

Future of Flight: BVLOS Roadmap

October 2025



Foreword

To unlock the full economic and societal potential of airborne drones - referred to here as Uncrewed Aircraft Systems (UAS) - it is essential to enable operations beyond the pilot's direct line of sight, known as Beyond Visual Line of Sight (BVLOS). Expanding BVLOS capabilities is a critical step toward scaling innovation, accelerating industry growth, and transforming how UAS contribute to public and commercial services.

The Department for Transport, the UK CAA and Future of Flight Industry Group have agreed the Future of Flight Objectives. For UAS operators, that is to have routine BVLOS operations in the UK by 2027.

Enabling routine BVLOS within the current aviation system is not achievable quickly with 'big bang' changes. Operations and the safety cases that support them are diverse. For example, a UAS survey within 10 meters of a building has significantly different operational considerations to an environmental survey over the sea in the same airspace as commercial air transport.

To scale successfully, UAS will need to be able to integrate safely and routinely into UK airspace, without need for 'special provisions' or 'segregated airspace'. All CAA BVLOS activities are intrinsically interconnected with and dependent on the UK's Airspace Modernisation Strategy (AMS). This is covered in greater detail in the CAA's AMS Part 3 Deployment Plan, which presents the roadmap for the development and modernisation of UK airspace up to 2040.

In 2024, we provided industry with our Delivery Model to enable routine BVLOS operations in the Specific Category (CAP 3038). Since then

we have developed a detailed portfolio plan consisting of 14 projects & programmes and have delivered on the first year of that plan.

In this publication we provide the operator and industry lens on our delivery plan. Rather than listing policies and projects this Roadmap describes what operations will be routine when, based on the work within the Future of Flight Portfolio. We have based the roadmap on operational pathways to relate it to real operations and use cases. Each pathway then includes different operational scenarios that will be enabled over time. We have ensured the roadmap is robust, ambitious, and aligned with market needs through engagement with government and industry.

For those interested in a more technical view, in the Annexes of this document, we present how we expect each operational pathway to develop over time, linking the enabled operational scenarios to the relevant airspace requirements and policies. Following the CAA's regulatory approach, all the policies referenced in this document will be appropriately engaged and consulted on as part of the policy development process.

Where policies have yet to be published, CAP 3038 remains a useful aid to understand which

new policies are being considered across the portfolio. In 2026 we will publish our airspace architecture proposals, providing the framework for UK integrated airspace.

We must not forget that our mission is protecting people and enabling aerospace. We need to be assured that BVLOS operations can be safely integrated into the UK's airspace. This requires us to be satisfied that the operation itself is safe, that the technology has the appropriate safety features, pilots are appropriately trained, and real-world operations are enabled that integrate these technologies into UK airspace.

Working closely with industry and living by our delivery approach principles we will enable increasingly more BVLOS operations, safely, in the UK to 2027 and beyond.



Sophie O'Sullivan

Director, Future, Safety
& Innovation UK Civil
Aviation Authority

The objectives of the Future of Flight Portfolio, agreed with DfT & industry are...



“Enabling routine BVLOS drone operations for key government priority use cases including the NHS, emergency services, infrastructure surveying and commercial delivery operations, with capability delivered iteratively between now and 2027.”

BVLOS



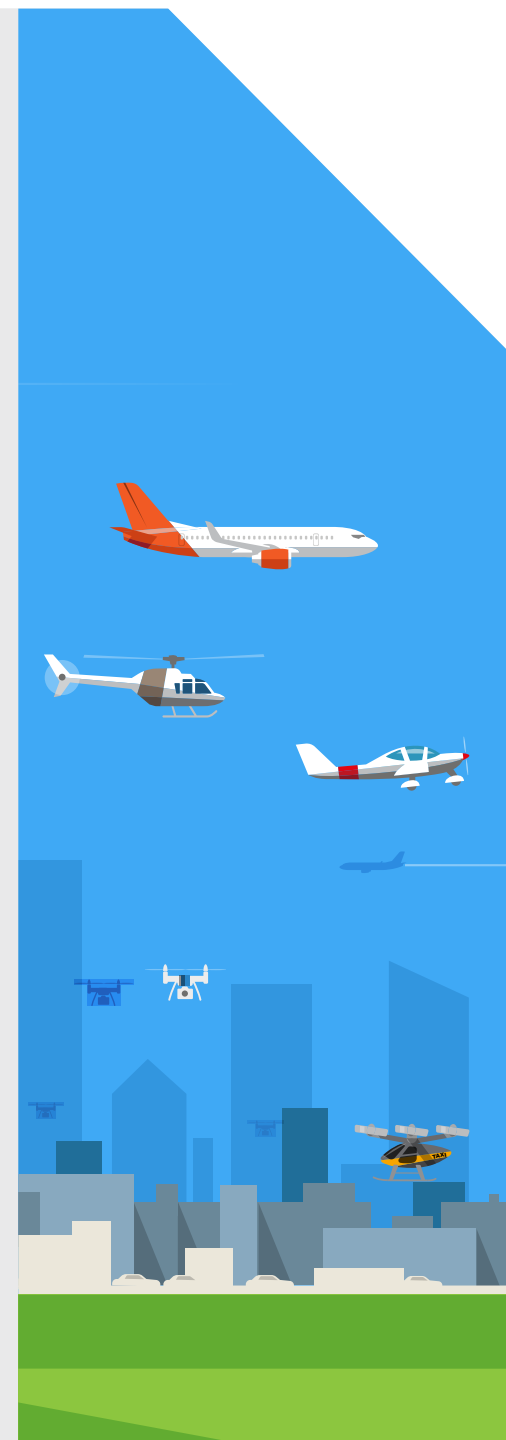
“By year end-2028 to have the regulatory framework and operational systems in place that enable initial commercial passenger AAM flights in the UK.”

AAM

These objectives replace the previous wording and roadmap of the Strategic Outcomes (SO's)

Collaborative action between Government, Industry and the Regulator is fundamental to realise the benefits of the Future of Flight Portfolio. The CAA has a key role in delivering the regulatory frameworks and processes that will enable the Future of Flight objectives, whilst continuing to keep the public and all aviation users safe. This document provides the next level of detail on how the CAA will work with industry and government to achieve those objectives.

The dates published in this roadmap are dependent on technical progress, industry progress and legislative change, any changes will be reflected in annual updates to this document.

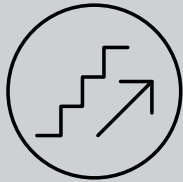


Delivery Approach and Operational Pathways



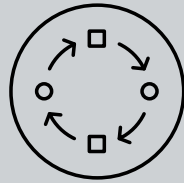
Delivery Approach Principles

To facilitate the delivery of a hugely complex combination of new infrastructure and regulatory frameworks, the CAA has implemented 4 delivery approach principles...



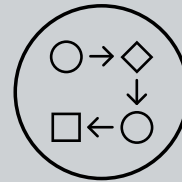
Segregation is a stepping stone towards integration

Enabling operations in segregated airspace is part of the process to generate learnings to inform policy iterations.



Develop policies iteratively

Develop and publish interim ConOps to allow industry to scale; both policy and operations start to mature hand-in-hand.



Outcome focused for industry

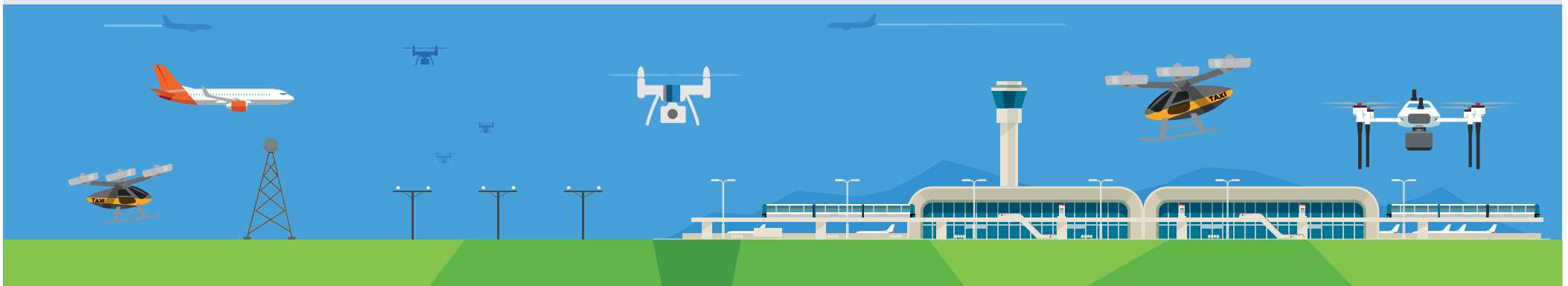
Defined use-cases for industry demonstrates iterative progress and provides the necessary feedback mechanism to develop policy.



Developing operational pathways

Using pathways to enable tactical flying allows the gradual scaling of operations, leading to sustained growth and safer regulation for new users.

Given the complexity of the portfolio, delivering big bang carries risk. The portfolio plan therefore focuses on delivering value iteratively and ensuring we have a continuous learn and evolve loop.



Understanding Operational Pathways

An operational pathway is a group of operations with similar ConOps and common regulatory approach (i.e. require the same authorisations / approval route / safety case) and is aligned to industry demand.

The CAA breaks the UAS market into seven pathways overall - two VLOS pathways and five BVLOS pathways. In this document we have only considered three of the BVLOS pathways. They are:

Atypical Air Environment (AAE)

BVLOS operations in airspace in close proximity to specific ground infrastructure (within AAE)

- > Linear infrastructure inspection e.g. power lines, railways, wind turbines
- > Security and surveillance
- > Agriculture (e.g. crop spraying)

Integrated Low Level BVLOS Over Urban Area

BVLOS operations integrated with other airspace users in low level airspace (<500ft AGL) over populated areas

- > Last mile deliveries (to end customer) e.g. medical supplies, pathology samples, consumer goods
- > Inspection

Fully Integrated BVLOS

BVLOS operations integrated with other airspace users in all airspace

- > Emergency air services
- > Offshore asset inspection
- > Middle mile deliveries (between warehouse / distribution centres)

The other two BVLOS pathways are Non-military state aircraft, and Test & Evaluation operations. These are both part of the Future of Flight Portfolio but we have not included these in this document as

- > We are currently working with our partners across government on the development of non-military state operations.
- > Initial BVLOS testing and development of new UAS will continue to take place in segregated airspace where the air and ground risk is minimal. We have recently published CAP3145 that describes a process to enable this.

Importance of Operational Scenarios

We use operational scenarios to describe how pathways evolve over time. Operational Scenarios are a particular type of UAS operation, tied to a specific environment, with applicable policies and requirements. Each different scenario helps develop our roadmap towards full airspace integration; enabling industry operations using this approach creates iterative progress and unlocks use cases leading to routine BVLOS in UK Airspace.

For example: A Policy Concept is launched that supports a single operator in a volume of airspace. Data provided via these operations is fed back into policy development which enables advancement of the policy; to support multiple operators in the same volume of airspace. This demonstrates pathway progression and unlocks commercial opportunity and industry growth.

Operational Scenarios

Allows us to deliver Outcomes

Provides data from live operations

Provides **tangible value** to industry

Gets **more people flying**

Outcome

So that specific industry use cases can be unlocked

Which provides insights for policy development

That enables the industry and ensures ongoing support

Demonstrating visible progress and opportunity for growth



UK BVLOS Roadmap



Roadmap for BVLOS Operational Scenarios

This roadmap presents the operational scenarios that could be available on each of three operational pathways from today to 2027 and beyond. Each operational scenario is described at a high level.

As new scenarios are realised, all previous ones remain valid to support operators on their journey towards more integrated operations.

Enabling these scenarios is subject to industry demonstrating capabilities that meet the relevant regulatory policies.

We explore which policy areas are applicable to each operational pathway and operational scenario in the Annexes of this document.

	Now	2026	2027	2028+
Atypical	Atypical operations with single operator A0 <i>Example operations -</i> Inspection on railway, seeding farmland, perimeter patrols	Atypical operations with multiple operators A1 <i>Example operations -</i> Multiple, consecutive, operations on the same length of railway	The definition of an Atypical Air Environment will be continually reviewed. This means over time, it may be possible to operate Atypical in more locations and greater volumes	
Low level Urban	Single operator with bespoke entry conditions LL0 Shift from bespoke entry conditions to increasing reliance on Con Ops/Policy Concepts to mitigate risk. <i>Example operations -</i> Last mile delivery operations or between hospitals in a TRA/TMZ		Multiple operators in controlled airspace LL1 <i>Example operations -</i> Multiple last mile delivery over an urban area, small packages delivered over longer distance. No longer requires a temporary airspace structure.	Multiple Operators in uncontrolled airspace LL2 <i>Example operations -</i> Multiple last mile delivery in villages, small packages delivered over longer distance.
Fully Integrated	Segregated operations F10 <i>Example operations -</i> Offshore monitoring in a TDA	Specific volumes with bespoke entry conditions F11 <i>Example operations -</i> TRA & TMZ for maritime operations	Operations in controlled airspace F12 <i>Example operations -</i> Point to point freight deliveries. No longer requires a temporary airspace Structure.	Operations in controlled and uncontrolled airspace F13 <i>Example operations -</i> Middle mile logistics across the UK. No longer requires a temporary airspace structure.

*Dates are based on the CAA continuing to receive the required level of funding needed to deliver the capabilities detailed within the Future of Flight Portfolio.

Annexes



Atypical pathway development

The first iteration of the Atypical Air Environment (AAE) Policy Concept was published in 2024 which enabled individual operators to fly within an AAE environment. In 2025 we provided clarity to operators on how they could fly at multiple sites and will publish additional guidance on how operators can present evidence to support they are operating within an AAE.

The CAA's policy concept outlines guidance for operators along with operational, strategic, and technical mitigations which may be necessary. UTM policy development will enable operators to use UTM as a strategic mitigation to avoid other UAS operators in AAEs. This is the enabling the step from A0 to A1 scenarios

Operators on this pathway will enjoy the benefits of the AAE Policy development over time which includes exploring how the heights of an AAE can be increased as well as ways in which the authorisation process and deconfliction checks can be more efficient.

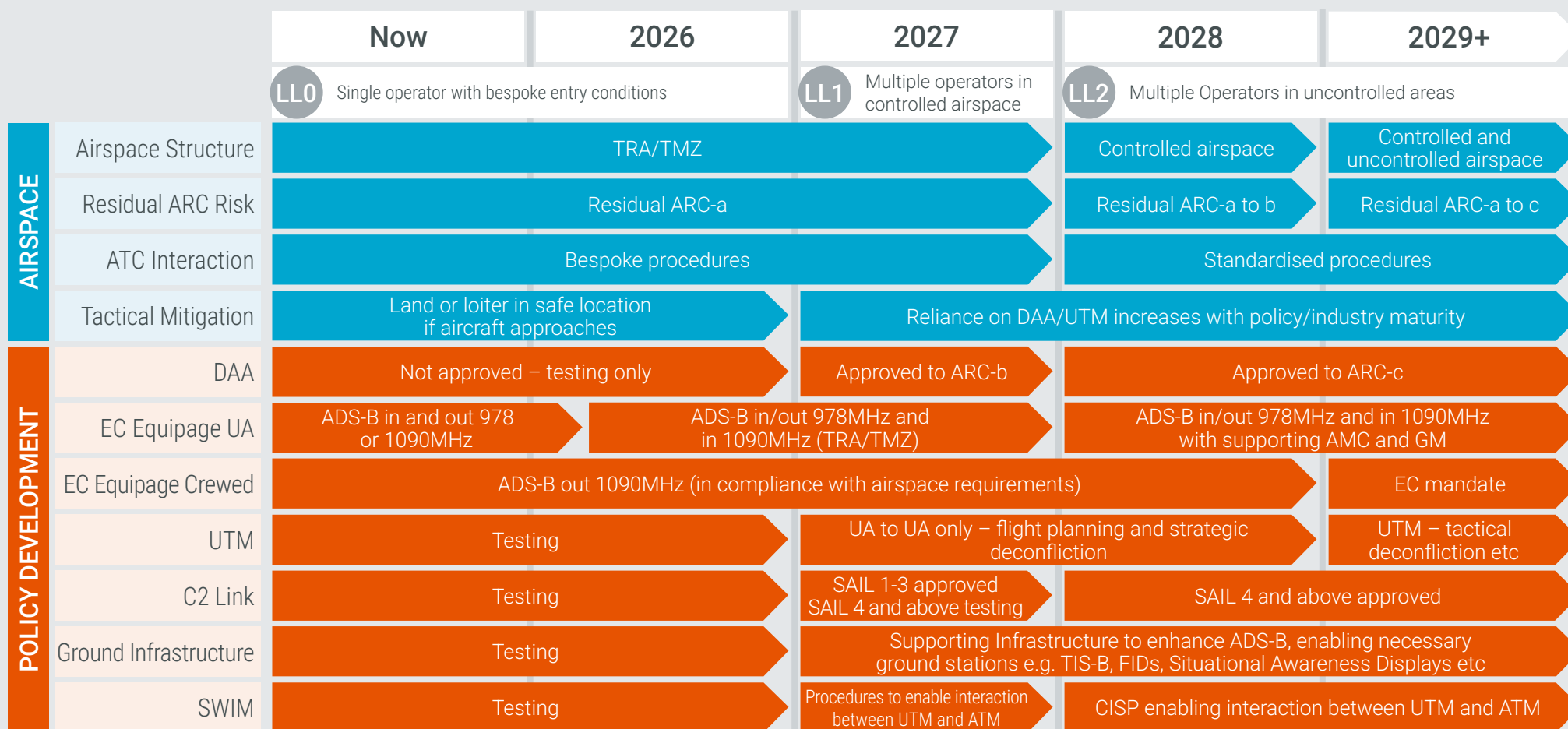
		Now	2026	2027	2028	2029+
		A0 Atypical operations with single operator	A1 Atypical operations with multiple operator			
AIRSPACE	Airspace Structure	Atypical Air Environment as defined in CAP 3040 – ongoing updates based on operational learning				
	Residual ARC Risk	ARC-a				
	ATC Interaction	None required				
	Tactical Mitigation	None – EC observation only				
POLICY DEVELOPMENT	DAA	None required				
	EC Equipage UA	ADS-B in and out 978 or 1090MHz		ADS-B in and out 978 or 1090MHz		
	EC Equipage Crewed	None, beyond requirements of existing airspace classification				EC mandate
	UTM	Testing		UTM – flight planning and strategic deconfliction		
	C2 Link	Testing		Systems approved to SAIL 1-3available		
	Ground Infrastructure	Not required				
	SWIM	Not required				

Low level over urban environment pathway development

The first partially integrated low-level operations over an urban environment started in 2024 with London Health Bridge between two hospitals in London. This operation relied on the access conditions of a Temporary Reserved Areas (TRA)s and bespoke operating procedures of the Air Navigation Service Provider and the operator for Mid-Air Collision (MAC) mitigation.

This first operational scenario enables testing and developing our shared understanding of the mitigation performance of technology deployed within the TRA/TMZ.

Policies will then be developed to allow for reduced reliance on temporary airspace structures (such as TRA/TMZ) to mitigate risk and increased reliance on the technologies. This progression will allow routine operations first in controlled airspace then in uncontrolled airspace.



Fully integrated pathway development

The FI0 and FI1 operational scenarios enable testing and developing our shared understanding of the mitigation performance of technology deployed within the TRA/TMZ.

Policies will then be developed to allow for reduced reliance on temporary airspace structures (such as TRA/TMZ) to mitigate risk and increased reliance on the technologies. This progression will allow routine operations first in controlled airspace then in uncontrolled airspace.

