



ACOG

**Airspace Change
Masterplan (Iteration 3)
Scotland:
Public Engagement
Exercise**

29 January – 10 March 2024

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INTRODUCTION

Who is ACOG and what is this public engagement exercise about?

1. The Airspace Change Organising Group (ACOG) was formed in 2019 under the direction of the UK Government Department for Transport (DfT) and Civil Aviation Authority (CAA), who co-sponsor and regulate airspace modernisation. ACOG is tasked with developing the UK Airspace Change Masterplan (the Masterplan), with oversight from an impartial Steering Committee of senior representatives drawn from across the aviation sector. More information is available on ACOG's website, www.acog.aero.
2. In developing the Masterplan, ACOG must engage with stakeholders to communicate its approach to coordinating the airspace change proposals (ACPs) required to deliver airspace modernisation. The Masterplan for the changes proposed to the airspace in the Scottish Terminal Control Area (ScTMA) includes ACPs sponsored by NATS En route Limited (NERL), Glasgow Airport and Edinburgh Airport.
3. This ACOG-led public engagement exercise explains the proposed changes in the ScTMA at a strategic level. The engagement does not include any detailed information about the options for new route designs or airspace structures proposed in the ScTMA. These detailed designs are still being developed by the Airports and NERL in line with the CAA's [airspace change process](#).
4. Later in the process the ACP sponsors conduct formal consultations that set out the detailed designs of all the proposed changes to the routes and airspace structures in the ScTMA, supported by the outputs of a rigorous quantitative appraisal of the expected impacts (both positive and negative).

How is the information in this engagement document presented?

5. The information in this document supports the ACOG public engagement exercise on the development of the Masterplan for the ScTMA. ACOG has organised the information into the following parts:

Part 1.	Background to airspace modernisation and the Masterplan.
Part 2.	Why is ACOG conducting this public engagement exercise?
Part 3.	What are the issues in the ScTMA and the objectives of modernisation?
Part 4.	What are the strategically important ACPs needed in the ScTMA?
Part 5.	What are the airspace changes proposed in the ScTMA likely to involve?
Part 6.	What is the process and timelines for making the airspace changes?
Part 7.	How can stakeholders participate in the process?

How to respond?

6. Feedback questions can be found in Part 7 of this document and in an online form at acog.citizenspace.com. Please review the information and submit your response online. If you are unable to use the Citizens Space page, require this document to be provided in a different format or have any questions about the content, please email info@acog.aero.

How long is the engagement period?

7. The ACOG-led public engagement exercise to support the preparation of the Masterplan for the ScTMA runs for 6 weeks from 29th January 2024 to 10th March 2024. **Please submit your feedback by 10th March 2024 at the latest.** We cannot commit to take into account representations received after this date. Once the engagement period has closed, we will consider all the responses carefully.

Part 1: Background to airspace modernisation and the Masterplan

Background to airspace modernisation

8. Aviation keeps people connected and provides the commercial air transport services that the UK needs for business, tourism, and economic growth. In Scotland, aviation also provides a critical lifeline for remote communities, offering access to healthcare and basic provisions. All forms of aviation depend on access to the airspace, making it an essential but largely invisible part of our national infrastructure. The basic design of the UK's airspace is predicated on an aging network of ground navigation beacons and has remained largely unchanged since the 1950s when there were far fewer flights. It was never envisaged that it would need to cope with the current volume of flights – over 2.5 million a year in 2019 – with projections of 3m by 2030. Despite this, in many cases, today's aircraft are still having to use the same outdated routes that are inefficient and reaching capacity. Aircraft often fly further than necessary at sub-optimal altitudes and speeds because the routes were originally intended to overfly the location of navigation beacons on the ground, instead of following the shortest, more efficient flight paths.
9. If the UK's airspace is not modernised, NERL estimates that by 2040, delays may increase by over 200% which would

result in 1 in 5 flights experiencing disruption for over 45 minutes¹. For passengers, cargo, businesses, and the wider economy that benefit from aviation, a failure to act would create significant negative impacts.

10. The UK's airspace is being upgraded as part of the UK Government's airspace modernisation programme.² This includes redesigning the arrival and departure routes that serve many of the UK's airports. Modernising airspace is also a key part of the aviation sector's plans to decarbonise. The planned upgrades will make it easier for aircraft to fly more direct routes, with better climb and descent profiles to and from energy-efficient cruising altitudes to help reduce CO2 emissions.
11. The airspace modernisation programme is co-sponsored by the DfT and the CAA. The reasons for modernising the UK's airspace and the costs of not doing so are laid out in a report published by the DfT [here](#). The vision for airspace modernisation to 2040 and the ways and means of achieving it are described by the CAA in the Airspace Modernisation Strategy [here](#).

The 2040 vision for airspace modernisation is to:

“Deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace”

12. The Airspace Modernisation Strategy explains that achieving the vision will maintain and improve the UK's high levels of aviation safety, boost efficiency, strengthen environmental sustainability and facilitate access to a diverse mix of established and emerging forms of aviation (such as electric air taxis, remotely piloted aircraft systems, or drones and commercial space flights).
13. Airspace modernisation will be delivered, in part, through a series of linked ACPs. Twenty of the UK's airports are sponsoring ACPs to upgrade the arrival and departure routes that serve their operations in the lower airspace (below 7,000 ft). NERL, the UK's licensed Air Navigation Service Provider for en route operations, is currently sponsoring seven ACPs to upgrade the route network that sits above 7,000 ft, in busy portions of airspace where there are lots of climbing and descending flights, referred to as Terminal Control Areas (TMAs).³
14. The Government's priorities when considering the potential environmental impacts of airspace changes are laid out in the Air Navigation Guidance 2017 [here](#). The guidance describes altitude-based priorities which should be taken into account by the CAA and ACP sponsors when considering the potential environmental impacts of airspace changes. The environmental priority in the airspace below 4,000 ft is to limit and where possible reduce the total adverse effects of aircraft noise on people. The priority is the same in the airspace between 4,000 ft and 7,000 ft unless this would disproportionately increase CO2 emissions. In the airspace above 7,000 ft the environmental priority is to reduce CO2 emissions and the minimising of noise is no longer the priority. Where practicable, it is desirable that routes below 7,000 ft should seek to avoid flying over Areas of Outstanding Natural Beauty (AONBs) and National Parks. All changes below 7,000 ft should take into account local circumstances in the development of the airspace designs, including the actual height of the ground level being overflown, and should not be agreed to by the CAA before appropriate community engagement has been conducted by the ACP sponsor.

The Airspace Change Masterplan

15. Airspace modernisation is a complex programme with many organisations working together on a single coordinated implementation plan out to 2040 – the Masterplan. The changes that make up the Masterplan will upgrade the UK's airspace and deliver the objectives of airspace modernisation.
16. ACOG was set up to develop the Masterplan, which when finalised will:
 - identify where and when ACPs are needed, with proposed timelines for implementation;
 - describe how the ACPs relate to each other (i.e. **interdependencies**) and highlight potential **conflicts** between their designs;
 - explain how **trade-off** decisions to resolve those conflicts have been made; and
 - demonstrate the anticipated **cumulative impacts** of the ACPs.

¹UK Airspace Change Masterplan, Iteration 2, version 2.2, March 2022.

²UK aviation policy including airspace modernisation are policy areas that are reserved to the United Kingdom Parliament in Westminster rather than devolved to the Scottish Parliament.

³The number of NERL-led ACPs to upgrade the route network may change as the programme matures.

17. Table 1 explains what is meant by interdependency, conflict, trade-off and cumulative impact when used in this engagement document.

Table 1: Definition of interdependency, conflict, trade-off and cumulative impact

Interdependency	An interdependency can be described as two or more ACPs that are linked together in some way. For example, there is a potential conflict in their design options or there is a potential cumulative impact on stakeholders on the ground.
Conflict	A conflict can be described as two or more ACPs that cannot both proceed in their proposed form because their design options are not compatible.
Trade-off	A trade-off is the decision to resolve a conflict and could be between two or more sponsors of separate ACPs, or between two or more objectives (such as achieving noise reduction and achieving fuel efficiency improvements).
Cumulative Impact	A cumulative impact arises when two or more routes from different ACPs are positioned in the same portion of airspace below 7000 ft, creating adverse effects for people on the ground in a specific location.

18. The Masterplan is being developed in iterations that will each be assessed, and if appropriate, accepted separately by the airspace modernisation co-sponsors (DfT and CAA). The iterations broadly align with the gateways of the regulatory process for airspace change (known as the CAP1616 process), published [here](#). The Masterplan will show more detail about the interdependent ACPs as the iterations are developed. Iteration 1 (2020) of the Masterplan provided a high-level plan for airspace changes in the south of England and is published [here](#). Iteration 2 (2022) expanded the scope of the Masterplan to provide a national view of the ACPs needed for airspace modernisation and the potential interdependencies between the proposals, and is published [here](#).

19. Iteration 3 of the Masterplan is currently being prepared by ACOG, working with the ACP sponsors (the airports and NERL) to describe the overall airspace structure and route network envisaged by the proposals when viewed as a collective (but without the detailed design of all the routes). It is important to emphasise that iteration 3 is an overarching strategic document. Any illustrations used in iteration 3 to explain aspects of the proposed designs will be high-level and indicative. Detailed information about the proposed design options and how they may affect stakeholders will be set out in the individual ACP consultations. Iteration 3 will describe how the ACP sponsors will consult on their proposals in a coordinated manner so that stakeholders are presented with a holistic view of the overall airspace design, the cumulative impacts of the changes and the potential trade-offs to be made.

The feedback gathered during this public engagement exercise will help to inform the development of the Masterplan iteration 3 for the SctMA.

20. Iteration 4 of the Masterplan will be created by ACOG once feedback from the ACP consultations has been analysed and taken into account. Building on the previous iterations, iteration 4 will provide an updated description of the airspace structure and route network envisaged by the ACPs when viewed as a collective for each cluster, including the final proposed trade-offs and the expected cumulative impacts.

The Masterplan ACP clusters

21. The Masterplan ACPs are grouped into four clusters. Each is based on the interdependencies between the individual proposals and analysis conducted by NERL into areas of the existing airspace where inefficiencies and delays are expected to worsen as traffic levels grow. Figure 1 illustrates the airport sponsored ACPs in each Masterplan cluster, located in:

- the west of the UK, known as the West Terminal Airspace;
- the north of England, known as the Manchester Terminal Control Area (MTMA);
- the south of Scotland, known as the Scottish Terminal Control Area (ScTMA);
- the southeast of England, known as the London Terminal Control Area (LTMA).

Figure 1: Four clusters of the Airspace Change Masterplan and airport sponsored ACPs



22. The Masterplan is organised into clusters so that the simpler airspace changes can be deployed sooner, realising benefits earlier. A single nationwide change would be too big for the programme to manage. The timelines for making airspace changes are generally shorter for the simpler clusters, like the ScTMA, where there are fewer airports and less complex interdependencies. Airspace modernisation will take longer in the more complicated clusters, like the LTMA, with a larger number of airports and more challenging interdependencies. As a result, iterations 3 and 4 of the Masterplan will be prepared by ACOG according to the development timelines of each cluster.

Definition of strategically important ACPs

23. Only the ACPs that are strategically important to achieving the airspace modernisation vision are included in each cluster. These ACPs were identified in the Masterplan iteration 2 as the initiatives required to modernise routes in the lower airspace and enable the network upgrades above, which are sponsored by NERL.
24. There are several main ways through which an individual ACP could make a significant contribution to achieving airspace modernisation and meet the definition of strategically important. For example, if the proposal is likely to improve the overall performance of the airspace at a national and/or regional level:
- from an operational perspective, in terms of safety, capacity, efficiency and resilience;
 - from a consumer perspective, in terms of choice, value and the multiplied economic benefits of air connectivity;
 - In terms of supporting the aviation sector to reach net zero emissions by 2050, and limit and, where possible, reduce the total adverse effects of aircraft overflight; and
 - In terms of integrating other airspace users including General Aviation⁴, the Military and new and emerging forms of aviation.

An individual ACP could also make a significant contribution to airspace modernisation where it influences the decisions made about other strategically important ACPs. For example:

- Where an ACP forms part of a coordinated overall airspace design improving the performance of the airspace at a national or regional level (like those ACPs that are already included in the four Masterplan clusters set out in figure 1).
 - Where an ACP either enables or constrains other strategically important ACPs because of its location, altitude, timing or sequencing.
25. Some larger airports, like Birmingham, Newcastle International, Aberdeen and Inverness are not currently included in the Masterplan because modernising the routes that serve their operations in the lower airspace is not expected to make a significant national or regional contribution to achieving the airspace modernisation vision. These airports, and others (for example Belfast International, Belfast City, Norwich and Newquay) do not form part of a coordinated overall airspace design and they do not share interdependencies with the existing Masterplan ACPs. One of the goals of the public engagement exercises in each cluster is to seek stakeholders' feedback on possible gaps in, or improvements to, the Masterplan, for example if ACOG has identified the strategically important ACPs. More information about the strategically important airspace changes needed in the SctMA is set out in part 4 of this engagement document.

Strategic environmental assessment and Habitats Regulations assessment

26. The Masterplan, through the individual ACPs, may alter where aircraft fly. This could have consequential environmental impacts, including noise levels on the ground, CO2 emissions and local air quality.
27. To ensure that environmental impact considerations are integrated into the development of the Masterplan, the CAA must ensure that the Masterplan is subject to a Strategic environmental assessment (SEA) and a Habitats Regulations assessment (HRA). These assessments are a legal requirement. ACOG will show how the SEA and HRA have been taken into account in developing the Masterplan for each cluster.
28. The SEA is an iterative process of gathering data and evidence, assessment of environmental effects, developing mitigation measures and making recommendations to refine plans or programmes in view of the predicted environmental effects. The aim is to influence strategic decisions taken early on, to take account of alternatives and assess the cumulative effects of multiple proposals. In the case of the Masterplan, the SEA is carried out by the CAA as the 'responsible authority'. This SEA complements the more specific assessment of environmental impacts carried out by each individual ACP sponsor through the CAP 1616 process. The SEA must be kept up to date through monitoring as the Masterplan is developed and implemented.
29. The HRA refers to the several distinct stages of assessment which must be undertaken in accordance with law on conservation of habitats and species. The HRA determines the potential effects of the Masterplan on protected sites, referred to as 'European sites', in view of the sites' conservation objectives. As the 'competent authority', the CAA must first screen for 'likely significant effects', then carry out an 'appropriate assessment' of any potential adverse effects that were not discounted at the screening stage.

⁴ The definition of General Aviation incorporates a wide range of operators (other than scheduled commercial air transport), pursuing a mix of different interests in a variety of different classes of aircraft, including (but not limited to) fixed-wing light aircraft, business jets, helicopters, microlights, gliders, hang gliders, paragliders, gyrocopters, balloons and large model aircraft operators.

30. The first stage of each of these assessments for the Masterplan is to decide what they must cover, including the methodology that the CAA proposes to use. The CAA has already completed a consultation on:

- For the SEA, a draft scoping report that can be viewed [here](#); and
- For the HRA, a draft screening report that can be viewed [here](#).

The reports explain why the law requires these assessments to be carried out for the Masterplan. The CAA also used the consultation to seek stakeholders' views on the approach to producing, later on, the actual SEA and HRA assessments themselves. This is set out in a third document:

- The approach to the SEA and HRA that can be viewed [here](#).

31. Work has begun on the actual environmental assessments for both the SEA and HRA for the ScTMA cluster. The CAA intends to consult on those assessments on or around the same time as when the sponsors plan to consult on their ACPs during Stage 3 of the CAP 1616 process (planned to start in November 2024).

Part 2: Why is ACOG conducting this public engagement exercise?

What is ACOG engaging on:

32. ACOG is conducting this public engagement exercise to support the preparation of the Masterplan iteration 3 for the ScTMA cluster only. Similar engagement exercises will be conducted by ACOG for the other clusters or deployments in due course to support the preparation of the Masterplan in those regions.

33. The purpose of this engagement exercise to explain in general terms the high-level approach to coordinating the ACPs required to deliver airspace modernisation in the ScTMA, including a description of:

- the strategically important airspace changes needed to deliver airspace modernisation in the ScTMA and a consideration of possible gaps or improvements;
- the proposed ScTMA design envisaged by the ACPs when viewed as a collective, based on the available information, and without the detail of all the routes;
- where trade-offs have been proposed by the ACP sponsors to create the proposed ScTMA design;
- more information about the cumulative impacts of the proposed ScTMA design and the methods used to calculate them; and
- the principles for coordinating the ScTMA ACP consultations so that stakeholders can comment on the trade-off decisions that will affect them.

34. The engagement offers stakeholders the opportunity to feedback on the positives and negatives of ACOG's approach and possible gaps in, or improvements to, the Masterplan. Table 2 summarises specifically what ACOG is seeking feedback on in this engagement:

Table 2: ScTMA public engagement exercise feedback questions

Q1	Please provide your comments on any possible gaps in, or improvements to, the Masterplan for the ScTMA cluster.
Q2	Please provide your comments on the principles for coordinating the delivery of the ScTMA consultations. The principles are organised into four themes; audience, approach, materials and length, in line with the CAP1616 process.
Q3	Please provide your comments on the clarity of the engagement information we have provided at this stage in the process. Does the information make sense? If not, what areas need clarifying?
Q4	Please provide your comments on whether you understand how to engage in the development of the Masterplan and the ScTMA ACPs and have your voice heard?

What ACOG is not engaging on:

35. ACOG is not engaging on the details of the proposed route design options and airspace structures that are being developed by the ScTMA ACPs. The ACP sponsors are still working on the design options and appraising the potential impacts following the CAP1616 process. Later in the process, each sponsor will run a full consultation setting out the detailed design of all the proposed routes and airspace structures, supported by the outputs of a rigorous quantitative appraisal of the expected impacts (both positive and negative). The ScTMA ACP consultations are planned to start in November 2024.

Part 3: Issues with the ScTMA airspace and the objectives of modernisation

Issues with the existing ScTMA airspace

36. The existing ScTMA airspace was designed to support operations to and from Glasgow and Edinburgh Airports. The ScTMA also serves flights to and from several smaller airports including Glasgow Prestwick, Dundee, Cumbernauld and Leuchars Station (formerly RAF Leuchars Airfield), and on the region’s periphery, flights to and from Aberdeen Airport.

37. The airspace in the ScTMA has remained relatively unchanged for many decades. When the airspace was originally designed, the ScTMA was not expected to cope with the number and complexity of flights operating today. For example, analysis conducted by NERL for the Masterplan iteration 2 indicated that traffic demand in the busiest hours of the day is likely to exceed the maximum capacity in parts of the ScTMA by 2040 if the airspace is not modernised. When a portion of airspace reaches maximum capacity the need to maintain safety restricts the number of additional flights that air traffic controllers can manage. The operation responds by:

- slowing flights down and directing aircraft onto longer, less efficient flight paths;
- directing inbound flights into airborne holds delaying their scheduled arrival; and
- instructing outbound flights to hold on the ground, delaying their scheduled departure and increasing ground emissions.

38. The issues facing the ScTMA that cause capacity constraints and inefficiencies in the existing airspace can be grouped into four themes that are summarised in Table 3.

Table 3: Issues with the existing ScTMA airspace

Theme	Description of the issues
Outdated routes designs	The existing arrival and departure routes that serve the ScTMA airports, including Edinburgh and Glasgow were designed around the location of ground navigation beacons rather than following the shortest more efficient flight paths. The existing routes typically converge at the same points over the ground creating pinch points that constrain capacity and lead to traffic congestion at busy times. Outbound flights level off at lower altitudes to avoid crossing traffic, interrupting their climbs and creating excess CO2 emissions. Inbound flights follow longer flight paths rather than descending quietly and continuously to the runway with minimal engine thrust.
Position of the airborne holds	The locations of the airborne holds serving Glasgow and Edinburgh Airports (where flights follow a racetrack pattern waiting for clearance to land during busy times) are not optimised to manage the main inbound traffic flows to the ScTMA as efficiently as possible. In addition, the holds interact with some of the existing departure routes, meaning outbound traffic must fly longer and climb less efficiently to reach the cruise.
Connectivity to the east and southwest	A lack of Controlled Airspace and route options to the east of the ScTMA means that most flights to and from the east and southeast are channelled through a single pinch point to the south of the ScTMA (in the Newcastle area), which leads to congestion at busy times. Similarly, traffic to and from the west and southwest route via pinch points just south of Prestwick and to the west of Carlisle that become congested when traffic volumes are high.
Special use airspace reserved by the Military	There are several areas of special use airspace within and surrounding the ScTMA that can be reserved by the Military for training and exercises. Civil flights often plan to avoid these areas even when they are not in use, flying longer, less efficient routes around them.

Introduction of advance Performance-based Navigation routes

39. The widespread introduction of advanced Performance-based Navigation (PBN) routes that rely on satellite technology (GNSS) rather than ground navigation beacons is a cornerstone of airspace modernisation in the Masterplan clusters. The use of PBN improves aircraft track keeping so that routes can be positioned more flexibly and closer together if needed. As part of the proposed ScTMA design, new PBN arrival and departure routes serving Glasgow and Edinburgh Airports can be separated by design, reducing the volume of converging tracks and crossing traffic that controllers need to manage.
40. With less crossing traffic controllers can manage more flights without the airspace reaching capacity. Departure routes can be redesigned with greater precision so that outbound flights climb continuously towards the cruise with fewer emissions and lower noise impact. Arrival routes can be redesigned in a similar way so that inbound flights descend continuously and more quietly from the holds to the final approach for landing. New route options can also be included within the design, offering additional capacity, more efficient connections with the network and opportunities to better manage environmental impacts.
41. The volume of Controlled Airspace needed to protect the PBN routes may be reduced in some areas of the ScTMA, especially at lower altitudes, although additional Controlled Airspace may also need to be introduced to protect routes deployed in areas that were not previously overflown. The overall goal is to minimise the total volume of Controlled Airspace required to support commercial air transport operations in the ScTMA.

Objectives of the ScTMA cluster ACPs

42. The ScTMA cluster ACPs aim to deliver four main objectives in line with the vision for airspace modernisation, that address the issues set out in table 3 through the widespread introduction of new PBN routes. The ScTMA cluster ACP objectives are to:
- **Maintain and where possible improve the high levels of aviation safety**, simplifying the airspace design and reducing the complexity of the flight paths.
 - **Increase the airspace capacity to accommodate reasonable growth in demand** for commercial air transport whilst minimising delays, enhancing Scotland's global connections, giving better value and more choice for businesses and individual travellers and helping to stimulate economic growth benefiting the Scottish population.
 - **Improve the environmental sustainability of aviation in Scotland**, reducing CO2 emissions through more efficient flight paths and enabling aircraft to climb more quickly, descend more quietly and reduce the total adverse effects of aircraft noise on people.
 - **Secure the most efficient use of airspace**, by creating an airspace design that can facilitate better sharing and access for commercial air transport, the Military, General Aviation, and in due course, new and emerging forms of aviation.
43. The objectives reflect the Design Principles for the ScTMA ACPs developed during Stage 1 of the CAP1616 process and align with the overarching objectives or 'ends' of the Airspace Modernisation Strategy that can be viewed [here](#). The expected benefits of airspace modernisation in the ScTMA are summarised by stakeholder group in table 4.

Table 4: Expected benefits of airspace modernisation by stakeholder group

Stakeholder	Benefits description
For passengers and the wider economy	Fewer flight delays and service disruptions are expected to save time and improve the passenger experience. Also the capacity to add new routes and accommodate new flights will lead to more choice, better value, and enhanced global connections that drive economic growth.
For airlines	More airspace capacity will reduce delays while maintaining high levels of safety. Modernisation will also improve flight efficiency, punctuality and costs per flight, enabling the airlines to capitalise on the performance of their modern fleets of aircraft.
For airports	Modernisation is expected to strengthen resilience against adverse weather conditions, reduce delays on the ground pre-departure caused by capacity constraints in the airspace and potentially increase runway throughput during busy periods.
For local communities	The priority for airspace modernisation at lower altitudes is to limit and, where possible, reduce the total adverse effects of aircraft noise on people. Modernisation is expected to deliver a reduction in noise levels per flight, but the redistribution of noise between different areas may lead to disruption for communities living under new flight paths.

For other airspace users	Modernisation offers the opportunity for other airspace users to access more volumes of airspace that are not required by commercial air transport through the release of Controlled Airspace.
For the Military	Airspace modernisation will continue to ensure that Military operators have access to suitably sized and sited areas of airspace to fulfil defence and national security objectives, recognising that new military aircraft and weapons platforms often require larger volumes of airspace in which to train and maintain operational readiness.

Part 4: What are the strategically important ACPs needed in the ScTMA?

As part of this public engagement exercise ACOG is required to seek inputs from stakeholders on possible gaps in, or improvements to, the Masterplan, for example whether ACOG has identified the strategically important airspace changes needed to deliver airspace modernisation.

Summary of the strategically important ACPs required to modernise the ScTMA airspace

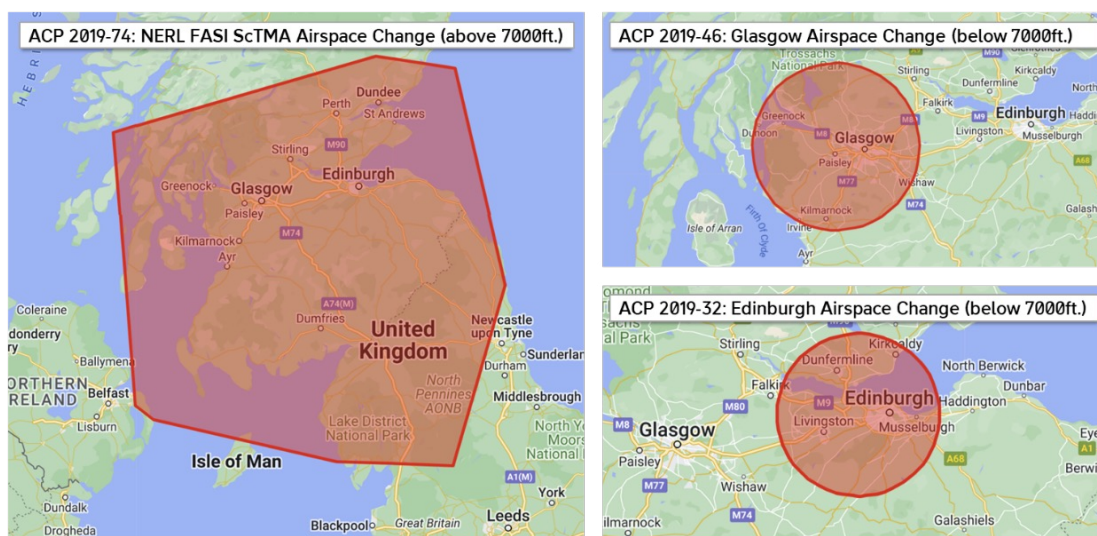
44. The strategically important ACPs required to modernise the ScTMA were identified by ACOG in Iteration 2 of the Masterplan as; the NERL-led proposal to upgrade the route network above 7,000 ft, and linked proposals led by Glasgow, Edinburgh and Aberdeen airports to redesign the arrival and departure routes that serve their operations below 7,000 ft.
45. Following the publication of Iteration 2, ACOG agreed with Aberdeen Airport that the airspace design options arising from its ACP did not share interdependencies with those proposed by the Edinburgh, Glasgow or NERL ACPs. As a result, ACOG advised the DfT and CAA that the Aberdeen Airport ACP should detach from the ScTMA cluster and continue to develop and deploy its proposed changes in line with the Airspace Modernisation Strategy, on a separate independent timeline. The CAA published an addendum to Iteration 2 of the Masterplan in October 2022 that summarises ACOG’s advice on the withdrawal of Aberdeen Airport and the co-sponsors’ acceptance of the rationale [here](#).
46. Aberdeen airport is located 95 miles north of Edinburgh and 125 miles northeast of Glasgow in an area of airspace with relatively low traffic volumes. The Aberdeen ACP includes two specific proposals: 1) The introduction of new PBN arrival routes for use alongside the existing procedures by a very small percentage of flights; and 2) The release of a section of the Controlled Airspace that is not used by aircraft arriving or departing from Aberdeen Airport for the benefit of other airspace users. Aberdeen Airport plans to conduct a consultation on these proposals later in 2024. The proposals are not interdependent with the ScTMA cluster ACPs. For these reasons the Aberdeen ACP is not considered a strategically important airspace change in the context of the Masterplan.
47. Table 5 sets out the strategically important ACPs that are now included in the scope of the ScTMA cluster of the Masterplan and provides links to the CAA’s Airspace Change Portal that hosts all relevant documentation and information about the development of the individual proposals.

Table 5: Strategically important ACPs included in the scope of the ScTMA cluster

ACP sponsor	ACP-ID and CAA Airspace Change Portal link
Edinburgh Airport Limited	ACP-2019-32 can be viewed on the portal here
Glasgow Airport Limited	ACP-2019-46 can be viewed on the portal here
NERL	ACP-2019-74 can be viewed on the portal here

49. Figure 2 illustrates the volumes of airspace that are potentially affected by the ScTMA cluster ACPs, sourced from the CAA Airspace Change Portal.

Figure 2: Illustration of the broad geographical areas that are potentially affected ScTMA cluster ACPs



50. During the development of the Masterplan, ACOG reviewed the strategic importance of the airspace changes in the ScTMA. The review considered nine criteria provided by the CAA in part A of their Masterplan acceptance criteria regarding where, when and why airspace changes may be needed. The aim of the review was to ensure that the strategically important airspace changes required to deliver airspace modernisation in the ScTMA had been identified and to consider if there were any gaps or improvements that should be addressed. Table 6 sets out the acceptance criteria alongside a summary of our review of the strategically important airspace changes in the ScTMA.

Table 6: Summary of ACOG’s review into the strategically important airspace changes needed in the ScTMA

Acceptance criteria	Review of strategically important airspace changes
<p>Areas where, in light of forecast growth in demand and airspace bottlenecks, ACPs could be developed to accommodate that growth and alleviate delays by the introduction of additional airspace capacity (A1).</p>	<p>Because of the outdated route design, the existing ScTMA airspace relies on controller vectoring to create the capacity to accommodate high volumes of flights that operate to and from Glasgow and Edinburgh Airports. A vector is a specific instruction given by a controller to a pilot to fly a particular compass heading and altitude to keep aircraft safely separated and maintain an expeditious flow of traffic.</p> <p>The existing departure routes require two-minute intervals between take-offs, limiting the capacity of the single runway operations at both Edinburgh and Glasgow airports.</p> <p>At busy times, inbound flights are delayed in airborne holds and vectored onto longer, less efficient flight paths; outbound flights may be held on the ground pre-departure. These actions can disrupt passengers, create additional aircraft noise and CO2 emissions and are expected to worsen as traffic levels continue to grow if additional airspace capacity is not introduced.</p> <p>The impacts of significant disruption to Glasgow and Edinburgh flights can affect the overall performance of the airspace system across the Scottish region and nationally.</p> <p>No other Scottish airports experience such high volumes of inbound and outbound flights that:</p> <ul style="list-style-type: none"> • existing airspace and runway capacity constraints lead to routine delays and disruptions, or • delays and disruptions are expected to worsen significantly as traffic grows, or • the impact of disruptions would affect the overall performance of the airspace at a regional or national level.

<p>Planned developments on the ground which require new airspace designs (A2).</p>	<p>ACOG has reviewed the latest published airport Masterplans for Glasgow, Edinburgh, Aberdeen, Glasgow Prestwick, Inverness and the Highlands and Islands Airports. We have not identified any planned infrastructure developments on the ground at the airports which would require new airspace designs that could be considered strategically important.</p> <p>In addition, we have conducted a high-level review of the outputs of the Aerodrome Safeguarding process for the Scottish airports, planned wind farm developments in the region and planned housing developments set out in local authority strategies. During this review, ACOG has not identified any projects that would require new airspace designs of a size or nature that could affect the overall performance of the airspace at a national or regional level.</p>
<p>Areas where ACPs could be developed to allow for more direct routes (A3).</p>	<p>ACOG has reviewed the scope of the NERL ACP to modernise the route network above 7,000 ft and introduce more direct routes into, out of and through the ScTMA. The NERL ScTMA ACP includes additional routes within a new portion of Controlled Airspace to the east of the ScTMA (over the Firth of Forth), reducing track miles for many flights heading to the southeast, Europe and beyond.</p> <p>Based on the available information, ACOG does not consider that there are gaps or improvements related to the strategically important airspace changes included in the NERL ScTMA ACP to allow for more direct routes.</p>
<p>Areas where ACPs are needed to deliver a safety benefit (A4).</p>	<p>In the ScTMA specifically, there are very few reported safety incidents and no trends within the existing airspace that are driving remedial actions. An improvement in safety performance is expected from the ScTMA ACPs that all aim to remove risk factors from the existing airspace through the greater systemisation of the route network. New PBN arrival and departure routes will be designed to strategically deconflict the traffic flows associated with each ScTMA airport so that lateral and vertical separation when flights do interact is maintained by design. Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to deliver a safety benefit, which would have an overall effect on the performance of the airspace at a national or regional level.</p>
<p>Areas where ACPs can limit the total adverse effects of noise (A5).</p>	<p>ACOG has reviewed the published Noise Action Plans of the ScTMA airports. Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to limit total adverse noise impacts, which would have an overall effect on the performance of the airspace at a national or regional level.</p>
<p>Areas where ACPs can deliver air quality or fuel efficiency benefits (A6).</p>	<p>ACOG has reviewed flight track data provided by EUROCONTROL, an intergovernmental organisation responsible for coordinating air traffic control operations across Europe. The data shows the vertical and horizontal efficiency of the existing ScTMA flight paths. Vertical efficiency is measured by the proportion of flights in the ScTMA that climb and descend continuously with no intermediate portions of level flight. The less level flight the more efficient the vertical profiles. Horizontal efficiency is measured by comparing the shortest distance between two endpoints with the actual tracks flown.</p> <p>In the existing ScTMA airspace, 86% of flights in 2019 climbed continuously from the surface to the cruise and 43% of flights descended continuously from the cruise to landing. The conclusion that fuel efficiency is worse for descents than climbs is consistent with experience in other TMAs, although performance in the ScTMA remains better than the LTMA and the European average.</p> <p>The Horizontal Flight Efficiency metric takes into account various features of the airspace including route length and track deviations. It is used to identify areas where more efficient flights can be achieved. The metric is expressed as a percentage. Horizontal flight efficiency across the Scottish region (including some flights in Northern England) has remained at around 5%, with the average for European States sitting at 4%. The lower the score the more efficient the airspace.</p> <p>Collectively the NERL, Glasgow and Edinburgh ScTMA ACPs aim to optimise the airspace system and route network to improve environmental efficiency by increasing the rates of continuous climb and continuous descent operations and implementing more direct routes.</p> <p>Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to deliver fuel efficiency and air quality benefits in the Scottish region. Flights to and from other airports in the Scottish region typically operate in lower density, lower complexity airspace than the ScTMA. The vertical and horizontal performance of flight paths is rarely restricted by features of the airspace that have been introduced for ScTMA operations to manage high volumes of traffic, for example airborne holds.</p>

Areas where ACPs are needed to improve access to airspace for all users (A7).	<p>The ScTMA airspace is a scarce resource shared by a diverse mix of users. Overtime, the use of Controlled Airspace has increased in response to growing traffic levels, segregating most commercial flights from other aircraft. The Military regularly operate in segregated special use airspace across the Scottish region, for example to separate high energy activities like fast jet training from all other users.</p> <p>Operators in emerging parts of the sector are also requesting more segregated airspace within and surrounding the ScTMA, for example to trial new services like drone flights beyond the visual line of sight of a remote pilot.</p> <p>Airspace segregation restricts access for other users, in particular many General Aviation operators, including pilot training, sports, leisure and other private flying that mostly use the non-segregated Uncontrolled Airspace. Airspace modernisation aims to safely facilitate access by diverse airspace users by moving towards a greater integration of air traffic. Whilst recognising that the ScTMA ACP sponsors may have some conflicting requirements, we would nevertheless emphasise the requirement to minimise the total volume of Controlled Airspace as far possible within the existing ScTMA ACPs in support of the access and integration goals.</p> <p>Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to improve access to airspace for all users.</p>
Areas where ACPs are needed to enable military access to airspace for training and national security (A8).	<p>Military operations rely on access to the full range of UK airspace to secure our borders and carry out training.</p> <p>In the ScTMA, with the proposed expansion of Controlled Airspace to the east, above the Firth of Forth, there are interdependencies with the proposed Military airspace structures, and with procedures for aircraft operating at Leuchars Station. Engagement between the ScTMA ACP sponsors and Defence aviation stakeholders is taking place on a regular basis in order to understand and mitigate the potential impacts.</p> <p>Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to enable Military access to airspace for training and national security in the Scottish region. ACOG has confirmed this conclusion through engagement with the Ministry of Defence.</p>
Areas where ACPs are needed to introduce new technology (A9).	<p>The ScTMA is the busiest and most complex area in the Scottish region. PBN technology offers the opportunity to modernise busy airspace, introducing a more structured and predictable route network.</p> <p>The widespread deployment of new routes designed and operated to more advanced PBN standards is a technological cornerstone of the ScTMA ACPs.</p> <p>Based on the available information, ACOG does not consider that there are strategically important gaps or improvements related to ACPs that are needed to introduce new technology in the Scottish region that are strategically important in terms of their impact on the overall performance of the system at a national or regional level.</p>

Part 5: What are the proposed airspace changes likely to involve?

As part of this public engagement exercise ACOG is required to provide a description of the overall ScTMA proposal when viewed as a collective, but without the detailed designs of all the routes.

Overview of the proposed changes required to the ScTMA airspace

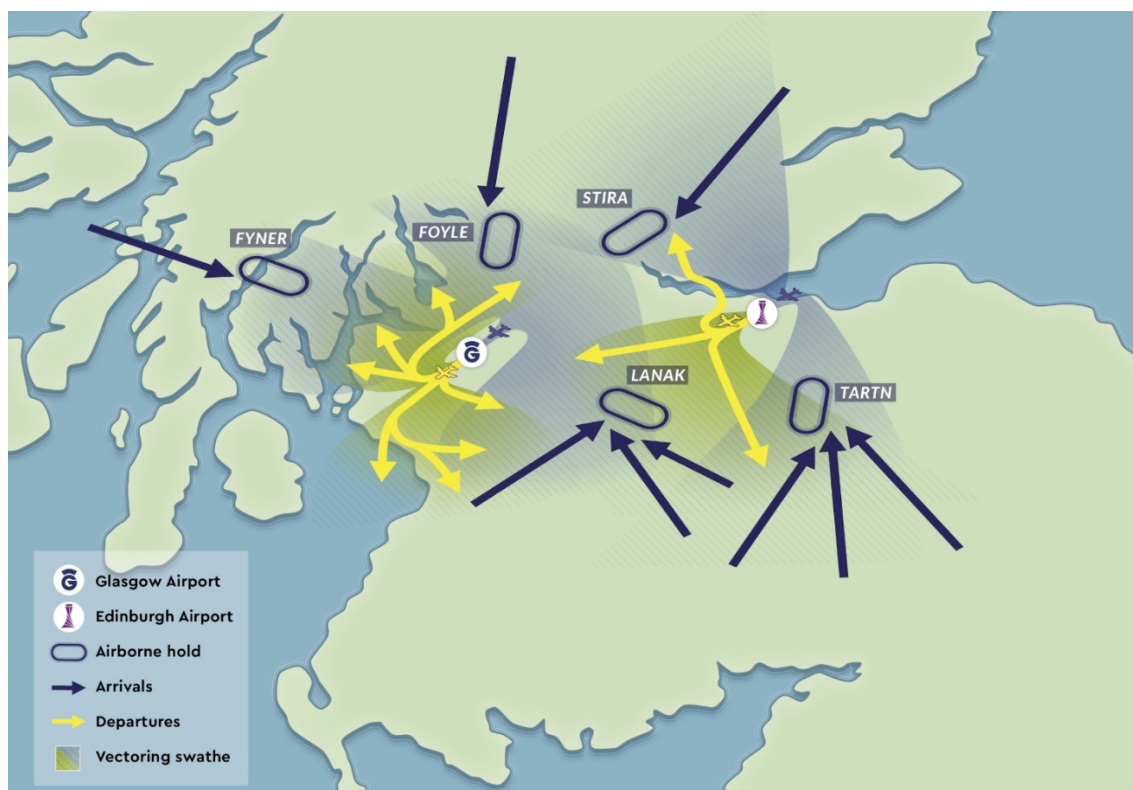
51. The proposed changes can be organised into four themes:

- Reviewing and amending the airborne holds serving arrivals into the ScTMA.
- Redesigning airspace pinch points affecting flights to and from the south of the ScTMA.
- Introducing new departure and arrival routes to and from the east of the ScTMA.
- Optimising airspace sharing with the Military and minimising Controlled Airspace.

52. A simple illustration of the existing ScTMA airspace offers a basis from which to describe the strategic changes brought forward by the ACPs when viewed as a collective. **ACOG is not seeking feedback on the features of the existing ScTMA airspace and air traffic flows in this engagement exercise.**

53. Figure 3 illustrates the existing ScTMA airspace, the current location of the airborne holds and the position of the main inbound and outbound traffic flows when the prevailing wind is from the west.⁶ The yellow arrows indicate the general position of the current departure flows from both airports. The blue arrows indicate the general direction of the current arrival flows into the existing airborne holds. The yellow and blue shaded areas, indicate the broad swathes of airspace where inbound and outbound flights are currently vectored by controllers on arrival and departure.

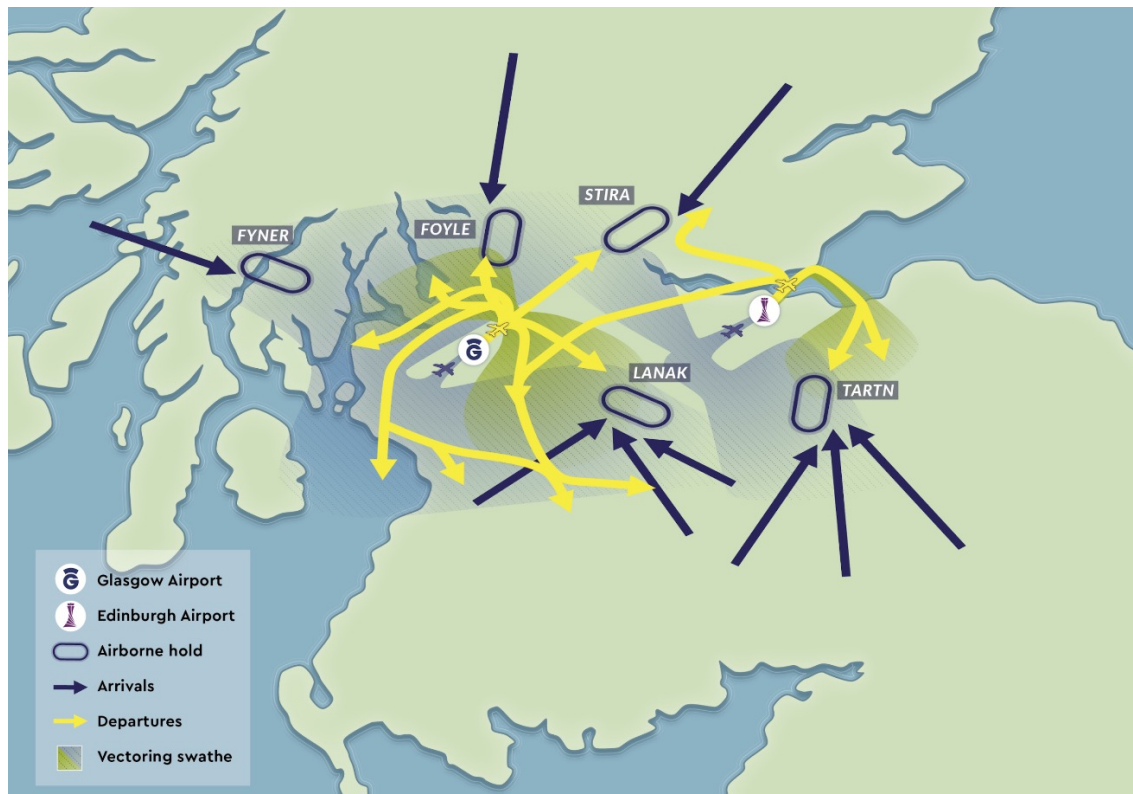
Figure 3: Simple illustration of the current ScTMA airspace and air traffic flows during westerly operations



⁶ Aircraft usually take-off and land into the wind. The prevailing wind in Scotland is from the west for approximately 70% of the time. Figure 3 shows flights departing and arriving in a westerly direction (known as westerly operations), illustrating the most common case in the ScTMA. When the prevailing wind is from the east, flights arrive and depart in an easterly direction using a different configuration of routes and procedures (known as easterly operations).

54. Figure 4 illustrates the same information as figure 3 when the prevailing wind is from the east.

Figure 4: Simple illustration of the current ScTMA airspace and air traffic flows during easterly operations



55. In the existing ScTMA airspace (during both westerly and easterly operations) outbound flights follow one of several Standard Instrument Departure (SID) routes immediately after take-off and are then vectored (in the shaded yellow areas) by controllers as they climb towards the cruise. Inbound flights follow one of several Standard Arrival Routes (STARs) that terminate at the airborne holds. Arriving aircraft are then vectored (in the shaded blue areas) from the hold or the end of the STAR onto the intermediate and final approach for landing.

Reviewing and amending the airborne holds serving arrivals into the ScTMA

56. Flights inbound to the ScTMA currently route towards one of five airborne holds dependent on the destination airport. A published airborne hold, sometimes referred to as a holding stack, is a structure for arriving aircraft to fly in a racetrack pattern at assigned altitudes and speeds waiting for instructions from controllers to begin their approach for landing. The ScTMA holds are used by controllers to manage the flows of inbound traffic, especially during busy periods. Over 80% of flights inbound to the ScTMA arrive from the south. As a result, the LANAK hold that serves Glasgow arrivals and the TARTN hold that serves Edinburgh arrivals are by far the busiest. The STIRA hold in the northeast that serves flights inbound from northern Scotland, Europe and beyond, is shared by both Glasgow and Edinburgh traffic making it complicated for controllers to use efficiently. The position of flights in the hold are assigned on a first come first basis, creating an imbalance in the flow of inbound traffic to both airports during busy periods.

57. As part of the proposed ScTMA design the ACPs are considering options to change the position and orientation of the holds so that they are better aligned with the main flows of inbound traffic. Changes to some or all of the holds creates opportunities to redesign the departure routes at lower altitudes, so they are separated from the arrival flows, enabling more flights to climb continuously in the most efficient way possible. The proposed ScTMA design also considers the potential to introduce a new hold in the east of the ScTMA so that inbound traffic flows to Edinburgh from the north and east would have a dedicated airspace structure for managing arrivals.

Redesigning airspace pinch points affecting flights to and from the south of the ScTMA

58. The portion of airspace in the south of the ScTMA is the most capacity constrained and inefficient in the current operation because it is used by the majority of arriving and departing flights. Departing aircraft are routinely required to level off when climbing to the south to remain safely separated from the arrival flows, leading to inefficiencies. Similarly, arriving aircraft are often instructed to follow longer less efficient flight paths and descend sooner than necessary to avoid the departing traffic.

59. As part of the proposed ScTMA design the ACPs are considering options to deconflict the arrival and departure routes using PBN standards to optimise the use of the available airspace. The new routes would be positioned so they are broadly parallel and safely separated by design (rather than multiple routes converging and creating pinch points as they do today). This is expected to reduce the reliance on controller vectoring and help to ensure that the departures flows heading south cross the arrival flows heading north in a simpler more ordered way, adding capacity and increasing efficiency.

New arrival and departure routes to and from the east of the ScTMA

60. The existing airspace does not include departure and arrival routes that connect to the east side of the ScTMA over the Firth of Forth and out to the North Sea. This means that outbound flights from Glasgow and Edinburgh airports with onward destinations in the east and southeast must fly west and southwest first adding significant unnecessary track miles and CO2 emissions. Inbound flights from the east must approach the ScTMA from either the north or south, again resulting in additional track miles and emissions.
61. As part of the proposed ScTMA design the ACPs are considering the introduction new arrival and departure routes to the east that would enter and exit the ScTMA over the Firth of Forth. These routes would require additional Controlled Airspace to manage the safe, orderly flow of flights through this new area.

Optimising airspace sharing with the Military and minimising Controlled Airspace

62. There are several areas of special use airspace within and surrounding the ScTMA that can be reserved by the Military for training and exercises. Civil flights avoid these areas when they are in use by flying longer, less efficient routes around them. As part of the proposed ScTMA design the ACPs are seeking to take maximum advantage of existing joint Civil-Military procedures for the Flexible Use of Airspace (FUA). Under these arrangements, civil traffic may fly directly through certain areas of special use airspace enroute to and from their destination, when they are not being used by the Military. FUA procedures for airspace sharing are already used effectively in the ScTMA today. The proposed ScTMA design is considering route options that are configured to deliver the greatest potential efficiency improvements through airspace sharing.
63. The proposed ScTMA design also includes a comprehensive review of the existing structure of Controlled Airspace. Portions of Controlled Airspace that are no longer required will be released and converted to uncontrolled airspace (Class G) that is accessible to other airspace users. Where possible, the base of Controlled Airspace will be lifted, releasing portions at lower altitudes for other airspace users to access.

Part 6: What is the process for coordinating the ScTMA ACPs?

As part of this public engagement exercise ACOG is required to demonstrate where trade-offs have been proposed between the ScTMA ACP sponsors to create their respective designs, provide more information about the cumulative impacts of different design choices, and describe the methods used to calculate them.

Overview of interdependencies, design conflicts and trade-offs

64. The Masterplan helps sponsors, stakeholders and the CAA understand how the options in each ScTMA ACP relate to each other and therefore make better informed choices about any design conflicts and proposed trade-off decisions. In doing so, any proposed trade-offs are to be made transparently with the coordination of ACOG (and assessed by the DfT and CAA).
65. Edinburgh, Glasgow and NERL each developed and assessed a shortlist of airspace design options for their respective ScTMA ACPs during Stage 2 of the CAP1616 process. In Stage 3 of the process the ACP sponsors are working together, in coordination with ACOG, to further refine and integrate the options into a proposed ScTMA design. As part of this process, the ACP sponsors must consider their options from a cumulative and collective basis to properly reflect the expected impacts on the ScTMA airspace as a whole.
66. The Masterplan requires the ACP sponsors to identify the interdependencies between the options and examine any specific design conflicts. In this context, an interdependency can be described as an area where the options from different ACPs are linked together in some way. A design conflict may arise from an interdependency if the options cannot both proceed in their current form. When this happens, the ACP sponsors, coordinated by ACOG, must make joint design choices to modify one or more of the options (or to remove options altogether).
67. These choices result in trade-offs being made between the alternative designs, which each create a different mix of positive and negative impacts (noting that safety remains the priority above all else). The phrase 'trade-off' is typically used to refer to the compromises made by ACP sponsors to deliver benefits in one area, at the expenses of improvements elsewhere.

Methods used to calculate cumulative impacts

68. ACOG set the process that the ACP sponsors applied and the evidence required when identifying interdependencies and proposing trade-offs to resolve any design conflicts. This information is described in the ACOG Cumulative Analysis Framework (CAF) that will be published as part of the Masterplan iteration 3.
69. The CAF considers where cumulative impacts from interdependent design options below 7,000 ft may affect stakeholders on the ground and the collective impacts of all the ACPs in a cluster when they are added together.
70. **Cumulative impacts** only arise when two or more routes from different ACPs are positioned in the same portion of airspace below 7000 ft, creating cumulative adverse effects for people on the ground in a specific location. For example if:
- ACP 1 positions route A in a certain area below 7,000 ft, which results in 5 overflights an hour impacting people in a specific location; and
 - ACP 2 positions route B in the same area below 7,000 ft, which results in a further 10 overflights an hour impacting the same location; then
 - The cumulative impact generated by ACP 1 and ACP 2 is the total adverse effects of 15 overflights an hour for people on the ground in that location.
71. **Collective impacts** on the other hand, incorporate all the impacts (both positive and negative) of the ACPs contributing to the overall design when they are added together consistently, regardless of their effects on specific stakeholders or locations. In other words, specific areas of cumulative impact within the design can be described as a subset of the overall collective impact. When considering solutions to resolve a design conflict, ACP sponsors examine both cumulative impacts below 7,000 ft (affecting people in specific locations) and the overall collective impacts.
72. The CAF incorporates the outputs that are available from the Initial Options Appraisals conducted by ACP sponsors on their design options in Stage 2 of the CAP1616 process, the Full Options Appraisals conducted in Stage 3 and the Final Options Appraisals in Stage 4. This is why the CAF methodology is organised into three parts. The Full Options Appraisals are a more rigorous quantitative analysis of the options than the qualitative Initial Options Appraisals. The Final Options Appraisals update the Full Options Appraisals, taking into account modifications to the design as a result of the consultations.
73. Importantly, the CAF does not tell the ACP sponsors what the outcomes of different conflicts and trade-offs should be. Rather, it steps the sponsors through a three-part method they should follow to ensure they gather the necessary evidence in a robust, coherent and transparent way as the CAP1616 process progresses. Table 7 summarises the three parts of the CAF methodology.

Table 7: Summary of the three-part CAF methodology

#	Title	Summary
CAF part 1 (linked to the Initial Options Appraisals)	Review of route interdependencies, design conflicts and trade-offs	Before the Full Options Appraisals are carried out, ACOG coordinates a joint ACP sponsor review of the interdependencies between the shortlisted options from the Initial Options Appraisals to identify design conflicts, consider the potential solutions and where required describe the proposed trade-offs.
CAF part 2 (linked to the Full Options Appraisals)	Full cumulative analysis	ACOG collates the performance data from the individual Full Options Appraisals carried out by the ACP sponsors in the cluster and makes this information available (in the Masterplan iteration 3) for sponsors to describe in their consultations.
CAF part 3 (linked to the Final Options Appraisals)	Final cumulative analysis	ACOG collates the performance data from the individual Final Options Appraisals undertaken by the ACP sponsors in the cluster and makes this information available (in the Masterplan iteration 4) for sponsors to describe in their ACP submissions.

Outputs of the CAF part 1 review for the proposed ScTMA design

74. Glasgow Airport, Edinburgh Airport and NERL conducted the CAF part 1 review for the proposed ScTMA design during the summer of 2023. All three sponsors had completed an Initial Options Appraisal and passed the CAP1616 Stage 2 gateway.
75. The review was coordinated and recorded by ACOG for inclusion in the Masterplan iteration 3. It identified 18 specific areas across the proposed ScTMA design where interdependencies may arise between the specific options developed by the ACPs (i.e. where one sponsor's design choice had the potential to affect the options included in another sponsor's ACP).
76. Eight of the potential interdependencies resulted from the possibility of the proposed new PBN arrival and departure routes interacting. However, the CAF part 1 analysis conducted by the ACP sponsors demonstrated that none of the potential interdependencies would result in a specific design conflict. In other words all the design options for new PBN arrival and departure routes that are considered for inclusion in the proposed ScTMA design are compatible in their current form.
77. In all eight cases where the proposed PBN arrival and departure route options were positioned in the same portions of airspace, either:
- The departure route options climbed quickly enough to jump the arrival route options without a design conflict; or
 - The arrival route options all remained high enough for the departure route options to climb continuously beneath them without the need to level off.
78. As a result the CAF part 1 review concluded that there are **no proposed trade-offs or cumulative impacts arising** between the new PBN arrival and departure route options developed by the ScTMA ACPs.
79. The remaining ten potential interdependencies concerned the proposed locations and orientation of the airborne holds and the possibility that they may affect the position of new PBN arrival and departure route options. During the CAF part 1 review, design conflicts associated with these potential interdependencies did not arise because for 8 out of the 10 potential interdependencies the preferred positions of the proposed PBN arrival and departure routes were vertically or laterally separated from the preferred hold locations, and both options were compatible in their current forms.
80. The CAF part 1 review did identify two potential interdependencies that may result in design conflicts. Both interdependencies concerned the location of airborne holds serving traffic inbound to Glasgow Airport (that are developed as part of NERL ScTMA ACP above 7,000 ft) and the position of PBN arrival routes options (that are developed as part of the Glasgow Airport ACP). The first conflict involved an option to locate a new hold to the west of Glasgow. The second involved an option to locate a new hold to the north of Glasgow.
81. ACOG coordinated a qualitative assessment of the potential solutions available to resolve the conflicts, working with subject matter experts from both NERL and Glasgow Airport. The qualitative assessments were sufficient to demonstrate that one solution was clearly preferable to resolve the conflicts in both scenarios, because the chosen design delivered better outcomes when considering the collective impacts across all categories (e.g. Noise, CO2 emissions, Capacity, Airspace Access etc.) than the alternatives. More detail about the design conflicts, potential solutions and trade-offs, including both interdependencies will be set out by ACOG in the Masterplan iteration 3 to be assessed, and if appropriate, accepted by the co-sponsors (DfT and CAA). Following acceptance of the Masterplan, the ACP sponsors will include the proposed trade-offs as part of the consultations, and clearly highlight them so that stakeholders can influence the final proposed design.

Coordinated consultation principles

As part of this public engagement exercise ACOG is required to ensure that stakeholders are aware of how they can be notified of the CAP1616 consultations, enabling them to comment on trade-off decisions that will affect them.

82. The consultations at Stage 3 of the CAP1616 process are the opportunity for stakeholders to provide feedback on the ScTMA ACPs and influence the final designs. As part of the consultations, the ScTMA ACP sponsors will set out the proposed changes in detail, including the outputs of the Full Options Appraisals that provide the evidence for the chosen designs. Stakeholders should be consulted in a coordinated way on the proposed ScTMA design, its cumulative and collective impacts, design conflicts and trade-offs.

83. ACOG has worked with the ACP sponsors to develop guiding principles for coordinating the delivery of the ScTMA consultations. The degree of coordination is largely dependent on the size and nature of the interdependencies between the ACPs and will be explained in detail in the ACP sponsors' CAP1616 consultation strategies that will be set out in their Stage 3 Consult Gateway submissions. The principles are summarised in table 8 and organised into four themes; audience, approach, materials and length, in line with the CAP1616 process.

Table 8: Principles for coordinating the delivery of the ScTMA consultations

Theme	Principles for coordinating the delivery of the ScTMA consultations
Audience	<p>The ACP sponsors have already conducted audience identification and analysis in Stages 1 and 2 of the CAP1616 process and engaged with a mix of representative stakeholders. Further analysis of the stakeholder groups that are potentially affected by the ScTMA ACPs will be drawn from the sponsors' Full Options Appraisals.</p> <p>The ScTMA ACP sponsors propose to build on this by:</p> <ul style="list-style-type: none"> • Combining their analysis of potentially affected stakeholders to understand where coordination is most important and streamline the delivery of consultation activities. • Integrating their audience mapping to minimise the risk that stakeholders are contacted multiple times by different sponsors and reduce duplications of effort. • Identifying and coordinating the use of potential intermediaries, for example local authorities and environmental interest groups.
Approach	<p>The consultations will be undertaken through the CAA's Airspace Change Portal and all the information for each consultation will be available there.</p> <p>The sponsors will coordinate how they present common information about the proposed ScTMA design including the cumulative and collective impacts and any proposed trade-offs regardless of which consultation stakeholders participate in.</p> <p>The sponsors will coordinate how they consult with shared audiences using a range of channels, including both online and in person activities.</p>
Materials	<p>All common ScTMA design information will be developed in coordination by the ACP sponsors to ensure its accuracy, consistency and completeness, including:</p> <ul style="list-style-type: none"> • The context and background to the proposed changes, using consistent language about the airspace modernisation programme, tailored for each specific ScTMA ACP. • The cumulative and collective impacts, presented in the same format, with the same language to explain the methods used to calculate them. • Proposed trade-off decisions, presented in a consistent way, applying the same questions for feedback. • A common glossary for the ACPs covering all technical terms.
Length	<p>The CAP1616 process guidance explains that the accepted standard for the duration of a consultation exercise is 12 weeks. Edinburgh, Glasgow and NERL will consider the following points when coordinating their consultation timelines:</p> <ul style="list-style-type: none"> • Any major holidays within the locality of the proposed changes, allowing extra time if appropriate. • Ensuring that the same launch date and close date is chosen for both consultations. • Review points to enable the coordinated approach to be refined if required and provide the opportunity to consider responding to any common challenges in a coordinated way. • The approach to analysing responses will be undertaken collaboratively to ensure all feedback is captured. Sponsors will consider the relevance of the feedback to the other sponsors and share responses as appropriate. • Developing potential consultation extension plans collaboratively so that in the event of an extension being required, all sponsors have considered the impact this will have on their in-train consultation activities.

Part 7: How can stakeholders participate in the process?

84. Having considered the information in this document about ACOG's approach to coordinating the Masterplan and the ACPs required to deliver airspace modernisation in the ScTMA, stakeholders are requested to offer feedback on the questions summarised in table 9.

Please use the online form available at acog.citizenspace.com to respond. If you are unable to respond online you can send your feedback to: ACOG, 4000 Parkway, Whitely, Fareham, Hampshire, PO15 7FL

85. Table 9: (a repeat of table 2) ScTMA public engagement exercise feedback questions

Q1	Please provide your comments on any possible gaps in, or improvements to, the Masterplan for the ScTMA cluster.
Q2	Please provide your comments on the principles for coordinating the delivery of the ScTMA consultations. The principles are organised into four themes; audience, approach, materials and length, in line with the CAP1616 process.
Q3	Please provide your comments on the clarity of the engagement information we have provided at this stage in the process. Does the information make sense? If not, what areas need clarifying?
Q4	Please provide your comments on whether you understand how to engage in the development of the Masterplan and the ScTMA ACPs and have your voice heard?

What will happen next?

86. Stakeholders will be able to see how their views have been captured and considered during the preparation of the Masterplan iteration 3 for the ScTMA.

87. ACOG will analyse the feedback received at the end of the engagement period and produce a response document setting out how the exercise has influenced the preparation of the Masterplan. The response document will be submitted to the CAA and DfT alongside the Masterplan iteration 3 for the ScTMA in spring 2024.

88. The Masterplan will then be assessed, and if accepted, published later in 2024. Following acceptance of the Masterplan, the ScTMA ACP sponsors will submit their consultation strategies and draft materials to the CAA for a Consult Gateway review planned in September 2024. If the CAA approves the gateway submissions, the sponsors will launch their consultations on the proposed airspace changes in November 2024.

89. **If you would like to remain actively engaged in the development of the ScTMA design and receive notifications about the planned ACP consultations so that you can comment on the proposed changes and trade-offs that may affect you, please subscribe to the ACOG newsletter [here](#) and visit the CAA Airspace Change Portal [here](#). ACOG will be publicising when the consultations will be taking place in the newsletter.**