UK Civil Aviation Authority

Flying UAS BVLOS in the Specific Category

UK CAA Guide for Industry- v1.0

This guide provides guidance to Unmanned Aircraft Systems (UAS) operators who are seeking permission to fly Beyond Visual Line of Sight (BVLOS) operations in the Specific Category. The guidance is also for awareness of Air Navigation Service Providers (ANSPs) and Aerodromes that might be providing services to UAS operators or have UAS operations within their designated or adjacent airspace. End users of the UAS service may also find this guidance useful.

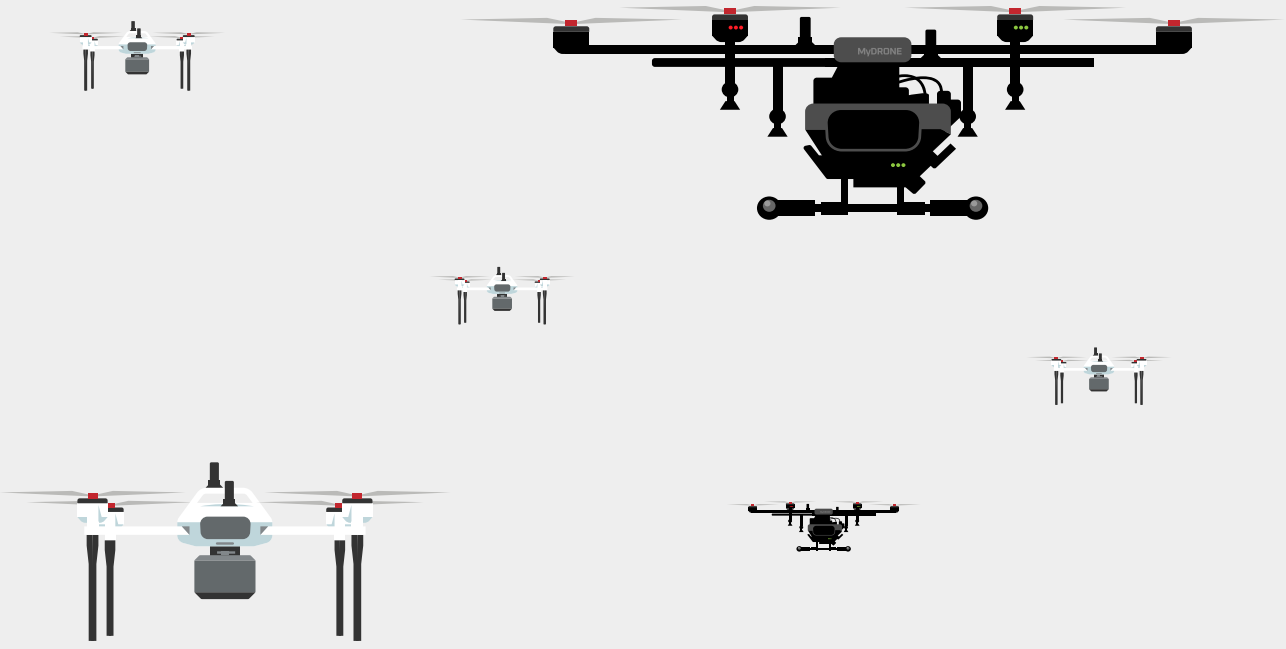
CAP 3008

Introduction

The guide describes a number of operational pathways for operating BVLOS, what authorisations and approvals are required and the expected timelines. The final page of the guide provides details of the regulations and policies referred to and, if reading the document online, links can be found there too.

BVLOS operations all have specific considerations and features and there remains gaps in the regulatory requirement to support scalable operations. The CAA has a programme of work to develop the regulatory framework to better clarify the requirements for BVLOS operations. As an example, the CAA are developing new emerging policy concepts providing strategic direction on how these gaps may be resolved.

To help operators understand these emerging policies the CAA will make available to industry appropriate subject matter experts to discuss operators' BVLOS plans prior to submitting an application. The goal is to agree the most appropriate operational pathway and the high-level requirements the applicants must satisfy to gain operational authorisations to fly. Operators can contact the CAA via bvlos@caa.co.uk. The CAA will then organise a discussion on the applicants proposed concept of operations where the CAA will provide advice on its feasibility and outline any regulatory considerations that should be included in the application. This service is free and guarantees up to seven hours of advice.



Operational Requirements for BVLOS

Currently, the CAA has defined six recommended operational pathways for UAS BVLOS operations. Four relate to operations in specific airspace structures. Two are independent of airspace structure and relate to the use of a specific air-risk mitigation.

BVLOS pathways in Specific Airspace Structure
The following scenarios provide high-level requirements and timelines for the recommended operational pathways that use specific types of airspace.

Ref
1
BVLOS Operation Type
Special Use Airspace (Segregated) – Existing Danger Area in Uncontrolled Airspace
Operating Safety Case[1]
Yes
Airspace Change Proposal[2]
No
Dangerous Goods application[3]
Required, if UAS carry dangerous goods
Environment Assessment
In line with UAS.SPEC.050 operator must minimise noise and emissions
Typical Application Length (months)[4]
2-4

Ref
2
BVLOS Operation Type
Special Use Airspace (Segregated) – Temporary Danger Area
Operating Safety Case[1]
Yes
Airspace Change Proposal[2]
Yes
Dangerous Goods application[3]
Required, if UAS carry dangerous goods
Environment Assessment
Covered in ACP
Typical Application Length (months)[4]
5-7

Ref
3
BVLOS Operation Type
Special Use Airspace (Segregated) – Temporary Segregated Areas in Controlled Airspace
Operating Safety Case[1]
Yes
Airspace Change Proposal[2]
Yes
Dangerous Goods application[3]
Required, if UAS carry dangerous goods
Environment Assessment
Covered in ACP
Typical Application Length (months)[4]
6-9

Ref
4
BVLOS Operation Type
Temporary Reserved Areas with coincident Transponder Mandatory Zone (or equivalent)
Operating Safety Case[1]
Yes
Airspace Change Proposal[2]
Yes
Dangerous Goods application[3]
Required, if UAS carry dangerous goods
Environment Assessment
Covered in ACP
Typical Application Length (months)[4]
8-12

Operational Requirements for BVLOS (Continued)

BVLOS pathways using Air-Risk Mitigation

Ref
5

BVLOS Operation Type
BVLOS with Atypical Air Environment Mitigation

Operating Safety Case[1]
Yes

Airspace Change Proposal[2]
No

Dangerous Goods application[3]
Required, if UAS carry dangerous goods

Environment Assessment
In line with UAS.SPEC.050 operator must minimise noise and emissions

Typical Application Length (months)[4]
2-4

Ref
6

BVLOS Operation Type
BVLOS with Visual Mitigations

Operating Safety Case[1]
Yes

Airspace Change Proposal[2]
No

Dangerous Goods application[3]
Required, if UAS carry dangerous goods

Environment Assessment
In line with UAS.SPEC.050 operator must minimise noise and emissions

Typical Application Length (months)[4]
2-4

Notes

1. The Operating Safety Case remains the current recommended mechanism for completion of the risk assessment required to obtain operational authorisations until introduction of UK SORA in 2025.
2. Typical application length varies based on whether applicants have had previous authorisations in the UK or not. The timescale is dependent on the applicant providing information and engaging with the CAA promptly when requested.
3. An Airspace Change Proposal (ACP) is a separate application path as covered in CAP1616 and is subject to separate timelines and may require the applicant to provide additional information.
4. A Dangerous Goods application is a separate application path and is subject to separate timelines and may require the applicant to provide additional information.

Regulatory Considerations for Applicants

UAS operators should develop a comprehensive Operating Safety Case (OSC) that outlines the safety measures and risk mitigations for their specific BVLOS operations. The OSC is the primary basis for the UAS Operational Authorisation. The OSC shall detail the technical capabilities of the UAS and the wider system, such as ground infrastructure, operational procedures, details of training and competence and be relevant to operations within the specific airspace they intend to operate in.

Capability of the Air Platform: Operators need to provide evidence demonstrating that their air platform is sufficiently robust for any proposed overflight of persons and for ensuring containment within its operational volume. This may include presenting documented flight hours for the specific UA intended for deployment or providing a rationale for why flight hours from a different UA are considered equivalent, ensuring these hours are representative of the operational conditions and that the UA configuration is the same or justified as equivalent. Additionally, operators must offer further assurance for integrated safety features, such as parachutes, and ensure that any technical systems on the air platform are suitably tested with supporting evidence. UAS operators also need to evidence the capability for safe carriage of dangerous goods, including the mechanisms for deploying or lowering packages and parcels from the air platform to the ground.

Use of Technology to support Airspace Integration: Technologies including detect-and-avoid systems, electronic conspicuity devices, PNT (position, navigation and timing) and command and control link are crucial for mitigating the risk of mid-air collisions and ensuring compliance with airspace regulations. Operators should assess each safety-based technology as contributing to the overall safety system supporting your proposed operation and consider what technological solutions may be available via interface with other air systems and service providers. Operators may need to equip their UAS with ADS-B transmitters or transceivers of the required accuracy and high-intensity anti-collision lighting.

Training and Competency Development: Operators need to demonstrate the robustness of their training programs for their remote pilots and support staff, ensuring that all personnel are well-trained competent and current. These programs should cover the specific operational, technical, and safety aspects of conducting BVLOS operations. Flight crews conducting integrated operations require a significant additional skillset, when compared to VLOS and segregated operations. Ensuring that all personnel are well-trained and competent is fundamental to maintaining high safety standards and regulatory compliance. As well as the operation of the UA this training must include the specific operational procedures of all supporting hardware and software as well as procedures including maintenance and emergency procedures.

Additional Approvals to Operate: Dependent on the operations, operators may need to gain other approvals (e.g. Dangerous Goods Approval) and Airspace Change Proposals via CAP1616. Early engagement with the CAA will help define the level of regulatory engagement required to operate your selected aircraft type in your proposed airspace. UAS operators may need to identify and conduct early engagement with relevant ANSPs to achieve the required minimum level of air traffic service provision to support operations in integrated airspace. Each type of operation will have different requirements and timelines specific to the type of operation that need to be adhered to for approval.

Stakeholder Engagement and Coordination: Effective communication and coordination with various stakeholders, including local air traffic service providers, other airspace users, and the military (if applicable), are essential. This may include local authorities and community groups. Flight route notifications and ensuring that all operations are well-coordinated with these entities can significantly reduce operational risks and enhance safety. Applicants can use the CAA Airspace Co-ordination and Obstacle Management tool (ACOMS) to raise digital NOTAMS (Notices to Aviation) for UAS operations.

Introduction to BVLOS Operational Pathways

BVLOS Pathways

The CAA currently has six recommended operational pathways for UAS BVLOS. They have been defined as the most effective way to enable BVLOS operations and at the same time maximise learning opportunity to drive policy development within the CAA.

Special Use Airspace (Segregated) Existing Danger Area in Uncontrolled Airspace An airspace structure that provides segregation from other airspace users. These structures inform a user that dangerous activities may exist within the airspace. Existing Danger Areas are in Uncontrolled Airspace.

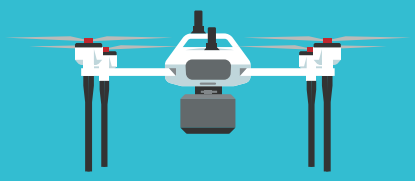
Special Use Airspace (Segregated) Temporary Danger Area in Uncontrolled Airspace An airspace structure that provides segregation from other airspace users. These structures inform a user that dangerous activities may exist. Temporary Danger Areas are used in Uncontrolled Airspace.

Special Use Airspace (Segregated) Temporary Segregated Area in Controlled Airspace An airspace structure that provides segregation from other airspace users. Temporary Segregated Areas (TSAs) are allocated for the exclusive use of a specific user for operations that cannot be safely integrated with other airspace users. They are used in Controlled Airspace.

Special Use Airspace (Non-Segregated) – Temporary Reserved Areas
Special Use Airspace which is periodically reserved and allocated for the specific use of a particular user during a determined period of time and through which other traffic may be allowed to transit in accordance with the air traffic management arrangements.

Air Risk Mitigation – Operations in Atypical Air Environments
An environment where you can reasonably anticipate that the likelihood of interacting with crewed aircraft is negligible due to the proximity of certain ground infrastructure, reducing the likelihood of a mid-air collision (MAC) to an acceptable level.

Air Risk Mitigation - Operations with Visual Mitigation An operation where collision avoidance is achieved through the 'unaided visual observation' of a human, through the use of additional observers visually 'scanning' a block of airspace for conflicts while maintaining VLOS with the UA.



Operator defined BVLOS Operational Pathways

Applicants may define their own operational pathways for BVLOS. More information can be found within CAA acceptable means of compliance (AMC) material which explains technical capabilities and operational mitigations to comply with the requirement to avoid any risk of collision with manned aircraft. For operator defined pathways there is a greater requirement on the applicant to demonstrate their operation is fit for purpose and meets the intention of current UK policy and applications may take additional time to assess and complete beyond the timelines shown in this document.

Selecting Appropriate BVLOS Operational Pathway

Applicants should consider what is the most appropriate pathway to support their ambition. For example, for operations where the UAS is operating in an area where there is a very low probability of encountering another aircraft e.g. near infrastructure or buildings, the Atypical Air Environment (AAE) may be a suitable route. Importantly, AAE does not require any Airspace Change activities. For those wishing to demonstrate air platform capability or other technology without any needs to demonstrate non-segregated operations then operations in segregated airspace may be appropriate.

Applicants may also wish to operate in airspace taking into account all three pathways i.e. the UAS is transiting from segregated airspace to non-segregated and there is also benefit to apply the AAE mitigation for parts of the route. In these cases then guidance for all three pathways is applicable.

Each operation is different and may require a tailored regulatory path. Differences in location, equipment, proposed operation and airspace can all result in a different regulatory pathway and set of considerations.

The CAA wants to support industry to operate BVLOS and we are therefore asking all operators who are planning to fly BVLOS to contact us on bvlos@caa.co.uk at the early stage of your planning. We will then ask you for a brief concept of operations that describes your operation and provide advice on the best regulatory path and considerations when completing your application. Up to seven hours of CAA advice can be accessed this way for free.

We are providing this service as we want to support applicants and we have learnt that time spent agreeing a path and agreeing what is possible saves both the applicant and the CAA time later in the process, significantly reducing delays.

Pathway 1/2/3 Operations in Special Use Airspace (Segregated)

Operations in Segregated Airspace cover three different pathways. The first (Pathway 1) is operations in uncontrolled airspace through use of an existing Danger Areas (DA) or (Pathway 2) setup of a new Temporary Danger Area (TDA). The third (Pathway 3) is operations in controlled airspace through setup of Temporary Segregated Airspace (TSA).

Operations in Segregated Airspace are appropriate for those operators who wish the freedom to demonstrate technology and operational capability as a means to build evidence for future operations in non-segregated airspace. Whilst referred to as Segregated Airspace, DAs and TDAs is an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.

The focus should be testing and demonstrating aircraft (e.g. flying hours, controllability etc), air and ground systems and operations away from uninvolved aircraft.

For Danger Areas, the intended operational objective must either be agnostic of location or connected to the location within the Danger Area. The Danger Area must be also approved for UAS operations within the AIP. If not an Airspace Change Proposal may be required.

Regulatory Considerations for Segregated Airspace Operations

Operating Safety Cases
If you are proposing to operate in an

Summary Requirements

Entry Criteria:	Open to all.
You will need:	A UAS Operational Authorisation in accordance with Assimilated Regulation (EU) 2019/947 Article 11 and 12 granted by submitting an Operating Safety Case following guidance in CAP722A. Only for TDAs and TSA, an approval for a TDA/TSA to be granted in accordance with SARG Policy 133: Policy for the Establishment and Operation of Special Use Airspace and initiated following CAP1616 Airspace Change process. Guidance provided in CAP2989 details specific steps required.
You may need:	Dangerous Good approval in accordance with guidance in CAP2555 and an application using form SRG2807.
Useful to have:	Test and Evaluation Plan
You don't need:	An Airspace Change Proposal for existing Danger Areas. An Environmental Assessment / Management Plan
Timeframe:	A typical application will take a minimum of 2-4 months for a DA A typical application will take a minimum of 5-7 months for a TDA A typical application will take a minimum of 6-9 months for a TSA

existing Danger Area then you should submit an Operational Safety Case using the guidance provided in CAP722A. A description of the Danger Area and operating procedures in line with controlling authority of the Danger Area as is required as part of the OSC.

To operate in a TDA you should submit an Operational Safety Case (CAP722A) and in parallel an Airspace Change Request for the creation of the Temporary Danger Area (CAP1616/G). TDAs are available for up to 90 days for 'temporary' airspace change and up to 6 months for 'trial' airspace change. Additional guidance (CAP2989) on conducting an ACP in support of BVLOS operations will be published in summer 2024.

Should a temporary airspace change be required for longer than 90 consecutive days, or should we receive a request to repeat a temporary change that has previously been in effect for 90 days, a permanent airspace change proposal will normally be needed. In extremis, the CAA may use its discretion to extend a temporary change beyond 90 days on a case-by-case basis e.g. force majeure.

The duration of an airspace trial can vary and is for a fixed period as the CAA considers appropriate, which is normally not more than 6 months. Following implementation, a trial change may be extended at the discretion of the CAA which is normally not more than 12 months.

A request for a temporary airspace change can be made in well in advance of activation, but the sponsor should consider the likelihood of regulatory changes which could impact a future structure, along with consideration of the validity of stakeholder engagement conducted a significant period ahead of activation.

Environmental Assessments

For operations in Temporary Danger Areas and Temporary Segregated Areas then the requirements for an environmental assessment are covered in the Airspace Change Proposal process. For operations in existing Danger Areas, operators are reminded of the responsibilities around noise and emissions that are detailed in Assimilated Regulation (EU) 2019/947, UAS.SPEC.050.

Carriage of Dangerous Goods

Carriage of dangerous goods (DG) is to be considered in accordance with CAP2555 which provides policy and guidance to the operation of UAS/RPAS in the Specific Category when carrying dangerous goods. It summarises and references regulations throughout, that are applicable to the carriage of DG by air for all other aircraft types.

Dangerous Goods may be carried in the Specific category if the safety risk is mitigated sufficiently. This may be achieved with the use of a crash protected container or by adjusting the scope/location/nature of the operation or a combination of both (Assimilated Regulation (EU) 2019/947, AMC1 Article 6(1)(b)(iii)).

Consultation with, and application of CAP2555 will help to ensure that UAS/RPAS operators are able to gain approval to carry DG in an efficient manner. Providing as much detail on the type, Class/es and/or Division/s, quantity and packaging arrangements for the dangerous goods to be carried will greatly assist in the efficient processing of applications, together with requested supporting documentation such as Application form SRG2807, Dangerous Goods Procedures Manual, Safety Risk Assessment and Emergency Response Procedures. A Dangerous Goods approval can be obtained through submission of an Application (SRG2807) and shall be submitted to dgo@caa.co.uk

Pathway 4 – Operations in Temporary Reserved Areas (with coincident TMZ)

A Temporary Reserved Area (TRA) is airspace that is temporarily reserved and allocated for the specific use of a particular user during a determined period of time. Other traffic may or may not be allowed to transit in accordance with the air traffic management arrangements notified for that volume of airspace.

In 2023 and early 2024, the CAA held two competitions to select applicants for a TRA Sandbox. Currently only those applicants accepted into the Sandbox are permitted to establish TRAs for BVLOS operations. The TRA Sandbox restriction is used to ensure that appropriate resource from within the CAA is available to support applications.

Operations in Temporary Reserved Area (TRAs) are appropriate for those UAS Operators who wish to demonstrate their technical and operational capability in performing BVLOS operations in non-

Summary Requirements

Entry Criteria	Applicants must be part of the CAA managed TRA Sandbox
You will need:	A UAS Operational Authorisation in accordance with Assimilated Regulation (EU) 2019/947 Article 11 and 12 granted by submitting an Operating Safety Case following guidance in CAP722A.
	An approval for a TRA to be granted in accordance with SARG Policy 133: Policy for the Establishment and Operation of Special Use Airspace and initiated following CAP1616 Airspace Change process (CAP1616G). Guidance provided in CAP2989 details specific steps required.
	Test and Evaluation Plan agreed with the CAA
You may need:	Dangerous Good approval in accordance with guidance in CAP2555 and an application using form SRG2807.
	Demonstrate ATS capabilities (including capability of existing services or use of new technology to support ATS) prior to the initiation of the TRA under a trial arrangement (CAP 670 GEN03).
	An Article 205 approval that any new equipment to support ATM/ ANS service provision is fit for purpose
	Compliance to CAP670 for new ATS technology.
Useful to have:	Not identified
You don't need:	Not identified
Timeline:	A typical application will take a minimum of 8-12 months for a TRA.
	The timeline is extended where an ANSP is required to be setup or new equipment is required to be approved (managed under a GEN03 Trial).

segregated airspace by allowing controlled interaction with other aircraft.

The use of TRAs assures that appropriate Airspace Management capability is available to manage access to the airspace and distribution of flight information intent and surveillance information to all airspace users. As such it is likely that a Transponder Mandatory Zone (or equivalent) will be overlaid with the TRA. Further information is published in CAP2533.

Applicants should consider how they will operate initially in the TRA noting that a simulated segregated airspace is likely initially, where encounters will be managed closely. The introduction and further maturing of Detect and Avoid capabilities and other traffic management services will optimise the use of the airspace. Applicants should demonstrate their capability to operate with progressively reduced restrictions / accommodation measures until finally the TRA can be removed i.e. the operation demonstrates the required operational and technical capabilities to remove the TRA and operate in non-segregated airspace.

Operations in TRAs are suitable for those operators who want to test DAA capabilities as a step towards integrated airspace operations. Operations in TRA are not suitable for where the airspace does not have an existing ANSP providing ATM/ANS services (noting that setup of a new ANSP is possible but will impact timelines considerably).

Regulatory Considerations for TRAs

Airspace Change Proposal
An Airspace Change Request (CAP1616/G) is required to setup a TRA in the UK. Additional guidance (CAP2989) for ACP in support of BVLOS operations in temporary or trial airspace is available.

Dependency between OSC and ACP
An ACP applicant may make an application for a TRA (with TMZ or RMZ) without identifying or linking the application to a specific BVLOS operator and the requirement for an OSC.

The activation of an approved TRA/TMZ/RMZ is dependent upon an a BVLOS operator gaining approval to fly within the airspace concerned but this revised methodology does allow an ANSP to contemplate and facilitate the delivery of the required additional capabilities to service UAS integration in a given volume of airspace.

Role of the ANSP
A TRA requires an Air Navigation Service Provider (ANSP) to manage access and provide specific ATS services to all the airspace users in the TRA. An ANSP, by definition, is approved by the UK CAA to provide ATM/ANS services. There are over 60 existing ANSPs certified to operate in the UK. Applicants must demonstrate that the ANSP has mitigated any changes to their services (referred to in regulation as the functional system), to support operations in integrated airspace. The following section provides additional details.

Delivery of ATS / Flight Information Services (ATS-FIS)
Access will be managed by an ANSP, with air traffic services (ATS) provided to all participating traffic, in accordance with the background airspace classification. ATS primarily includes the provision of flight information services (FIS). Where FIS is provided this must be supported by information from an ATS surveillance system. It is critical that there is a recognised air traffic environment. This will likely require identification of alternative provisions to traditional Mode S SSR transponders (e.g. ADS-B) to achieve a cooperative, accurate, assured surveillance environment. Guidance on electronic conspicuity devices (CAP1391) approved for use in the UK is available.

For Operations that will use new ATM/ ANS technology not yet proven to demonstrate a cooperative electronic

conspicuity environment then the ANSP is able to submit application for an Operational Trial (CAP670 GEN03). The application must include a safety assessment that demonstrates that the trial does not have a negative impact on the safety of participating or non-participating aircraft and other air traffic control units. This could include novel ground based surveillance capabilities that could be used to support tactical detect and avoid or FIS provision. An Article 205 approval is required that ensures any new equipment to support ATM/ANS service provision is fit for purpose

Environmental Assessment
Evidence to demonstrate that the environmental impacts from UAS operations is low is required as part of the ACP application. The CAA will require UA operators to provide plans for environmental / noise mitigation, noise monitoring, community engagement including complaints management.

Carriage of Dangerous Goods
Carriage of dangerous goods (DG) is to be considered in accordance with CAP2555 which provides policy and guidance to the operation of UAS/RPAS in the Specific Category when carrying dangerous goods. It summarises and references regulations throughout, that are applicable to the carriage of DG by air for all other aircraft types.

See above for further details.

Pathway 5 – Operations in Atypical Air Environments

Operations in Atypical Air Environments (AAE) are appropriate for those operators who are able to demonstrate their BVLOS flights are in locations where you can reasonably anticipate there to be a negligible number of crewed (conventionally piloted) aircraft, usually due to proximity of ground infrastructure or buildings.

The CAA consulted on the policy guidance for AAE through CAP2968. The consultation is still open and the final policy will be published no later than Q3 2024. This policy will include examples of AAE operations.

These environments are suited to routine inspections of infrastructure but should not be seen as permanent highways or corridors.

Regulatory Considerations

Atypical Air Environment Argument
CAP2968 provides guidelines for identifying and operating within Atypical Air Environments (AAE), explaining the criteria and specific considerations for such environments.

Operators will need to present evidence as to why other aircraft are unlikely to operate in the location you are operating in. They will need to also work with the ANSP, if there is one, to determine if there is any impact on the ANSP or other traffic. The use of data and procedures in line with CAP2968 (and any updated version) should be presented.

Permission from the owner of the infrastructure or buildings may be required to operate.

Notification of operations to other airspace users Operators are able to access the new Airspace Coordination and Obstacle Management Service (ACOMS) to determine whether the proposed volume of airspace covered by the AAE has any conflicts with other airspace user activity.

Once approved by the CAA, operators are able to submit a NOTAM using ACOMS to notify other airspace users of the planned operation. The CAA are required to check the NOTAM with other airspace activity to determine if the operation can proceed.

Environmental Assessments There is no specific policy related to noise or other habitat impacts for operations in Atypical Air Environments.

For operations in existing Atypical Air Environments then it is recommended that operators make an argument that the environmental implications are negligible. It is recommended, but not a regulatory requirement, that operators consider noise and habitat mitigations, noise and emission monitoring and community complaints management.

Carriage of Dangerous Goods
Carriage of dangerous goods (DG) is to be considered in accordance with CAP2555 which provides policy and guidance to the operation of UAS/RPAS in the Specific Category when carrying dangerous goods. It summarises and references regulations throughout, that are applicable to the carriage of DG by air for all other aircraft types.

See above for further details

Summary Requirements	
Entry Criteria	Open to all – after authorisation operators will be required to share operating data with the CAA Test and Evaluation Team
You will need:	A UAS Operational Authorisation in accordance with Assimilated Regulation (EU) 2019/947 Article 11 and 12 granted by submitting an Operating Safety Case following guidance in CAP722A.
You may need:	Dangerous Good approval in accordance with guidance iCAP2555 and an application using form SRG2807.
Useful to have:	Test and Evaluation Plan, Environment Assessment
You don't need:	An Application for an Airspace Change Proposal.
Timeline:	A typical application will take a minimum of 2-4 months

Pathway 6 – Operations with Visual Mitigations

Operations that use Visual Observers as an air risk-mitigation are appropriate for those operators who wish to demonstrate BVLOS capabilities but do not yet have the capability to evidence mitigations to manage mid-air collision risk e.g. technical detect and avoid capabilities.

The requirement for the remote pilot to maintain direct visual contact with the unmanned aircraft can be addressed via other non-technical 'visual observation' methods or procedures while still achieving the key responsibilities of avoiding collisions. These are still classed as BVLOS operations, however they may also be referred to as BVLOS VM. When operating 'BVLOS VM', collision avoidance is still achieved through the 'unaided visual observation' of a human, through the use of additional observers visually 'scanning' a block of airspace for conflicts while maintaining VLOS with the UA.

Carriage of Dangerous Goods
Carriage of dangerous goods (DG) is to be considered in accordance with CAP2555 which provides policy and guidance to the operation of UAS/RPAS in the Specific Category when carrying dangerous goods. It summarises and references regulations throughout, that are applicable to the carriage of DG by air for all other aircraft types.

See above for further details.

Summary Requirements	
Entry Criteria:	Open to all
You will need:	A UAS Operational Authorisation in accordance with Assimilated Regulation (EU) 2019/947 Article 11 and 12 granted by submitting an Operating Safety Case following guidance in CAP722A.
You may need:	Dangerous Good approval in accordance with guidance in CAP2555 and an application using form SRG8207.
Useful to have:	Test and Evaluation Plan Environment Assessment
You don't need:	An Application for an Airspace Change Proposal.
Timeline:	A typical application will take a minimum of 2-4 months

Regulatory Considerations requiring further development

The CAA supports industry in the desire to perform more advanced operations and operations in a greater number of locations, such as urban environments. Policies, guidance and AMC are continually being produced to support new operations. Please contact the CAA using bvlos@caa.co.uk to discuss the following topics:

Detect and Avoid

Collision avoidance within current airspace is predicated on 'see and be seen'. The CAA vision is for integrated BVLOS UA / crewed aircraft ops to be facilitated by EC enabled Detect and Avoid within a Transponder Mandatory Zone. This change from 'see-and-be-seen' to 'detect-and-be-detected' is a fundamental change to the air environment, where a crewed aircraft pilot is unlikely to see a small UA, and the remote pilot will only detect the crewed aircraft if the EC equipment is of the right type and functioning correctly.

The objective of a Detect and Avoid (DAA) capability is to allow the remote pilot to meet their collision risk obligations as defined in the UAS regulations (referenced below) and SERA.

The collision risk regulations are clear, but for reliance on a DAA capability there is minimal AMC which makes it challenging for the RPAS inspectors to provide approval:

- Regulations: Assimilated Regulation 2019/947 UAS.SPEC.060 Responsibilities of the remote pilot (avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft)

- AMC: AMC1 UAS.SPEC.060(3)(b) Responsibilities of the Remote Pilot (asks for a tech or operational capability, but minimal additional guidance available, e.g., CAP722 Para 4.3).

The CAA has developed a DAA policy concept to address this gap. The policy concept provides a basis of assurance for a DAA capability that will be tested via a policy concept test and feedback phase.

Detect and avoid will require mandatory universal conspicuity with systems that can be universally detected by all participants. A primary radar environment is not conducive to this activity.

Overflight of people with non-certified platform

Flights in sparsely populated areas are considered low risk. Flights in populated airspace require additional assurance that the UA (aka air platform) is robust and any failure could not reasonably lead to a collision. There are currently no CAA published requirements for the robustness of the UA. UAS operators should contact the CAA using bvlos@caa.co.uk for further information.

References

Assimilated Regulation (EU) 2019/947 - Dec-22: Consolidated Regulation, Acceptable Means of Compliance and Guidance Material to UK Regulation (EU) 2019/947 (as amended) UAS Regulation (caa.co.uk) details requirements for the operation of UAS in the UK in addition to the personnel and organisations involved in the operations.

Air Navigation Order: The Air Navigation Order 2016 The Air Navigation Order 2016 (legislation.gov.uk) details the main civil requirements for UK aviation and provides additional regulatory content for UAS operations in the UK.

CAP670 - v3.0 - Jun-19: ATS Safety Requirements Describes requirements Air Traffic Services (including Flight Information Services (FIS), alerting services, air traffic advisory services and ATC services (area, approach and aerodrome control services) provided to aircraft within the UK

CAP722 - v2.0 - Dec-22: UAS Operations in UK Airspace – Operating Safety Cases Outlines the process that an applicant must undertake to complete a safety assessment as part of the application process for an Operational Authorisation.

CAP1616 - v5.0 - Oct-23: Airspace Change Process Explains the airspace change process for making a permanent change to the notified airspace design. This applies to TDAs, TRAs and TMZs with a validity of over 90 days.

CAP1616G - v1.0 - Feb-24: Guidance on Airspace Change Process for Temporary and Trial Airspace Change Proposals Designed to enable change sponsors to complete the airspace change process for temporary airspace changes (less than 90 days) with minimal reference to other CAP 1616 documents.

CAP2533 - v1.0 - Apr-23: Airspace Requirements for Integration of BVLOS Unmanned Aircraft Describes use of TRAs and TMZ overlays for BVLOS operations where SERA.3201 (need to avoid collisions) and SERA.3205 (not operating in undue proximity to other aircraft) can be satisfied.

CAP2989 - v1.0 - July-24: Temporary or Trial ACP for BVLOS – additional guidance Provides guidance on the application of ACPs in support of UAS BVLOS operations.

CAP2968 - v1.0 - Feb-24: Consultation: UA operations within an Atypical Air Environment Policy consultation document that provides examples of Atypical Air Environments (AAEs) for the purpose of reducing mid-air collision risk with other traffic for BVLOS operations. Use of an AAE enables an ARC-a air risk score in SORA (lowest risk).

CAP1391 - v3.0 - Feb-21: Electronic conspicuity devices Sets out a full technical specification that EC devices are required to meet, along with acceptable means of compliance.

CAP2555 - v1.0 - July-23: Guidance on the Carriage of Dangerous Goods as Cargo for UAS/RPAS Operators in the Specific Category Provides guidance to UAS/RPAS operators regarding best practice for the carriage of DG by air with a UAS/RPAS. References other regulations and templates.

SRG2807 - v7.0 - Nov-23: Application for Approval to Transport Dangerous Goods by Air–Operators of UK-Registered Aircraft Application requirements for Dangerous Goods.

DG Manual Template - v1.0 - Jul-23: Example Operations Manual Entry for a UK Remote Piloted Aircraft System Operator Approved to Carry Dangerous Goods as Cargo Example template of Operations Manual for RPAS operators planning to carry dangerous goods.

SARG Policy 133 - v1.0 - Feb-24: Policy For The Establishment And Operation Of Special Use Airspace Details the policy for the establishment and operation of special use airspace such as Temporary Danger Areas and Temporary Segregated Areas.

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