



Future Airspace Strategy Brief London City Airport Consultative Committee - LCACC

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Phil Roberts

Assistant Director of Airspace Policy CAA

What is FAS?

- **FAS is a strategic framework that will pull together a complex and diverse set of policy and regulatory issues that will enable judgements to be made that are properly underpinned by cohesive and cogent policy formulation**
- **This will, in turn, enable air navigation service providers (such as NATS) to create an airspace structure that is fit for the future, effective, efficient and ensures that the UK meets any international obligations that are placed upon it**
- **It is not a detailed implementation plan, although such plans will be driven by the outcome of the FAS work**

The FAS concept

FAS analysis concluded a flexible, robust strategy is required that is responsive to Government policy on aviation



- Initial Impetus
- Broader context

The Context For Developing the FAS

The FAS sets out the strategy for modernising the UK airspace system answering the question " *How can we make the most efficient use of airspace, to meet users requirements, within future constraints?*"

In scope for the FAS

- Maximising efficiency of the system within **safety** and **environmental** constraints
- Integration with **SES II** and **SESAR**
- **Balancing demand** for airspace capacity **with supply** - when and where it occurs
- Setting out the **characteristics** and **benefits** of the future airspace system
- **Roadmap for implementation** of changes.

Areas not in scope but key to delivering overall improvements

- The **efficiency of airports'** operations (scheduling, ground movements etc.)
- Government policy on **airport development**
- A detailed **plan for implementation** of the proposed changes
- Alignment of **industry investment plans** to implement changes
- Mechanisms to track the overall **performance** of the system as changes are implemented.

What is the FAS about

UK Airspace requirements for the future and the FAS Vision

UK Airspace Requires Modernisation to:

- Deal with current hotspots of congestion
- Enable and facilitate continuous improvement in safety
- Implement SES proposals
- Take advantage of technological developments to improve efficiency
- Be responsive to Government policy and decision-making
- Ensure access to sufficient airspace for non CAT users
- Provide flexibility within the system to enable future development and advancements

FAS Vision

Safe, efficient airspace, that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment

The FAS Vision

Completed comprehensive draft of the FAS, to be refined and agreed by aviation stakeholders (Airports, Airlines, ANSPs, GA, NGOs etc)

Jun 09 to Oct 09
Stock-take of key issues/concepts



Nov 09 to Nov 10
Produce draft for consultation



1 Nov 10 to 7 Feb 11
Stakeholder Consultation

Captures what FAS seeks to address:

- Demand/Supply
- Safety
- Technology & Ops.
- Environment
- Policy & Reg.



Draft strategy for airspace out to 2030:

- Characteristics of 2030 airspace
- Framework of potential changes
- Priorities and risks

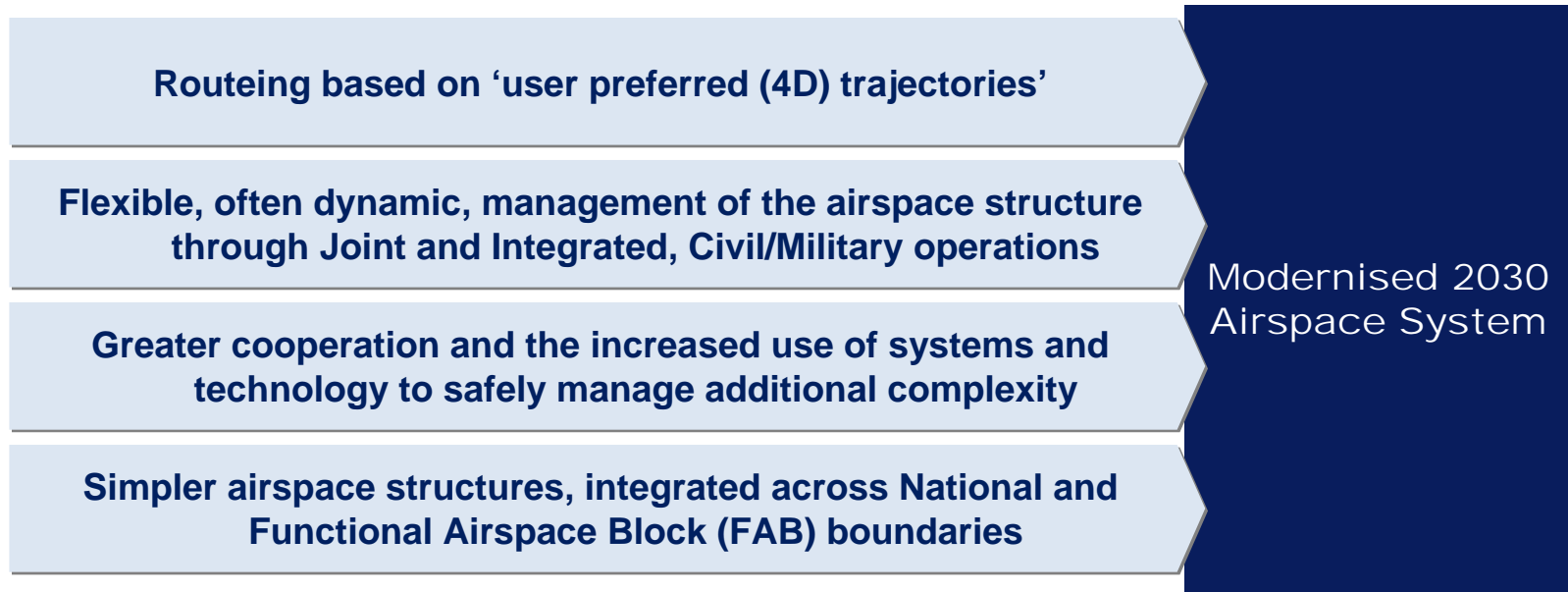


Refine strategy with stakeholders:

- Gain industry buy-in and commitment
- Demonstrate commercial feasibility and plan for implementation

Progress Update

FAS proposes significant changes to modernise the way the UK's airspace system operates over next 20 years, introducing greater flexibility, cooperation and systemisation



Characteristics of 2030 Airspace

Implementation of the changes set out in the FAS aim to deliver benefits in safety, capacity, the environment and cost effectiveness

Safety	Capacity	Environmental	Cost
<ul style="list-style-type: none"> - Performance-based navigation allows routes to be flown more accurately and consistently - Building flexibility and resilience into the system reduces the occurrence of pinch points and high risk situations - New communications, navigation and surveillance technology improves situational awareness of users and controllers - Simplification of the airspace structure and classification reduces potential for errors, infringements and level busts 	<ul style="list-style-type: none"> - Increased navigational accuracy enables closer spaced routes - Introduction of free routeing, systemisation and ATM support tools enables higher volumes of traffic to be managed - Flexible / dynamic structures accommodate demand when and where it occurs - Reduced reliance on stack holding increases design freedom in the busy terminal airspace - Integration of airspace through FABs mean interfaces are simpler and more efficient - Access to sufficient airspace for non-CAT users 	<ul style="list-style-type: none"> - Enabling more direct routes and optimal vertical profiles reduces GHG emissions - Continuous climb and descent procedures reduce the total number of people impacted by aircraft noise - FAB integration expands environmental benefits across state borders - Reduced reliance on stack holding reduces GHG emissions from delays in the air 	<ul style="list-style-type: none"> - Enabling more direct routes and optimal vertical profiles reduces fuel burn and costs - Building flexibility and resilience into the system reduces delays that impose costs on users and suppliers of airspace - Move to space-based navigation aids removes cost of maintaining and replacing ground infrastructure - Common, simpler approaches to management and regulation through FAB integration reduces costs to users and regulators - Alignment of strategies across different industry partners and across ANSPs allows for a seamless and more cost effective change process as different techniques are introduced

Benefits



The overall airspace system can be separated into five areas

Communications

Navigation

Surveillance

ATM Capability

Airspace Structure

The ATM System



2011 – 14:

- Navigation** – Performance-based navigation implemented in the en-route environment.
- Surveillance** - Wider adoption of Mode S and ADS B.
- Communication** - Data-link introduced for standard messages and clearances.
- ATM Capability** - Arrival Management tools implemented in some busy terminal operations.
- Airspace Structure** - Introduce a common transition altitude in controlled airspace.

2015 – 20:

- Navigation** – Advanced RNP (part of SES II IR) allows aircraft to maintain the spacing during a turn.
- Surveillance** – Move towards more cooperative solution ATC downloading data from the aircraft.
- Communication** – Use of Data-link expanded to become primary method of communications.
- ATM Capability** - Departure Management introduced. Arrival Management expands to point of departure.
- Airspace Structure** - Expand free routing / self separation areas to include lower flight levels.

2021 – 30:

- Navigation** – Advanced RNP introduces vertical containment and 4D trajectory optimisation.
- Surveillance** – Roll-out of Multi Static PSR to replace primary radar.
- ATM Capability** – New tools to support 4D trajectory optimisation.
- Airspace Structure** - Introduce dynamic (near real time) management of airspace structures.

Example Road Map

FAS Document

Three Parts

- Part 1 – What the FAS aims to consider, address and achieve.
- Part 2 – The high-level characteristics of the future airspace, framework of potential changes and associated benefits.
- Part 3 – Ensuring safe, balanced and effective decision-making and implementation.

Appendices

- App 1 – Future Growth in Demand for Airspace: Scenario Modelling Detail.
- App 2 – Technology and Operations Roadmap.
- App 3 – Performance-Based Navigation.
- App 4 – Environmental Metrics

FAS Document

FAS Document

Key Points

A synopsis of the key points being considered in the FAS document are highlighted in **bold blue** and are summarised, along with a reference to the relevant paragraphs, in Table 9 at the end of the document. There are 68 items in the table.

Synopsis Table

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Synopsis of Key Points

Table 9: Summary of Synopsis of Key Points

#	Synopsis of Key Point	Para ref.
PART 1		
1	The FAS 2030 Vision is to establish: "Safe, efficient airspace, that has the capacity to meet reasonable demand, balances the needs of all users and mitigates the impact of aviation on the environment"	17
2	The three broad strategic drivers for the development of the UK's airspace system are to: <ul style="list-style-type: none">• Ensure safety is maintained and where possible improved, in light of the growing demand for aviation• Balance the demand for airspace capacity with supply, ensuring airspace is not a constraint on users operations.• Enable aircraft to fly in more environmentally efficient ways, with particular focus on the greenhouse gas (GHG) emissions they produce while airborne.	20
3	The aspiration is that all changes will contribute to directly reducing risk and/or contribute to the development of a fundamentally safer system. As an absolute minimum safety levels must be at least maintained in making changes that benefit other aspects of the system.	20
4	The FAS will seek to promote work to ensure that the safety regulatory framework is developed in order to be sufficiently robust to mitigate the risks of the future airspace system and thus assure the safety of the system overall.	23
5	It is likely that the pressure on the UK's airspace system will continue to grow over the long-term with the changing profile of demand from different user groups, leading to a tightening in the supply and demand balance for airspace capacity.	25,26
6	Ensuring that national airspace can meet reasonable demand growth from potential airport development is key	27,28
7	Challenging future demand scenarios for airspace capacity have been modelled in order to inform decision-making as the FAS work progresses.	29,30

Future Airspace Strategy Draft v2.0 DRAFT

Synopsis of Key Points

FAS Document

Conclusions and Recommendations

The conclusions and recommendations are highlighted in **bold green** as they appear in the body of the FAS document and are summarised, along with a reference to the relevant paragraph, in the table at the end of the document. There are 64 items in the table

Recommendations Table

Conclusions and Recommendations

Table B: Summary of Conclusions and Recommendations

Once the Strategy has been agreed with stakeholders then the work to confirm ownership of each item and its priority will be undertaken.

#	Conclusion / Recommendation	Para.ref.	Owner	Priority (HML)
PART 1				
1	Undertake a safety assessment of any actual policy change or major proposed change to the airspace system resulting from the progression of the FAS to ensure that safety standards are not compromised.	24	TBD	TBD
2	Review change assessments produced by ANSPs under their Individual Safety Management Systems in accordance with the relevant legislation in support of the implementation of changes proposed in FAS.	24	TBD	TBD
3	Assess the impact of new or emergent European legislative initiatives, during the development of revised policy or proposed concepts and associated change initiatives, in order to avoid regulatory work and to ensure that safety standards are not threatened.	24	TBD	TBD
4	In seeking to reach an outcome that can satisfy the requirements all airspace users, the optimal solution overall may not be one that is optimal for all groups of users individually. The FAS should support the development of a vehicle to consider how compromises can best be made for the good of all airspace users, without affecting unduly the interests of any one particular group (or groups). This process will be particularly challenging where a user group is, or perceives it is, being left with a	26	TBD	TBD

Conclusions and Recommendations

FAS Document

Risks to Implementation

Risks associated with the implementation of the FAS are highlighted in **bold red** in the text of the document. A full list of risks associated with the FAS are in the table at the end of the document. Once the FAS is agreed, work will be needed to make a high-level assessment of risk proximity, probability and impact followed by identification of appropriate mitigations. There are currently 35 items in the table

Risk Table

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Summary of Risks to the Implementation of the FAS

Table 10: Summary of risks to the implementation of the FAS

Once the Strategy has been agreed with stakeholders then the work on proximity, probability and impact will be undertaken.

#	Description	Para.ref.	Proximity	Prob. (1-4)	Impact (1-4)
PART 1					
1	Dedicating the significant effort required to comply with the large volume of regulatory changes anticipated risks stretching the finite resources of UK industry, to the potential detriment of safety.	23	TBD	TBD	TBD
2	The economic downturn, and recovery from it, continues to place pressure on the aviation industry as a whole that risks a reduction in its capability to continually improve safety and drive change	23	TBD	TBD	TBD
3	There is a risk that European ATM initiatives, such as SES and SESAR, which lead the development of many of the future airspace concepts, and ultimately many of the proposed changes in the FAS, do not sufficiently assure the safety of these changes for the UK system or for the European network as a whole.	23	TBD	TBD	TBD
4	Some elements of EASA's extended remit will reduce the UK's national discretion in rulemaking. This should be mitigated by the UK's ongoing input to the development of the EASA regulations.	23	TBD	TBD	TBD

Future Airspace Strategy Draft v2.0

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Risks

Consultation 1 November 2010 to 7 February 2011

CAA Webpage for FAS

- Full draft FAS document
- Consultation document with questions
- Airspace for Tomorrow 1 and 2
- E-mail address for questions and replies
FAS@caa.co.uk

www.caa.co.uk/FAS

E-mail: **FAS@caa.co.uk**

Consultation Document



Developing the United Kingdom's
Future Airspace Strategy

Consultation and Stakeholder Engagement

1 November 2010

Consultation

Consultation Questions

- **Stakeholders are free to provide general, or specific, comments on the draft in addition to the 14 questions asked in the consultation document.**
- **Consultations Questions are set out at paragraph 6 of the Consultation Document under the headings of:**

General

Policy and Regulation

Technology and Operations

Environment

Safety

Capacity and Demand

Consultation Questions

Consultation – Next Steps

- **Once the consultation is closed the responses will be considered.**
- **The draft FAS document updated accordingly.**
- **Aim to produce and publish the Future Airspace Strategy in the second quarter of 2011.**
- **Should the consultation responses result in the requirement for a fundamental change then further consultation may needed.**

Consultation

Consultation – Next Steps

Aviation stakeholders are invited to provide written response to this consultation by 7 February 2011 by e-mail to: **FAS@caa.co.uk**, or in writing to:

Tony Rapson
Policy Coordinator
Directorate of Airspace Policy
CAA House
45 – 59 Kingsway
London
WC2B 6TE

For more information call: 020 7453 6522
or e-mail **FAS@caa.co.uk** or tony.rapson@caa.co.uk

CONSULTATION DOCUMENTS CAN BE FOUND AT: **www.caa.co.uk/FAS**

Consultation

Questions?

