

AIRPORT OPERATORS ASSOCIATION

&

GENERAL AVIATION AWARENESS COUNCIL

supported by

CIVIL AVIATION AUTHORITY

'Working in Co-operation'

SAFEGUARDING OF AERODROMES

Advice Note 2

Lighting near Aerodromes

1. Introduction

Aerodrome Safeguarding ensures the safety of aircraft and their occupants when in the vicinity of an aerodrome by controlling potentially hazardous development and activity around it. An overview of the Safeguarding process is given in the first Advice Note in this series. This Note considers in particular the control of the location, height, brightness and type of lights around the aerodrome.

At night, and in periods of poor visibility during the day, pilots rely on the particular pattern of the aeronautical ground lights, principally the approach and runway lights, to assist in aligning themselves with the runway and to touch down at the correct point. Therefore, other lights should not be displayed which could distract pilots or confuse them by being mistaken for aeronautical ground lights.



A full set of Approach and Runway lights as seen by the pilot at a major airport.

In particular, the following need to be taken into account when proposing new street or other lighting in the vicinity of an aerodrome:

- Where the intensity of the lights, whether steady or flashing (i.e. strobe lighting), could cause glare in the direction of an aircraft approaching to land or taking-off;

- Where the colour of the light could cause it to be mistaken for an aeronautical ground light;
- Where, when viewed from the air, the lights make a pattern (i.e. a row of street lights) similar to an approach or runway lighting system;
- Where the overall amount of illumination detracts from the effectiveness of the approach and runway lighting, particularly during periods of low visibility;
- Where the aeronautical ground lights are obscured from the pilot's view.

2. The Areas for Particular Attention

Although all lighting proposals in the vicinity of aerodromes may be of concern, *Civil Aviation Publication (CAP) 168 "Licensing of Aerodromes"* (available at <www.caa.co.uk/publications>) states that particular attention should be paid to lights in the following areas (Chapter 6, Para 1.3.4):

(a) *For instrument approach runways*

A rectangular area 750 m on each side of the centreline and extended centreline of the runway extending to a distance of 4500 m before the threshold.

(b) *For non-instrument runways*

An area 220 m wide equally disposed about the centreline of the runway and increasing in width along the extended centreline from 220 m at the threshold to 950 m wide at a distance of 3000 m from the threshold.

The aerodrome concerned will be able to indicate what type of runway(s) it has and may be able to supply a map showing the areas applicable to it.

3. Guidance on Lighting

To avoid confusion with aeronautical ground lights, it is recommended that flat glass full cut-off (FCO) lanterns mounted horizontally be used, so that no light is emitted above the horizontal.

This is now contained in British Standard Institution's *BS 5489 Code of practice for the design of road lighting, Part 1 Lighting of roads and public amenity areas* (BS 5489-1:2003) section 12.2 *Lighting in the vicinity of aerodromes*. It recommends the use of luminaires conforming to the installed intensity requirements of Classes G4 to G6 of Table A.1 of *BS EN 13201 Road Lighting, Part 2 Performance Requirements* (BS EN 13201-2:2003) from which the following has been extracted (where cd / klm units are candelas of light output per 1000 lumens of lamp output):

Angle from the downward vertical	Maximum Luminous Intensity (cd / klm)		
	Class G4	Class G5	Class G6
70°	500	350	350
80°	100	100	100
90°	10	10	0
>95°	0	0	0

While Classes G4, G5 and G6 correspond to the FCO concept; Class G6 with no light emitted above the horizontal is particularly recommended for use in areas under the approach and take-off paths.

As BS 5489 states, this guidance may also be applied to lighting other than road lighting.

This does not rule out other lighting solutions being considered, but these will depend on the particulars of the lighting proposed and its location in relation to the aerodrome.

4. Lighting and the Safeguarding Process

Lighting columns and masts are as subject to the Obstacle Limitation Surfaces around aerodromes as any other structure and should be evaluated in the Safeguarding Process as described in **Advice Note 1: Safeguarding - An Overview**. The same process is also used to check lighting proposals. Therefore, full details of any proposed lighting near aerodromes, particularly if in the areas highlighted in paragraph 2 above, should be included in any Planning Application submitted to the Local Planning Authority. In appropriate cases it may be necessary to place controls on the installation and illumination of lighting by the use of conditions on any planning permission that may be granted.

Should any light, once installed, be reported as dangerous or confusing, then there are provisions under the Air Navigation Order (ANO) which directs that lights shall not be exhibited which are liable to endanger aircraft taking-off or landing, or which are liable to be mistaken for an aeronautical light. In addition, there is a provision which states that nobody should damage or interfere with any aeronautical ground light (relevant extracts from the ANO can be found at the end of this Advice Note).

Owners of lights must always comply with any Notice that may be issued under the ANO to dim or extinguish lights, pending resolution of any problems that arise when the lights are in use.

5. Outdoor Light Shows involving Lasers, Searchlights or Fireworks

Temporary outdoor light displays, particularly those involving **Lasers, Searchlights or Fireworks**, are also of concern if in the immediate vicinity of an aerodrome, or under one of the approaches. These should be notified to the CAA in accordance with the guidance in *CAP 736 "Guide for the Operation of Lasers, Searchlights and Fireworks in United Kingdom Airspace"* (available at <www.caa.co.uk/publications>). Notifications should be made to Airspace Utilisation Section, Directorate of Airspace Policy, K1, CAA House, 45-59 Kingsway, London WC2B 6TE (Tel: 020 7453 6599, Fax: 020 7453 6593, e-mail: ausops@dap.caa.co.uk).

CAP 736 also contains guidance for permanently sited lasers and searchlights, though, if near an aerodrome, the LPA and/or the Safeguarding Consultee for that aerodrome should also be approached.

Extracts from Air Navigation Order 2006

Article 132 - Aeronautical lights

- (2) A person shall not intentionally or negligently damage or interfere with any aeronautical ground light established by or with the permission of the CAA.

Article 135 - Dangerous lights

- (1) A person shall not exhibit in the United Kingdom any light which:
- (a) by reason of its glare is liable to endanger aircraft taking off from or landing at an aerodrome; or
 - (b) by reason of its liability to be mistaken for an aeronautical ground light is liable to endanger aircraft.
- (2) If any light which appears to the CAA to be such a light as aforesaid is exhibited the CAA may cause a notice to be served upon the person who is the occupier of the place where the light is exhibited or has charge of the light, directing that person, within a reasonable time to be specified in the notice, to take such steps as may be specified in the notice for extinguishing or screening the light and for preventing for the future the exhibition of any other light which may similarly endanger aircraft.
- (3) The person may be served either personally or by post, or by fixing it in some conspicuous place near to the light to which it relates.
- (4) In the case of a light which is or may be visible from any waters within the area of a general lighthouse authority, the power of the CAA under this article shall not be exercised except with the consent of that authority.

- Notes:**
1. The “CAA” is the Civil Aviation Authority.
 2. The ANO is issued under the authority of the Civil Aviation Act 1982 and the Airports Act 1986.
 3. The version and article numbers listed here were correct at the time of printing however it is recommended that reference be made to the source document to ensure the latest information is used.
 4. A non-authoritative version of ANO 2006 (as amended) is available in *CAP 393 “Air Navigation: The Order and the Regulations”* (available at <www.caa.co.uk/publications>).

This Advice Note has been produced for information only jointly by the Aerodrome Standards Department of the Civil Aviation Authority, the Airport Operators Association and the General Aviation Awareness Council. Its contents may be reproduced as long as the source is acknowledged. The other Aerodrome Safeguarding Advice Notes available are:

Advice Note 1: Safeguarding - An Overview

Advice Note 3: Potential Bird Hazards from Amenity Landscaping and Building Design

Advice Note 4: Cranes and Other Construction Issues

Advice Note 5: Potential Bird Hazards from Landfill Sites

Advice Note 6: Potential Bird Hazards from Sustainable Urban Drainage Schemes (SUDS).

Advice Note 7: Wind Turbines and Aviation