identified above. The Borough Council will assess lighting schemes against the design guidance for the relevant environmental zone as set out below:

4.4. Where planning permission is required, the proposal must take make an account of the following:

4.5. **An Assessment of the Need for Lighting**

The Borough Council 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 the most sensitive locations and therefore the Council will ensure that only lighting schemes that are strictly necessary are approved in these locations. The Council will also take account of the requirements of the Highway Authority (KCC or Highways Agency) with regard to proposals relating to highway safety to secure the most appropriate solution with least light pollution.

## General Factors to be taken into consideration

### 4.6. The Nature of the Use of the Lighting Proposed

Applicants will need to identify the purpose of proposed lighting, 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.

4.7 In addition, depending on the type of scale of development, there are other considerations. These are tackled in Sections 5 and 6 below.

# Making a planning application involving lighting

## 5. Making a planning application involving lighting

5.1. This section provides general guidance for those making planning applications.

5.2. Certain types of development may not need planning permission and may be undertaken using 'permitted development rights'. If your property is a listed building, you should always consult the Local Planning Authority for advice. Whether or not permission is needed, people are encouraged to take careful account of the Design Guidance set out in the next section of this document.

5.3. When external lighting is proposed, you should ensure that the intensity and direction of light does not disturb others. This may be done by ensuring that beams are not pointed directly at windows of other houses. Security lights fitted with passive infra-red detectors (PIRs) and/or timing devices should be adjusted so that they minimise nuisance to neighbours and are set so that they are not triggered by traffic or pedestrians passing outside your property. Remember, a neighbour might take you to court if you are negligent or cause nuisance.

5.4. Developments in the Borough's HS1 safeguarded zone (see the Council's GIS system) shall be so designed to avoid dazzle and glare or light shed which could cause hazard or distraction to operators of HighSpeed1 from any lighting system which forms part of the development or is amended locally to accommodate the development. All proposals for lighting systems either temporary or permanent shall be submitted in writing and approved by the Local Planning Authority in consultation with HS1. Unless otherwise agreed in writing with the Local Planning Authority in consultation with HS1, the approved scheme shall be implemented. This is for reasons of safety as, depending upon the orientation and shrouding of the lighting or component lighting levels and the position of the development, lighting can interfere with sighting of signals.

5.5. **If you need to make a planning application**, the following considerations could be included in a Design and Access Statement:

5.5.1. External lighting must be shown to have been carefully thought through in any proposal. Government Guidance that can help to achieve this can be found at <http://planningguidance.planningportal.gov.uk/> and is summarised below :

- Does the proposal, or major change to an existing one, materially alter light levels outside the development and/or have the potential to adversely affect the use or enjoyment of nearby buildings or open spaces?

## Making a planning application involving lighting

- Does an existing lighting installation make the proposed location for a development unsuitable? E.g. the lighting changes light levels significantly in the locality; potential or existing users may be particularly sensitive to light intrusion (e.g. hospital); the proposal has a significant impact on a protected site or species. This is especially important in proposals for white or ultraviolet light, and where light shines on water.
- The development is in a protected area of dark sky or an intrinsically dark landscape where it is desirable to minimise new light sources? Consider Environmental Zone designations.
- The proposed development includes smooth, reflective building materials, including large horizontal expanses of glass, particularly near water bodies, as this has potential to change natural light and to create polarised light pollution affecting wildlife.

5.5.2. Should any of the issues detailed above be relevant to your application, you **must** include in your application details of the following<sup>2</sup>:

- where the light shines;
- when the light shines;
- how much light shines; and
- possible ecological impact.

5.5.3. It must be demonstrated that any potential adverse impacts have been considered and that measures are in place to mitigate, minimise or minimise the impact of light.

5.5.4. A number of considerations could mitigate potentially harmful impacts of lighting. Greater detail will be provided in the design section of this document, but for general schemes applicants should bear the following pointers in mind:

- Lighting schemes could be turned off when not needed ('part-night lighting') to reduce any potential adverse effects e.g. when a business is closed or, in outdoor areas, switching-off at quiet times between 11pm and 5am or 6am.
- Impact on sensitive wildlife throughout the year, or at particular times (e.g. on migration routes), may be mitigated by the design of the lighting or by turning it off or down at sensitive times<sup>3</sup>.

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<sup>2</sup> Guidance on Light Pollution at <http://planningguidance.planningportal.gov.uk/>



# Making a planning application involving lighting

5.5.5. How much light? Consider the following points:

- Assess how much light *and* from what parts of the spectrum the light in your scheme comes from (e.g. light source and performance levels) and whether it exceeds the levels required do what it is supposed to do. This should be in keeping with the character and/or environment of the area.
- Avoid glare for safety reasons. This is the uncomfortable brightness of a light source due to the excessive contrast between bright and dark areas in the field of view. A large difference in adjacent lit areas can mask activity in shadow and cause areas of high contrast or glare.
- Avoid unnecessary light spillage through poorly directed light (see Section 6).

## 5.6. Larger-scale development

Although relatively small in number, there will be occasional commercial and residential developments of larger scale in the rural areas. Where these occur, especially in the most sensitive areas<sup>4</sup>, then the Borough Council would encourage applicants to use best practice such as the Scottish Executive's Guidance Note "Controlling Light Pollution and Reducing Lighting Energy Consumption" (2007). This sets out a series of essential and desirable steps as follows:

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<sup>3</sup> Further advice is available from the Government's and Natural England's websites on handling the impact on wildlife – including from artificial light – where European protected sites or European protected species could be affected.

<sup>4</sup> Consideration should be given to the management plan of AONBs for large development within or immediately surrounding their boundaries.

## Making a planning application involving lighting

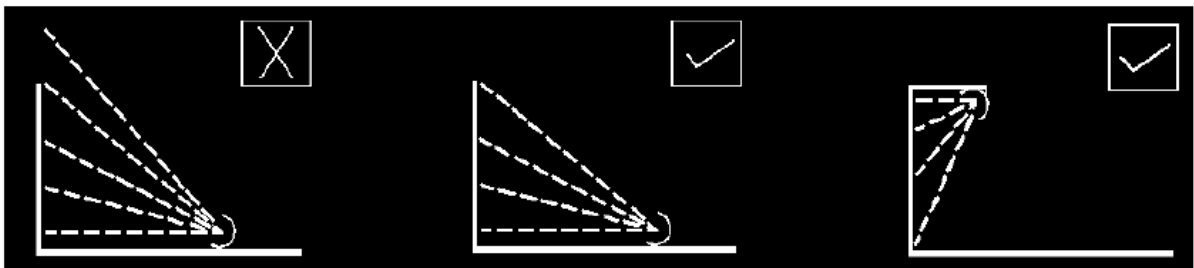
Table 2: Best practice light survey requirements recommended for large-scale developments

Stage	Requirement	Stage Name
1	<b>Essential</b>	<b>Statement of Client Needs/Operational Statement</b>
2	<b>Essential</b>	<b>Site Survey</b>
3	<b>Essential</b>	<b>Critical Viewpoints</b>
4	Desirable	Existing Lighting Conditions
5	Desirable	Baseline Conditions
6	<b>Essential</b>	<b>Task Analysis</b>
7	<b>Essential</b>	<b>Establishing Environmental Setting</b>
8	<b>Essential</b>	<b>Lighting Design Objectives</b>
9	Desirable	Lighting Design Methodology
10	<b>Essential</b>	<b>Calculated Predictions</b>
11	<b>Essential</b>	<b>Obtrusive Light Calculation</b>
12	<b>Essential</b>	<b>Comparing Design with Baseline Values</b>
13	Desirable	Designer's Critique
14	Desirable	Viewpoint Visualisation
15	Desirable	Virtual Walkthrough
16	Desirable	Surface Colour Schedule
17	<b>Essential</b>	<b>Luminaire Schedule</b>
18	Desirable	Energy Usage
19	<b>Essential</b>	<b>Schedule of Luminaire Profiles</b>
20	<b>Essential</b>	<b>Layout Plan</b>

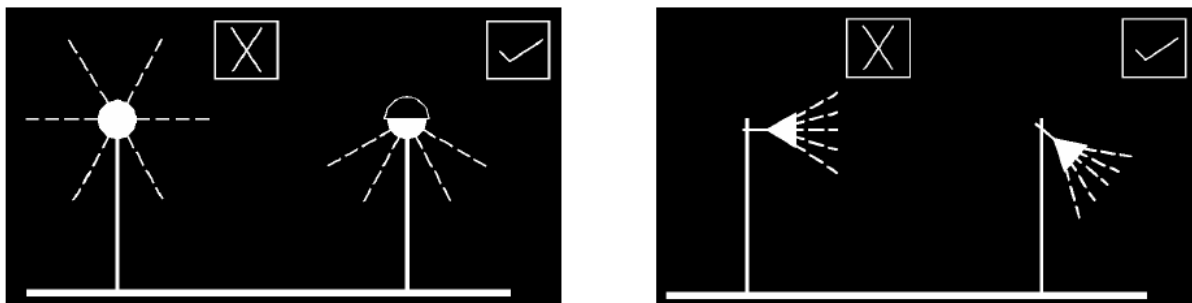
## Design Guidance

### 6. Design Guidance

- 6.1. To minimise obtrusive light the applicant should adhere to the following general principles taken from the Institution of Lighting Professionals (ILP), Guidance Notes for the Reduction of Light Pollution, 2011.
- 6.2. 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, and is especially inappropriate in zones E0 and E1.

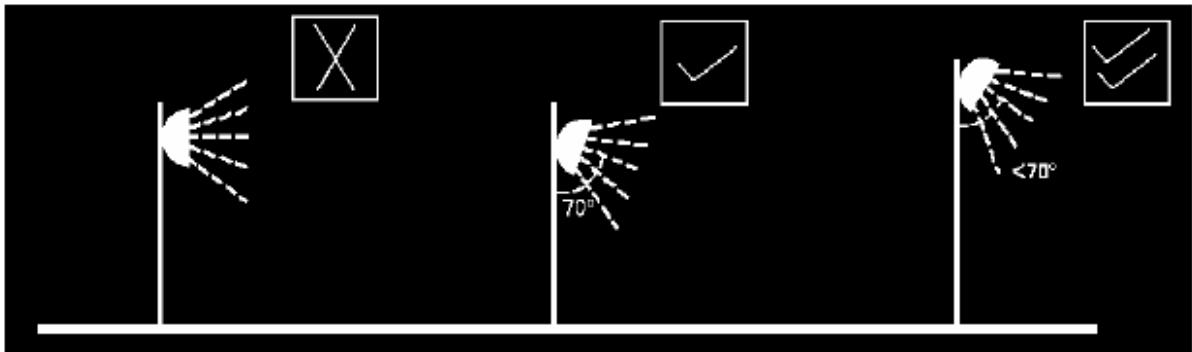


- 6.3. Lighting is designed so as to minimise the spread of light near to, or above the horizontal (see image below). Again any light that shines above the horizontal line of the light adds to the sky glow effect.



- 6.4. 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.

- 6.5. 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 reduces the effect of glare and light spill on neighbouring dwellings, passing motorists, pedestrians, etc.



- 6.6. Lighting should be directed to minimise and preferably avoid light spillage onto neighbouring properties.
- 6.7. Wherever possible use floodlights with asymmetric beams that permit the front glazing to be kept at or near parallel to the surface being lit.
- 6.8. 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.
- 6.9. Regardless of the zone, the lights you choose and then how you install them is of critical importance.



This spot light is what is known as a bisymmetric light and is commonly purchased from DIY centres. The light from this type of fixture, if not installed correctly, can be extremely intrusive. This type of light must be installed pointing directly downward. Any tilt above zero degrees will result in intrusive light heading uselessly into the sky. Due to it having to be installed pointing downward the usefulness of this flood light is extremely limited.





## Design Guidance



This spot light is what is known as an asymmetric light which is less commonly used but is the preferred option in all cases. If installed correctly with zero degrees of upward tilt there will be no upward light and the light is forced outwards across the area that you wish to be lit. The glass cover is completely flat with no ridging or curve.

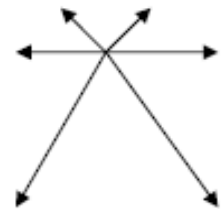


Light fall when installed at zero degrees upward tilt.



The flood light shown is wrongly installed with a 60 degree upward tilt which is unacceptable.

Many rural properties such as barns, milking parlours, yards and even houses have flood lights such as this and they often give off a bright orange light. The reflector unit held within the light fitting is bisymmetric and should be installed facing directly downward. However, the unit also has a curved glass panel on the front to aid with light spread which means even pointing directly down ward it will still have upward stray light. This is not acceptable.



Light fall when installed at zero degrees upward tilt.



A fully cut-off light fitting making a downward cone of light with no stray light. This fitting illuminates a doorway only. This light does not have additional shielding and therefore viewed light may be seen from a distance if in a rural setting, making it a poor option.

## Design Guidance

<b>Table 3: Obtrusive Light Limitations for Exterior Lighting Installations as appropriate for Ashford Borough</b>		
<b>Zone</b>	<b>What is acceptable?</b>	<b>Where does this apply?</b>
<b>E<sub>0</sub></b>	No decorative lighting acceptable. Security lighting acceptable only in exceptional circumstances.	Future designated 'dark sky' zone (not yet applicable)
<b>E<sub>1</sub></b>	External lighting to be limited to accord with ILP lighting guidance for this zone. Decorative lighting generally inappropriate. All lighting must be extinguished after 23:00 except in exceptional circumstances.	AONBs; SSSIs; rural areas outside of settlement confines.
<b>E<sub>2</sub></b>	For large-scale developments, lighting levels should accord with ILP technical guidance for this zone. Where development takes place, strict control of new street lighting. All lighting must be extinguished after 23:00 except in exceptional circumstances.	Within identified rural settlement confines <u>and Tenterden (excluding High Street)</u>
<b>E<sub>3</sub></b>	External lighting levels should accord with ILP technical guidance for this zone.	Extensions to the Ashford urban area <u>and Tenterden High Street</u>
<b>E<sub>4</sub></b>	External lighting levels should accord with ILP technical guidance for this zone. Street lighting proposals should be carefully planned and specified to achieve best practice in light pollution control.	Within the Ashford urban area

6.10. Table 3 (above) indicates the definitions of environmental areas the Council will use and the differentiated acceptability of lighting across the borough in seeking to protect against light pollution when it is considering planning and listed building applications.

6.11. If in doubt, it may be worth consulting and/or working with a professional lighting designer before installing any exterior lighting. The following limitations should be observed as guidance to appropriate levels of lighting in each environmental zone. Details of specific lighting levels may be found in Appendix 3, based on ILP guidance.

# Appendix 1 – Publications and Standards

## Appendix 1: Publications and Standards

The relevant British Standards covering lighting are BS 5266; BS 5489; BS 13201; BBS EN 12193; and BS EN 12464-2.

BS 5489 contains guidance and recommendations that are intended to support BS EN 13201 and to enable designers of lighting systems to comply with that standard.

BS 5489 consists of two parts:

- BS 5489-1 Gives guidance and recommendations for the lighting of roads and public amenity areas
- BS 5489-2 gives guidance and recommendations for the lighting of tunnels.

BS EN 13201 consists of three parts:

- BS EN 13201 part 2 – Details performance requirements
- BS EN 13201 Part 3 – Details calculation of performance
- BS EN 13201 Part 4 – Details methods of measuring light performance

BS EN 12193: 1999 Light and lighting – Sports lighting

BS EN 12464-2: 2007 Lighting of work places – Outdoor work places

Countryside Commission/ Lighting in the Countryside: Towards good practice (1997)  
(*Out of Print but DOE available on*

<http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/archived/publications/planningandbuilding/lighting>)

UK Government / Defra ([www.defra.gov.uk](http://www.defra.gov.uk))

- Statutory Nuisance from Insects and Artificial Light – Guidance on Sections 101 to 103 of the Clean Neighbourhoods and Environment Act 2005
- Road Lighting and the Environment (1993) (Out of Print)

Scottish Executive

- Guidance Note: Controlling Light Pollution and Reducing Light Energy Consumption (2007)

CIBSE/SLL Publications ([www.cibse.org](http://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)

## Appendix 1 – Publications and Standards

### CIE Publications ([www.cie.co.at](http://www.cie.co.at))

- 01 Guidelines 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 – Second Edition (2010)
- 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)

### English Heritage

External lighting for historic buildings (2007)

### ILP (formerly ILE) Publications ([www.theilp.org.uk](http://www.theilp.org.uk))

- Guidance Notes for the Reduction of Obtrusive Light GN01 (2011\_)
- 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

### ILP/CIBSE Publications

Joint Lighting the Environment - A guide to good urban lighting (1995)

### ILP/CSS Joint Publications

Code of Practice for the installation, maintenance and removal of seasonal decorations. (2005)

### ILP/CfDS Joint Publication ([www.dark-skies.org](http://www.dark-skies.org))

Towards Understanding Sky glow. 2007

IESNA ([www.iesna.org](http://www.iesna.org)) TM-15-07 (R) Luminaire Classification System for Outdoor luminaires

Sport England (2012) Artificial Sports Lighting



## **Appendix 2: Glossary of Terms Used in External Lighting (ILP, 2011)**

### **Appendix 2: Glossary of Terms Used in External Lighting (ILP, 2011)**

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).

## Appendix 2: Glossary of Terms Used in External Lighting (ILP, 2011)

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.

## Appendix 3: External lighting technical guidance (ILP, 2011)

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Obtrusive Light Limitations for Exterior Lighting Installations						
Environmental Zone	Sky Glow ULR [Max %] <sup>1</sup>	Light Intrusion (into Windows) Ev [lux] <sup>2</sup>		Luminaire Intensity I [candelas] <sup>3</sup>		Building Luminance <sup>4</sup> Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average L [cd/m <sup>2</sup> ]
<b>E0</b>	0	0	0	0	0	0
<b>E1</b>	0	2	0 ( 1* )	2,500	0	0
<b>E2</b>	2.5	5	1	7,500	500	5
<b>E3</b>	5.0	10	2	10,000	1,000	10
<b>E4</b>	15	25	5	25,000	2,500	25

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

Ev = Vertical Illuminance in Lux - measured flat on the glazing at the centre of the window.

I = Light Intensity in Candelas (cd)

L = Luminance in Candelas per Square Metre (cd/m<sup>2</sup>)

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.

\* = Permitted only from Public road lighting installations

(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 Intrusion (into Windows) – These values are suggested maxima and need to take account of existing light intrusion 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

## Appendix 3: External lighting technical guidance (ILP, 2011)

light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.

(3) Luminaire Intensity – This applies to each luminaire 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.

<b>Maximum Allowable Wattages (metal Halide/discharge lamps) to meet ILP indicator guidance for commercial/farm properties</b>						
	<b>Fully Cut-Off (flat glass)</b>		<b>Cut-Off</b>		<b>Semi Cut-Off</b>	
	Pre-curfew Max Wattage	Post Curfew Max Wattage	Pre-curfew Max Wattage	Post Curfew Max Wattage	Pre-curfew Max Wattage	Post Curfew Max Wattage
E0	0	0	0	0	0	0
E1*	100*	35*	0	0	0	0
E2	250*	35*	150*	25*	0	0
E2+	400	70	150	50	0	0
E3	400	100	400	100	400	70
E4	1000	150**	1000	150	1000	150

**\*After work complete all lights to be switched off/on PIR**  
**\*\* Can be 400W with best light fitting possible with 0cd/klm at 90 degrees**

## Appendix 3: External lighting technical guidance (ILP, 2011)

<b>Technical Data for Lighting</b>			
	Fully Cut-Off (flat glass)	Cut-Off (low profile bowl)	Semi Cut-Off (deep clear bowl)
<b>Max upward light ratio*</b>	0%	2.5%	5%
<b>Max source intensity at specific angle**</b>	$\geq 90^\circ$ 0 cd/klm $\geq 80^\circ$ 100 cd/klm $\geq 70^\circ$ 350 cd/klm	$\geq 95^\circ$ 0 cd/klm $\geq 90^\circ$ 10 cd/klm $\geq 80^\circ$ 100 cd/klm $\geq 70^\circ$ 350 cd/klm	$\geq 95^\circ$ 20 cd/klm $\geq 90^\circ$ 25 cd/klm $\geq 80^\circ$ 150 cd/klm $\geq 70^\circ$ 500 cd/klm
<b>Allowable angle of tilt</b>	0 degrees (bottom glass of lantern horizontal and all light emitted downwards)	10°	20°
<b>Accepted in Zones</b>	E1, E2, E3, E4	E2, E3, E4	E3, E4
* ULR is the percentage of light emitted directly into the sky			
** The brightness of light emitted from a lantern at a specific angle			

## Appendix 4: Standard Planning Conditions related to External Lighting

### Appendix 4: Standard Planning Conditions related to External Lighting

In relation to the control of light pollution and nuisance, the following conditions may be applied to permissions:

#### E013 – Floodlighting

No external lighting shall be installed on the site without the prior written consent of the Local Planning Authority.

Reason: In the interests of amenity of adjoining residents and to protect the darkness of night skies.

#### E032 - Submission of Lighting Details

No external lighting shall be installed other than in the locations shown on the approved plans. No external lighting shall operate other than in accordance with details that have been previously approved in writing by the Local Planning Authority. The details submitted for approval shall include a layout plan with beam orientation and a schedule of light equipment proposed (luminaire type; mounting height; aiming angles and luminaire profiles).

Reason: To protect the appearance of the area/the environment and wildlife/local residents from light pollution and to protect the darkness of night skies.

#### E033 - External Lighting Control of Timing

The external lighting shall be switched off between the hours of <insert time> and <insert time>.

Reason: To protect the appearance of the area, the environment and wildlife and local light-sensitive development from light pollution and to protect the darkness of night skies.

#### E035 – Lighting conditions – Overspill of light

Light trespass shall not exceed a vertical illuminance greater than 5 Lux measured at the <insert which> boundary of the site.

Reason: In the interests of the amenities of neighbouring light-sensitive development.



## **Appendix 4: Standard Planning Conditions related to External Lighting**

### **E036 - Sport Stadium Conditions**

The Horizontal Luminance levels on the playing surface/arena shall be no greater than levels specified for the particular sport/activity and for the level of competition, as specified in BS EN 12193: 2007.

Reason: In the interests of the amenities of neighbouring light-sensitive development and to protect the darkness of night skies.

### **E037 - Lighting Condition Glare**

Luminance shall not have a Glare Rating higher or a Colour Rendering Index higher than that specified (as measured) in BS EN 12193: 2007.

Reason: In the interests of the amenities of neighbouring light-sensitive development and to protect the darkness of night skies.

In addition to these, specific conditions relating to advertisements are A0003-A0006.

## Appendix 5: Cooperation with partners

### Appendix 5: Cooperation with partners

The control of external lighting is not a task that Ashford Borough Council alone can enforce. Some of the most polluting light emissions come outside of its remit. For example, while some street lighting belongs to the Council, many others are the responsibility of Kent County Council (KCC) or the Highways Authority (HA). It is essential that the aims of all institutions are aligned wherever possible.

In the case of street lighting, this may be enforced between developers, ABC, KCC and/or the HA through the inclusion of lighting considerations in Section 38 agreements in new developments, requiring that roads of an adoptable standard conform to the zone-specific light requirements, and contribute to sustainability principles, contained within this SPD as best practice. Where development leads to changes to existing roads, Section 278 agreements may be used for the very same reasons, making sure that any addition or replacement of street lighting conforms with current best practice standards to control light pollution.

Ashford Borough Council will attempt to work with KCC and the HA to coordinate our approach to reduce light spillage.

### Intelligent Lighting Systems

Recent successes in the Borough include KCC's pilot of energy-efficient LED lighting in Stanhope, which helps to reduce energy use and light spillage, while the lower intensity lighting is more focused and directed downwards to help tackle local security and safety. Such success will be particularly important in the Ashford Urban Extension at Chilmington and, while the greatest restrictions on light will be enforced in the rural areas, control in and around Ashford's urban area itself will also be important as most new development will take place here

Further room for lighting efficiency comes from Intelligent Street Lighting pilots. LED lights are fitted with sensors which collect data such as footfall, air and noise pollution levels. These are programmed to increase in brightness if the noise level rises - for instance if there is a disturbance in the area. The lighting sensor which detected the incident could be programmed to flash - guiding the emergency services to the precise location where it occurred. Intuitive street lights are appropriate for road cycle routes. While these tracks are mostly unlit, lights operate at 40% brightness rising to 100% when they sense an approaching cyclist. This increases safety in an area and give more people confidence to use the routes after dark.

## Appendix 5: Cooperation with partners



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