UK Civil Aviation Authority

The UK National Aviation Safety Plan

2022-2024

Foreword

UK airspace and UK airlines are among the safest in the world. There has not been a fatality on a commercial airline in the UK since 1989. Even with this success, we are not complacent; Government is committed, through the UK state safety system, to maintaining and improving the high safety standards in aviation.

This National Aviation Safety Plan (NASP) represents a key part of ensuring we remain ahead of aviation safety risks, even as the aviation industry and the context in which we operate evolves at an unprecedented rate. Our support for emerging technology in aviation, our response to the Covid-19 pandemic, and our departure from the European Union all shape and inform our dynamic approach to safety; as a living document, this NASP captures the way in which we respond to and prioritise action to continually improve aviation safety in the UK.

In this changing context, the United Kingdom continues to strive for the highest aviation safety standards to protect consumers and third-party individuals. We recognise that the expectations as to what an aviation safety system will provide are broadening, and work to develop the State Safety Programme centres on ensuring safety standards are delivered within an environment which can support innovators. This consideration is formalised as part of the CAA's growth duty and its duty to enable leadership on sustainability challenges.

This NASP articulates the UK's strategy for reducing the aviation safety risk to the public in this context and our priorities. It provides an overview of key operational and systemic risks in the UK system as they flow from global and regional plans and sets out the action needed to reduce these to acceptable levels in the form of Safety Enhancement Initiatives (SEIs).

By being intrinsically linked to the UK's wider State Safety Programme, these actions are meaningfully linked to strategic priorities identified and endorsed by stakeholders across the programme, with the State Safety Board being the key decision-making board overseeing the programme and prioritisation within it. The reality is that safety will always be a focus for continuous improvement; by bringing together stakeholders across the UK system, this NASP ensures that we are moving in the direction of greater accountability, efficiency, and proportionality for the enhancements we make, and that we are prioritising appropriately to address the key safety risks.

Dr Rannia Leontaridi
UK Director General Civil Aviation

Contents

Abbreviations and acronyms

Civil Aviation Authority	>	**CAA**
Controlled Flight into Terrain	>	**CFIT**
European Regional Aviation Safety Plan	>	**EUR RASP**
European Union Aviation Safety Agency	>	**EASA**
Global Aviation Safety Plan	>	**GASP**
International Civil Aviation Organization	>	**ICAO**
Loss of Control In-Flight	>	**LOC-I**
National Aviation Safety Plan	>	**NASP**
Remotely Piloted Air System	>	**RPAS**
Safety Enhancement Initiatives	>	**SEIs**
Safety Management System	>	**SMS**
Standards And Recommended Practices	>	**SARPs**
State Safety Board	>	**SSB**
State Safety Objective	>	**SSO**
Urban Air Mobility	>	**UAM**

Operational Context

Traffic levels in the UK between 1st April 2021 to 31st March 2022 saw our airports handle a total of 1,358,996 flights, departing and arriving. In addition, there were 342,628 overflights of our airspace. This equates to around 85% of the pre-pandemic levels of 2019, with an expected growth through the rest of 2022 to over 90% of 2019 traffic.

In the long term, it is predicted that there will be a gradual increase of flying schedules over the next few years, however it is predicted that traffic recovery will not fully return to pre-pandemic levels (2019) until 2024 at the earliest. [Source: Eurocontrol]

Our Aviation Community

Aircraft and Air Operators

- 19,254 G-registered aircraft
  - 17,918 of these are considered as general aviation aircraft. 93%
  - 1,101 aircraft registered as commercial and having a Maximum Take-off Mass greater than 5,700kg
- 119 Air Operator Certificate (AOC) Holders

General Aviation

- 280 Training organisations
  - 64 Approved
  - 216 Declared
- 26 Balloon organisations
- 46 Ex-Military organisations (37 non-SSAC and 9 SSAC)
- 51 Parachute organisations (31 Parachute Training Organisations and 20 Parachute Display Teams)
- 21 Part SPO organisations
- 4 Wing walker organisations

Medical

- 116 Aeromedical examiners
- 3 Aeromedical centres

Aerodromes & Airspace

- 215 Active Aerodromes
  - 92 Certified of which 45 are International
  - 38 Licensed
  - 4 Temporary or Seasonal
  - 81 Unlicensed
- Airspace classified as A, C, D, E and G
- 1,358,996 aircraft movements between 1 April 2021 to 31 March 2022

Air Navigation Service Providers

- 60 Air Traffic Service Providers
- 26 Flight Information Service Units
- 6 Communication Navigation and Surveillance Providers
- 3 Aeronautical Meteorological Service Providers

Maintenance Organisations

- 533 Part 145 organisations with an additional 185 pending approval
- 129 Part MG organisations
- 30 Part CAMO organisations with an additional 120 pending approval

Our Aviation Community

Space

- 145 Orbital Licences issued
- 23 Orbital Licences applications received
- 4 Launch Operator applications received
- 2 Range Licence applications received
- 2 Spaceport applications received

Training Organisations

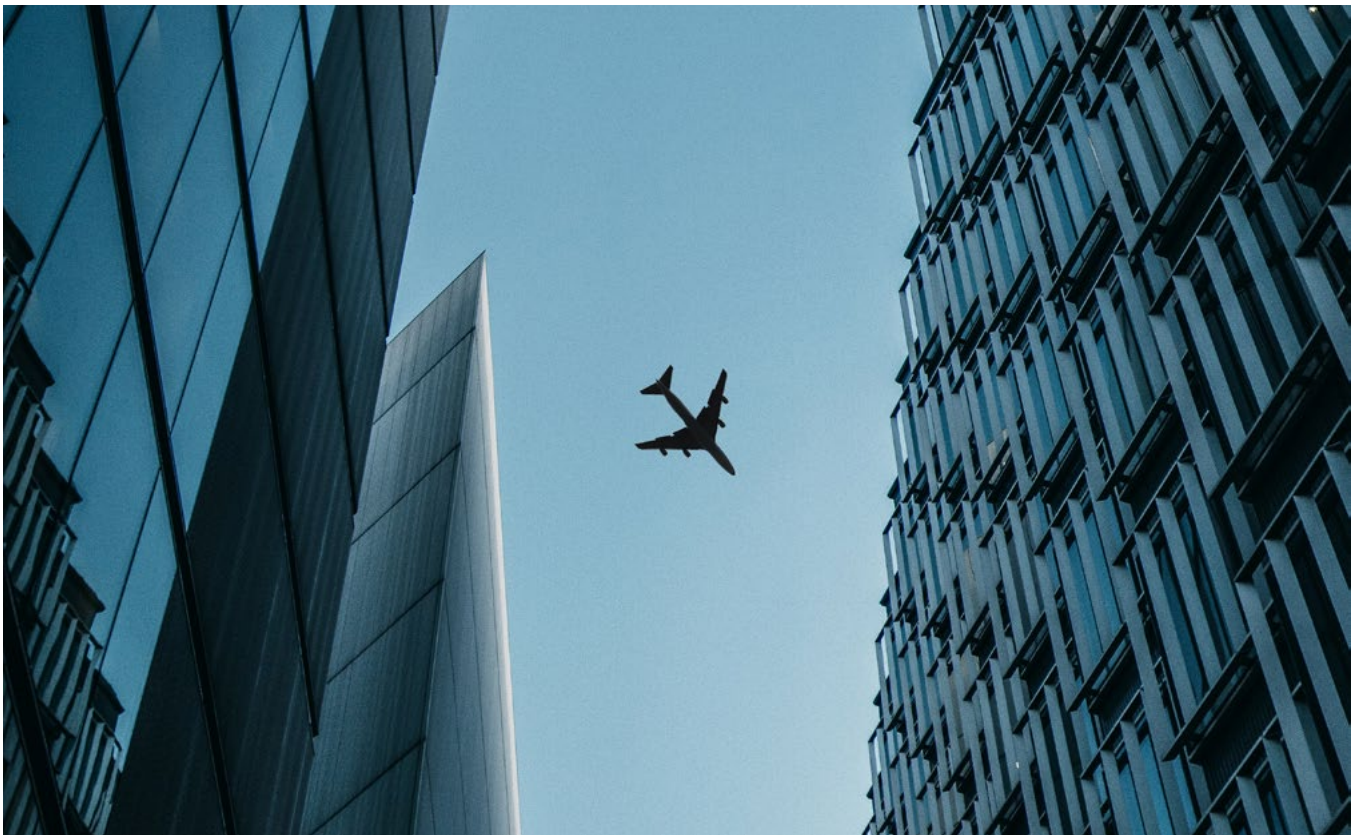
- 482 Pilot training organisations, 207 Approved Training Organisations and 275 Declared Training Organisations
- 280 General Aviation training organisations
- 39 Maintenance engineer training organisations, with an additional 9 pending approval
- 35 Air Traffic Control training organisations

Remotely Piloted Aircraft Systems

- 455,192 Active users (273,678 Flyer ID holders (13+), 176,086 Operator ID holders (18+), 5,428 Flyer ID holders (under 13))
- 7,000 Specific Category Operational Authorisations
- 4,675 Organisations holding an active Operator ID
- 30 Regulated Assessment Entities (RAE's)
- 3 Active Model/Flying Associations

Licence Holders

- 30,141 Private Pilots
- 11,456 Maintenance Engineers
- 10,624 Air Transport Pilots
- 6,095 Commercial Pilots
- 2,540 Light Aircraft Pilots
- 1,740 Air Traffic Controllers



Introduction

Purpose

Since 2008 the State Safety Programme has set out how the UK aviation system is regulated, who our stakeholders are, how they interrelate and the role that each stakeholder plays with respect to safety.

The State Safety Programme continues to adapt as the aviation environment changes, thus allowing us to keep our stakeholders informed of regulatory activities and ensuring that we remain accountable for our actions and continuously improve our ability to protect the public.

The International Civil Aviation Organization's (ICAO) Global Aviation Safety Plan (GASP) outlines key Safety Enhancement Initiatives (SEIs) at the global level; it includes improvements in regulatory governance, infrastructure and the management of organisational challenges and operational safety risks. Containing the global aviation safety roadmap, it serves as an action plan to assist the aviation community in achieving the GASP goals through a structured, common frame of reference for all relevant stakeholders.

Flowing from the GASP and covering the ICAO European region is the European Regional Aviation Safety Plan (EUR RASP). The Civil Aviation Authority (CAA) has also consulted the European Plan for Aviation Safety, which is an intermediate 'regional' document for European Union Aviation Safety Agency (EASA) member states.

It is from this hierarchy of documents that one of the key outputs of the State Safety programme is created, the National Aviation Safety Plan (NASP). This is where we define the actions for safety improvement, following our general principle of compliance with ICAO standards, unless there are exceptional UK specific circumstances. It can therefore be viewed as the 'dynamic' part of the SSP.

State Approach

The State Safety Board (SSB) is accountable for the development, implementation and monitoring of the NASP and is chaired by the Department for Transport. The Civil Aviation Authority has been delegated responsibility for the maintenance of the NASP and for monitoring the actions described in the plan. The NASP has been created in collaboration with the other SSB stakeholders, who are:

- Department for Transport
- Air Safety Support International
- UK Overseas Territories and Crown Dependencies
- Maritime and Coastguard Agency
- Military Aviation Authority
- Air Accidents Investigation Branch

This first iteration of the NASP focusses on the Civil Aviation Authority's role in state safety; the integration of the other State Safety Board stakeholder roles will be added as part of a 2023 update. The NASP will be accompanied by an Implementation Plan which will detail how we aim to deliver on the activities we have identified.

Within the NASP, we will present the Key Risk Areas within the UK aviation system; these are derived from ICAO's High Risk Categories which in turn were derived from the UK's Significant Seven. The Key Risk Areas also consider the intelligence from the UK's aviation safety risk management systems and safety data collection and processing systems. The work of service providers in developing and maintaining their own safety management systems (SMSs) also provides a significant amount of input in determining the actions within the UK's NASP.

State Safety

The methodology employed in the UK for establishment of an Acceptable Level of Safety Performance and State Safety Objectives is different to that envisaged by ICAO, as it focuses on the establishment of objectives from which Safety Performance Indicators and targets are derived; these then establish the Acceptable Level of Safety Performance.

In the UK, at a high-level, our Acceptable Level of Safety Performance is:

"No accidents involving commercial air transport that result in serious injuries or fatalities. No serious injuries of fatalities to third parties as a result of aviation activities."

This statement is supported by five State Safety Objectives (SSO); it is through the Key Risk Areas where we aim to achieve our objectives as a state. They are grouped into Primary Objectives that are operational or largely outcome orientated, and Secondary Objectives that cover State activities outside the core regulatory remit. The State Safety Objectives are central to the Performance Based Regulation system in the UK.

The data used to monitor performance of the primary objectives and in the Accident and Serious Incident data is from 2019/2020. As such, it does not include the fatal accident at Plymouth Hospital helicopter landing site in March 2022. The CAA is conducting a regulatory safety review of the current processes and procedures for helicopter operations into hospital landing sites. The CAA is utilising a systems theory approach which will assist in understanding the relationships across multiple stakeholders in this complex and critical operating environment. This is independent of the investigation being conducted by the Air Accidents Investigation Branch.

In addition to these State Safety Objectives, we are monitoring human performance and organisational change management as our industry emerges from the impact of Covid-19. We are examining resilience and recovery; this includes short term rapid operational changes affecting schedules as new variants appear, as well as the longer-term management of resource from initial training through to maintaining the competence and currency of all aviation personnel.

State Safety Objectives		
Primary		**Safety Performance 2019/2020**
SSO 1	No fatal accidents in commercial air transport Aeroplanes where the UK has State oversight responsibility.	**0**
SSO 2	No fatal accidents in commercial air transport Rotorcraft where the UK has State oversight responsibility.	**0**
SSO 3	No fatal accidents involving people on the ground in the UK as a result of an aviation accident.	**0**
Secondary		
SSO 4	We act to reduce the likelihood of UK citizens being involved in an aviation accident anywhere else in the world by supporting and influencing global aviation safety.	
SSO 5	Embed an effective State Safety Programme that delivers our Acceptable Level of Safety Performance.	

Wider Context and Considerations

We are also focusing on the challenges, both regulatory and operational, associated with future air mobility and the hazards linked to the new threats associated with Dangerous Goods as cargo or as personal electronic devices.

Safety data and intelligence are crucial to achieving our aims. When used alongside international partners, industry stakeholders and CAA expertise, the insights derived from data and intelligence feeds regulatory and industry initiatives aimed at maximising the safety benefit to all UK citizens, whilst also supporting economic and sustainable growth.

This NASP focuses on the CAA and contains the strategic direction of the UK for the management of aviation safety for the period 2022-2024. The plan will describe how we have identified the risks associated with our objectives, how we create safety performance indicators to monitor system effectiveness and the achievement of our aims.

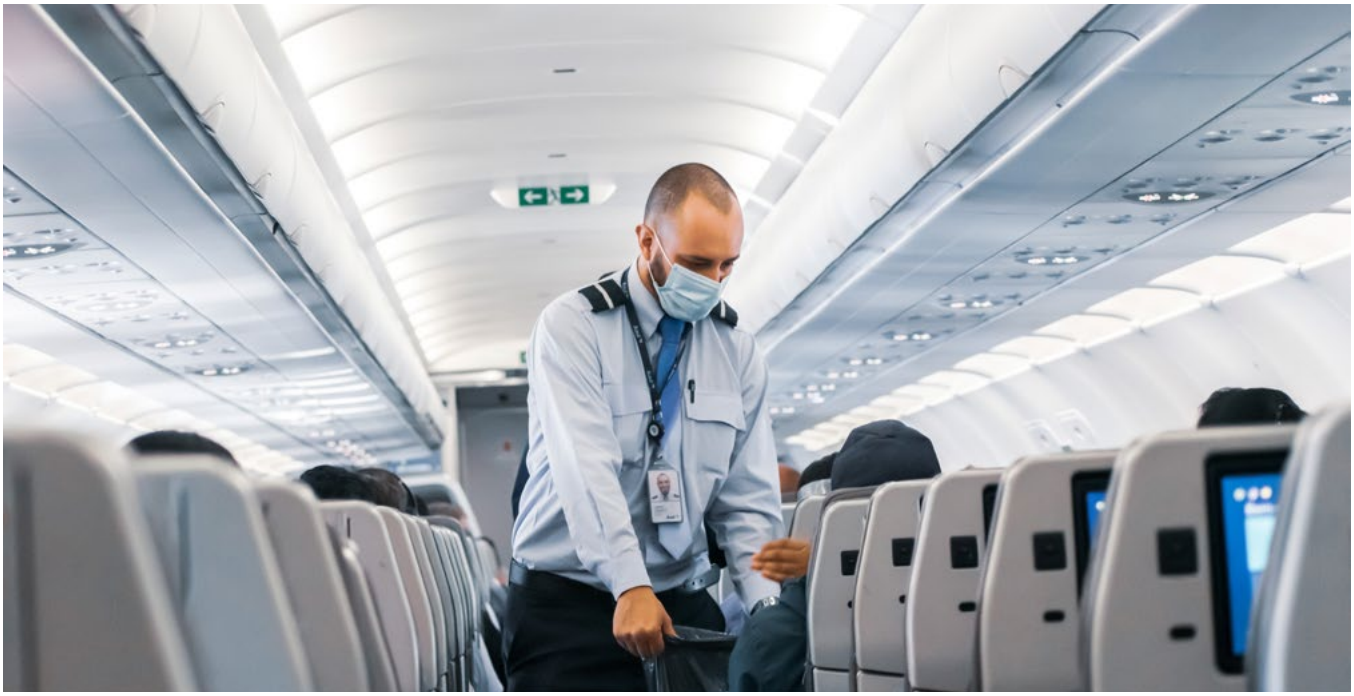
The Department for Transport have published 'Flightpath to the future', it is a strategic framework for the aviation sector that supports their vision for a modern, innovative and efficient sector over the next 10 years. This 10-point plan focuses on how government and industry can work together to deliver a successful aviation sector of the future.

This strategic framework builds on the responses received to Aviation 2050 and establishes our ambitions and commitments for aviation over the next 10 years.

The pace of change across the aviation community is set to quicken. Traffic levels across the commercial, general aviation and military sectors are forecast to rise, coincident with new innovations such as remotely piloted aircraft systems, which are already proliferating. There is a consensus that airspace modernisation is required to safely enable innovation while at the same time maintaining high standards of aviation safety. This includes reducing the complexity of airspace structures and introducing new technologies that help to manage the residual risks. The CAA's Airspace Modernisation Strategy describes the objectives set in UK governmental and international policy for airspace to be modernised and sets out the work that industry and other entities are required to carry out to deliver that modernisation while maintaining and improving the UK's high levels of safety.

All the associated activities within this NASP are considered alongside the sustainability goals, that are bolstered by the Department for Transport Jet Zero strategy for net zero in aviation.

In some cases, the plan will align with the Global Aviation Safety Plan, European Regional Aviation Safety Plan and where applicable the European Plan for Aviation Safety. In other cases, we may have a requirement for actions that are outside of those in the European Regional Aviation Safety Plan or that hold a higher priority for the UK, because of specific national issues or requirements



National Operational Safety Risks

The Safety Enhancement Initiatives (SEIs) in the GASP are connected to all aspects of our work and relationships and the UK already has well established functions related to these initiatives. However, we must maintain and improve on these to ensure they remain effective, especially so with the current pace of Innovation and the impact this may have on the safety performance of our aviation system.

The CAA has linked actions to specific elements of the SEIs aimed directly and indirectly at maintaining and improving safety. An overview of these actions is presented below.

Commitment	Activity	SEI
As we approach the end of the European Union transition period, our rulemaking activities are maturing to provide the processes and governance for the identification of the best regulatory interventions. Our work in this area is aimed at providing the processes and systems we require to support the implementation of a regulatory development programme and ongoing response to aviation safety requirements and issues, while we continue to prepare for the ICAO Compliance Monitoring Approach, our first since 2009.	*Developing - Embedding and Continuous Improvement*	**SEI-1 Consistent implementation of ICAO SARPs at the National Level** 1B — Address all priority protocol questions (PQs) of the Universal Safety Oversight Audit Programme Continuous Monitoring Approach 1C — Establish primary aviation law and regulations, to empower the competent authority to conduct regulatory oversight, this includes separation of oversight functions and service provision functions (CE-1 and CE-2)
With the aim to attract and maintain technical expertise in a changing market, in 2022 the CAA aims to deliver an effective system that is aligned with our values with a reward approach that recognises accountability, collaboration, empowerment, judgement, and decision making in role and across boundaries. With appropriate reward and recognition, we can motivate and inspire current staff and attract new talent to our organisation.	*Established - Continuous Improvement*	**SEI-2 Development of a comprehensive regulatory oversight framework** 2C — Establish an effective system to attract, recruit, train and retain qualified and sufficient technical personnel to support regulatory oversight (see SEI-5) (CE-3 and CE-4)
The UK has an established independent accident investigation authority in the Air Accidents Investigation Branch, which has recently celebrated its centenary. The CAA maintains mutually beneficial collaborative biannual meetings with them as well as ad-hoc engagement on new developments and requirements for innovators looking to enter the Aviation System.	*Established - Engagement and Collaboration, Continuous Improvement*	**SEI-3 Establishment of an independent accident and incident investigation authority, consistent with Annex 13 — Aircraft Accident and Incident Investigation** 3A — Establish an independent accident and incident investigation authority, as per Annex 13 requirements (CE-1 and CE-3)
We are evolving the CAA capacity planning tool to enable us to deploy colleagues in our inspectorate with greater effectiveness and to also ensure that expert resource is available as future demands change. In addition, we are working to confirm and standardise our technical competencies requirements data, which will link to our initial and recurrent training programmes and existing Learning Management System training records.	*Established - Established - Continuous Improvement*	**SEI-4 Strategic allocation of resources to enable effective safety oversight** 4B — Establish a process for the resource planning and allocation in alignment with a competent authority's organizational structure which is required to conduct effective safety oversight (CE-2 and CE-3). SEI-1 and SEI-5 could be used to identify resource requirements (CE-1 to CE-5) **SEI-5 Qualified technical personnel to support effective safety oversight** 5A — Establish an effective system to identify and track qualifications and training of existing technical personnel (CE-4) **SEI-10 Strategic allocation of resources to enable effective safety oversight** 10A — Use SEI-1 and SEI-5 to identify resource requirements (CE-6 to CE-8)

National Operational Safety Risks

Commitment	Activity	SEI
The CAA regularly participates in sectorised stakeholder meetings, such as the Department for Transport's Industry Engagement forum, the Corporate Aviation Safety Executive, the Flight Operations Liaison Group, the Offshore Helicopter Safety Leadership Group and General Aviation Partnership to maintain awareness of initiatives, future policy making and safety issues as they arise.	*Established - Engagement and Collaboration*	**SEI-6 Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner** 6A — Based on the identified safety deficiencies, establish a mechanism to identify collaborators and develop an action plan for the resolution of those deficiencies (CE-1 to CE-5) **SEI-11 Strategic collaboration with key aviation stakeholders to enhance safety in a coordinated manner** 11A — Based on the identified safety deficiencies, establish a mechanism to identify collaborators and develop an action plan for the resolution of those deficiencies (CE-6 to CE-8)
While the CAA prepares for the 2022 ICAO audit under the Continuous Monitoring Approach, we have identified actions we will need to take to maintain our evidence base and any corrective action plans beyond 2022. Supported by our internal audit and assurance teams we routinely monitor our performance.	*Developing - Continuous Improvement*	**SEI-7 Provision of the primary source of safety information to ICAO by completing, submitting, and updating all relevant documents and records** 7E — Update documents and records, as required, in a timely manner **SEI-12 Continued provision of the primary source of safety information to ICAO by updating all relevant documents and records as progress is made** 12A — Update USOAP corrective action plan items
The information and actions generated in the CAA from the Regulatory Safety Management System are routinely shared with members of the SSB to prioritise safety concerns and related mitigating actions. How this information is evaluated and shared at the national level will be reviewed to ensure timely interventions can be applied.	*Established - Engagement and Collaboration*	**SEI-8 Consistent implementation ICAO SARPs at the national level** 8A — Work at the national level to address significant safety concerns as a priority
We have established an Aviation Licensing Improvement Project which aims to improve the licensing customer experience by improving the quality of applications received and increasing efficiency in processing.	*Established - Continuous Improvement*	**SEI-9 Continued implementation of and compliance with ICAO SARPs at the national level** 9A — Implement licensing, certification, authorization and approval processes (CE-6)
Our SSP is implemented at the national level. Occasionally, changes affecting the UK aviation system are identified that require a modification to the UK State Safety Programme or its supporting functions. In these cases, options to implement the required changes are presented to the SSB and an approach is approved that is then implemented.	*Established - Engagement and Collaboration, Continuous Improvement*	**SEI-13 Start of SSP implementation at the national level** 13A — Secure State-level commitment to improve safety **SEI-14 Strategic allocation of resources to start SSP implementation** 14A — Establish a process for planning and allocation of resources to enable SSP implementation and identify areas where resources are needed **SEI-15 Strategic collaboration with key aviation stakeholders to start SSP implementation** 15A — Identify areas where collaboration/support is needed as part of the SSP implementation plan (See SEI-14) **SEI-16 Strategic collaboration with key aviation stakeholders to complete SSP implementation** 16B — Work with collaborators to ensure all elements of the SSP are present, suitable, operational and effective

National Operational Safety Risks

Commitment	Activity	SEI
We continue to utilise the Regulatory Safety Management System to identify, track and prioritise risks affecting the UK consumer and the public and that those aviation safety risks are being managed effectively.	*Established - Engagement and Collaboration, Continuous Improvement*	**SEI-17 Establishment of safety risk management at the national level (step 1)** 17E — Establish and utilize a process to ensure the assessment of safety risks associated with identified hazards
Safety Performance Indicators currently exist at varying stages of maturity. We aim to consolidate these indicators aligning them to feed the Key Risk Areas. A range of monitors, triggers and targets will be included in these Safety Performance Indicators to monitor industry and authority performance against our objectives.	*Established - Continuous Improvement*	**SEI-18 Establishment of safety risk management at the national level (step 2)** 18A — Develop safety performance indicators using the established safety risk management process
We continue to invest in resources and systems to enable smarter analysis and improved understanding of risks using BowTie/barrier methodology. The insights derived from our risk modelling support our Regulatory Safety Management System and facilitates industry conversation and safety communication.	*Established - Engagement and Collaboration, Continuous Improvement*	**SEI-19 Acquisition of resources to increase the proactive use of risk modelling capabilities** 19A — Identify resources needed to support safety intelligence collection and processing, advanced data analysis, risk modelling and information sharing capabilities
The provision of Just Culture training should be extended to all internal colleagues to enable us to hold supportive conversations internally and with industry to promote non-punitive safety reporting. We are exploring how the training can be amended to improve awareness within new entrants to the aviation system of the importance of a safety culture.	*Established - Continuous Improvement*	**SEI-20 Strategic collaboration with key aviation stakeholders to support the proactive use of risk modelling capabilities** 20A — Identify areas where collaboration/ support is needed to ensure that stakeholders understand and implement safety culture concepts to fully embrace an open, just culture and non-punitive safety reporting
We are considering combining our security and safety reporting systems to further enhance our safety picture.	*Established - Continuous Improvement*	**SEI-21 Advancement of safety risk management at the national level** 21A — Establish data sharing connectivity and integration among the State's aviation safety databases, including the mandatory occurrences reporting system, voluntary safety reporting systems, safety audit reports and aviation system statistics (traffic counts, weather information, EI scores, etc.)

National Operational Safety Risks

In addition to the actions listed above, we can also link the SEIs, whether they are new initiatives or considered as business as usual, to the CAA's Board priorities. Together this explains how we are maintaining, reacting, and evolving the business to ensure we remain agile and able to continue to influence the safety conversation.

Aviation Recovery

Use our role to encourage good consumer outcomes and operational resilience, while recognising the likely demand/supply constraints in the system this year and the importance of operational and financial recovery for commercial aviation.

Examples:

- Deliver a robust programme for safety, security and consumer protection
- Take an active role in co-ordinating responses to cross-sector/entity issues
- Continue to promote more financial robustness amongst ATOL[1] holders and airlines, while supporting growth and competition
- Realistic and deliverable service levels in place for passengers with reduced mobility

Service Delivery

Enhanced focus on improving the customer experience of CAA's service delivery and dealing effectively with the volume of applications expected with the end of the EU recognition period.

Examples:

- Service level agreements consistently met, with resilience built in to meet increased demands
- Improve how we deal with customers in terms of interactions and complaints
- Transform business processes by leveraging digital solutions to improve customer experience
- Improve transparency and regularly make public our performance data

ICAO Audit

In partnership with DfT, we prepare for the ICAO audit by November 2022, achieving a minimum of 95% score for audited CAA scope.

Examples:

- All continuous monitoring approach tools and information completed, reviewed and uploaded into the online framework before the audit
- Mock audit completed based on ICAO audit scope and timetable
- Online framework maintenance process developed, implemented and documents updated and published
- Fully participate in the DfT's state-level preparation programme

CAA Reward Strategy

Deliver a new reward model and a credible implementation plan.

Examples:

- Colleagues understand the model and have the opportunity to input their views
- Includes a robust progression mechanism and clearer, consistent grading and job naming
- Continue to have transparent pay governance in place
- Undertake bi-annual equal pay audits and address issues identified

New User Integration

Integrate new users into the existing UK aviation system, including spaceflight, RPAS (remotely piloted aircraft systems), BVLOS (beyond visual line of sight) services and UAM (urban air mobility).

Examples:

- Develop roadmaps and strategies to integrate existing and new users into UK aviation system
- RPAS and UAM[2] entities have clear pathways to air worthiness certification
- Spaceflight licensing decisions are evidence based and made in a timely manner
- All applications requiring authorisation from CAA are issued following adequate assessment of safety risk and compliance with regulations

[1]ATOL – Air Travel Organiser's Licence
[2]UAM – Urban Air Mobility

The Identification of Risks

Engagement with CAA colleagues from all domains, coupled with global insights and expertise from the wider aviation community, is fundamental in enabling us to identify risks and make sound decisions about aviation safety risks as they relate to all UK citizens. Where safety risks fall outside the remit of our direct regulatory control, we work alongside our CAA International Group colleagues in the State Safety Partnerships team to identify the appropriate levers for change and to utilise all available safety improvement avenues. Together, we recognise when cross-government and international cooperation is key to ensure we can effect real change for the benefit of all parties.

Operational Risks

The CAA's Operational Key Risk Areas match ICAO's High-Risk Categories of Runway Excursions, Runway Incursions, Loss of Control In-Flight (LOC-I), Mid-Air Collision and Controlled Flight into Terrain (CFIT), with Aircraft Environment and Ground Safety as two additional themes.

Aircraft Environment includes topics such as fire, smoke, fumes or loss of oxygen or pressure in flight. Ground Safety covers collisions or losses of separation on the ground between aircraft and vehicles, equipment, or people, on surfaces other than the runway, along with other incidents relating to ground services such as handling, loading, fuelling, de-icing etc.

The CAA's Regulatory Safety Management System contains a register of the safety risks our industry are exposed to, covering both operational and system risks. The purpose of this is to ensure that the aviation safety risks facing UK consumers and the public are being managed effectively.

At the time of publication, the top safety risks in the CAA's Regulatory Safety Management System were.

Type	Key Risk Area	Risk relates to
Operational	Aircraft Environment	Lithium battery fire in the hold of an inbound aircraft
Operational	Aircraft Environment	Lithium battery fire in the hold of an outbound aircraft
Operational	Airborne Conflict	RPAS collision with Commercial air transport
Operational	LOC-I/CFIT	Helicopter use of unapproved IFR approach procedures
Operational	Aircraft Environment	RPAS carriage of unapproved Dangerous Goods
Operational	Airborne Conflict	RPAS collision with aircraft over the public
Operational	LOC-I	RPAS loss of control over the public

The CAA is also addressing two themes that are in addition to the those defined as ICAO High Risk Categories.

Lithium battery fires: The operational risks we are treating that differ from the ICAO's High-Risk Categories are all in the UK's Aircraft Environment Key Risk Area. A lithium battery fire in the hold of an inbound or outbound aircraft sits at the top of our risk register. We have gained cross-government support in our engagements with international partners, taking a leading role in influencing a global approach to reduce the risk of lithium fires.

Further work is ongoing to mitigate the risk of undeclared or misidentified lithium batteries. One area of focus is on the checks being made to identify these goods as they enter the aviation system. The other area is on fire detection and suppression; there are some promising initiatives within the aviation community which we aim to support by collaborating with other stakeholders to provide universal technical specifications and to ensure there are no unintended consequences from introducing these controls.

Remotely Piloted Aircraft System carriage of unapproved Dangerous Goods: With a recent increase in RPAS accidents, there is potential for an RPAS carrying dangerous goods, such as lithium batteries, medical supplies or hazardous materials, to cause harm to third parties, the environment and/or property, should control of the aircraft be lost. We are supporting the development of crashworthy containers as well as undertaking safety promotion initiatives to highlight to RPAS operators the risk posed by dangerous goods. Alongside this, we will maintain an appropriate level of oversight and enforcement activity as the RPAS sector continues to develop.

Systemic Risks

Other safety issues are considered as being of utmost priority because they are systemic issues which impact the effectiveness of safety risk controls. They are identified based on analysis of data derived from ICAO's Universal Safety Oversight Audit Programme, accident and incident investigation reports, safety oversight activities, as well as through input from key national and regional stakeholders.

Degraded operational performance during regeneration following Covid-19: Aviation is a complex socio-technical system and human performance issues affect every part of the system in often unexpected or unforeseen ways. Human performance is affected by numerous contributors, known collectively as human factors. These human factors are often considered as escalation factors, more likely to exacerbate other safety risks, making them either more likely or more severe.

The impact on aviation from the Covid-19 pandemic exacerbated these issues and, with organisational restructuring and extended periods of absence right across the aviation system, the potential for manifestation of human factors risks into reality was considerable. Through stakeholder engagement, close monitoring, and guidance, we are seeing the industry slowly and safely return to a level of normality. We continue to be vigilant as the global, regional, and national situation changes to ensure we can continue to support a safe aviation system.

Inappropriately managed contracted activities leading to a reduction in safety performance: The use of contractors by operators and service providers to support business activities has always been part of the aviation system, and the strains brought about by Covid-19 have also been felt by these organisations. We have provided information to the industry seeking to highlight the hazards associated with industry recovery, promoting action plans and guidance. We will continue to champion best practice with our operators, including by highlighting that their oversight of contractors must be maintained with added focus on the ongoing staffing problems faced by ground handling organisations across the European region.

Restarting of operations in conflict areas: On occasion, access to airspace or countries must be restricted or suspended to protect consumers and operators from entering or over-flying areas where severe political and social instability exist, and where the potential for conflict is likely or ongoing. When these restrictions are lifted it can be difficult for operators to adequately assess all aspects of flight and ground safety risks. We constantly monitor these situations and discuss appropriate mitigations with aircraft operators, also engaging with the affected and neighbouring states through our State Safety Partnerships team and EASA, who has produced a useful Safety Risk Portfolio on these issues.

Type	Risk relates to
Systemic	Restarting of operations in conflict areas
Systemic	Degraded operational performance during regeneration following Covid-19
Systemic	Inappropriately managed contracted activities leading to a reduction in safety performance

The Risk with Risks

Risks change; they are affected by positive interventions such as new mitigations, or the likelihood or severity could increase with negative influences from human performance, socio-economic challenges, environmental changes, or technological factors. To prepare for this the CAA is always looking ahead, and by working closely with our international and industry partners through collaborative 'Horizon Scanning' activities, we place ourselves in the best position we can be to adapt to and manage aviation risks. With the Regulatory Safety Management System focussing on risks from the aviation communities present activities, Horizon Scanning is intended to systematically identify threats in the aviation system to develop a pro-active approach to safety risk management and ultimately proportionate regulation, supported by our Innovation team.

As well as identifying emerging or changing risks, we recognise and act upon cyclical risks and seasonal activities such as aircraft de-icing, runway snow clearance or the start of the recreational aviation flying season; activities or times of peak pressure on the aviation system that could increase the likelihood and severity of incidents. By reviewing historic safety data and utilising expert knowledge, our analyses provide the insights to enable the proactive promotion of safety awareness regarding the safety issues associated with these seasonal trends, increasing awareness to prevent occurrences.

Our internal 3P's initiative of Programmes, Publications and Promotions, supports the Safety and Airspace Regulation Group. Its objective is to engage with our stakeholders at the right time, using the right media, whether it's the Skyway Code, Safety Sense leaflet or other Civil Aviation Publication, a podcast, social media, such as our Twitter account or YouTube channel, working with our communications team to land the message.

Summary of Accidents and Serious Incidents

When accidents and serious incidents are categorised, we align them to the Key Risk Areas, assessing them using barrier methodology and selecting what the most credible outcome could be or was.

In 2020 & 2021 there were **no fatal accidents**, 5 non-fatal accidents and 39 serious incidents involving commercial aircraft over 5700 kgs occurring in the UK or with UK aircraft operating overseas.

While these are allocated to a Key Risk Area, they are generally not the worst-case outcome of that area but a precursor event or a less serious outcome, meaning we didn't lose two aircraft to controlled flight into terrain or have 16 losses of control in flight.

The safer the aviation system gets, the further back in the chain of events we must look to identify opportunities to improve our safety standards. Within these categorisations we have had one Incursion and one Excursion; the remainder are all precursor or recoverable events.

Key Risk Area	Accidents*	Serious Incidents*
Aircraft Environment	0	9
Ground Safety	4	5
Runway Excursion	1	6
Runway Incursion	0	1
Controlled Flight into Terrain	0	2
Loss of Control In-flight	0	16
Airborne Conflict	0	0

*Involving Commercial Aircraft over 5700kg

Other Safety Issues

In addition to the operational and systemic safety risks there are other areas that share our focus. Some are challenges that every State faces, for example enabling the safe integration of new technology and innovation, maintaining the integrity of safety systems from cyber-attack, or ensuring that sustainability is delivered without impacting safety. Other challenges the UK must adapt to are more specific and unique to us as a State, including enabling the growth of UK-based space operations.

Innovation

The pace of innovation in aviation is relentless. Technological advances, large private and public investments, the rise of entrepreneurship, the explosion of new entrants in the aviation sector, and the adoption of agile innovation methodologies are all driving factors. We seek to create and maintain a regulatory environment where innovation can safety integrate into the existing system.

The CAA Innovation team has set two challenges on Advanced Air Mobility and RPAS Operations Beyond Visual Line of Sight. By challenge we mean that a key emerging technology has been identified by the CAA and has been assessed as presenting a potential risk to safety if not correctly integrated into the existing aviation system. Failure or inability of the CAA to act in a timely manner may reduce the opportunity for industry to innovate or may have a detrimental effect on the ability of innovators to enter our current aviation system without increasing the likelihood and/or severity of existing safety risks.

The CAA is currently re-directing internal resource to deliver a programme of work designed to mitigate the threat of congestion and collision, whilst maximising the opportunities for innovators, the industry and the consumer.

We are aiming for routine and safe Beyond Visual Line of Sight operations by 2024 and the implementation of technologies to safely support increased volumes of air traffic and a wider diversity of aircraft, such as electric commercial passenger carrying aircraft with vertical take-off and landing capability, by 2025.

Sustainability

In 2022 an Environmental Sustainability team was established to drive our work to improve aviation's environmental performance and to take a holistic view of environmental sustainability issues. This includes those functions of the former Independent Commission on Civil Aviation Noise that the CAA agreed to take on from 1 April 2022. The team will lead on delivering the CAA's sustainability strategy and engaging consumers, industry, communities and the wider public.

We will provide advice to Government and collate information to report on aviation's sustainability performance. As well as dealing with the environmental challenges aviation presents such as noise and pollutants, we will support safe sustainability activities aimed at reducing aviation's climate impact though reducing emissions and increasing efficiency.

The increased use of greener fuels like synthetics, electricity, biofuels and hydrogen, require safety standards that don't just cover the operation of the aircraft but also preserve the safety of ground personnel during refuelling, transportation and storage operations as well as understanding the Rescue and Fire Fighting implications associated with a mixture of fuels in use on aerodromes.

As we modernise our airspace and the use of automation and artificial intelligence grows, we are looking at the potential direct or indirect risks these bring into the aviation system. The safety risks are being considered in our day-to-day work, whereas the strategic risks feature in our Environmental Sustainability Strategy.

Cyber

Due to the progressively interconnected nature of industry systems, the aviation industry must remain aware of cyber threats, both direct and indirect. The risk profile is dynamic: attackers who may be people, artificial intelligence systems or self-replicating viruses, are always looking to exploit vulnerabilities and can quickly develop new ways of breaching cyber security. This means that aviation entities need to have dynamic protection systems and we require a cyber strategy that is reviewed regularly to ensure it keeps pace with the main trends in cyber vulnerability/intent and to ensure the resilience of critical safety systems.

The objective of our Cyber Strategy is to have a proportionate and effective approach to cyber security oversight that enables our aviation industry to manage cyber security risks without compromising aviation safety, security or resilience.

The Strategy includes the implementation of a regulatory framework for the mitigation of risks to UK aviation, thus creating a cyber resilient aviation system that can continue to benefit from the advantages a networked aviation system brings.

As the applicability of cyber requirements are phased through the wider industry, we are in the process of engaging with industry cyber teams as well as safety colleagues to ensure the regulatory framework remains proportionate to the scale and scope of the operation.

Aviation is a system of systems with a lot of interconnections and interdependencies. We are continuously working with CAA colleagues and industry experts to understand where cyber vulnerabilities have the potential to impact safety systems, working together to identify mitigations to protect these key systems and preserve safety performance.

Space

In 2021 the CAA became the UK's space regulator. Our role, as a proportionate and effective safety regulator, is to support UK spaceflight to thrive as a competitive and, above all, safe industry. The regulatory framework is outcome focused, not prescriptive, and it has a safety case approach at its heart. This means that an operator applying for a launch operators or spaceport operator licence must satisfy us that they have taken all reasonable steps to ensure that the risks to public safety posed by their activities are as low as reasonably practicable.

Since we took on this responsibility, we have been working closely with the industry to make sure it understands the requirements that will enable launch from the UK, continuing to learn and adapt as we go. We are currently assessing licence applications for spaceport, launch, range and orbital operations and we have issued a number of orbital licences so far.

We are aligning this sector with the Regulatory Safety Management System and are undertaking an ongoing review to assess the risks to people and property associated with space operations, using the existing Key Risk Areas to help identify our risks.

Roadmap for Rulemaking

Until the UK's withdrawal from the European Union, the European Commission and EASA were responsible for the development of aviation regulation covering the UK. We are now developing our own systems for these activities, that includes processes to capture the various drivers for potential changes to the regulatory landscape in the UK.

The different drivers for safety policy and legislative development and implementation, also known as rulemaking activity, have been identified and prioritised in the development of a programme of change that is seeking endorsement by programme sponsors. This process is underpinned by the Aviation Legislation and Policy Sponsorship Board. The board is made up of CAA Board members and representatives from the Department for Transport who are tasked with vetting rulemaking proposals, agreeing prioritisation and endorsing the resources needed to deliver the task. We will need to increase our efforts to gather the drivers for rulemaking activity in future years as the UK becomes more distanced from equivalent activity within the EASA system while maintaining and increasing our compliance with the appropriate ICAO Standards and Recommended Practices. This requires a coordinated approach to capture drivers from both the internal and external environments.

The external drivers for rulemaking are varied, with the geopolitical situation to consider alongside UK governmental political aims and ambitions for the industry. These ambitions link to the rapid technological advances we support and the social desire for change, especially where the environment is concerned.

The internal drivers for rulemaking are already part of our function, underpinned by our strategic priorities. These include safety improvement projects (such as the introduction of enhanced underwater breathing devices to help increase survivability in the offshore helicopter sector) and innovations (such as RPAS integration). Understanding these drivers and capturing them in a rulemaking roadmap allows us to support safe growth for the industry to the benefit of consumers.

Industry Implementation of Safety Management Systems (SMS) in Airworthiness

SMS has been introduced into the EASA system in a staggered approach, with SMS being mandated for each of the major domains at different times, airworthiness being the last. The introduction of SMS for Continuing Airworthiness Management Organisations coincided with the UK's EU withdrawal and Covid-19, which introduced further challenges for the CAA and the industry.

From the CAA's perspective, the key threat to achievement has been the availability of competent resources to evaluate SMS in these organisations. With our small, dedicated team of SMS specialists we are leading on the oversight of organisations, delivering high quality training for existing surveyors and providing on-the-job training.

Organisations are finding the implementation of SMS in airworthiness challenging. One of the key risks is the lack of understanding of how hazards associated with contracted and subcontracted activities impact on the organisation.

Implementation of SMS into organisations responsible for aircraft and aircraft parts maintenance (Part 145), production and design (Part 21) is currently in the rulemaking process. It is expected that those organisations will be required to implement SMS by the end of 2025.

Safety Performance Monitoring

Effective SSP Implementation

The ICAO European Regional Aviation Safety Plan builds on the global plan and GASP Goal 2, "for EUR region States to improve their Effective Implementation score for the Critical Elements of the State's safety oversight system to achieve a score of 75% by 2024, 85% by 2026 and 95% by 2030".

A State's Effective Implementation score is a measure of how well the State has implemented the ICAO Standards and Recommended Practices contained within the ICAO Annexes. A State's Safety Oversight Index is an indicator of that State's oversight capabilities as a function of traffic volume and a target effective implementation score. Simply, if a State's score was to remain static, but traffic volume increased, the Safety Oversight Index would decrease.

The UK's current effective implementation score is 92% and, with this in mind, the UK aims to accelerate the embedding of an effective State Safety Programme by achieving the following timescales:

- 95% Effective Implementation by 2026
- 100% Effective Implementation (minus notified Deviations) by 2030
- Additionally, we will work to maintain and look to increase the UK's Safety Oversight Index

SSP Promotion

Over the next NASP period, the UK will conduct a coordinated promotion activity of the State Safety Programme and the NASP.

We will aim to embed the UK State Safety Objectives within industry to improve awareness of the relationship between industry safety performance and the UK's overall aviation safety performance. This will promote greater collaboration and engagement between industry partners and the State authorities to continually improve aviation safety for all UK citizens.

State Safety Partnerships

The International group of the CAA established State Safety Partnerships to engage with international stakeholders. This supports our State Safety Objective 4 where:

"We act to reduce the likelihood of UK citizens being involved in an aviation accident anywhere else in the world by supporting and influencing global aviation safety."

The primary focus of this activity is to work with individual states and their aviation industries to improve operational safety performance as part of a Department for Transport funded initiative and the UK SSP.

State Safety Partnerships focus on improving operational safety performance by:

- Improving the operational safety performance experienced by non-UK aircraft whilst in UK airspace and airports
- Improving the operational safety performance experienced by UK operators whilst overseas

Our approach starts with the gathering of intelligence from multiple sources, including data from established partnerships to ensure we have the most complete risk picture. The risk picture is further analysed and prioritised on the level of exposure and risk to the UK citizen. Relationships are then established with a variety of stakeholders across the global aviation system, and these continue to develop and grow.

Support from UK industry is vital for success and has been well received by airlines, air traffic services and ground handling operations. In addition, working collaboratively with other National Aviation Authorities, this initiative has proved invaluable as it has provided opportunities to validate the risk picture, share lessons learned and adopt best practice.

These engagements have also led to several important projects through which we have been able to facilitate workshops with the right level of expertise from other National Aviation Authorities and their associated industry, by working in a collaborative environment on mutual safety risks. Via these initiatives we continue to deliver improved operational safety performance globally on subjects such as mass diversion, lithium batteries and illegal public transport.

Next Steps

Looking back is as important as looking forward; globally, aviation has led the way in learning from accidents and incidents, but the safer the system gets the more we need to exploit our data. The CAA's digitalisation drive and big data exploration are just two ways we are seeking to extract maximum value from data we hold, available industry data and data from open-source platforms utilising both qualitative and quantitative inputs to help identify risks.

Turning this raw data into actionable insights allows us to continue to ensure our Performance Based Oversight regime is intelligence-led and effective. Expanding on traditional data sources also leads to the identification of Safety Enhancement Initiatives, allowing us to maintain continuous improvement momentum.

But we are not resting there; initiatives which have influenced industry across the globe for over a decade, such as the Significant Seven or our collaboratively constructed and freely available risk modelling bowties, are products to be proud of. Through the application of big data tools, we aim to breathe new life into these initiatives, with People, Systems and Environment as the themes that tie these and the global industry together through the Key Risk Areas. We look forward to sharing these with you.