

Guidance to crane users on aviation lighting and notification

Introduction

As with any tall object, the presence of a single crane or number of cranes has the potential to affect aviation activities. In the main, crane-related issues are considered and managed in much the same way as for any tall object, however due to the distinctive character of the crane construction and operations, they are addressed separately.

The guidance should be considered relevant to users of all cranes exceeding a height¹ of 10 m above ground level (AGL) or that of the surrounding structures or trees (if higher). The guidance is implemented in Phases, as described below:

Phase 1

Stage A - 1st TRIAL - 1 October 2020 to 31 May 2021

Stage B - Trial Reflection – 1 June 2021 to 30 September 2021

Phase 2

Stage A - 2nd Trial - 1 October 2021 – 31 March 2022

Stage B – Confirmation of Readiness – Q1/Q2 2022

Phase 3

Full Implementation which will occur not earlier than 1 April 2022. This time frame will be informed from the implementation plan established in Phase 2, Stage B

There are other publications relevant to the scope of this guidance, such as:

- Construction Plant-hire Association (CPA) Technical Information Note **TIN 039** 'Operating Tower Cranes in the Vicinity of Aerodromes, Notification and En-route Obstacle Lighting', available at <http://www.cpa.uk.net>
- BSI **BS 7121** Code of practice for the safe use of cranes. Multi-part document available to buy at <https://shop.bsigroup.com/>
- Civil Aviation Publication **CAP 738** (Safeguarding of Aerodromes), **CAP 168** (Licensing of Aerodromes) and UK Air Navigation Order 2016 (ANO) – **CAP 393** available at: <http://www.caa.co.uk/>
- Airport Operators Association, Safeguarding of Aerodromes, Advice Note 4 - Cranes and Other Construction Issues (**AOA Advice Note 4**).
- European and international regulations.

¹ Crane falls into this scope if at any point during the planned lifting operation the highest point of the crane structure or load will exceed 10m AGL or that of the surrounding structures or trees (if higher). If a crane is located on top of another structure, it is the overall height (structure + crane) above ground level that is relevant.

Notification process

The operation of cranes could present a serious hazard to air navigation, particularly during the approach and departure phases of flight when aircraft are at low altitudes. In addition to the creation of an obstacle, cranes could also interfere with navigation and/or communication equipment. Implications to flight safety may be mitigated by coordinating crane and aircraft operations through the **advance notification of the crane to the CAA**. The CAA will in turn process and share the crane notification with relevant parties which require this information.

The CAA recommends initial contact using the Notification Form at Annex A **at least eight weeks before the erection of the crane**. This will allow correct identification of local aerodromes and allow consultation time and possibly further instructions from aerodrome operators.

However, as the CAA recognises that there are times when very little notice is given to the crane user, additional notification timescales have been created as follows:

1. **PLANNED LONG-TERM PROJECTS:** Notification to be sent to the CAA at least eight weeks (40 working days) before the erection of the crane. The CAA will then identify parties that may be affected by the crane and inform the crane user and affected parties about the next steps.
2. **AD-HOC PROJECTS:** Notification to be sent to the CAA not later than 5 working days in advance. The CAA will then identify parties that may be affected by the crane and inform the crane user and the affected parties about the next steps.

Note: It is important that crane users who can notify their operations 40 working days or more before the erection of the crane (scenario II) are not using scenario II (delayed notification) as it has been created to allow the CAA to prioritise crane notifications which due to the character of their operations cannot be notified earlier.

3. **UNFORESEEN AND URGENT PROJECTS:** If there is an unforeseen and urgent requirement to erect a crane within 5 working days from the notification, the crane user is required to contact all aerodromes whose perimeters are within 10 Nautical Miles (NM) (18.5 km) of the crane and submit the notification form (Annex A) to the CAA as soon as possible and advise which aerodrome operators have been contacted and the reason for less than 5 working days' notice. As the operation of the crane may have an implication to other airspace users, where no aerodromes are located within 10 NM (18,5 km) from the location of the crane, notification form (Annex A) should still be submitted to the CAA, who will process such notifications at the earliest opportunity.

Please be aware **any crane erected without a positive response received from the CAA or the aerodrome operator may be considered a hazard to air navigation** and such a crane operates at the crane user's risk of endangering the safety of an aircraft.

In order to ensure that the requirement for duty of care is fulfilled, crane users need to make sure that the crane can operate safely and if there are any doubts relating to the safety of aircraft operations, the crane user should contact the CAA and request further guidance.

Cranes are often used in projects which require planning permission. Officially safeguarded aerodromes issue safeguarding maps which are used by the Local Planning Authorities (LPAs). Every time a crane is detailed in the planning permission, LPAs should provide the crane user with the contact details of the aerodrome operator or take part in the consultations of the crane. In this instance cranes are still required to be notified to the CAA (as per this CAP).

Obstacle lighting and marking

Cranes should be sufficiently conspicuous. This can be achieved by applying obstacle lighting and if necessary marking.

The need for obstacle lighting on 'tall' objects (including cranes) is dependent on the location in relationship to an aerodrome and height of the object.

There are also best practices for the lighting (and where applicable, marking) of cranes which the CAA recommends are followed to ensure that crane users fulfil their requirements for a duty of care towards others.

Summaries of the requirements and recommended practices are provided below:

LIGHTING

1. VICINITY OF AN AERODROME

Height of Crane: Any

For any obstacles, including cranes, which are affecting aerodrome operations the lighting and marking requirement will be dictated by the relevant aerodrome operator in accordance with ICAO Annex 14. The aerodrome will liaise directly with the relevant crane user once notification has been received from the CAA (see the workflow at Annex B) but for general guidance on lighting and marking see details in Paragraphs II and III below.

Note: Lighting aids should be supplied with secondary power unless agreed otherwise with the aerodrome operator.

2. EN-ROUTE

Height of Crane: 150 metres AGL or more

En-route obstacles (including cranes) must be fitted with lighting in accordance with the ANO. Medium intensity (generically 2000 candela) steady red lights must be displayed by night² and be visible from all directions (omnidirectional).

Additionally, it is recommended that lights should also be displayed by day.

Note: Lighting aids should be supplied with secondary power unless agreed otherwise with the CAA (arops@caa.co.uk, phone: 01293 983 880).

3. OTHER

Height of Crane: Less than 150 m AGL.

It is recommended that:

- a. all cranes with a height 45 m to a height less than 150 m AGL are lit in accordance with the details specified in Paragraph II above;
- b. all cranes with a height less than 45 m are lit in accordance with the details specified in Paragraph II above except that low intensity (generically 32 candela) steady red lights should be used.

² 'Night' is defined for civil aviation purposes as the time from half an hour after sunset until half an hour before sunrise.

In **all** cases (all 3 categories above), lights must be positioned as close as possible to the top of the crane.

Where the top of the crane is more than 45 m AGL, additional lights should be provided at intermediate levels spaced as equally as practicable, between the top lights and ground level or the level of tops of nearby buildings, as appropriate, with the spacing not exceeding 52 m.

Lights should also be applied to display the general definition and the extent of the object (crane). This means that lights should provide an indication of the height and the shape of the crane (i.e. lights installed on both ends of the jib).

MARKINGS

In **all** cases, the CAA recommends that consideration is also given for cranes to be made conspicuous by their colour, especially if the crane is not permanently lit.

When markings are applied to cranes it is recommended that they are coloured to show alternating contrasting bands. The colours of the pattern should contrast each with the other and with the background against which they will be seen. The bands should be perpendicular to the longest dimension and have at least 5 meters in width.

Note: The objective is to use markings of contrasting colours which will be conspicuous against the background and a review conducted by the CAA determined that the use of a yellow and black (or dark blue) pattern (especially in urban areas) provides the best contrast with the background from the air.

What happens next?

The crane should be notified to the CAA using the Notification Form at Annex A. The CAA will then identify parties that may be affected by the crane (if any) and notify them accordingly.

Those parties include, but are not limited to:

- Aerodrome operators (safeguarded civil and military aerodromes, aerodromes with Instrument Flight Procedures (IFPs) and all aerodromes published in the UK Aeronautical Information Publication (AIP) section AD 2);
- Defence Geographic Centre (responsible for UK en-route obstacle data set published in UK AIP section ENR 5.4)
- RAF Low Flying Operations Flight (LFOF).

The CAA needs to be provided with a surveyed position and height of every obstacle that may affect aerodrome operations. It is especially important to provide the crane position in WGS-84 format (and OSGB36 format if required by the aerodrome operator) along with the height above mean sea level (AMSL) and AGL. These are standard survey requirements.

Aerodrome operators are responsible for safeguarding the Obstacle Limitation Surfaces (OLS) as well as other surfaces associated with the aerodrome including IFP. Lateral boundaries of these extend far beyond the OLS.

To ensure the safety of operations, actions imposed by the aerodrome operator may include, but are not limited to:

- survey of the crane position and height;

- fitting of obstacle lights;
- restrictions on crane operating times;
- restrictions depending on the runway in use;
- restrictions on crane operating height;
- restrictions during low visibility conditions;
- publication of Notice to Airmen (NOTAM).

Aerodrome operators can also apply additional crane permit procedures for those cranes which may affect aerodrome operations and need to be assessed. Such additional procedures will be initiated as part of the notification process described in this CAP. The Aerodrome operators will inform the crane users about any aerodrome-specific requirements. Also, aerodrome-specific charges may apply to the crane user, for example, the cost of the IFP assessment conducted by a UK CAA Approved Procedure Design Organisation (APDO), if required.

The crane user once informed about being in the vicinity of the aerodrome should make sure that the crane does not impact on aerodrome operations. The crane should be as low as possible for the intended job. It is also recommended to use cranes capable of being lowered in the vicinity of the aerodrome. When possible and practical, the crane should be lowered when not in use, or when requested by an aerodrome operator (i.e. during low visibility conditions). The aerodrome operator may also request parking the jib in a particular direction when not in use.

Aerodrome operators will request fitting of obstacle lights if the crane constitute a hazard to aircraft and lighting is considered necessary to ensure its avoidance. See also page 3 – *Obstacle lighting and marking*.

The flowchart representing the simplified notification process is available at Annex B to this document.

In any case the CAA will, upon request, provide comment, guidance or recommendation for crane users on a case-by-case basis: arops@caa.co.uk; phone: 01293 983 880

Specific queries regarding IFP safeguarding can be discussed with the CAA IFP Policy Team: ifp.policy@caa.co.uk

Annex A: Crane Notification Form (DAP1924)

Note 1: Notification form is available online at www.caa.co.uk/dap1924. Whenever possible this form should be completed electronically and submitted as a .pdf file.

Note 2: This form is applicable to all fixed/mobile cranes and can also be used to notify the CAA about other mobile plant equipment - if it is recommended by the aerodrome operator.

Crane Notification (CAP1096 Annex A)



This form is applicable to all fixed/mobile cranes and can also be used to notify the CAA of any other mobile plant equipment if it is recommended by the aerodrome operator. Any change to the details listed below (including changes to the removal dates) should be notified to the CAA immediately.

Please download and fill in the form on-screen then submit it, together with any supporting documents, using the button at the foot of the page.

FALSE REPRESENTATION STATEMENT

It is an offence under the UK Air Navigation Order to make, with intent to deceive, any false representation for the purpose of procuring the grant, issue, renewal or variation of any certificate, licence, approval, permission or other document. This offence is punishable on summary conviction by a fine, and on conviction on indictment with an unlimited fine or imprisonment or both.

1. APPLICANT DETAILS

Name: Job Title/Organisation:
Address:
..... Postcode:
Contact Phone Number: E-mail:

2. LOCATION DETAILS

Site Address:
County: Site position (Latitude/Longitude): (WGS-84)
OS Grid Ref: to provide you with Lat/Long and OS Grid (see page 2.)
Development name:

3. CRANE OPERATION DETAILS

Crane User Contact Name:
Crane User Contact Email: Contact Phone Number:
Type of crane: Max Overall Height: (feet) AGL AMSL
(AGL and AMSL not AOD)
Max Planned Height: (feet) AGL AMSL Max Horizontal extent: (feet)
(AGL and AMSL not AOD over the course of the project) (Max jib radius)
Number of cranes on site: Aviation Lighting Scheme:
Erection Schedule:
(Dates and Heights (in feet))
Planned removal dates:
Principle means of communication with crane operator: Radio Mobile phone Intercom Other:
State if Other:
Planning Permission:
(if required)
Details of any agreements with aerodromes:

4. DECLARATION

By clicking Submit Form, I, as the event sponsor, declare that I have checked the above information and that to the best of my knowledge it is correct, and that I am aware of my obligations under the UK Air Navigation Order.

Name: Date:

5. SUBMISSION

Once complete please send this form by email to arops@caa.co.uk by clicking the button below which will attach the form to your email service. Some browsers may function slightly differently so for best results, download the form to your computer first, open it in your PDF reader and then complete it. The generated email will prompt you to attach any additional information.

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Other similar applications may be available.

Annex B: Simplified notification process flowchart

