UK Civil Aviation Authority

A guide to the

Airspace Modernisation Strategy

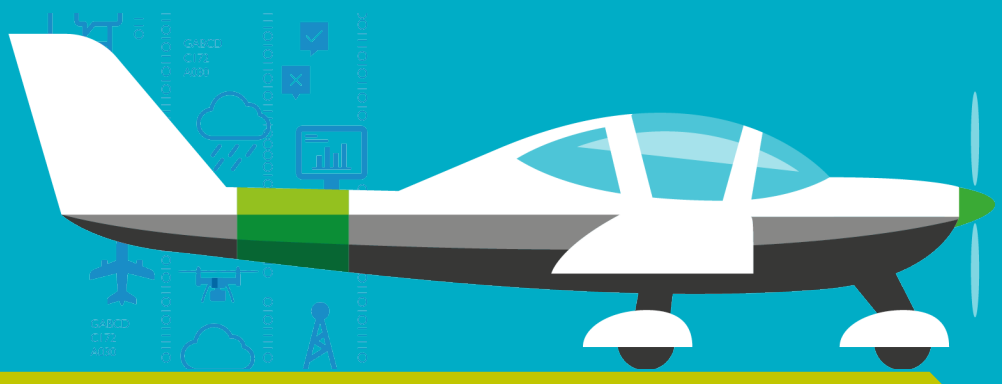
What is Airspace Modernisation?

Airspace is an invisible but vital piece of our national infrastructure. Its basic design has remained unchanged for decades, despite technological advances and increased demand from airspace users. Modernisation is long overdue and is critical to ensure that UK airspace is fit for purpose.

In 2017, the Secretary of State tasked the UK Civil Aviation Authority (CAA) with preparing and maintaining a coordinated strategy and plan for the use of UK airspace. This has become the Airspace Modernisation Strategy (AMS). We refreshed the AMS in 2023, extending its focus out to 2040.

Together, the CAA and the Department for Transport (DfT) have developed a shared vision for modernising UK airspace. That vision is…

To deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace.



Did you know?

The AMS replaced the 2011 Future Airspace Strategy (FAS). The FAS was the strategy to address the UK's airspace system from 2011 to 2030 and has its genesis in the DfT's 'The Future of Air Transport' White Paper in 2003 and the 'Future of Air Transport Progress Report' in 2006.

Why do we need Airspace Modernisation?

The UK's airspace is one of the most complex in the world, yet its underlying core is rooted in a 1950s design. Like our road and rail infrastructure on the ground, we need to modernise our infrastructure in the sky to allow for cleaner journeys while providing greater capacity for those who use and are affected by airspace.

Airspace modernisation will provide more choice and value for consumers by allowing airlines to add new flights, reduce flight delays and enhance global connections that can help boost the UK economy. It will also help us continue to improve safety standards and make journeys by air more environmentally friendly.

With the adoption of new technology, modernisation will also help pave the way for the integration of new or rapidly developing airspace users, such as drones and spacecraft.

The four drivers for change are:

Meeting the demand for airspace more sustainably.

Encouraging aviation innovation to support UK economic growth.

International obligations.

Facilitating defence and security objectives.

What are the objectives of the AMS?

The AMS is based on four strategic objectives: Safety, Integration, Simplification and Environment.

Safety
Maintaining and, where possible, improving the UK's high levels of aviation safety. This is the most important part of the strategy, taking priority over everything else.

Integration
Integration of diverse users – satisfying wherever possible the requirements of operators of all classes of aircraft, whether these be existing, new or rapidly developing airspace users, including defence and national security.

Simplification
Reducing complexity and improving efficiency. Airspace modernisation should result in the most efficient use of airspace and flow of traffic, accommodating new demands and improving system resilience to the benefit of everyone.

Environmental sustainability
An overarching principle applied through all modernisation activities in accordance with the Government's environmental objectives.

Working together

Our strategic objectives will need to be delivered collaboratively by a wide range of aviation organisations and stakeholders, such as air navigation service providers, airports, airlines, manufacturers, representative organisations and, where appropriate, bespoke delivery bodies. In developing the refreshed strategy, we considered the views of these stakeholders, and you can read the responses to our consultation on our website.

www.caa.co.uk/ams

Airspace modernisation benefits

Airspace modernisation benefits a wide range of people in different ways. Modernising airspace will:

- ✓ Help to reduce aviation's climate change impacts, contributing to the Government's decarbonisation strategy
- ✓ Create more airspace capacity, which, in turn, can:
  - + Accommodate new flights and destinations, giving better value and more choice for consumers, enhancing the UK's global connections and stimulating the economy
  - + Make existing operations more efficient through better design, including addressing 'hotspots' of congestion, meaning fewer flight delays, and improving airspace access to recreational flyers
  - + Unlock further growth, supporting the UK economy in accordance with the government's policy and direction
  - + Accommodate new technology and new or rapidly developing types of aerial vehicles, such as drones providing new services to businesses and the public, alongside medical or search and rescue flights
- ✓ Create opportunities for airports to better manage noise impacts on local communities, so aircraft could climb sooner, descend more quietly and navigate more accurately around populated areas
- ✓ All while maintaining and, where possible, improving the UK's high levels of aviation safety.

AMS parts 1 to 3

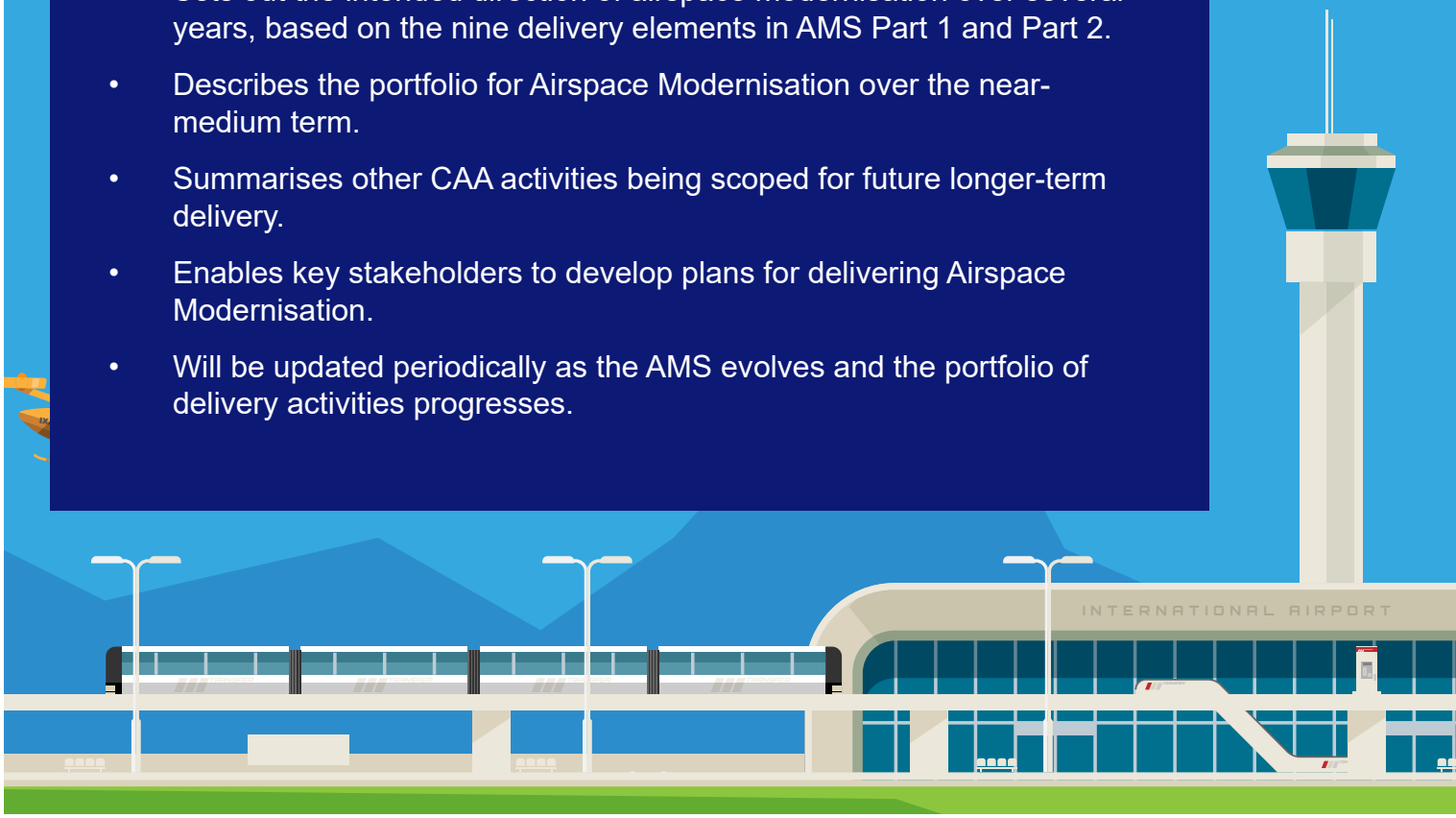
The AMS 2023–2040 is split into three parts, published separately. Part 1 (Strategic objectives and enablers) explains the strategy's objectives (the 'ends'), a high-level overview of what will enable those objectives to be fulfilled, and governance arrangements for overseeing delivery. Part 1 does not specify detailed solutions, allowing space for innovation.

Part 2 (Delivery elements) and Part 3 (Deployment) describe the short-term ambition and explain how the strategy is being delivered. Parts 2 and 3 will likely be updated more frequently than Part 1 as the elements evolve and mature for delivery.

Part 2 explains the different elements that make up delivery (the 'ways') in more detail. It includes a linked online database.

Part 3 sets out progress with deployment and related activities for those elements (the 'means'). The CAA will be coordinating and leading on the deployment plans, tasking relevant delivery groups or organisations as appropriate. Part 3:

- Sets out the intended direction of airspace modernisation over several years, based on the nine delivery elements in AMS Part 1 and Part 2.
- Describes the portfolio for Airspace Modernisation over the near-medium term.
- Summarises other CAA activities being scoped for future longer-term delivery.
- Enables key stakeholders to develop plans for delivering Airspace Modernisation.
- Will be updated periodically as the AMS evolves and the portfolio of delivery activities progresses.



Airspace Modernisation Strategy

Ends & Ways & Means

Strategy

Part 1: Strategic objectives and enablers

Required outcomes for a modernised airspace and the supporting high-level enablers.

CAP1711

Delivery

Part 2: Delivery elements

The design, operations and technology needed to deliver a modernised airspace.

CAP171a

Part 3: Deployment

Delivery plans and airspace modernisation direction over several years.

CAP171b

The AMS vision and strategic objectives give us a direction of travel that guides airspace modernisation. But there remains significant work to do to inform how we achieve that vision and use UK airspace most effectively.

Did you know?

The CAA AMS team administer an AMS Support Fund (ASF). The ASF is intended to aid projects in support of the delivery of airspace modernisation. It provides the opportunity for recognised UK legal entities, other than NERL and CAA, to seek financial support to deliver projects against the AMS strategic objectives.

AMS Delivery Elements

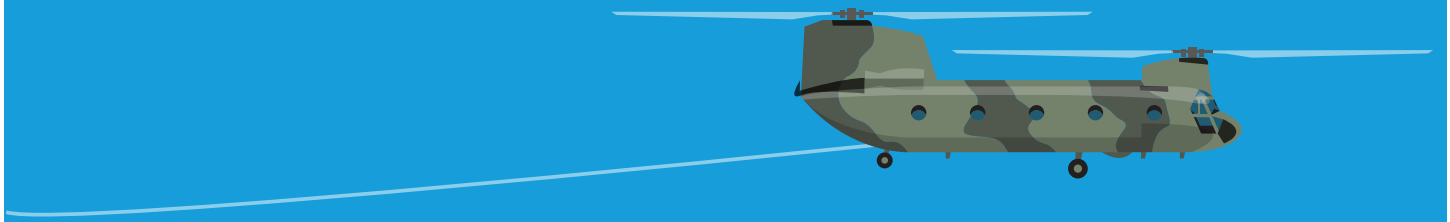
Part 2 of the AMS explains the nine delivery ‘elements’ – the design, technology and operations needed to deliver a modernised airspace. It includes a linked online database www.caa.co.uk/cap1711a.

These nine delivery elements are arranged into two categories: aircraft-based navigation and airspace management.

Aircraft-based navigation:
trajectory-based operations, terminal airspace redesign, network management, integration.

Airspace management:
airspace management, data services, future surveillance and spectrum, integration of communications, navigation, surveillance and spectrum, aircraft capabilities.

Part 3 of the AMS is the deployment plan, taking each delivery element and setting out the progress of the CAA and others with delivery plans and activities, including research activities in support of deployment.



Did you know?

The Department for Transport and CAA are co-sponsors for airspace modernisation and are working together to deliver our shared strategic vision and objectives for the modernisation of UK airspace and Air Traffic Management.

Structure of AMS Delivery Elements

Aircraft-Based Navigation

UK-ABN/1. Trajectory-based operations

UK-ABN/2. Terminal airspace redesign

UK-ABN/3. Network management

UK-ABN/4. Integration

Airspace Management

UK-AM/5. Airspace management

UK-AM/6. Data services

UK-AM/7. Future surveillance and spectrum

UK-AM/8. Integration of communications, navigation, surveillance and spectrum

UK-AM/9. Aircraft capabilities

Overarching principle for all elements:

Implementing government policy on minimising the environmental impacts of aviation within the context of supporting a strong and sustainable aviation sector.

For more information on delivery elements, see CAP1711a Airspace Modernisation Strategy Part 2.

Towards Net Zero and other benefits

The Government expects that to meet its commitment to achieving net zero emissions in aviation, a proportion of the emissions reductions will come from improving the efficiency of the existing aviation system, including aircraft, airports and airspace. These efficiency improvements also offer the best opportunities for short-to-medium term emission reductions, given the lead times associated with other measures, such as sustainable aviation fuels and zero emissions flight.

Airspace modernisation will therefore be a contributor to reducing UK aviation greenhouse-gas emissions and play a role in the Government's decarbonisation strategy.

Airspace modernisation is expected to result in a further reduction in the average noise levels per flight. For example, modernisation could enable aircraft to climb more quickly and descend more quietly and to navigate more accurately around population centres or other noise-sensitive areas. However, noise impacts will also depend on other factors like planning decisions, traffic growth or airline route networks.

AMS 2023 extended scope

We published the first AMS in 2018, replacing our previous Future Airspace Strategy. In 2023, we refreshed the AMS to bring it up to date and widen its scope:

- To extend the strategy's focus out to 2040
- To maintain and, where possible, improve the UK's high levels of aviation safety
- To take account of the latest developments in innovation and technology, placing integration of all airspace users at the core of the strategy, including accommodating new types of vehicles such as drones, aerial taxis and spacecraft
- To aim for simpler airspace design and supporting regulations
- To introduce environmental sustainability as an overarching principle to be applied through all modernisation activities, taking account of the latest Government policy and environmental guidance
- To meet the UK's international obligations, aligning delivery of the strategy with the International Civil Aviation Organization's Global Air Navigation Plan and ensuring interoperability of the UK network with our neighbours
- To provide a clear strategic path for regulatory policy and requirements now that the UK has left the EU and the EU Aviation Safety Agency.

The refreshed AMS pulls together the ICAO Global Aviation Navigation Plan, the 2018 AMS initiatives, and new requirements that the CAA has identified through extensive stakeholder engagement in 2021–2022. It also now provides a clear strategic path for rulemaking activities.

The CAA acknowledges that this is a constantly evolving and dynamic environment; therefore, it undertakes regular reviews, updates, and re-publications of all constituent parts of the AMS to ensure that the strategy remains relevant.

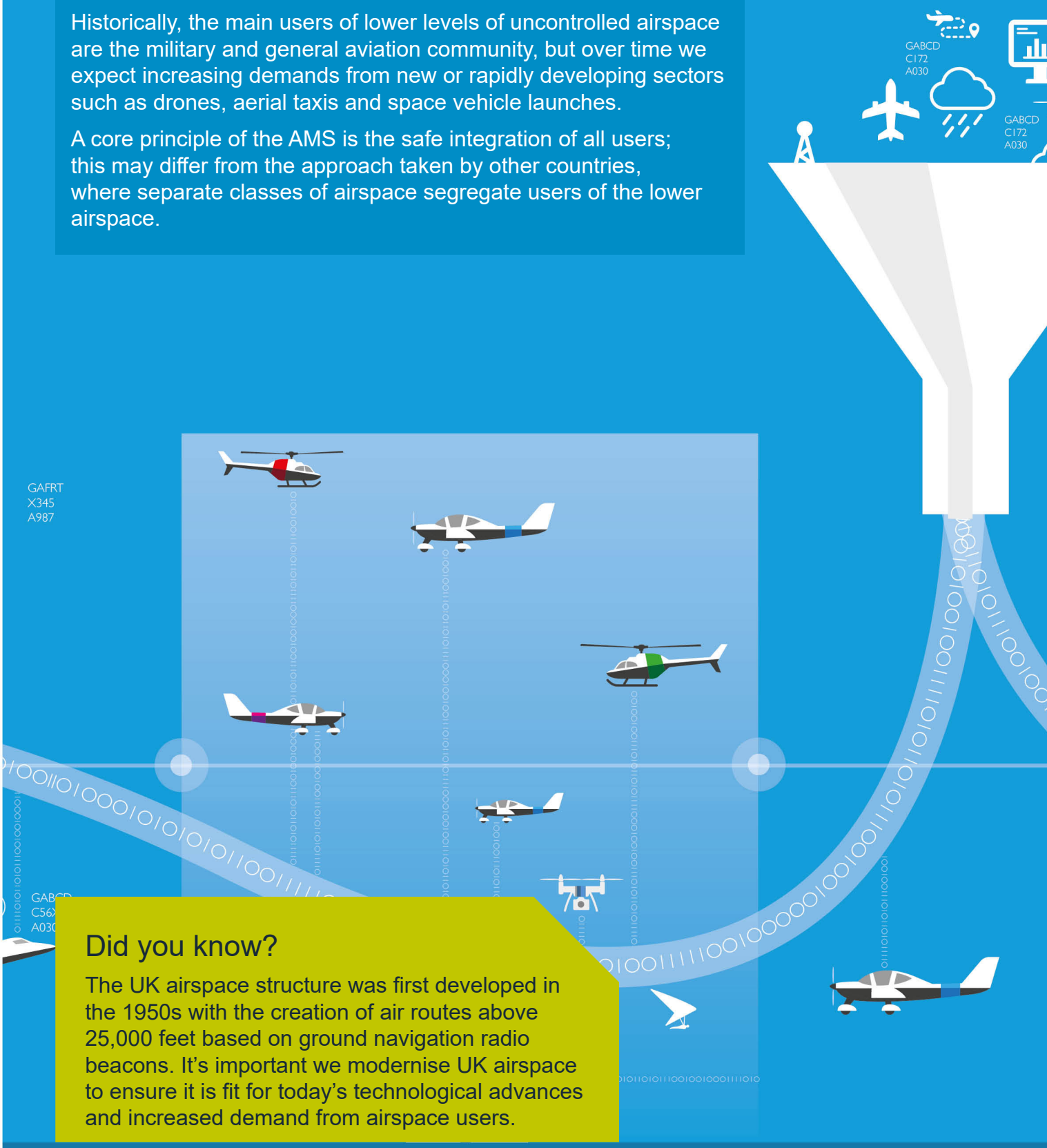
Did you know?

Many other states are also on a journey of Airspace Modernisation and the CAA AMS team are working with international partners such as EUROCONTROL and the United States FAA to share our respective work and collaborate in areas of mutual interest.

Modernised lower airspace in the uk

Historically, the main users of lower levels of uncontrolled airspace are the military and general aviation community, but over time we expect increasing demands from new or rapidly developing sectors such as drones, aerial taxis and space vehicle launches.

A core principle of the AMS is the safe integration of all users; this may differ from the approach taken by other countries, where separate classes of airspace segregate users of the lower airspace.

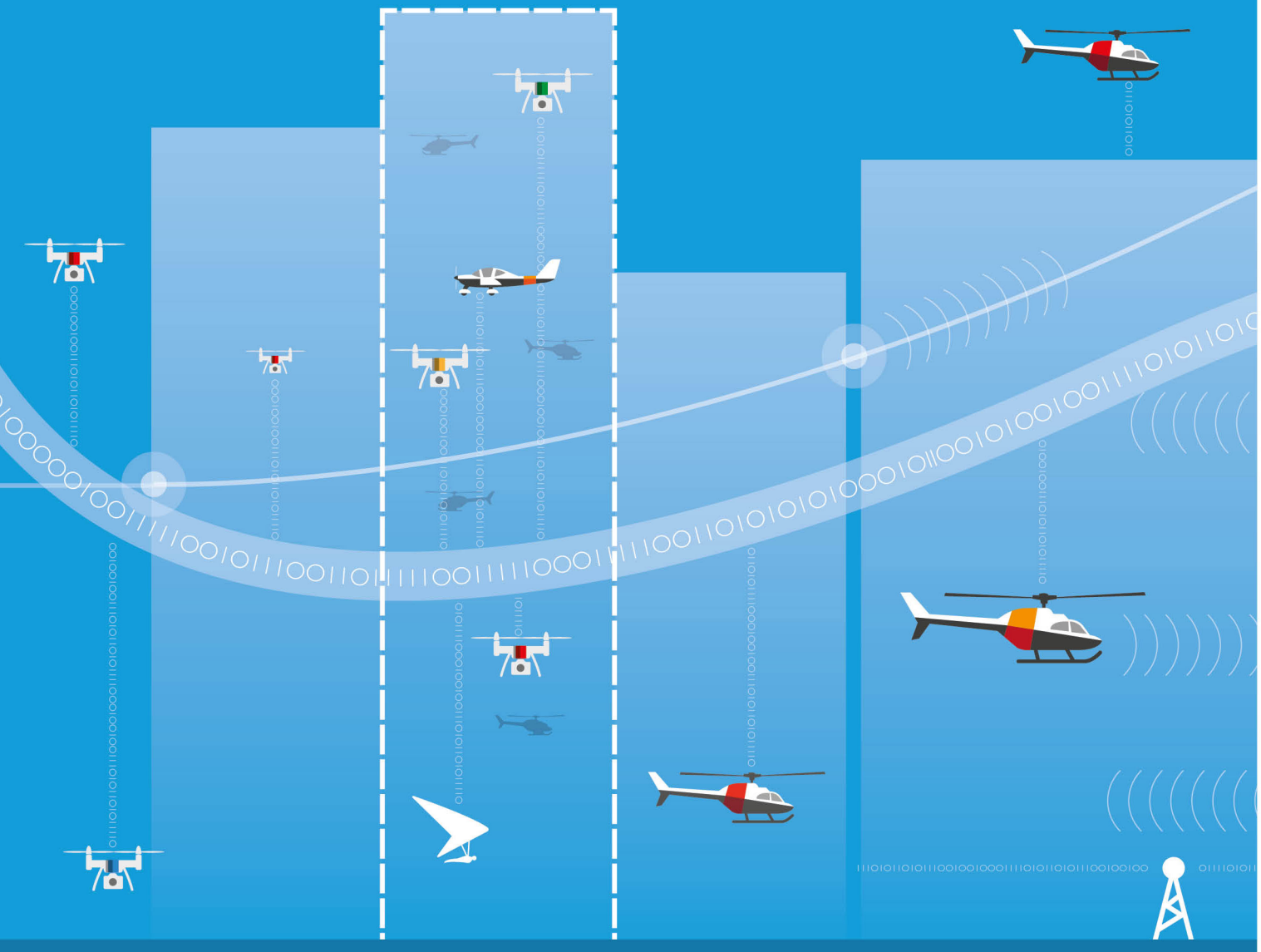


Did you know?

The UK airspace structure was first developed in the 1950s with the creation of air routes above 25,000 feet based on ground navigation radio beacons. It's important we modernise UK airspace to ensure it is fit for today's technological advances and increased demand from airspace users.

In our modernised lower airspace, aircraft and other airspace users will choose to be electronically conspicuous, to safely integrate with other airspace users and benefit from new digital services.

To view and download our Modernised Lower Airspace in the UK infographic use the QR code above



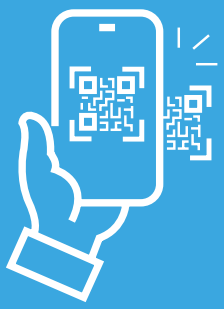
Where can I find out more?

To view and download Part 1 of the AMS (CAP 1711), point your phone at the QR code above.

To view and download Part 2 of the AMS (CAP 1711a), point your phone at the QR code above.

To view and download Part 3 of the AMS (CAP 1711b), point your phone at the QR code above.

To view and download the Government's Jet Zero Strategy, point your phone at the QR code above.



Did you know?

The 2018 AMS, which replaced the Future Airspace Strategy, initially focussed on the period out to 2024. The refreshed AMS extends the focus from 2024 to 2040. All of the 2018 AMS initiatives are subsumed into the refreshed AMS. As the modernisation programme continues to evolve, additional initiatives may be introduced, with the overall planning horizon extending beyond 2040 as required.

To watch the AMS video, point your phone at the QR code above.

“The strategic vision set out in our refreshed strategy gives us a direction of travel that guides airspace modernisation and the key areas of work that the UK Civil Aviation Authority, the sector and the Government will need to undertake. It will help make our airspace more environmentally friendly and deliver the many benefits of airspace modernisation.

Alongside existing users of airspace such as commercial air transport, business aviation, recreational flyers and the military, there are new parts of the sector which need to be integrated safely into our existing airspace network. Our strategy enables these different groups to use airspace alongside each other. This is a fundamental principle of the strategy.”

Tim Johnson, Director of Communications, Strategy and Policy at the UK Civil Aviation Authority.

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CAP 2547

Edition 4