Airspace Change Proposal

ACP-2019-32

Stage 3: Main Consultation Document

Edinburgh Airport

POWERED BY VINCI AIRPORTS | GLOBAL INFRASTRUCTURE PARTNERS

Help shape the skies above Scotland

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Help shape the skies above Scotland

Foreword

We're asking for your views on the impact of modernising our flight paths to make them more efficient, reduce the overall number of people affected by noise from them and reduce their carbon footprint.

Why are we doing this now? An industry-wide drive led by the regulator, the Civil Aviation Authority (CAA), to create airspace infrastructure fit for the 21st century is now underway. This national Airspace Change Programme aims to deliver the vision of the Government's Airspace Modernisation Strategy to deliver quicker, quieter, and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. A key element of the strategy is to introduce more modern navigation methods; commonly called Performance Based Navigation (PBN).

The demand for aviation to and from Scotland is also growing. This saw us welcoming more than 15.7 million people through our doors in 2024. We connect Scotland globally, currently connecting to 157 destinations with 37 airlines. Demand for aviation to and from Scotland will remain high, so it is important that we ensure we invest in and create the conditions to ensure that the demand can be met by a sustainable, modern aviation infrastructure.

Our proposals modernise our arrival and departure routes whilst also reviewing our controlled airspace structure to ensure we are using the minimum volume of airspace necessary. We believe this improves community noise and greenhouse gas emissions whilst also reducing passenger delay and improving access for other airspace users.

Whilst our overall proposal provides an improvement in as many areas as possible, we know airspace change is not an easy process, nor is it one to take lightly. We know that some people will have concerns, and we will need to ensure that any change minimises noise and disruption whilst delivering a safe, effective and sustainable solution.

This is why we are consulting on these plans to modernise the infrastructure above us. We want your views; we want to gather as many opinions as possible.

We've used technology to ensure that our consultation is available to all and we'll also be visiting different areas over the course of the consultation to meet with communities and other stakeholders to explain our proposals.

The consultation runs from Monday 20th October 2025 and ends at 23:59 on Sunday 25th January 2026. We look forward to discussing these plans and to receiving your views.

Gordon Dewar

Introduction

01

1.1 Background to this Airspace Change

1.1.1

Since 2017 the Department for Transport (DfT) and Civil Aviation Authority (CAA) have worked together to develop a shared vision to modernise UK airspace.

1.1.2

The airspace modernisation programme is a key national infrastructure project that aims to deliver quicker, quieter, and more resilient and environmentally cleaner journeys to the benefit of those who use and are affected by UK airspace.

1.1.1

The CAA has developed the Airspace Modernisation Strategy (AMS)[1] also known as CAP1711, which sets out how the UK is modernising airspace.

1.1.2

The overall programme of changes required to implement the AMS is considered one of the most significant airspace and Air Traffic Management (ATM) developments ever undertaken. Some of the most important changes described in the AMS concern the widespread adoption of satellite-based navigation technology, known as Performance Based Navigation (PBN).

Why must this change happen now and what does it aim to deliver?

1.1.3

This Edinburgh Airport airspace change proposal is a critical component of the UK AMS. It aims to create a more efficient, safe and environmentally friendly airspace system that can safely accommodate future aviation growth.

[1] CAA's Airspace Modernisation Strategy

1.1.4

The key vision and objectives of the AMS are:

Airspace Modernisation Strategy: Vision	
Deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace	
Airspace Modernisation Strategy Objectives	
Safety:	Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation.
Integration of diverse users:	Airspace modernisation should wherever possible satisfy the requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, general aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems).
Simplification, reducing complexity and improving efficiency:	Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic, accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers.
Environmental sustainability:	Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance and, in doing so, will take account of the interests of all stakeholders affected by the use of airspace.

Figure 1: AMS Vision and Objectives

1.1.5

Edinburgh Airport proposes to modernise the airport's flightpaths to better meet technical requirements, and take advantage of improved navigational capability.

1.1.6

By modernising the airspace, minimising noise and environmental impacts and improving operational efficiency, this proposal seeks to address the challenges and opportunities presented by the forecast growth in aviation.

1.2 Scottish Airspace Modernisation and the Co-ordinated Consultation

Background

1.2.1

The Airspace Change Organising Group (ACOG) was formed in 2019 under the direction of the DfT and CAA, who co-sponsor and regulate airspace modernisation. ACOG is tasked with developing the UK Airspace Change Masterplan[2] (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.

1.2.2

The UK's airspace is being upgraded as part of the UK Government's airspace modernisation programme. This includes redesigning the arrival and departure routes that serve many of the UK's airports. Airspace modernisation will be delivered, in part, through a series of linked Airspace Change Proposals (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 7,000ft). NATS En-route Plc (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 7,000ft, in busy portions of airspace where there are lots of climbing and descending flights, referred to as Terminal Control Areas (TMAs).

The Airspace Change Masterplan

1.2.3

Airspace modernisation is a complex programme, with many organisations working together on a single co-ordinated 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 the Government's AMS.

1.2.4

The Masterplan is organised into four regional clusters so that the simpler airspace changes can be deployed sooner, realising benefits earlier. The timelines for making airspace changes are generally shorter for the simpler clusters where there are fewer airports and less complex interdependencies between the airport ACPs.

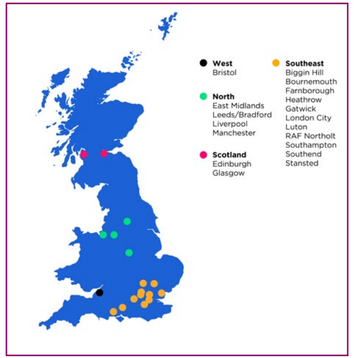


Figure 2: Four clusters of the Airspace Change Masterplan and airport sponsored ACPs

Scottish Airspace Modernisation

1.2.5

Edinburgh Airport's ACP forms part of a wider Scottish Airspace Modernisation proposal. This is formed between three airspace change sponsoring organisations, often referred to as 'the sponsors', Edinburgh Airport, Glasgow Airport and NERL. Within the Masterplan, the modernisation of Scottish Airspace is referred to as the Scottish Terminal Control Area (ScTMA) cluster, however, throughout our consultation materials, we will refer to this as 'Scottish Airspace Modernisation'.

[2] Airspace Masterplan

1.2.6

Edinburgh Airport and Glasgow Airport are responsible for the ACPs to modernise their departure and arrival routes below 7,000ft and the associated controlled airspace. NERL is responsible for the ACP to modernise the wider route network above 7,000ft.

1.2.7

The three ACPs are being progressed independently, however, there are design interdependencies between the proposals i.e. a change to the Edinburgh Airport design may result in a knock-on change for NERL and/or Glasgow Airport.

1.2.8

This means that Edinburgh Airport, Glasgow Airport and NERL, co-ordinated by ACOG, have worked closely together to develop the Scottish Airspace Modernisation proposal. It also means that for some stakeholders, such as airlines and general aviation, there will be co-ordinated consultation events to present the overall proposal.

1.2.9

This Consultation Document focuses on the proposed changes which form the Edinburgh Airport ACP, however, ACOG has also published a number of documents that present information about the development and outcomes of the system wide Scottish Airspace Modernisation proposal. As we progress through this document, we will provide information and links to the relevant ACOG documentation which shows how the Edinburgh Airport proposal fits within the wider system design.

1.3 Airspace Change Process

1.3.1

Since January 2018, any changes to airspace are required to follow the CAA's CAP1616 regulatory guidance. CAP1616 outlines a 7-stage process for changing airspace design, including community engagement requirements.

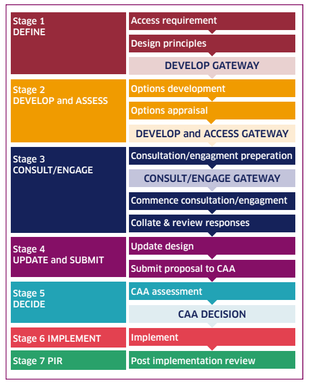


Figure 3: CAP1616 (Edition 5) 7-Stages

1.3.2

A key principle of the airspace change process is that it is as transparent as possible throughout. Those potentially affected by an airspace change proposal should feel confident that their voice has a formal place in the airspace change process[3].

1.3.3

The CAA monitors the progress of an airspace change proposal against the requirements of the airspace change process at key defined points, called gateways. At each gateway, the CAA will assess whether the relevant airspace change process requirements have been met. The gateways are there to determine whether the airspace change process has been followed up to that point, and whether to approve the progress to the next stage[4].

1.3.4

In early 2023 the CAA conducted a public consultation on proposed changes to CAP1616, and Edition 5 of the document was published at the end of October 2023. In November 2023 the CAA wrote to Edinburgh Airport to inform them that Stage 3 of the CAP1616 should be carried out in accordance with Edition 5.

1.3.5

As such all our Stage 3 documentation will be based on the guidance provided in **Edition 5 of CAP1616** and **CAP1616 f, Guidance on Airspace Change Process for Permanent Airspace Change Proposals**.

[3] CAP1616 Edition 5 Page 14, Paragraph 1.30

[4] CAP1616 Edition 5 Page 20, Paragraphs 2.16-2.17

1.4 Edinburgh Airport's Airspace Change Proposal

1.4.1

Edinburgh Airport began the ACP process to modernise its airspace in April 2019 by submitting our 'Statement of Need'. The project and much of the wider programme was paused due to the COVID-19 pandemic in March 2020 whilst the aviation industry focused upon managing their response to the pandemic and subsequent recovery and recommenced in May 2021.

1.4.2

The proposal seeks to modernise Edinburgh Airport's flight paths to meet technical requirements and improve airspace efficiency and overall network capacity.

1.4.3

The new routes will take advantage of improved navigational capability, which has allowed us to design new routes that would reduce overall noise impact, generate less CO_2e per flight and improve operational efficiency.

1.4.4

Table 1 below summarises the CAP1616 stages already undertaken for this ACP and the stage where we are now. There are links to previous submission documents, held on the **CAA's Airspace Change Portal**, with further information.

1.4.5

Stages 1 and 2 were written in accordance with CAP1616 Edition 4, and Stage 3 onwards is written in accordance with CAP1616 Edition 5.

Table 1: Summary of ACP and Engagement Activity to date

Airspace Change Stage	Summary	Link to Documents[5]
Stage 1: Assess Requirement	In 2019, Edinburgh Airport submitted their Statement of Need (SoN) to the CAA.	Statement of Need on CAA's Airspace Change Portal
	Edinburgh Airport participated in an assessment meeting with the CAA as part of Step 1A of the CAP1616 process. The purpose of the assessment meeting is for the change sponsor to present and discuss their SoN and to enable the CAA to consider whether the proposal falls within the scope of the formal airspace change process.	Assessment meeting minutes
Stage 1: Design Principles	At Step 1B Edinburgh developed a set of design principles with identified Stakeholders. The aim of the design principles was to provide high-level criteria that the proposed airspace design options should meet. They also provided a means of analysing the impact of different design options and a framework for choosing between or prioritising options. The final design principles are presented within the Stage 1B submission.	Step 1B Design Principle Submission Report
Stage 2: Options Development	Step 2A requires change sponsors to develop and assess options for the airspace change. In Step 2A, we developed our comprehensive list of options that address the Statement of Need and that align with the design principles from Stage 1. We then shared those options with our Stakeholder representatives (the same ones engaged with on the Design Principles). Feedback from the engagement was then used to refine and/or generate further options. Finally, we qualitatively assessed the options we had developed against the Design Principles and produced a Design Principle Evaluation (DPE). Our Step 2A document provides details of this process and the resultant DPE.	Step 2A DPE Submission Document
Stage 2: Options Appraisal	At Step 2B an Airspace Change Sponsor is required to undertake an Initial Options Appraisal (IOA) of the airspace change options which proceed from Step 2A. Our Step 2B document described the baseline of today's airspace, the options under assessment, and explanation of the methodology used to assess each option, and finally the IOA outcome.	Step 2B IOA Document
Stage 3: Consultation/ Engagement Preparation	At Stage 3, an airspace change sponsor is required to plan for stakeholder consultation and engagement by preparing a Consultation Strategy, Consultation Document, and a Full Options Appraisal (FOA). The FOA is the second phase of appraisal, following the IOA at Stage 2B, with more rigorous analysis of the impacts and benefits of the proposed airspace change options. Sponsors may also rationalise and refine their design options before completing the FOA. Full details of the FOA and design work that preceded it can be found here. Following the FOA, the option for consultation was identified and we then produced a Consultation Strategy and draft consultation materials which were submitted to the CAA for review. Once the CAA have assessed the outputs and passed the gateway, we then commence this consultation. Following the close of the consultation, the sponsor must produce and publish a consultation response document before proceeding to Stage 4 of the process.	This document

[5] This column provides a link to the main and latest version of the documents. In each case there may have been previous submissions also submitted, and/or appendices and/or other supporting information also published alongside. The full document set is available on the CAA Airspace Change Portal for this ACP.

1.5 This Consultation Document

1.5.1

This document is our main Consultation Document, which provides details of the background to this ACP and the proposed changes. It aims to explain the proposed changes in a way that those not familiar with aviation terminology can understand. To assist with this, we have produced a Glossary of Terms, which we recommend having open whilst reading this Consultation Document. It can be found using the link below:

Edinburgh Airport Airspace Change Programme Glossary of Terms

This Consultation Document is broken down into 10 main sections and 4 appendices.

1.5.2

Section 1: Introduction – introduces the background of this ACP and the work undertaken to date.

1.5.3

Section 2: Consultation Information – provides an overview of the consultation, including details of the materials, our consultation events, and how you can feedback your comments.

1.5.4

Section 3: What is Performance Based Navigation (PBN) – explains what PBN is and how it applies to how we are modernising Edinburgh Airport's airspace.

1.5.5

Section 4: How we developed our proposal – provides a summary of how the proposals have been developed since the start of the ACP.

1.5.6

Section 5: Proposed departure routes – explains how aircraft depart from Edinburgh Airport today and how they could in the future.

1.5.7

Section 6: Proposed arrival routes – explains how aircraft arrive at Edinburgh Airport today and how they may arrive in the future.

1.5.8

Section 7: The overall proposal for modernising Edinburgh Airport's airspace – brings together the information about arrivals and departures to present the overall airspace proposal. This section includes information about where to find more details about the system wide Scottish Airspace Modernisation proposal.

1.5.9

Section 8: The benefits and Impacts of our proposal – provides a high-level summary of the FOA, so that consultees can understand the potential positive benefits and negative impacts of the proposed option.

1.5.10

Section 9: Proposed Controlled Airspace (CAS) – explains the current CAS arrangements at Edinburgh Airport and how these arrangements could change in the future. This section also contains information about the positive benefits and negative impacts of the proposed change.

1.5.11

Section 10: Responding to our consultation and what happens next – describes the next stages of the CAP1616 process and explains how to respond to the consultation.

1.5.12

Appendix A: Feedback Form – a hard copy feedback form for those unable to respond to the consultation via the **Citizen Space consultation website**.

1.5.13

Appendix B: Alternative Route Designs

1.5.14

Appendix C: Selecting option for consultation

1.5.15

Appendix D: High Resolution Maps and Tables (Published Separately)

Consultation Information

02

2.1 Who are we consulting?

2.1.1

This consultation aims to reach all stakeholders who may be impacted by the proposed changes. This includes aviation industry stakeholders, such as airlines and general aviation, and communities who are either currently overflown by aircraft arriving or departing Edinburgh Airport, or who could be in the future.

2.1.2

Our Consultation Strategy document includes more information about how we have identified our consultation audience, who our consultation audience are, and our approach to tailoring the consultation to different stakeholders. This includes our engagement activities during the consultation period[6].

2.2 Our Edinburgh Airport Consultation website

2.2.1

Edinburgh Airport has a website dedicated to this consultation, which can be found using the link below:
https://www.edinburghairport.com/whats-your-view

2.2.2

The Edinburgh Airport consultation website contains accessible material and links to a set of online interactive tools, where you can learn more about our proposals.

2.2.3

The material available on the Edinburgh Airport consultation website comes from this consultation document.

2.2.4

We highly recommend you use the website tools available. You can interactively find out the potential impacts of our proposals on specific locations.

2.2.5

The resources available include:

- **Postcode tracker** – this tool helps you find out how specific proposals may affect your postcode. You can search using your postcode to see what the changes could mean for your area.
- **SoundLab** – after inputting your postcode or selecting a location on the map, you'll have the option to hear what a typical aircraft could sound like at that spot, depending on the proposed changes. A recommended aircraft type, flight mode (arrival or departure), and altitude will be pre-selected, but you can also listen to different scenarios if you wish. The sound heard will be from an aircraft overflight if you were outdoors at this location.
- **Virtual room** – this is a website which will explain the impact of the Airspace Change.

[6] Under the UK Civil Aviation Authority's CAP1616 guidance, engagement refers to early and ongoing dialogue with stakeholders to inform the development of airspace change options, while consultation is the formal process of seeking stakeholder and public views on a finalised proposal prior to submission for approval.

2.3 Consultation Materials

2.3.1

Edinburgh Airport has created a set of consultation materials and tools presenting information at various technical levels, to aid stakeholders in understanding the context of this consultation and the scale of the proposed changes.

2.3.2

These materials and tools are listed opposite, and you can also find links on our Edinburgh Airport consultation website.

2.3.3

All printed materials are also available in accessible formats including audio, braille easy read and large print upon request by phone, post or email from Edinburgh Airport.

Table 2: Edinburgh Airport's Consultation Materials

Consultation Summary Document	A short and easy to understand outline of our proposal and our consultation.
Consultation Document (this document)	A detailed overview of the proposal including the background of the ACP and summary of the outcomes of the FOA.
Postcode Tracker	A tool which aims to show specific postcodes and how they may be impacted by the proposals.
SoundLab	A tool which provides the sound demonstration and will allow stakeholders to access interactive mapping showing the key noise information from the FOA scenarios for the proposals. Users have the option to hear what a typical aircraft could sound like at that spot, depending on the proposed changes. A recommended aircraft type, flight mode (arrival or departure), and altitude will be pre-selected, but users can also listen to different scenarios if they wish.
Full Options Appraisal	A document which describes in full technical detail the options and the positive benefits and negative impacts of the proposal compared against the 'without airspace change' baseline.
Frequently Asked Questions (FAQ) document	An FAQ document which will be updated as the consultation progresses, with any frequent questions that may arise either during the consultation events or in consultation responses.
Glossary of Terms	A reference document providing clear definitions of technical or unfamiliar terms used across all consultation materials.
ACOG Document	ACOG System Wide description of the Scottish Airspace Modernisation Proposal.
Consultation Strategy Document	A document which describes our approach to the consultation.

2.4 Consultation events

2.4.1

If you are looking to find out more about our consultation, we will be holding several events, both in-person and online, where the Edinburgh Airport ACP team will be available to answer any questions, you may have about our proposals.

In-person drop-in events

2.4.2

At these events, the consultation material will be available to view along with several tools, which aim to provide all consultees with the information they will need to provide a response to the consultation.

2.4.3

Consultees, where possible, will be able to use the following:

- SoundLab – which will allow stakeholders to access interactive mapping showing the key noise information from the FOA scenarios for the proposals.
- Virtual room – which will explain the impact of the Airspace Change.
- Postcode tracker – to ensure that consultees can understand the impact of the proposals on them.

2.4.4

Exhibition materials will be available to view; these will be in line with the information material contained within our consultation documents and presented in an accessible way. This will allow understanding of the key facts regarding the consultation.

2.4.5

Members of the Edinburgh ACP team will be on-hand to answer any questions regarding the Edinburgh proposals. Members from the NERL ACP team will also be invited to attend to answer questions on their proposals. Where NERL is unable to attend, Edinburgh Airport will undertake to forward questions, comments and other communications to the appropriate member of the NERL ACP team.

2.4.6

Where additional engagement is requested Edinburgh Airport will consider a request through the relevant community council(s) for further engagement on a case-by-case basis and the most appropriate channel to utilise, for example an additional in-person event, webinar, online meeting etc.

Table 3: In-person drop-in events

Event Number	Proposed Date(s)	Location/Venue
1	Thursday 30th October 14:00 – 20:00	Howden Park Centre, Howden, Livingston, West Lothian, EH54 6AE
2	Tuesday 4th November 14:00 – 20:00	Uphall Community Centre, Strathbrock Place, Uphall, Broxburn, EH52 6BN
3	Wednesday 12th November 14:00 – 20:00	Cramond Boat Club, Riverside, Cramond, Edinburgh, EH4 6NY
4	Monday 17th November 14:00 – 20:00	Carnegie Conference Centre, Halbeath Road, Dunfermline, KY11 8DY
5	Tuesday 18th November 14:00 – 20:00	Earlsferry Town Hall, Elie & Earlsferry, Leven, Fife, KY9 1AF
6	Thursday 27th November 14:00 – 20:00	Linlithgow Burgh Halls, Market Lane, Linlithgow, EH49 7AH
7	Tuesday 2nd December 14:00 – 20:00	Peebles Golf Club, 45 Kirkland Street, Peebles, EH45 8EU
8	Tuesday 9th December 14:00 – 20:00	Musselburgh Rugby Football Club, Stoneyhill Farm Road, Musselburgh, EH21 6RN
9	Wednesday 17th December 14:00 – 20:00	Dalgety Bay Community Centre, Moray Way, Dalgety Bay, Dunfermline, KY11 9UZ

Webinars

2.4.7

Edinburgh Airport has scheduled several webinars which will be open to all consultees. The aim of the webinars is to provide consultees who are unable to attend an in-person session (or those who prefer to join a webinar) an opportunity to directly engage with the Edinburgh ACP team and ask questions regarding the proposals.

Table 4: Webinars

Date	Time	Link to register
Monday 27th October 2025	18:00 – 20:00	**Link**
Monday 10th November 2025	18:00 – 20:00	**Link**
Monday 24th November 2025	18:00 – 20:00	**Link**
Monday 8th December 2025	18:00 – 20:00	**Link**
Tuesday 23rd December 2025	15:00 – 17:00	**Link**
Tuesday 5th January 2026	18:00 – 20:00	**Link**

2.4.8

The information presented at all the general webinars will be the same. All webinars will be available for any person to join.

2.4.9

A recording explaining our ACP will be made available.

2.4.10

As well as the general ACP webinars, a number of bespoke webinars have been scheduled to take place at the start of the consultation for aviation industry stakeholders, such as airlines, airports, general aviation representatives and the military. These webinars are part of the co-ordinated consultation with NERL and Glasgow Airport.

2.4.11

Details on the Webinars and how to join are detailed on Table 4 on page 19.

2.5 Further questions

2.5.1

If you have any further questions, please contact us using the contact details. Please note that all response to the consultation should be submitted via the Citizen Space Portal (see below for more information).

email: **whats-your-view@edinburghairport.com** or call: **0131 348 4299**

2.6 How to respond to the consultation

2.6.1

The consultation runs for 14 weeks from 00:01 hrs on Monday 20th October 2025 to 23:59 hrs on Sunday 25th January 2026.

2.6.2

All responses to the consultation should be submitted online via the CAA's Citizen Space Portal. This is available at **https://consultations.airspacechange.co.uk/edinburgh-airport/airspace-consultation/**

2.6.3

If you need hard copy materials, you can contact the team either by:

email: **whats-your-view@edinburghairport.com** or call: **0131 348 4299**

and we will send you an information pack and feedback form by post, with a freepost envelope that you can return your completed form to us. A copy of the feedback form is also available at **APPENDIX A: Consultation Feedback Form** of this document.

2.6.4

All responses to the consultation, including those received in hard copy form, will be published on the CAA's Citizen Space Portal.

2.6.5

If you wish for your response to be published anonymously, there is an option to redact your personal details, and these will only be seen by Edinburgh Airport and the CAA. However, if your feedback is relevant to one of the other Scottish airspace modernisation sponsors (Glasgow Airport and/or NERL) then your feedback and personal details will be shared with the applicable sponsor(s).

2.6.6

Edinburgh Airport will operate in compliance with the Edinburgh Airport Limited's **Privacy Policy** in order to ensure lawful processing of personal data.

2.7 Analysis of your feedback

2.7.1

The consultation closes on Sunday 25th January 2026 (23:59 hrs). Once Edinburgh Airport receives feedback from our stakeholders, the next step is to thoroughly analyse the received responses. The primary aim is to understand stakeholders' views, identify any common themes and pinpoint significant concerns. To achieve this, all received responses will be systematically categorised and reviewed.

2.7.2

All of the responses received during the consultation will be reviewed and categorised into two main groups: and,

- Those that present new information or evidence that could impact the final airspace change proposal.
- Those which do not, including those raising issues which are outside the change sponsor's control (such as Government policy).

2.7.3

Each response to our consultation will have a clear explanation from Edinburgh Airport on why it has been categorised in a specific way. This is to ensure that all received responses are considered and there is a transparent process for how your response to our consultation has been interpreted and used.

2.7.4

The analysis process involves several stages. Initially, data will be collected from all consultation activities, ensuring that every viewpoint and concern is recorded. This data will then be subject to qualitative and quantitative analysis to identify recurring themes, levels of support or opposition and specific areas of concern. Received responses will be grouped into categories such as safety, noise, environmental impact, community concerns and operational efficiency; this categorisation helps in pinpointing which aspects of the proposal is most contentious or well received. The categorisation and review of each received consultation response will be documented in the Consultation Response Document (CRD). This document will serve as the record of how consultation feedback has been managed and will be published after the consultation window has closed, at the end of Stage 3 of the airspace change process.

What is Performance Based Navigation?

03

3.1 What is PBN?

3.1.1

The introduction of Performance Based Navigation (PBN) is a key component of the Government's Airspace Modernisation Strategy (AMS). PBN enables aircraft to follow more precise and predictable flight paths by specifying navigation performance requirements, rather than relying solely on conventional ground-based navigation aids. Importantly, PBN is not a navigation system itself, nor does it rely exclusively on satellite-based technology. It allows for the use of both ground-based and satellite-based navigation infrastructure, depending on the specific navigation specification. The International Civil Aviation Organization (ICAO) defines PBN as "area navigation based on performance requirements for aircraft operating along an ATS route, on an IAP or in a designated airspace" (ICAO Doc 9613, Performance-based Navigation (PBN) Manual). **https://skybrary.aero/articles/performance-based-navigation-pbn**

3.1.2

Conventional navigation aids, such as VHF Omnidirectional Range beacons (VORs) and Non-Directional Beacons (NDBs), are constrained by their fixed locations, which can limit where flight routes can be placed. PBN overcomes these limitations by enabling route design based on performance criteria rather than the physical placement of navigation aids. This flexibility supports more efficient and environmentally responsive use of airspace.

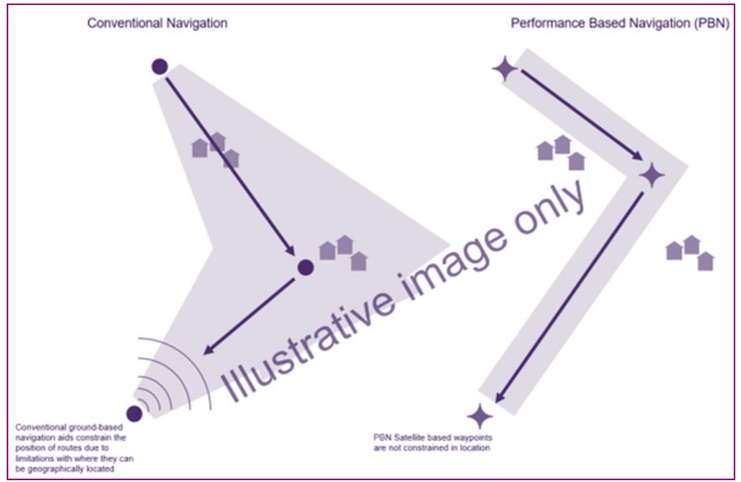


Figure 4: Conventional Navigation vs PBN

3.1.3

At Edinburgh Airport, the current departure routes are defined using conventional, ground-based navigation aids. There are also conventional arrival procedures for the final stages of flight which is known as final approach. However, there are no published arrival routes between the holding stacks and the final approach, and therefore arrivals are always vectored onto final approach. Whilst there are published departure routes, Air Traffic Control (ATC) still regularly vector departing aircraft to deliver the most operationally safe and efficient operation they can.

3.1.4

Vectoring is when ATC provide an instruction to pilots in the form of a direction (heading based on a compass bearing). ATC will also instruct pilots to climb or descend. Pilots may also be instructed to use speed control by ATC.

3.1.5

This vectoring generates a high workload for air traffic controllers and pilots and creates dispersion across the airspace. This can be seen in the images opposite which show the typical swathes of flights to and from Edinburgh Airport:

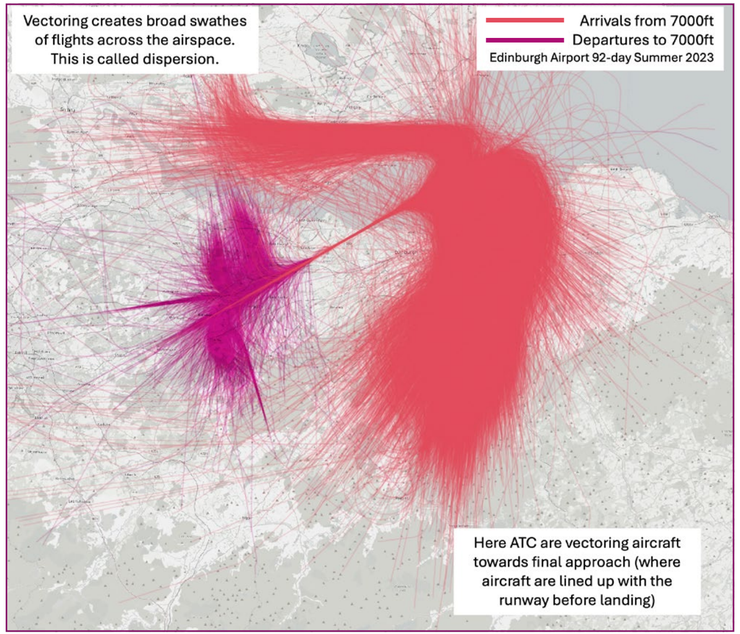


Figure 5: Typical swathes to and from Edinburgh Airport runway 24 operations. Basemap: ©OpenStreetMap

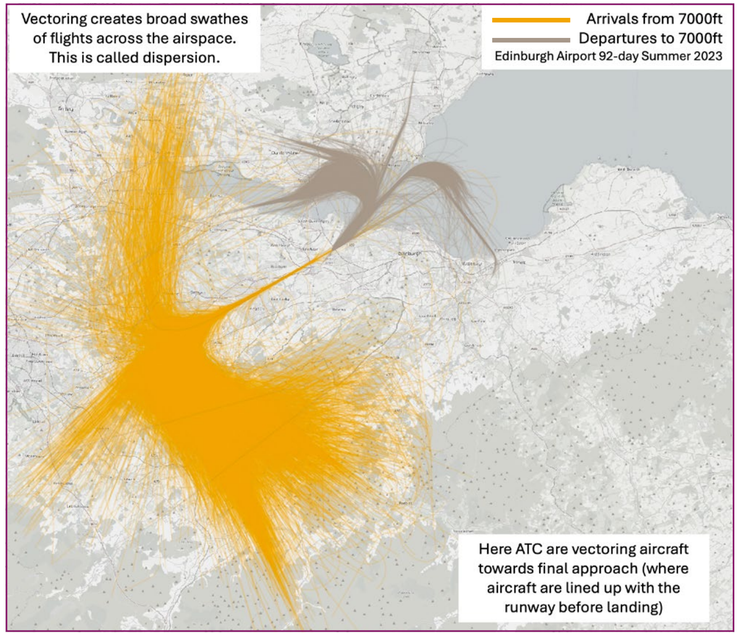


Figure 6: Typical swathes to and from Edinburgh Airport runway 06 operations. Basemap: ©OpenStreetMap

3.1.6

When aircraft fly along their PBN routes, they are typically more concentrated over a narrower area compared to when they are vectored by ATC.

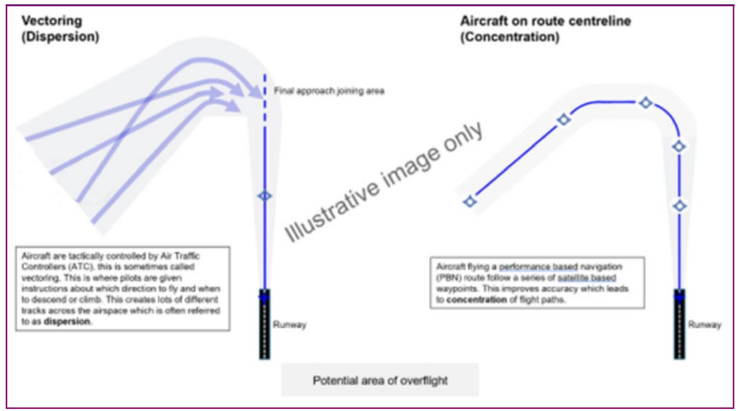


Figure 7: Example of vectoring of arrivals compared to aircraft remaining on an arrival route centreline

3.1.7

As PBN is not constrained by the location of ground-based navigation aids, there is much more design flexibility in determining where routes can be positioned.

3.1.8

As part of the later sections of this document, we will describe where we propose Edinburgh's new departure and arrival routes will be positioned and how that will result in a reduction in the amount of vectoring seen today. There is also more information about how aircraft arrive and depart today.

3.2 The DVOR Rationalisation Project

3.2.1

Alongside the main driver of this airspace change, which is to meet the Government's **Airspace Modernisation Strategy (AMS)**, Edinburgh Airport is also required to remove dependency on conventional, ground-based navigation aids called DVOR (Doppler VHF Omni Directional Range) which are currently undergoing a rationalisation programme by NERL.

3.2.2

Edinburgh Airport's current departure route procedures, and some arrival procedures, utilise DVORs and therefore one of the aims of this ACP is to reduce dependencies on ground-based navigation aid infrastructure, and move towards satellite-based navigation (PBN) which would remove the dependency on DVORs.

How we developed our proposal

04

Design Principles

We first started by engaging with representative stakeholders on our design principles. These stakeholders included representatives for local communities, the aviation industry, military as well as political representatives and environmental groups.

Design principles are the high-level criteria which the airspace design should meet.

Working with representative stakeholders, we developed 16 principles.

We submitted details of the design principles and our engagement to the CAA, who approved us to move onto the next step of the process.

Category	Number	Design principle
Safety (core)	FDP1	The airspace design and its operation must be as safe or safer than it is today.
Safety (core)	FDP2	Flight paths must be flyable and technically supported by air traffic control and airport technical management systems.
Operational (core)	FDP3	Flight paths must be designed to allow modern aircraft to use performance-based navigation (PBN) in line with CAA's modernisation strategy.
Operational (core)	FDP4	Routes to/from Glasgow and Edinburgh airports must be procedurally deconflicted from the ground to a preferred level in coordination with NATS Prestwick.
Operational (core)	FDP5	The predictability of flight tracks must be maximised for consistency of operations.
Operational (core)	FDP6	Collaborate with other Scottish airports and NATS to ensure that the airspace design options are compatible with the wider programme of lower altitude and network airspace changes being coordinated by the FASI North programme.
Health and wellbeing	FDP7	Flight paths should be designed to minimise the total adverse effect on health and quality of life created by aircraft noise and emissions.
Health and wellbeing	FDP8	For flightpaths at or above 4,000ft to below 7,000ft, the impact of aviation noise, unless this would disproportionately increase CO2 emissions.
Health and wellbeing	FDP9	Flight paths should be designed to minimise population overflown below 4,000ft and, between 4,000ft and 7,000ft, taking into account any potential adverse impact, due to those overflown having protected characteristics, as defined by the Equalities Act 2010.
Health and wellbeing	FDP10	Flight paths should be designed to minimise overflying sensitive locations and noise-sensitive receptors (for example, the zoo, retirement complexes, green spaces, historic heritage sites, and others).
Health and wellbeing	FDP11	Flight paths should be designed to include track concentration and/or track dispersal options to provide noise respite.
Operational	FDP12	Flight paths should be designed with routes that minimise track miles and fuel burn.
Operational	FDP13	Flight paths should be designed to ensure efficient and effective route management.
Technical	FDP14	Requirements of airspace users should be taken into account when designing flight paths.
Environment	FDP15	Flight paths should be designed to minimise adverse local air quality impacts.
Economy	FDP16	Airspace should be designed to maximise capacity in order to contribute economic benefits to Scotland, including tourism.

Option Development

We then developed concepts for the design based on these design principles.

At this point, the options were represented by conceptual drawings or 'swathes'. These defined the framework for the routes. This covered such things as the number of routes required and the direction each route would need to head off in, or come in from. The swathes described a broad area in which a route fitting the framework could be positioned within, but did not narrow down to proposed lines for the routes.

Example of a set of 'swathes' from our Stage 2 submission

Stakeholder Engagement

We then tested the options with the same stakeholder representatives who helped us develop the design principles.

Those stakeholders gave us lots of useful feedback to use when evaluating and appraising the options.

At this point we had what CAP1616 calls a 'Comprehensive List of Options' and the feedback we received was also used in Stage 3 when we rationalised and refined our options, developing the swathes into defined routes.

Back to Design Principles <

Design Principle Evaluation

The first assessment was called a Design Principle Evaluation (DPE). This looks at how each option performs against each design principle. The option was given an assessment based on whether it 'met', 'partially met' or 'not met' the design principle.

Initial Options Appraisal

The next assessment was called the 'Initial Options Appraisal'. It is the first of three phases of appraisal as part of the CAP1616 process.

With this assessment, we compared each concept/ swathe option against a 'without airspace change' baseline to understand the positive benefits and negative impacts of the option.

This assessment is based on lots of different categories which are required by CAP1616, including safety, noise, greenhouse gas emissions, air quality, biodiversity, tranquillity, general aviation, fuel burn, capacity and potential monetary costs to airlines, air navigation service providers, and the airport.

Once this assessment was concluded, we documented the whole process from Options Development and submitted it to the CAA to ensure we were following the CAP1616 process in a clear and transparent way. The CAA reviewed our work and approved us to move to the next stage.

Cap 1616 Options Appraisal Assessment Categories

- Safety
- Noise
- Greenhouse gas
- Air quality
- Biodiversity
- Tranquillity
- General aviation
- Fuel burn
- Capacity
- Resilience
- Airline, Airport, and ATC costs

Back to Design Principles <

Detailed design development of the options

Step 1

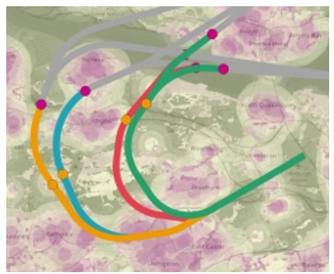
In order to develop detailed designs options for FOA, we took the concepts and swathes from stage 2 through a 4-step process which is summarised below and described in full detail in the FOA.

In step 1 our team of design experts developed designs for individual routes referring to:

- Requirements for integrating our design with the wider network and neighbouring airports
- Technical design of Instrument Flight Procedures (IFP) and operational viability assessment
- Local data represented by population, today's flight paths, 'GoldSET' data covering other places potentially sensitive to noise, and other airspace user requirements, see Note 1 below
- Route length
- Application of concentration, respite and relief

The result of this was a set of route designs for each of our routes. For some routes we only had one design. For example, where we could design a route to be over the sea, or for routes where there was only one design that met the technical criteria and best avoided population and other sensitive areas.

For the busier routes where there was more design flexibility our team developed more than one alternative design. The alternative route designs we developed are described in **Appendix B**.



Note 1: the Goldset data was part of the dataset provided to our designers to refer to when designing individual routes. It was not used in the formal FOA appraisal. Please see the FOA Section 2 for more detail on how Goldset and the other data referenced above influenced the design of individual routes

Example of alternative designs for one route, overlaid on a map of GoldSET indicating where there are areas that may be sensitive to noise that should be avoided if possible.

Back to Design Principles <

Step 2

The FOA is performed on designs for the full airport system rather than individual routes, so the next step was to combine the individual routes into design scenarios that represented a full system of working routes for the airport.

The designs for individual routes from Step 1 gave rise to 16 separate design scenarios.

Step 3

We then undertook a pre-FOA review to help narrow down the scenarios. At this stage in the design process, we did not have detailed noise analysis to look at, but we could compare each scenario to performance indicators covering the key impacts where the performance of each differed.

This included an assessment against the noise contours that occur today to qualitatively assess whether the scenario would be likely to offer an improvement in line with Government policy, or not. We also looked at other data such as the population, GoldSET and route length to give an indication on how the design scenarios performed relative to one another with respect to noise, overflight, fuel burn and greenhouse gas emissions.

Step 4

The data from the pre-FOA review was used to identify which scenario was likely to perform the best in our FOA, which we took forward as our FOA 'Option 1'.

We also identified a second FOA option (Option 2), which matches Option 1 except for one route which we know from previous stakeholder feedback will be a point of discussion. In Option 2 we picked the version of the route that most differed from that in Option 1.

For our third FOA Option we selected a design that most differed from Options 1 and 2. By doing this we ensured all the individual route design combinations identified in STEP 2 were represented in the FOA.

Example of the matrix produced in the pre-FOA review showing how different scenarios performed with respect to performance indicators..

Back to Design Principles <

Network integration

The development of the detailed design described above involved a lot of safety and operational viability assessments. The three ACP sponsors collaborated with ACOG to refine and integrate the shortlisted options into an overall Scottish Airspace Modernisation proposal. First and foremost, this involved making sure the overall design would be safe, which was then followed up by work to ensure that any trade-offs between the ACPs were considered from the perspective of overall performance.

The outcomes of the work to make the overall system safe helped form the broad framework of routes for the region. How these safety requirements fed into, and affected our design is covered in Section 2.1 of our FOA document.

Considering 'trade-offs': a key goal of the Masterplan is to outline how the options in each ACP relate to one another (their interdependencies), including any design conflicts and the potential solutions. Interdependencies occur when the options from different ACPs are linked, for example when one sponsor's designs affect the feasibility of another's. A design conflict arises if these options are individually safe but cannot coexist as they are. In such cases, ACP sponsors must work together to modify or remove options to resolve the conflicts. Resolving conflicts often involves 'trade-offs', where different solutions lead to varying combinations of positive and negative impacts. These trade-offs reflect the compromises made to prioritise benefits in one area, sometimes at the expense of improvements in another, while always maintaining safety as the top priority. For more information about the treatment of ACP interdependencies and design conflicts please see sections B3, B4 and B5 of the Masterplan Iteration 3 **here**.

ACOG has developed a Cumulative Analysis Framework (CAF) described in Appendix 1 of the Masterplan **here**, to guide ACP sponsors in identifying interdependencies and resolving design conflicts through evidence-based trade-offs.

Edinburgh Airport, Glasgow Airport and NERL collaboratively reviewed the ACPs using the CAF methodology, identifying 18 potential interdependencies. Eight of these arose from interactions between arrival and departure route options in the Edinburgh Airport and Glasgow Airport ACPs. Further analysis confirmed that these interdependencies would not result in design conflicts, so no modifications to the designs were necessary.

The remaining ten interdependencies involved options for the position of the airborne holds included in the NERL ACP and their potential to interact with the route options included in the airport ACPs. Further analysis identified that none of the design conflicts involved the Edinburgh ACP.

Appendix 3 of the Masterplan Iteration 3 **here**, provides more information about the overall Scottish Airspace Modernisation proposal and a full description of all 18 interdependencies and the qualitative assessments of the two design conflicts, including the potential solutions and trade-offs.

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Full Options Appraisal

We then undertook a FOA, the second of the three phases of appraisal.

This is based on the same assessment categories as the IOA (such as safety, noise, greenhouse gas etc) but the assessments are increased in detail and almost all the categories were quantitatively (data based) assessed rather than qualitatively assessed.

Just like in the IOA, we assessed each of the three options against a 'without airspace change' scenario to understand the positive benefits and negative impacts of each option. This was undertaken for 2027 (the expected year of implementation) and 2036 (10 years following implementation).

Three options have been assessed for our FOA and the detailed assessments gave us sufficient information to narrow down our options to our preferred option for this consultation. More details around this can be found in **Appendix C** of this document and **Section 5 of our FOA** document.

Back to Design Principles <

Where we are now – this consultation

This brings us to where we are now – this consultation.

We are consulting on our proposed design which has been developed over the past 6 years. We have chosen to bring one option forward to consultation to be able to clearly present to consultees the detailed information around how the proposal could benefit or impact compared to the 'without airspace change' scenario.

We want to hear from you – your feedback will be used to help shape our proposal and develop the final design. For example, communities may tell us that it would be advantageous to move a route slightly to avoid a noise sensitive area, or airspace users may have more technical feedback such as a boundary of controlled airspace would benefit from a lateral change to better suit a visual reference point. All your feedback will be considered by Edinburgh Airport, and we will document this process so that you can understand how your feedback has been considered as part of the final proposal.

Your feedback will also help us to further understand the benefits and impacts of the proposal and where possible we will incorporate this into future options appraisals.

Changes to the design could have knock-ons in the wider Scottish Airspace Modernisation airspace and therefore we will be working closely with Glasgow Airport and NERL (co-ordinated by ACOG), to develop the final Scottish Airspace Modernisation proposal.

The full process will be documented so that you can see how your feedback has been considered and, if design trade-offs are required, how we have developed the final airspace design.

What if the design fundamentally changes following consultation?

Depending on the scale of the changes, we will either undertake targeted engagement or, if the design changes are significant, we will carry out further consultation activities.

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System Wide Proposal for Scottish Airspace Modernisation cluster

Edinburgh Airport, along with Glasgow Airport and NERL have developed the overall proposal for the modernisation of Scottish Airspace. This is formed of three separate ACPs (one for each sponsor) and these ACPs have followed CAP1616 to produce three separate Full Options Appraisal document sets.

Because these ACPs are all part of Scottish Airspace Modernisation, an additional document has been produced to capture the cluster wide performance (i.e. the overall impact from the three ACPs taken as a whole) and this shows that the cluster-wide proposal would provide:

- significant regional benefits with regard to CO_2, delay reduction and overall monetised noise (some areas would be overflown less and others more, but overall monetised noise effects would be reduced)
- a net cluster-wide benefit (using the Government's method for monetising benefits) is c.£130m

The document also identifies that there are no dependencies between, or cumulative effects from, the options being presented by each ACP at consultation, and so there are no trade-offs between the consultation options presented by different sponsors.

This document is referred to as CAF2 and is published on the **airspace change portal**.

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Table 1: Replicated table from ACOG's Description of the proposed system-wide design for the Scottish (ScTMA) Cluster of the Airspace Change Masterplan detailing the "Strategically important ACPs included in the scope of the ScTMA cluster

ACP ID	Title	Sponsor	Scope
ACP-2019-45	Glasgow Airport Airspace Change	Glasgow Airport Limited	Arrival and departure routes serving Glasgow Airport and the controlled airspace that contains them below 7,000 ft.
ACP-2019-32	Edinburgh Airport Airspace Change	Edinburgh Airport	Arrival and departure routes serving Edinburgh Airport and the controlled airspace that contains them below 7,000 ft
ACP-2019-74	Future Airspace Implementation- ScTMA	NERL	Route network in the ScTMA above 7,000 ft and interfaces with Glasgow and Edinburgh arrival and departure routes below 7,000 ft.

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Table 2: Replicated table from ACOG's Description of the proposed system-wide design for the Scottish (ScTMA) Cluster of the Airspace Change Masterplan detailing the "Expected benefits of airspace modernisation in the ScTMA organised by stakeholder group

Stakeholder Group	Expected Benefits
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 the environment	Airspace modernisation is expected to reduce the environmental impact of flights and help the UK to achieve its commitment to net zero emissions. The Government set out its proposed approach to reach net zero aviation by 2050 in its 2021 Jet Zero consultation and expects a significant proportion of the required emissions reductions will come from improving the efficiency of the existing aviation system, including aircraft, airports and airspace.
For airlines	Additional airspace capacity will reduce delays while maintaining high levels of safety. Modernisation will also improve flight efficiency, enabling the airlines to the capitalise on the performance of their modern fleets of aircraft.
For airports	Modernisation is expected to reduce delays on the ground pre-departure caused by capacity constraints in the airspace and potentially increase runway throughput during busy periods.
For passengers and the wider economy	Fewer flight delays and service disruptions are expected to save time and improve the passenger experience. The capacity to accommodate new flights will lead to more choice, better value, and enhanced global connections.
For other airspace users	Modernisation offers opportunities for other airspace users to access volumes of airspace that are not required by commercial air transport through the release of controlled airspace and improvements in airspace sharing.
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.

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Proposed Departure Routes

05

5.1.1

To fully describe the proposed changes, we first need to describe how aircraft depart Edinburgh Airport today.

5.2 How aircraft depart Edinburgh Airport today

Runway Direction

5.2.1

Edinburgh Airport has one runway, which can be operated in two directions. These runway directions are called runway 24 and runway 06[7].

5.2.2

Aircraft depart (take off) into the wind. This means that Edinburgh Airport's runway direction depends on the wind direction.

5.2.3

Across an average year, 70% of aircraft take off on runway 24 which means they take off to the southwest towards Livingston, and 30% of aircraft take off on runway 06 to the northeast towards the Firth of Forth.

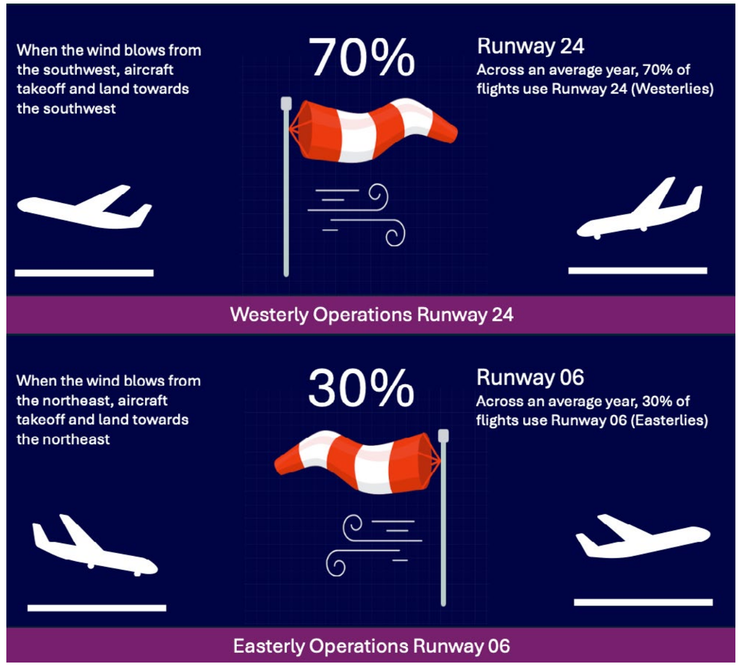


Figure 8: Edinburgh Airport runways and usage

[7] Our airport operation depends entirely on the direction of the wind. We operate either in a westerly mode referred to as runway 24, or an easterly mode referred to as runway 06 and the numbers are derived from the compass heading of each end of our runway. Runway 24 faces approximately 240 degrees, runway 06 approximately 060 degrees.

Edinburgh Airport's Departure Routes and Noise Preferential Routings

5.2.4

Edinburgh Airport publishes Noise Abatement Procedures which all outbound aircraft are required to conform to. Within these procedures, there are Noise Preferential Routings (NPRs) for departing aircraft.

5.2.5

Edinburgh Airport's NPRs require all departing jet aircraft and all other departing aircraft of more than 5,700kg Maximum Take Off Weight to fly specific flight paths. Aircraft are permitted to deviate from the NPRs when instructed by ATC or in the interests of safety.

5.2.6

Edinburgh Airport's existing departure routes (known as Standard Instrument Departures or SIDs) incorporate the NPRs. Figure 9 shows Edinburgh's existing departure route (SID) centrelines. The point at which the NPRs end vary depending on the route being flown, as summarised in Tables 5 and 6 on the right.

Table 5: Runway 06 NPRs

Runway 06 route name	NPR end point, unless ATC instructed by ATC:
GOSAM (Jet only SID)	Aircraft will follow the NPR until 6,000ft
GRICE	Aircraft will follow the NPR until 3,000ft
TALLA	Aircraft will follow the NPR until flying back overland west of Prestonpans

Table 6: Runway 24 NPRs

Runway 24 route name	NPR end point, unless ATC instructed by ATC:
GOSAM (Jet only SID)	Aircraft will follow the NPR until 6,000ft
GRICE	Aircraft will follow the NPR until 3,000ft
TALLA	Aircraft will follow the NPR until passing Livingston Village (11.5km from the end of the runway)

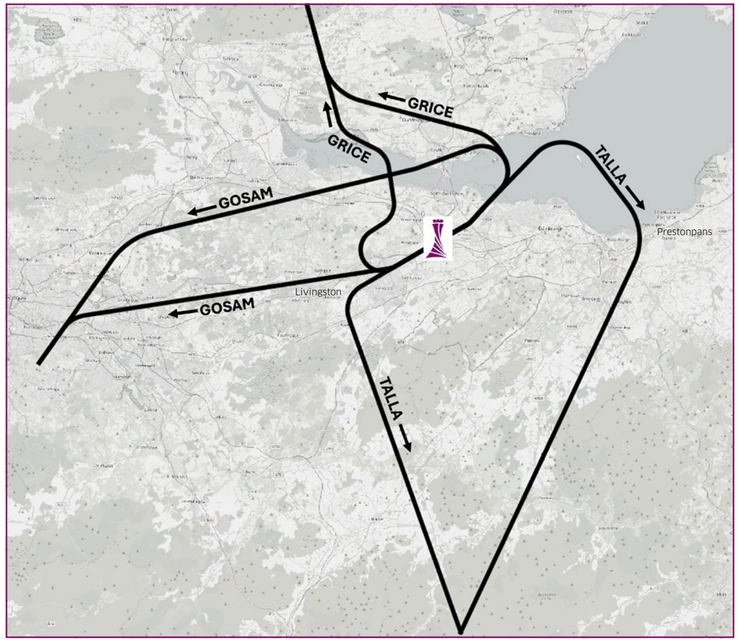


Figure 9: Edinburgh Airport's existing Standard Instrument Departure routes (SIDs) (Map: ©OpenStreetMap)

5.2.7

Whilst ATC do vector some departures before the end of the NPRs for safety or operational efficiency reasons, once beyond the NPRs, most aircraft are routinely vectored by ATC. This means that rather than following the departure route, ATC direct aircraft where to fly using compass headings and climb instructions.

5.2.8

Figure 10 and Figure 11 show current departures swathes from Edinburgh Airport.

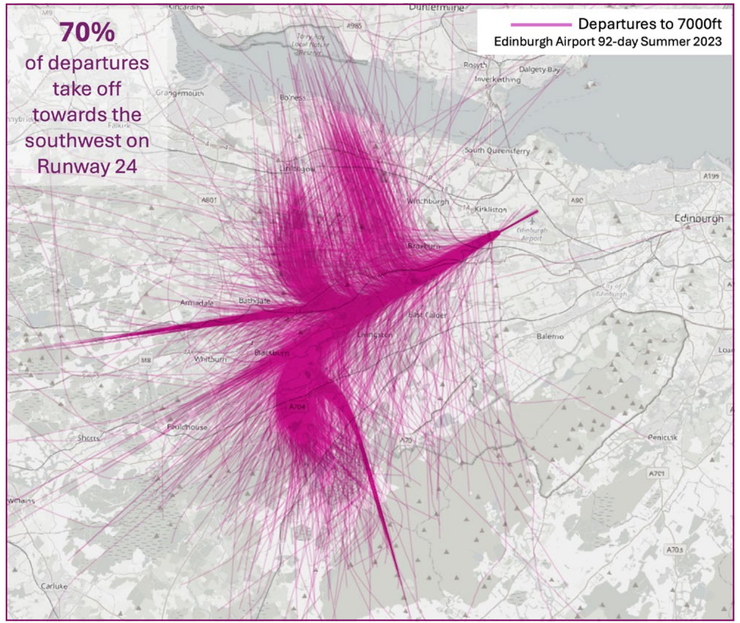


Figure 10: Edinburgh Airport's current runway 24 departures (Map: ©OpenStreetMap)

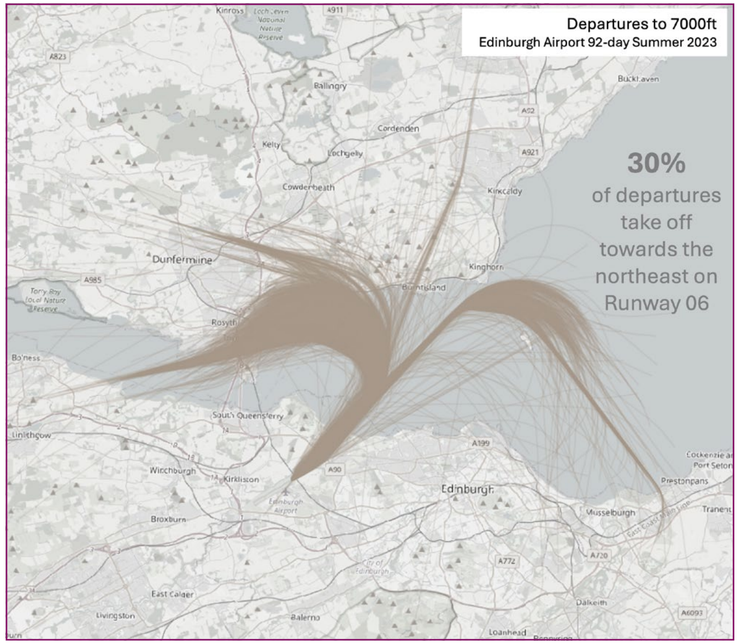


Figure 11: Edinburgh Airport's current runway 06 departures (Map: ©OpenStreetMap)

5.2.9

Non-jet aircraft which are under the 5,700kg restriction can be turned by ATC immediately after departure and do not have to follow an NPR. These aircraft are often smaller and slower than other aircraft and so ATC give them instructions to keep them safely separated from other arriving and departing traffic to help reduce delays. This means these aircraft do not follow the published departure routes and it often reduces track mileage compared to if they were to fly the published departure routes. There are very few of these departures at Edinburgh Airport. In 2023 there were only 24 such departures.

Why do ATC vector departures?

5.2.10

ATC vector departures because there are lots of complex interactions within the airspace whereby arriving and departing aircraft need to be kept safely separated. It also sometimes means ATC can give departing aircraft a more direct route, which saves fuel and greenhouse gas emissions.

5.2.11

Vectoring departures enables ATC to resolve the interactions between arrivals and departures by keeping aircraft a safe distance apart.

5.2.12

This often means that departures also get better climb performance as shown in Figure 12. There are a number of factors that can influence how well a departure climbs (known as continuous climb performance) including operational restrictions, interactions with other traffic flows

to/from the same airport or another airport and also controlled airspace restrictions.

5.2.13

Understanding continuous climb performance is important because when aircraft do not climb continuously, there can be more noise, greenhouse gas emissions, and other impacts for the period of level flight.

5.2.14

One of the problems the modernisation of the Scottish airspace tries to resolve is to remove some of the interactions and dependencies between flows of aircraft traffic. For example, today, on some occasions, Edinburgh Airport's departure traffic restricts some of Glasgow Airport's departures from continuous climb.

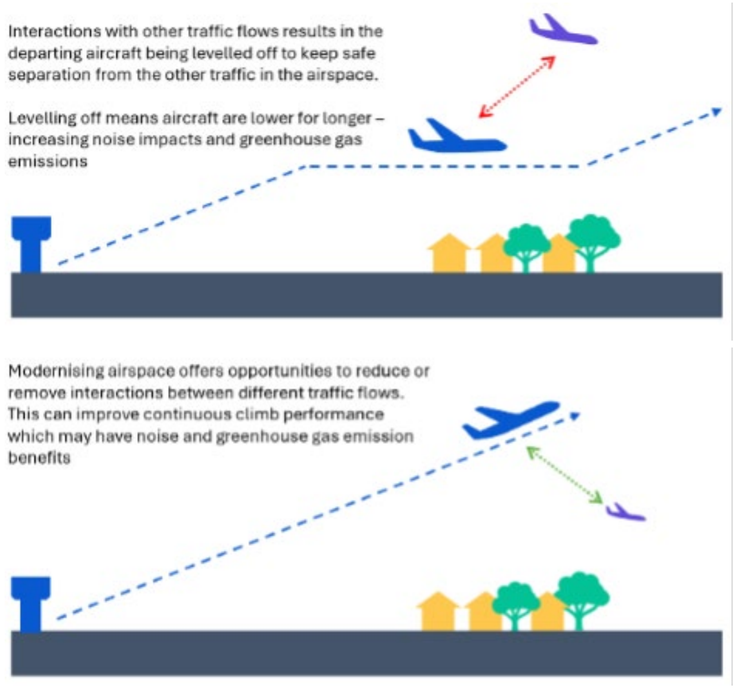


Figure 12: Levelling off vs continuous climb

Where aircraft fly today

5.2.15

Figure 13 shows Edinburgh Airport's current published departure routes alongside tracks of where departing aircraft fly today up to 7,000ft.

5.3 Proposed departure routes: how aircraft could depart in the future

5.3.1

The proposed departure routes which form part of this consultation have been developed over the last 4 years. More information about the work to develop these routes can be found in Section 4, 'How we developed our proposal'.

5.3.2

The following section describes these departure routes in more detail, before the 'what are the benefits and impacts of the proposals' section shows the outcome of the appraisal of the option we found to perform best, and which we are presenting in this consultation.

5.3.3

For detailed aviation technical information about the proposed departure procedures, including draft procedure charts, please see the **FOA**.

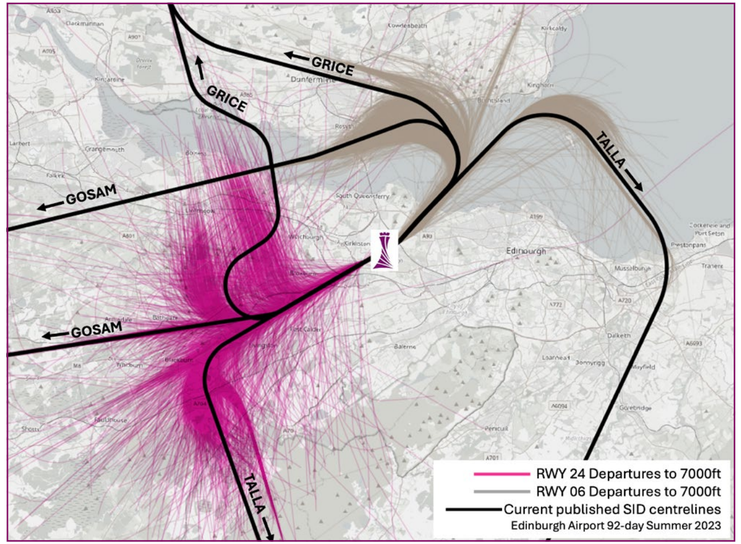


Figure 13: Edinburgh Airport's current published departure routes overlaid on 92 Day summer 2023 departure track data (Map: ©OpenStreetMap)

How to read the operational diagrams

The images on the following four pages show operational diagrams of the 'without airspace change' and 'with airspace change' departures to runway 24 and runway 06 to help consultees understand where aircraft may fly in future.

The first set of images shows an annotated map of the airspace which explains the various aircraft traffic flows today. Our existing departure routes are shown with a thick pink line. We have also included data from our Noise Track Keeping (NTK) system about where aircraft flew during the summer period of 2023. This data includes all flights during the period, and therefore it sometimes extends beyond the scope of the baseline overflight contours shown later in this document (as these only look at a minimum of 5 overflights on an average day). The NTK data has been colour coded at 4,000ft and 7,000ft to help illustrate where aircraft typically reach those points today.

For both the 'with airspace change' and 'without airspace change' diagrams, each route has been labelled with how often it is expected to be used on average throughout the year. There is also a table which includes information about:

- Average annual percentage of all arrivals and departures by 2036 which would use that route
- Average annual departures per day by 2036
- Average summer daily departures by 2036
- Average daily departures outside of summer by 2036

Please note the information within the table has been rounded.

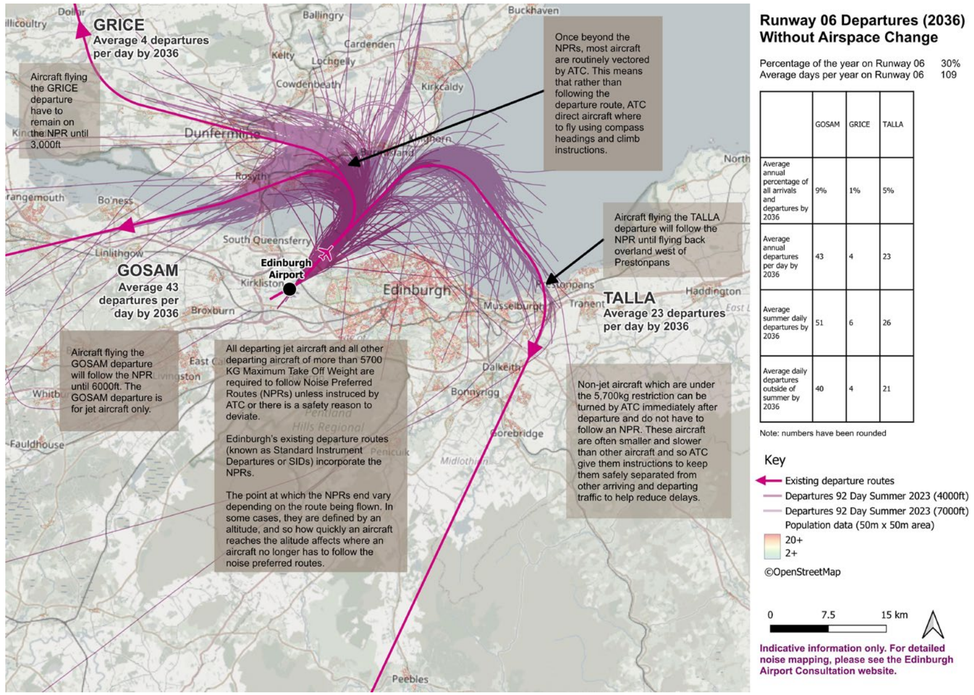
It is important to note that the information within the operational diagrams is indicative: the data has been generated based on averages and therefore there could be fluctuations in the number of aircraft departing from each direction.

The second set of images 'with airspace change' show how we expect traffic to route in future. The proposed route centrelines are shown with a thick purple line, with the section of the departure route up until 7,000ft shown as a continuous line. Above 7,000ft, we have shown how the route continues into the network airspace, which forms part of the NERL proposal, with a dashed grey line.

The geographical areas shown are based on only one runway in operation. The indicative areas of overflight up to 7,000ft are shaded in purple. It is important to note however, that although we expect the vast majority of aircraft to fly the routes in future, some vectoring outside of the purple areas may be required for safety reasons.

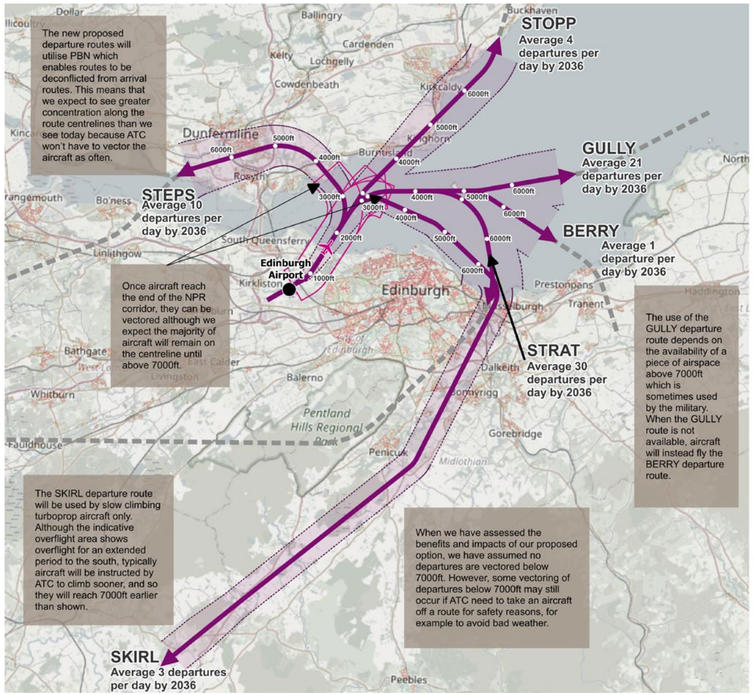
The image also shows information about the proposed NPRs. The end of the NPR corridors provides an indicative point where aircraft are expected to reach 4,000ft. Do keep in mind, however, that different aircraft types climb at different rates, and some jet aircraft climb more slowly than this which means they would still be below 4,000ft beyond the NPR.

Operational diagrams are not measures of potential noise impacts; for detailed noise mapping please see Section 8, 'What are the benefits and impacts of our proposal' and our online Postcode tracker which can be found here **https://scottishairspacemodernisation.co.uk**



	GOSAM	GRICE	TALLA
Average annual percentage of all arrivals and departures by 2036	9%	1%	5%
Average annual departures per day by 2036	43	4	23
Average summer daily departures by 2036	51	6	26
Average daily departures outside of summer by 2036	40	4	21

Figure 14: Runway 06 departures without airspace change



Runway 06 Departures (2036) With Airspace Change

Percentage of the year on Runway 06 30%
Average days per year on Runway 06 109

	BERRY	GULLY	SKIRL	STEPS	STOPP	STRAT
Average annual percentage of all arrivals and departures by 2036	<1%	5%	1%	2%	1%	6%
Average annual departures per day by 2036	1	21	3	10	4	30
Average summer daily departures by 2036	2	28	5	11	3	35
Average daily departures outside of summer by 2036	1	19	3	10	4	28

Note: numbers have been rounded

Key

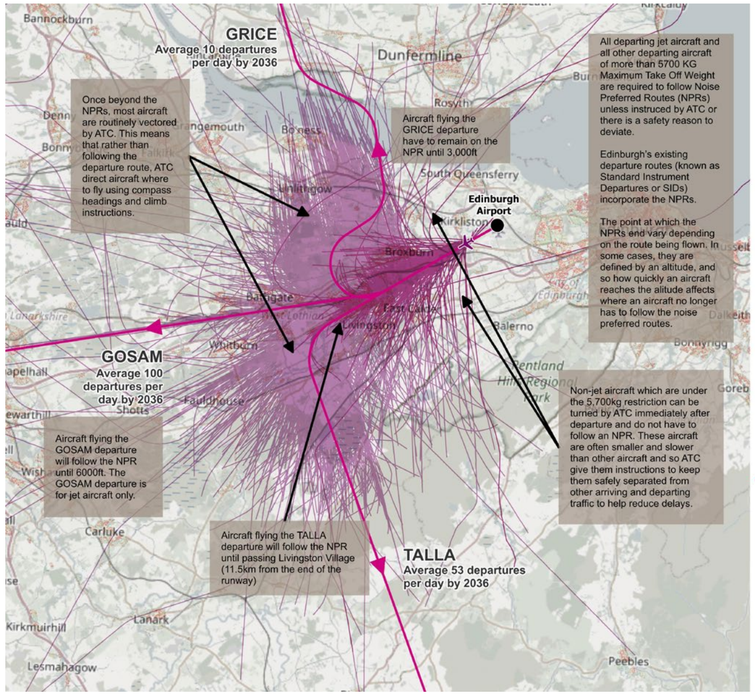
- Noise preferential route (NPR)
- Indicative departure overflight area
- Departure routes below 7000ft
- Routes above 7000ft
- Indicative aircraft altitude marker
- Population data (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 15: Runway 06 departures with airspace change



Runway 24 Departures (2036) Without Airspace Change

Percentage of the year on Runway 24 70%
Average days per year on Runway 24 256

	GOSAM	GRICE	TALLA
Average annual percentage of all arrivals and departures by 2036	21%	2%	11%
Average annual departures per day by 2036	100	10	53
Average summer daily departures by 2036	119	13	62
Average daily departures outside of summer by 2036	93	9	50

Note: numbers have been rounded

Key

- Existing departure route
- Departures 92 Day Summer 2023 (4000ft)
- Departures 92 Day Summer 2023 (7000ft)
- Population data (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 16: Runway 24 departures without airspace change

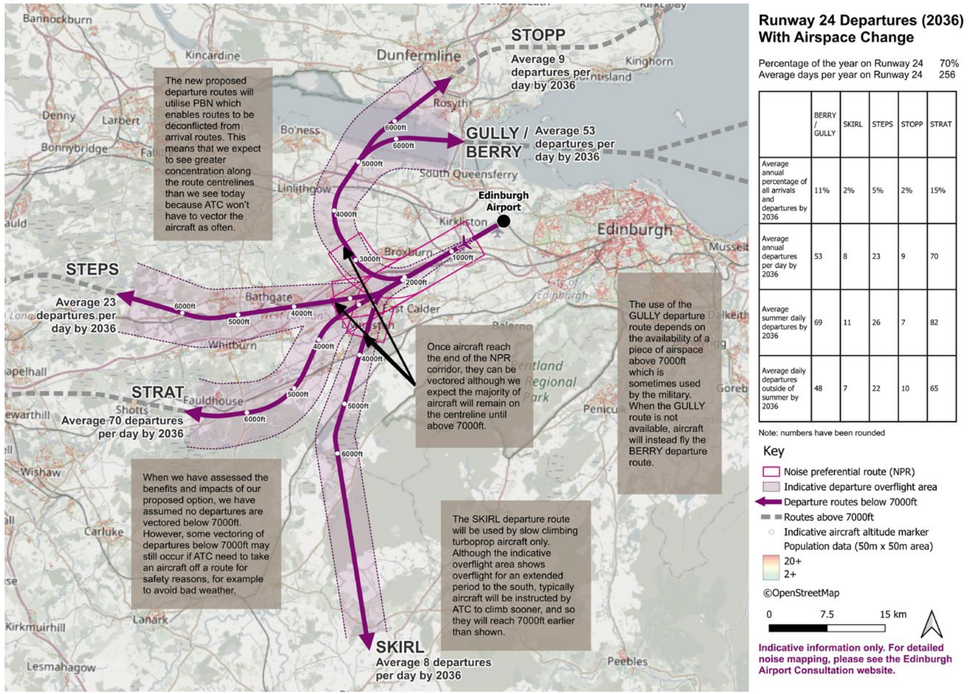


Figure 17: Runway 24 departures with airspace change

5.3.4

The new proposed departure routes will utilise PBN which enables routes to be deconflicted from arrival routes which will also utilises PBN. This means that we expect to see greater concentration along the route centrelines than we see today because ATC won't have to vector the aircraft in normal operations.

5.3.5

The use of the GULLY departure route depends on the availability of a piece of airspace above 7,000ft which is sometimes used by the military. When the GULLY route is not available, aircraft will instead fly the BERRY departure route. For more technical information about this, please see the **FOA**.

5.3.6

The SKIRL departure route will be used by slower climbing turboprop aircraft only. In order to deconflict from aircraft arriving from the south, the departure route is designed to be restricted to climb to only 6,000ft. It is important to note, however, that this 6,000ft restriction would be applied very rarely. It would only be applied if there were other aircraft in the vicinity in confliction therefore preventing continuous climb. In the majority of occasions, we expect air traffic control to intervene and instruct aircraft to climb to 7,000ft or higher before joining the wider route network at SKIRL. For more technical information about this, please see the FOA.

5.3.7

The proposed new Noise Preferential Route (NPR) corridors are shown in the operational diagrams above and expanded in Figure 18 overleaf. Once aircraft reach the end of the corridor, they can be vectored although we expect the majority of aircraft will remain on the centreline until above 7,000ft.

5.3.8

When we have assessed the benefits and impacts of our proposed option, we have assumed no departures are vectored below 7,000ft. However, some vectoring of departures below 7,000ft may still occur if ATC need to take an aircraft off a route for safety reasons, for example to avoid bad weather.

5.3.9

It is proposed that aircraft weighing less than or equal to 5,700kg Maximum Take Off Weight would continue to not be required to follow the PBN routes. It is not expected that the number of these movements will increase above the very low numbers currently experienced.

Proposed Noise Preferential Routes for Departures

5.3.10

The following Noise Preferential Routes are proposed for departures:

- All departing jet aircraft and all other departing aircraft of more than 5,700kg Maximum Take Off Weight shall remain within the NPR unless deviations are required in the interests of safety.
- The NPRs extend to 1.5km either side of the SID centrelines until 6.5 nautical miles (nm) from the runway end. The end of the corridors are shown in Figure 18.

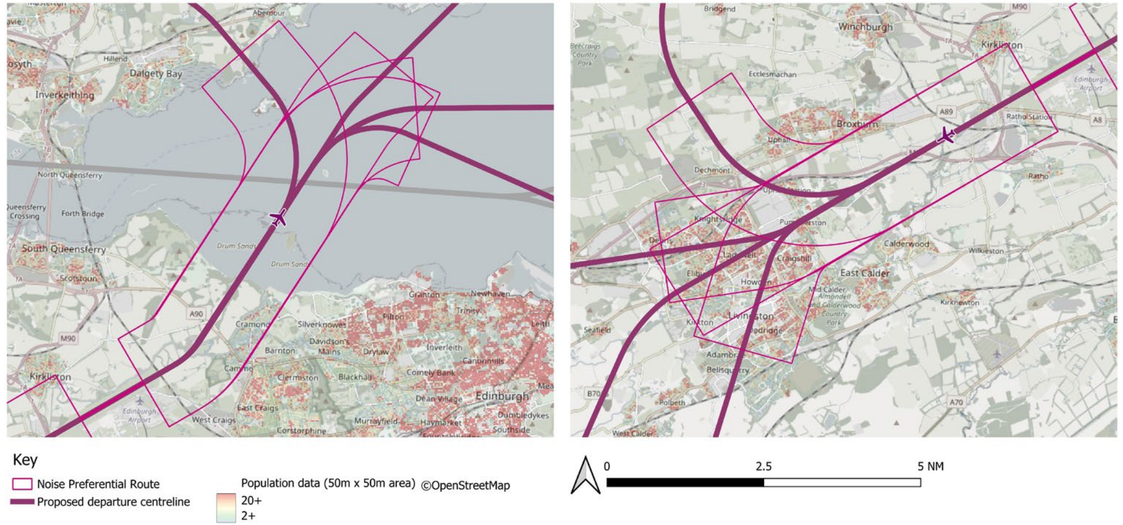


Figure 18: Edinburgh Airport's proposed NPRs (Maps: ©OpenStreetMap)

How do these departure routes fit into the wider Scottish Airspace Modernisation system design?

5.3.11

Edinburgh Airport's departure procedures form part of the wider Scottish Airspace Modernisation design. To see how these procedures fit in with the overall design, please see the **Scottish Airspace Modernisation website**.

Proposed Arrival Routes

06

6.1 How aircraft arrive at Edinburgh Airport today

6.1.1

When arriving at Edinburgh Airport, aircraft land into the wind. This means that Edinburgh Airport's runway direction depends on the wind direction.

6.1.2

Across an average year 70% of aircraft land on runway 24 which means they arrive from the northeast over the Firth of Forth and 30% of aircraft land on runway 06 which means they arrive from the southwest over the areas around Livingston.

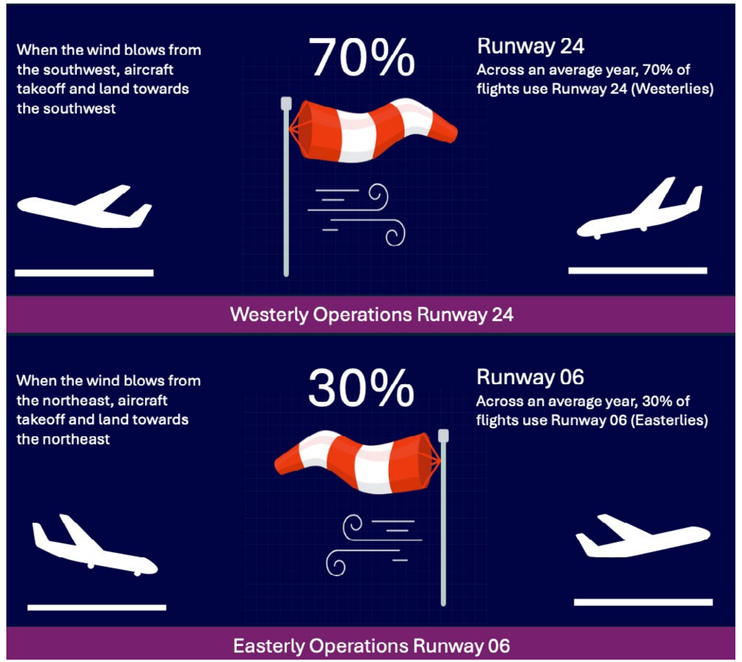


Figure 19: Edinburgh Airport runways and usage

6.1.3

Below 6,000ft, there are no defined routes used for aircraft arriving at Edinburgh Airport until aircraft are established on final approach (the final part of the flight when aircraft are lined up with the runway and are undertaking a final descent before landing).

6.1.4

As there are no usable routes for aircraft between the network airspace above 7,000ft and the final approach, aircraft are vectored by ATC. Vectoring is where ATC direct aircraft where to fly using compass headings, speed and descent instructions. ATC do this because there are lots of complex interactions within the airspace whereby arriving and departing aircraft need to be kept safely separated. In the case of arriving aircraft, ATC also need to ensure that arriving aircraft are safely spaced to allow enough time between each aircraft landing on the runway. This vectoring creates dispersion across the airspace, with this dispersion reducing the closer aircraft get to final approach.

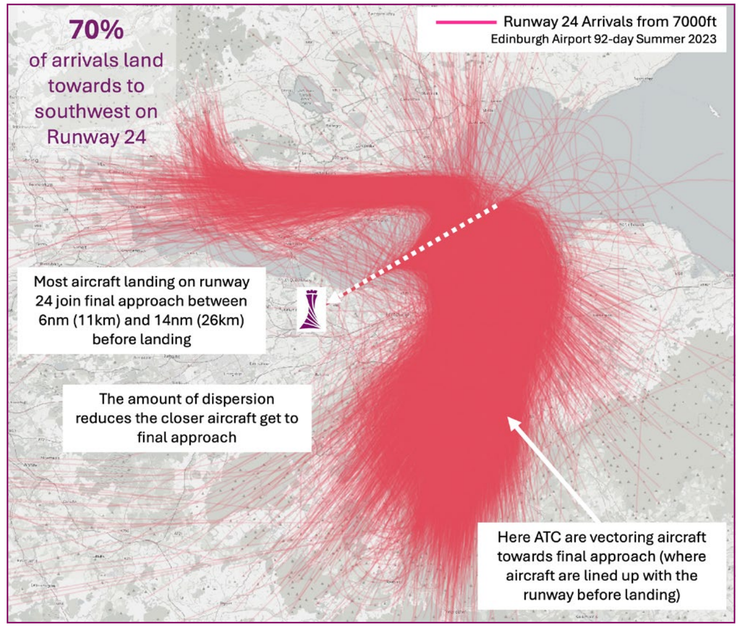


Figure 20: Edinburgh Airport runway 24 arrivals (Map: ©OpenStreetMap)

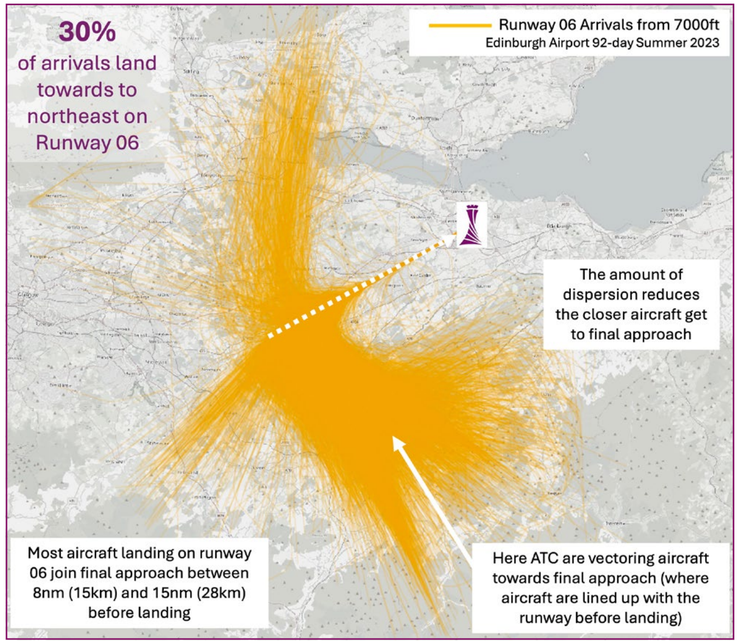


Figure 21: Edinburgh Airport runway 06 arrivals (Map: ©OpenStreetMap)

6.1.5

Final approach is the final part of the flight when aircraft are lined up with the runway and are undertaking a final descent before landing. At Edinburgh Airport, there are various navigation aids aircraft can use when landing. Most aircraft use a navigation aid called an Instrument Landing System (ILS). An ILS guides aircraft on final approach to the runway threshold with a standard 3-degree approach slope.

6.1.6

When aircraft use the ILS, they follow a published approach procedure which is based around this navigation aid. As well as the ILS, Edinburgh Airport currently also has a type of conventional approach called an NDB/DME approach. These approaches rely on ground-based navigation aids and are typically used when the ILS is out of service; descent is dependent upon ATC clearance.

6.1.7

On some occasions, aircraft may also land visually without the use of navigation aids.

Noise Abatement Procedures for Arriving Aircraft

6.1.8

Aircraft arriving at Edinburgh Airport are required to follow noise abatement procedures. These are published in the Aeronautical Information Publication (or AIP) and are described below:

Arrivals using the ILS shall not descend below 3,000ft unless instructed by ATC, before intercepting the ILS.

All visual approaches from the south to runway 24 by aircraft with a maximum weight in excess of 5,700kg are to join final approach not less than 7nm from the runway threshold. Aircraft are not to descend below 2,000ft until after crossing the Firth of Forth coastline northbound.

All visual approaches from the north to runway 24 by aircraft with a maximum weight in excess of 5700kg are to join final approach not less than 4nm from the runway threshold. Aircraft making a visual approach to runway 06 are to join the extended runway centreline at a height of not less than 1,500ft.

Visual approaches are not permitted for most arrivals between the hours of 2230 and 0630.

Aircraft holds

6.1.9

Holds, or holding stacks, are procedures for arriving aircraft to fly in a racetrack pattern whilst waiting for instructions from ATC to begin their approach for landing. The proposed holds that form part of Scottish Airspace Modernisation are above 7,000ft and therefore form part of the NERL proposal. More information can be found **here**.

6.1.10

Edinburgh airport also has two contingency holds at lower altitudes. One is situated along the runway 24 final approach and the other along the runway 06 final approach. These holds are not routinely used as their main purpose is for contingency procedures such as if there is an emergency, or if there is a radar outage which is very rare. Occasionally, the hold may be used if poor weather means the other holds around Edinburgh are not usable.

Missed Approaches

6.1.11

Missed approaches occur when it is judged that an approach cannot be continued to a safe landing. Aircraft may undertake a missed approach when the weather or visibility make it difficult to land, or when the aircraft is not correctly stabilised and aligned with the runway.

6.1.12

Sometimes missed approaches also occur if the runway is temporarily blocked, or it is unsafe to land. In the event of a missed approach, aircraft fly a defined procedure.

6.1.13

At Edinburgh Airport there were 149 missed approaches in 2023 which is around 12-13 per month on average.

6.1.14

As missed approaches are operated on an unplanned basis and owing to the very small number of missed approaches per year, they do not form part of the main noise and environmental analysis of our proposal, however details of the current missed approaches and proposed future missed approaches are included in the **FOA: Technical details of the proposed procedures**. These include 2 new contingency holds to the south of the airport to replace the existing contingency holds.

6.2 Proposed Arrival Routes: How aircraft could arrive in future

6.2.1

The proposed arrival routes which form part of this consultation have been developed over the last 4 years. More information about the work to develop these routes can be found in **Section 4, 'How we developed our proposal'**.

6.2.2

The following section describes these arrival routes in more detail, and the benefits and impacts of our proposal.

6.2.3

For detailed aviation technical information about the proposed arrival procedures, including draft procedure charts, please see the **FOA**.

How to read the operational diagrams

The images on the following four pages show operational diagrams of the 'without airspace change' and 'with airspace change' arrivals to runway 24 and runway 06 to help consultees understand where aircraft may fly in future.

The first set of images shows an annotated map of the airspace which explains the various aircraft traffic flows today. As explained above, there are no defined routes between the holding stacks and final approach. To help illustrate the flows of traffic, we have overlaid pink arrows.

We have also included data from our Noise Track Keeping (NTK) system about where aircraft flew during the summer period of 2023. This data includes all flights during the period, and therefore it sometimes extends beyond the scope of the overflight contours shown later in this document (as these only look at a minimum of 5 overflights on an average day). The NTK data has been colour coded at 4,000ft and 7,000ft to help illustrate where aircraft typically reach those points today.

For both the 'with airspace change' and 'without airspace change' diagrams, each route has been labelled with how often it is expected to be used on average throughout the year. There is also a table which includes information about:

- Average annual percentage of all arrivals and departures by 2036 which would use that route
- Average annual arrivals per day by 2036
- Average summer daily arrivals by 2036
- Average daily arrivals outside of summer by 2036

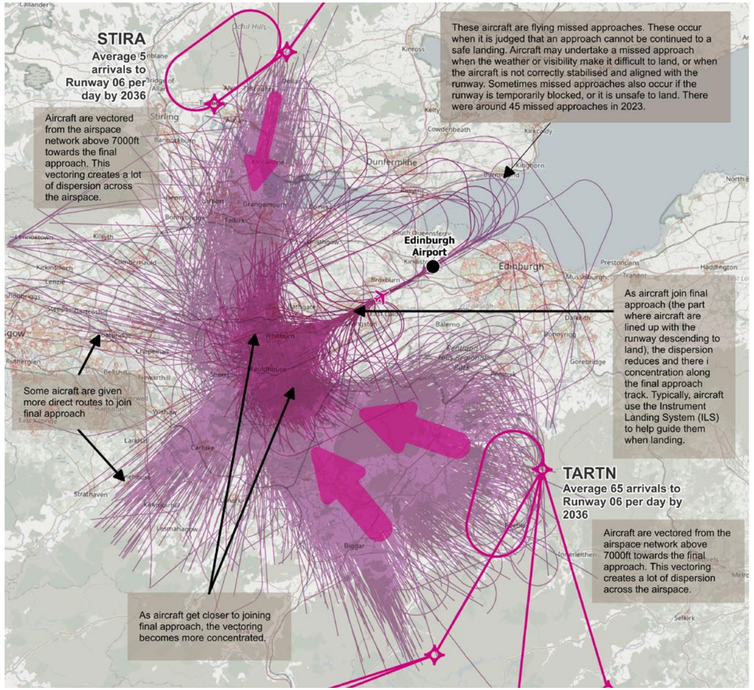
Please note the information within the tables has been rounded.

It is important to note that the information within the operational diagrams is indicative; the data has been generated based on averages and therefore there could be fluctuations in the number of aircraft departing from each direction.

The second set of images 'with airspace change' show how we expect traffic to route in future. The proposed route centrelines are shown with a thick purple line, with the section of the departure route up until 7,000ft shown as a continuous line. Above 7,000ft, we have shown how aircraft arrive from the network airspace, which forms part of the NERL proposal, with a dashed grey line.

The geographical areas shown are based on only one runway in operation. The indicative areas of overflight up to 7,000ft are shaded in purple. It is important to note,however, that, although we expect the vast majority of aircraft to fly the routes in future, some vectoring outside of the purple areas may be required for safety reasons.

Operational diagrams are not measures of potential noise impacts; for detailed noise mapping please see Section 8, 'What are the benefits and impacts of our proposal' and our online Postcode tracker which can be founder here **https://scottishairspacemodernisation.co.uk**



Runway 06 Arrivals (2036) Without Airspace Change

Percentage of the year on Runway 06 30%
Average days per year on Runway 06 109

	STIRA	TARTN
Average annual percentage of all arrivals and departures by 2036	1%	14%
Average annual arrivals per day by 2036	5	65
Average summer daily arrivals by 2036	8	77
Average daily arrivals outside of summer by 2036	3	62

Note: numbers have been rounded

Key

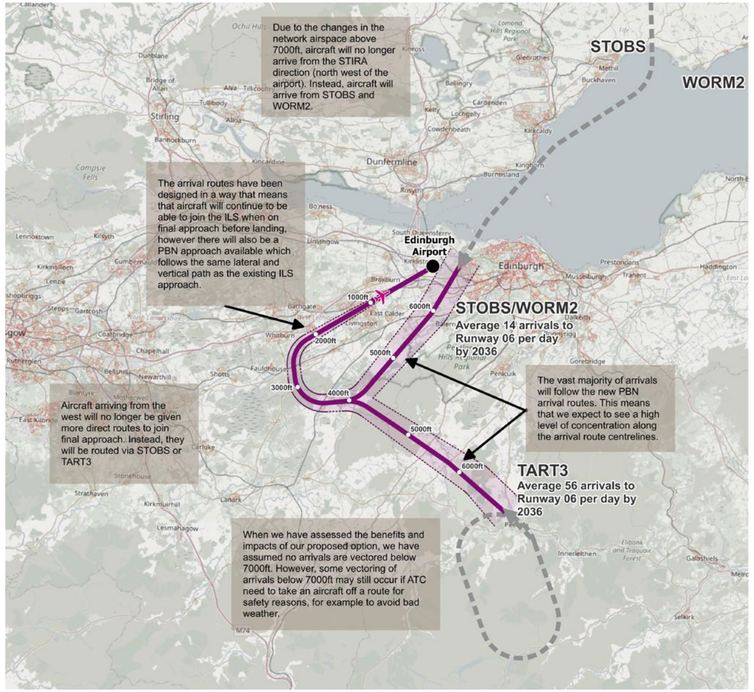
- Edinburgh STARs and holds
- Arrivals 92 Day Summer 2023 (4000ft)
- Arrivals 92 Day Summer 2023 (7000ft)
- Population data (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 22: Runway 06 arrivals without airspace change



Runway 06 Arrivals (2036) With Airspace Change

Percentage of the year on Runway 06 30%
Average days per year on Runway 06 109

	STOBS	WORM2	TART3
Average annual percentage of all arrivals and departures by 2036	<1%	3%	12%
Average annual arrivals per day by 2036	2	12	56
Average summer daily arrivals by 2036	6	13	65
Average daily arrivals outside of summer by 2036	1	11	53

Note: numbers have been rounded

Key

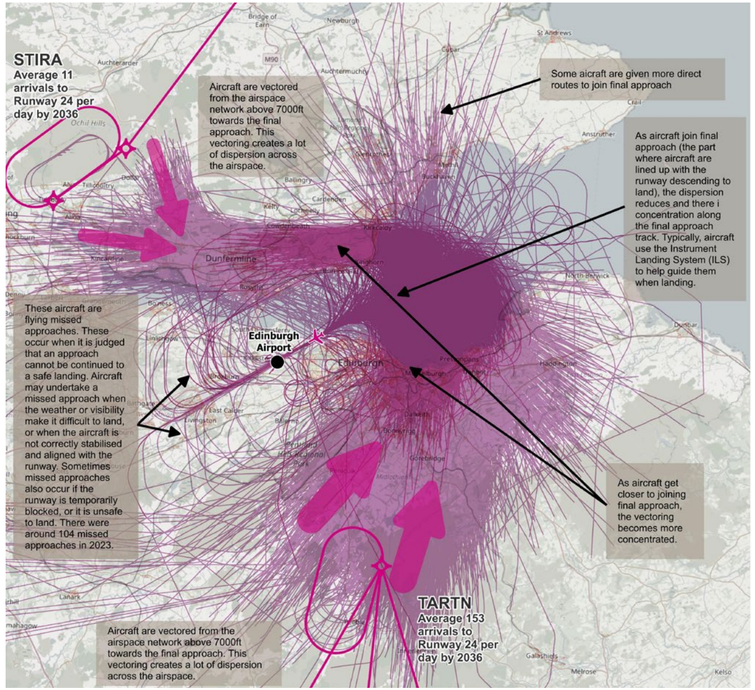
- Arrivals routes below 7000ft
- Routes above 7000ft
- Indicative arrival overflight area
- Indicative aircraft altitude marker
- Population (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 23: Runway 06 arrivals with airspace change



Runway 24 Arrivals (2036) Without Airspace Change

Percentage of the year on Runway 24 70%
Average days per year on Runway 24 256

	STIRA	TARTN
Average annual percentage of all arrivals and departures by 2036	2%	33%
Average annual arrivals per day by 2036	11	153
Average summer daily arrivals by 2036	20	179
Average daily arrivals outside of summer by 2036	8	144

Note: numbers have been rounded

Key

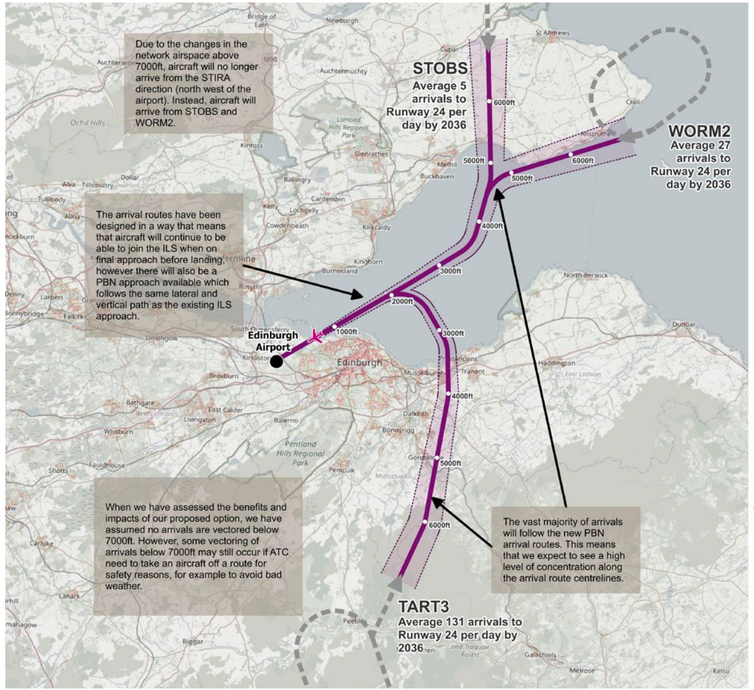
- Edinburgh STARs and holds
- Arrivals 92 Day Summer 2023 (4000ft)
- Arrivals 92 Day Summer 2023 (7000ft)
- Population data (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 24: Runway 24 arrivals without airspace change



Runway 24 Arrivals (2036) With Airspace Change

Percentage of the year on Runway 24 70%
Average days per year on Runway 24 256

	STOBS	WORM2	TART3
Average annual percentage of all arrivals and departures by 2036	1%	6%	28%
Average annual arrivals per day by 2036	5	27	131
Average summer daily arrivals by 2036	15	31	153
Average daily arrivals outside of summer by 2036	1	26	124

Note: numbers have been rounded

Key

- Indicative arrival overflight area
- Arrival routes below 7000ft
- Routes above 7000ft
- Indicative aircraft altitude marker
- Population data (50m x 50m area)
  - 20+
  - 2+

©OpenStreetMap

0 7.5 15 km

Indicative information only. For detailed noise mapping, please see the Edinburgh Airport Consultation website.

Figure 25: Runway 24 arrivals with airspace change

6.2.4

The vast majority of arrivals will follow the new PBN arrival routes. This means that we expect to see a high level of concentration along the arrival route centrelines. When we have assessed the benefits and impacts of our proposed option, we have assumed no arrivals are vectored below 7,000ft. However, some vectoring of arrivals below 7,000ft may still occur if ATC need to take an aircraft off a route for safety reasons, for example to avoid bad weather.

6.2.5

The arrival routes have been designed in a way that means that aircraft will continue to be able to join the ILS when on final approach before landing, however, there will also be a PBN approach available which follows the same lateral and vertical path as the existing ILS approach.

Future Noise Abatement Procedures for Arriving Aircraft

6.2.6

It is proposed that the Noise Abatement Procedures for arriving aircraft would broadly remain the same as published today.

6.2.7

This means that unless making a visual approach, arriving aircraft shall not descend below 3,000ft until established on the ILS or new PBN approach unless instructed by ATC.

6.2.8

All visual approaches from the south to runway 24 by aircraft with a maximum weight in excess of 5,700kg are to join final approach not less than 7nm from the runway threshold. Aircraft are not to descend below 2,000ft until after crossing the Firth of Forth coastline northbound.

6.2.9

All visual approaches from the north to runway 24 by aircraft with a maximum weight in excess of 5,700kg are to join final approach not less than 4nm from the runway threshold. Aircraft making a visual approach to runway 06 are to join the extended runway centreline at a height of not less than 1500ft.

6.2.10

Visual approaches are not permitted for most arrivals between the hours of 2230 and 0630.

6.2.11

For detailed aviation technical information, please see the FOA.

How do these arrival routes fit into the wider Scottish Airspace Modernisation system design?

6.2.12

Edinburgh Airport's arrival procedures form part of the wider Scottish Airspace Modernisation design. As part of the operational diagrams above, we have shown parts of the design above 7,000ft with a dashed line, however, for details of the full system wide design, please see the **Scottish Airspace Modernisation website**.

The overall proposal for modernising Edinburgh Airport's airspace

07

7.1.1

When assessing the benefits and impacts of the proposed 'with airspace change' option against the 'without airspace change' baseline, CAP1616 requires us to look at the overall airport system performance, and hence it is important we show how the departure and arrival components work together ahead of explaining the outcomes of the FOA.

7.1.2

Sections 5 and 6 of this document gave a detailed breakdown of the proposed departure and arrival procedures for each runway end. This section brings this information together to present the overall system design for modernising Edinburgh Airport's airspace. We would encourage readers to review Sections 5 and 6 before reading this section.

7.1.3

Figure 27 shows all the proposed departure and arrival procedures overlaid on one image along with overflight contours which show an average summer day. As the contours have been generated for an average summer day, they take into account summer daytime runway modal split which is 70% of the time runway 24 is in use, and 30% of the time runway 06 is in use.

7.1.4

Overflight contours are generated using the CAA's 48.5-degree definition of overflight as outlined in CAP1498, this means 'an aircraft in flight passing an observer at an elevation angle of 48.5° from the ground at an altitude below 7,000ft'. Although overflight contours do not illustrate noise impacts, they do enable calculation of the number of times a location may be considered to be overflown.

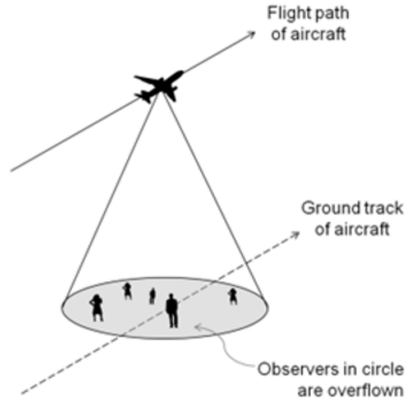


Figure 26: CAP1498 definition of overflight (note that the cone is defined by the CAA to be 48.5 degrees)

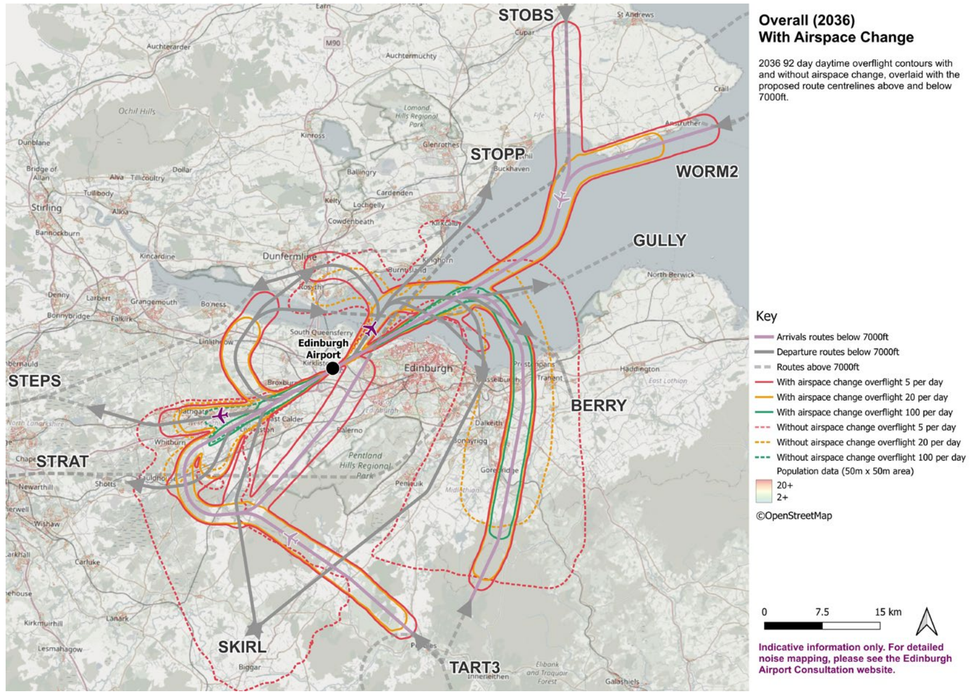


Figure 27: Overall design with airspace change

7.1.5

This helps to show the areas that are overflown by the departure and arrivals procedures for both runway ends. Areas within the dotted lines would be overflown in the future without airspace change. If the change is made as proposed the areas within the solid lines would be overflown instead.

7.1.6

The map shown at Figure 27 also available as part of the interactive noise maps on our Edinburgh Airport consultation website. This allows you to enter your address, or navigate to an area shown on the map, and see how the proposed option would benefit or impact you. **Click here** to go to the Edinburgh Airport consultation website.

7.2 Movement information

7.2.1

Our airspace change options do not intend to increase movements at Edinburgh Airport by itself, merely the airspace change will facilitate modern methods of navigation and operation, as well as providing the opportunity for increased network capacity and will open up environmental benefits. The airspace change will not by itself encourage a sudden influx of new traffic and an associated increase in movements.

7.2.2

Table 7 to the right provides the number of movements we would expect to see over a 10-year period after implementation. This is planned to be 2027 and the 10th year will be 2036. The projected annual movements in the intervening years are also included to the nearest thousand.

Table 7: Annual forecast movements for Edinburgh Airport across the ACP assessment period. Source: FOA documentation

Annual	2023	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Total movements rounded to nearest 1,000	116,000	148,000	149,000	149,000	152,000	155,000	157,000	160,000	163,000	167,000	170,000

7.2.3

The future forecasts and the fleet mix forecasts are based on the best and most up-to-date information available at the time of forecasting. Airport operations are continuously evolving with airline decisions around the introduction of new destinations, withdrawal of existing destinations and changes of fleet mix sometimes outside of the airport's immediate control. As we progress through the airspace change process, we will continue to review the forecasts and update where necessary and appropriate to do so.

7.3 Future Fleet Mix

7.3.1

Edinburgh Airport's fleet mix for typical summer day in 2023 (actual) and projected for 2027 and 2036 is in the tables below.

Table 8: 2023 Fleet mix

Type	2023	Cumulative Percentage
BOEING 737-800	22%	22%
AIRBUS A320	18%	41%
BOEING 737 MAX 8	10%	51%
AIRBUS A319	8%	60%
AIRBUS A320neo	7%	66%
EMBRAER 190	5%	72%
ATR ATR-72-600	5%	77%
EMBRAER C-99	4%	81%
ATR ATR-42-500	3%	84%
BOEING 737-400	2%	86%
BOEING 757-200	2%	88%
AIRBUS A321neo	2%	89%
AIRBUS A321	1%	90%
BOEING 787-8	1%	91%
BOEING 767-300	1%	92%
Other Aircraft Types	8%	100%

Table 9: Year of implementation fleet mix

Type	2027	Cumulative Percentage
BOEING 737-800	30%	30%
AIRBUS A320	23%	53%
AIRBUS A320neo	9%	62%
AIRBUS A319	6%	68%
ATR ATR-72-201	6%	73%
EMBRAER 190	5%	78%
EMBRAER C-99	5%	83%
ATR ATR-42-300	3%	86%
BOEING 757-200	3%	89%
AIRBUS A321	2%	91%
BOEING 737-400	2%	92%
BOEING 787-8	2%	94%
BOEING 767-300	2%	95%
BOEING 737-200	1%	97%
AIRBUS A321neo	1%	97%
CANADAIR Challenger 890	1%	98%
Other Aircraft Types	2%	100%

Table 10: Year of implementation +10 fleet mix

Aircraft type (Year of implementation +10 2036)	% of fleet mix	Cumulative % of fleet mix
BOEING 737-800	32%	32%
AIRBUS A320	22%	55%
AIRBUS A320neo	9%	64%
AIRBUS A319	5%	69%
EMBRAER 190	5%	74%
ATR ATR-72-201	5%	79%
EMBRAER C-99	4%	84%
ATR ATR-42-300	2%	86%
AIRBUS A321	2%	89%
BOEING 757-200	2%	91%
BOEING 787-8	2%	93%
BOEING 737-400	2%	94%
BOEING 767-300	1%	96%
BOEING 737-200	1%	97%
CANADAIR Challenger 890	1%	97%
AIRBUS A321neo	1%	98%
Other Aircraft Types	2%	100%

NOTE: due to rounding of the percentages of aircraft type, the cumulative figures may not add up precisely.

What are the benefits and impacts of our proposal?

08

8.1.1

As part of the work in preparation for this consultation, we undertook a detailed assessment of 3 options for our whole system of routes. This was to understand the positive benefits and negative impacts, compared to a 'without airspace change' baseline. This is called the Full Options Appraisal (FOA). The outcome of the FOA was our proposed design option to take to this consultation.

8.1.2

The table to the right and continues to the next page provides a very high-level summary of the outcomes of the FOA for the proposed option. Following this table, there are sub-sections which explain how we assess each category and provide some further details about the outcomes of each assessment. You can use the links in the table to navigate directly to a category subsection.

8.1.3

For detailed analysis, please see the FOA (note our proposed option is called 'Option 1' within the FOA document).

Table 11: High-level FOA summary

Category (as required by CAP1616)	How our proposed Airspace Change option performed against the future 'without airspace change' scenario.
Noise	The noise assessment shows an overall **reduction in total adverse effects on health and quality of life from noise**. It is important to note that in some areas the proposed option changes where aircraft fly compared to today. There could therefore be local positive benefits and negative impacts to some areas surrounding Edinburgh Airport. These local impacts are explained in the FOA. To further help communities understand the impacts to their area, we have created interactive noise maps which can be found on our **Edinburgh Airport Consultation website**. This interactive map allows you to enter your address, or navigate to an area shown on the map, and see how the proposed option would benefit or impact you.
Air Quality	The proposal is predicted to have a **negligible impact on local air quality** and so local air quality assessment was not required.
Fuel Burn and Greenhouse Gas Emissions	The proposal is predicted to **reduce the total annual and per flight fuel burn**. The proposal is predicted to **reduce the total annual and per flight greenhouse gas emissions**[8].
Tranquillity	There is a mix of positive and negative effects with respect to potential noise impact on designated tranquillity areas such as regional and country parks. **Overall, we believe the impact on tranquillity is negligible**, although we recognise that individual perception may differ depending on whether their area of interest is overflown more or less.
Biodiversity	**No biodiversity impacts are expected** to the European sites identified as part of the Habitats Regulatory Assessment screening. European sites are made up of Special Areas of Conservation (SAC) and possible SACs, Special Protection Areas (SPAs) and possible SPAs and Ramsar sites (wetlands of international importance) and proposed Ramsar sites. Our screening process concluded that there will be changes in the number and extent of overflight of some other biodiversity receptors such as Sites of Special Scientific Interest, National Nature Reserves and Local Nature Reserves, but there is no predicted impact to the biodiversity of these sites. Further HRA analysis was therefore not required, but we have provided data for overflight of designated sites.
How do we assess capacity?	The proposed option is not expected to increase capacity although the reconfiguration of our routes does mean more routes going out over the North Sea and that **some of our flights will avoid pre-departure delays** currently resulting from congestion in the network over the north of England. This delay reduction as a result of reduced congestion further into the network is difficult to model and this is only captured qualitatively.

[8] Please refer to the FOA methodology section for greenhouse gas emissions for contextual information on how the use of planned flight data in the NERL modelling may affect the results for both greenhouse gases and fuel burn.

Category (as required by CAP1616)	How our proposed Airspace Change option performed against the future 'without airspace change' scenario.
How do we assess resilience?	The introduction of modern satellite-based procedures (performance-based navigation) removes some of Edinburgh Airport's dependencies on outdated ground-based navigation which **improves resilience**.
General Aviation	The proposed option involves changes to the lateral boundaries and some re-classification of controlled airspace. In places, these boundaries overlap between the Edinburgh Airport, Glasgow Airport and NERL proposals. Overall, there is a **net release of Controlled Airspace (CAS) below 7,000ft** which is expected to have positive benefits for General Aviation. The CAS volume data suggests an improvement for users of airspace below 7,000ft, however, it is important to note that in some areas additional CAS is required, and in other areas CAS is being released. There could therefore be positive benefits and negative impacts to some areas surrounding Edinburgh Airport. Please see Section 9, Proposed Controlled Airspace (CAS), of this document for full details of the CAS proposals and the potential benefits/impacts for particular areas.
Economic Impacts	It is expected there **will be economic benefits** as a result of some **reduced departure delay** (although it is not possible to quantify this).
Airline Costs	It is not anticipated that the proposed option would result in any additional costs to airlines, such as training costs and other costs.
Airport and ANSP Costs[9]	There is a small **operational cost** for Edinburgh Airport to maintain the additional Instrument Flight Procedures that are required. There is an **infrastructure saving** because the introduction of PBN will mean that some old ground-based navigation equipment at the airport will not need to be replaced. There will be a **cost** to Edinburgh Airport and the Air Navigation Service Provider (ANSP) to modernise Edinburgh's Airspace which mainly involves training air traffic controllers and assistants and updating ATC infrastructure.
Safety	The safety assessments have indicated that the proposed option will maintain and, by utilising modern navigation capability, reduce complexity. Reducing complexity is considered a safety enhancement, and therefore **this proposal offers a safety enhancement compared to the 'without airspace change' baseline**.
Airspace Modernisation Strategy	Our proposed option **aims to meet** the vision of the airspace modernisation strategy by delivering quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. As assessment against the objectives of the AMS is included in the section below.

8.2 Monetised Assessments within the Full Options Appraisal

8.2.1

As part of the FOA, we are also required to generate monetised costs and benefits for the airspace change options where possible to do so.

8.2.2

Within the FOA, the following categories have been monetised: noise, greenhouse gas emissions, fuel burn, operational costs and infrastructure costs.

8.2.3

A 'Net Present Value' (NPV) for each option was then generated using calculations as required by CAP1616. The noise and greenhouse gas emissions monetisation are undertaken using the governments TAG method and tools. For more information about NPV and Cost Benefit Analysis, please see the **Full Options Appraisal document**.

8.2.4

Overall, the monetised assessment has shown a £74m benefit (approximately) over 10 years for the proposed option taking into account inflation and discounting using the Government's social time preference rate.

[9] The cost of development of the ACP proposal, consultation and design are not included in assumptions of cost to Edinburgh Airport.

8.3 Noise

How do we assess noise?

8.3.1

The noise assessment is based around the CAP1616 primary and secondary noise metrics. CAP1616[10] explains, "When considering noise impacts, the CAA will weigh the outcomes from 'primary' metrics over 'secondary' metrics. Primary metrics will be those that are used to quantify significant noise impacts, such as WebTAG outputs. Secondary metrics will be those that are not being used to determine significant impacts, but which are still able to convey noise effects, such as N65 contours and Lmax levels. While not a noise metric, overflight contours will be a secondary metric for the purposes of decision-making."

8.3.2

Noise metrics are generated based on a 92-day summer period from 16 June to 15 September inclusive. This means that the modal split applied when calculating the noise contours is generated from the 92-day average, taken across 20 years. It is also split into daytime and night-time periods and so can differ from the annual modal split average taken across the same 20-year period. Once rounded, the summer daytime modal split used in noise modelling matches the annual one, with runway 06 being used 30% of the year, and runway 24 being used 70% of the year.

For summer night-time noise modelling the average is runway 06 being used 26% of the year, and runway 24 being used 74% of the year.

Primary noise metrics: TAG

8.3.3

TAG[11] is the Department for Transport's suite of guidance on how to assess the expected impacts of transport policy proposals and projects. The TAG noise is a tool which assesses the impact of changes in noise exposure and can be used to monetise certain aspects of the noise impact. LAeq,16h (daytime noise) and LAeq,8h (night-time noise) noise exposure data from the input into TAG.

8.3.4

The Department for Transport have published a guide to WebTAG Noise Appraisal for non-experts which can be viewed **here**.

Primary noise metrics: LAeq contours

8.3.5

LAeq is the equivalent sound level of aircraft noise in dBA[12]. This is based on the daily average movements that take place in the 16 hr period (07:00-23:00 local time) or 8 hr period (23:00-07:00) during the 92-day period (16 June to 15 September inclusive). This metric is the measure of noise exposure adopted by UK Government for the purposes of considering adverse effects from aircraft noise. It forms the basis of the UK Government's policies in relation to aircraft noise.

8.3.6

LAeq,16h and LAeq,8h noise exposure data has been generated for the baseline and for our proposed option. These have been used to calculate the population numbers within the specific contours, the area of the contours and the noise level change at individual postcodes.

8.3.7

The 51dB LAeq,16h (daytime noise) and 45dB LAeq,8h (night-time noise) noise exposure levels represent the daytime and night-time Lowest Observable Adverse Effect Level (LOAEL) contour defined in UK Government airspace policy. The LOAEL represents the noise exposure level above which adverse effects on health and quality of life can be observed.

Secondary noise metrics: Noise events above 65dB and 60dB LASmax (N65 and N60)

8.3.8

N60 and N65 are noise metrics which respectively describe the number (N) of aircraft noise events above a noise level of 60dB LASmax in the night-time period and 65dB LASmax for the daytime period. These are event-based metrics, which can be used to better understand the number of noise events that occur and their location.

[10] **CAP1616i** 5.16

[11] **https://www.gov.uk/guidance/transport-analysis-guidance-tag**

[12] In the context of sound, dBA stands for decibels A-weighted. It's a unit used to measure sound intensity, but it's specifically designed to reflect how the human ear perceives loudness at different frequencies. This is because our ears aren't equally sensitive to all frequencies; they're most sensitive to sounds in the middle range of our hearing.

8.3.9

N65 and N60 contours have been generated for the baseline and for the proposed option. These have been used to calculate the population numbers within the contour and the area of the contour.

Secondary noise metrics: Overflight contours

8.3.10

Overflight contours are generated using the CAA's definition of overflight as outlined in CAP1498. Although overflight contours do not portray noise impacts, they do enable calculation of the number of times a location may be perceived to be overflown.

8.3.11

Overflight contours have been generated for the baseline and for each option up to an altitude of 7,000ft. These have been used to calculate the population numbers captured within that contour.

Figure 28: CAP1498 overflight

How did our proposal perform in terms of noise?

8.3.12

For ease of comparison, within this consultation document we have only provided the summary data and contour pictures for a selection of key noise metrics for the without airspace baseline and the with airspace change proposal. The data and Figures shown are largely focused on the 2036 sample year (year of implementation +10). We have focused on 2036 as this was the busiest year we analysed and so it best highlights the positive and negative impacts of the change. Equivalent contours for 2027 are smaller, but show similar characteristics.

8.3.13

Along with this Consultation Document, **Appendix D (published separately)** provides high resolution noise contour maps and full data tables for the year of implementation (2027) and the future 10-year forecast (2036). The sections below summarise the noise outcomes.

Primary Noise Metrics

8.3.14

The monetised noise assessment of our proposed option gives a NPV of noise changes of £20.9m (2024 prices). This positive value reflects a net benefit i.e. a reduction in total adverse effects on health and quality of life from noise. The FOA document includes further details about the outcomes of the TAG assessment.

8.3.15

The daytime and night time contours data on the next few pages reflect this overall benefit showing there would be a net reduction in people affected a across most of the contour bands.

Table 12: LAeq16hr daytime contour comparison between 'without airspace change' baseline and the proposed option 'with airspace change' 2027

Year	Scenario	Metric	Contour (dB)	Area (km²)	Total Population
2027	Option 1	Comparison LAe16hr	51	0.0	-9,600
			54	-0.5	-2,300
			57	-0.2	200
			60	0.0	-200
			63	0.0	-100
			66	0.0	0
			69	0.0	0

Table 13: LAeq16hr daytime contour comparison between 'without airspace change' baseline and the proposed option 'with airspace change' 2036

Year	Scenario	Metric	Contour (dB)	Area (km²)	Total Population
2036	Option 1	Comparison LAe16hr	51	1.0	-10,400
			54	-0.5	-5,000
			57	-0.4	-900
			60	0.0	0
			63	-0.1	-200
			66	0.0	0
			69	0.0	0

Table 14: LAeq8hr night-time contour comparison between 'without airspace change' baseline and the proposed option 'with airspace change' 2027

Year	Scenario	Metric	Contour (dB)	Area (km²)	Total Population
2027	Option 1	Comparison LAe8hr	45	2.9	-10,500
			48	-0.5	-21,100
			51	-0.6	-1,600
			54	-0.1	100
			57	-0.1	-100
			60	0.0	0
			63	0.0	0
			66	0.0	0

Table 15: LAeq8hr night-time contour comparison between 'without airspace change' baseline and the proposed option 'with airspace change' 2036

Year	Scenario	Metric	Contour (dB)	Area (km²)	Total Population
2036	Option 1	Comparison LAe8hr	45	5.1	-6,600
			48	-0.2	-7,200
			51	-0.6	-3,000
			54	-0.1	-400
			57	0.0	0
			60	-0.1	0
			63	0.0	0
			66	0.0	0

8.3.16

As part of our **Edinburgh Airport Consultation website**, we have created interactive noise mapping. This tool provides an interactive map which shows the baseline 'without airspace change' noise contours and the proposed 'with airspace change' contours so that you can understand the changes within your area. To go to the interactive noise mapping please **click here**.

8.3.17

The following four pages show LAeq16h daytime and LAeq8h night-time contours for the baseline 'without airspace change' scenario and the proposed option 'with airspace change'. There is then a further diagram which shows the 45db night-time contours highlighting where the main benefits and impacts occur.

8.3.18

Stakeholders can use these maps to identify how their area of interest is affected in the with and without change scenarios. Alternatively the maps can be viewed interactively and in more detail on our **Edinburgh Airport Consultation website**. Alternatively, larger high-resolution versions of these contours are contained in Appendix D. In Appendix D (published separately) there are also further noise contour maps including 100% mode contours and LASmax contours.

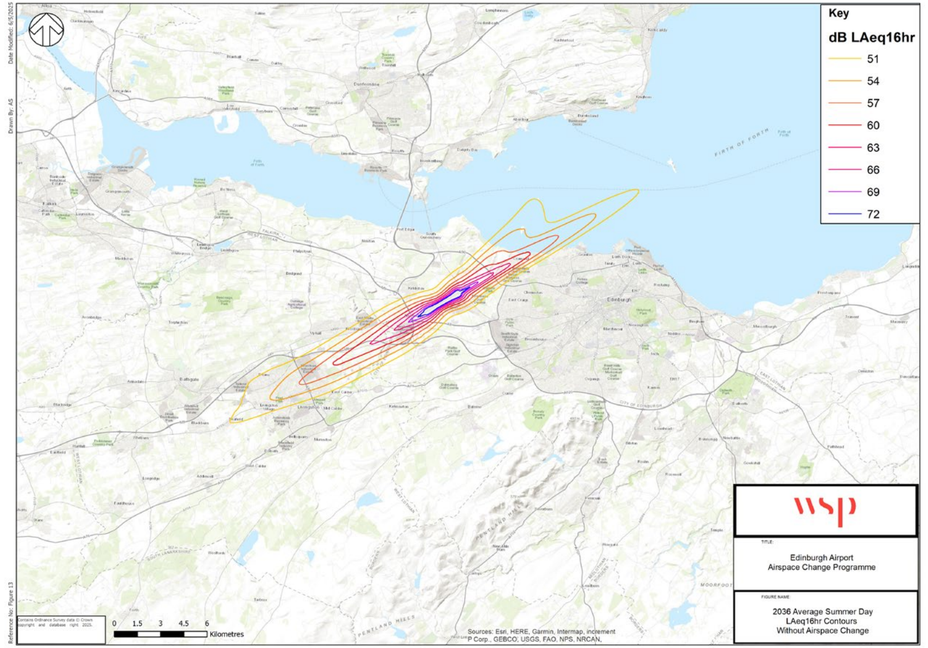


Figure 29: 2036 LAeq16hr daytime 'without airspace change'

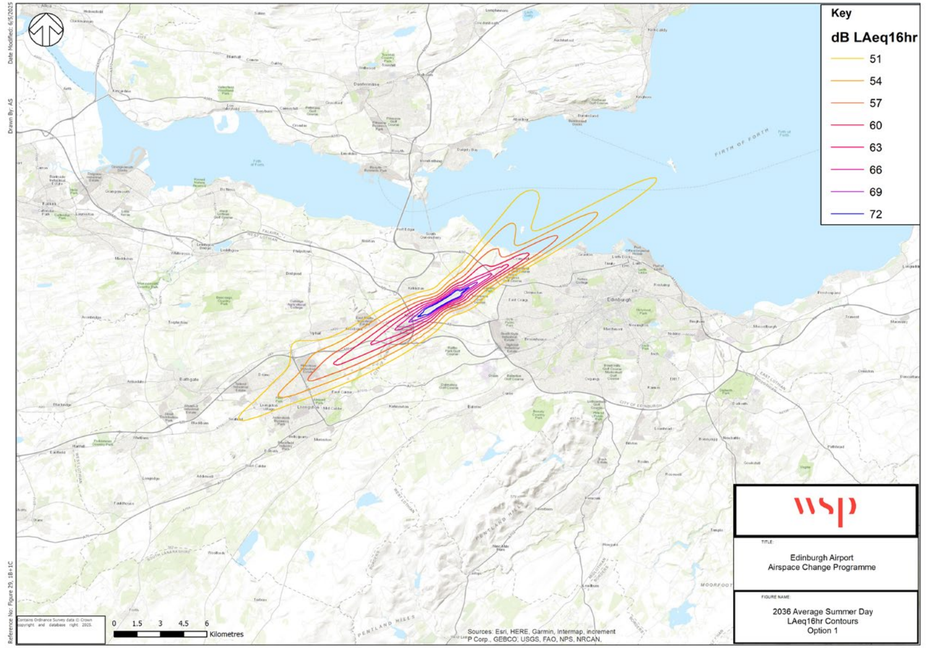


Figure 30: 2036 LAeq16hr daytime 'with airspace change'

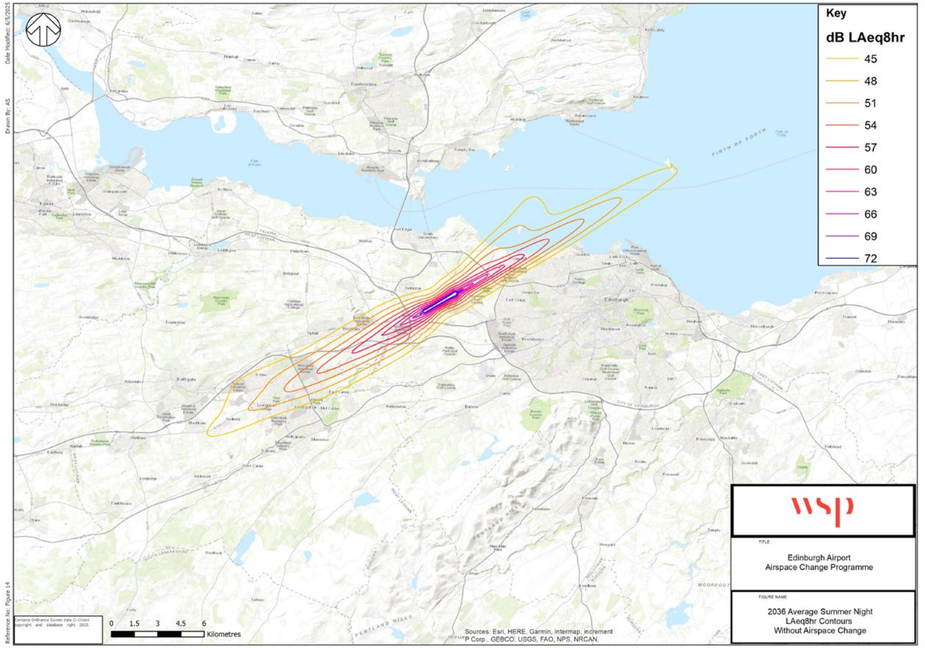


Figure 31: 2036 LAeq8hr night-time 'without airspace change"

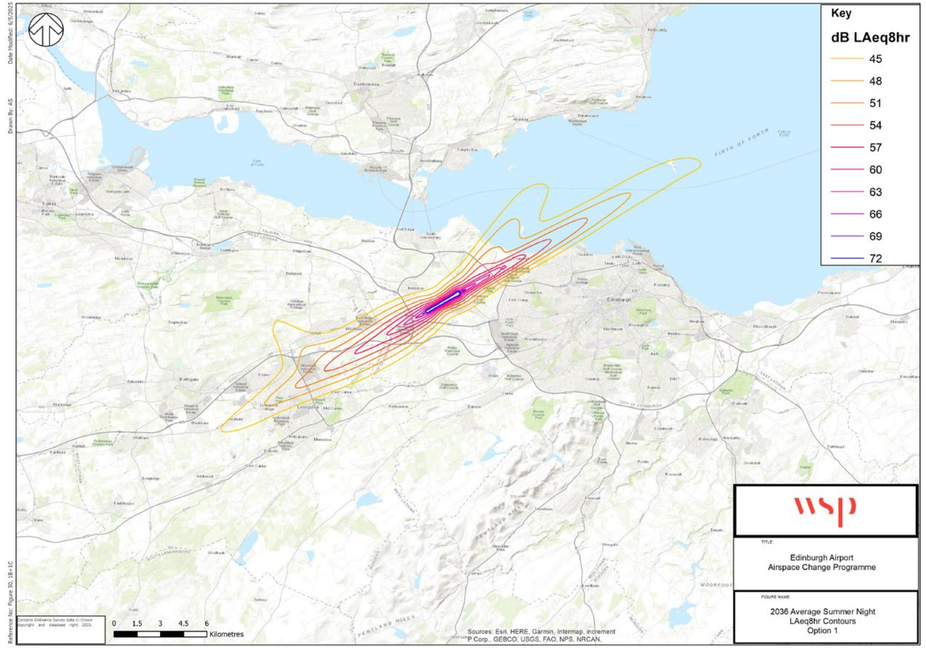


Figure 32: 2036 LAeq8hr night-time 'with airspace change"

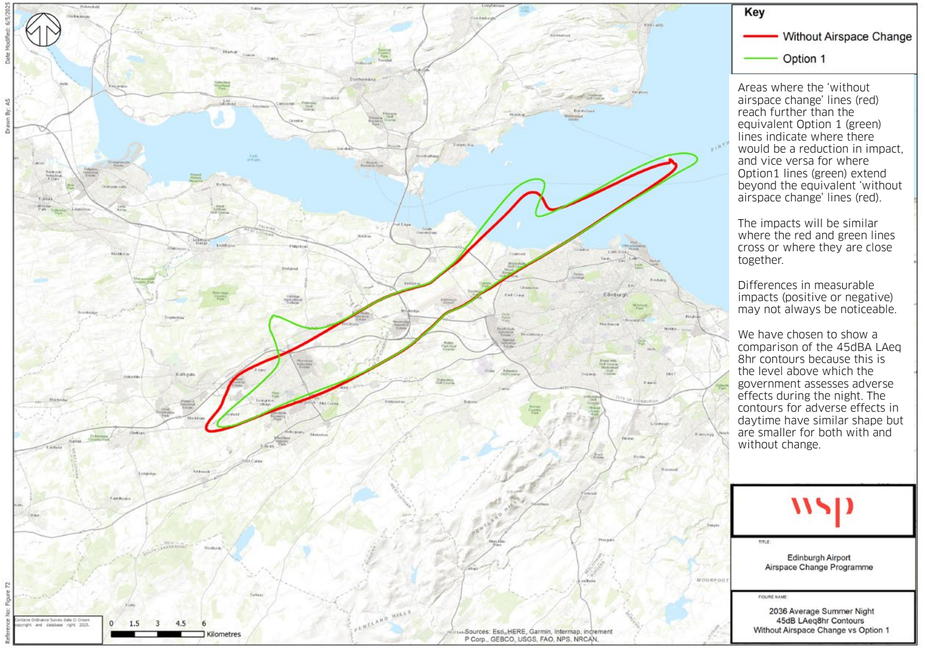


Figure 33: 2036 LAeq 8hr Night time 'without airspace change' versus 'with airspace change' at 45 dBA'

2036 Assessment of the LOAEL

8.3.19

As described earlier the LOAEL is a level of noise exposure, defined by the Government, above which adverse effects on health and quality of life can be observed.

8.3.20

As part of the FOA analysis, we looked at how the total number of people exposed above the LOAEL changes when comparing the 'without airspace change' scenario to the 'with airspace change' scenario in 2036. This showed in 2036, a net reduction in the total number of people exposed above the LOAEL during daytime and at night.

8.3.21

This is consistent with the monetised TAG noise assessment which shows a reduction in the total adverse effects on health and quality of life from noise.

8.3.22

Qualitative review of the contours indicate the net reduction is primarily the result of the contours being reduced over the north and central areas of Livingston, in particular the Deans area. This is at the expense of the 'node' (or bulge) in contours which shows a lump extending to the north, over less densely populated areas but which include Dechmont and the western end of Uphall.

As part of our Edinburgh Airport Consultation website, we have created interactive noise mapping. This tool provides an interactive map which shows the baseline 'without airspace change' noise contours and the proposed 'with airspace change' contours so that you can understand the changes within your area. To go to the interactive noise mapping please click here.

8.3.23

For detailed analysis of the LAeq contours, please see our FOA document. Within this document, our proposed option is called Option 1.

Secondary CAP1616 metrics

8.3.24

Within the secondary CAP1616 metrics, there is variation in performance across the N60, N65 and overflight contour bands. It is important to note that these metrics do not determine adverse noise effects but can be a useful metric in communicating noise effects and the perception of overflight. The following tables show the proposed option compared to the 'without airspace change' baseline for the N60 (night-time), N65 (daytime) and overflight metrics. Maps for these contours are shown over the following pages.

N65 and N60

8.3.25

The N65 daytime comparison for 2036 shows negative effects for population changes within 10 flights per day range versus more positive effects at all the other rates. Benefits in terms of populations effected are greatest at the 50 flights per day level with a reduction of over 10,000 people. Note that for 2027 (not shown) there is also a negative impact at 5 flights per day, but in both 2027 and 2036 the numbers positively affected (particularly in the higher flights-per-day contours where effects are greater) are larger than those negatively affected (which are generally in the lower flights-per-day contours).

8.3.26

N60 night-time data shows a decrease in population counts affected at all contour levels.

8.3.27

The effects across potentially sensitive buildings for both N60 and N65 is mixed, with some categories benefiting and others not. Like the population comparison, the negative effects tend to be at the lower contour levels, and positive effects at the higher contour levels.

8.3.28

Drawing a single conclusion from positive and negative effects across different N65 and N60 contours is difficult, but in general terms we perceive these results to be more positive than negative, particularly at night.

Table 16: 2036 N65 daytime contour comparison between 'without airspace change' and the proposed option 'with airspace change'

Year	Scenario	Metric	Contour (Flights per Day)	Area (km²)	Total Population	Total Households	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places to worship	Number of schools
2036	Option 1	Comparison N65 (day)	5	12.2	-3,100	-1,500	1	0	-21	1	1
			10	15.1	6,200	2,700	1	0	19	1	1
			20	5.6	-5,000	-2,300	0	0	9	-3	-6
			50	0.6	-10,400	-4,700	0	0	-8	-2	-6
			100	-1.6	-4,200	-1,900	0	0	-3	0	-2
			200	-2.5	-4,100	-1,900	-2	0	-26	-1	-3

Table 17: 2036 N60 night-time contour comparison between 'without airspace change' and the proposed option 'with airspace change'

Year	Scenario	Metric	Contour (Flights per Day)	Area (km²)	Total Population	Total Households	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places to worship	Number of schools
2036	Option 1	Comparison N60 (night)	5	40.8	-22,900	-10,400	-1	-1	40	-2	-6
			10	9.7	-10,900	-600	0	0	-6	-3	-4
			20	-2.4	-10,900	-4,800	0	0	-3	-3	-8
			50	0.0	0	0	0	0	0	0	0

8.4 Overflight

8.4.1

The daytime overflights show significant reductions in population overflown at the lower counter levels (5, 10 and 20 flights per day) which can be attributed to the significant reduction in the areas overflown today because of the wide dispersal through vectoring.

8.4.2

At 50 and 100 flights per day there are negative effects across the two analysis years with more people being overflown; this which can also be assumed to be the consequence of concentration.

8.4.3

The 200 flights per day contour does not exist in 2027, but in 2036 it shows a reduction. At this rate the contour is close to the airport. The most significant difference between the baseline and our proposal this close to the airport, is the early right turn for north and eastbound departures of runway 24 (STOPP, GULLY and BERRY), and therefore this is likely to be the cause of the reduction.

8.4.4

Night-time contours also show a pattern of large population reductions at the lowest contour band and negative effects at the higher contour bands.

8.4.5

In all cases the numbers of people negatively affected by concentration at the higher contour bands are an order of magnitude less than those positively affected at the low contour levels.

8.4.6

A similar pattern of positive effects at lower flights-per-day rates and negative effects at the higher rates is present in the 2027 data (not shown).

8.4.7

In all cases the comparative area column is difficult to interpret because the areas may be over water or over areas where there is little by way of population.

Table 18: 2036 Overflight (day) comparison between 'without airspace change' and the proposed option 'with airspace change'

Year	Scenario	Metric	Contour (Flights per Day)	Area (km²)	Total Population	Total Households	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places to worship	Number of schools
2036	Option 1	Comparison Overflights Day	5	-562.7	-201,200	-91,600	-36	-9	-1,307	-21	-53
			10	-143.5	-189,200	-85,600	-22	-4	-626	-14	-43
			20	25.6	-145,900	-65,800	-17	-3	-883	-11	-36
			50	184.2	15,800	7,200	3	0	169	-5	-5
			100	65.0	2,400	1,200	3	0	79	-4	-7
			200	2.4	-5,200	-2,400	-1	0	3	0	-3

Table 19: 2036 Overflight (night) comparison between 'without airspace change' and the proposed option 'with airspace change'

Year	Scenario	Metric	Contour (Flights per Day)	Area (km²)	Total Population	Total Households	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places to worship	Number of schools
2036	Option 1	Comparison Overflights Night	5	87.6	-113,900	-50,800	-15	-3	-373	-16	-36
			10	114.3	12,300	5,500	3	0	145	-4	-3
			20	66.3	10,900	5,000	1	0	84	-1	1

For high-resolution contour maps please see Appendix D.

As part of our Edinburgh Airport Consultation website we have created interactive noise mapping. This tool provides an interactive map which shows the baseline 'without airspace change' noise contours and the proposed 'with airspace change' contours so that you can understand the changes within your area. To go to the interactive noise mapping please click here.

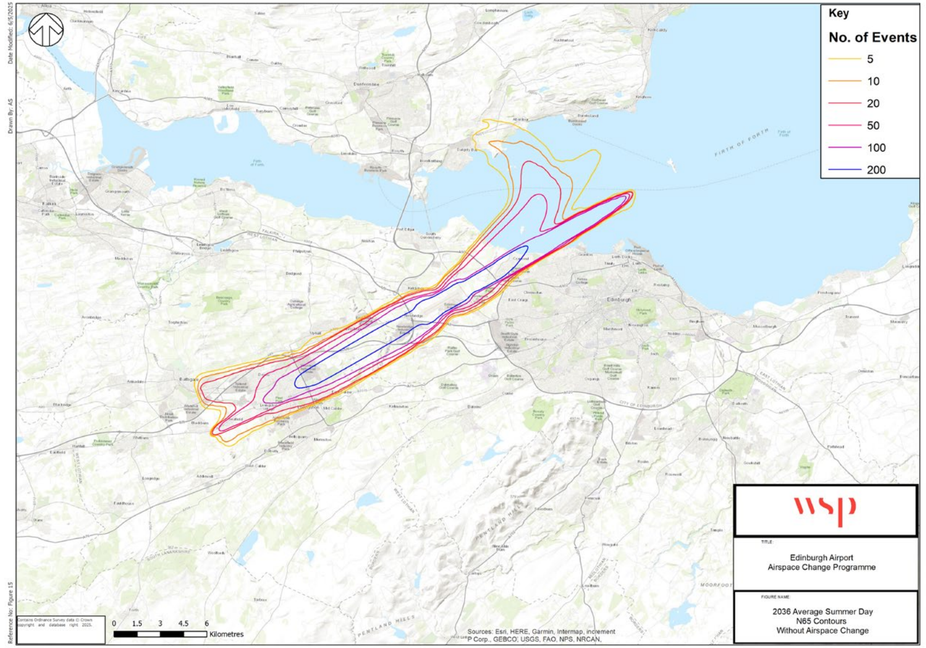


Figure 34: 2036 N65 daytime 'without airspace change'

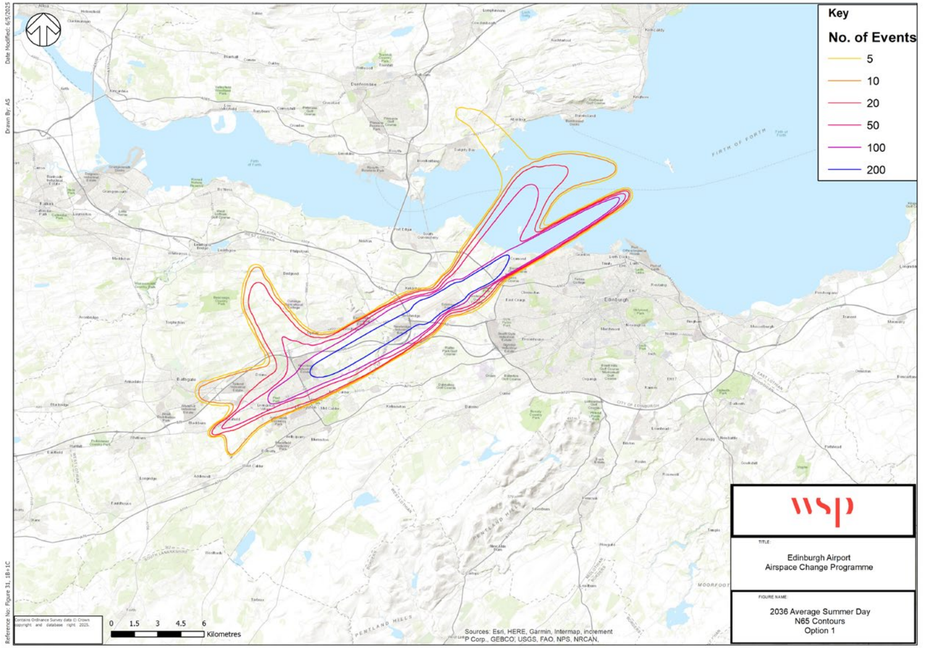


Figure 35: 2036 N65 daytime 'with airspace change'

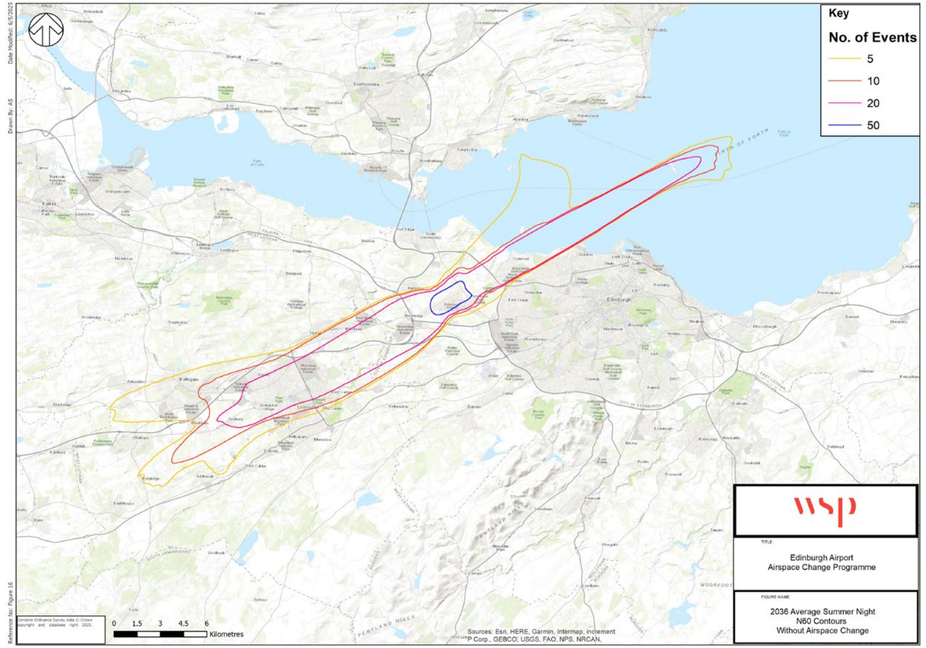


Figure 36: 2036 N60 night-time 'without airspace change'

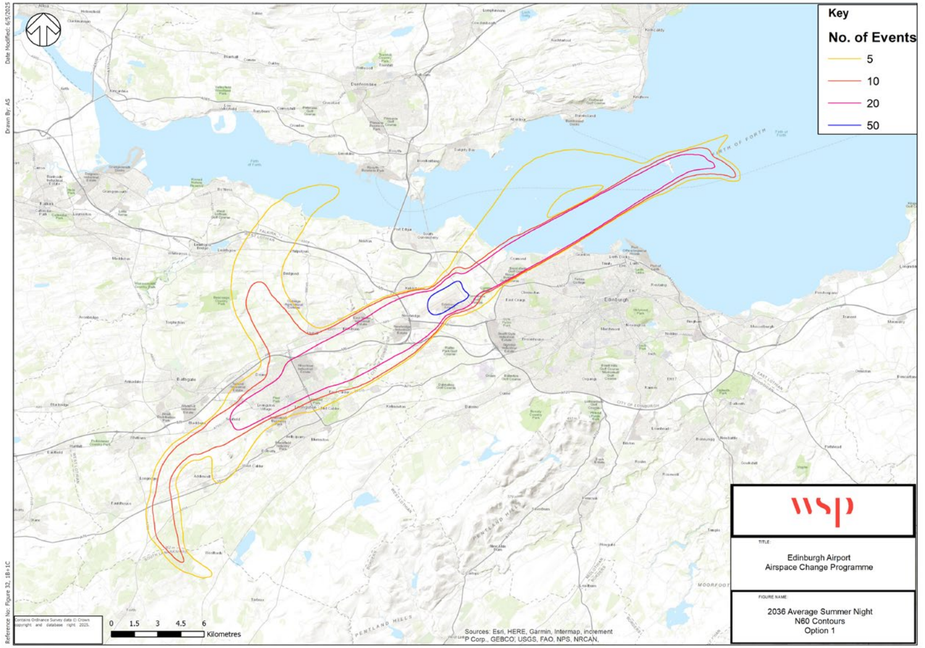


Figure 37: 2036 N60 night-time 'with airspace change'

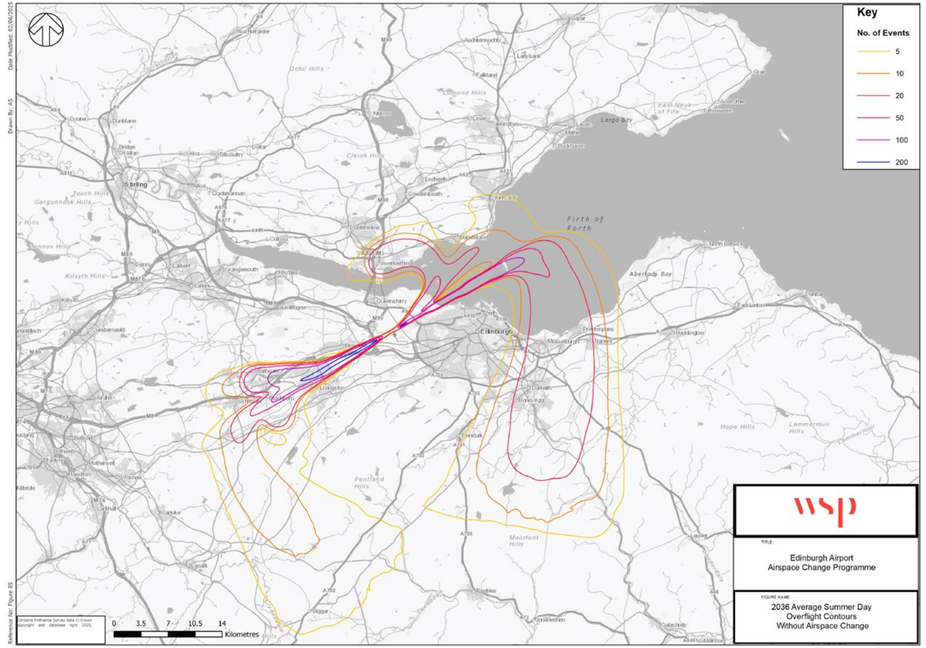


Figure 38: 2036 Overflight daytime 'without airspace change'

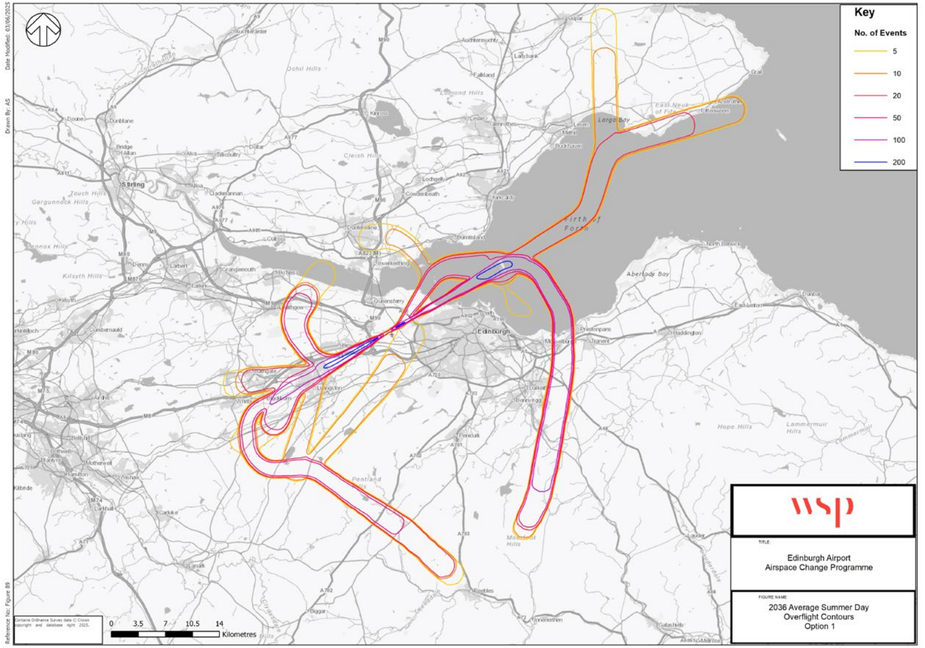


Figure 39: 2036 Overflight daytime 'with airspace change'

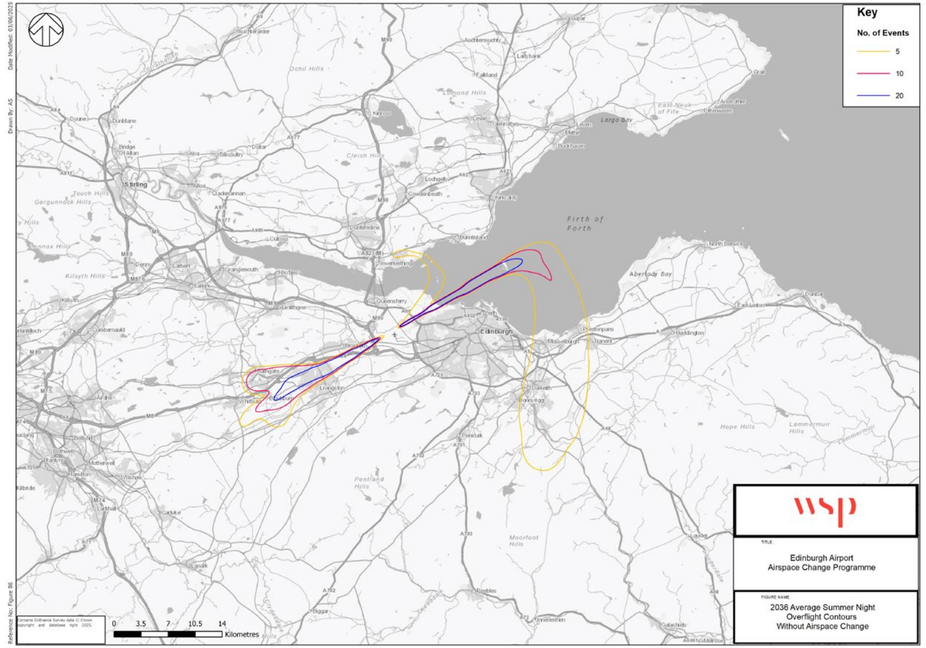


Figure 40: 2036 Overflight night-time 'without airspace change'

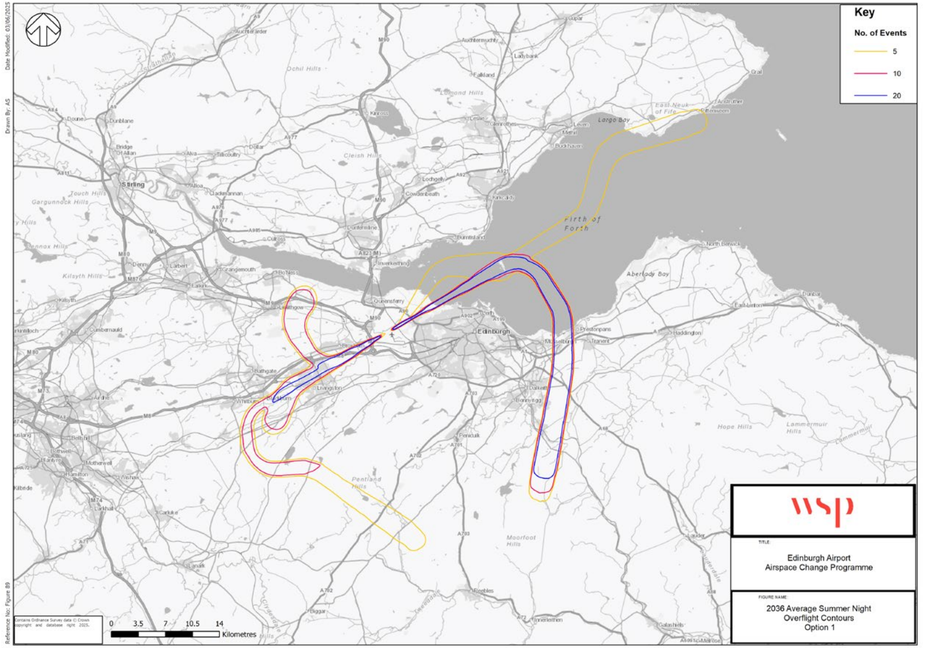


Figure 41: 2036 Overflight night-time 'with airspace change'

Overflight of people with protected characteristics

8.4.8

The table to the right shows the impact of our proposal on overflight for specific special schools and Sight Scotland facilities. We have listed all the facilities we have looked at, including those not overflown; where this is the case the table states 'null'.

8.4.9

Data on educational facilities, medical facilities, care homes and places of worship are covered in the earlier noise/overflight data tables sections.

8.4.10

Red cells show the option results in more overflights than the baseline, green represents fewer. This shows that Moore House Academy and Ogilvie School would have fewer daytime overflights reducing from 100 to 20 per day in 2036. Cedarbank, Calaiswood School and Linburn Centre would respectively be newly overflown by 10, 5 and 5 flights (below 7,000ft) per day in 2036.

Table 20: 'Without Airspace Change' Baseline and Option 1 Overflight of Special Schools and Sight Scotland Facilities, 2036

	2036 Day Overflight Contour (Flights per Day)	
Receptor Name	**Without Airspace Change**	**Option1**
Pinewood School	50	50
Moore House Academy	100	20
Ogilvie School	100	50
Cedarbank	Null	10
Calaiswood School	Null	5
Sight Scotland Veterans Linburn Centre	Null	5
Starley Hall	Null	Null
Victoria Park	Null	Null
Kaimes Special School	Null	Null
Rosslyn School	Null	Null
Sight Scotland Allermuir Home	Null	Null
Sight Scotland The Royal Blind School	Null	Null
Broughton Primary School	Null	Null
Hyndhead School	Null	Null
New Struan School	Null	Null
Ochil Tower School	Null	Null
Rowanfield Special School	Null	Null
Woodlands School	Null	Null

Changes to noise distribution as a result of other airspace users

8.4.11

General Aviation (GA) are operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire. The most common type of GA activity is recreational flying by private light aircraft and gliders, but it can range from paragliders and parachutists to microlights, balloons, helicopters and private corporate jet flights.

8.4.12

The reclassification of controlled airspace volumes as shown in section 9 is likely to result in changes to traffic patterns of some GA aircraft. Any changes in noise from GA activity is unpredictable, not the responsibility of Edinburgh ATC and are not as a result of scheduled aircraft arriving or departing from Edinburgh Airport. It therefore does not form part of the quantified noise modelling shown here or in the following sections relating to tranquillity and biodiversity.

8.4.13

A qualitative assessment has been provided in the FOA which explains that our design sees a lowering of CAS bases to the northeast, and lesser extent in the southwest. These are shown as the red shaded areas in Figure 46 in Section 9 later in this document. In either area this could result in GA flying lower, which in turn could mean some more noticeable overflight by light aircraft for the populations living in these areas. Note that much of the area in question to the northeast is over the sea.

8.4.14

Levels from the surface to 3500ft are being changed from CAS to Class G to the northwest and southeast of the airport as shown by the green shaded area marked A and B in Figure 46. Our proposal would mean GA would, in the future, be able to fly in these areas which they are currently excluded from. This could mean more overflight by light aircraft for the populations living in these areas. If this does occur it would be expected to offset by some reduced overflight by light aircraft in the adjacent unshaded airspace marked CTA3 and CTA4 in Figure 46, as this is where light aircraft operate at low levels today. Figure 46 also shows a green area further to the southeast. This shows where the CAS base is being raised. This would enable light aircraft to fly higher than they today if they wish to do so.

Overall Noise Summary

8.4.15

Assessment of TAG results show that for this option there is a significant net reduction in adverse effects as shown by the monetised benefit of £20.9m over 10 years.

8.4.16

This is illustrated by the LAeq comparison tables for both day and night which are predominantly green, indicating net improvements. This means that more people would be positively effected than negatively, however, it should be noted that there would be some areas where adverse effects are worsened.

8.4.17

Drawing a single conclusion from positive and negative effects across different N65 and N60 contours is difficult. However, in general terms we perceive the results to be more positive than negative, particularly at night where populations affected would be reduced at all contour levels.

8.4.18

Likewise drawing a single conclusion from overflight data is difficult. The overflight data demonstrates large reductions of people overflown overall. This is attributable to large reductions in people overflown at lower contour levels due to aircraft following the prescribed track rather than being vectored. However, this is partially offset by increases to the number of people overflown at some higher contour levels, also likely to be attributable to increased flight path concentration.

8.4.19

Overall, Edinburgh Airport concludes that our proposal is expected to result in a significant net positive beneficial impact to noise and overflight. This is on the basis that there is a significant reduction in the monetised adverse effects which is the primary noise objective.

8.4.20

The secondary metrics show a range of positive and negative effects, the relative benefit of which is likely be viewed subjectively depending on people's areas of interest.

8.5 Air Quality

How do we assess air quality?

8.5.1

CAP1616 requires us to consider whether local air quality could be impacted when developing airspace change proposals and to look at whether an option has the potential to create a change which would result in pollutants breaching legal limits or target values. The CAA deems that this is only likely to become a possibility where:

- there is likely to be a change in aviation emissions (by volume or location) below 1,000ft, and
- the location of the emissions is within or adjacent to an identified Air Quality Management Area.

How did the proposed option perform in terms of air quality?

8.5.2

In our proposed option there are some small changes to flight profiles below 1,000ft to the northwest of the airport, but these are not near any Air Quality Management Areas so it concluded that the proposed option would have a negligible impact on local air quality.

8.6 Tranquillity

How do we assess tranquillity?

8.6.1

Though it is no longer current, CAP1616a provides a helpful summary of the status of tranquillity assessment methodologies, noting that 'In terms of portraying 'tranquillity' or any impacts upon it, there is no universally accepted metric by which tranquillity can be measured, although some attempts have been made.' The **Air Navigation Guidance 2017** states that 'where practicable, it is desirable that airspace routes below 7,000ft should seek to avoid flying over Areas of Outstanding Natural Beauty (AONB) and National Parks'.

8.6.2

CAP1616i states that 'The consideration of impacts upon tranquillity for airspace change proposals is with specific reference to National Parks, Areas of Outstanding Natural Beauty (AONB), National Scenic Areas (NSA) (broadly equivalent to AONBs in Scotland), the Norfolk and Suffolk Broads, plus any local 'tranquil' areas that are identified through community engagement and are subsequently reflected within an airspace change proposal's design principles.'

8.6.3

The assessment of tranquillity therefore focuses on overflight of National Scenic Areas and National Parks, supplemented by overflight and noise information for Candidate Quiet Areas, Country Parks, Gardens and Designated Landscapes.

8.6.4

As tranquillity receptors are outdoors, they are more frequently occupied during the daytime. The frequency of overflight is also greater during the daytime. The consideration of the impact of noise and overflight on tranquillity therefore focuses on potential daytime effects, but night-time data is provided in Annex L of the FOA for information.

How did the proposed option perform in terms of tranquillity?

8.6.5

The LAeq16hr comparison tables below show that the differences with respect to tranquil sites is a mix of positive and negative effects, all of which are relatively minor. These relate to the changing of the contours as a result of the improved Cramond offset which moves the concentration of flights away from the designated landscapes at Craigiehall and Cammo near Cramond, at the expense of extending slightly further over Dalmeny Park and the Firth of Forth (Drum Sands) candidate quiet area. Note that while the concentration of flights would move as a result of this option all these sites are overflown today and would remain so in the future.

8.6.6

Overflight of tranquil areas show a similar pattern to the overflight population counts, i.e. reduced overflight at lower contour levels and increased overflight at higher contour levels. This can be attributed to the effects of flights sticking to their routes as a result of the new PBN standards.

8.6.7

The results show an increase in the overflown area of the 'country parks' category as a result of the PBN approach transition for runway 06 from the north that catches the western edge of the Pentland Hills Regional Park, and also to a lesser extent from the runway 24 north and eastbound departure routes (STOPP, GULLY and BERRY) overflying the eastern end of the Beecraigs Country Park. Overflights in our proposal also extend slightly over the northern edge of the Upper Tweeddale NSA. Vogrie Country Park is overflown in both the baseline and our proposal. In the baseline the overflight is spread over all parts of the park as a result of the vectoring, whereas in the proposal the western edge of the park would be regularly overflown while the eastern edge would not. CQA and Scheduled Monuments show a pattern of reduction at the lower contour levels offset by increases at higher contour levels. This is the result of the flight path concentration reducing the overall areas overflown, but increasing the area overflown at higher concentrations.

8.6.8

Overall, we believe the overall impact on tranquillity is negligible, although we recognise that individual's perception may differ depending on whether their areas of interest is overflown more or less.

Table 21: Daytime LAeq16h data for areas of tranquillity compared to the 'without airspace change' baseline

Year	Scenario	Metric	Contour (dB)	Country Parks		CQA		Gardens and Designated Landscapes		National Parks		NSA		SAMs	
				Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)
2036	Option 1	Comparison LAeq16hr	51	0	0.0	0	1.0	0	0.4	0	0.0	0	0.0	1	0.0
			54	0	0.0	0	0.1	0	0.4	0	0.0	0	0.0	0	0.0
			57	0	0.0	0	-0.1	0	0.1	0	0.0	0	0.0	0	-0.1
			60	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
			63	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
			66	0	0.0	0	0.0	-1	-0.1	0	0.0	0	0.0	0	0.0
			69	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

Table 22: Daytime overflight data for areas of tranquillity compared to the 'without airspace change' baseline

Year	Scenario	Metric	Contour (Flights per Day)	Country Parks		CQA		Gardens and Designated Landscapes		National Parks		NSA		SAMs	
				Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)	Total	Area (km²)
2036	Option 1	Comparison Overflights Day	5	0	8.0	5	-0.3	-12	-20.0	0	0.0	1	0.4	-113	-3.1
			10	2	7.3	4	-0.1	-8	-17.6	0	0.0	0	0.0	-63	-2.2
			20	1	-0.5	0	-0.6	-9	-18.4	0	0.0	0	0.0	-19	-1.6
			50	2	0.2	1	1.8	3	1.8	0	0.0	0	0.0	27	0.7
			100	1	0.0	1	0.1	2	0.9	0	0.0	0	0.0	17	0.4
			200	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	0.3

8.6.9

For detailed analysis of tranquillity, please see our FOA document. Within this document, our proposed option is called Option 1.

8.7 Biodiversity

How do we assess biodiversity?

8.7.1

Airspace change sponsors are required to undertake a Habitats Regulations Assessment (HRA) screening assessment of European Sites potentially affected by the Airspace Change Masterplan. This is outlined in **CAP2527**. The assessment involves looking at any sites which are within 18km of the aerodrome, where aircraft are typically below 3,000ft, and assessing whether the change has the potential to impact these.

8.7.2

The receptors that must be considered in the HRA screening are Special Areas of Conservation (SAC) and possible SACs, Special Protection Areas (SPAs) and possible SPAs and Ramsar sites (wetlands of international importance) and proposed Ramsar sites. These receptors are collectively known as European Sites and are protected by the Habitats Regulations. These sites have been identified using the **spatialdata.gov.scot** website.

How did the proposed option perform in terms of biodiversity?

8.7.3

The outcome of the assessment concluded that the potential effects of overflights by aircraft below 3,000ft in the vicinity of any European Site would not differ sufficiently from the existing baseline to result in likely significant effects on the conservation objectives of those European Sites.

8.7.4

For further details about the HRA assessment we would recommend reading the biodiversity methodology section of our FOA.

8.8 Fuel Burn and Greenhouse Gas Emissions

How do we assess fuel burn and greenhouse gas emissions?

8.8.1

The fuel burn and greenhouse gas emissions assessment is undertaken through complex computer modelling. As flight paths extend above 7,000ft, the overall system wide modelling was undertaken by NERL. We then undertook our own modelling to look at the variation between the different options which were assessed as part of the FOA.

8.8.2

This modelling relies on a number of inputs and assumptions to anticipate the behaviour of all aircraft. More details around the modelling are provided in the FOA.

8.8.3

The outcome of the modelling is an 'enabled benefit' that is then input into the Government's TAG workbook in order to monetise the greenhouse gas emissions benefits. An enabled benefit is one that relates to the fuel saving resulting from more efficient flight planned routes. This is not an exact representation of the actual change in fuel burn and CO_2e emissions. The actual impact can only be calculated following implementation of the change. This will allow a direct comparison between the pre-implementation trajectory data and actual trajectory data following the change. This will be provided within the Post Implementation Review of the Airspace Change.

How did the proposed option perform in terms of fuel burn and greenhouse gas emissions?

8.8.4

The proposal is expected to reduce the total annual and per flight enabled fuel burn and greenhouse gas emissions (measured in CO_2e). Tables 23 and 24 respectively show the difference in enabled fuel burn and CO_2e between the with and without airspace change. A negative value represents an improvement[13].

[13] Please refer to the FOA methodology section for greenhouse gas emissions for contextual information on how the use of planned flight data in the NERL modelling may affect this result

Table 23: Enabled fuel burn 'without airspace change' and 'with airspace change'

Year	Annual Fuel Burn (t)	Annual Fuel Burn Cost (£) 2024 prices	Average Fuel Burn per Flight (kg)
2027	-3,262	-£2,237,908	-22
2036	-4,509	-£3,092,990	-27

Table 24: Greenhouse Gas emissions difference between 'with airspace change' and 'without airspace change'

Year	Annual total GHG emissions (tCO_2e)	Average GHG emissions per flight ($kgCO_2e$)
2027	-10,374	-70
2036	-14,338	-84

Monetised Benefits

8.8.5

The forecast enabled fuel saving has been monetised discounted per year as a saving over the 10 year period of c.£20.5m. The CO_2e savings have been monetised using the Government's TAG workbook to produce a monetised value over the 10 year period. This change is forecast to save 124,000 tonnes CO_2e with a monetised equivalent of c.£32.4m[14].

Changes to fuel burn and CO_2e for other airspace users

8.8.6

The reclassification of airspace volumes as shown in Annex G of the FOA may result in changes to traffic patterns of general aviation aircraft. General aviation are operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire. The most common type of general aviation activity is recreational flying by private light aircraft and gliders, but it can range from paragliders and parachutists to microlights, balloons, helicopters and private corporate jet flights.

8.8.7

Our proposal would mean in some places there is less controlled airspace which could enable some general aviation to perhaps fly more efficient profiles, while in other places there will be more controlled airspace which may potentially result in some less efficient profiles. However, any changes in fuel burn from general aviation activity is unpredictable, not the responsibility of Edinburgh ATC and are not as a result of scheduled aircraft arriving or departing from Edinburgh Airport. It therefore does not form part of the quantified CO_2e or fuel burn modelling for the baseline or any of the options.

[14] Monetised figures are in 2024 prices discounted as per Government guidance.

8.9 Capacity/Resilience

How do we assess capacity?

8.9.1

An airport's capacity is based around the number of aircraft which are able to arrive and depart at the airport within a given timeframe.

8.9.2

In Stage 2 we alluded to potential capacity improvement from this ACP that would increase our growth. This was to be achieved by reducing the timed separation between our departures. It has since been clarified that the reduction of departure separation is not part of this ACP as it does not require any changes to the airspace structure. Therefore, we are no longer claiming a capacity benefit from this ACP. Consequently, the proposal within the ACP does not enable any increase in forecast movements at Edinburgh Airport and therefore the traffic forecast applied 'without airspace change' is the same as 'with airspace change'.

8.9.3

However, this proposal is expected to have benefits in terms of delay reduction for flights to the east and southeast which currently fly south until over the north of England, from where they turn east and head out over the North Sea. This area of airspace over the north of England can become congested at times, and when it does our flights can be delayed on the ground until the congestion eases.

8.9.4

The introduction of new routes over the Firth of Forth sends our east and southeast bound departing flights directly over the North Sea, avoiding this bottle neck.

8.9.5

We have not been able to quantify this benefit as it would involve modelling the whole air traffic system for the UK which would be disproportionate for our proposal for Edinburgh Airport. However, our ATC experts are confident that the proposal will reduce pre-departure delay currently experienced by these flows as a result of congestion in downstream air traffic control sectors in the network over the north of England.

8.9.6

Airborne delay is also expected to reduce, which usually is caused by aircraft being held in 'holds' or 'stacks'. This forms part of the NERL ACP as NERL is responsible for the holds and holding procedures. For more information about improvements to airborne delay, please see the NERL ACP **here**.

How did the proposed option perform in terms of capacity?

8.9.7

The proposed option does not directly increase capacity at Edinburgh Airport, it helps a proportion of our traffic avoid some of the more congested areas and so is expected to reduce delays.

How do we assess resilience?

8.9.8

When assessing resilience, we have looked at how our proposal and the introduction of PBN routes would benefit or impact Edinburgh Airport. This assessment was undertaken by aviation experts such as Air Traffic Controllers and aviation safety experts. As any impacts or benefits to resilience would not be experienced on a routine basis they have not been monetised.

How did the proposed option perform in terms of resilience?

8.9.9

Arrivals on final approach use an Instrument Landing System (ILS) to guide them into the airport. When the ILS is unavailable aircraft currently rely on the Non-Direction Beacons (NDBs) to guide them close enough to the airport to enable a visual approach. The Edinburgh Airport NDBs are at end of life, and it is expected that they will need to be replaced in 2030 at a cost of c.£300k. The PBN procedures will provide a contingency for when ILS is unavailable thereby avoiding this cost.

8.9.10

The published procedures today also rely on conventional ground-based navigation aids, in particular those called Very High Frequency Omnidirectional Range or VORs for short. This equipment is due to be decommissioned as part of a NERL UK wide programme under the Airspace Modernisation programme. PBN routes would enable Edinburgh Airport to continue operating as the VORs are decommissioned.

8.9.11

The introduction of PBN approaches will therefore improve our resilience both in the short and long term as conventional navigational aids reach their end of life.

8.10 General Aviation

8.10.1

Controlled Airspace (CAS) is airspace of defined dimensions within which ATC service is provided in accordance with the airspace classification. Its purpose is to create a known air traffic environment to achieve the objectives of the ATC service to prevent collisions between aircraft and to expedite and maintain an orderly flow of air traffic.

8.10.2

In the next section, Proposed Controlled Airspace (CAS), we have included full details of our CAS proposal and the potential benefits and impacts to general aviation. "The following paragraphs provide a summary of the impacts on CAS, but for those seeking more detailed information we recommend reading Section 9: Proposed Controlled Airspace (CAS)".

How do we assess impacts to General Aviation?

8.10.3

Edinburgh Airport has worked with NERL and Glasgow Airport to define the CAS volume required to safely contain the proposed departure and arrival procedures which form part of Scottish Airspace Modernisation.

8.10.4

The volume of this proposed airspace has then been assessed against the existing CAS to understand changes to the volume and classification of the airspace.

8.10.5

Broadly speaking, the release of controlled airspace or airspace which is designated to a lower classification is considered a beneficial change, and an increase in CAS, or an increase in classification is considered a negative impact.

How did the proposal perform in terms of General Aviation?

8.10.6

The overall Scottish Airspace Modernisation requires many changes to the lateral extents and classifications of CAS. More details can be found in Proposed Controlled Airspace (CAS), section 9. Overall, there will be an **increase** in the CAS volume required, however, this mainly occurs in the NERL proposal above 7,000ft.

8.10.7

When looking at the overall Scottish Airspace Modernisation proposal for CAS, the combined Edinburgh Airport, Glasgow Airport, and NERL design will result in a **reduction of 601.7nm³ of CAS** where bases are below 7,000ft.

8.10.8

For full details, including annotated charts, please see Proposed Controlled Airspace (CAS), section 9.

8.11 Safety

How do we assess safety?

8.11.1

Air traffic controllers and other aviation experts undertake detailed safety assessments, including simulations, to understand whether there are any positive benefits or negative impacts compared to the baseline 'without airspace change' scenario.

8.11.2

The safety assessment also looks at the design of the arrival and departure procedures, and whether the specification of PBN used offers any safety advantages compared to the baseline 'without airspace change' scenario.

How did the proposal perform in terms of safety?

8.11.3

The safety assessments have indicated that the proposed option will **maintain and, in some areas, enhance safety** compared to the 'without airspace change' baseline.

8.11.4

The enhancement is through the introduction of systemised routes where aircraft fly their planned route with a degree of autonomy. This will reduce complexity and associated workload for both air traffic control and pilots. This is considered a safety enhancement as it is best practice to minimise complexity in the design and operation of airspace where possible.

8.11.5

Safety assurance is an ongoing part of the ACP. Further safety assessments and justifications to meet all relevant safety requirements will be submitted in Stage 4.

8.12 How does the proposed option meet the Government's Airspace Modernisation Strategy

8.12.1

We have assessed the proposed option against the objectives of the Government's Airspace Modernisation Strategy (AMS) which is a key driver for this airspace change. The vision of the AMS is to deliver quicker, quieter and cleaner journeys and more capacity for the benefit of those who use and are affected by UK airspace. Table 25 provides the objective of the AMS alongside information about how the proposed option aligns with these objectives.

Table 25: Objectives of the Airspace Modernisation Strategy (AMS) and how this proposal aligns with the AMS

Objective of the Government's Airspace Modernisation Strategy	How this proposal aligns with the AMS
Safety **Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation**	The safety assessments have indicated that the proposed option will maintain and, in some areas, enhance safety compared to the 'without airspace change' baseline.
Integration of diverse users **Airspace modernisation should wherever possible satisfy the requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, general aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems)**	The proposed option is expected to meet the requirements of existing airspace users such as commercial airlines. The airspace will be classified to support access to users as appropriate. General aviation and new and rapidly developing users are expected to benefit from the overall release of CAS volumes below 7,000ft. There are no expected conflicts with national security requirements.
Simplification, reducing complexity and improving efficiency: **Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic[15], accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers**	The capacity and resilience assessments within the FOA have shown that the proposed option would offer benefits helping to reduce future delays. The proposed designs will efficiently use the airspace to enable the expeditious flow of traffic, including all classes of aircraft across the commercial, general aviation and military sectors.
Environmental sustainability: **Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's Air Navigation Guidance and, in doing so, will take account of the interests of all stakeholders affected by the use of the airspace**	The proposed option offers a net benefit i.e. a reduction in total adverse effects on health and quality of life from noise. The proposed option also offers an expected improvement in Greenhouse Gas Emissions.

[15] 'Most efficient use of airspace' and 'expeditious flow' are defined at the foot of page 22 of **CAP1711**

Proposed Controlled Airspace (CAS)

09

9.1 What is Controlled Airspace (CAS)?

9.1.1

Controlled airspace (CAS) is airspace of defined dimensions within which an ATC service is provided in accordance with the airspace classification. Its purpose is to create a known air traffic environment to achieve the objectives of the ATC service to prevent collisions between aircraft and to expedite and maintain an orderly flow of air traffic.

9.1.2

Different types of airspace are classified by a lettering system specified by ICAO. Class A to E airspace is known as 'controlled airspace'; Class G airspace is 'uncontrolled airspace'. The airspace classification type establishes the extent to which airspace users must comply with various regulations (embracing, for example, aircraft equipage, pilot qualification and applicable Rules of the Air) and the types of air traffic services that are provided in the airspace.

9.1.3

In the UK, controlled airspace is established primarily to protect commercial air transport passenger flights from other flights and is where ATC needs to have positive control over aircraft flying in the airspace in order to maintain safe separation between them. Uncontrolled airspace is airspace where aircraft are able to fly freely without being constrained by instructions from ATC, unless they request such a service.

9.1.4

Controlled airspace contains the network of corridors (known as Airways or the Route Network) which link the busy airspace surrounding the major airports. The controlled airspace around the major airports is designated variously as Control Zones (CTR), from the ground upwards to a specified upper limit; Control Areas (CTA), from a specified base level and Terminal Control Areas (TMA) which are larger CTAs normally encompassing a number of airports and extend from a specified base level above the ground to a specified upper limit. This is illustrated in Figure 42.

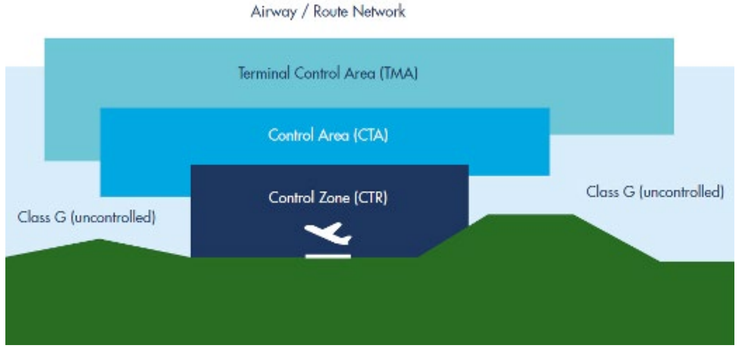


Figure 42: Illustrative example of CAS structures

9.1.5

The following section describes the proposed changes to Controlled Airspace. We recognise that not all consultees may be interested in this section and if you would like to go to the next section, please click **here**.

9.1.6

The following section is aimed towards the aviation industry and other stakeholders, and therefore sometimes uses technical language to help describe the CAS proposal. All consultees are welcome to review the information, and we would recommend referring to our **Glossary of Terms** document to understand some of the technical language used.

9.2 The controlled airspace around Edinburgh Airport today

9.2.1

The chart on the on the next page shows the existing CAS surrounding Edinburgh Airport. The source of this information is the UK AIP AD2 EGPH 4-1.

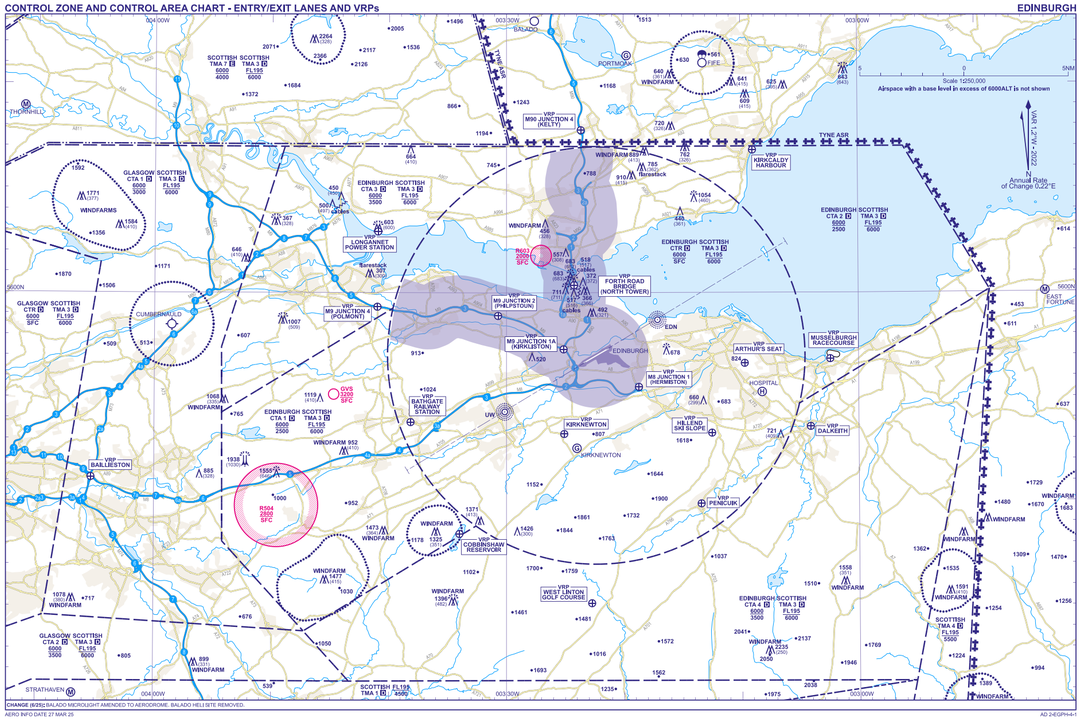


Figure 43: CAS 'without airspace change'. Chart source ©NATS **UK AIP AD 2. EGPH**

9.3 Developing the controlled airspace for our proposals

9.3.1

Edinburgh Airport's ACP requires wholesale changes to CAS volumes and classifications. In determining the CAS requirements, there are several key CAA documents that all feed in to determining an appropriate volume of airspace. Note, the extant CAS arrangements surrounding Edinburgh Airport pre-date many of these policy documents.

- Policy for the Design of Controlled Airspace Structures, 11 Aug 2022.
- Policy for the Classification of UK Airspace, 12 Oct 2023.
- CAP 778 Policy and Guidance for the Design and Operation of Departure Procedures in UK Airspace, 1 Nov 2012.
- Performance-based Navigation (PBN): Enhanced Route Spacing Guidance CAP 1385, Dec 2022.

9.3.2

In the UK, the guiding principle in establishing a volume of CAS is that sponsors must seek to ensure that the amount of controlled airspace is the minimum required to maintain a high standard of air safety and, subject to overriding national security or defence requirements, that the needs of all airspace users is reflected on an equitable basis. This has led to the adoption that the least restrictive classifications of airspace should be the norm in UK airspace design.

9.3.3

Controlled airspace in the vicinity of an aerodrome consists of a Control Zone (CTR), Control Areas (CTA) and may include Terminal Control Areas (TMA).

9.3.4

The CAS volumes and classifications proposed by our ACP are designed to meet all aspects of CAA policy. The following, non-exhaustive, list summarises some of the key requirements:

9.3.5

CAS containment that provides sufficient airspace to contain instrument approach and departure procedures (including holding and missed approach procedures) and the area in which aircraft receive vectoring instructions to join the final approach track.

9.3.6

The term 'sufficient airspace' is considered to mean that the volume of CAS should safely contain the primary areas of these procedures and permit compliance with air traffic management procedures for the tactical handling of flights to achieve a safe and efficient volume of traffic.

9.3.7

Where competing airspace requirements preclude containment by primary area, containment of the nominal track defined by the procedures may be less but should not be less than 3nm from the lateral limit of CAS.

  - SIDs and approach transitions should remain wholly within CAS where the nominal track should not be less than 2nm from the edge of CAS on straight or RF legs or 3nm on non-straight legs.
  - Vertical containment that ensures the flight profile remains at least 500ft above the lower limit of CAS.
  - Sponsors may present proposals for a CAS design that results in less lateral containment than this, subject to an acceptable safety assessment.
- The lower limit of a CTA shall not be less than 700ft AGL.
- Where practicable, the lower limit of a CTR joining a CTA should be no lower than 1500ft AGL. The use of an expanded CTR to permit higher CTA base levels is preferable.
- Those portions of airspace where an air traffic control service must be provided to VFR flights shall be Class B, C or D airspace. Class D is the minimum classification notified where a known traffic environment is necessary in both Visual Meteorological Conditions (VMC) and Instrument Meteorological Conditions (IMC). Though in CTAs where airspace classes A-D cannot be justified, Class E may be notified. The classification depends on consideration of multiple factors including the type and density of air traffic, specifically, the presence of commercial air transport flights involving the movement of passengers on a scheduled journey, the number and frequency of IFR flights and the complexity.
- Instrument Flight Procedure (IFP) design criteria, Flight Management Computer (FMC) coding and the 6,000ft Transition Altitude (TA) limit where waypoints can be placed and what/where altitude/flight level restrictions can be assigned.

9.3.8

Broadly speaking, the release of controlled airspace or airspace which is designated to a lower classification is considered a beneficial change, and an increase in CAS, or an increase in classification is considered a negative impact.

Proposed Controlled Airspace

9.3.9

Figures 43 and 44 on the next page show the overall proposed controlled airspace arrangements in and around Edinburgh Airport alongside a simplified version of the without airspace change map shown earlier.

9.3.10

Figure 45 then highlights the differences between each of them and Table 26 describes each of the changing areas.

9.3.11

The following sub sections then provide a breakdown of the sections of airspace where there are potential areas of benefit and impacts.

9.3.12

This section focuses on the areas of change. For a more general technical description of the proposed airspace and procedures contained within see Annex K of the FOA and for details of the wider CAS proposed as part of Scottish Airspace Modernisation, please see the ACOG CAF 2 Document.

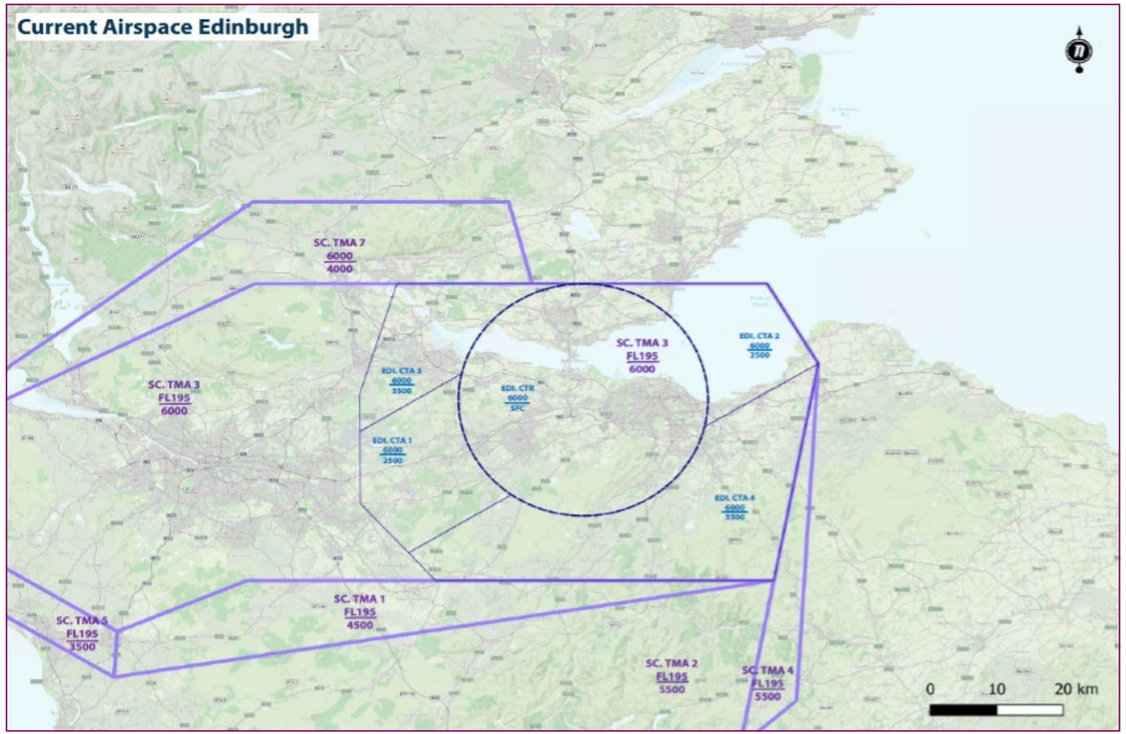


Figure 44: CAS without airspace change (simplified). (Map Source: ©OpenStreetMap; Airspace info: UK AIP July 2024)

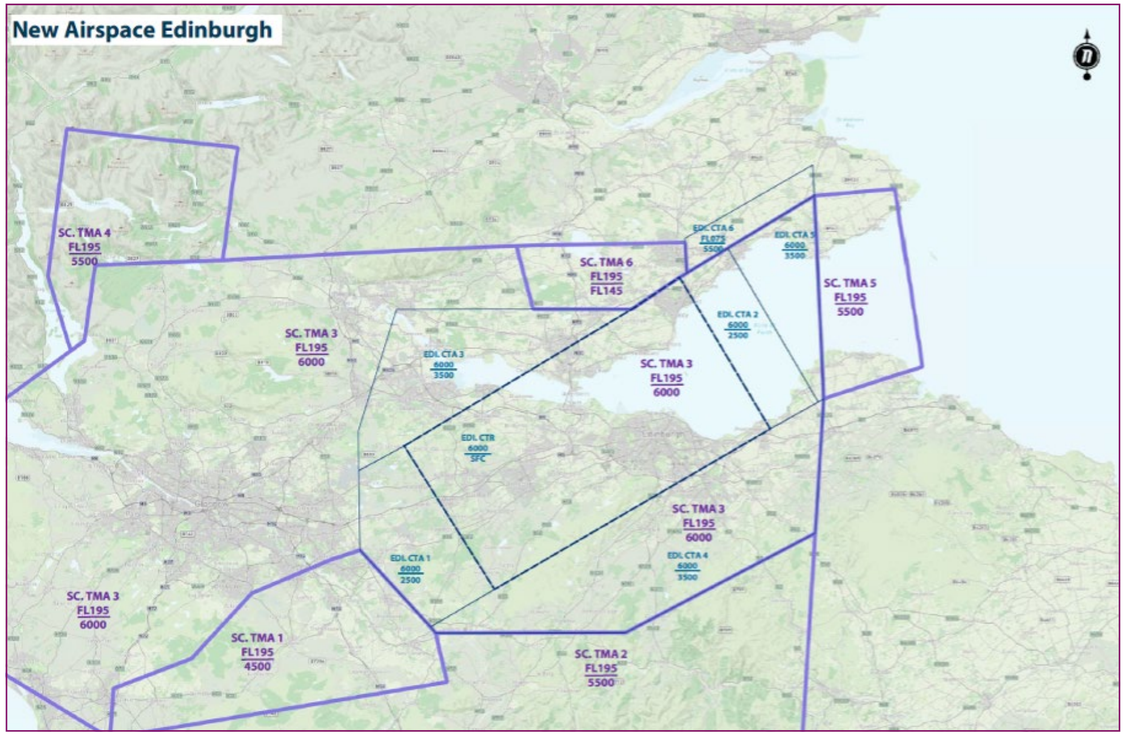
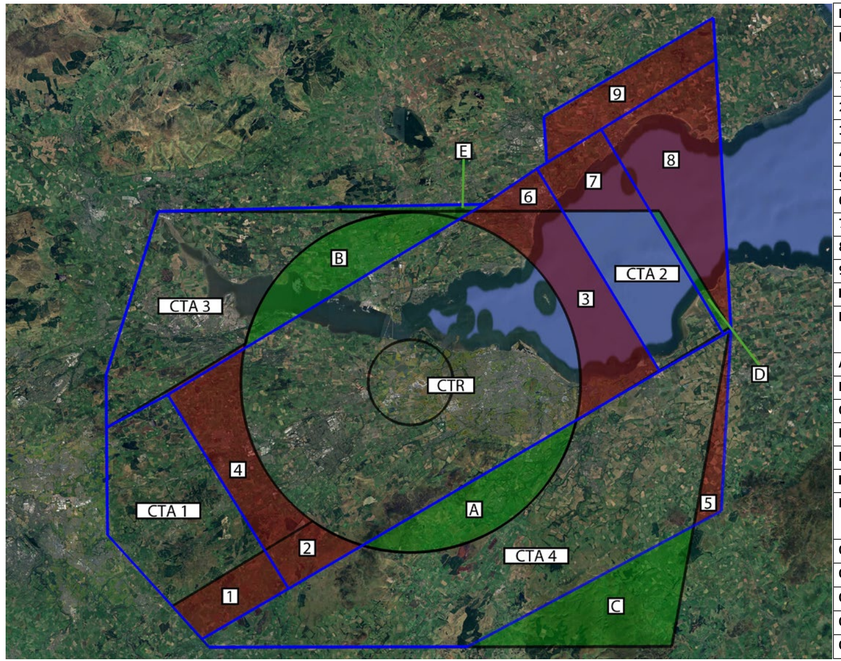


Figure 45: CAS with proposed airspace (applied to Options 1,2 and 3). (Map Source: ©OpenStreetMap; Airspace info: Nerl (kml file 15/07/2024)



Increased CAS (red polygons)		
Label	New definitions	
	Lower limit	Upper limit
1	2,500ft	6,000ft
2	SFC	6,000ft
3	SFC	6,000ft
4	SFC	6,000ft
5	3,500ft	6,000ft
6	SFC	6,000ft
7	2,500ft	6,000ft
8	3,500ft	6,000ft
9	5,500ft	FL 75
Decreased CAS (greenpolygons)		
Label	New definitions	
	Lower limit	Upper limit
A	3,500ft	6,000ft
B	3,500ft	6,000ft
C	5,500ft	FL 195
D	3,500ft	6,000ft
E	3,500ft	6,000ft
No changes (no shading)		
Label	New definitions	
	Lower limit	Upper limit
CTR	SFC	6,000ft
CTA 1	2,500ft	6,000ft
CTA 2	2,500ft	6,000ft
CTA 3	3,500ft	6,000ft
CTA 4	3,500ft	6,000ft

Figure 46: Areas of difference between the current and proposed airspace for Edinburgh operations (comparing Figure 43 with Figure 44). (Base Map Source: Google Earth; UK AIP July 2024 and Nerl (kml file 15/07/2024).

This diagram shows only changes involving the Edinburgh CTR or CTA. Changes to TMA areas are covered in the NERL ACP. Positive changes are shown in green and denoted with a number. Negative changes are shown as red and denoted by a letter.

Proposed boundaries are shown in blue, and existing boundaries that differ are shown in black.

Table 26: Areas of increased CAS in the proposed design[16]

Label (in Figure 46)	This airspace was…	This area would change to…	Rationale
1	Uncontrolled SFC-3,500ft EDI CTA 4 3,500ft-6,000ft	Uncontrolled SFC-2,500ft EDI CTA 1 2,500ft-6,000ft	Additional Class D CAS established to protect commercial traffic on approach transitions RNAV approaches and missed approach procedures for runway 06. This airspace is also established around the departure routes for runway 24. In both the case of arrivals and departures the airspace is sufficient to provide vectoring space should vectoring be required for safety or weather reasons. The airspace is also necessary to allow for the correct lateral separation standards between the systemised design and the boundary of CAS.
2	Uncontrolled SFC-3,500ft EDI CTA 4 3,500ft-6,000ft	EDI CTR SFC-6,000ft	Additional Class D CAS established to protect commercial traffic on approach transitions RNAV approaches and missed approach procedures for runway 06. The airspace is of sufficient dimension to provide vectoring space should vectoring be required for safety or weather reasons. The Intermediate Fix (IF) of runway 06 lies within this CTR at 1.1nm from the CTR boundary. The lowering of the base to SFC ensures that arrivals can safely descend below 3,000ft at the IF. With the current (circular) CTR the IF would be positioned outside the CTR where the CTA base is currently 2,500ft – this means a descent below the IF could result in loss of separation with VFR in the Class G airspace beneath.
3	Uncontrolled SFC-2,500ft EDI CTA 2 2,500ft-6,000ft	EDI CTR SFC-6,000ft	Additional Class D CAS established to protect commercial traffic on approach transitions and RNAV approaches arriving at EDI on runway 24. The airspace is of sufficient dimension to provide vectoring space should vectoring be required for safety or weather reasons. For runway 24 the IF is 1.5nm from the CTR boundary. The lowering of the base to SFC ensures that arrivals can safely descend below 3,000ft at the IF. With the current (circular) CTR the IF would be positioned outside the CTR where the CTA base is currently 25,000ft – this means a descent below the IF could result in loss of separation with VFR in the Class G airspace beneath.
4	Uncontrolled SFC-2,500ft EDI CTA 1 2,500ft-6,000ft	EDI CTR SFC-6,000ft	See area 2 for rationale.
5	Uncontrolled SFC-5,500ft SCOTTISH TMA 4 5,500ft-*6,000ft+*	Uncontrolled SFC-3,500ft EDI CTA 4 3,500ft-6,000ft	Additional CAS established to protect commercial traffic on approach transitions and RNAV approaches arriving at EDI on runway 24. The airspace allows for the correct lateral separation standards between the systemised design and the boundary of CAS.

[16] Label 1 and Label 2 on Table 26 focus on the areas of change where Edinburgh CTR or CTA is reducing or expanding. Heights and flight levels are shown only where they are relevant to the Edinburgh CTR/CTA levels. TMA and other controlled airspace above is not described. Where an area extends above the ceiling of relevance to this description it is denoted by italic and a '+' suffix.

Label (in Figure 46)	This airspace was…	This area would change to…	Rationale
6	Uncontrolled SFC-5,500ft SCOTTISH TMA 4 5,500ft-6,000ft+	EDI CTR SFC-*6,000ft*	See area 3 for rationale
7	Uncontrolled SFC-6,000ft+	EDI CTA2 2,500ft-*6,000ft*	Additional Class D CAS established to protect commercial traffic on departure from runway 06 to the northeast.
8	Uncontrolled SFC-6,000ft+	EDI CTA5 3,500ft-*6,000ft*	Additional Class D CAS established to ensure systemised separation for both new arrivals and departures over the Firth of Forth for both runways. This airspace is the minimum volume required for Edinburgh's systemised design whilst enabling safe separation between Edinburgh's traffic and the boundary of CAS.
9	Uncontrolled SFC-FL75+	EDI CTA 6 5,500ft-*FL75*	Additional Class D CAS established to ensure systemised separation for both arrivals and departures at Edinburgh especially using the northeast departure (STOPP) and arrival (STOBS) routes. This airspace is the minimum volume required for Edinburgh's systemised design whilst enabling safe separation between Edinburgh's traffic and the boundary of CAS.

Table 27: Areas of reduced CAS in the proposed design[17]

Label (in Figure 45)	This airspace was…	This area would change to…	Rationale
A	EDI CTR D SFC-6,000ft	Uncontrolled SFC-3,500ft EDI CTA 3 3,500ft-6,000ft	The CAS to 3,500ft in areas A and B will be removed as this is controlled airspace that was required for the approach to the cross runway which is no longer in use. The base of CAS will be lifted to 3,500ft in both cases, below this will be reclassified as Class G airspace.
B	EDI CTR D SFC-6,000ft	Uncontrolled SFC-3,500ft EDI CTA 4 3500ft-6,000ft	
C	Uncontrolled SFC-3,500ft EDI CTA 4 3,500ft-6,000ft	Uncontrolled SFC-5,500ft SCOTTISH TMA 2 5,500ft-*6,000ft+*	The systemised design for arrivals means that the CAS in area 'C' can have its base altitude increased to 5,500ft, and the airspace below will be reclassified as Class G.
D	Uncontrolled SFC-2,500ft EDI CTA 2 2,500ft-6,000ft	Uncontrolled SFC-3,500ft EDI CTA 5 3,500ft-6,000ft	The systemised design for arrivals means that the CAS in area 'D' can have its base altitude increased to 3,500ft, and the airspace below will be reclassified as Class G.
E	Uncontrolled SFC-2,500ft EDI CTA 2 2,500ft-6,000ft	Uncontrolled SFC-3,500ft EDI CTA 3 3,500ft-6,000ft	The systemised design for arrivals and departures means that the CAS in area 'H' can have its base altitude increased to 3,500ft, and the airspace below will be reclassified as Class G.

[17] See footnote 14

Local Summary

9.3.13

The EDI CTR has been changed in size to what is shown in Figures 43 and 44. The area previously required for the now defunct second runway has been removed, and replaced with a rectangular CTR. This is aligned to the requirements of a single runway airport.

9.3.14

The CAS to the northwest has remained as it is today in order to allow flexibility for departures travelling at different speeds and also some space for vectoring should it be required for safety or weather reasons.

9.3.15

The western boundary of CAS ends at the buffer zone as it does in today's airspace.

9.3.16

The southeastern corner is reduced in volume as the systemised design does not require this airspace.

9.3.17

There is more CAS to the northeast to provide protection for proposed arrival and departures routes over the Firth of Forth.

9.3.18

All the new CAS required for the PBN design is classified as class D in order to protect commercial traffic both arriving and departing from Edinburgh Airport.

9.3.19

We have sought to minimise the CAS required whilst not overcomplicating the airspace structure.

Overall Volume of Controlled Airspace

9.3.20

The overall volume of CAS is assessed on a system wide perspective, across the ScTMA Cluster.

9.3.21

Table 28 shows the total change in volume of airspace types and classifications for the combined Edinburgh Airport, Glasgow Airport and NERL ACPs. Overall, the proposed, combined design will require an additional 658.8 nm3 of CAS. However, in isolation, 1193.0 nm3 of new CAS is required by NERL above 7,000ft to provide more efficient en-route connectivity which demonstrates that a substantial airspace release has been achieved in the remainder of the design. In addition to the CAS release, the classification of a substantial volume of CAS is proposed to be lowered increasing accessibility to all airspace users.

Table 28: Volume of each type and classification of CAS in the baseline and proposed, combined Edinburgh, Glasgow and NERL ACPs

Airspace Type	Baseline Volume (nm^3)	Option Volume (nm^3)	Volume Change (nm^3)
CTR	773.2	737.6	-35.5
CTA	26,129.4	26,778.7	649.3
TMA	9,467.3	9,512.3	45.1
Total	36,369.8	37,028.7	658.8
Airspace Classification	**Baseline Volume (nm^3)**	**Option Volume (nm^3)**	**Volume Change (nm^3)**
Class A	6,714	1,417.8	-5296.2
Class C		37,13.2	3,713.2
Class D	17,691.7	19,307.5	1,615.8
Class E	11,964.2	12,590.1	626
Total	36,369.8	37,028.7	658.8

9.3.22

For details of the wider CAS proposed as part of Scottish Airspace Modernisation please see the **ACOG system wide description document**.

9.3.23

Table 29 below presents the same data as in Table 28 but for CAS with a base of 7,000ft or lower. Overall, the proposed, combined design will result in a reduction of 616.1 nm^3 of CAS where bases are below 7,000ft.

Table 29: Volume of each type and classification of CAS in the baseline and proposed, combined Edinburgh, Glasgow and NERL ACPs 7,000ft and below only

Airspace Type	Baseline Volume (nm^3)	Option Volume (nm^3)	Volume Change (nm^3)
CTR	773.2	737.6	-35.5
CTA	7,667.8	7,100.1	-567.7
TMA	9,467.3	9,468.8	1.5
Total	17,908.2	17,306.5	-601.7
Airspace Classification	**Baseline Volume (nm^3)**	**Option Volume (nm^3)**	**Volume Change (nm^3)**
Class A	404.4	95.2	-309.2
Class C	0.0	0.0	0.0
Class D	13,389.0	13,566.8	177.8
Class E	4,114.9	3,644.6	-470.3
Total	17,908.2	17,306.5	-601.7

9.3.24

In terms of the overall value to General Aviation, previous engagement with GA stakeholders as part of Stage 2 highlighted that there was a desire from those users that Edinburgh Airport release as much CAS as possible and, broadly speaking, less CAS results in improved access for General Aviation. As outlined in the section above, whilst overall there is a CAS release benefit below 7,000ft, there are some areas which will be negatively impacted and other areas which will see improvements as shown in Figure 45.

9.3.25

We are aware of the value of CAS to Scottish Gliding Centre at Portmoak and general aviation opening from Fife Airfield at Glenrothes. This has been considered as part of the CAS development but some lowering of CAS in their vicinity has been required to provide CAS protection for new PBN route structure.

9.3.26

We have included detailed information on proposed CAS dimensions, and we look forward to feedback from all of GA on the proposals, specific to their operations throughout the consultation process.

New and rapidly developing airspace users

9.3.27

The Government's AMS requires us to also consider the benefits and impacts to new or rapidly developing users such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems.

9.3.28

We are not aware of any permanent proposals for airspace change in the vicinity of Edinburgh's CAS boundaries concerning remotely piloted aircraft systems, advanced air mobility, spacecraft or high-altitude platform systems. Neither have we had any requests from new airspace users to release airspace in specific geographic regions to support their ambitions.

9.3.29

For the purposes of Scottish Airspace Modernisation, we have therefore assumed that the release of CAS in terms of volume or lower classification could benefit new and rapidly developing airspace users. We are interested to hear from new and developing airspace users as to whether our proposals for changes to controlled airspace can benefit them or if there are any specific requests to support firm aspirations.

Responding to our consultation and what happens next

10

10.1.1

Thank you for your consideration of our proposals. If you have any questions, please contact us via email at **whats-your-view@edinburghairport.com** or by phone at 07825 451158.

10.1.2

To respond to the consultation, visit our Citizen Space website at **https://consultations.airspacechange.co.uk/edinburgh-airport/airspace-consultation/**.

10.1.3

If you need hard copy materials you can contact the team using the details above and we will send you an information pack and feedback form by post, with a postage-paid envelope, so that you can return your completed form to us. A copy of the feedback form is also available at Appendix A of this document.

10.1.4

All responses to the consultation, including those received in hard copy form will be published on the CAA's Citizen Space Portal. If you wish for your response to be published anonymously there is an option to redact your personal details, and these will only be seen by Edinburgh Airport and the CAA. If your feedback is relevant to one of the other Scottish Airspace Modernisation sponsors (Glasgow Airport and/or NERL) then your feedback and personal details will be shared with the applicable sponsor(s).

10.1.5

The consultation closes on Sunday 25th January at 23:59hrs. Edinburgh Airport will then collate, review and categorise the consultation responses.

Responses will be categorised into those which may lead to a change in the design and those that would not. We will then produce a Consultation Response Document (CRD) which summarises the consultation and our response to the feedback raised. The CAA will review our CRD, once approved it will be published on the CAA Portal and our ACP will move into Stage 4.

10.2 The next stages of the CAP1616 process

10.2.1

At Stage 4 we will review how the option could be amended in light of consultation responses and carry out the 3rd appraisal, the Final Options Appraisal. When completing this Final Options Appraisal we shall use the most up to date data available to us.

10.2.2

We will then submit our Airspace Change Proposal to the CAA and upload the final submission to the CAA Portal.

10.2.3

As part of Stage 5, the CAA will then make a decision on the ACP. Subject to CAA decision, the ACP would then move onto Stage 6 – Implementation.

10.2.4

A year after implementation, a Stage 7 Post Implementation Review (PIR) (as per the Airspace Change Process) is undertaken to ensure the ACP is meeting its stated objectives.

10.3 Reversion Statement

10.3.1

CAP1616 requires sponsors to be clear with stakeholders, the extent to which the proposed airspace change, once implemented, is reversible if it does not meet the objectives it was designed to achieve. This would most likely be identified at the post-implementation review which is required as part of Stage 7 of the airspace change process.

10.3.2

In the unlikely event the proposal requires reversal once approved and implemented, permanent reversion to the pre-implementation state would be complex and very difficult due to the significant changes proposed to the airspace structure, the scale of change and the interdependencies between the Glasgow Airport, NERL and Edinburgh Airport airspace changes. Should there be unexpected issues caused by this proposal, then short notice changes could be made via NOTAM or by adding Route Availability Document (RAD) restrictions.

10.3.3

However, if one airspace change is required to revert then it is highly likely that the other two airspace changes would also be required to revert. For a permanent reversion, the changes would have to be reversed by incorporating this into an appropriate future AIRAC date. Large scale airspace changes are implemented a maximum of four times a year due to the lengthy lead times to allow for testing and preparation activities to take place. The feasibility and time for determining reversion would also be influenced by the time needed to update multiple safety critical systems simultaneously alongside the appropriate training of Air Traffic Controllers.

APPENDIX A: Consultation Feedback Form

11

How to have your say

Edinburgh Airport is consulting on an Airspace Change Proposal to modernise its arrival and departure routes and the surrounding airspace. The consultation runs for 14 weeks from 20th October 2025 to 25th January 2026.

To respond to this consultation, please use our Citizen Space Consultation website:
https://consultations.airspacechange.co.uk/edinburgh-airport/airspace-consultation/

If you are unable to respond online, please use the form below to answer the questions and return it to:

Edinburgh Airport Consultation, Edinburgh Airport, Almond House, Almond Road, EH12 9DN

Written responses must be received by 17:00 on Wednesday 28th January 2026.

We recommend reviewing the Consultation Summary Document and materials before completing this form. If you require hard copies, contact:

email: **whats-your-view@edinburghairport.com**
Phone: 07825 451158

You may also write to the address above.

All responses will be transcribed and uploaded onto the Citizen Space website.

Q1. **Select below if you would prefer your response to be published anonymously:**

☐ YES – publish my details with my response
☐ NO – publish my response anonymously

About You

Q2. Name: _____

Q3. Email Address: _____

Q4. Address: _____

_____

Q5. Postcode: _____

Q6. Are you responding as an individual or on behalf of an organisation?

☐ Individual
☐ Organisation

Q7. Name of organisation (if relevant):

_____

Q8. Please categorise your interest in the Edinburgh Airspace Proposal (tick all that apply):

☐ Airport/Airfield
☐ Airspace user – airline
☐ Airspace user – commercial/business aviation
☐ Airspace user – GA/private pilot
☐ Airspace user – other (e.g. ATC)
☐ Airspace user – new/developing user (e.g. drone operator/remote pilot/ANSP)
☐ NSA/AONB representative
☐ Community Council/Ward Councillor
☐ Environmental Group
☐ Local Authority/Council
☐ Local business
☐ Local resident
☐ Member of NATMAC
☐ MP/MSP
☐ Other (please specify):

Our proposals for Consultation

This consultation is split into two sections:

1. Our proposal to modernise our departure and arrival routes at Edinburgh Airport.
2. Our proposal to modernise the airspace surrounding Edinburgh Airport.

We recognise that not all stakeholders are interested in both parts of this consultation, therefore, if you are only interested in our proposal to modernise the departure and arrival routes at Edinburgh Airport please complete questions 9 to 22.

If only interested in the second part, go to Question 23.

We recommend you review the diagrams in the Consultation Summary Document or Main Consultation Document prior to responding to the questions here.

General Question

9. How do you feel about the overall principle of modernising Edinburgh Airport's airspace?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I do not support
- ☐ I oppose
- ☐ Unsure

If you are unsure, please note the explanatory material outlining our proposals can be found on the Edinburgh Airport Consultation Virtual room **here**.

Runway 24 Departures Questions

10. How do you feel about the proposed departures from runway 24?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I oppose
- ☐ I strongly oppose
- ☐ Not applicable

11. Please select the main reason(s) why you have chosen your response to the question about proposed departures from runway 24: (tick all that apply)

- ☐ Noise
- ☐ Greenhouse gas emissions
- ☐ Tranquillity
- ☐ Biodiversity
- ☐ Capacity
- ☐ Safety
- ☐ Airspace access
- ☐ Airline and operational procedures
- ☐ Other (please specify): _____

12. Please provide any further explanation or reasons to help us understand your response:

_____

_____

Runway 06 Departures Questions

13. How do you feel about the proposed departures from runway 06?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I oppose
- ☐ I strongly oppose
- ☐ Not applicable

14. Please select the main reason(s) why you have chosen your response to proposed departures from runway 06: (tick all that apply)

- ☐ Noise
- ☐ Greenhouse gas emissions
- ☐ Tranquillity
- ☐ Biodiversity
- ☐ Capacity
- ☐ Safety
- ☐ Airspace access
- ☐ Airline and operational procedures
- ☐ Other (please specify): _____

15. Please provide any further explanation or reasons to help us understand your response:

_____

_____

Runway 24 Arrivals Questions

16. How do you feel about the proposed arrivals to runway 24?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I oppose
- ☐ I strongly oppose
- ☐ Not applicable

17. Please select the main reason(s) why you have chosen your response to the question about proposed arrivals to runway 24: (tick all that apply)

- ☐ Noise
- ☐ Greenhouse gas emissions
- ☐ Tranquillity
- ☐ Biodiversity
- ☐ Capacity
- ☐ Safety
- ☐ Airspace access
- ☐ Airline and operational procedures
- ☐ Other (please specify): _____

18. Please provide any further explanation or reasons to help us understand your response:

_____

_____

Runway 06 Arrivals Questions

19. How do you feel about the proposed arrivals to runway 06?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I oppose
- ☐ I strongly oppose
- ☐ Not applicable

20. Please select the main reason(s) why you have chosen your response to the question about arrivals to runway 06: (tick all that apply)

- ☐ Noise
- ☐ Greenhouse gas emissions
- ☐ Tranquillity
- ☐ Biodiversity
- ☐ Capacity
- ☐ Safety
- ☐ Airspace access
- ☐ Airline and operational procedures
- ☐ Other (please specify): _____

21. Please provide any further explanation or reasons to help us understand your response:

_____

_____

22. Please tell us about other options you would like us to consider.

Other options.

_____

_____

_____

Proposal to Modernise the Surrounding Airspace

In order to undertake Airspace Change, Edinburgh Airport must change its controlled airspace.

This will allow new flight paths, particularly those over the Firth of Forth. Edinburgh Airport is consulting on a change to its controlled airspace. This change means removing a circular zone that was needed for the now disused cross runway. It also means requesting new airspace over the Firth of Forth. This will allow arrivals and departures via the Firth of Forth and controlled airspace to connect to new routes that are part of the wider Airspace Change.

We recommend that you review the diagrams in Section 9 of the Main Consultation Document prior to responding to the questions.

23. How do you feel about the proposed CAS structure in the vicinity of Edinburgh Airport?

- ☐ I strongly support
- ☐ I support
- ☐ Neither support nor oppose
- ☐ I oppose
- ☐ I strongly oppose

24. Do you have any comments on the change to controlled airspace?

_____

_____

25. Which areas influenced your response? (tick all that apply)

- ☐ Label 1
- ☐ Label 2
- ☐ Label 3
- ☐ Label 4
- ☐ Label 5
- ☐ Label 6
- ☐ Label 7
- ☐ Label 8
- ☐ Label 9

- ☐ Label A
- ☐ Label B
- ☐ Label C
- ☐ Label D
- ☐ Label E

26. Please provide any details to clarify your response.

We are particularly interested in hearing from any new or developing airspace users, including drone or remote pilots on our proposals for controlled airspace:

_____

_____

_____

Final thoughts and Scottish Airspace Modernisation

This is your opportunity to provide further feedback, and to comment on the wider Scottish Airspace modernisation programme.

The Edinburgh Airport Airspace Change Programme (ACP) forms part of the wider project to modernise Scottish Airspace. As part of the development of the ACP we have worked with NERL who are responsible for managing air space and Glasgow Airport to design the system-wide airspace. Further information can be found **here**.

27. Would you like to provide any further feedback about the Edinburgh Airport proposals? Please let us know any other factors we should take into account:

---

28. If you have any comments on the system-wide proposals please make them here.

Scottish ACP further feedback.

Equality Monitoring

29. What is your sex?

- ☐ Male
- ☐ Female
- ☐ Prefer not to say
- ☐ Other

30. Is the gender you identify with the same as your sex registered at birth?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

31. What is your ethnicity?

- ☐ Asian or Asian British
- ☐ Black
- ☐ African
- ☐ Caribbean or Black British
- ☐ Mixed or Multiple Ethnic Groups
- ☐ White
- ☐ Other Ethnic Group
- ☐ Prefer not to say

32. Do you consider yourself to have a disability or health condition?

- ☐ Yes
- ☐ No
- ☐ Prefer not to say

33. What is your sexual orientation?

- ☐ Heterosexual
- ☐ Gay
- ☐ Lesbian
- ☐ Bisexual
- ☐ Asexual
- ☐ Pansexual
- ☐ Undecided
- ☐ Prefer not to say
- ☐ Other

34. What is your religion or belief?

- ☐ None
- ☐ Buddhist
- ☐ Christian
- ☐ Hindu
- ☐ Jewish
- ☐ Muslim
- ☐ Sikh
- ☐ Prefer not to say
- ☐ Other

35. What is your age group?

- ☐ Under 18
- ☐ 18-24
- ☐ 25-34
- ☐ 35-44
- ☐ 45-54
- ☐ 55-64
- ☐ 65-74
- ☐ 75 and over
- ☐ Prefer not to say

APPENDIX B: Alternative route designs that were considered

12

12.1.1

Section 4 of this document describes the process we went through to design detailed routes from the concepts and swathes presented in our Stage 2 submission. This Appendix provides additional detail for the different designs that were developed and assessed before we chose the preferred set of routes that we are now consulting on.

12.1.2

For most of our routes there was an obvious choice for the route design, for example where there was a clear alignment that best avoided populations at low levels, or where the route could be put over the sea – this is described in detail in Section 2 of the FOA.

12.1.3

However, for three of our most heavily used departure routes the choice was less clear, so we developed some alternative versions to test in our FOA. The three departure routes for which alternatives were developed were:

- runway 24 STOPP, GULLY and BERRY departures
- runway 24 STRAT departures
- runway 06 STEPS departures

12.1.4

The remainder of this appendix presents the alternatives developed for each of these routes, highlighting the version that has been brought through into the proposal that we are now consulting on.

12.1.5

The alternative designs presented here would each have different impacts on noise and overflight. Section 5 of the FOA provides a detailed, location-by-location comparison between the noise and overflight impacts of the FOA options.

Alternative routings considered for runway 24 STOPP, GULLY and BERRY departures

12.1.6

Four versions of the initial right hand turn for north and east bound traffic off runway 24 were developed. These are referred to as 'orange', 'blue', 'red' or 'green' as per the picture right.

12.1.7

This routing would be used by c.13% of our flights in 2036.

12.1.8

The green version has been incorporated into our Option 1, which is our preferred design, the one we have brought forward to this consultation. The orange and red versions are contained in our FOA Options 2 and 3 respectively and were discontinued on the basis of the FOA results (see Appendix C for details).

12.1.9

Primary noise metrics are influenced by tracks at lower levels. The blue version of this route is similar to the orange one at these lower levels and remains very close to orange until above 7,000ft. It was therefore deemed that taking further options into the FOA just for the blue route would be disproportional and not add any value to the design process. The blue routing below does not feature in any of our detailed analysis and does not form any further part of this consultation.

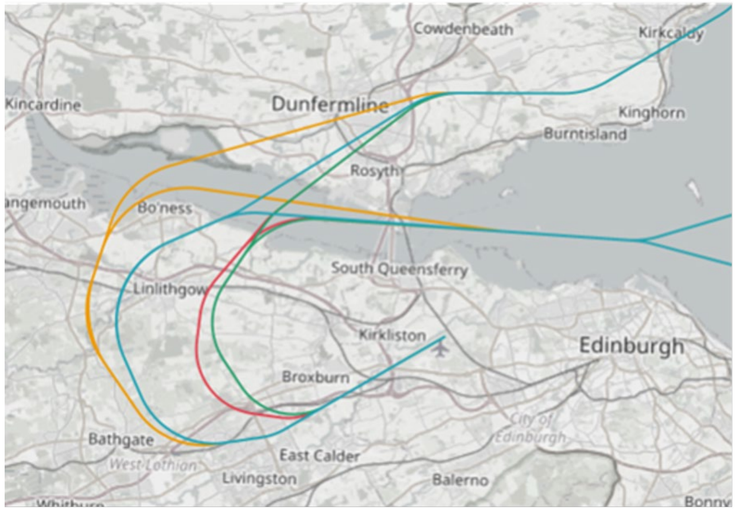


Figure B1: Runway 24 STOPP, GULLY and BERRY departure alternatives (Map: ©OpenStreetMap)

Alternative routings considered for runway 24 STRAT departures

12.1.10

Two versions of the initial left hand turn for runway 24 southbound traffic were developed. These are shown in the picture right. These are referred to as 'orange' or 'red'.

12.1.11

This route would be used by c.15% of our flights in 2036.

12.1.12

The orange version has been incorporated into our Option 1, which is the preferred design we have brought forward into this consultation. The orange route is also the design in the FOA Option 2, while red is in the FOA Option 3. Options 2 and 3 were discounted after the FOA (see Appendix C for details).

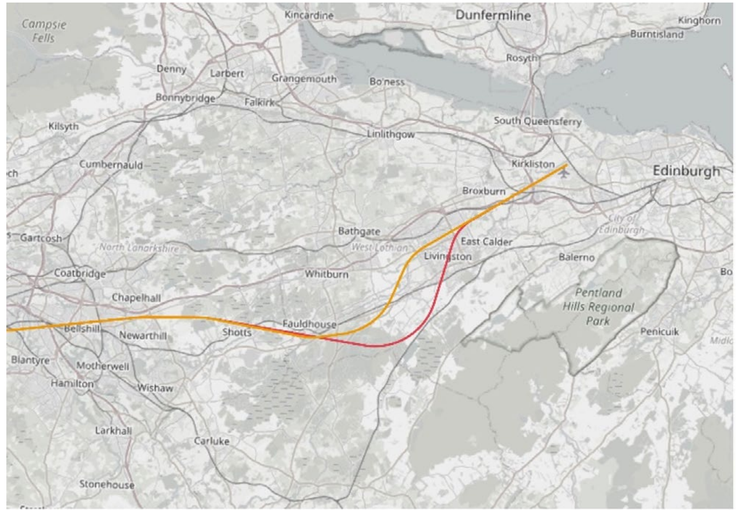


Figure B2: Runway 24 STRAT departure alternatives (Map: ©OpenStreetMap)

Alternative routings for runway 06 STEPS departures

12.1.13

Two versions of the initial left hand turn for westbound traffic (referred to as 'orange' or 'red') were developed.

12.1.14

This route would be used by c.2% of our flights in 2036.

12.1.15

The orange route shown below has been incorporated into Option 1, which is our preferred design we have brought forward into this consultation. The orange route also forms part of our Option 2 in the FOA, whilst the red route forms part of the FOA Option 3. Whilst Options 2 and 3 have been analysed in the FOA, we have discounted them after thorough analysis of the benefits and impact of the three assessed options (see Appendix C for details).

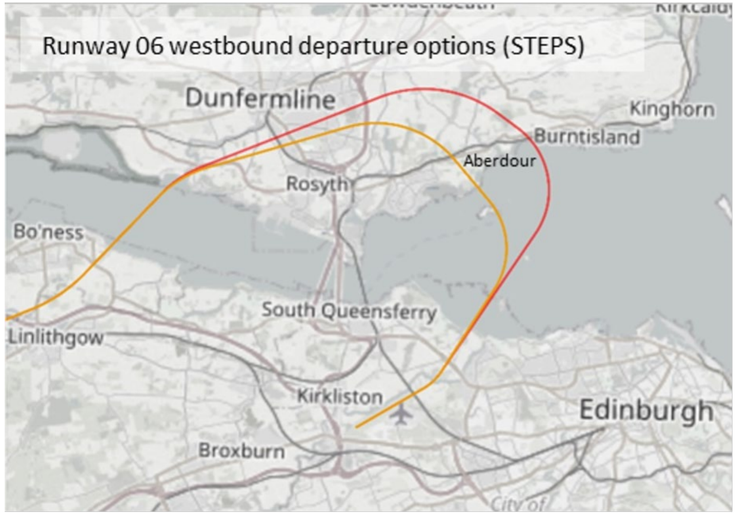


Figure B3: Runway 06 STEPS departure alternatives (Map: ©OpenStreetMap)

APPENDIX C: Selecting our preferred option for consultation

13

13.1.1

The following appendix provides a summary of how we used the Full Options Appraisal to identify the proposed option that we are consulting on. For full details of this work please see the Full Options Appraisal, section 5.

13.1.2

We took three options into the Full Options Appraisal – the 'FOA options'. Each comprised a complete set of arrival and departures routes to both our runways. These were based on the outcomes of the Stage 2 work and the four steps of the 'Detailed design development of the options' as described in Section 4 of this consultation document and described in detail in Section 2 of the FOA.

13.1.3

These FOA options differed from one another in terms of the alternative routes for three of our most used departure routes.

All the routes considered in the three FOA options are shown in Figure C1 to the right.

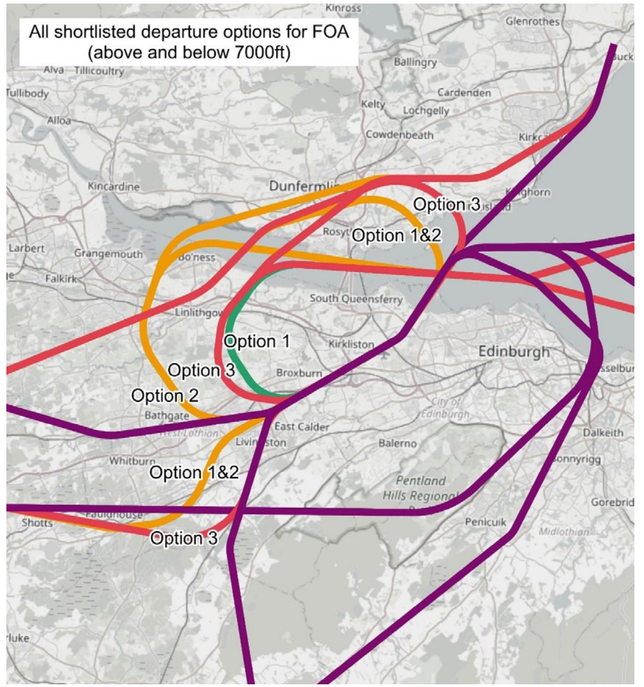


Figure C1: FOA Options 1, 2 and 3 side by side with alternative designs highlighted (Map: ©OpenStreetMap)

13.1.4

The table to the right is a different way of showing how the options differ from one another with each FOA option having a different combination of coloured routes (the colouring relates to Figure C1 on the previous page). For more detail on the options see **Section 4 of the FOA**.

Table C1: Table showing how the options selected for FOA have a different combination of routes

	Runway 24 STOPP/GULLY/ BERRY	Runway 24 STRAT	Runway 06 STEPS	All other routes
FOA Option 1	**Green (turns east of Linlithgow)**	**Orange (turns after Livingston)**	**Orange (turns west of Aberdour)**	**No difference**
FOA Option 2	**Orange (turns west of Linlithgow)**	**Orange (turns after Livingston)**	**Orange (turns west of Aberdour)**	**No difference**
FOA Option 3	**Red (turns east of Linlithgow)**	**Red (turns overhead Livingston)**	**Red (turns east of Aberdour)**	**No difference**

How did we assess the options?

13.1.5

At Stage 3 CAP1616 requires sponsors to carry out a full assessment of the benefits and impacts of each option, tested against the 'without airspace change' scenario. The purpose of this FOA is to highlight the change to sponsors, stakeholders, and the CAA, the relative differences between the impacts, both positive and negative, of each option.

13.1.6

The assessment criteria shown in Table C2 to the right were categorised based on the requirements outlined in CAP1616f (page 36 – 40). An additional category called 'Airspace Modernisation Strategy' has been added to satisfy the indicators that the CAA will use to assess whether this Stage 3 submission accords with the AMS including iteration 3 of the Masterplan.

13.1.7

More information about how we have assessed the options against each of these categories can be found in section 8 of this document, or within section 3.3 of the FOA.

Table C2: FOA assessment categories (as per CAP1616f page 36-40)

Group	Impact	Type of assessment
All	Safety	Qualitative conclusions determined following detailed safety assessments
Communities	Noise	Quantitative (data based) assessment based on the primary and secondary metrics required by CAP1616
	Air Quality	Qualitative
Wider Society	Greenhouse gas emissions	Quantitative (data based) assessment
	Tranquillity	Quantitative (data based) assessment
	Biodiversity	Quantitative (data based) assessment
	Capacity / Resilience	Qualitative assessment
General Aviation	Access	Quantitative (data based) assessment which looked at the volumes of Controlled Airspace (CAS) required
General Aviation / Commercial airlines	Economic impact from increased effective capacity	Qualitative assessment
	Fuel burn	Quantitative (data based) assessment
Commercial airlines	Training costs	Assessment of potential costs incurred by airlines, the ANSP, or Edinburgh Airport
	Other costs	
Airport / Air navigation service provider (ANSP)	Infrastructure costs	
	Operational costs	
	Deployment costs	
	Other costs	
All	Airspace Modernisation Strategy (AMS) (CAP1711)	A qualitative assessment against the objectives of the AMS

13.1.8

At the end of the FOA, all categories that could be monetised were combined to produce a Cost Benefit Analysis (CBA) which looks at the monetised costs associated with the ACP and produces a Net Present Value (NPV) for each option.

How did we draw conclusions on which option to take forward to this consultation?

13.1.9

When determining which option(s) to take to consultation, we considered the outcomes of the CBA and the detailed assessments undertaken against each FOA category to understand the options positive benefits and negative impacts comparing to the 'without airspace change' baseline and comparing between the options.

13.1.10

When considering the environmental assessments within the FOA, we have looked to the Air Navigation Guidance (ANG) 2017 **(https://www.gov.uk/government/publications/uk-air-navigation-guidance-2017)**. The ANG is guidance to the CAA on its environmental objectives when carrying out its air navigation functions, and to the CAA and wider industry on airspace and noise management. The ANG outlines the Government's altitude-based priorities for consideration of the environmental impacts arising from airspace change proposals.

13.1.11

Table C3 provides a summary of the conclusions of our comparison against each of the ANG altitude-based priorities and Table C4 does the same for the AMS Objectives.

13.1.12

We believe that when taken as a whole this indicates Option 1 to be the best overall performing across these ANG and AMS criteria.

13.1.13

No other CAP1616 FOA category listed above provided differentiating evidence of significance between the options, with the exception of fuel burn costs, for which the conclusions mirror those for CO_2e presented in Table C3.

13.1.14

All the options were developed to be equally suitable with regard to neighbouring airports and the wider network, and so network integration did not influence our choice of preferred design.

13.1.15

The overall benefits of Option 1 compared to the baseline and the other options is demonstrated in the cost benefit comparison, which shows Option 1 produced the best overall NPV when compared to the 'without airspace change' baseline. This was £74m over 10 years compared to £71m for Option 3 and £38m for Option 2. The NPV calculations therefore also supports the selection of Option 1 as the preferred option for consultation.

13.1.16

We also undertook and extra qualitative geographical comparison of options. This showed that there are large areas where the effects of each option would be the same or similar. However, there are some differences where the routes in the options deviate from one another.

13.1.17

This comparison did not identify any extenuating local circumstances that would justify deviating from the option shown to best meet Government guidance. However, geographical comparison does show how the choice of options would affect some communities differently.

13.1.18

On the basis of the FOA we are focusing our consultation on Option 1. While we discounted Options 2 and 3, all the information is available in the FOA for stakeholders wishing to see the detail of the other options considered.

13.1.19

We believe that the rationale for the choice of the preferred option presented here is sound, and that our choice represents the best overall solution in terms of the Government's objectives and presents a tangible net benefit to our all our stakeholders including local communities as a whole.

Table C3: Altitude based priorities and a summary of how they have been assessed

Altitude Based Priority (ANG 2017)	How it's assessed within the FOA	Summary of Comparison
a) In the airspace from the ground to below 4,000ft, the Government's environmental priority is to limit and, where possible, reduce the total adverse noise effects on people	Differences in total adverse effects compared to the 'without airspace change' scenario are assessed and monetised using the Government TAG methodology/worksheets. We have used the TAG outputs to compare the performance of options with respect to the total adverse effects.	In terms of the monetised reduction in adverse effects between Option 1 and Option 3 are similar, both providing a significant benefit. When compared to today Option 2 would increase total adverse effects, and as this objective to minimise adverse effects from noise has primacy, this alone was a reason to discard Option 2.
b) Where options for route design from the ground to below 4,000ft are similar in terms of the number of people affected by total adverse noise effects, preference should be given to that option which is most consistent with existing published airspace arrangements.	Where the adverse impacts are similar, we have considered which options are most consistent with published arrangements. We have assumed that the basis of this objective for consistency is not because keeping routes where they are is good per se, but because keeping routes where they are is good because it is less likely to move adverse effects to new areas that have not had them before. In our application of this objective we have therefore looked for consistency in terms of where noise affects occur, i.e. an option is considered more consistent with the existing published arrangements if the adverse noise effects have remained in similar areas as seen with the published arrangements.	Neither Option 1 nor Option 3 is, of itself, consistent with existing arrangements because both involve fundamental redesign to PBN. However, the distribution of adverse impact from Option 1 is more consistent with that of the existing published airspace arrangements than those of Option 3. Option 2 was not similar in terms of adverse noise effects and so was not assessed for consistency with published arrangements.
c) In the airspace at or above 4,000ft to below 7,000ft, the environmental priority should continue to be minimising the impact of aviation noise in a manner consistent with the Government's overall policy on aviation noise, unless the CAA is satisfied that the evidence presented by the sponsor demonstrates this would disproportionately increase CO_2 emissions.	The noise contours that determine total adverse noise effects do not cover all the areas affected by flight paths above 4,000ft and below 7,000ft. For insight into potential noise between 4,000ft and 7,000ft we have considered how the secondary metrics – N65, N60 and overflight – change when compared to the 'without airspace change' baseline, and how the relative performance of the options compare to one another. See below for consideration of CO_2e emissions.	This comparison shows Option 1 has better performance than Option 3 across more of the categories for the Nx metrics, whereas there is more of an even spread across the overflight categories in Option 1 and Option 3. Option 2 results were not directly compared to either because it has already been discounted on the basis of the primary noise metrics. None of the options increased CO_2e.

d) In the airspace at or above 7,000ft, the CAA should prioritise the reduction of aircraft CO_2 emissions and the minimising of noise is no longer the priority;	It is not possible to make a clear distinction between CO_2e generated as a consequence of the design of the network above 7,000ft, and the CO_2e generated as a consequence of the design of the same routes below 7,000ft[18]. Therefore, while our design of options focused on the design of routes below 7,000ft, it still contributes to overall reductions in CO_2e for our flights at levels above 7,000ft. We therefore use the overall CO_2e reduction achieved with each of our design options as a comparator of their performance against this ANG performance category.	Option 1 includes the shortest version of all the routes and so contributes to the biggest reduction in CO_2e. Option 3 is a relatively close second, and while Option 2 still provides a sizable benefit, it is significantly the worse than both the other options.

Table C4: Assessment against AMS objectives

AMS Objective	Summary of Comparison
Safety: Maintaining and, where possible, improving the UK's high levels of aviation safety has priority over all other 'ends' to be achieved by airspace modernisation.	All the options were based on PBN operating principles that would reduce complexity, which in turn would be expected to enhance future safety compared to the 'without airspace change' baseline.
Integration of diverse users: airspace modernisation should wherever possible satisfy the requirements of operators and owners of all classes of aircraft, including the accommodation of existing users (such as commercial, general aviation, military, taking into account interests of national security) and new or rapidly developing users (such as remotely piloted aircraft systems, advanced air mobility, spacecraft, high-altitude platform systems).	All the options were based around the same design for controlled airspace. In all cases the needs of other airspace users have been balanced with the need to ensure that commercial traffic on PBN routes has the required protection of controlled airspace, and sufficient airspace for air traffic control to ensure safety in unusual circumstances or bad weather. This has meant more airspace in some areas and less in others.
Simplification, reducing complexity and improving efficiency: Consistent with the safe operation of aircraft, airspace modernisation should wherever possible secure the most efficient use of airspace and the expeditious flow of traffic, accommodating new demand and improving system resilience to the benefit of airspace users, thus improving choice and value for money for consumers.	All the options were based on PBN operating principles that will reduce complexity. Although no specific capacity gains would be achieved by any of the designs, they all incorporated new routes that would help flights avoid congested parts of UK airspace and so avoid delay. The options all offered operational efficiency benefits in terms of reduced fuel burn with Option 1 performing best.
Environmental sustainability: Environmental sustainability will be an overarching principle applied through all airspace modernisation activities. Modernisation should deliver the Government's key environmental objectives with respect to air navigation as set out in the Government's ANG and, in doing so, will take account of the interests of all stakeholders affected by the use of airspace.	As discussed in Table C3, Option 1 comes out on top with respect to ANG criteria.

[18] For more details on why CO_2e assessment methodologies can't be split above and below 7,000ft see the CO_2e section of the CAF2 methodology in Appendix 2 of the **UK Airspace Change Masterplan Iteration 3 – ScTMA**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