

# **Consultation:** Unmanned Aircraft operations within an Atypical Air Environment

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# Revision History

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Edition	Date	Summary
First Edition	February 2024	First Edition

# Abbreviations and Glossary of Terms

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The definitive list of abbreviations and terms/definitions that are relevant to UAS operations within the UK are centralised within [CAP 722D – Master Glossary and Abbreviations](#).

# Forward

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## Purpose and scope

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The Civil Aviation Authority is consulting on our proposed policy position on the recognition of Atypical Air Environments (AAE). A link to provide your views to this consultation can be found [here](#).

This policy is intended to aid operators seeking to operate Unmanned Aircraft (UA) beyond visual line of sight (BVLOS) of the remote pilot (RP) within an AAE. It supports an applicant in deciding what may be reasonably considered as an AAE and what operational, strategic, and technical mitigations may be appropriate for such an operation.

This policy is not exhaustive in terms of what could be considered an AAE. Similarly, an assessment of what technical, strategic, and operational mitigations may be required will vary from operation to operation.

## Introduction

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Operating within an AAE reduces the likelihood of a mid-air collision (MAC) between an UA, and other conventionally piloted aircraft. This is particularly useful when operating BVLOS within non-segregated airspace without an acceptable detect & avoid (DAA) capability. An AAE can be considered as a volume of airspace where you can reasonably anticipate there to be a reduced number of conventionally piloted aircraft due to proximity of ground infrastructure.

An AAE is not a separate classification of airspace, and it can exist within any classification of airspace, other than a Flight Restriction Zone (FRZ). Operations within an AAE must adhere to the rules which apply to Unmanned Aircraft Systems (UAS) that govern both the classification, and applicable restrictions, of the airspace in which the operation takes place. Operating within an AAE does not absolve the operator of having to seek any relevant airspace permission, for example, when wishing to operate within a Restricted Area.

**Note:** Operating within an AAE does not address any aspect of ground risk that the operation may pose. It is likely that certain elements of ground risk are increased by operating close to infrastructure. It is for the operator to propose how they intend to mitigate other areas of risk, including seeking any relevant approval and ensuring coordination with the infrastructure owner, as required.

## What could be considered an Atypical Air Environment?

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Below are examples of what may be considered an AAE for the purpose of reducing the MAC risk between the UA, and other conventionally piloted aircraft. They are to be used as a guide. The following examples may take place within any classification of airspace, excluding FRZs.

**Note:** Given their conceptual nature, there is no single definition of what would be routinely accepted as being an AAE. All applications will initially be required to define the precise route in which they intend to operate. This position may mature as we collectively gain experience of operating within AAEs.

- Within 30m (100ft) of any building or structure.
- Within 15m (50ft) of a permanent linear structure. For example, a railway, road, or powerline.
- Within the confines of private property at a height not exceeding 15m (50ft). The owner of the property must be consulted and consent to the operation. For example, an industrial site where security personnel use a UA for perimeter inspection.

**Note:** There are numerous specific examples where locations meeting the above conditions would not be accepted as being within an AAE.

An applicant may propose an alternative instance of an AAE. For example, they may suggest a specific offshore installation should be considered, or with distances exceeding those suggested above. It is for the operator to explain why they believe the operation is within an AAE and what mitigations are considered suitable to reduce any residual safety risk to a level that is as low as reasonably practicable (ALARP).

# Operating within an Atypical Air Environment

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Within the United Kingdom, through [ORS4 1496](#), the CAA has authorised and permitted certain aerial operations to deviate from the Standardised European Rules of the Air (SERA) minimum height requirements as laid down in UK.SERA.5005(f). Therefore, additional MAC risk mitigations are required prior to operations within an AAE being authorised.

Helicopters operated by or on behalf of the emergency services, military, and infrastructure owners, operate in close proximity to airspace that may be considered an AAE. Additionally, the general aviation community may operate from any suitable area of land across the UK, including unlicensed aerodromes, without the need to notify their activity or to be electronically conspicuous.

The following mitigations should be considered for all operations within an AAE. If an operator does not believe any of the mitigations are required for their operation the safety case must clearly set out why.

## **Pre-tactical flight route notification**

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To address the residual MAC risk posed by the UA towards other UA, and conventionally piloted aircraft, the operator must pre-notify their intended operating route. An Operating Safety Case must outline the organisations intended process to pre-notify for operations within an AAE. What type of pre-notification is appropriate will depend on several factors, such as the location, and intended duration of the operation. Notice to Aviation (NOTAM) can be considered the default mechanism to satisfy this requirement. However, NOTAM may become unsuitable due to the volume and regularity of the notifications being issued. Therefore, notification via Air Information Circular of a regularly used route may be required.

**Note:** It is not necessary to have the relevant notification approved prior to applying for an Operational Authorisation (OA).

As is recommended practice with all UA flying, the operator shall coordinate their activity with any local flying operations, for example, gliding clubs and unlicensed airfields. An operator must coordinate their activity with the [Military Airspace Management Cell – Low Flying \(MAMC LF\)](#). Further information about the military low-level flying network can be found [here](#). The operator must take all reasonable steps to directly notify other operators who could be affected by the presence of a UA within the proposed AAE. This will vary depending on the specific geographical location of the intended flight and must be recorded within pre-flight planning documentation.



## Electronic Conspicuity

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In December 2022, the Department for Transport (DfT) and CAA published a [joint statement](#) detailing their support for the recommended adoption of Automatic Dependent Surveillance -Broadcast (ADS-B) operating on 1090 MHz for piloted aircraft and 978 MHz for UA respectively, utilising existing global standards. The DfT and CAA are currently undertaking a programme of work to deliver this Electronic Conspicuity (EC) specification, aligned to the aims of the Airspace Modernisation Strategy, to support the rapidly evolving needs of new airspace users and to provide additional safety benefits to airspace users in Class G airspace in the UK.

To mitigate the MAC risk between UA and other aircraft operating at very low level, in the vicinity of an AAE, any UA operating within an AAE shall be equipped with and operating an ADS-B transmitter or transceiver utilising 978 MHz/UAT and functioning in accordance with the Radio Technical Commission for Aeronautics (RTCA) performance standards RTCA DO-282B Class B1S, RTCA DO-260B Class A0, and RTCA DO-160G sections 4 and 5. CAA and DfT are working with Ofcom to define permanent licensing arrangements for the use of 978 MHz/UAT but in the meantime, operators should utilise OFCOM's Innovation and Trial licensing procedures.

A callsign for the UA shall be allocated and agreed with the CAA. This callsign (together with the allocated hexadecimal aircraft address) will be programmed into the ADS-B device and emitted during flight. The callsign will also be included in any supporting NOTAM notifying such flights in order the other aircraft operators may correlate that operation with the notified activity, when detecting the UA electronically. Additionally, the callsign and hexadecimal address of the UA should be made available when coordinating with other air users in the pre-flight planning phase.

UA operators may elect to deploy additional mitigation of the MAC risk by utilising received cooperative surveillance emissions (ADS-B, FLARM, PilotAware etc.) either via the transceiver fitted to the UA or via ground-based reception. In these circumstances, the operator must detail and describe the operating system and associated procedures with the CAA, prior to deployment.

Further information about EC can be found [here](#).

## Safeguarding operations within Controlled Airspace

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There are additional risks associated with operations within controlled airspace (CAS). When operating BVLOS within CAS, an operator must notify the relevant Air Traffic Control (ATC) service provider prior to conducting an operation within an AAE. An operator must comply with any associated operating conditions specified by the ATC unit, for example, time restrictions.

**Note:** It is not necessary to have this coordination in place prior to applying for an OA. However, the procedure to coordinate must be outlined within the Operating Safety Case.

## High intensity anti-collision lighting

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To aid in the visual conspicuity of the UA for other air users, any UA operating within an AAE shall be equipped with high intensity anti-collision lighting. This shall be in the form of an upwards facing white strobing light that must be visible from a minimum of three statute miles at night under clear atmospheric conditions at a strobe rate of 40-100 cycles per minute. Alternatively, it may be appropriate for the operator to make use of aircraft lighting in accordance with [SERA.3215](#).

**Note:** The CAA has not currently defined specific technical or operational requirements for high-intensity anti-collision lighting for UA operated within the Specific Category. In absence of this, the requirement outlined above aligns with the United States Federal Aviation Administration's directive for the use of anti-collision lighting for UA at night and therefore several products are readily available on the market which meet this requirement.

## Containment of the UA within an Atypical Air Environment

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Any UA operating within an AAE must be equipped with a sufficiently technically robust containment solution to ensure a breach of the operational volume is mitigated as far as reasonably practicable. For example, an onboard software based geo-caging function.

## Summary

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The adoption and recognition of an AAE is an innovative concept for the CAA, operators and other air users who operate near or within what may be considered an AAE. This initial policy position will evolve as our understanding of how AAEs are used matures. The CAA will closely monitor its use and implement any change to this policy as required.

**Note:** The guidance contained within this publication is to be considered in addition to any regulation, and Acceptable Means of Compliance (AMC) and Guidance Material (GM) that may be relevant to UAS operations.

