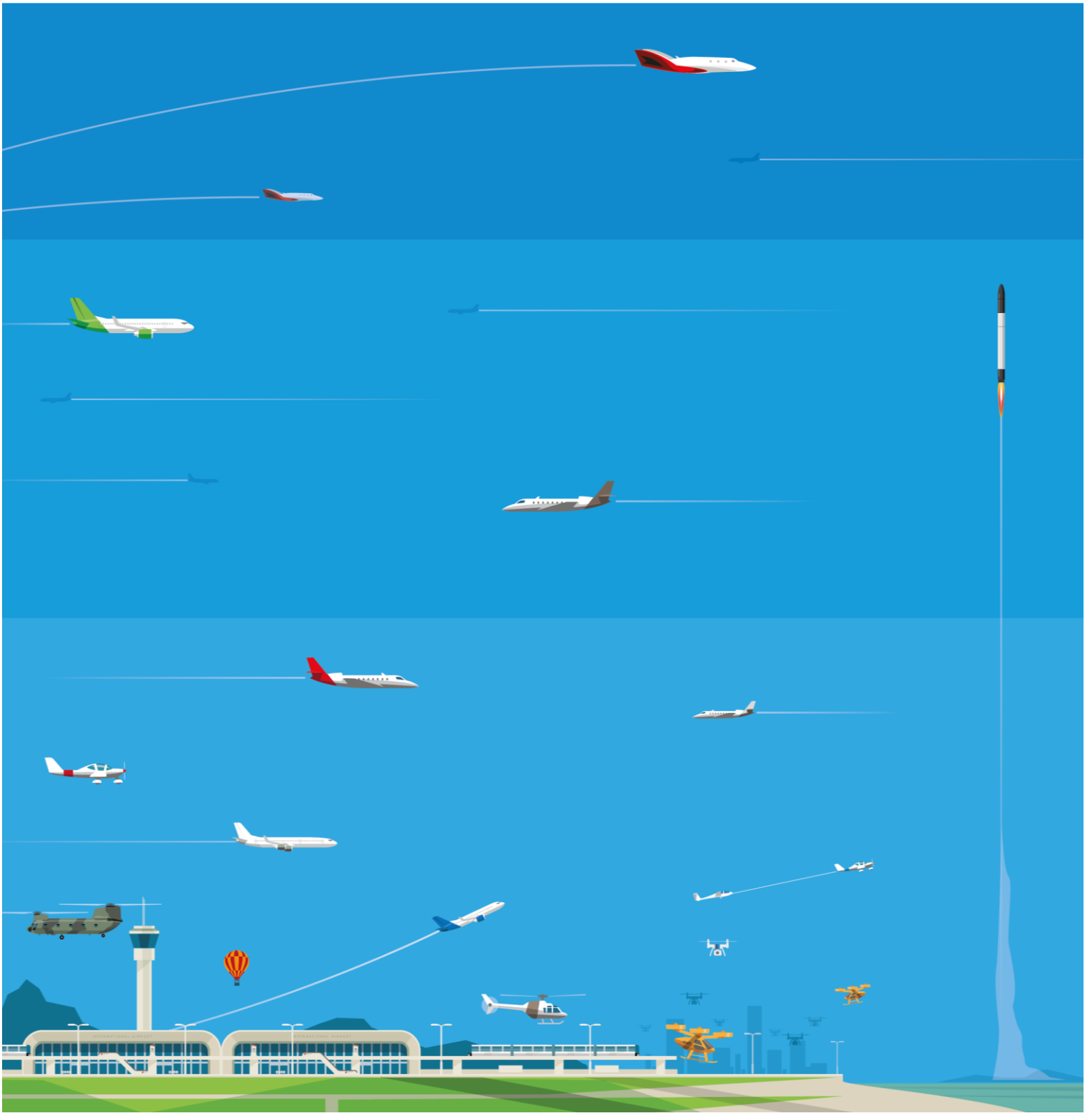
UK Civil Aviation Authority

Airspace Modernisation Strategy Part 3: Deployment Plan, 2nd Edition

CAP 1711b



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Introduction

Purpose of the document

1. The purpose of the Airspace Modernisation Strategy (AMS) Part 3 Deployment Plan is:

   - to translate, as far as practicable, the strategic intentions for modernising UK airspace into deliverable tasks, objectives and milestones set over the near term, and
   - to indicate future change to operational, technological and information concepts.

2. Airspace modernisation (AM) is a portfolio of programmes. It is an evolving and dynamic process focused on delivering a modernised UK airspace but linked to global and regional programmes of change. As such, the AM programme will change and mature over time. The AMS Part 3 will continue to frame this work and indicate the direction of travel for delivery of the programme portfolio.

3. The AMS Part 3 describes the current AM programme in terms of progress, next steps and overall objectives. Additionally, the AMS Part 3 provides an indication of future areas of work in the next International Civil Aviation Organization (ICAO) Global Air Navigation Plan (GANP) Aviation System Block Upgrades (ASBU) Block timeframe that will evolve from ICAO concepts through to Standards and Recommended Practices (SARPs) and, where applicable, into the AM programme.

4. The AMS Part 3 therefore sets out the intended delivery of AM in the UK over the next six years. This will assist aviation stakeholders with their planning and allow them to better understand the opportunities for them to engage on topics of particular interest.

5. As a consequence of the size, complexity, and duration of the AM programme, the scope of AMS Part 3 is currently focused primarily on CAA enabling activities. This document is therefore not a complete picture. It does not describe in detail the delivery plans led by the Airspace Change Organising Group (ACOG), NATS (En Route) plc (NERL) or others in support of the AMS, although it takes account of them and may refer to them. The CAA intends to include a fuller description of non-CAA activities in future versions of the AMS Part 3.

6. The plans in the AMS Part 3 capture work already underway through the original 2018 AMS as well as activity commissioned or completed since the CAA published the refreshed AMS in 2023.

7. As well as the content, the method of presentation is likely to evolve as the AMS develops over the coming years. In order to optimise accessibility and information sharing, the CAA will consider the feasibility of presenting the plans online in a form that is easier for users to interact with and interrogate than the current AMS Part 3 document.

Strategic environment

8. The strategic environment sets the context for AM in the UK: how the UK fits into a much wider system, and what that means for the AMS. The modernisation of the national air navigation system is dependent on close cooperation at both global and regional levels to ensure that concepts, equipment, systems and procedures are standardised and interoperable. Because of complex geographical boundaries, and multiple flight information regions, air navigation service providers (ANSPs) and air traffic management (ATM) systems, interoperability is particularly critical at European regional level to ensure the safety and efficiency of the network.

Global

International Civil Aviation Organization (ICAO)

9. The UK as a signatory to the Chicago Convention is an ICAO member state. The CAA provides expertise to numerous ICAO technical panels and supports various ICAO meetings and events as part of the UK contribution to ICAO's work. The ICAO GANP, and associated strategic documentation, is one product of this international collaboration.

10. The ICAO GANP is due to be updated towards the end of 2025 following submission to the triennial Assembly for endorsement. This submission follows extensive development work and reviews by the Air Navigation Commission, States and international organisations through the Air Navigation Conference, and by the ICAO Council. The CAA has been involved in the continuous development of the updated GANP materials. Since the plan is a major driver for the UK AMS, there remains an expectation that the AMS will be reviewed and updated accordingly, following the release of Edition 8 of the GANP and periodically in line with other future updates.

Regional

EUROCONTROL

11. The UK remains a committed member of the European Organisation for the Safety of Air Navigation (EUROCONTROL) and actively participates in various strategic and technical groups. EUROCONTROL has 42 member states including the UK and the 27 EU member states; however, EUROCONTROL is not an agency of the EU.

12. The UK's participation in EUROCONTROL technical and planning groups ensures that the Department for Transport (DfT), CAA and NERL maintain the requisite cooperation with neighbouring states to deliver an interoperable air navigation system through the delivery of the AMS.

Single European Sky ATM Research and the European ATM Master Plan

13. SESAR is the technological arm of the EU Single European Sky (SES) initiative and is key to delivering a high-performance, digital European sky. The SESAR Joint Undertaking (SJU) produces the European ATM Master Plan which is the roadmap for the digitalisation and modernisation of the European air navigation system. Additionally, the SJU manages the ATM innovation cycle whereby technological solutions move from concept to deployment in support of the European ATM Master Plan.

14. As of January 2024, the UK joined Horizon Europe, the parent EU programme to SESAR, as an associate member, allowing UK entities to participate in SESAR projects.

15. The UK is not subject to the European ATM Master Plan; however, the CAA maintains a working relationship with the SJU and monitors Master Plan developments to ensure continued alignment and to reduce the risk of regulatory divergence.

ICAO EUR Region Air Navigation Plan (EUR ANP)

16. The EUR ANP is a product of the ICAO EUR/NAT Regional Office where the ICAO GANP is translated into the plans specifically applicable to the European regional environment. It contains the specific ASBU Modules and Threads which are important and relevant to the ICAO EUR/NAT region operational environment. The EUR ANP is the plan to deliver the outcomes of the Air Navigation Assembly and Conferences resolutions relating to air navigation in the EUR region.

National

17. During the lifespan of the AMS both the strategy and subsequent delivery of AM will need to respond to key changes in the external environment and changing priorities. Directed by the DfT and CAA as co-sponsors of AM, the UK AMS remains the means by which the global, regional and national aspects of modernising the air navigation system are cohered, planned and monitored for the UK.

18. The UK government recognises that modernising national airspace is key to enabling aviation growth and sustainability improvements for existing operations in the aerospace sector, as well as safely allowing new innovative operations in the sector.

19. In early 2025, in response to the challenge set by the government to support growth, and alongside the DfT, the CAA committed to several AM-related initiatives:

- establishing the UK Airspace Design Service (UKADS) to accelerate and enhance the airspace changes that are vital to achieving modernisation
- enabling two trials using remotely piloted drones beyond visual line of sight to demonstrate scalable operations
- consulting on improvements to the effectiveness and proportionality of our process for changing airspace.

20. Furthermore, the UK government announced in January 2025 that "it would support proposals for a third runway at Heathrow airport. The Chancellor of the Exchequer, Rachel Reeves, said "a third runway at Heathrow would unlock further growth, boost investment, increase exports, and make the UK more open and more connected as part of our Plan for Change." The government invited proposals for a third runway by 31 July 2025 noting that any expansion must be delivered "in line with the UK's legal, climate, and environmental obligations". The Government's objective remains to deliver an operational third runway by 2035, with planning applications submitted within the current parliamentary term. Initial submissions will be assessed in the autumn. Any plans and timetable for a third runway may influence AM activities, because a third runway will likely require redesigned airspace.

Chapter 1

Deployment overview

1.1 This chapter delivers an overview of the deployment and delivery activity that is underway and that is required in the next years to support delivery of the UK AMS. It has moved on from the previous 'focus areas' in the first edition of the AMS Part 3 in 2024 to better reflect the subsequent interpretation of the numerous deliverable activities required across the large portfolio of projects that are required.

1.2 As explained in the introduction to this document, this second edition of the AMS Part 3 is primarily focused on the enabling activity that is led and delivered by the CAA. However, we reference relevant industry support to the AMS and expect this to be a larger part of the Deployment Plan in future years.

Delivery programmes

1.3 Figure 1 below shows the AMS delivery components and the related governance structures within the CAA:

Note: A detailed text description of Figure 1 is at Appendix C.

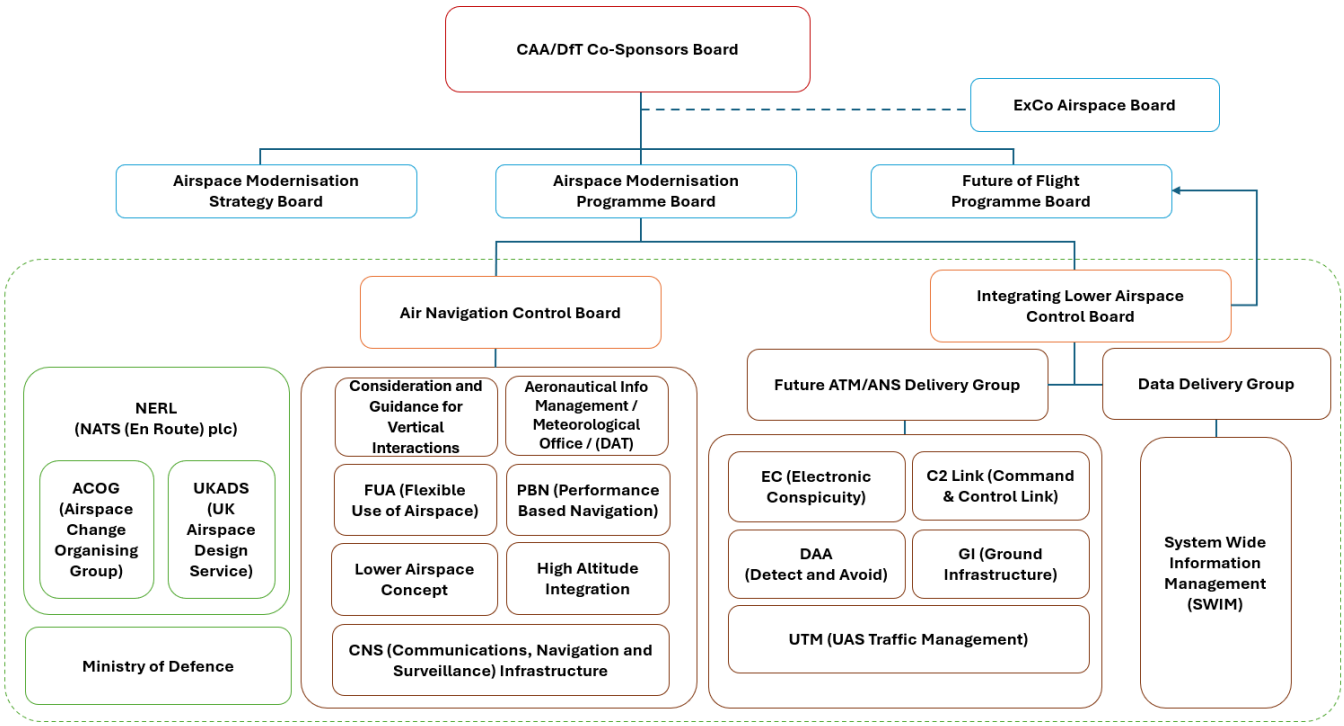

Figure 1: AMS delivery components and related governance structures within the CAA

Airspace Modernisation Programme Board

1.4 In 2024, following the publication of the first edition of the AMS Part 3, the CAA initiated a delivery programme within the Airspace, Air Traffic Management and Aerodromes (AAA) capability area of the Safety and Airspace Regulation Group. This programme was created to focus on the wide range of CAA activities required to deliver the AMS portfolio and which had been identified in the development of the strategy. Moving the CAA aspects of the AMS delivery onto a programmatic footing has been one of the main changes since Part 3 of the strategy was last published.

1.5 Within this, two programmes of work were established:
1. Integrating Lower Airspace
2. Air Navigation

1. Integrating Lower Airspace programme

1.6 The Integrating Lower Airspace programme focuses on AMS Delivery Element UK-ABN/4 Integration, with some aspects of Element UK-AM/6 Data Services and Element UK-AM/7 Future Surveillance and Spectrum. The Integrating Lower Airspace programme focuses on delivering aspects of the Future of Flight programme (see below for more detail) in the short term while also delivering the long-term goals of the AMS.

1.7 Bringing related projects together as a programme has ensured the delivery is aligned with a consistent approach and clear dependencies; in addition, both funding and resource allocation are managed at programme level. The core delivery team has been established, with a technical lead and project manager assigned to each project, and additional expert resource put in place to support the deliverables. Additional technical and delivery support has been provided through external consultancy.

1.8 The Future Air Traffic Management and Air Navigation Services (F-ATM/ANS) is a sub-programme of the Integrating Lower Airspace programme. It brings together workstreams on electronic conspicuity (EC), detect and avoid (DAA), unmanned aircraft system (UAS)[1] traffic management (UTM), ground infrastructure (GI) and command & control link (C2 link) (see Figure 1). Each of these workstreams will provide a level of risk mitigation to enable the safe integration of Beyond Visual Line of Sight (BVLOS) UAS. Developing them through a cohesive programme ensures they will work effectively both independently and collectively. Delivery of these enabling activities will be

[1] piloted aircraft systems (RPAS) may be referred to as unmanned aircraft systems (UAS), unmanned aerial vehicles (UAV), uncrewed aircraft, drones, model aircraft or radio-controlled aircraft. This terminology may change as aircraft capability evolves through technological development such as autonomy. For more information see https://www.caa.co.uk/drones/.

iterative, with ConOps/policy concepts developed and then tested through trials and industry engagement to validate them before being updated. To ensure the workstreams are properly aligned, an overarching technical airspace architecture is being developed to set out the constituent components and how they will interact across the complex programme of work.

2. Air Navigation programme

1.9 The Air Navigation programme comprises two programmes: ICAO GANP and Airspace Regulation, to deliver the CAA-led areas of the AMS (see Figure 1).

1.10 The Air Navigation programme is focused on delivering the regulatory requirements for the following projects in the AMS scope: performance-based navigation (PBN), trajectory-based operations (TBO), communications, navigation, surveillance and spectrum (CNSS), lower airspace concept, high-altitude integration and flexible use of airspace (FUA). To facilitate this work within the AM governance framework, the Air Navigation Control Board has been established. The Control Board manages the oversight of funding, resource allocation, technical direction and delivery approach. The Board acts as a sponsor of project initiation and closure, regularly monitoring the collective progress by means of reporting throughout the project lifecycle. Intended project outcomes include policy updates, guidance material, procedures and publication of concepts.

Principal stakeholder delivery plans

UK Future of Flight programme

1.11 The CAA, as a key partner with the DfT to deliver the Future of Flight programme for the UK, is committed to the integration of Future of Flight vehicles into aviation and transport networks. The aviation industry and government have collaborated to create a comprehensive strategy for the sector's growth, supporting the UK economy, society and environment while maintaining high safety and security standards.

1.12 The Future of Flight programme will deliver the regulation, technologies and infrastructure for the routine use of innovative aircraft, so that they are safe, secure, sustainable and work for citizens and communities. To fully realise the benefits of Future of Flight technologies for the UK (UAS and Advanced Air Mobility (AAM)), the Future of Flight programme is working towards:

- enabling routine BVLOS UAS operations at scale in integrated airspace iteratively between now and 2027, and
- enabling piloted eVTOL from 2028 to deliver better connectivity across the UK and economic growth.

1.13 In March 2024, the UK Future of Flight Industry Group, sponsored by the DfT, published the UK Future of Flight Action Plan (FOFAP). The action plan described five strategic outcomes for the development and industrialisation of emerging aviation technologies and their integration into the existing civil aviation system. The CAA Future of Flight programme coordinates delivery in partnership with the DfT and UK Research and Innovation's Future Flight Challenge and other industry partners.

1.14 The CAA Future of Flight programme supports the development of policy, regulation and legislation that enables new users to operate in UK airspace. The AMS delivery elements include planning the modernised traffic management and airspace structures that enable new and existing users of UK airspace to integrate safely.

1.15 The deliverables set out as part of the Integrating Lower Airspace programme (as mentioned above) support delivery of BVLOS operations at scale for the Future of Flight programme while also enabling the longer-term ambition of airspace modernisation.

1.16 Various elements of the Future of Flight programme (projects under Integrating Lower Airspace programme) act as enablers to the longer term AMS vision. Therefore the AMS and Future of Flight programme are mutually supporting elements requiring the management of dependencies through proportionate governance and collaboration in order to ensure the achievement of the AMS end state. Internal CAA arrangements facilitate cross-programme management and oversight.

1.17 The Future of Flight programme was formally established and scaled up during 2024. It is iteratively delivering against the ambition to achieve scaled BVLOS in integrated airspace and piloted eVTOL operations across the UK against the action plan, through the following initiatives:

- **Digitising Specific Category Operational authorisations (DiSCO).** This project had been previously established to deliver a digital version of EASA's Predefined Risk Assessment (PDRA) methodology in April 2024 and has launched the UK Specific Operations Risk Assessment (SORA) in April 2025. UK SORA is a more structured approach to conducting a risk assessment for UAS operations and is based on the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) SORA v2.5. SORA has already been implemented in more than 60 countries worldwide. The UK SORA methodology has been launched by the CAA on a digital platform alongside relevant policies for Remote Pilot Competency and Recognised Assessment Entities for Flightworthiness, which are seen as key enablers enabling industry to scale UAS operations in the ‘specific’ category.

- **The Remotely Piloted Aircraft System (RPAS) Regulatory Review** has continued to progress towards making the regulatory changes required in the 'open' and 'specific' categories. This includes work on establishment of UK Class Markings, such as standards for Remote ID, and the implementation of a Market Surveillance Authority and Conformity Assessment Bodies to oversee components of these regulations.
- **Test & Evaluate** was set up to create a brand-new function to successfully deliver the demonstration of BVLOS in non-segregated airspace, initiating a data-capture process to enable policy progression as part of achieving the longer-term goal of BVLOS at scale in integrated airspace. This project will conclude in Summer 2025 with the launch of recognised test sites and guidance to support operators through application for their test operations using the new UK SORA platform.
- **eVTOL** was an established programme of work and has continued to progress policy, infrastructure, operations, training, licensing and certification required to achieve piloted eVTOL operations.
- **Safety at Scale** was established to understand the safety system and process requirements to allow for scaled integrated flying. This concluded in March 2025.

1.18 The UK Law Commission is reviewing the UK regulatory framework in preparation for autonomy in aviation. The project is examining legislative gaps in UAS, AAM and ATM, ensuring a robust framework that allows for innovation while at the same time maintaining high safety standards.

1.19 The following activities are part of the CAA's AMS delivery / Integrating Lower Airspace programme of activities (see above), but are run in close cooperation with the Future of Flight programme requirements to ensure capture of synergies between initiatives:

- **Electronic conspicuity (EC)** was already well established, working towards standards and policy supporting a means of detection and avoidance in integrated airspace.
- **Future ATM**: setting up a programme encompassing UTM, Detect & Avoid, Ground Infrastructure and C2 Link – all key enablers to achieve BVLOS in integrated airspace.
- **System Wide Information Management**: set up to define new user requirements to achieve BVLOS at scale.

1.20 A Programme Office supporting Future of Flight delivery was also established. This function has set out governance and reporting requirements, along with planning standards, to provide a clear and consistent approach to monitoring

progress. Projects and programmes feed into the Future of Flight Programme Board which in turn reports to the DfT.

NATS En-Route plc (NERL)

1.21 NATS is working to progress the elements of the AMS that lie directly within its area of responsibility. This work is focused on upgrading the technology used to provide existing air navigation services (ANS), modernising the airspace for which it is responsible, and deploying new capabilities. Current work includes:

- airspace developments to enable further deployment of free route airspace in the upper air
- progression of its technology transformation programme and confirmation of the deployment strategy for the roll-out into Prestwick upper airspace operations
- deployment of new queue management tools to improve airport capacity, resilience and reduce fuel/carbon
- continued deployment of flexible use of airspace improvements and modernised data-sharing technology
- further delivery of operational service enhancements and airspace redesign with airport sponsors in the London, Scottish and Manchester TMAs and south-west England, while also preparing to become the provider of the UK Airspace Design Service (see below).

1.22 NATS supports the objectives of the AMS including the introduction of new airspace users. Recent and ongoing work in this area includes:

- Development of potential capabilities that could provide ANSPs and UTM service providers with appropriate aeronautical data and tools to enable airspace access. This service architecture may support a national UK SWIM framework for safe airspace operations and help contribute to the UK-wide airspace integration of existing and new airspace users.
- Support for trials to demonstrate how new airspace users may integrate in a variety of airspace types; these include the use of medical delivery UAS in London and around Glasgow, larger RPAS in the upper airspace and passenger-carrying AAM aircraft in London and south-west England. NATS will continue to support trials to integrate new airspace users and existing users in the same airspace, to further validate the concepts, technology and procedures required for safe integration.
- Creation of an internally initiated study to consider how NATS may modernise its licensed Flight Information Service (FIS) provision in the future and to be ready to support work in developing the AMS Part 3.

1.23 NATS is an active participant in developing and deploying the AMS and supports the CAA as it helps all UK stakeholders work to understand their roles, responsibilities and future services.

ACOG and the airspace change masterplan: terminal airspace redesign progress

1.24 The terminal airspace redesign programme, a key element of the AMS, made some progress across multiple masterplan geographic 'clusters' in 2024, against the backdrop of operational, financial and regulatory challenges. Delays were primarily driven by funding constraints, regulatory complexities and evolving stakeholder requirements, affecting the overall programme status.

1.25 Despite the challenges, several milestones were reached, including undertaking air traffic control development simulations and work towards key regulatory gateways. Subject to passing through these regulatory gateways, the clusters are expected to progress to public consultations towards the end of 2025 and through 2026. More information about the masterplan is on the CAA website.

UK Airspace Design Service (UKADS)

1.26 The current delivery model for airspace change is based on sponsors of individual airspace change proposals, normally airports and ANSPs, being responsible for taking forward and funding changes in airspace design through the CAA's CAP 1616 airspace change process. No single party has responsibility for designing how UK airspace works effectively and efficiently as a holistic system.

1.27 This approach has created significant risks to the delivery of AM. The DfT and CAA agree that airspace design would be more successfully delivered through a single entity, a UK Airspace Design Service (UKADS). This would be in line with the model operated in many other countries.

1.28 A DfT and CAA joint consultation on a proposal to create a UKADS concluded in December 2024. Following analysis of responses, the Chancellor announced on 17 March 2025 that the Government would proceed with setting up the UKADS, as well as establishing an Airspace Design Support Fund to ensure fairness and support modernisation across the whole of the UK. It was confirmed in June 2025 that NERL will be tasked with providing the UKADS through modifications to its air traffic services licence that are being consulted on. The UKADS is anticipated to be operational by the end of 2025.

1.29 The initial scope of the UKADS is to progress airspace change in the London TMA region, with the airports forming the London cluster of the airspace change masterplan as a priority, including airspace change required for any Heathrow third runway. Once operational, the UKADS will commence developing the airport partnership arrangements required to onboard the priority airspace change proposals into a single airspace change proposal to support a network

design for the London TMA region. Work will also begin to set up the UK Airspace Design Support Fund, which we anticipate NERL will administer.

1.30 The UKADS will develop a strategic delivery plan which will set out its plans to deliver airspace change in the London TMA region, including its approach, assumptions, milestones, timescales and appropriate risk management allowances. The UKADS activities will be subject to DfT/CAA oversight through existing AMS governance arrangements and an Advisory Board will ensure key stakeholders retain transparency and can hold the UKADS to account.

1.31 The UK Airspace Design Support Fund will allow eligible sponsors of airspace change proposals that do not fall within the scope of the UKADS to seek funding for work undertaken for stage 3 onwards of the airspace change process, subject to meeting eligibility criteria.

1.32 The ultimate scope envisaged for the UKADS is that it becomes responsible for progressing all airspace change proposals in UK airspace. Expanding the scope to that extent is likely to require primary legislation to create new statutory arrangements. It is anticipated that two to five years from now, the CAA will undertake a 'lessons learnt' exercise with NERL to inform the development of the longer-term scope for the UKADS. Any detailed proposals would also be subject to further consultation in future, prior to implementation.

1.33 When the scope of the UKADS evolves, we will consider whether and how the UK Airspace Design Support Fund and associated charging mechanism might be adapted in support of the objectives of the AMS.

Ministry of Defence (MoD)

1.34 The AMS recognises the MoD as a strategic partner in AMS delivery, alongside the DfT and CAA. Integration of defence requirements to the AMS will be achieved through the UK's Joint and Integrated approach to airspace management and the established relationship between the Defence Airspace and Air Traffic Management (DAATM) team and the CAA – continued close engagement is essential as governance structures evolve to ensure appropriate representation and working group alignment. This aims to ensure MoD's flexibility and freedom of airspace access which is essential for national security tasking, collaborative training, and force-generation activity.

1.35 AM and integration of new platforms and operating procedures is essential for defence to support UK interests globally. Key activity includes:

- enabling the introduction of new capabilities into service
- the transition from segregation – through accommodation – to integration of BVLOS UAS activity.

1.36 While acknowledging that integration of emerging technologies will in part be reliant on EC to enable integration, Defence activity must retain the freedom to operate without restriction in UK airspace. Any future integration requirements must not negatively impact Defence's ability to conduct national security tasking or operational activity, including operations in a contested environment and with current EC methods. The CAA will continue to champion the requirement for resilience and redundancy and the minimum operational requirement for critical national CNS infrastructure.

1.37 MoD will also manage its understanding of the impact of aligning UK Flight Information Services with ICAO principles on airspace structures, MoD ATS delivery as an ANSP and continued provision of a safe operating environment.

Artificial Intelligence Strategy and Portfolio Hub

1.38 Artificial intelligence (AI) offers the ability to enhance many aspects of aerospace, including aircraft operations, airports, ground infrastructure, airspace management and consumer services through the automation of complex tasks and functions. The introduction of high levels of autonomy as a result of this automation presents both exciting opportunities and significant risks that require due diligence and careful regulation.

1.39 To recognise this transformative potential, the CAA has produced a strategy to address the growing challenges and opportunities of AI in the aerospace sector. The strategy focuses on enabling innovation while ensuring safety and security and maintaining the public's confidence in aviation. It is structured around three main pillars:

- horizon scanning and market engagement to gather insights
- defining strategic directions, including regulatory questions to explore
- developing the skills and capabilities needed for this transformation.

1.40 The AI Strategy and Portfolio Hub is central to the strategy. It will provide oversight, integrate and ensure coherence of AI across internal operations, and help to manage the AI portfolio. Furthermore, the CAA will focus on international collaboration, influencing ICAO and contributing to global standards, especially as AI legislation, like the EU’s AI Act, begins to take shape. The strategy has been shaped to align with the UK's pro-innovation approach to AI regulation, which introduces and emphasises performance-based principles for AI across all sectors, including aerospace. The CAA will continue to monitor AI's development closely, ensuring that risks are assessed and mitigated.

1.41 The regulatory approach will have to evolve in line with global standards and frameworks, such as those set by ICAO, and will be aiming to ensure that the CAA's capabilities are sufficiently agile to respond to the rapid evolution of AI technologies. This vision includes building a robust regulatory framework that

supports AI's integration into aerospace while ensuring public confidence, safety and environmental sustainability.

1.42 The CAA will use a comprehensive approach that aims to unlock the benefits of AI and advanced automation in aerospace, fostering efficiency, sustainability and scalability, while maintaining trust through proportionate governance and strong regulatory oversight.

Chapter 2

Deployment Plan progress

Introduction

2.1 Chapter 2 sets out the current programme of work activities that are delivering AM and the AMS strategic objectives. It aims to provide readers with information on the delivery of the AM programme including progress to date, key considerations, dependencies, next steps and milestone dates. Stakeholders can use this information for planning purposes and to better understand how the complex components of AM are being delivered.

2.2 We have framed and described activities led by the CAA under their respective programme control boards to provide a structure that aligns with programme delivery and to contextualise the projects therein. The activities range from individual policy changes, to larger groups of projects, to complex programmes to deliver novel outcomes, meaning the scale and depth of the activities described will vary. We provide indicative timescales and milestone dates both in this chapter and in Appendix A. These extend from short term to longer term out to approximately five years, although there is no definitive 'end date' for the activities described here.

2.3 Chapter 2 aims to provide recent and future information and therefore limits the repetition of text from Edition 1 of the AMS Part 3 (2024). Consequently readers may need to refer to Edition 1 for the complete history and additional context. We have only transposed text from Edition 1 where necessary. We have described any major changes from Edition 1 along with the rationale for the change.

AMS Delivery Control Boards – enabling activities

Integrating Lower Airspace

2.4 The Integrating Lower Airspace Control Board (ILACB) was established in 2024 within the AMS governance structure. The ILACB provides oversight to project activity and is responsible for directing projects in accordance with business priorities and strategic objectives. The ILACB acts as a sponsor of project initiation and closure, regularly monitoring progress by means of reporting throughout the project lifecycle.

2.5 The ILACB consists of several projects and a sub-programme focusing on Future ATM and ANS aspects. The Future ATM and ANS sub-programmes incorporate delivery activities required by the AMS to enable near-term Future of Flight programme outcomes with respect to airspace and ATM. Projects include UTM, GI, EC, DAA and Airspace Architecture.

Airspace Classification Review

2.6 In accordance with the CAA (Air Navigation) Directions 2023, and in support of the AMS strategic objectives, the CAA will regularly review volumes of airspace using the process described in CAP 1991. The airspace amendment to the Manchester Low Level Route has been finalised and the newly classified airspace volume is now referred to as the North West Transit Corridor.

2.7 The ongoing airspace review work is being undertaken as part of the wider programme delivering lower level flexible airspace, with safety and integration at the fore. The CAA retains the function to sponsor airspace change, where appropriate, using the CAP 1991 process.

Electronic conspicuity (EC)

2.8 EC is an umbrella term for the technology that can help pilots, unmanned aircraft users and ATS be more aware of what is operating in the surrounding airspace. Identifying an aircraft by electronic means involves the use of electronic devices such as Automatic Dependent Surveillance–Broadcast (ADS-B), Mode C and Mode S radar and Multilateration (MLAT).

2.9 ADS-B systems and other technologies enhance aircraft visibility and situational awareness. EC enables the improvement of visibility of airspace users by electronic means and supports the integration of new entrants or unmanned vehicles into airspace structures. EC helps to create an environment which can safely and efficiently incorporate manned and unmanned systems in UK airspace. In addition to these benefits, an EC policy will be one of the core enabling policies that will help achieve the AMS ambition for the safe integration of diverse airspace users such as BVLOS UAS operations, thus supporting the Future of Flight programme.

2.10 Activities supporting the development of an EC policy will be complete by the end of 2027. An Initial Technical Concept of Operations on the carriage, use and performance for EC in the UK has been produced. This was informed by studies and test data and will be published for consultation in July 2025. The position paper will be updated and will evolve in response to the results of planned testing and the consultation process.

2.11 UK Aeronautical Information Circular (AIC) Y 141/2019 addresses the UK position on both ADS-B Out via Mode S extended squitter transponders and ADS-B Out via portable ADS-B transceivers. This AIC was reviewed in 2024 as part of the EC work and will be updated within the next 12 months to reflect AMS developments, such as the use of Universal Access Transceivers (UAT). A safety assessment of this AIC also needs to be completed.

2.12 In March 2025, a joint statement issued from the CAA and Ofcom marked the end of a multi-year piece of policy work to enable the use of the 978 MHz frequency to provide additional ADS-B capacity for UAS airborne transmission. The decision unlocks elements of the AMS in respect of BVLOS RPAS operations to transmit location and other data on the 978 MHz frequency. Although the frequency has been released, further work is required to enable airborne equipage and usage. In the next 12 months the CAA will work to get the frequency approved for ground transmission as well. This will enable progress on concepts such as Flight Information Service–Broadcast (FIS-B) and Traffic Information Service–Broadcast (TIS-B) to further progress.

2.13 Over the next two years, further work is planned to ensure that the UK's position on EC enables the AMS ambition for the safe integration of diverse airspace users, thus supporting the UK Future of Flight programme. This will include, inter alia, informing updates to relevant syllabi on the carriage and use of EC – ready for training delivery to the appropriate aviation professionals.

UAS Traffic Management (UTM)

2.14 In a UK context, UTM and the needs of other vehicles such as eVTOLs are considered part of the overall ATM service provision. UTM is accepted as supporting the real-time or near-real-time organisation, coordination and management of UAS operations, including the potential for multiple BVLOS operations. To facilitate the safe and efficient integration of UAS there will be a requirement for specific services to be provided, such as Flight Authorisation, Geo-consciousness and Conflict Management Services. The CAA, with input from stakeholders is setting out a framework of the services a UTMSP will be required to provide together with how they will be regulated, to enable UTM to be deployed in the UK to support new airspace users.

2.15 UTM will provide the traffic management approach for uncrewed systems – moving the UK away from a permissions-based flight authorisation approach to an exceptions-based approach. This is an important interface between crewed and uncrewed systems and in enabling scalability for BVLOS.

2.16 Central to the development of UTM policy over the next 12 months is the completion of several interdependent activities:

- a preliminary review of SERA proximity and right of way during 2024 concluded that no immediate changes were required; however, the SERA pertinent to UAS will be reviewed as necessary.
- initial UTM ConOps followed by revision after first wave of testing
- version 1 of the UTM ConOps has been developed in preparation for testing and trials that are planned for later in 2025; the necessity and scope of rulemaking to enable UTM continues to be explored through, inter alia, industry engagement and Law Commission review.

2.17 The UTM ConOps will be updated to reflect the outcomes and lessons from the first wave of testing and certification requirements for service providers will be drafted and proposed. Timing of this update task is dependent upon the completion of testing but is anticipated by 2026.

2.18 Subsequently, with the aforementioned activities and building blocks complete, there will be a second wave of testing after which the CAA will further revise the UTM ConOps to account for the testing outcomes. Looking out to five years, the CAA will deliver the final UTM ConOps in support of Future of Flight objectives and the ultimate AMS ambition to integrate, as far as practicable, all airspace users.

2.19 Enabling the full deployment of UTM as a part of ATM may be dependent on significant rulemaking activities across several different areas, reflecting the complexity and scope of the task. However, the parliamentary capacity for legislative changes for aviation is a known constraint that could affect the deployment timeframe. The CAA will need to continue monitoring this area, and the aviation legislative landscape more generally, as other workstreams related to UTM progress.

Detect and Avoid (DAA)

2.20 For UAS operations that are BVLOS of the remote pilot and outside of segregated airspace a DAA capability is required to replace the pilot see-and-avoid responsibilities. DAA is defined within the ICAO RPAS Manual as providing “the capability to see, sense or detect conflicting traffic or other hazards and take the appropriate action”. DAA is therefore a critical enabler for BVLOS UAS operations and the AMS ambition for the safe integration of diverse airspace users.

2.21 DAA policy, underpinned by performance evidence, analysis and safety assessments will support industry with deploying DAA capabilities. Those DAA capabilities will initially provide remote pilots with the ability to exercise their responsibilities with regard to the rules of the air thereby enabling UAS to operate BVLOS. Further DAA policy evolution will consider encounters with other unmanned aircraft and avoidance of other hazards such as weather, terrain and wildlife. It is one of the underpinning policies to drive integrated, reliable, safe, scalable and sustainable BVLOS operations.

2.22 The UK Specific Operations Risk Assessment (SORA) method replaced the operating safety case (OSC) method as the way of applying for operational authorisation in the 'specific' category from April 2025. This SORA methodology includes assessments of air risk that consider the airspace in which flights take place and requires the identification and use of available safety mitigations. The DAA policy and its evolution will support the SORA approach to air risk considerations.

2.23 The DAA policy concept was published in July 2024. This signalled the beginning of a test and feedback phase conducted via the UK sandbox environment, which in turn will inform further DAA policy development. This initial DAA policy concept applies to all classes of airspace and categories of UAS; however, at this stage crewed aircraft are the only hazard considered.

2.24 The current CAA expectation is that the test and feedback phase, including policy and guidance material development, will last until at least January 2026. This would be followed by a public consultation and consultation response, ahead of routine and scaled use of DAA via formal DAA policy adoption.

2.25 Additionally, the CAA aims to deliver several other connected and parallel policy activities that will lead to holistic testing and evaluation of these dependent policy concepts. This includes the Atypical Airspace Environment concept evolution, the establishment of airspace requirements for BVLOS UAS integration, and UTM and EC policy development activities.

2.26 The CAA will continue to consider emerging DAA requirements; these are anticipated to be within the scope of the Future ATM/ANS programme.

Atypical Air Environment (AAE)

2.27 Operating within an Atypical Air Environment (AAE) should reduce the likelihood of a mid-air collision between a UAS and other conventionally piloted aircraft. The adoption and recognition of an AAE is an innovative concept in the UK. The

initial policy position will evolve as understanding of how AAEs are used matures. The policy is to be considered in addition to any regulation, acceptable means of compliance or guidance material that is applicable to UAS operations.

2.28 The AAE policy concept (CAP 3040) was launched in 2024. As the number of operations increases, it will be possible to gather more data and evidence to mature the CAA's understanding and inform the development of the policy concept. The necessary next step is to enable greater use of the policy concept while creating clear hypotheses to test, which will enable the required further development.

Ground Infrastructure (GI)

2.29 Work in this area addresses the technical ground-based systems and other requirements that enhance EC, and subsequently enabling the assured position information to achieve integrated operations of crewed and uncrewed systems in UK airspace.

2.30 Activities supporting the development of GI policies in respect of BVLOS integration will be completed by 2026.

2.31 TIS-B will allow manned and unmanned aircraft equipped to receive UAT transmissions on 978 MHz to be able to receive information about appropriately equipped aircraft within range of the TIS-B service. Licensing of the 978 MHz frequency for Ground to Air use would also be an enabler for the provision of FIS-B. Activities supporting the development of GI policies will be complete by 2026. Next steps will include the updating of publications and discussions on licensing the 978 MHz frequency for GI equipment to support the development of EC through the implementation of TIS-B. TIS-B will allow crewed aircraft equipped with ADS-B Out/In to be able receive surveillance information about other appropriately equipped aircraft within range of the TIS-B service.

2.32 GI project requirements were drafted in 2025 with the intention to test these through and alongside ongoing trials and CAA sandbox activity. Work is now underway on the development of the ConOps to be evaluated through the trials. While this milestone for TIS-B trials utilising the 978 MHz frequency will complete later than anticipated, it will not affect the overall delivery.

2.33 TIS-B will initially be deployed as a localised service which will rebroadcast a unified surveillance picture of multiple emission types for the benefit of all airspace users in a certain geographic area. At present, questions remain

unanswered with respect to the commercial and funding mechanisms that would enable the adoption of TIS-B, particularly as a scaled-up regional or UK-wide service.

2.34 Work to address these questions is yet to commence and is key for the industry delivery partners to make plans to realise the vision.

2.35 Any further delays to the completion of service tender, award and licensing process for a national TIS-B and provider may affect the overall delivery dates for UK-wide modernisation of lower airspace.

Remotely Piloted Aircraft Systems C2 Link

2.36 The command and control (C2) link is the data link between the remotely piloted aircraft and the remote pilot station for the purpose of managing flight. There are a variety of possible architectures and considerations in the design, security and management of the C2 link, which also depend on the operating environment, the functions hosted by the C2 link, and the consequences of the loss of the C2 link.

2.37 The ICAO RPAS panel has been developing detailed C2 link standards and recognised practices (SARPs), and a dedicated C2 link manual. Work is also underway on the concept of required link performance (RLP), which details the minimum performance of the C2 link in different airspace and aerodrome environments, its reliability and latency, and its ability to cope with interference while maintaining functional safety and mitigating airspace integration risks.

2.38 The intent is that RLP will eventually form part of the wider performance-based approach that is used already for communication, navigation, surveillance and traffic separation, and this may ultimately result in RLP categories that are linked to different airspace volumes or aerodrome environments. However, the ICAO RPAS panel has recognised that the RLP concept needs considerably more time and effort to develop and refine than is available for the initial release of the RPAS SARPs; therefore, the expectation is that the initial release of these SARPs will not mention RLP and will, instead, refer to minimum C2 link performance for some of the early expected use cases of international IFR RPAS operations. RLP will, therefore, be implemented through subsequent amendment, which may take several years, i.e. well into the 2030s.

2.39 In parallel, the CAA has initiated a policy development programme for UAS and RPAS C2 links in the UK, focussing initially on lower-risk specific category UAS operations, and subsequently on higher-risk specific category UAS operations

and certified category RPAS. The policy for C2 links and lost C2 link for specific assurance integrity level (SAIL) 1–3 UAS operations is expected to be released before the end of 2025, with the policy for SAIL 4–5 UAS operations released in late 2026, and the policy for SAIL 6 UAS and certified category RPAS operations following in the 2027–2028 timeframe. The C2 link project will be cognisant also of developments in higher airspace, where C2 links for uncrewed systems will also be required.

2.40 The CAA continues to support the international efforts at ICAO that are driving standards for certified category RPAS capable of undertaking routine international flights in the global air navigation system. From a UK perspective, the SORA framework has been developed and adopted for specific category UAS operations, as an acceptable means of compliance to UK UAS regulations. The CAA also intended to enable the delivery of SAIL-mark certificates for UAS to be operated within the specific category in the UK. The CAA's internal C2 link policy concept was published for review in May 2025 incorporating various aspects of C2 link architectures, performance and safety, and considerations in the event of a lost C2 link scenario. An external consultation on SORA-related guidance for C2 links is intended to follow.

2.41 Over the next three years, the C2 link policy concept will be further tested and evaluated to inform the creation of a final C2 Link Policy for SAIL 1–5 specific category UAS before the end of 2027, and for SAIL 6 UAS and certified RPAS in the UK by the end of 2028 – although this end date is subject to when ICAO publishes the initial set of RPAS SARPs and may also need to be extended if the consequent magnitude of UK regulatory change is large.

System Wide Information Management (SWIM)

2.42 System Wide Information Management (SWIM) is the standards, infrastructure and governance for ATM-related information, facilitating the discoverability, accessibility and interoperability of accurate, timely data for the whole aviation system.

2.43 With the significant growth in the aviation industry, the acceleration of concepts such as unmanned and autonomous aircraft, along with economic growth and environmental considerations, the accessibility of and reliance on timely and accurate information is critical.

2.44 The AMS recognises that the sharing of aviation data enhances the efficiency and safety of aviation operations. A shared, consistent view of critical aviation data enables better decision-making, coordination and situational awareness,

especially in mixed-user airspace environments, enhancing safety. SWIM implementation can support various aspects of aviation, such as ATM, flight planning and optimisation of airport operations and weather services, and is considered essential for the integration of new technologies into the aviation sector.

2.45 Implementation of SWIM will allow for the seamless exchange of information via interoperable information services. The whole ATM community, including ATM and ANS providers, aerodrome operators, aircraft operators, regulators and new airspace users (such as UAS) are SWIM stakeholders. In the SWIM environment they are categorised as originators, information service providers, information service consumers or regulators. Access to information through the appropriate type of information services will ensure the right information can be consumed in the right place at the right time.

2.46 The CAA is continuing to align SWIM with the broader AMS, aiming to improve the UK's airspace infrastructure to manage future demands, including increased air traffic and the integration of new users of airspace. The SWIM framework will play a pivotal role in this strategy by facilitating an interoperable data-sharing framework that supports both manned and unmanned aircraft.

2.47 The CAA actively works with international organisations, particularly ICAO, to align efforts on SWIM globally, ensuring that the UK's systems are interoperable with global air traffic management systems.

2.48 Additionally, within the next 12 months the CAA will develop a UK SWIM implementation framework. This will be informed by both international SWIM development including requirements for international air transport and those requirements anticipated to be necessary for the integration and evolution of diverse airspace users.

2.49 By the end of 2026, the CAA will have defined and delivered a SWIM registry for the UK with an expectation that industry will deliver SWIM-compliant services by 2027.

Air Navigation

Lower Airspace Concept

2.50 The Lower Airspace Concept is an overarching descriptor for a number of projects being progressed by teams within the CAA that will deliver key components of the AMS vision for lower airspace in the UK. The projects under the Lower Airspace Concept deliver an important element of the overall vision for

safe, integrated and interoperable lower airspace. This includes projects for airspace structures, ATS provision, enhanced use of flight information displays (FID) and the deployment of the proposed Lower Airspace Service (LAS).

2.51 The Lower Airspace Concept work is intrinsically linked to, and dependent on, other AMS activities such as EC, GI, SWIM, TIS-B, FIS-B and UTM within its scope.

2.52 The demand for ATM in UK lower airspace (outside of controlled airspace) is expected to increase. This demand will require enhanced service provision to safely integrate more aircraft: diverse new users (including BVLOS UAS operations and AAM) alongside existing users of this airspace which include General Aviation and the military. A simplified provision of ATS in lower airspace will benefit all airspace users and help to fulfil the ambition of the AMS for full integration. Leveraging technology enhancements in the provision of ATM in lower airspace will support the safe and efficient conduct of flight and improve access to volumes of airspace.

ICAO FIS

2.53 The opportunity to improve alignment of UK Flight Information Services with ICAO FIS provisions and embrace future technological developments with ATS delivery allows the UK to demonstrate that ATS provision is complementary to that of neighbouring states, thereby enhancing overall flight safety and providing an adaptable visual flight rules (VFR) or instrument flight rules (IFR) solution to service recipients in class E and class G airspace. Additionally, it offers the UK a stepping stone towards the implementation of the future capabilities such as FIS-B and TIS-B, as well as an opportunity to ensure that ATS can be provided to new entrants in the aviation sector.

2.54 In July 2024, the CAA published an ICAO FIS Implementation Engagement Response Document (CAP 3007) following a public ‘Call for Input’ engagement on improving the degree of alignment between UK Flight Information Services and ICAO FIS provisions in the UK.

2.55 The CAA has already commenced the safety assurance activities to ensure that any future policy changes are acceptably safe.

2.56 In parallel, the CAA is developing the technical solutions in conjunction with industry stakeholders which will eventually form draft policy provisions ready for public consultation. The CAA will work with key stakeholders on delivering implementation activities such as flight crew and ATS personnel training.

2.57 Implementation will be followed by a post-implementation review after approximately 12 to 24 months.

Airspace structures

2.58 Work to develop policy on class G airspace structures to support aerodromes operating in uncontrolled airspace is ongoing. The activity is exploring the most effective means of delivering the AMS ambitions for simplified and flexible airspace structures, and consequently specific policy options have not yet been determined. The CAA is developing options and subsequent proposals that deliver the AMS intent to varying extents while balancing resource and complexity.

Need for ATS

2.59 Complementary to the activities to improve the alignment of UK Flight Information Services with ICAO FIS provisions and to develop policy on class G airspace structure to support aerodromes in uncontrolled airspace, is the work to develop guidance material for stakeholders with respect to determining the need for ATS. For example, the identification of an appropriate airspace structure for an aerodrome will be driven by the need to manage the air traffic operating at, and within the vicinity of, that aerodrome. An aerodrome will have to first determine the need for the provision of ATS, the result of which will be a determining factor in the type and classification of airspace structure.

2.60 Within the next two years, requirements and policy for determining the areas where ATS is provided, and the designation and design of airspace to support that provision (in the Lower Airspace Concept) will be developed. Publication will be synchronised with other Lower Airspace Concept deliverables.

Enhanced use of FID

2.61 Enabling the use of enhanced functions of a FID by flight information service officers (FISO) and air traffic controllers will support the safe and effective provision of FIS within UK airspace by leveraging available cost-effective technologies and a broader cadre of personnel. Work on the use of enhanced functions of a FID is anticipated to commence in 2028, but is dependent on synchronisation with other activities, including the development of the necessary system specifications and the evolution of FISO training, qualification and licensing policy.

Lower Airspace Service

2.62 The AMS ambition for a new, state-wide Lower Airspace Service (LAS) to replace the extant Lower Airspace Radar Service (LARS) model includes a number of interrelated activities in addition to those described in the Lower Airspace Concept. Activities to develop and deploy the LAS have not yet commenced. Consequently delivery of LAS is not expected until after 2030.

Dependencies

2.63 Benefits in lower airspace – such as simplifying service provision and improving airspace access for a diverse range of airspace users – will be delivered by the improved alignment of FIS with ICAO provisions; deployment of a Lower Airspace Service, supplemental capabilities of FIS-B and TIS-B and the publication of associated guidance for determining the need for ATS in volumes of airspace.

2.64 However, the projects described within Lower Airspace Concept should be viewed as a system and must be deployed synchronously because of the interdependencies between the technical aspects of each project. For example, implementation of new FIS provisions requires the deployment of appropriate supporting airspace structures to ensure safety and the realisation of expected benefits. Additionally, outwith the umbrella of the Lower Airspace Concept, delivery is to varying degrees dependent on other AMS activities, such as EC, UTM, SWIM, DAA, SCNS and GI. For example, supporting airspace structures will require associated ground and airborne technology to realise the benefits of airspace access, flexibility and, importantly, safety.

2.65 The overall development and deployment of these interrelated activities will be synchronised through development of the AMS and via the AMS governance structure as the strategy iterates.

2.66 The AMS ambition for lower airspace, and therefore the intent to deliver the Lower Airspace Concept, remains. However, the nature of delivering the projects against the complexities of the wider AM programme, along with the need to prioritise and constraints in capacity, means that some aspects may not be delivered within the intended timescales. Additionally, questions remain unanswered over the commercial framework and funding mechanisms that would enable the adoption of a state-wide FIS-B, TIS-B and LAS.

Flight Information Service–Broadcast (FIS-B)

2.67 FIS-B is a broadcast service transmitting meteorological and aeronautical information via 978 MHz (Universal Access Transceiver (UAT)) that can be received by aircraft equipped with a suitable device for receiving data over UAT and a means of displaying the information. As it is intended that FIS-B information will be transmitted via UAT, a key dependency for implementing the service is to obtain Ofcom licensing of the 978 MHz (UAT) frequency for Ground–Air transmissions.

2.68 It is envisaged that the FIS-B service will transmit meteorological and aeronautical information including graphical weather displays, text-based advisories, significant weather activity and NOTAM to be displayed to the pilot by suitable means.

2.69 Although work is ongoing, the CAA has in principle established a preferred conceptual approach for the implementation of a FIS-B service that would provide:

- UK national coverage
- broadcasts to be received up to at least 10,000ft
- service provided by a single CAA-certificated ANSP
- use of GI that may, in the future, be utilised to provide both a FIS-B and TIS-B service
- broadcasts to include regulated (assured) information such as METAR, TAF, SIGMET, winds aloft and NOTAM (data sourced from the UK-certificated meteorological and aeronautical information ANSPs)
- additional meteorological information to be considered based on user requirements and use-cases
- service 'free at the point of use' (to aircraft which have been suitably equipped by the aircraft owner)
- meteorological and aeronautical data to the cockpit – this service would not be a 'client-based service' but rather always broadcast into the airspace on the UAT frequency; the information will not be broadcast on the 1090 MHz frequency.

2.70 In parallel with the work to establish FIS-B, consideration has also been given to the specifications for UAT-In devices that would be deemed suitable to receive a FIS-B service, such as ADS-B devices, and the applications necessary to display the broadcast information, i.e. either via an integrated (certified) application on the aircraft or, potentially, via a carry-on, uncertified and unregulated device.

2.71 Details concerning the use of ADS-B devices for EC purposes are provided in the discussion of EC earlier in Chapter 2 and in CAP 1391 (version 3, published February 2021). ADS-B-In devices might also be able to receive UAT broadcasts. The CAA will review current material concerning ADS-B units for EC and will, in due course, provide details concerning the suitability of these and other EC devices for receiving UAT broadcasts. Material regarding the use of applications to display information broadcast by FIS-B will also be provided.

Envisaged high-level activities/milestones

- Two-year timeframe:
  - appoint FIS-B ANSP
  - develop FIS-B policies and trials

- establish CAA and Ofcom agreement to make the 978 MHz (UAT) frequency available for ground-to-air transmission as an enabler for the provision of FIS-B (and TIS-B) services in the UK.
- complete stakeholder engagement activities, to fully understand user requirements and use-cases
- publish regulatory material, including service specifications, applicable policies (including policies applicable to in-flight equipment and information display) and guidance material
- complete limited trial(s).

- Five-year timeframe:
  - complete implementation of ground infrastructure and associated equipment and systems for the provision of a FIS-B service
  - complete full trial(s) of FIS-B
  - implement the operational FIS-B service.

2.72 At present many technical, logistical and regulatory questions remain unanswered and the revised target dates for the milestones specified above mean that certain activities will complete later than anticipated. However, delivery of FIS-B (and TIS-B) services is seen as a significant enabler in achieving the overall delivery dates for modernisation of lower airspace and the CAA is committed to implementing the new services by the specified milestone dates.

2.73 To meet the milestone dates, while the CAA has commenced the work necessary to address the outstanding questions, input from industry and users will be key to the successful delivery of FIS-B and as such engagement with key stakeholders is a priority.

Performance Based Navigation (PBN)

2.74 Performance Based Navigation (PBN) is one of the key enablers for the AMS terminal airspace redesign element. Optimisation of airspace designs is critical for delivering a modernised, high-performing air navigation system.

2.75 During 2024 the CAA developed and consulted on proposals for amending the UK PBN regulation with an aim to:

- refresh the requirements and implementation dates for implementing PBN

- align PBN with the objectives set out within the AMS
- achieve consistency in application and maintain interoperability with equivalent regulations in the EU.

2.76 The consultation on the proposed amendments to the UK PBN Regulation closed in January 2025, having been initially delayed because of restrictions relating to the pre-General Election period in summer 2024. The consultation response document will be published during 2025, following which the CAA will work with the DfT on the legislative package. Publication of the amended PBN regulation is scheduled for 2026.

2.77 Within the next 24 months the CAA aims to commence several other PBN activities that relate to, or are dependent on, the amended PBN regulation planned for 2026. These activities are:

- develop and publish new legislation, acceptable means of compliance, and guidance material for PBN as necessary
- consider requirements for a UK PBN implementation plan
- review the material contained within both CAP 1385 PBN: Enhanced route spacing guidance and CAP 1378 Airspace design guidance, with an intention to augment the information and guidance.

2.78 Looking out to five years, the CAA intends to develop guidance for the future use of vertical navigation utilising a satellite-based navigation system to further drive airspace systemisation and optimisation. Industry research and development on this topic has commenced but is not mature, meaning that any concepts informing this guidance are only expected to develop over the medium to longer term.

2.79 Where there are emerging PBN requirements for specific types of airspace user, such as AAM, policy developments will be considered as appropriate.

2.80 The CAA will consider policy options to support deployment of reduced departure divergence in the UK. However, this deliverable is subject to the outcome of a related project being delivered under the AMS Support Fund, and therefore timescales are not currently known.

Flexible Use of Airspace

2.81 Flexible use of airspace (FUA) is an airspace management concept based on the principle that airspace should not be designated as purely civil or military, but

rather as a continuum in which all user requirements are accommodated to the greatest extent possible. The application of FUA enables more efficient use of airspace and is a key tenet of civil-military cooperation as recognised by ICAO. The UK FUA strategy is set out in CAP 740 UK airspace management policy.

2.82 The FUA concept underpins the management and operation of airspace in the UK and aims to ensure that Special Use Airspace (SUA) is only activated when necessary. SUA provides a method of sharing and, where necessary, segregating airspace to achieve the most efficient use of airspace possible which is consistent with the safe operation of aircraft and expeditious flow of air traffic. Balancing the needs of all other airspace users is vital when establishing and operating SUA. As such, the goal is to establish airspace volumes of optimal dimensions that are operated cooperatively to maximise the benefits of FUA. To achieve this, a range of SUA constructs are available within which the limitations of access of other airspace users depend upon the rationale for its establishment.

2.83 A policy for the establishment and operation of SUA was an AMS programme milestone delivered in 2024. It advances airspace structures from Danger, Restricted and Prohibited Areas to incorporate more modern and flexible forms. In addition, the policy ensures an SUA Authority is nominated for each permanent SUA structure. The SUA Authority is responsible for ensuring that appropriate processes and procedures exist to ensure the safe and efficient management and operation of the SUA. The CAA may approve SUA Authorities once they can demonstrate how they will comply with the FUA oversight requirements detailed in CAP 740.

2.84 FUA is a form of airspace management (ASM). Utilising enhanced concepts and structures to support the dynamic configuration of airspace, together with mission trajectory management, will contribute to the efficiency of all airspace user requirements while improving network performance. Transition to dynamic airspace configuration (DAC) requires enhanced segregation features such as variable profile areas (VPA) and dynamic mobile areas (DMA).

2.85 DMAs are integrated into mission trajectory management. Of the three types, Types 1 and 2 are not currently deemed appropriate for UK airspace. Type 3 DMA is effectively a ‘bubble’ of segregated airspace moving with an aircraft. The advanced requirements of 4D datasets on all participating elements including aircraft, network managers, ANSPs etc require significant enhancements to pre-existing air and ground infrastructure such as datalinks, SATCOMs etc for trajectory deconfliction with a moving DMA. This key activity is not expected to be viable until at least 2030.

2.86 VPAs are a concept and refer to structures and reserved areas within which sub-divisions, laterally, vertically or both, can be enabled. Establishing safety

assurance, operational procedures and tool support for VPAs is an AMS deliverable scheduled for Q4 2025.

2.87 To fully realise the benefits of FUA, civil-military coordination is essential. Collaborative decision making (CDM) and extensive use of airspace configurations and associated SUA enable Advanced FUA (AFUA). AFUA is a concept already well established in the UK's Airspace Management Cell which initiates pre-tactical Level 2 ASM. However, to ensure a transition to DAC principles and maximise AFUA, enhanced CDM is required at tactical Level 3 ASM. By developing CDM into the tactical phase of ASM and integrating air traffic flow management, ATC and the military Level 3 management cell would create a real-time ASM picture capable of accommodating traffic demand and air traffic flows, and capitalising on instantaneous updates to SUA status. NERL, MoD and the CAA are investigating development of a tactical ASM cell in the UK for initial implementation within 24 months. This delivery element is required to support ICAO GANP elements FRTO-B0/2, FRTO-B1/3, FTRO-B2/2, NOPS-B1/5 and NOPS-B1/6.

2.88 AFUA will support development and implementation of several AMS delivery elements. However, it has dependencies on other elements, in particular SWIM and integration of ASM with air traffic flow management.

CNS infrastructure

2.89 Communications, Navigation and Surveillance (CNS) infrastructure, and the radio spectrum they require, are the foundation of aviation operational performance, enabling airspace capacity. CNS capabilities typically provided through regionally or globally harmonised radio spectrum and ICAO standards are core to enabling the ongoing delivery and evolution of safe, efficient and resilient air navigation. It is important that where possible, CNS and spectrum are harmonised across regions and globally.

2.90 Activities in support of AM encompass numerous activities across the constituent elements of CNS and radio spectrum.

2.91 In the immediate term, the updated optimisation programme for existing ground infrastructure will enhance Global Navigation Satellite Systems (GNSS) resilience for suitably equipped aircraft. The evolution of resilient minimum operational networks (MON) is detailed in the section on new activities below.

2.92 The CAA has also provided additional input into the UK Space Agency (UKSA) outline business case for a UK GNSS Space-Based Augmentation System (SBAS), which is also referenced separately below.

Performance-based frameworks

2.93 In line with similar performance-based initiatives across aviation (such as PBN), performance-based capabilities and supporting frameworks are now required for communication and surveillance (PBCS) in appropriate airspace.

2.94 The PBCS concept is aligned with that of PBN and applies required communication performance (RCP) and required surveillance performance (RSP) specifications to communication and surveillance elements, respectively. PBCS has been in operation in the North Atlantic region since 2017 and ICAO is further developing the framework to include new and emerging technologies. The UK PBCS framework is being developed in line with ICAO and EUROCONTROL with the aim of implementing PBCS across UK airspace from 2027. Over the coming years, a programme of work that includes development of a performance-based communications framework for the UK in line with the ICAO direction will follow also.

Datalink capacity

2.95 The roadmap for CNS infrastructure development envisages an increased utilisation of air-ground digital data (currently controller–pilot datalink communications (CPDLC)). There is a need to provide enhancements to current capabilities, ultimately building to routine use of digital air-ground systems with less dependence on voice-based systems. CNS infrastructure, in support of the AMS, will require extended use of ADS-C datalink to automatically downlink flight data from aircraft to ground systems. Trajectory-based operations (TBO), a cornerstone of future operational efficiency improvements, requires the development of appropriate datalink capacity to support it (Terrestrial L-Band Digital Aeronautical Communication System (LDACS), IRIS satellite communications).

2.96 Extended satellite voice communication using performance-based communication approved systems will provide greater resilience.

UK SBAS and DFMC

2.97 There remains a requirement to address the operational introduction of dual-frequency multi-constellation (DFMC) GNSS-enabled augmentation systems for the UK in the long term. Dates for this work are as yet undetermined.

2.98 Increasingly aviation has become dependent on GNSS and associated augmentation capabilities to provide accurate navigation capability. In recent years, the vulnerabilities of GNSS have been exploited to disrupt the service. There is a significant global requirement to support the development of DFMC-

enabled GNSS augmentation systems to enhance the resilience of these systems. This includes the development and operational deployment of aircraft- and satellite-based augmentation systems.

2.99 Since leaving the EU, the UK has lost access to the European Geostationary Navigation Overlay Service (EGNOS) SBAS Safety of Life provision. The CAA has continued to support the development of the ongoing UK Government business case. This has included identifying dependencies upon GNSS augmentation within the AMS, European and global plans related to air navigation. Also identifying the opportunity costs associated with not being able to access an assured service (for example, some higher decision minima, limited Point in Space procedures, etc) and its potential future constraint on UAS and AAM that rely on GNSS, augmented by SBAS, as their primary, or sole, navigational means. While single-frequency, single-constellation SBAS solutions exist today, the AMS also needs to consider the availability and development of a DFMC SBAS solution in the future.

TIS-B/FIS-B infrastructure

2.100 Frequency requirements to support the introduction of TIS-B and FIS-B concepts will need to be managed and capacity modelled as part of any development and rollout of these services. It is proposed that TIS-B, FIS-B and UAT will all operate on 978 MHz. With multiple operators on the frequency, this will increase the management and monitoring overhead for the CAA to ensure safety and compliance of the services.

Environmental Sustainability

2.101 The AMS fourth objective on environmental sustainability is an overarching principle applied through all AM activities. We recognise that AM can help drive operational efficiency improvement and assist the sector with the realisation of sustainability benefits relating to carbon emission, noise and air quality.

2.102 We have continued to develop our understanding of the application of this AMS fourth objective and its scope and applicability across the full breadth of the AMS. This has included exploring the subject in more detail with the AMS delivery partners (MoD, NERL and ACOG), DfT and the CAA sustainability team. Together these organisations have sought to identify current best practice in AMS activities and assess the implications of legislation, guidance and directions that currently apply against the delivery of the AMS, as identified in AMS Part 1.

2.103 The application of the AMS fourth objective will be driven in large part by the requirements set out by government. Consideration of growth, increases in

aviation activity and environmental factors will be made in accordance with this UK government policy and direction. The AMS must remain cognisant of the evolving external environment and the focus on environmental sustainability both within aviation and more generally. UK growth and airport expansion plans as outlined in Chapter 1 must also be considered. The CAA is refreshing its sustainability strategy to set out aims and plans for sustainability over the next few years. The AMS and its objectives will be a key part of the strategy considerations.

2.104 At the present time, the areas of focus for aviation activities related to environmental sustainability are CO_2 emissions, noise and air quality. The CAA is engaging with AMS partner organisations, industry and academia, and plans to conduct outreach with environmental stakeholder communities to explain the approach. We will report on the fourth objective in the 2025 AMS annual progress report to the Secretary of State, which will be published in 2026.

2.105 Environmental sustainability has been a key focus of research and development funding applications from the AMS Support Fund (see below). A focused call for proposals was made during 2024. Examples of projects underway seeking to show the benefits that can be achieved through AM are:

- fair and equitable distribution of noise
- fuel-efficient delay absorption.

2.106 We expect that the approach to the fourth objective will continue to evolve alongside the requirements set by government, and as the scientific basis for monitoring, mitigation and other airspace and aviation-related sustainability topics (for example, non-CO_2 emissions and adaptation) develops.

2.107 From 2026 a planned iteration of UK AMS Parts 1 and 2 will ensure alignment with any new environmental sustainability elements of the GANP and Long Term Aspirational Goal that are published by ICAO, alongside any new UK-specific considerations such as the UK's 2050 net zero target and any cross-transportation activities required by government.

New content for Edition 2

Minimum Operational Network (MON)

2.108 A Minimum Operational Network (MON) refers to the minimum infrastructure needed to provide the required level of ATM/ANS for both normal and contingency operations specifically for crewed aviation. A MON is required to

provide resilience and protect against interruption to satellite-based navigation systems where the only current alternative is terrestrial navigation.

2.109 A Navigation-MON (NAV-MON) working group was established under the Air Navigation Control Board and within the CNS infrastructure group of projects. The working group has been tasked with developing a UK strategy and function as a focal point for resilient Position Navigation and Timing (PNT) infrastructure concept development. The working group draws together a variety of CAA internal and external stakeholders including ANSPs and the MoD, which will be crucial in ensuring any disruption caused to the UK aviation network by a significant GNSS degradation event is mitigated. Detailed delivery plans and engagement will be undertaken during 2025, and the work must remain cognisant of a growing European and international focus on navigation aid resilience that will need to be addressed in conjunction with multiple ANSPs and national security agencies.

2.110 The proposed second and third phases will incorporate infrastructure development in support of newer airspace users such as RPAS etc, with consideration for potential resilience, which options such as enhanced Long-Range Navigation (eLORAN) or LDACS may offer as an Alternate Positioning Navigation and Timing (APNT).

Higher airspace operations (HAO)

2.111 Higher airspace operations (HAO) will transcend the current vertical airspace limits, ATM technologies and global norms. HAO presents a convergence of issues related to global air navigation as platforms (crewed and uncrewed) seek access to the higher levels of airspace precipitating the need for new technologies and standards. An expected and increasing demand from High Altitude Platform Systems (HAPS) and other HAO users increases the bailiwick of the AMS. There is a need to initiate strategic foundational development of requirements relating to new airspace integration and operational challenges for the UK. This is an area which has global focus and it is expected it will form part of new requirements set nationally, regionally and globally by ICAO in future years.

2.112 The UK Higher Airspace Platform Systems Delivery Group was renamed the HAO Delivery Group to better reflect the evolving subject and the various use cases that are expected. The group is formed of the CAA, MoD, NATS and DfT. At the end of 2024, a gap analysis was completed to identify the overarching technical components needed to enable HAO in the UK in the short, medium and

longer terms. This will inform further planned work for the CAA to develop requirements and policy, including ATM/ANS technical requirements.

2.113 The CAA has continued to engage with industry and provide inputs and feedback to the European Concept for HAO (ECHO) project. Furthermore, the UK CAA presented a paper on behalf of European States and EUROCONTROL at the ICAO 14th Air Navigation Conference to further the international discussion and build consensus on air navigation priorities for the safe and efficient integration of HAO (and transit of space operations). The UK CAA will place a seconded national expert to support developments in this area alongside space integration, in the EUROCONTROL network manager from 2025. This will support and enhance pan-European collaboration and contributions. In addition, the CAA has requested support from US federal agencies to expand and share knowledge and experience to help in the formulation of strategic options for the UK approach to HAO.

2.114 In order to prepare for the anticipated need to develop formal requirements and policy relating to the integration of HAO, we will continue to work with stakeholders to ensure that the AMS evolves in response to an expected inclusion of HAO in the GANP. Furthermore, the CAA will lead the drafting of a green paper in 2026 for the UK Government to then determine the strategic direction for the management of higher airspace in the UK. This will be done iin conjunction with regional and international requirements. Classification in higher airspace, vertical limits of the UK Flight and Upper Information regions and any new requirements for the management of higher regulated airspace will need to be considered.

Faster-than-sound flight

2.115 In anticipation of a potential return of civil supersonic transport aircraft, the UK and other states recognise the need to introduce integration protocols for supersonic, hypersonic and suborbital vehicles into ATM, addressing the unique challenges of high-speed vehicle operations to maintain operational harmony with existing air traffic and manage noise implications on the ground. This also relates to some of the potential use cases proffered for HAO. The CAA has contributed to work in the early identification of requirements including participation at European and ICAO working groups addressing integration of new entrants into airspace globally.

2.116 Following consultation that took place in early 2024, the CAA has developed provisions and an approval process to manage supersonic and transonic flights

which prohibits transonic, supersonic and hypersonic VFR flight over land and supersonic and hypersonic IFR flight unless approved by the CAA. The next step is the approval mechanism and airspace and ATS arrangements. This is an interim measure to facilitate the ongoing development of new aircraft types capable of supersonic and hypersonic speeds, while protecting citizens on the ground from noise impacts.

2.117 For the longer term, the CAA is proceeding with the task of creating rules which limit when and where aircraft can fly at speeds faster than sound. These rules will not limit transonic IFR flight and, where there is a requirement for faster-than-sound flight over land for research and development purposes, the CAA will have power to approve these flights where appropriate.

2.118 As technology advances and the impacts of faster-than-sound flight on the ground diminish, these rules can be revised to ensure innovative technologies achieve their full potential both in terms of speed and efficiency. The proposal specifically allows for research and development flights to continue through the power afforded to the competent authority to approve such flights, while still ensuring the protection of people on the ground. It is intended that the proposal to prohibit faster-than-sound flights over land is an interim measure which provides the flexibility to support research and development and the subsequent certification of ‘low boom’ aircraft.

Research and development

Airspace Modernisation Strategy Support Fund (ASF)

2.119 The Airspace Modernisation Strategy Support Fund (ASF) is intended to aid research and development projects in support of the delivery of AM, where the delivery benefits multiple stakeholders and/or research will enable wider industry deployment. Funding is allocated to projects that support the delivery of elements defined in the AMS and therefore funding proposals must align with the overall AMS objectives.

2.120 As of 2025, the ASF continues to provide grant funding to multiple projects across a variety of topics that aim to deliver research that can drive the pace of modernisation for the UK air navigation system. For example, recently funded projects range from research into airspace design tools using AI to methods of improving the management of traffic arriving into a TMA. Current projects include:

- **Fuel-efficient delay absorption**: focused on enhancing extended arrival management techniques to achieve two sets of benefits targeted in the AMS:
  - to further reduce the level of stackholding at the main UK capacity-constrained airports
  - to stream arriving aircraft prior to the top of descent.

Stansted Airport will be used as the test case for this project.

- **Project Dragon's Eye**: The objective of this proposed project is to perform end-to-end experimental flight testing of lower airspace FIS procedures and surveillance technology options, in the context of the illustrative use cases defined in the AMS for routine BVLOS RPAS and General Aviation flight in class G airspace
- **PBN arrivals optimisation**: This project will resolve the 'Reduced Night Noise' (RNN) trial issues, and thereby develop associated guidance on the implementation of PBN arrivals to support delivery of the expected noise benefits. This activity will focus on simulations (not a trial) because this offers more flexibility. This activity will focus on simulations (not a trial) because this offers more flexibility. To complement the simulations, modelling will be undertaken to confirm the noise benefits of these procedures (as this is not measured in the simulations) and this will also confirm the carbon benefits of the procedures.
- **EC interoperability test programme (ECITP)**: the scope of the ECITP stage 3 concentrates on four related workstreams. These build on the success of stages 1 and 2 to maximise the potential for electronic surveillance networks, such as the one established at Goodwood Aerodrome to enable airspace integration. They are:
  - system adaptations to protect against GNSS interference
  - developing and testing software and processes for assessing the performance of ADS-B emissions from aircraft
  - enhancing situational awareness via TIS-B
  - creation of an air traffic density analysis tool.
- **Project RAPID**: The overall objective of this project is to provide feedback to inform, evidence and support the adoption and alignment of the three CAA Detect and Avoid (DAA) related policy documents.
- **High-integrity aircraft surveillance data exchange**: This project proposes enhanced ATM provision by connecting individual airports' surveillance sensor feeds into a data exchange using its 'edge network' infrastructure, where airport data from one location is transmitted directly to and augments the surveillance picture of another. This serverless approach to data aggregation has a range of benefits, including data assurance, security, latency, cost and robustness, opening up the potential for it to be used for a range of enhanced flight information services.
- **4G and 5G network at-altitude surveys**: This project aims to collect mobile network data at a number of spot locations from all UK mobile network

operators at altitude (up to 500ft) to understand the performance of 4G and 5G across various altitudes and radio access network clutter classes (rural, urban, sub-urban etc) within the UK. This is to ascertain whether this cellular network technology achieves the required link performance to underpin safety critical services.

2.121 We publish the results of completed projects on the ASF webpage.

Example project delivered

2.122 **Determine policy options for UK reduced departure divergence (RDD)**: Current operational procedures originating from ICAO SARPs and PANS require that aircraft may depart from the same runway with a time-based spacing of no less than one minute, providing that the successive aircraft are on Standard Instrument Departures (SIDs) which diverge by no less than 45° immediately after departure. RDD is a concept that intends to modify the provisions in ICAO PANS-ATM relating to course divergence for departing aircraft. The RDD concept has potential to improve operational efficiency and provide options for noise management. The CAA summarises the results of research into RDD in CAP 1385, and has recommended further research and development.

2.123 RDD could be an important contributor to TMA developments. The CAA recognises the need to consider the outputs of the ASF-funded research, formulate a view on the use of RDD in the UK, and determine next steps for policy development sometime after 2026. RDD is a complex subject with separation implications and must therefore be carefully considered before any policy decisions are taken.

2.124 The CAA aims to:

- determine a policy position on the use of RDD in the UK
- if required, determine a plan for RDD policy options development.

Projects beyond the ASF

2.125 In addition to the ASF the CAA continues to monitor the wider European and global ATM research and development landscape.

Chapter 3

Horizon (ASBU Block 3)

Introduction

3.1 The structure of AMS Part 3 is designed to evolve and iterate as projects and their outcomes develop from future concepts through to tangible CAA deliverables.

3.2 Chapter 3 therefore identifies the operational concepts, technologies and information services that are planned for deployment before the end of GANP ASBU Block 3 period between 2026 and the end of 2031.

3.3 While Chapter 2 describes and includes the formalised and maturing delivery programme, most of the ASBU Block 3 activities have remained in the same state, or with no substantive change, compared with the 2024 baseline. Therefore, most of the content of this chapter originates from Edition 1 of the AMS Part 3, Chapter 3: Technical Look Ahead, published in July 2024. The content has been reframed to better fit the AMS delivery elements, ICAO GANP element and UK sub-element structure used in the AMS Part 2 and AMS Part 2 database. Changes also include amendment to the ICAO GANP ASBU durations to align them with the latest version of the ICAO GANP and ensure consistency between global, regional and national planning time horizons. This change facilitates improved structuring for future versions.

3.4 Additionally, over time the CAA intends to optimise alignment between plans and reporting, such as the Secretary of State AMS annual progress report and the Local Single Sky implementation monitoring (LSSIP). The CAA has decided to take this approach to ensure a clear link between editions of the AMS Part 3 Deployment Plan and progress reporting as the overall programme evolves and matures.

3.5 The CAA expects that a number of ICAO GANP threads will be amended by the forthcoming 8th edition of the ICAO GANP, whereby individual GANP elements will be added, deleted or moved to a later block.

ASBU Block 3 elements

UK Delivery Element UK-ABN/1 Trajectory-based operations

OPFL

3.6 The GANP OPFL Thread describes the evolution of operational concepts to optimise climb and decent operations, aiming to improve efficiency, environmental performance and predictability of aircraft operations during climb and descent phases of flight.

3.7 The GANP introduces the following OPFL elements in Block 3:

- OPFL-B3/1 Helicopter RNP 0.3 terminal and en-route operations
- OPFL-B3/2 Expansion of upper limit of RVSM band of flight levels
- OPFL-B3/3 Target-to-target separations using space-based ADS-B data

3.8 On this thread, the CAA is active as part of the global expertise and technical collaboration through ICAO panels. The UK CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

TBO

3.9 The GANP TBO thread describes the evolution of operational concepts to deliver TBO within the global ATM system.

3.10 The GANP introduces one TBO element in Block 3:

- TBO-B3/1 Network based on-demand synchronization of trajectory-based operations.

3.11 The GANP anticipates increasing capabilities will emerge to support the exchange and synchronisation of individual trajectory intent and projections in many airspace environments, including low level. Protocols will enable the enhanced sharing of flight-centric information between aircraft and among ATM systems across airspace environments. This will allow more efficient and accurate flight planning and coordination of aircraft among an expected larger number of operations utilising lower levels of UK airspace.

3.12 The AMS requires the implementation of TBO in line with the GANP TBO thread. The UK must also remain cognisant of EU rulemaking and maintain alignment with ICAO EUR region developments to ensure seamless interoperability across state boundaries. Initial major steps towards TBO in the UK are expected to be delivered by 2031. These steps include the integration of airport operations plans (AOPs) and initial trajectory information-sharing in accordance with UK Regulation 716/2014.

3.13 Additionally, TBO as envisaged for commercial air transport will provide a basis on which UAS and AAM can, in the future, be similarly enabled to link and synchronise various time advisories and flightpaths for individual aircraft. Flight segments can then be coordinated to provide equitable and efficient operations. This would help achieve an efficient coordination process across time-based capabilities leading to stable, consistent and robust local trajectory solutions. In turn this would improve individual flight efficiency while optimising the overall airspace performance. The development of enabling policies for the integration of flight plan and trajectory data, along with integration of UAS and AAM TBO in lower airspace, is dependent on progress in several areas such as, but not limited to, SWIM, output from BVLOS Temporary Reserved Area (TRA) trials, PNT developments and additional ATM services. Specific activities and deliverables will be added to AMS Part 3 when appropriate.

UK Delivery Element UK-ABN/2 Terminal airspace redesign

APTA

3.14 Point-in-Space (PinS) operations are enabled through UK Element UK-ABN/2 (Terminal airspace redesign) using the ICAO GANP ASBU thread APTA to describe PinS operations for helicopters. Future work will explore and, where necessary, develop policy for PinS approaches in support of vertiports and AAM. AAM aircraft performance characteristics and vertiport policy requirements, such as safeguarding, are essential elements in the formulation of any future policy.

3.15 The GANP introduces the following GANP APTA elements in Block 3:

- APTA-B3/1 Parallel approaches without vertical guidance
- APTA-B3/2 Implementation of A-RNP to support non-complex simultaneous independent parallel approaches.

3.16 ICAO panels that develop technical proposals for this thread are actively supported by the CAA. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air

navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

DATS (Remote Aerodrome ATS)

3.17 The DATS thread, formerly referred to as RATS (Remotely Operated Aerodrome Control), became DATS (Digital Aerodrome ATS) in the 7th Edition of the ICAO GANP. Notwithstanding the amended ICAO nomenclature, the UK and EU still consider the technical content relating to this thread as 'Remote ATS,' which is reflected in associated policy. There are no Block 3 elements in the extant ICAO GANP framework; however, the UK CAA expects two new DATS elements to be introduced in the forthcoming 8th Edition of the GANP that relate to Blocks 3 and 4. These are expected to be elements for multiple-mode aerodrome flight information service (AFIS) and multiple-mode aerodrome control service.

3.18 The UK continues to contribute to the relevant ICAO panel that leads the development of technical proposals for this thread. The UK CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

Surface Traffic Management (SURF)

3.19 The GANP SURF thread describes the evolution of surface operations with a focus on improving safety, efficiency and situational awareness on aerodrome movement areas. By taking account of all aspects of ground operations and leveraging optimisation algorithms, A-SMGCS routing and guidance is automated and follows agree A-CDM strategies. The ATCO can operate in manual, semi-automated or automated mode.

3.20 The GANP introduces the following SURF elements on Block 3:

- SURF-B3/1 Optimisation of surface traffic management in complex situations
- ACDM-B3/1 Full integration of TAM into TBO.

3.21 The CAA is active as part of the global expertise and technical collaboration through ICAO panels. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

UK Delivery Element UK-ABN/3 Network management

ACDM

3.22 The GANP ACDM thread describes the evolution of ACDM with a focus on improving the efficiency, predictability and resilience of airport operations by leveraging real-time information sharing.

3.23 The GANP ACDM element in Block 3 is:

- ACDM-B3/1 Full integration of ACDM and TAM in TBO.

3.24 The co-sponsors will work to determine the UK applicability of this element in the context of the European ATM network and UK ambitions for gate-to-gate operations. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

NOPS

3.25 The GANP NOPS thread describes the evolution of network operations and aims to improve the overall performance and resilience of the global ATM network through dynamic airspace management, air traffic flow management and collaborative decision making.

3.26 The GANP introduces the following NOPS elements in Block 3:

- NOPS-B3/1 ATM network services in full TBO context
- NOPS-B3/2 Cooperative network operations planning
- NOPS-B3/3 Innovative airspace architecture.

3.27 The CAA expects the NOPS thread to evolve with the next edition of the GANP with a number of elements amended and moved into later blocks along with the introduction of additional elements.

3.28 The CAA continues to contribute to the relevant ICAO panel that leads the development of technical proposals for this thread. The UK CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

RSEQ – Runway sequencing

3.29 The RSEQ thread describes the operational concepts that focus on enhancing airport runway throughput and safety by optimising sequencing, spacing and

timing particularly for high-density terminal operations with multiple airports. Integrated arrival management and departure management enable dynamic scheduling and runway configuration to better accommodate arrival/departure patterns and integrate arrival/departure management. In addition, integrated arrival management and departure management expands scope from single airport operations to consider multiple airports within the same terminal airspace.

3.30 The GANP introduces the following RSEQ elements in Block 3:

- RSEQ-B3/2 Arrival management in terminal airspace with multiple airports
- RSEQ-B3/3 Increased utilisation of runway capacity by improved real-time runway scheduling
- RSEQ-B3/4 Improved operator fleet management in runway sequencing.

FICE

3.31 The FICE thread describes the information concepts that focus on enhancing the exchange of flight and flow information between aviation stakeholders to enable more coordinated, efficient, data-driven and dynamic ATM.

3.32 The GANP introduces one FICE element in Block 3:

- FICE-B3/1 Flight information management services for enhanced trajectory operations.

3.33 The CAA is active as part of the global expertise and technical collaboration through ICAO panels . The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

UK Delivery Element UK-ABN/4 Integration

UK-ALIGN

3.34 UK-ALIGN is a specific UK thread, indicated in AMS Part 2, that is used to frame the bespoke requirements relating to the alignment of UK policy with ICAO provisions and contains associated UK elements. The content is described in a similar way to the GANP elements for consistency and traceability.

3.35 For the equivalent GANP Block 3 period the following work is anticipated:

Flight intent and flight progress data

3.36 The submission of the planned intention of flight, more commonly referred to as a flight plan, is a critical component for the integration of new airspace users as well a fundamental tool in the management of airspace capacity and targeting of service provision for existing users.

3.37 A flight plan typically includes essential information about the flight, such as the aircraft's identification, proposed departure time, route, cruising altitudes and speeds, destination, and estimated time en route. For new airspace users, this may also include specific operational details relevant to the type of aircraft or activity, such as UAV operational ceilings and trajectories.

3.38 The submission of flight plan data will remain voluntary in some cases. However, third-party functionality such as ‘point and click’ submission via Electronic Flight Bag applications will ease the process of submission in airspace requiring compulsory submission of flight plan data.

3.39 Flight progress data refers to the management and updating of flight plan data once the flight has started and is en route.

3.40 Modifications to the rules surrounding the reception, processing and distribution of some types of flight plan and flight progress data will be required, that is, route validation of VFR flight plans and the mandated distribution of low-level flight progress data between ANSPs. The national reception, processing and redistribution of flight intent as well as flight progress data will continue to form an intrinsic part of SWIM.

Evolution of ATM to enable scaled operations

3.41 The ability of any new airspace user to operate in low-level airspace under IFR will clearly place considerable demand on ATS provision within airspace classifications where separation is required to be delivered between IFR flights. Any change to those separation agreements or to the core requirements of the flight rules (such as the long-term digital flight rules concept) should be progressed internationally but contributed to and anticipated nationally. Additionally, the development of any specific requirements for equipage will be transparent and collaborative with industry.

CSEP

3.42 The CSEP thread describes the operational concepts that focus on enhancing efficiency and safety through cooperative separation that is envisaged by the AMS as a medium- and longer-term enabler to all AMS strategic objectives. Cooperative separation evolution is particularly important for the integration of diverse airspace users, whereby aircraft are afforded greater autonomy and access based on cooperative separation capabilities.

3.43 The GANP introduces the following CSEP elements in Block 3:

- CSEP-B3/1 Interval management (IM) procedure with complex geometries
- CSEP-B3/2 Remain well clear (RWC) functionality for UAS/RPAS
- ASUR-B3/1 New non-cooperative surveillance system for airborne aircraft (medium altitudes)

3.44 ICAO panels that develop technical proposals for this thread are actively supported by CAA experts. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

UK Delivery Element UK-AM/5 Airspace management

UK-Flexible airspace

3.45 UK-FA is a specific UK thread that describes the bespoke flexible airspace elements that are in the context of lower airspace operations in the UK and in addition to ICAO GANP airspace management concepts.

3.46 For the equivalent ICAO GANP Block 3 period the following work is anticipated:

- FA UK B2/3 Develop airspace activity data sharing via SWIM protocols.

FRTO

3.47 The FRTO thread describes the operational concepts that focus on improving the efficiency and resilience of the ATM network, by enabling aircraft to fly optimised routes achieved through the deployment of dynamic airspace structures and associated procedures.

AFUA

3.48 The Advanced Flexible Use of Airspace may provide further options for future modernisation activities including the ability to further exploit Variable and Dynamically Activated Areas.

3.49 The CAA continues to contribute to the relevant ICAO panel that leads the development of technical proposals for this thread. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

UK Delivery Element UK-AM/6 Data services

AMET

3.50 The AMET thread describes the evolution of information concepts for aeronautical meteorology services, focusing on improving the resolution, range, accessibility and integration of meteorological information into ATM, enhancing decision-making in all phases of flight.

3.51 The GANP introduces the following AMET elements in Block 3:

- AMET-B3/1 Meteorological observations information
- AMET-B3/2 Meteorological forecast and warning information
- AMET-B3/3 Climatological and historical meteorological information
- AMET-B3/4 Meteorological information service in SWIM.

3.52 Contributions to the relevant ICAO panel that leads the development of technical proposals for this thread are made via CAA experts. The UK CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

3.53 To ensure that future aeronautical meteorological services result in the provision of information that support the GANP concepts as described in the applicable UK delivery elements, and delivering the envisaged enhanced safety, efficiency, environmental performance, scalability and predictability and resilience of operations, it will be necessary to fully understand user requirements and use-cases. ICAO has recognised that feedback from industry and users will be key to the successful delivery of the AMET threads. Successful delivery of the UK AMS delivery elements will similarly be dependent on UK operational stakeholders highlighting specific requirements if necessary.

UK Delivery Element UK-AM/7 Future surveillance and spectrum

ASUR

3.54 The ASUR thread describes the aeronautical surveillance technology concepts that have a focus on improving the accuracy, reliability and coverage of surveillance technologies which will provide greater safety, flexibility and resilience for the ATM system.

3.55 There is one ASUR element in Block 3 that remains under development:

- ASUR-B3/1 New non-cooperative surveillance system for airborne aircraft (medium altitudes).

3.56 The CAA is active as part of the global expertise and technical collaboration through ICAO panels. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

UK Delivery Element UK-AM/8 Integration of CNS&S

COMI

3.57 The COMI thread describes the technology concepts that focus on the evolution of communications infrastructure that improve safety and efficiency and enable scalable ATM operations.

3.58 The GANP introduces the following COMI elements in Block 3:

- COMS-B3/1 Extended CPDLC (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace
- COMS-B3/2 Extended ADS-C (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace.

UK Delivery Element UK-AM/9 Aircraft capabilities

COMS

3.59 The COMS thread describes the technology concepts that focus on the evolution of communications services for voice and data communications and is complementary to the COMI thread.

3.60 The GANP introduces the following COMS elements in Block 3:

- COMS-B3/1 Extended CPDLC (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace
- COMS-B3/2 Extended ADS-C (B2 incl. Adv-IM and dynamic RNP) for dense and complex airspace.

3.61 Performance-based communications and surveillance (PBCS) is the combination of the criteria of performance-based communication (PBC) and performance-based surveillance (PBS) and relates to communication and surveillance based on performance specifications applied to the provision of air traffic services. PBCS elements are expected to evolve over time to incorporate domestic and complex airspace in addition to the current oceanic procedural airspace capability.

3.62 The CAA continues to contribute to the relevant ICAO panel that leads the development of technical proposals for this thread. The CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Deliverables will be included in future iterations of the AMS Part 3 where necessary.

WAKE

3.63 The WAKE thread describes the operational concepts that focus on the evolution of wake turbulence separation on final approach and for en-route operations enabling improvements in safety and efficiency.

3.64 The GANP introduces the following WAKE elements in Block 3:

- WAKE-B3/1 Dependent parallel approaches
- WAKE-B3/2 Independent segregated parallel operations
- WAKE-B3/3 Wake turbulence separation minima based on leader/follower static pairs-wise

- WAKE-B3/4 Enhanced dependent parallel approaches
- WAKE-B3/5 Enhanced independent segregated parallel operations
- WAKE-B3/6 Time-based wake separation minima for departure based on leader/follower static pairwise
- WAKE-B3/7 Time-based dependent parallel approaches
- WAKE-B3/8 Time-based independent segregated parallel operations.

3.65 The UK CAA will monitor ICAO developments for these elements and, when appropriate, determine the applicability to the UK air navigation system and plan any associated policy-making activities. Changes will be included in future iterations of the AMS Part 3 where necessary.

Appendix A: Timelines

2024	2025	2026	2027-30	2030+	CAA Control Board	Project	Updated milestone
		●			Air Navigation	Performance-Based Navigation	Develop and publish new legislation and AMC/GM for PBN
	●						Publish amendment to or replacement of CAP1385
	●						Publish amendment to or replacement of CAP1378
		●					Produce an updated UK PBN Implementation Plan informed by industry plans
				●			Produce a UK concept for the future use of vertical navigation utilising a satellite-based navigation system
			●				Determine policy options for UK Reduced Departure Divergence
				●			Develop policy on point-in-space (PinS) approaches at vertiports
●						Flexible Use of Airspace	Publish updated safety buffer policy for Special Use Airspace design
	●						Establish safety assurance, operational procedures and tool support for Variable Profile Areas
				●			Establish safety assurance, operational procedures and tool support for Dynamic Mobile Areas
		●				Lower Airspace Concept	Requirements and policy for determining the areas where air traffic services are provided and the designation and design of airspace to support that provision
		●					Develop updated policy on the airspace structures to support aerodromes operating in uncontrolled airspace
			●				Deployment concept for delivery of improved UK alignment with ICAO FIS provisions
			●				Enable the use of enhanced functions of a flight information display by FISOs
				●		CNS Infrastructure	Development of performance-based surveillance framework for the UK
			●				Establish common infrastructure requirements for the provision of LAS
			●				Identify surveillance requirements for high altitude platform systems (station)
			●				Identify surveillance requirements for Advanced Air Mobility operators
	●						Updated rationalisation programme for ground infrastructure to provide GNSS failure resilience (development of minimum operational networks)

Appendix A: Timelines

2024	2025	2026	2027-30	2030+	CAA Control Board	Project	Updated milestone
●					Air Navigation	CNS Infrastructure	Provide input into UK Space Agency (UKSA) outline business case for SBAS
				●			Operational introduction of dual-frequency multi-constellation GNSS enabled GBAS for the UK
				●			Operational introduction of dual-frequency multi-constellation GNSS enabled SBAS for the UK
				●			Operational introduction of dual-frequency multi-constellation GNSS enabled ABAS for the UK
			●				Develop a Performance-based Communications Framework for the UK in line with the ICAO direction
			●				Increase utilisation of air-ground digital data (currently CPDLC) and provide enhancements to current capability
				●			Extended use of ADS-C datalink to automatically downlink flight data from aircraft to ground systems
				●			Development of appropriate datalink service to support TBO (LDACS, Terrestrial-SATCOM)
			●				Extend Satellite Voice Communications using Performance-based Communications approved systems
				●			Routine use of digital air-ground communications
				●	Integrating Lower Airspace	Classi-fication Teams	Review airspace design and classification to ensure that it is fit for purpose and maintains a high standard of safety
	●						North West Transit corridor
	●					Ground Infrastructure	Ground Infrastructure Project scoped
	●						Ground Infrastructure Project delivery plan baselined
	●						Initial ConOps and safety case produced, review and signed off
		●					Ground Infrastructure ConOps and safety case to enable FOF goals finalised
	●					Command and Control Link (C2)	C2Link policy concept V1 (SAIL 1-3) published
	●						Lost C2Link policy concept V1 (SAIL 1-3) published
		●					C2Link policy concept V2 (SAIL 4-5) published
		●					Lost C2Link policy concept V2 (SAIL 4-5) published
●						Detect and Avoid (DAA)	Develop and publish Detect and Avoid (DAA) policy
	●						DAA policy concept consultation response published
	●						Policy revised to include other non-crewed hazards
		●					Updated DAA policy concept published
			●				DAA policy to enable FOF goals published

Appendix A: Timelines

2024	2025	2026	2027-30	2030+	CAA Control Board	Project	Updated milestone
	●				Integrating Lower Airspace	Electronic Conspicuity	Ofcom licensing of 978MHz for air-to-air use published
	●						EC consultation begins
	●						EC ConOps updated following testing and consultation
			●				EC ConOps for FOF goals completed
			●				EC training aspects incorporated into relevant training syllabi – ready for training delivery
			●				EC policy changes to enable FOF goals in place
	●					UAS traffic management (UTM)	Review rules of the air (SERA) right-of-way
	●						Initial UTM ConOps complete
	●						UTM ConOps after first wave of testing updated
	●						Certification requirements for UTMSPs drafted
		●					UTM ConOps after second wave of testing updated
			●				UTM ConOps for enabling FOF goals complete
	●					System-wide Information Management (SWIM)	SWIM concept definition agreed by the CAA
	●						SWIM implementation framework
		●					SWIM Registry defined and delivered for UK State
			●				Industry starts delivering in SWIM compliant manner
			●				Air/Ground SWIM for non-safety-critical information
				●			Air/Ground SWIM for safety-critical information
				●			Introduce Flight and Flow Information for a Collaborative Environment
	●					Future ATM/ANS Programme	Programme Airspace Technical Architecture and ConOps approved
	●						DAA, UTM and EC Version 1 ConOps/policy concepts in place and ready for testing
	●						All Future ATM/ANS Projects have a ConOps or policy concept in place and validated
			●				Future ATM/ANS Programme Level Airspace Architecture live trials commence
	●						UK SORA Air Risk (Model) Classes (ARCs) for RPAS integration with crewed aircraft
●							Publish policy on RPAS BVLOS operations in Atypical Air Environments

● Projects delivered or completed

APPENDIX B

Abbreviations

Abbreviation	Description
AAE	Atypical Air Environment
AAM	Advanced air mobility
ABAS	Aircraft-based augmentation system
ACOG	Airspace Change Organising Group
ADS-B	Automatic Dependent Surveillance–Broadcast
ADS-C	Automatic Dependent Surveillance–Contract
AFIS	Aerodrome Flight Information Service
AFUA	Advanced Flexible Use of Airspace
AIC	Aeronautical Information Circular
AM	Airspace modernisation
AMC	Acceptable means of compliance
AMS	Airspace Modernisation Strategy
ANP	Air navigation plan
ANS	Air navigation service
ANSP	Air navigation service provider
AOP	Airport operating plan
APNT	Alternate Positioning Navigation and Timing
ASBU	Aviation System Block Upgrade
ASF	Airspace Modernisation Strategy Support Fund
ASM	Airspace management
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management
ATS	Air Traffic Service
BVLOS	Beyond visual line of sight
C2	Command and control
CAA	UK Civil Aviation Authority
CAP	Civil Aviation Publication
CDM	Collaborative decision making
CNS	Communications Navigation and Surveillance

ConOps	Concept of operations
CPDLC	Controller–pilot datalink communications
CTR	Control Zone
C2	Command and Control
DAA	Detect and Avoid
DAATM	Defence Airspace and Air Traffic Management
DAC	Dynamic Airspace Configuration
DFMC	Dual-Frequency Multi-Constellation
DfT	Department for Transport
DMA	Dynamic Mobile Area
DiSCO	Digitising Specific Category Operational authorisations
EASA	European Union Aviation Safety Agency
EC	Electronic conspicuity
ECHO	European Concept for Higher Airspace Operations
EGNOS	European Geostationary Navigation Overlay Service
eLORAN	Enhanced long-range navigation
EU	European Union
EVS	Enhanced Vision Systems
eVTOL	Electric vertical take-off and landing
F-ATM/ANS	Future Air Traffic Management/Air Navigation Services
FID	Flight Information Display
FIS	Flight Information Service
FIS-B	Flight Information Service–Broadcast
FISO	Flight Information Service Officer
FoF	Future of Flight
FOFAP	Future of Flight Action Plan
FUA	Flexible Use Airspace
GANP	Global Air Navigation Plan
GBAS	Ground Based Augmentation System
GI	Ground Infrastructure
GM	Guidance material
GNSS	Global Navigation Satellite System
HAO	Higher Airspace Operations
HAPS	High Altitude Platform System
ICAO	International Civil Aviation Organization

IFR	Instrument Flight Rules
ILACB	Integrating Lower Airspace Control Board
IM	Interval Management
JARUS	Joint Authorities for Rulemaking on Unmanned Systems
LAS	Lower Airspace Service
LARS	Lower Airspace Radar Service
LDACS	L-band Digital Aeronautical Communications System
LSSIP	Local Single Sky Implementation
LTMA	London Terminal Control Area
J&I	Joint and Integrated
MLAT	Multilateration
MoD	Ministry of Defence
MON	Minimum Operational Network
NERL	NATS (En Route) plc
Ofcom	The Office of Communications
OSC	Operating safety case
PANS	Procedures for Air Navigation Services
PANS-ATM	Procedures for Air Navigation Services – Air Traffic Management
PBCS	Performance-Based Communication and Surveillance
PBN	Performance-Based Navigation
PDRA	Predefined Risk Assessment
PinS	Point-in-Space
PNT	Position Navigation and Timing
RCP	Required Communication Performance
RDD	Reduced Departure Divergence
RLP	Required Link Performance
RNP	Required Navigation Performance
RPAS	Remotely Piloted Aircraft System
RSP	Required Surveillance Performance
SAIL	Specific Assurance Integrity Level
SARP	Standards and Recommended Practice
SATCOM	Satellite Communication
SBAS	Space-Based Augmentation System
SCNS	Spectrum, Communications, Navigation and Surveillance
SERA	Standardised European Rules of the Air

SES	Single European Sky
SESAR	Single European Sky Air Traffic Management Research
SID	Standard Instrument Departure
SIP	Service and Investment Plan (NERL)
SoL	Safety of Life
SORA	Specific Operations Risk Assessment
STAR	Standard Instrument Arrival
SUA	Special Use Airspace
SWIM	System Wide Information Management
TBO	Trajectory-Based Operations
TIS-B	Traffic Information Service–Broadcast
TMA	Terminal Control Area
TRA	Temporary Reserved Area
UAS	Unmanned Aircraft System
UAT	Universal access transceiver
UKADS	UK Airspace Design Service
UKSA	UK Space Agency
UTM	Unmanned Aircraft Systems Traffic Management
UTMSP	UTM Service Provider
VFR	Visual Flight Rules
VOLMET	Meteorological information for aircraft in flight
VPA	Variable Profile Area

APPENDIX C

Text description of Figure 1

C1 This appendix is a detailed text description of **Figure 1: AMS delivery components and related governance structures within the CAA**, which appears on page 8.

C2 The first tier of the governance structure is the CAA/DfT Co-sponsors Airspace Modernisation Strategy Programme Board. This has an indirect link to the CAA Executive Committee Airspace Board, and a direct link to the second tier of the structure, which comprises:

- **Airspace Modernisation Strategy Board**
- **Airspace Modernisation Programme Board**
- **Future of Flight Programme Board.**

C3 The **Airspace Modernisation Programme Board** is divided into two Control Boards which form the third tier:

- **Air Navigation Control Board**
- **Integrating Lower Airspace Control Board.**

The latter reports to the Future of Flight Programme and executes its projects.

C4 Each element under these Control Boards encompasses the projects that drive delivery of the AMS.

- **Air Navigation Control Board:**
  - Consideration and Guidance for Vertical Interactions
  - Aeronautical Info Management / Meteorological Office / (DAT)
  - FUA (Flexible Use of Airspace)
  - PBN (Performance Based Navigation)
  - Lower Airspace Concept
  - High Altitude Integration
  - CNS (Communications, Navigation and Surveillance) Infrastructure
- **Integrating Lower Airspace Control Board** is made up of two Delivery Groups which contain a set of projects in delivery of the AMS:

1. Future ATM/ANS Delivery Group:

- EC (Electronic Conspicuity)
- C2 Link (Command & Control Link)
- DAA (Detect & Avoid)
- GI (Ground Infrastructure)
- UTM (UAS Traffic Management).

2. Data Delivery Group

- System Wide Information Management (SWIM).

C5 In parallel with the Control Boards and their structure, external partners play a critical role in the delivery of specific elements of the AMS, through coordinated cooperation and defined responsibilities. These are:

- ACOG (Airspace Change Organising Group)
- NERL (NATS (En Route) plc)
- Ministry of Defence
- UKADS (UK Airspace Design Service).