



# Airspace Modernisation 2023 Annual Progress Report Summary

# Introduction

In 2017, the Secretary of State for Transport tasked the UK Civil Aviation Authority (UK CAA) with preparing and maintaining a co-ordinated strategy and plan for the use of UK airspace for air navigation, including for the modernising of such airspace.

The UK CAA reports to the Secretary of State for Transport annually on the delivery of the Airspace Modernisation Strategy. This brochure provides summary of the 2023 Airspace Modernisation Strategy Progress Report (CAP2600), covering the period of 1 January – 31 December 2023. Project progress is monitored and reported on by the UK CAA's Airspace Modernisation Oversight team.

# Progress in 2023



Delivery progress is focussed on a 0-2 year lookahead.



Strategic progress is focussed on a 2+ year lookahead.

A trend indicator has been provided, to indicate a **comparison with the progress rate from the 2022 Annual Progress Report**, with the status as follows:



Progress is getting worse; severity is trending up



Progress is getting better; severity is trending down



Progress is steady





## Element 1 – Trajectory Based Operations

Delivery Progress is amber. Progress is getting better; severity is trending down.

Strategic Progress is green. Progress is steady.

## Performance Based Navigation

UK CAA internal work mandate was accepted by the Aviation Legislation & Policy Board in October 2023. The UK CAA's next step is to finalise the consultation documents and engage with the industry in 2024. Pending the legal processes relating to the development of required legislation, it is anticipated that the new Performance Based Navigation regulation will be published in the Q2 2025.

## Free Route Airspace

Free Route Airspace West Airspace Deployment was successfully achieved in March 2023. Free Route Airspace Deployment 3 (Central and Southeast Flight Information Region) is temporarily paused to accommodate NATS (En Route) plc's technical transformation programme. Resourcing challenges remain the key risk to the programme, with dependency on the DP En Route and Voice programme being critical to unlocking the full benefit realisation.

## Doppler Very High Frequency Omni Directional Radio Range De-commissioning

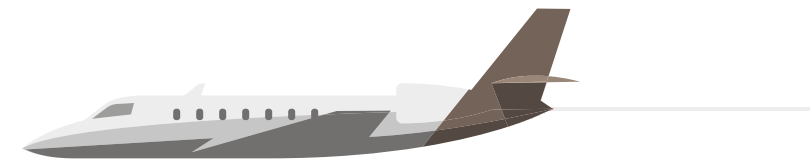
As part of NATS (En Route) plc Sustainment and Surveillance Programme, on-site testing, and completion of handover of the Tiree Doppler Very High Frequency Omni Directional Radio Range replacement was completed in September 2023.

## DP En Route & Voice Programme

Prestwick Centre Upper Airspace Full Operational Service delayed due to the need to conduct urgent sustainment to the current network. Second Voice Service (SVS) was successfully deployed in October 2023. Deployment of Integrated DSESAT Services and Main Voice Service (MVS) at Swanwick remain on track for future deployments.

## Delivery Status Overview of Element

Whilst good progress has been made, the Amber status is mainly due to uncertainties around the delivery of the Free Route Airspace Deployment 3 and 4, and the dependency with the DP En-Route programme, which has currently stalled. NATS (En Route) plc is managing this risk closely through their portfolio re-prioritisation activity, with oversight and monitoring from the UK CAA.





## Element 2 – Terminal Airspace Re-design

Delivery Progress is red. Progress is steady.

Strategic Progress is amber. Progress is steady.

### North of England Cluster

In the North of England cluster, Manchester, Liverpool, and East Midlands completed Stage 2 in 2023, Leeds-Bradford faced resource challenges and delayed Stage 2 until Q2 2024. Critical to the programme, simulation preparations were completed in Q4 2023.

### South – East Cluster

In the South – East cluster, 11 of the 15 Airspace Change Proposals have now completed Stage 2, with Gatwick, Southampton, London Biggin Hill and NATS (En Route) plc progressing through in 2023. The 4 remaining sponsors are expected to complete in Q2 2024. Additionally, the Airspace Change Organising Group worked with Gatwick, NATS (En Route) plc and the interdependent sponsors, to define the scope on an early deployment phase, known as the London Airspace South.

### South of Scotland Cluster

In Q1 2023, the South of Scotland cluster sponsors completed Stage 2 of the CAP 1616 process but faced design integration issues driving delays. An ability for Aberdeen to progress independently from the cluster has been identified by the Airspace Change Organising Group and their advice was accepted by the co-sponsors (DfT/UK CAA).

### West of England

Progress in the West of England cluster stalled due to resource and funding issues experienced by Cardiff and Exeter, with no formal decision made regarding Cardiff's position on programme withdrawal in 2023. Exeter did not progress through Stage 2, while Bristol completed their work in Q3 2023.

### Delivery Status Overview of Element

The ongoing red delivery status is due to significant delays with the Masterplan Iteration 2 milestones not being met. Risks to progress include funding, program compression, and complexity, especially in the South-East cluster. Mitigating actions in 2023 included the co-sponsors exploring options for a future, alternative delivery model, the Airspace Change Organising Group engaging and coordinating with sponsors through additional governance steps, alongside a lessons learned review in the South of Scotland cluster to improve practices and processes going forward.



## Element 3 – Network Management

Delivery Progress is amber. Progress is steady.

Strategic Progress is green. Progress is steady.

### Queue and Capacity Management (QCM)

Arrival Manager Headbranch, Time Based Separations Advanced Mixed Mode and Time Based Separation Pairwise projects progressed in line with the plan, towards deployment targets in 2024 and 2025. There is however a risk to delivery, due to NATS (En Route) plc's portfolio re-prioritisation and resource availability, which may impact these originally planned timescales.

### Initial Airport Operations Plan/Network Operations Plan

Gatwick Initial Airport Operations Plan development commenced through an initial engagement with Eurocontrol. Heathrow has made progress in collaboration with NATS (En Route) plc and Eurocontrol, however deployment will not achieve original timescales. Stansted has made progress, with deployment expected by the end of 2024. Manchester has started the project with implementation planned by the end of 2024. To enable collaborative Network Operations Plan deployment by the end of 2024, NATS (En Route) plc is in the process of developing an appropriate system infrastructure.

### Delivery Status Overview of Element

The steady amber delivery status reflects the NATS (En Route) plc risk around resource availability of specialist resources.



## Element 4 – Integration

Delivery Progress is amber. Progress is steady.

Strategic Progress is green. Progress is steady.

### Electronic Conspicuity

In Q4 2023, the UK CAA published a report investigating how human factors affect the use of Electronic Conspicuity, and what can be done to enhance airspace safety. The findings of the report will be used alongside new research to set a future standard for the use of Electronic Conspicuity. The UK CAA is also working with Ofcom and have a supplier contracted to conduct trials for the use of 978MHz for uncrewed aircraft.

### Delivery Status Overview of Element

The steady amber delivery status reflects the current absence of the UK CAA delivery plans. Those were being developed throughout 2023 and so the risk is expected to reduce in Q2 2024, with the publication of the AMS Part 3 baseline.



## Element 5 – Airspace Management

Delivery Progress is amber. Progress is steady.

Strategic Progress is green. Progress is steady.

### Flexible Use of Airspace

One of the ongoing strategies to improve the efficiency of Flexible Use of Airspace in the UK has been to make non-Airspace Management Cell managed. Airspace Management Cell-managed areas have risen from 2017 to 2023 showing continued improvement. The UK CAA published an update to CAP740, UK Airspace Management Policy in March 2023. Publication of the Special Use Airspace Policy and revised CAP740 are planned for Q1 2024.

In January 2023 Virgin Orbit conducted the UK's first orbital space launch.

Through Letters of Agreement with Airspace Management Cell France and the Irish Air Navigation Service, the UK Airspace Management Cell cooperates with adjacent States to coordinate the management and notification of specified Danger Areas to the Network Manager. The Letters of Agreement outlining the agreed procedures were renewed during 2023.

### Delivery Status Overview of Element

The steady amber delivery status reflects the current absence of the UK CAA delivery plans. Those were being developed throughout 2023 and so the risk is expected to reduce in Q2 2024, with the publication of the AMS Part 3 baseline.





## Element 6 – Data Services

Delivery Progress is red. Progress is steady.

Strategic Progress is amber. Progress is steady.

### System Wide Information Management

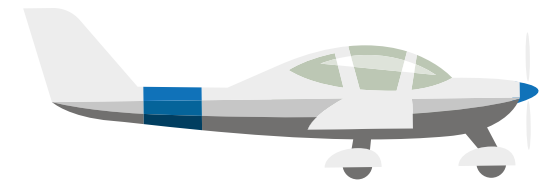
UK SWIM requirements policy and guidance material is under development by the UK CAA with an initial analysis of the legislative gap between UK Regulation (EU) No 716/2014 (the Pilot Common Project Regulation - PCP Reg) and CIR (EU) 2021/116 (Common Project 1 – CP1) to assess the need for any amendments to the UK Regulation. Resourcing challenges may result in longer than anticipated timescales of SWIM deployment. Currently plans are being drawn up with an aim of identifying short-term and long-term objectives that could be delivered.

### European Meteorological Aircraft Derived Data Centre

The UK Met Office has been involved in this project which KNMI (the Dutch National Met Office) is leading, and the UK Met Office focused on the development and deployment of Mode-S receivers. The project is still active however the UK Met Office's tasks related to this project have been completed. All in-scope aerodrome operators were required to deliver CAP1732 surveys to the UK CAA by the end of 2023. 60 UK aerodrome operators are delivering surveys and the aerodrome inspectors are verifying compliance as part of their oversight, using the Management of Aeronautical Data.

### Delivery Status Overview of Element

Data services is a key enabler for several other elements of the AMS. The need for bridging the gap between UK and European legislation to aid interoperability, with limited subject matter expertise to progress the workstream and undefined requirements to support new airspace users, are key drivers for the continuing red status. Mitigating activities include the standing up of the Common Project Coordination Group and publication of the UK CAA delivery plans in Q2 2024 under AMS Part 3.





## Element 7 and 8 – Future Surveillance, Integration of Communications, Navigation, Surveillance and Spectrum



Delivery Progress is amber. Progress is steady.

Strategic Progress is green. Progress is steady.

### Spectrum, Communications, Navigation and Surveillance

A UK CAA Steering Group has been stood up under Airspace Modernisation Strategy Governance. Initial discussions have taken place with NATS (En Route) plc regarding Global Navigation Satellite System resilience. Conversations have taken place with Ofcom to develop a plan to enable 978MHz use.

### Satellite Based Augmentation System

Requirements and associated timescales are currently in development and government funding scope is being defined with the UK CAA's input to the government business case for UK Satellite Based Augmentation System, which is being coordinated by UK Space Agency.

### Datalink

Performance issues related to aircraft datalink equipment and frequency management (congestion) have been noted by the UK CAA. Actions to address these issues are currently being investigated, although negotiations on the exact allocations and use to ease the congestion have slowed. Work on international agreements will be proposed for agreement regarding frequency use. Promotion of UK engagement within the European Union datalink improvement activities is ongoing, with a view of increasing the datalink message set to enhance operations.

### Satellite Based Augmentation System

The steady amber delivery status reflects the current absence of the UK CAA delivery plans. Those were being developed throughout 2023 and so the risk is expected to reduce in Q2 2024, with the publication of the AMS Part 3 baseline.







## Element 9 – Aircraft Capabilities

Delivery Progress is amber. Progress is steady.

Strategic Progress is green. Progress is steady.

### Aircraft Capability Steering Group

The UK CAA Steering Group was established in June 2023. Recent work includes completion of the first iteration of the European Concept for Higher Airspace Operation (ECHO), where the UK CAA provided feedback. The UK CAA ATM policy team has raised possible Standardised European Rules of the Air (SERA) activity, relating to supersonic flight over land.

### Delivery Status Overview of Element

The steady amber delivery status reflects the current absence of the UK CAA delivery plans. Those were being developed throughout 2023 and so the risk is expected to reduce in Q2 2024, with the publication of the AMS Part 3 baseline.

## Co-sponsors Update

### Introduction

The DfT and UK CAA are co-sponsors for airspace modernisation, the DfT accountable for national policy on airspace, and the UK CAA for the strategy and reporting on its progress.

The DfT and UK CAA commission specific projects necessary for airspace modernisation, including delivery of the elements. While in some cases delivery of the elements is a matter of law, for others, delivery depends on the voluntary participation of delivery groups. The co-sponsors agree deliverables and outcomes, setting parameters for delivery groups, tasked with planning and delivering projects in support of the Airspace Modernisation Strategy.

### Airspace Modernisation – Next Steps

The refreshed Airspace Modernisation Strategy was published in January 2023, consisting of Parts 1 (Strategic Objectives and Enablers) and Part 2 (Delivery Elements). Part 3 (Deployment), which is expected for publication in Q2 2024, sets out the deployment plan, detailing timelines, and delivery plans for each element, describing the short-term (0-2 year) roadmap and deliverables.



Delivery is subject to oversight from the UK CAA's Airspace Modernisation Oversight team, with progress reported through the AMS governance structure. Output will inform future editions of the annual Airspace Modernisation Strategy Progress Report to the Secretary of State for Transport, and the UK's input to Eurocontrol's Local Single Sky Implementation Plan monitoring.

### **Airspace Modernisation Strategy Support Fund**

The UK CAA established the Airspace Modernisation Strategy Support Fund to aid projects in support of the delivery of airspace modernisation, where delivery benefits multiple stakeholders or research, to enable wider industry deployment. The fund of about £2million per annum is available to recognised legal entities in the UK (other than the UK CAA and NATS (En Route) plc), to deliver activities in support of airspace modernisation, where the required work cannot be funded by other means.

Following the first call for applications in September 2021, as of 31 December 2023, funds have been committed to 12 projects, totalling approximately £4million to date. The following five projects have been completed:

### **Project**

Electronic Conspicuity Interoperability Test Programme

### **Scope**

Led by The Aviation Innovation Centre at Goodwood Aerodrome, this project tested and compared the accuracy, latency and coverage between different Electronic Conspicuity equipment and created a Flight Information Display.

### **Project**

Light GA Digitalisation of Flight Data

### **Scope**

Led by Skyverse, this project focussed on development of a concept to deliver end-to end digital transfer of Visual Flight Rules data via the internet. This project is an enabler for future implementations, that will help modernise UK airspace, by providing a more robust demand view of General Aviation traffic to air traffic control.

### **Project**

FID Document Templates



## Scope

Led by Custom Chess Company, the project demonstrated how Flight Information Display data can reduce the burden on Aerodrome Flight Information Services. It provided some common standards to the documentation, improved efficiency of the CAA's approval process, and encouraged common standards across the aviation industry.

## Project

Trial of ADS-B Obstruction Beacons on 978Mhz UAT

## Scope

Led by uAvionix, the trial evaluated the effectiveness of the Automatic Dependant Surveillance Broadcast obstruction beacons, from the operator and the other airspace users' point of view. This demonstrated the use of technology to support safer and greener airspace operations.

## Project

Reduced Departure Divergence

## Scope

Led by Heathrow Airport Limited and Gatwick Airport Limited, the project aimed to reduce the existing minimum standard angle of divergence for conventional departures below 45°. The research validated the use of flight data from the existing Standard Instrument Departure routes and a robust analytical approach to loss of separation risk modelling.



# Strategic Risks and Mitigations

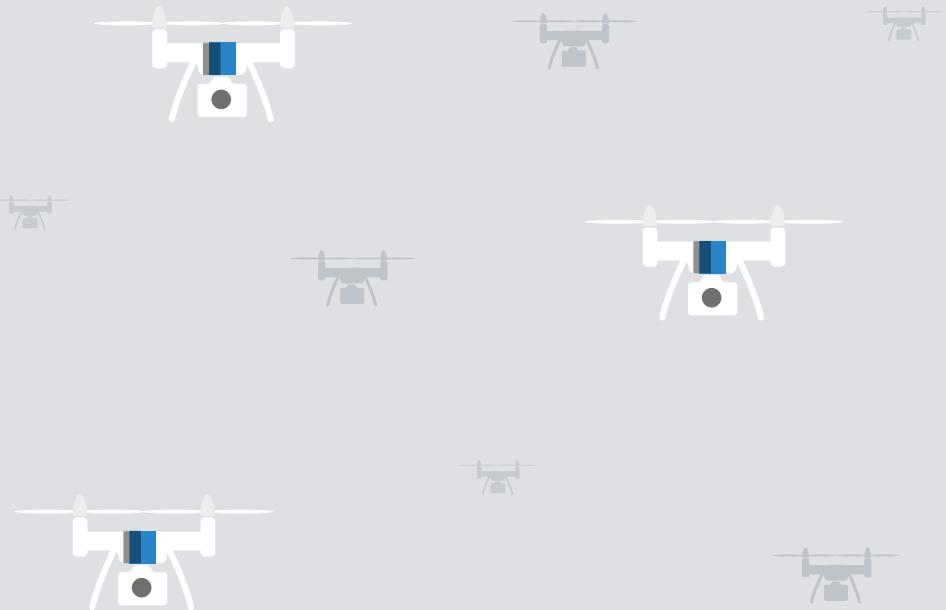
The following strategic risks have been identified:

- **Airspace Modernisation Strategy Scope and Delivery Model**
  - There is a risk that the refreshed Airspace Modernisation Strategy (CAP1711) is not fully progressed, for example where integration of new entrants in uncontrolled airspace is considered, due to the structure of the current delivery mechanisms and/or funding models. The UK CAA is in the process of addressing these risks, working with the DfT and relevant stakeholders to develop the Airspace Modernisation Strategy Part 3 deployment plan, to the necessary funding and resource required for delivery.
- **Delivery of the Masterplan and Airspace Change Proposals of Element 2** - The complexity, phasing, delivery progress and funding of the coordinated redesign in terminal and upper airspace across the UK is a risk to achieving strategic objectives within the initially anticipated timescales. A pause or delay of one sponsor may have impacts on other sponsors who have interdependent airspace change proposals. That may lead to a breakdown of collaboration needed, defined within the Masterplan. The UK CAA expects sponsors to work closely with the Airspace Change Organising Group and other interdependent sponsors, to develop the appropriate Masterplan content, to the quality required. Additionally, the UK CAA will continue to monitor, provide assistance, support and advice to the DfT as it develops policy.

- **UK CAA & Industry Subject Matter Resource** - As detailed within the Airspace Modernisation Strategy Part 3, it has been possible to identify ongoing programme management requirement for delivery. This includes greater granularity on the resourcing requirements, the need for further funding and opportunities to prioritise and shape delivery plans in line with expected resources. Short-term solutions around bringing in consultancy services have been employed where possible, in the long-term the government, UK CAA and the industry will need to continue taking proactive steps to develop the required skills and resources to deliver modernisation.

## UK Airspace Design Service

The co-sponsors have established a joint project team to identify and set out how a “Single Design Entity – SDE” could deliver a modernised airspace design. In July 2024 this was renamed the UK Airspace Design Service (UK ADS). Initially, the UK ADS will focus on the complex South – East Cluster, but ultimately it could, one day, become the only body responsible for changes to the design of UK airspace. The role, scope, and funding model for the UK ADS is being considered by the project team. This project is focussed on airspace design, the UK CAA is not planning to fundamentally change who manages the airspace or sponsors airspace change. The outcome of this project should not require work that has already been undertaken on airspace change proposals to be redone.





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