Aberdeen International Airport

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Airspace Change Proposal

ACP-2019-082

Final Airspace Change Proposal Submission

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1. Introduction

1.1 Background

1.1.1 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 (AMS) 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 modern satellite-based navigation, called Performance Based Navigation (PBN), by the end of the decade.

1.1.2 For Aberdeen International Airport, this means offering modern PBN arrival procedures for resilience alongside our current arrival procedures. It also means reviewing our airspace structures to ensure we are using the minimum volume of airspace necessary.

1.1.3 Over the past 5 years, Aberdeen Airport has been developing our proposal to meet the AMS and this document forms part of Aberdeen Airport's formal airspace change submission for Airspace Change Proposal ACP-2019-82. The main components of the proposal are:

1. To introduce satellite-based (PBN) arrival procedures[1] which would be used by a very small percentage of arrivals for resilience and training purposes; and

2. The release of a section of the Controlled Airspace (CAS), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

1.2 Where we are in the airspace change process

1.2.1 Airspace Change Proposals (ACP) are required to follow a CAA process called CAP1616 Guidance on the regulatory process for changing airspace design, including community engagement requirements. The guidance sets out the steps for the airspace change process, which a change sponsor of any permanent change to the published airspace design must follow. The airspace change process is split into 7 stages.

1.2.2 Figure 1 displays the full ACP process as defined in CAP1616 Edition 5. The first 3 stages of Aberdeen Airport's ACP were carried out between November 2019 and December 2022 and are based on the regulations in the fourth edition of CAP1616. In October 2023 the CAA published the fifth edition of CAP1616 and in December 2023 the CAA confirmed that Aberdeen Airport should continue to follow the CAP 1616

1 Required Navigation Performance (RNP 1) Approaches

Version 4 process requirements up to Stage 3. From Stage 4 onwards (where we are now), Aberdeen Airport has then followed version 5 of CAP1616.

1.2.3 The following subsection includes information about Stages 1, 2 and 3 of the process.

1.3 Summary of CAP1616 activity to date

1.3.1 Aberdeen Airport began the ACP to modernise its airspace in November 2019 and passed through Stage 1 of CAP1616 in March 2020. Shortly after this, the project and much of the wider UK programme to modernise airspace was paused due to the COVID-19 pandemic, whilst the aviation industry focused on managing the pandemic, and its recovery from it.

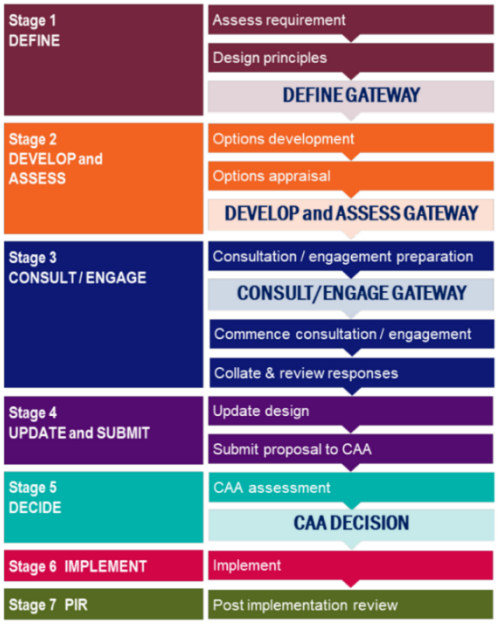


Figure 1: CAP1616 Stages. Source: CAP1616 Edition 5

1.3.2 The programme was remobilised in March 2021 following the provision of DfT grant funding, allowing Aberdeen Airport to recommence its ACP in May 2021, passing the Stage 2 Gateway in January 2023.

1.3.3 **Error! Reference source not found.** summarises the CAP1616 stages already undertaken for this ACP and the stage Aberdeen Airport is at now, providing links to previous submission documents with further information. A summary of the stakeholder engagement which has taken place at each stage is available at section 2.8 of this document.

Table 1: Summary of ACP to date

Airspace change stage	Summary	Link to documents (Also available on the ACP portal[2])
Stage 1A	In November 2019, Aberdeen Airport submitted its Statement of Need (SoN) to the CAA.	Statement of Need on CAA's Airspace Change Portal
	Aberdeen Airport participated in an assessment meeting with the CAA on 19 November 2019 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 1B	At Stage 1B Aberdeen Airport developed a set of design principles with identified stakeholders. The aim of the design principles is to provide high-level criteria that the proposed airspace design options should meet. They also provide a	Stage 1B Design Principle Submission Report

[2] https://airspacechange.caa.co.uk/PublicProposalArea?pID=198

Airspace change stage	Summary	Link to documents (Also available on the ACP portal[2])
	means of analysing the impact of different design options and a framework for choosing between or prioritising options.	
Stage 2A	Stage 2A requires change sponsors to develop and assess options for the airspace change. In Stage 2A, Aberdeen Airport developed a Comprehensive List of Options that aimed to address the Statement of Need and align with the design principles from Stage 1. Those options were then shared with stakeholder representatives (the same ones engaged with on the design principles). Feedback from the engagement was then used to generate further options where feasible. Finally, all options were qualitatively assessed against the design principles and a Design Principle Evaluation (DPE) was produced. Aberdeen Airport's Comprehensive List of Options was then shortlisted before progressing to Stage 2B.	Stage 2A DPE Submission Document
Stage 2B	Stage 2B involved carrying out an Initial Options Appraisal of the (IOA) of the airspace change options which proceed from Stage 2A. The initial appraisal described the options under assessment and the baseline options, before explaining the methodology used to assess each option and the IOA outcome. Following this the document explained, based on the IOA, which options have been taken forward to Stage 3 and the preferred option(s).	Initial Options Appraisal
Withdrawal of Aberdeen Airport from the Airspace Change Masterplan	In September 2023 the Airspace Change Organising Group (ACOG) wrote to the co-sponsors (CAA and DfT) with advice on the proposed withdrawal of Aberdeen Airport from the UK Airspace Modernisation masterplan. The CAA subsequently accepted the proposal. Aberdeen Airport's ACP was de-coupled from the Masterplan because the proposal no longer had interdependencies with the NERL ACP for the airspace above 7000ft. In addition to this, there were no interdependencies with the other Scottish cluster sponsors (Glasgow and Edinburgh Airports). Withdrawal from the Masterplan allows this ACP to progress on a separate timeline to the rest of the Scottish cluster and does not require Iteration 3 of the Masterplan to be published prior to a Stage 3 gateway. Nonetheless, the ACP does continue to make a valuable contribution to airspace modernisation in the UK.	ACOG Advice to the CAA CAA acceptance to withdraw Aberdeen Airport from the UK Airspace Modernisation Masterplan

Airspace change stage	Summary	Link to documents (Also available on the ACP portal[2])
Resubmission of Statement of Need	Aberdeen Airport's original SoN referred to meeting the requirements of (EU) 2018/1048 and removing reliance on Perth (PTH) and Aberdeen (ADN) ground-based navigation aids (VORs) due to NERL's NAVAID Rationalisation programme. Since submitting the SoN, the UK has withdrawn from the EU, and NERL have notified Aberdeen there is no longer the intention to withdraw the ADN VOR. The reliance on PTH VOR has already been resolved. With these developments in mind, it was prudent to update the Statement of Need to reflect intentions going forwards. Following acceptance of the proposal to withdraw from the ScTMA masterplan cluster, in October 2023 Aberdeen Airport submitted a revised Statement of Need (SoN). All Stage 2 engagement and the development of our Comprehensive List of Options has taken place with regard to this revised Statement of Need.	Revised Statement of Need
Stage 3A **Stage 3B**	In Stage 3A Aberdeen Airport planned for the consultation by preparing a consultation strategy, consultation documents and a Full Options Appraisal. The CAA then completed the CONSULT gateway assessment on 19 March 2024 and approved Aberdeen Airport to progress to the next step, consultation.	Consultation Strategy Main Consultation Document
Stage 3C	Stage 3C is where Aberdeen Airport launched and carried out the consultation. The formal consultation took place for 12 weeks between 29 April 2024 and 21 July 2024. The consultation resulted in 20 responses regarding the proposals.	Full Options Appraisal
Stage 3D	Stage 3D is where the consultation responses were collated, reviewed and categorised into those that may lead to a change in a design, and those that could not. This categorisation was submitted to the CAA, who reviewed a sample to determine whether the categorisation has been done fairly, before approving the ACP to progress to Stage 4.	Consultation Categorisation Document
Stage 4	This document is the main submission document associated with Stage 4 of the CAP1616 process. As stated in paragraph 1.2.2, Stage 4 onwards is in accordance with Edition 5 of CAP1616.	This document

1.4 This formal airspace change submission document

1.4.1 At Stage 4 of the airspace change process, the change sponsor prepares and submits the formal airspace change proposal to the CAA. The change sponsor must structure the submission in accordance with a standard template from CAP1616.

1.4.2 This document is the formal airspace change submission document for ACP-2019-082. As per the CAP1616 structure, this document follows the following format as shown in Table 2:

Table 2: Formal ACP submission document template based on requirements in CAP1616f

Section		Description
1	Introduction	Gives an overview of this document within the context of the CAP1616 process.
2	Executive Summary	Presents a summary of the activities undertaken as part of the Airspace Change process to date and includes reference to the Secretary of State's call-in criteria.
3	Description of the current airspace and operations	Provides information about the current airspace design and operation.
4	Detailed Description of the changes to Airspace Design and Operations	Provides information about the proposed changes to airspace design and operation.
5	Anticipated Operational impacts	Presents a proforma, as required by CAP1616, with information about operational impacts.
6	Supporting Infrastructure and Resilience	Provides a description of the anticipated impacts of the change on supporting infrastructure and resilience.
7	Regulations, Policies and Harmonisation	Provides a description of analysis taken against relevant regulations, policy and guidance.
8	Safety Assessment	Provides details of the safety assessments undertaken
9	Environmental Assessment	Describes the environmental outcomes of the Final Options Appraisal
10	Final Options Appraisal	Links to the Full Options Appraisal (published as a separate document due to its size)
11	List of Supplementary Documents	A list of supplementary information that is contained in annexes and/or appendices along with a brief description of their contents.

1.4.3 This document has been written with the aim of being easy to understand however we recognise that in order to fully describe the proposals we may need to use some technical language. Any language or terms **highlighted in red** are explained further as part of our glossary and terminology explained document which can be found here.

1.4.4 The following documents should be referenced in support of this ACP submission:

Table 3: ACP Supporting Documents

ACP Stage	Document (Linked)
Stage 1A	Statement of Need
Stage 1B	Report on Design Principle Engagement
Stage 2A	Design Principle Evaluation Report
Stage 2A	Design Principle Evaluation Annex A
Stage 2B	Initial Options Appraisal V1.1
Stage 3B	Full Options Appraisal
Stage 3B	Consultation Strategy
Stage 3B	Main Consultation Document
Stage 3	Consultation Summary Document
Stage 4	Consultation response categorisation document

1.4.5 A list of supplementary documents that form part of this Stage 4 submission can be found in section 11 of this document.

2. Executive Summary

2.1 Drivers for change

2.1.1 Aberdeen Airport is undertaking an ACP to improve resilience and meet the UK Government's Airspace Modernisation Strategy (AMS).

2.1.2 The UK's airspace is some of the busiest in the world. In 2017 the Department of Transport (DfT) notified aviation stakeholders that, as the demand for aviation is forecast to continue growing, delays and environmental impacts are expected to increase if the UK's airspace is not upgraded to introduce additional capacity.

2.1.3 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).

2.1.4 In response, the CAA was tasked to develop the UK Airspace Modernisation Strategy (AMS) which was first published in December 2018.

2.2 Statement of Need

2.2.1 Aberdeen originally submitted a Statement of Need (SoN) in November 2019. Since the original SoN was submitted, the UK has withdrawn from the EU, NATS En-Route Limited (NERL) has notified Aberdeen Airport there is no longer the intention to withdraw the ADN **VOR**, and the reliance on PTH **VOR** has been resolved.

2.2.2 In addition to these changes, on advice from the Airspace Change Organising Group (ACOG), Aberdeen Airport has been withdrawn from the UK Airspace Modernisation Masterplan.

2.2.3 Consequently, due to these significant changes since the original Statement of Need (SoN), Aberdeen airport submitted a Revised Statement of Need, in October 2023, to reflect intentions going forward. The full revised Statement of Need is as follows:

Aberdeen Airport is planning to conduct an airspace change proposal (ACP) to introduce RNP APCH (LNAV and LNAV/VNAV) procedures to runways 34 and 16 in order to provide resilience to the operation and modernise its airspace. The airspace change will take the opportunity to review existing controlled airspace boundaries and classifications. This airspace change proposal does not intend to make changes to the published helicopter route structures. The ACP will follow the regulatory process for changing airspace design including community engagement requirements, set out by the Civil Aviation Authority (CAA) in CAP1616.

The Future Airspace Strategy Implementation North (FASI North) programme is coordinating a series of linked ACPs that will modernise the overall airspace structure and route network in Scotland and Northern England. The FASI North airports are developing ACPs which would upgrade the arrival and departure routes that support their operations below 7000ft and

connects the airports with the wider network. Aberdeen Airport intends to align the development of this airspace change with the overall FASI North programme and will coordinate the schedule of airspace design, consultation and engagement, regulatory submission and implementation activities as appropriate with the other airports and NERL.

Delivering the Airspace Modernisation Strategy

2.2.4 This proposal is being progressed in support of the Airspace Modernisation Strategy (AMS). The main components of the proposal are:

1. To introduce PBN arrival procedures (called RNP approaches) which would be used by a very small percentage of arrivals for resilience and training purposes; and

2. The release of a section of the Controlled Airspace (CAS), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

Why is Aberdeen Airport not modernising departures, or making fundamental changes to the airspace?

2.2.5 Aberdeen Airport has a highly complex operation which requires integration of a high number of helicopters alongside fixed wing aircraft. As a result, the operation requires a highly flexible and adaptable environment. This is achieved through tactical vectoring to optimise capacity and enable departures in quick succession.

2.2.6 PBN departure and arrival procedures create a more systemised, fixed route structure, and, in the case of Aberdeen Airport, these would not be able to replicate the existing operational flexibility. This would likely have an impact to capacity at peak times and potentially a negative impact on noise, carbon emissions and controlled airspace. Accordingly, the scope of the airspace change looks to improve resilience at Aberdeen Airport, whilst maintaining the operational flexibility needed.

2.3 Aims of the proposal

2.3.1 There are two main aims/objectives/requirements of this ACP which are to:

- Provide resilience Aberdeen Airport's operation, and
- To modernise the airspace and meet the requirements of the Airspace Modernisation Strategy.

2.3.2 The aim to provide resilience will be achieved because adopting PBN arrival procedures will give Aberdeen a backup option in the event of ILS failure. PBN arrival procedures also introduce modern satellite-based approaches to Aberdeen airport and thus meet the requirements of the AMS.

2.3.3 In reviewing the surrounding airspace Aberdeen Airport propose to release a portion of CAS which is in line with the AMS and beneficial to the GA community without having any material impacts on the operation of Aberdeen Airport.

How does our proposal perform against the Design Principles?

2.3.4 Following submission of the Statement of Need and having had an assessment meeting with the CAA, the ACP progressed to Stage 1B of the process where we developed a list of Design Principles through engagement with representative stakeholders. More details of the engagement can be found in section 2.8.

2.3.5 The aim of the design principles is to provide high-level criteria that the proposed airspace design options should meet.

2.3.6 Table 4 shows the final list of design principles developed for the ACP and an assessment of how the final proposal performs against these principles.

Table 4: Final Design Principles and how the final proposal performs against these principles

DP#	Design Principle description	How does the final proposal perform?
DP1	The airspace design and its operation must be as safe or safer than today for all airspace users that are affected by the airspace change.	The PBN arrival procedures are anticipated to improve safety performance in the event of an ILS outage, through reduced ATC and pilot workload. The release of a section of CAS is anticipated to offer General Aviation safety benefits.
DP2	Subject to the overriding design principle of maintaining a high standard of safety, the highest priority principle of this airspace change that cannot be discounted is that it accords with the CAA's published Airspace Modernisation Strategy (CAP1711) and any current or future plans associated with it.	The proposal aims to meet the objectives of the Airspace Modernisation Strategy by introducing modern satellite-based arrivals and releasing a volume of CAS.
DP3	Design options should minimise the change to tracks over ground of aircraft arriving and departing from Aberdeen.	The Final Options Appraisal has shown the PBN arrival procedures, and the release of CAS, are not expected to materially alter tracks over the ground.
DP4	Design options should investigate the feasibility of steeper approaches for PBN arrivals to reduce the noise footprint of Aberdeen Airport's operation,	Steeper approaches were investigated as part of the option development work at Stage 2B however it was shown that there were no material benefits. They were therefore not adopted into the designs. More information can be found here.
DP5	Arrival route options should enable aircraft to descend continuously and should not inhibit departures from climbing continuously. If both cannot be achieved, there should be a preference to the most environmentally beneficial option.	The final proposal enables aircraft to descend continuously and does not inhibit departures from climbing continuously.
DP6	Options should not increase and should aim to reduce the emissions footprint of aircraft operating at Aberdeen by reviewing existing	The fuel burn and greenhouse gas analysis within the Final Options Appraisal has shown that this option could have some very small negative

	controlled airspace boundaries and usage of flight paths in the NERL network.	impacts if it was operated on a regular basis by c.5% of arrivals instead of the ILS, however it would have positive benefits in the event that the ILS was unavailable. Overall, when considering likely use of the procedures, it is considered to not have any significant or material benefits or impacts to fuel burn or greenhouse gas emissions.
DP7	Design the appropriate volume of controlled airspace (CAS) to safely support commercial air transport and release controlled airspace which is not required.	The proposal intends to release a volume of CAS following analysis of usage of the airspace.
DP8	Controlled airspace options should ensure there is safe and efficient access for other types of operations, and should explore measures, including classification and flexible use of airspace, where possible and appropriate, to improve access and decrease airspace segregation.	The proposal would result in the release of 27.8nm^3 of class D controlled airspace within Aberdeen Airport's CTA 3. The increase in base of this section of the CTA-3 would enable improved soaring profiled for flights to/from Deeside Gliding Club at Aboyne. In addition to this, it would enable GA transiting the airspace to remain outside of controlled airspace at a higher altitude than today, improving access to the area.
DP9	Options shall not reduce and where possible enhance the air traffic movement capacity of Aberdeen Airport.	The proposal will maintain capacity at Aberdeen airport
DP10	Ensure the Aberdeen operation is resilient to the withdrawal or failure of navigational aids and systems.	The proposal will improve resilience at Aberdeen Airport

2.4 Assumptions and Constraints

2.4.1 Throughout the development of the options and the later stages of the ACP there was an assumption that the PBN arrival procedures would predominantly be used for resilience and training.

2.4.2 This is because Aberdeen Airport has an **Instrument Landing System (ILS)**. The ILS is a more accurate approach, which enables it to be used in the worst weather conditions; and this means that many pilots will prefer to use this approach to land at the airport, where it is available.

2.4.3 Based on the assumption that the PBN arrival procedures would be used for resilience and training purposes, the below information was used to guide the % usage for the appraisals.

2.4.4 **Resilience:** Historic data shows in the last 5 years, there has been 1 unplanned ILS outage which lasted for 6 hours. In addition to this, the ILS is taken out of service for planned maintenance for around 5 hours per month, and up to 14 hours on a 6 monthly basis (however it is important to note that these often occur at night, or in periods when there are very few aircraft arriving at Aberdeen Airport).

2.4.5 **Training** It may be possible for some operators to use the RNP arrival procedures for training although we expect usage to be low.

Assumed usage of PBN arrivals procedures

2.4.6 The PBN arrival procedures proposed as part of this ACP are intended to be operated alongside the existing approaches at Aberdeen Airport and we expect the vast majority of arrivals will continue to be vectored to the ILS, as they do today. More information about how aircraft arrive today is provided in section 2.5.

2.4.7 As explained above, the PBN arrival procedures are required largely for resilience purposes to cover the eventuality of loss of the ILS due to fault or maintenance however some pilots may elect to fly an RNP arrival procedure for training purposes even with a serviceable ILS.

2.4.8 We expect c.1-5% of arrivals into Aberdeen could elect to fly the PBN arrival procedures; however, from experience at other airports, PBN arrival procedure uptake is likely to be closer to the lower end of this assumption given the ILS will remain available.

2.4.9 For the purposes of the appraisals throughout the ACP, we have assessed using an optimistic 5% of arriving aircraft flying the approaches. This means we expect at least 95% of arriving aircraft to continue to arrive as they do today.

2.4.10 Feedback from helicopter operators has suggested that the PBN arrival procedures would only be used for training purposes and therefore we have optimistically estimated c.5% of helicopter flights could use the PBN arrival procedures.

2.4.11 When considering the future use of missed approaches and holds, the PBN arrival procedures are not expected to result in an increase in holding or in the number of missed approaches flown. The PBN missed approach procedures replicate the existing ILS missed approach procedures and, if required, aircraft would fly a hold predicated on the existing conventional ground beacon (ADN VOR) (although the vast majority of operators will be flying an FMS overlay of the hold procedure).

Why can’t all arrivals use the new PBN procedures?

2.4.12 The PBN arrival procedures create a more systemised fixed route structure, and, in the case of Aberdeen Airport, these would not be able to replicate the existing operational flexibility needed to accommodate all arriving traffic.

2.4.13 In addition to this, the Instrument Landing System (ILS) approach will remain available for pilots at Aberdeen Airport and many pilots will prefer to use this approach to land where it is available.

2.5 Summary Description of the Current Airspace and Operation

2.5.1 Aberdeen Airport has one main runway for all fixed wing traffic and some helicopter traffic. Helicopter traffic is also able to arrive visually on to three other runways, depending on the wind direction.

2.5.2 The main runway, depending on the direction of operations, is called Runway 16 or Runway 34. On average, over the last 10 years, Runway 16 was in operation 60% of the time and Runway 34 40% of the time as shown in Figure 2.

Figure 2: Runway directions at Aberdeen Airport

How aircraft arrive at Aberdeen Airport

2.5.3 Currently, there are no defined flight paths routinely used by Air Traffic Control (ATC) for arriving aircraft, until aircraft are established on **final approach**.

2.5.4 Arriving aircraft are given instructions about where to fly, and at what height, by Air Traffic Control (ATC). This creates lots of different tracks across the airspace which is often referred to as **dispersion**.

2.5.5 Some aircraft at Aberdeen land visually. This means pilots do not use navigation aids when arriving but instead following ATC instructions and then locate the runway visually before lining up their aircraft to land.

2.5.6 Alternatively, pilots typically use a navigation aid called the **Instrument Landing System (ILS).** The ILS helps an aircraft line up with the runway before landing. Aircraft join the ILS anywhere from around 15km to 24km before landing when arriving at Aberdeen airport and an illustration of this is shown in Figure 3.

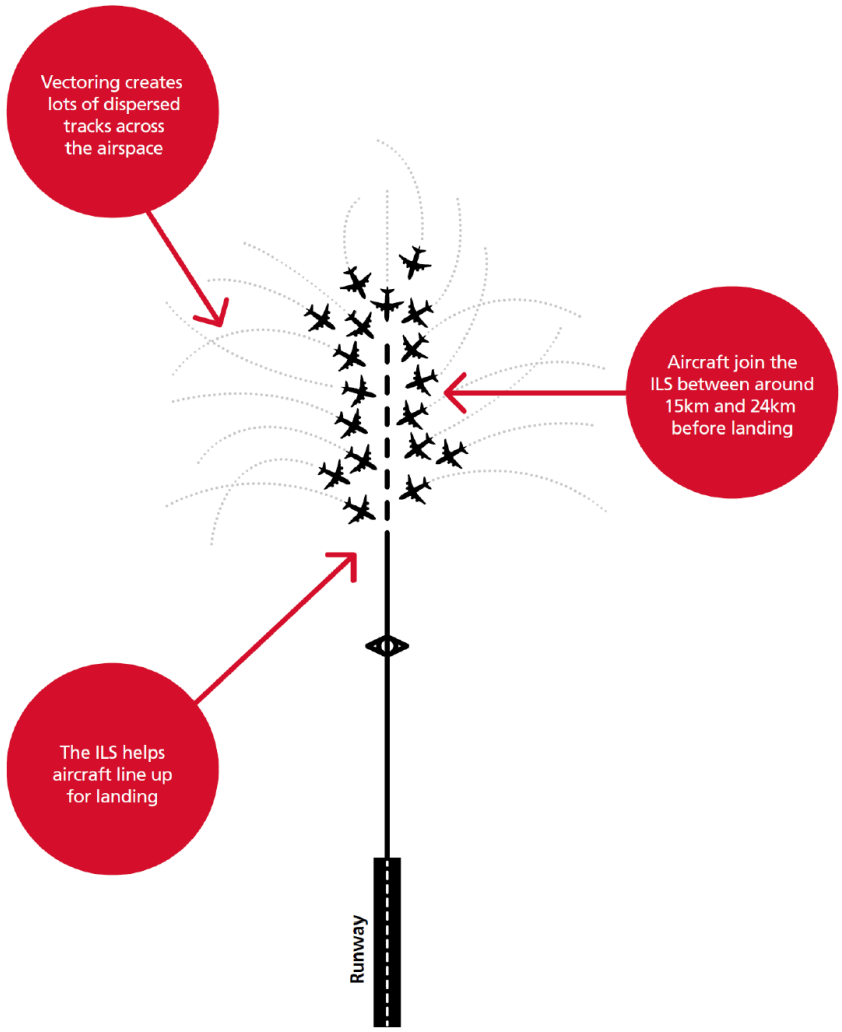


Figure 3 Illustrative example of how aircraft join the ILS

2.5.7 There are map examples of the arrivals dispersion created by vectoring shown in section 3 detailed description of current airspace and operations (Figure 9 to Figure 12).

2.5.8 The **Instrument Landing System (ILS)** is the preferred navigation aid used for arrivals but if this is not available then Aberdeen Airport also has a type of arrival called a **VOR/DME** approach to Runway 16 and 34, and an **NBD/DME** approach for Runway 34. These types of approaches also rely on ground-based navigation aids.

Holds

2.5.9 Aircraft are sometimes put in to holds while they are waiting to land. Aberdeen airport has holds available at three locations. These have specific patterns in which the aircraft must fly and altitudes (heights) that the aircraft must not fly below. Approximately 1% of Aberdeen Airport's arrivals use the holds.

2.5.10 This airspace change does not propose to make any changes to the holding procedures at Aberdeen Airport.

Missed Approaches

2.5.11 If it is judged that an approach cannot be continued to a safe landing, then the aircraft will carry out a **missed approach** and will fly a defined procedure. Around 1.7% of fixed wing arrivals fly a missed approach, this equates to just over one a day on average across the year.

2.5.12 Aberdeen Airport is not proposing to change the existing missed approach procedures as part of this ACP.

Air Traffic Service Routes

2.5.13 As explained above, there are no defined flight paths routinely used by Air Traffic Control (ATC) for arriving aircraft, until aircraft are established on final approach.

2.5.14 Aberdeen Airport publishes a route structure for helicopters however this is outside the scope of this ACP (for more information please see section 3)

2.5.15 As part of the Stage 3 submission, we explained that there is a runway 34 direct arrival route, which aircraft can use to join this ILS and we noted that the proposal to release CAS would result in a small change required to that direct arrival route so that aircraft remained in CAS. These 'direct arrivals' do not form part of routine operations at the airport and they are used very rarely if there is a request to undertake a training flight.

2.5.16 Since the Stage 3 submission, as part of the 5 year review of the Instrument Flight Procedures (IFPs), Aberdeen Airport have confirmed that the Direct Arrivals are no longer required and can be removed from the charts. The remainder of this submission document assumes that these chart amendments have taken place and the Direct Arrivals are no longer promulgated.

More details about Aberdeen Airport's current airspace can be found in section 3.

Aberdeen's Controlled Airspace (CAS)

2.5.17 Aberdeen Airport is contained within Controlled Airspace (CAS). Within Aberdeen's CAS, aircraft are required to follow instructions from Air Traffic Controllers (ATC). CAS is provided primarily for the safety of its users, mostly commercial airlines.

2.5.18 Other airspace users, who typically fly for non-commercial purposes such as gliding, often fly outside of CAS where they do not have to follow instructions from ATC.

2.5.19 The level of control varies depending on the classification of the CAS. Aberdeen Airport has a **Control Zone (CTR)** around the airport which is Class D. This extends from ground level or surface up to Flight Level (FL) 115.

2.5.20 For aircraft to operate inside Class D airspace, they must have a clearance from ATC and all ATC instructions are mandatory.

2.5.21 Aberdeen Airport also has additional airspace around the central CTR to offer additional protection to the aircraft flying in and out of the airport. These are Control Areas are also Class D, and they are known as:

- CTA1, which has vertical limits of 1500ft to FL115,
- CTA2, which has vertical limits of 1500ft to FL115, and;
- CTA3, which has vertical limits from 3000ft to FL115.

2.5.22 A chart with Aberdeen Airport's existing CAS is promulgated as part of the eAIP (AD 2 EGPD Aberdeen/ Dyce section 2.24, Class D Airspace Chart). The existing airspace is also shown in Figure 4.

Figure 4 Aberdeen Airport's existing CAS (Source: AIP AD2 EGPD-4-1)

More details about Aberdeen Airport's Controlled Airspace can be found in section 3.

General Aviation activity

2.5.23 There are several routine General Aviation (GA) activities and trends taking place in the vicinity of Aberdeen Airport.

2.5.24 Deeside Gliding Club lays to the West of the aerodrome and is a base for extensive wave soaring both locally and throughout the Scottish Highlands. Highland Gliding Club and Insch Airfield lies to the Northwest. There are also a small number of GA airfields within the CTR; Whiterashes, Peterculter, Aberdeen Royal Infirmary (ARI) and Trump Golf course (near Balmedie).

2.5.25 There are a low number of GA operations to and from Aberdeen Airport each year and also a number of movements from the Air Ambulance (fixed Wing) and Search and Rescue aircraft.

2.5.26 In 2017, Airspace4All published a piece of work on VFR Significant Areas (VSA) and identified areas that are particularly important to VFR operations. Of relevance to Aberdeen is the 'Aberdeen Coastal Corridor' and the 'Inverness-Aberdeen Coastal corridor with details of these provided in section 3 in **Error! Reference source not found.** and **Error! Reference source not found.**.

More details about the General Aviation activity around Aberdeen Airport can be found in section 3.

2.6 Summary Description of Changes to Airspace Design and Operation

PBN Arrival Procedures

2.6.1 As part of this ACP Aberdeen Airport are proposing to introduce satellite-based (PBN) arrival procedures, called RNP approaches, which would be used by a very small percentage of arrivals for resilience and training purposes.

2.6.2 The vast majority of aircraft (95%+) would continue to arrive as they do today (as illustrated in Figure 3). If the ILS was unavailable, or if an airline wanted to undertake a training flight, then some aircraft could use the new PBN arrival procedures.

2.6.3 These arrivals would continue to be vectored before final approach as they are today. The only difference would be, whereas with the ILS the arrivals have flexibility in where they join final approach from 15km (8nm) and beyond, the PBN arrivals would be vectored to join final approach at a satellite-based waypoint. An illustrative example of this is shown in Figure 5.

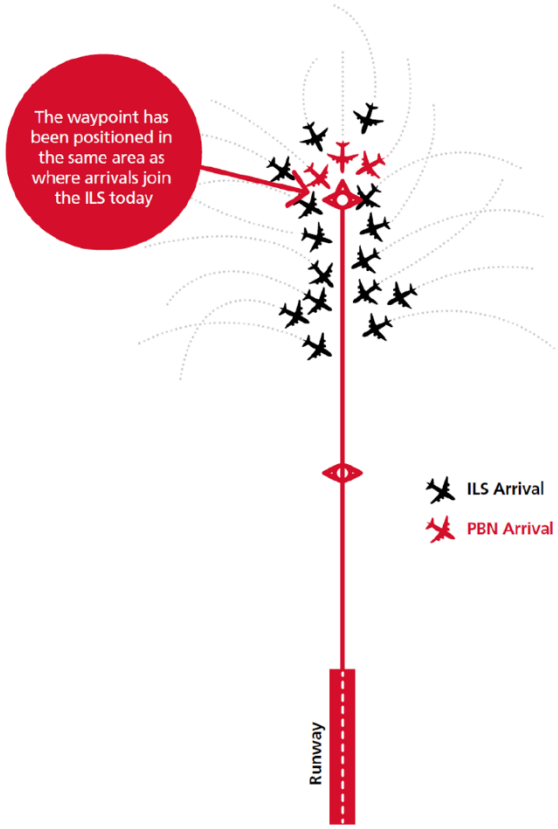


Figure 5 Illustrative example of PBN and ILS arrivals

2.6.4 There will continue to be **dispersion** across the airspace, however there may be a small amount of **concentration** around the waypoint if this change is introduced.

2.6.5 The waypoints on the PBN arrivals options have been positioned so that any aircraft flying the PBN arrival procedures are within the existing vectored arrival swathes. This

means that the 1-5% of aircraft using the PBN arrivals will overfly areas overflown by arrivals today.

2.6.6 Once aircraft turn onto final approach (when they are aligned with the runway), they will fly the same final approach track as today.

2.6.7 Because of the very small number of aircraft expected to fly the PBN arrivals and the waypoint positioning, we do not anticipate any material changes to how aircraft arrive today as a result of this ACP. More details of this can be found in later sections of this document.

Holds

2.6.8 This airspace change does not propose to make any changes to the holding procedures at Aberdeen Airport. If an aircraft flying the PBN arrival procedure needed to hold, then one of the existing holds would be available to use.

Missed approaches

2.6.9 Aberdeen Airport is not proposing to change the existing missed approach procedures as part of this ACP; the PBN arrival procedure will replicate the same missed approach as the existing ILS procedures.

Further details about our PBN arrival proposals are provided in section 4.

Controlled Airspace Proposal

2.6.10 As part of this ACP Aberdeen Airport are proposing to release a section of the Controlled Airspace (CAS), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

2.6.11 Aberdeen Airport has undertaken detailed analysis of the current use of CAS and identified a portion of CTA-3 that is being underutilised and can be safely released.

2.6.12 The proposal would be that the base level of the Southwest portion of CTA-3 is raised from 3000ft to 4500ft, and re-named CTA-4. This would result in the release of 27.8nm^3 of class D controlled airspace within Aberdeen's CTA 3. This area is indicated on the chart below (Figure 6) in red.

Figure 6: Class D Airspace Chart with proposed CAS change (Source: Stage 3 consultation document)

2.6.13 The release of this area of CAS improves access to airspace, which is an aim of the Airspace Modernisation strategy. There are benefits to airspace users, such as gliders from Deeside Gliding Club at Aboyne and GA transiting the airspace, whilst having no material impact on the operation or environmental performance of Aberdeen Airport.

Further details about our CAS proposals are provided in section 4.

2.7 Summary of Options Analysis

2.7.1 The following section provides a non-technical summary of the options appraisal process undertaken, describing the options considered, the analysis of those options, and why the final design option was selected.

2.7.2 In order to fully describe the options development and analysis process throughout the ACP, we must first introduce PBN and Required Navigation Performance (RNP) approaches.

2.7.3 RNP approaches are a type of PBN approach which use a series of satellite-based waypoints that aircraft follow to fly the overall Instrument Approach Procedure (IAP). Aircraft join the IAP at the Initial Approach Fix (IAF) waypoint before proceeding to the Intermediate Fix (IF). Aircraft then turn to the final approach fix (FAF) and descend to either land or undertake a missed approach. An illustration of this is shown in Figure 7.

2.7.4 PBN offers different types of waypoint which mean that sometimes aircraft predict the turn (flyby) before a waypoint rather than navigating directly overhead the waypoint before turning (fly over).

2.7.5 When designing RNP approaches, certain layouts of the waypoints are considered in order to optimise arrivals. They can be designed to continue to rely on vectors to final approach, or they can have PBN paths prior to final approach, referred to as T-bars. The 'bars' of these layouts can be designed to suit the requirements of the approach and they do not have to be symmetrical, although the layouts do have to follow the rules contained within PANS-OPs[3].

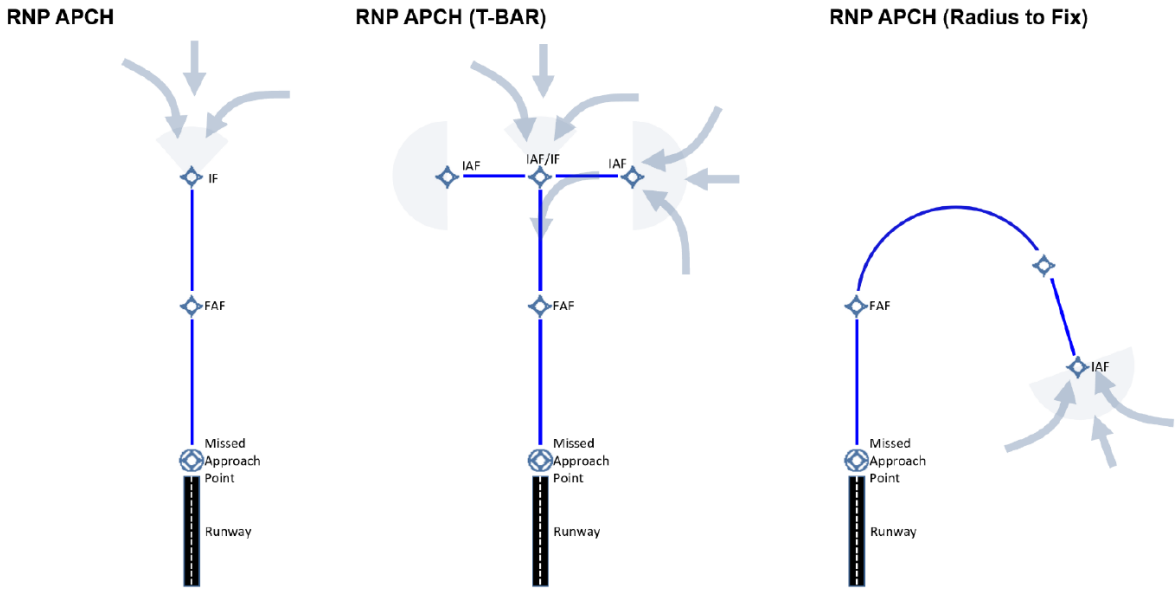


Figure 7 Illustrative Examples of RNP APCH, T-Bar and RNP APCH RF

2.7.6 An illustrative example of a T-Bar layout is shown in Figure 7 above. The light blue semi circles show the directions from which aircraft can be vectored to join the Initial

[3] International Civil Aviation Organisation (ICAO) rules used for designing instrument approach and departure routes

Approach Fix (IAF). Aircraft then follow the waypoints which are designed, where possible, to allow for continuous descent before landing.

2.7.7 Figure 7 also shows an illustrative example of an RNP APCH Radius to Fix (RF); The RF allows aircraft to very accurately fly in an arc of fixed radius around a point, direct to the Final Approach Fix (FAF). This type of approach can reduce track mileage and improve the accuracy of centreline adherence around the turn. The majority of aircraft are equipped to fly RNP APCH but not all aircraft are equipped to fly RF procedures. RNP APCH RF are sometimes referred to as 'curved approaches'.

Design Principles (Stage 1B)

2.7.8 At Stage 1B change sponsors are required to develop a set of design principles which provide high-level criteria that the proposed airspace design should meet. The design principles are shown in Table 4.

2.7.9 The design principles are an important part then used to develop the comprehensive list of options as part of the work undertaken at Stage 2A.

Comprehensive List of Options Development (Stage 2A)

2.7.10 The Stage 2A document details the options development process which aimed to develop a comprehensive list of options that aligned with the design principles and the Statement of Need for the ACP.

2.7.11 For the PBN arrival procedures, Aberdeen Airport developed a series of different options broken down into options for runway 16 and runway 34. These included RNP approaches, T-Bars and curved approaches (please see Figure 7 and paragraph 2.7.2 to 2.7.7 for further details).

2.7.12 For the CAS proposal, Aberdeen Airport undertook analysis of the existing surveillance data followed by conversations with Aberdeen ATC which identified a section of CTA 3 that was underutilised. It was initially considered that the base of this section could be raised to 4,500ft without any negative impact on the operation (subject to further assessment explained below).

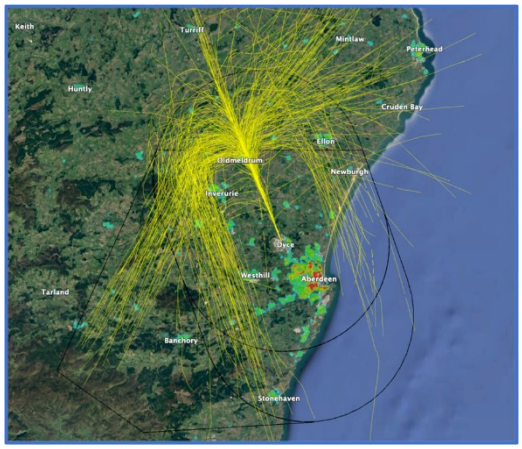
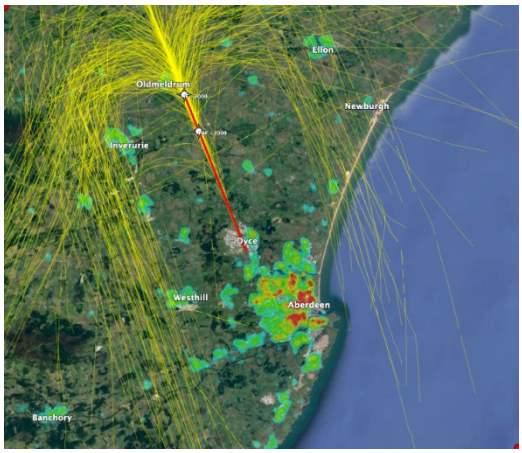
2.7.13 This comprehensive list of options was then shared with the same stakeholders engaged at Stage 1B to ensure they were satisfied that the design options were aligned with the design principles, and that we had properly understood and accounted for stakeholder concerns specifically relating to the design options.

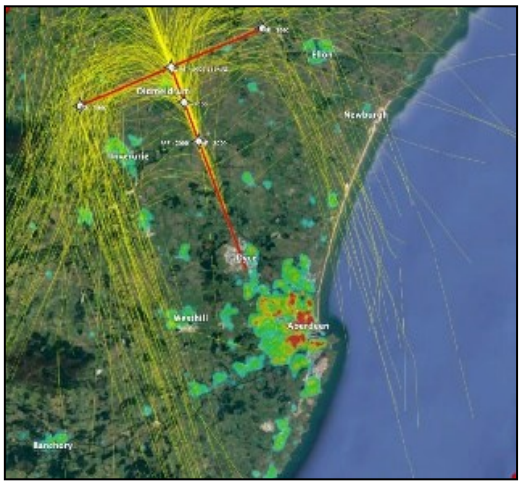
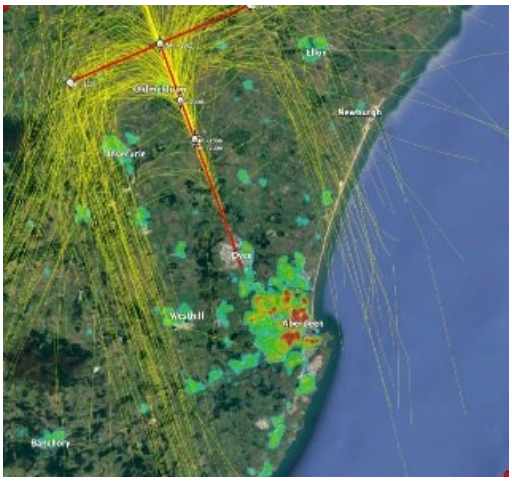
2.7.14 One piece of feedback directly influenced the Comprehensive List of options, this was to include an additional curved approach to Runway 16 from the East. A suggestion to raise CTA-1 to 2000ft was investigated but this was not viable as it would impact safety.

2.7.15 Table 5 and
2.7.16 Table 6 show Aberdeen Airport's comprehensive list of options following stakeholder engagement that were taken forward to the Design Principle Evaluation. Within the option diagrams, a 1-week sample of Aberdeen's existing arrivals are shown in yellow. Table 7 then shows the CAS option developed.

2.7.17 For more information about the options developed, please see the Stage 2A document on the CAA's airspace change portal.

Table 5: Runway 16 options at Stage 2A (Information sourced and then summarised from Stage 2A document)

Option Image (Stage 2A)	Option Name within Stage 2A	Description (Stage 2A)
	RWY 16 Do Nothing (Without Airspace Change)	All arrivals would be vectored, as they are today, to join final approach between 8 – 12nm.
	RWY 16 Option 1 Vectors to final approach	Aircraft would be vectored to join an RNP approach. The IF was positioned so those arrivals would join final approach at approximately 8nm (aiming to keep the vectored arrival swathes consistent with the without ACP)

Option Image (Stage 2A)	Option Name within Stage 2A	Description (Stage 2A)
	RWY 16 Option 2 Inner T Bar	Aircraft would be vectored to join a T-Bar approach. The 'T' was positioned with the aim to be consistent with an 8nm - 9nm final approach.
	RWY 16 Option 3 Outer T Bar	Aircraft would be vectored to join a T-Bar approach. The 'T' was positioned with the aim to be consistent with an 9nm -10nm final approach.

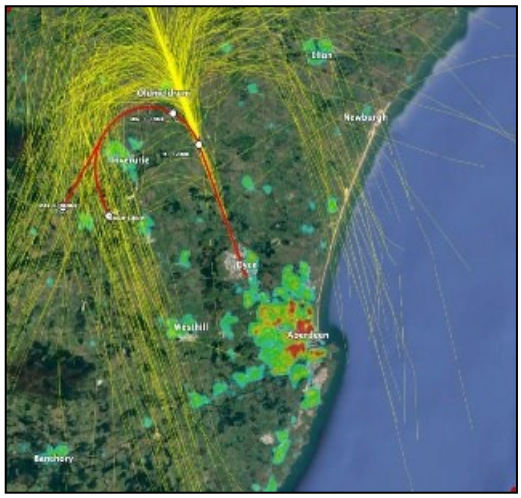
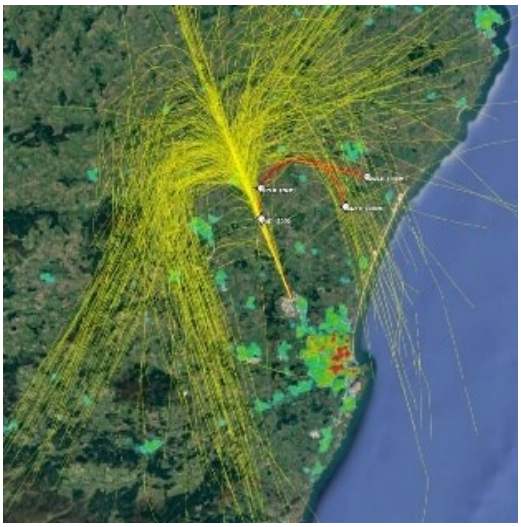
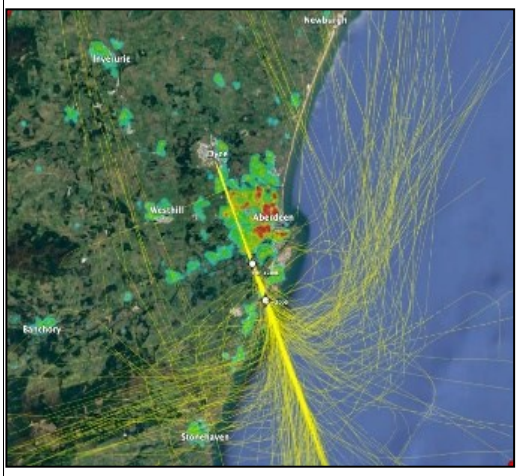
Option Image (Stage 2A)	Option Name within Stage 2A	Description (Stage 2A)
	RWY 16 Option 4 Curved Approach from West	Aircraft with 'Radius to Fix' (RF) functionality would be vectored to join a curved approach from the west.
	RWY 16 Option 5 Curved Approach from East	Aircraft with 'Radius to Fix' (RF) functionality would be vectored to join a curved approach from the east. This option was added following stakeholder engagement.

Table 6: Runway 34 options at Stage 2A (Information sourced and then summarised from Stage 2A document)

Option Image (Stage 2A)	Option Name at Stage 2A	Option Description (Stage 2A)
	RWY 34 Do Nothing (Without Airspace Change	All arrivals would be vectored, as they are today, to join final approach between 8 – 12nm.
	RWY 34 Option 1 Vectors to final approach	Aircraft would be vectored to join an RNP approach. The IF was positioned so those arrivals would join final approach at approximately 8nm (aiming to keep the vectored arrival swathes consistent with the without ACP)

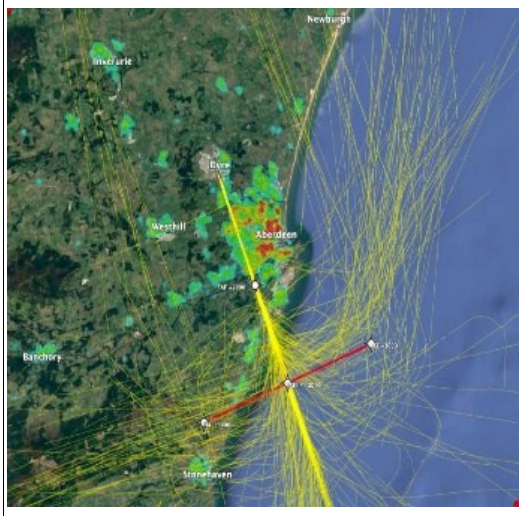
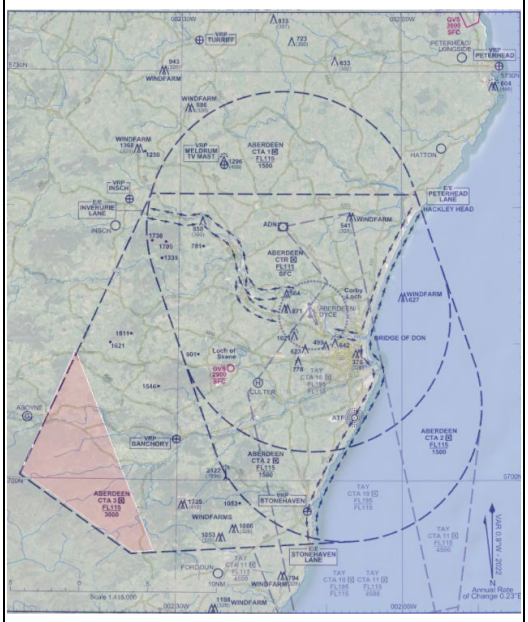
Option Image (Stage 2A)	Option Name at Stage 2A	Option Description (Stage 2A)
	RWY 34 Option 2 T Bar	Aircraft would be vectored to join a T-Bar approach. The 'T' was positioned with the aim to be consistent with an 8nm - 9nm final approach.
	RWY 34 Option 3 Curved Approach from East	Aircraft with 'Radius to Fix' (RF) functionality would be vectored to join a curved approach from the east.

Table 7: CAS options at Stage 2A (Information sourced and then summarised from Stage 2A document)

Option Image (Stage 2A)	Option Name at Stage 2A	Option Description (Stage 2A)
	Existing CAS Do Nothing (Without airspace change)	The controlled airspace (CAS) would remain promulgated as it is today (see section 2.5 for further details)
	CAS Option 1 Raise portion of CTA-3 to 4500ft	Analysis of surveillance data followed by conversations with Aberdeen ATC identified a section of CTA 3 which was underutilised. It was initially considered that the base of a SW portion of CTA 3 could be raised to 4,500ft without any negative impact on the operation. The image illustrates the section of CTA 3 (shaded in red) that was considered for a declassification from Class D to Class G.

2.7.18 Further information around the development of the Comprehensive list can be found as part of our Stage 2A submission on the CAA's Airspace Portal.

Design Principle Evaluation (Stage 2A)

2.7.19 All options in the comprehensive list then proceeded to a Design Principle Evaluation (DPE).

2.7.20 This involved taking all the options developed and qualitatively evaluating them against the Design Principles to understand how they respond. Each option's performance was assessed against each design principle and was categorised as either 'met', 'partially met' or 'not met'. This helps to determine which options best meet the Design Principles and then shortlist options to proceed to the next stage of the airspace change process which was the Initial Options Appraisal (IOA).

2.7.21 Table 8 summarises the outcome of the Design Principle Evaluation. Option's which were categorised as 'met' are shaded in green. Option's which 'partially met' a Design Principle are shaded amber, and 'not met' are red.

2.7.22 The full detail is available as part of the Stage 2A document on the CAA Airspace Change Portal.

Table 8: Summary of Design Principle Evaluation

	Design Principles										
	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DPE outcome
Option Name	The airspace design and its operation must be as safe or safer than today for all airspace users that are affected by the airspace change	Subject to the overriding design principle of maintaining a high standard of safety, the highest priority principle of this airspace change that cannot be discounted is that it accords with the CAA's published Airspace Modernisation Strategy (CAP 1711) and any current or future plans associated with it.	Design options should minimise the change to tracks over the ground of aircraft arriving and departing from Aberdeen.	Design options should investigate the feasibility of steeper approaches for PBN arrivals to reduce the noise footprint of Aberdeen Airport's operation.	Arrival route options should enable aircraft to descend continuously and should not inhibit departures from climbing continuously. If both cannot be achieved, there should be preference to the most environmentally beneficial option.	Options should not increase and should aim to reduce the emissions footprint of aircraft operating at Aberdeen by reviewing existing controlled airspace boundaries and usage of flight paths in the NERL network.	Design the appropriate volume of controlled airspace (CAS) to safely support commercial air transport and release controlled airspace which is not required	Controlled airspace options should ensure there is safe and efficient access for other types of operations, and should explore measures, including classification and flexible use of airspace, where possible and appropriate, to improve access and decrease airspace segregation.	Options shall not reduce and where possible enhance the air traffic movement capacity of Aberdeen Airport.	Ensure the Aberdeen operation is resilient to the withdrawal or failure of navigation aids and systems.	
Runway 16											
RWY 16 Do Nothing											Option Discontinued
RWY 16 Option 1 Vectors to final approach											Option carried forward to IOA
RWY 16 Option 2 Inner T Bar											Option carried forward to IOA
RWY 16 Option 3 Outer T Bar											Option carried forward to IOA
RWY 16 Option 4 Curved Approach from West											Option carried forward to IOA

	Design Principles										
	DP1	DP2	DP3	DP4	DP5	DP6	DP7	DP8	DP9	DP10	DPE outcome
RWY 16 Option 5 Curved Approach from East											Option carried forward to IOA
Runway 34											
RWY 34 Do Nothing											Option Discontinued
RWY 34 Option 1 Vectors to final approach											Option carried forward to IOA
RWY 34 Option 2 T Bar											Option carried forward to IOA
RWY 34 Curved Approach from East											Option carried forward to IOA
Controlled Airspace (CAS)											
Existing CAS Do Nothing											Option carried forward to IOA
CAS Option 1 Raise portion of CTA 3 to 4500ft											Option carried forward to IOA

2.7.23 All the approach options met DP1 (Safety) and therefore none were discontinued on this basis. CAS Option 1 partially met the safety design principle, as it required further investigation, however it was expected to be safe.

2.7.24 With regards to DP2, the two baseline 'do nothing' options did not meet this design principle as they would not offer the opportunity for the airspace to be modernised. These options also did not address the statement of need, offer any opportunity for improvement or provide any additional resilience for Aberdeen. These were therefore discontinued however they remained present throughout the ACP for baseline comparative purposed only.

2.7.25 All the remaining options partially meet the AMS design principle. This was because there are many competing factors within the parameters of the AMS, and there is inevitably a balance to be achieved between these. We therefore decided to not discontinue any further options on the sole basis of the AMS, until we understood more detail about their benefits and impacts at the Initial Options Appraisal (IOA).

2.7.26 We finally looked to the remainder of the Design Principles to understand if there were any options that overall performed comparatively poorly against the remaining 8 Design Principles. We found a mix of performance across the options and design principles and given the design principles themselves are not prioritised, we took forward all the remaining options to the Initial Options Appraisal.

Initial Options Appraisal (Stage 2B)

2.7.27 At Stage 2B CAP1616 requires sponsors to carry out an initial qualitative assessment of the benefits and impacts of each option, tested against the 'do nothing' (without airspace change) baseline scenario. The purpose of this initial appraisal is to highlight the change to sponsors, stakeholders and the CAA and the relative differences between the impacts, both positive and negative, of each option.

2.7.28 At the IOA stage we continued to test the options individually i.e. we looked at the options for runway 16 and runway 34 separately. It would be at the next stage, the Full Options Appraisal, that the options were combined together into full airport system options.

2.7.29 Several assumptions were made before the options were assessed in the IOA:

- Usage of the RNP approaches was assessed using conservative 'worst cast' estimate of 5% of arrivals. This means 95% of arrivals would continue to arrive as they do today.
- Owing to the shorter track mileage and associated fuel burn savings, we anticipated that more operators would elect to fly the RNP APCH (RF) curved approaches if available. For the IOA we estimated this as up to 10% of arrivals could elect to fly the curved approaches.
- Not all airlines are equipped to fly curved approaches and therefore, in order to achieve full resilience and fully modernise the airspace, Aberdeen would look to implement an alternative PBN approach, which is available to all operators, alongside the curved approaches. For runway 16, this could be option 1, 2 or 3, and for runway 34 this could be option 1 or option 2. For the purposes of the IOA however we assessed each option individually.
- Feedback from Helicopter operators suggested that the PBN procedures would only be used for training purposes and therefore we optimistically estimated

c.5% of helicopter flights could use the procedures. The anticipated use was however dependent on the configuration of each option and this was factored into the IOA assessments (for example helicopters would be unlikely to use the runway 16 curved approach from the west because very little helicopter traffic arrives from a westerly direction).

Initial Options Appraisal assessment categories

2.7.30 The assessment criteria shown in Table 9 were categorised based on the example in CAP1616 (v4) Appendix E, however we added an additional category called 'Interdependencies, conflicts and trade-offs' to satisfy the requirements to outline potential interdependencies with other FASI-N ACPs, and 'Airspace Modernisation Strategy' to satisfy the 7 confirmed indicators that the CAA will use to assess whether this Stage 2 submission accords with the AMS including iteration 2 of the Masterplan. This table structure was followed across the appraisal of all of the options.

Table 9 Initial Options Appraisal assessment categories (Based on CAP1616(v4) Appendix E)

Group	Impact	Level of Analysis
Communities	Noise impact on health and quality of life	Qualitative and partly quantitative
Communities	Air Quality	Qualitative
Wider Society	Greenhouse Gas Impact	Qualitative
Wider Society	Capacity/Resilience	Qualitative
General Aviation	Access	Qualitative
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative
General Aviation/ commercial airlines	Fuel Burn	Qualitative
Commercial airlines	Training costs	Qualitative
Commercial airlines	Other costs	Qualitative
Airport/ANSP	Infrastructure costs	Qualitative
Airport/ANSP	Operational costs	Qualitative
Airport/ANSP	Deployment costs	Qualitative
All	Safety	Qualitative
All	Performance against the vision and parameters/strategic objectives of the AMS	Qualitative
All	Interdependencies, conflicts and trade-offs	Qualitative

2.7.31 For full details of the IOA methodology, please see the Stage 2B Initial Options Appraisal document on the CAA's Airspace Change Portal.

Initial Options Appraisal outcomes

2.7.32 Table 10 provides a summary of the outcomes of the Initial Options Appraisal. For full details please see the Stage 2B Initial Options Appraisal document on the CAA's Airspace Change Portal.

Table 10 Initial Options Appraisal outcomes (Summarised from pages 59 – 62 of IOA document v1.1)

Runway 16 Option	Conclusion	Progress to Stage 3
Runway 16 Arrival Option 1 – Vectors to Final Approach	The IOA established that for the c.5% of traffic estimated to operate this option, it was expected to: • Maintain noise impacts similar to the baseline; at the point of joining the procedure, which is within the main concentrated area of the existing arrivals swathe, there would be a small change in noise distribution however any adverse impacts of this are so marginal that they are not expected to be significant (and are outside the L_{Aeq} contours). • Maintain similar levels of track mileage to the baseline. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore these were estimated to remain the same as within the baseline. • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 This option therefore continued into Stage 3 of the ACP as it did not have any impacts in these categories compared to the baseline, and it meets most of Aberdeen's design principles and the aims of the AMS.	Yes
Runway 16 Arrival Option 2 – Inner T Bar	The IOA established that for the c.5% of traffic estimated to operate this option, it was expected to: • Have marginal negative impacts to noise compared to the baseline; this was because the western T-Bar is slightly south of the main area of concentration and, when compared to the baseline centreline data, there was a small increase in population overflown. Owing to the number of flights expected to operate these, any impacts were likely to be marginal and were not expected to be significant (and are outside the L_{Aeq} contours) however this information helped us to compare the performance of different PBN options.	No

	• Offer slightly improved track mileage compared to the baseline. Track mileage is an indicator of fuel burn and greenhouse gas emissions. • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 Option 3 offered a T-Bar slightly further north than this option. When we compared the outcomes of the noise assessment, Option 3 offered improvements to population overflown whereas this option increases population overflown. Option 3 also locates the PBN procedure in the more concentrated part of the western arrivals swathe which more closely aligns with DP3 (Minimise change to tracks over the ground). When we compared the eastern T-Bar between the two options, this option offers slightly closer alignment with the concentrated area of the existing arrival swathe, however Option 3 still offers some overlap. This option does however offer improvements to track mileage, and associated fuel burn and greenhouse gas benefits compared to option 3, however these are marginal and the other curved approach options offer the opportunity for greater track mileage improvements (which would need to be balanced against potential impacts to noise). We therefore chose to discontinue this option as compared to other options, it comparatively performs less well against the baseline.	
Runway 16 Arrival Option 3 – Outer T Bar	The IOA established that for the c.5% of traffic estimated to operate this option, it was expected to: • Have a marginal change in noise distribution compared to the baseline. The IOA has shown that the western T-Bar of Option 3 is located within the main area of concentration of the existing arrival swathe, and the eastern T-Bar is largely located within the main concentrated area and, where it isn't, it is still located within the existing arrival swathe. Overall, owing to the small number of flights operating the RNP APCH, any impacts of this were not expected to be significant (and are outside the L_{Aeq} contours). When comparing centreline to centreline data, there is mix of small increases in population overflown with some slightly larger decreases; cumulatively there is a decrease in centreline population overflown. • Maintain similar levels of track mileage to the baseline with the exception of RATPU which would increase by c.1nm.	Yes

	Track mileage is an indicator of fuel burn and greenhouse gas emissions • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 Compared to Option 2, Option 3 offered a T-Bar slightly further north which aligned more closely, particularly on the western T-Bar, with the baseline existing arrival swathe. This meant that from a noise perspective, the small change in noise distribution due to the RNP approaches will occur over the areas already most frequently overflown within the baseline. When comparing the Option 2 and Option 3 centreline data, Option 3 offered a cumulative reduction in population overflown whereas Option 2 increases. Although there is a small increase in track mileage for arrivals from RATPU, for the purposes of the IOA track mileage was rounded to the nearest nm and as part of the preparation of the IFPs for the Stage 3 full options appraisal, we explored whether the procedure can be refined to enable similar track mileage to today. We therefore chose to continue this option into Stage 3 of the ACP as it performed comparatively well in this IOA, it met the scope of the Statement of Need, met most of our design principles and within the scope of minimising changes to tracks over the ground, it achieved a better balance between noise and greenhouse gas compared to Option 2. This option also meets the AMS.	
Runway 16 Arrival Option 4 – Curved Approach from the West	The IOA established that, for the c.10% of runway 16 fixed wing arrivals estimated to operate this option it was expected to: • Result in a small redistribution of traffic between 7000-5000ft over areas already overflown today. When flying the curved approach from c.5000ft, there is increased frequency of overflight at lower altitudes over some areas already overflown today, and there is also new overflight over areas not typically overflown. Owing to the small number of flights operating the RNP RF route, and this occurring largely over sparsely populated areas, any impacts of this are not expected to be significant (and are outside the L_{Aeq} contours). • Offer a c.9nm reduction in track milage. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore this option offers potential reductions.	Yes

	• Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue however only for aircraft/operators capable of flying RNP APCH RF. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 Analysis of the curved approaches showed that although they would create overflight which would alter the distribution of traffic compared to the baseline, this would largely occur over sparsely populated areas, and the centreline data shows reductions in population overflown. The option also offered a c.9nm reduction in track mileage which had the potential to offer significant greenhouse gas emissions and fuel savings compared to the baseline for those operators able to fly RNP RF. We therefore chose to take this option forward into Stage 3 to explore the potential positive benefits and negative impacts in quantified detail.	
Runway 16 Arrival Option 5 – Curved Approach from the East	The IOA established that for the c.10% of runway 16 fixed wing arrivals and c.5% of helicopter arrivals estimated to operate this option it was expected to: • Result in a small redistribution of traffic between 7-5000ft over areas already overflown today. When flying the curved approach from c.5000ft, there is increased frequency of overflight at lower altitudes over some areas already overflown today. Owing to the small number of flights operating the RNP RF route, and this occurring largely over sparsely populated areas, any impacts of this are not expected to be significant (and are outside the L_{Aeq} contours). • Offer a c.2nm reduction in track mileage. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore this option offers potential reductions. • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue however only for aircraft/operators capable of flying RNP APCH RF. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 Analysis of this curved approach showed that although it would create overflight which would alter the distribution of traffic compared to the baseline, this would largely occur over sparsely populated areas, and the centreline data shows reductions in population overflown. The option also offered a c.2nm reduction in	Yes

	track mileage which had the potential to offer CO_2 and fuel savings compared to the baseline for those operators able to fly RNP RF. We therefore chose to take this option forward into Stage 3 to explore the potential positive benefits and negative impacts in quantified detail.	
Runway 34 Option	**Conclusion**	**Progressed to Stage 3?**
Runway 34 Arrival Option 1 – Vectors to Final Approach	The IOA established that, for the 5% of traffic expected to operate this option, it was expected to: • Maintain noise impacts similar to the baseline; at the point of joining the procedure, which is within the main concentrated area of the existing arrivals swathe, there would be a small change in noise distribution however any adverse impacts of this are so marginal that they are not expected to be significant (and are outside the L_{Aeq} contours). • Maintain similar levels of track mileage to the baseline. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore these are estimated to remain the same as within the baseline. • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 We therefore chose to continue this option into Stage 3 of the ACP as it does not have any impacts in these categories compared to the baseline, and it met most of Aberdeen's design principles and it met the aims of the AMS.	Yes
Runway 34 Arrival Option 2 – T Bar	The IOA established that, for the 5% of traffic expected to operate this option, it was expected to: • Have a marginal change in noise distribution compared to the baseline. The IOA showed that the western T-Bar of Option 2 is located slightly to the north but still within the main area of concentration of the existing arrival swathe. This location results in a small increase in population overflown when comparing the centreline data however owing to only c. 1 fixed wing arrival per day using the western T-Bar on	Yes

	average, any impacts are not expected to be significant (and are outside the L_{Aeq} contours). • Offer a c.2nm reduction in track mileage. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore this option offers potential reductions. (Note that if the T-Bar is slightly repositioned as discussed above, this will alter the track mileage which has been rounded to the nearest nm for the purposes of this IOA). • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 We therefore chose to continue this option into Stage 3 of the ACP as it performs comparatively well in this IOA, it meets the scope of the Statement of Need, meets most of our design principles. This option also meets the AMS.	
Runway 34 Arrival Option 3 – Curved Approach from the East	The IOA established that, for the c.10% arrivals and c.5% of helicopter arrivals, it was expected to: • Result in a small noise redistribution compared to the baseline which would include a very small amount of overflight over areas not currently overflown in the baseline. The centreline data has however shown that the increase in population overflown from this new overflight is mixed with decreases in population overflown due to the later joining point of the curved approach; cumulatively there is a decrease in centreline population overflown. Owing to the small number of flights operating the RNP RF route, the impacts of this are not expected to be significant (and are outside the L_{Aeq} contours). • Offer a c.8nm reduction in track mileage. Track mileage is an indicator of fuel burn and greenhouse gas emissions and therefore this option offers potential reductions. • Improve resilience and therefore offer some opportunities for reduced airline operating costs and increased operating revenue however only for aircraft/operators capable of flying RNP APCH RF. • Not impact General Aviation and accommodate the reduced CAS volume associated with CAS Option 1 Analysis of the curved approaches showed that although they would create overflight which would alter the distribution of traffic compared to the baseline, this would largely occur over the water,	Yes

	and when over land, there would be a mix of benefits and impacts in terms of noise that would be useful to explore in quantitative detail. As the option also had the potential to offer significant greenhouse gas emissions and fuel savings compared to the baseline for those operators able to fly RNP RF, we chose to take this option forward into Stage 3 to explore the potential positive benefits and negative impacts in quantified detail.	
Controlled Airspace	**Conclusion**	
Existing CAS 'Do nothing'	The IOA concluded that the baseline 'do nothing' (without airspace change) option should remain as the safety assessment for option 1 highlighted that further safety investigation was required as part of Stage 3.	Yes
CAS Option 1 Raise portion of CTA 3 to 4500ft	CAS Option 1 was taken forward to stage 3 as it offered opportunities to release CAS however the IOA noted that this option requires further safety investigation to establish whether there would be impacts to some of Aberdeen Airport's published procedures, and NERL's enroute procedures.	Yes

Consideration of Steeper Approach angles

2.7.33 Aircraft at Aberdeen fly a 3.0° approach. The Stage 1 Design Principles includes DP4, *Design options should investigate the feasibility of steeper approaches for PBN arrivals to reduce the noise footprint of Aberdeen Airport's operation.*

2.7.34 Based on precedent within the UK (ACP-2017-49), as part of the Initial Options Appraisal (IOA) we reviewed the possibility of increasing the approach options to 3.2° rather than the standard 3.0° approach angle. This results in a height difference of approximately 210ft when an aircraft is 10nm from touchdown between a 3.2° and a 3.0° approach.

2.7.35 We know from studies there are environmental and noise benefits when aircraft fly a 3.2° approach, however these benefits are disproportionately small and require a large number of flights to operate in order for any of the benefits to be materially realised. In the case of Aberdeen, a very low number of aircraft are anticipated to fly the PBN approaches.

2.7.36 As the conventional 3.0° ILS procedures will remain, there would be no benefit to controlled airspace or other airspace from increased approach angles. Therefore, when considering noise and airspace benefits overall, any benefits would be so

negligible compared against the additional costs that the project would incur in being able to demonstrate whether 3.2° approaches were operationally safe and acceptable.

2.7.37 On balance, it was therefore concluded that the possibility of increasing the approach angle from 3.0° would not be continued to Stage 3 of this proposal.

Full Options Appraisal (Stage 3A)

2.7.38 As part of the Stage 3 Full Options Appraisal (FOA), airspace change sponsors are required to generate analysis which reflects the overall airport's air traffic operation (taking into account operations from all runways including arrivals and departures). Table 11 shows how the options which proceeded from the IOA (as shown in Table 10) were combined ahead of the Stage 3 FOA.

Table 11 Stage 3 FOA Options Configuration

Stage 3 Options Configuration			
Stage 2 Option name		**Stage 2 Option name**	**Stage 3 Option**
Runway 16 Arrival Option 1 – Vectors to Final Approach	+	Runway 34 Arrival Option 1 – Vectors to Final Approach	**Vectors to Final Approach**
Runway 16 Arrival Option 3 – Outer T Bar	+	Runway 34 Arrival Option 2 – T Bar	**T-Bars**
Runway 16 Arrival Option 4 – Curved Approach from the West	+	Runway 34 Arrival Option 3 – Curved Approach from the East	**T-Bars and Curved Approaches**
			Controlled Airspace
			Existing CAS 'Do nothing'
			CAS Option 1 Raise portion of CTA 3 to 4500ft

2.7.39 Differing options on each runway end, for example to have Vectors to final approach on runway 16 and T-Bar on runway 34, were not generated because of the increased risk of confusion for ATC and pilots which leads to safety concerns.

2.7.40 As noted in the IOA, runway 16 option 4 and runway 34 option 3 use a type of PBN capability called RF (Radius to Fix) however not all airlines are able to fly these curved approaches. These options were therefore combined with the T-Bars when creating the Stage 3 options to ensure a solution suitable for the majority of operators.

2.7.41 CAS Option 1 was independent of all three PBN arrival options so for the purposes of the FOA it was assessed separately.

Runway 16 arrival option 5 – curved approach from the east

2.7.42 Table 11 does not include the runway 16 arrival option 5 – curved approach from the east which was continued from Stage 2B. This was because safety discussions ahead of the main stage 3 safety assessment found that this option would generate increased workload for ATC, and, to mitigate this safety risk, there would be a change to vectoring

within the wider area of both fixed wing and rotary traffic. This is very much outside the scope of this ACP, which focuses on resilience and offering modern PBN approaches for Aberdeen rather than a fundamental redesign of the airspace. More information can be found in paragraphs 3.2.2 – 3.2.4 of the Stage 3 Full Options Appraisal document.

FOA Assumptions

2.7.43 Ahead of the FOA, several of the assumptions around the usage of the options were updated based on the latest information available:

- Usage of the **RNP approaches continued to be assessed using an optimistic estimate of 5% of arrivals**. This means 95% of arrivals would continue to arrive as they do today.

- Within the IOA we anticipated that, owing to the shorter track mileage and associated fuel burn savings, more operators would elect to fly the curved approaches if available and it was estimated that 10% of arrivals could elect to fly a curved approach. Ahead of the FOA, airlines informed the airport that despite the curved approaches offering track mileage savings, they would not be considered a preferred approach unless there are very clear visibility conditions. Airlines also noted that although there are track mile savings, there is very little flying time difference between a curved approach and an ILS approach, and therefore the ILS would remain the preferred. **The estimate for aircraft flying the curved approaches was therefore adjusted for the Full Options Appraisal to an optimistic c.3% of arriving aircraft.**

- Feedback from helicopter operators suggested that the PBN procedures would only be used for training purposes and therefore we **optimistically estimated c.5% of helicopter flights could use the RNP procedures**. Helicopter use of the curved approaches is limited to the eastern curved approach for runway 34, as the western curved approach for runway 16 would add significant track mileage for helicopters.

- The FOA also considered the future use of missed approaches and holds - the RNP approach procedures are not expected to result in an increase in holding or in the number of missed approaches flown.

FOA assessment categories

2.7.44 At Stage 3A, CAP1616 requires sponsors to carry out a full assessment of the benefits and impacts of each option, tested against the ‘do nothing’ (without airspace change) baseline scenario. The assessment categories followed the same structure as the IOA however the level of analysis was increased to mainly quantitative rather than qualitative assessments as shown in Table 12.

Table 12 Initial Options Appraisal assessment categories (Based on CAP1616(v4) Appendix E)

Group	Impact	Level of Analysis
Communities	Noise impact on health and quality of life	Quantitative
Communities	Tranquillity	Quantitative
Communities	Biodiversity	Quantitative
Communities	Air Quality	Qualitative
Wider Society	Greenhouse Gas Impact	Quantitative
Wider Society	Capacity/Resilience	Qualitative
General Aviation	Access	Quantitative and qualitative
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Qualitative
General Aviation/ commercial airlines	Fuel Burn	Quantitative
Commercial airlines	Training costs	Qualitative
Commercial airlines	Other costs	Qualitative
Airport/ANSP	Infrastructure costs	Quantitative
Airport/ANSP	Operational costs	Quantitative
Airport/ANSP	Deployment costs	Quantitative
All	Safety	Qualitative
All	Performance against the vision and parameters/strategic objectives of the AMS	Qualitative
All	Interdependencies, conflicts and trade-offs	Qualitative

2.7.45 For full details and of the FOA methodology, please see section 4 of the Full Options Appraisal document.

Full Options Appraisal outcomes

2.7.46 As part of the FOA, a Cost Benefit Analysis (CBA) was produced which looks at the monetised costs associated with the ACP and produces a Net Present Value (NPV) for each option.

2.7.47 Table 13 summarises the FOA NPV outcomes for the three options. When reviewing these costs, please note that they have been generated based on an optimistic 5% of aircraft flying the PBN procedures and we expect this number to be lower.

Table 13 Stage 3 FOA NPV outcomes (Sourced from Stage 3 Full Options Appraisal)

Option	Total NPV (£)[4]
Vectors to final approach	-140802
T-Bars	-112902
Curved approaches and T-Bars	-115365

2.7.48 For full details and a breakdown of the NPV across the 10 year period, please see pages 78 – 80 of the Full Options Appraisal document.

2.7.49 The threshold for continuing or discontinuing an option to consultation could not be based on a monetised quantitative assessment alone as it also comes down to the other quantitative and qualitative appraisals and professional judgment, as there are many factors to balance.

2.7.50 In the first instance, the FOA looked to the safety assessments. These found that for both the T-Bar and curved approaches with T-Bar options, both options would introduce complication within the airspace, which could lead to increased workload, changes in vectoring practices and potential for confusion for ATC and Pilots.

2.7.51 We were aware that this outcome was different to the outcomes presented in the Stage 2 Initial Options Appraisal (IOA) safety assessment for these options. This was because the shortlist of options taken from Stage 2 were developed and refined at Stage 3, and this included detailed IFP designs and charting development as well as ATC undertaking more detailed safety investigations.

2.7.52 The vectors to RNP approach option was found to be as safe as the baseline, as this option is very similar to what happens today and has been designed to keep in line with existing boundaries and levels.

2.7.53 Overall, the differences between the three options were so negligible in terms of noise, fuel burn and CO2e emissions that when balanced against the outcome of the safety assessment, which showed increased level of complication and increased safety risk for the T-Bar and curved approaches with T-Bar option, it was considered appropriate to discontinue these options at the FOA stage and only progress the vectors to RNP approach option as our preferred option to consultation.

CAS Option 1

2.7.54 The FOA of CAS Option 1 demonstrated there were benefits to General Aviation (GA) stakeholders from the release of a portion of CTA-3 and there were otherwise only marginal, almost indefinable, benefits and impacts to noise, fuel burn, CO2e for aircraft arriving at Aberdeen. Aircraft departing from Aberdeen will not be impacted. As such, we proposed to take CAS Option 1 forward to consultation.

[4] The FOA NPV were calculated based on the example provided in CAP1616 (v4) Table E3 and E4 using a social time preference rate to discount at 3.5%. This rate is set by the Government. For noise and CO_2e, the values are taken directly from the WebTAG workbooks before any discounting is applied and after setting the output price year to 2023. For fuel burn, the jet fuel price was based on the week ending 5 Jan 2024 and the GBP to USD conversion rate from 1 Jan 2024.

Consultation and next steps

2.7.55 The formal consultation took place for 12 weeks between 29 April 2024 and 21 July 2024 on the proposal to:

1. To introduce PBN arrival procedures (RNP approaches) to runways 16 and 34 (Vectors to final approach option) which would be used by a very small percentage of arrivals for resilience and training purposes; and
2. Release a section of the Controlled Airspace (CAS Option 1), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

2.7.56 The next section (section 2.8) of this document describes the consultation activities and how the outcomes of the consultation influenced the final proposal.

Final Options Appraisal

2.7.57 Following the consultation, a Stage 4 Final Options Appraisal was undertaken. This assessed the final airspace change proposal using the same methodology and criteria as the Stage 3 FOA. More details around this can be found within section 9 and section 10 of this document.

2.7.58 The Final Options Appraisal conclusion showed a Net Present Value cost of -£160,067 for the airspace change proposal however it was noted that the costs had been generated based on an optimistic 5% of aircraft flying the PBN procedures and we expect this number to be lower. In addition, some of the noise costs associated with the final option were influenced by a limited number of receptors transitioning between 1dB bands in the TAG evaluation due to noise variations of less than 0.1dB. These changes are negligible beyond the accuracy of any noise model. Therefore, the noise costs are not considered to be material to the assessment.

2.7.59 Just like in the FOA, the decision on whether or not to proceed with the proposed changes cannot be made on monetised assessments alone as it also comes down to the other quantitative and qualitative appraisals and professional judgment, as there are many factors to balance.

2.7.60 The Final Options Appraisal concluded that the proposal to introduce RNP approaches and the release of a section of CAS, would meet the aims of the ACP and ensure Aberdeen Airport aligns with the airspace modernisation strategy whilst not resulting in any material impacts.

2.7.61 As such Aberdeen Airport concluded to proceed with the proposal to:

- Introduce modern satellite-based arrival procedures (RNP approaches) which would be used by a very small percentage of arrivals for resilience and training purposes; and
- Release a section of the Controlled Airspace (CAS Option 1), which is not routinely used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

2.8 Summary of Engagement and Consultation

2.8.1 Throughout the airspace change process we have engaged with stakeholders. Table 14 summarises this activity before the following sub sections then summarise the outcome of the Stage 3 consultation.

Table 14: Summary of engagement and consultation activity

CAP1616 Stage	Summary of Activity	Links for more information
Stage 1B	Stakeholders were identified through the potentially impacted area and those airspace users who operate in and around Aberdeen airport including representatives from airlines and industry, NATMAC, General Aviation and other users, representatives from local councils, environmental groups, and politicians. Aberdeen Airport engaged on the design principles by conducting workshops, one for stakeholders involved in aviation and another to represent the interests of stakeholders who do not have an aviation background. Those who could not attend workshops were provided with the same materials as per attendees. The workshops provided information on airspace change and facilitated discussions to gain relevant input about design principles that should be adopted, to help guide the process. The feedback from these workshops was analysed and during a second phase of remote engagement the stakeholders were invited to complete feedback forms about the proposed design principles and engagement to date. Following the outcome of the engagement workshops and the remote feedback, the initial design principles were refined. The ACP passed the Stage 1 Gateway on 18 November 2022	Report on Airspace Design Principles Engagement
Stage 2A	The stakeholders identified during Stage 1 were engaged with during the Stage 2A engagement on the development of the Comprehensive list of options. Four briefing sessions were held, three of these were online and one was held in-person. Copies of the briefing slides and a recording of the briefing was available on Aberdeen's dedicated ACP website for those who could not attend a live briefing. Feedback was encouraged by a variety of means including email, phone, and hardcopy, and a five-week window was given for this. Feedback received from one stakeholder directly influenced the list of options, this was to include an additional curved approach to Runway 16 from the East.	Stage 2A DPE Report V1

	The ACP passed the Stage 2 Gateway on 04 January 2023.	
Stage 3	The formal consultation took place for 12 weeks between 29 April 2024 and 21 July 2024 on the proposal to introduce PBN arrivals for resilience and training purposes, and to release a section of the Controlled Airspace (CAS), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users. During the consultation, Aberdeen Airport hosted 4 webinars and one in person public drop-in event to ensure the events were accessible for as many people as possible. Hard copies of consultation information were made available. The previously engaged stakeholders from Stage 1 and 2 were emailed and provided with a link to the Citizen Space consultation website. The stakeholders were sent reminders at the consultation mid-point and two weeks before the closing date. The consultation was open to the wider public and Aberdeen promoted the consultation on the airport website, social media platforms and via leaflet drops to targeted consultees. This ACP passed the consult/Engage Gateway on 19 March 2024. The outcomes of the Stage 3 consultation are detailed in the following sub-section of this document.	Main Consultation Document Consultation Strategy

Stage 3 Consultation outcomes

2.8.2 During the 12-week consultation period, a total of 18 responses were received, with an additional 2 responses submitted after the consultation period ended. Of these responses, 10 were from individuals and 10 were submitted on behalf of organisations.

PBN Arrivals Procedure Feedback

2.8.3 As part of the consultation, two main questions were posed regarding the proposal to introduce PBN arrival procedures to Aberdeen Airport:

- What are your thoughts on the proposal to introduce PBN arrivals? And,
- Do you have any further comments you would like to share about the proposed introduction of PBN arrivals at Aberdeen Airport?

2.8.4 Out of the 20 respondents, 18 responded to the question regarding the introduction of PBN arrival procedures. Of these, 16 expressed broad support, highlighting the benefits of modernisation and improved resilience, while 2 had no comments or opinions on the PBN arrival procedures.

2.8.5 The second question invited respondents to provide any further comments. Out of 20 respondents, 11 either had no comments or left the question blank. The remaining responses were generally supportive, with some respondents raising questions about GPS jamming and the environmental metrics associated with the proposed procedures.

2.8.6 Overall, the feedback received around the PBN arrival procedures was broadly supportive and none of the feedback had the potential to impact the final proposal.

2.8.7 For further details around the response to the Consultation, please see the Annex A Consultation Response document.

Controlled Airspace Feedback

2.8.8 Respondents were directed to the relevant questions based on their status as airspace users or non-airspace users.

2.8.9 9 respondents indicated they were airspace users, 10 were not but opted to participate, and one respondent did not provide a response.

2.8.10 Airspace users were asked:

- As an airspace user, how satisfied are you with the proposed change?
- Can you provide details on why you feel that way?
- As an airspace user, in particular for GA (General Aviation) pilots, can you think of any visual features that could better define the boundary?
- Thinking specifically of Controlled Airspace, do you have any further comments?

2.8.11 All nine respondents who identified as airspace users indicated satisfaction with the proposed change to Controlled Airspace. They were broadly supportive with some noting potential operational and safety improvements if the CAS were to be released.

2.8.12 Three respondents provided suggestions of visual features and there is more information about this in the next section 'feedback taken forward to stage 4'.

2.8.13 No further comments were provided by respondents which would influence the final design proposal.

2.8.14 Non airspace users were asked:

- As a non-airspace user, do you support this proposal?
- Please explain why
- Thinking specifically of Controlled Airspace, do you have any further comments?

2.8.15 Of the ten respondents who indicated they were not airspace users, nine supported the proposal, with some suggesting it would enhance safety. One respondent did not support the proposal due to safety concerns and there is more information about this in the next section 'feedback taken forward to stage 4'.

2.8.16 No further comments were provided by respondents which would influence the final design proposal.

Feedback taken forward to Stage 4 and how it influenced the final design proposal

2.8.17 Table 15 shows the feedback that was categorised as 'may impact the final proposal' and therefore taken forward for further consideration in Stage 4. The table shows the question asked, the feedback received, and Aberdeen Airport's response. This includes details of how we have incorporated the feedback into the final proposal.

Table 15 Outcomes of the Stage 3 consultation: We asked, you said, we did

We asked	You said	We did
Feedback question	**Feedback received which could influence the final design**	**Aberdeen Airport response**
As a non-airspace user, do you support this proposal? [with regards to CAS Option 1]	Do NOT release this airspace! The gliding and other users have hundreds of miles of open air. ATC at Aberdeen and the airlines do not. Aircraft struggle to get the height off as it is for Runway 34 and you want to make them stay higher for longer? This just shows a lack of investigation into the airspace usage. This will not stop the infringements! And it will not stop here. The constant chipping away will continue. This has the potential to cause more issues than it solves!	As part of the development of the option in Stage 2 and ahead of the consultation at Stage 3, Aberdeen Airport analysed surveillance radar data to understand what could be safely achievable within the airspace. The data showed that no departures utilise the proposed portion of airspace and on average only 1 fixed wing and 1 rotary aircraft arrival per week utilise the airspace. Aberdeen Airport also assessed the potential benefits and impacts of releasing the CAS with Air Traffic Control (ATC) to understand any safety concerns or operational impacts. Following receipt of this feedback, it was shared with ATC for review ahead of ATC responding to the consultation and also ahead of any Stage 4 safety assessment. ATC are responsible for the safe and efficient movement of aircraft within Aberdeen's airspace and therefore they are best placed to consider whether the release of CAS could lead to any safety concerns. ATC carefully considered the feedback ahead of responding to the consultation however they found that releasing the section of airspace will be of great benefit to the GA community, without adversely affecting the overall ATC operation. They also noted there is an expected benefit in the reduction of Controlled Airspace infringements, particularly in the vicinity of Aboyne gliding site.
Thinking specifically of Controlled Airspace, do you have any further comments?	We need more not less! [Feedback from the same respondent as above]	

We asked	You said	We did
Feedback question	**Feedback received which could influence the final design**	**Aberdeen Airport response**
		As such, this feedback did not influenced the final design.
As an airspace user, in particular for GA (General Aviation) pilots, can you think of any visual features that could better define the boundary?	Visual features could include the addition of more visual reference points (VRPs) near the boundary, or VFR checkpoints.	The CAA publish a Policy for the establishment of visual reference points (VRPs) that we must follow as part of the airspace change process. This policy explains that the establishment and review of VRPs is the responsibility of the Air Traffic Service Unit (ATSU). Aberdeen Airport's ATSU is run by NATS NSL and therefore we have shared the VRP suggestions with the NATS NSL ATC team for their consideration. The CAA policy also states that VRPs should: a. *Be visible by day and by night. It is recognised that not all VRPs may be suitable for use at night, in which case sponsors should ensure that procedures based upon reference to VRPs take this into consideration.* b. *Be based upon prominent features such as major road networks, road junctions, masts, buildings, lakes, river confluences and reservoirs. Transitory features such as woodland, towns, villages, housing estates and disused airfields may not be suitable and should be avoided where possible.* c. *Be consistent with Commission Regulation (EU) 923/2012 SERA.3105 'Minimum heights'.* d. *Ensure there is no confliction with VRPs associated with adjacent aerodromes.* e. *If referring to a disused aerodrome depicted on VFR charts, an assessment of the visibility of vestigial aerodrome*
	Insch VRP at north, unsure from supplied maps about southern point.	
	Invercannie Water Works might be a useful feature on the eastern edge of the airspace release area	

We asked	You said	We did
Feedback question	Feedback received which could influence the final design	Aberdeen Airport response
		features is to be undertaken in advance of selecting such features as VRPs. The first piece of feedback said 'Visual features could include the addition of more visual reference points (VRPs) near the boundary, or VFR checkpoints'. When reviewing the changes to the CAS, the ATC team have considered potential VRP additions (and the suggestions as part of the consultation) against the requirements of the CAA policy. The second piece of feedback '*Insch VRP at north*' refers to a VRP that is already established (see Class D airspace chart in Figure 4 for further information). The ATC team have confirmed that this VRP will remain fit for purpose as an initial routing point into the CTR from the west and northwest. The third piece of feedback suggested VRP '*Invercannie Water Works might be a useful feature on the eastern edge of the airspace release area'*. This suggestion has been carefully considered by the ATC team. Invercannie Water Works is located on the new CAS boundary line however is located c.1.5nm west of an existing VRP at Banchory. The Banchory VRP is long established over an area which is considered more prominent than the waterworks. Given this, establishment of a VPR at the waterworks has not been progressed as it would not meet requirements b. and d. of the CAA policy. ATC also carefully considered whether a VRP at Alford would be useful to identify the point at which a southbound aircraft at 4000ft can make a left turn to track southeast. However, no prominent feature could be identified other than the town itself and the CAA policy says towns should be avoided.

Consideration of the requirement for further consultation

2.8.18 Overall, the feedback received around the PBN arrival procedures and the release of a section of CAS was broadly supportive and none of the feedback impacted the final proposal.

2.8.19 No changes were therefore made to the PBN arrival procedures, or the boundary of the CAS release, as a result of the consultation.

2.8.20 Given this, Aberdeen Airport has not identified a need to reconsult and intends to continue with this ACP submission. Aberdeen Airport's known stakeholders will be updated by email when this document is published on the Airspace Change Portal.

2.9 Summary of Anticipated Impacts

2.9.1 This section is required to summarise the information within section 5 of this document.

2.9.2 Table 16 summarises the anticipated operational impacts for airlines, Airport/ANSP, general aviation, communities. Please see section 5 for further information.

2.9.3 Table 17 shows the impact criteria outlined in CAP1616f (page 128 and 129) and then summarises the anticipated impacts for the PBN arrival procedures and the release of CAS.

Table 16: Summary of anticipated operational impacts for airlines, Airport/ANSP, general aviation, communities (see section 5 for full details)

Group	PBN arrival procedures (RNP approaches)	Release of portion of CAS (CAS Option 1)
Airlines and airspace users	Positive impact through improved resilience. Operationally no other material impacts anticipated.	No material impacts anticipated.
Aberdeen Airport / ANSP	The airport and ANSP are anticipated to be positively impacted as a result of improved resilience in the event of ILS outage. There are not expected to be any long-term operational impacts but there will be a cost to the airport and ANSP to initially deploy the PBN arrival procedures.	No material impacts anticipated. There will be a small cost to the airport / ANSP to initially deploy the changes to CAS.
General Aviation	No impacts anticipated as a result of the PBN arrival procedures.	The release of this volume of CAS is anticipated to have a positive impact on General Airspace (GA) users as it would improve access.
Communities	No material impacts are anticipated.	No material impacts anticipated as a result of aircraft arriving and departing to/from Aberdeen Airport.

Table 17 Operational impact assessment

Impact Criteria (CAP1616f)	RNP approaches	Release of portion of CAS (CAS Option 1)
The impact on safety (relating to section 70(1) of the Transport Act 2000 and the airspace modernisation strategic objective on safety)	The PBN arrivals are expected to be as safe as what happens today. This is because they are very similar to what happens today and have been designed to be operated in line with the existing Air Traffic Control procedures and charts. Implementing PBN arrivals would offer some ATC workload benefits in the event the ILS is unavailable	The release of this volume of CAS is expected to improve safety for GA users operating outside CAS. This is because the release could be expected to decrease congestion in the surrounding class G airspace.

Impact Criteria (CAP1616f)	RNP approaches	Release of portion of CAS (CAS Option 1)
	and furthermore, in this circumstance, safety would be improved as it would remove reliance on the existing Non-Precision Approaches (NPA).	
The impact on the efficient use of airspace (see section 70(2)(a) of the Transport Act 2000 and the airspace modernisation strategic objective on simplification)	This ACP does not seek to increase capacity at Aberdeen Airport. In the event of an ILS outage, the implementation of PBN arrival procedures would enable a simplified alterative procedure with for ATC compared to the current VOR/DME or NBD approach which would increase efficiency in the airspace.	Benefits to GA with the release of a portion of CTA-3.
The impact on the expeditious flow of air traffic (see section 70(2)(a) of the Transport Act 2000 and the airspace modernisation strategic objective on simplification)	As noted above, although this ACP does not seek to increase capacity at Aberdeen, in the event of an ILS outage, the implementation of PBN arrival procedures would enable a workload reduction for ATC, which means they may have a greater capacity to handle traffic compared to the current day where aircraft would fly a VOR/DME or NBD approach and thus there would be improved efficiency within the airspace.	There would be no change to capacity, efficiency, or resilience to Aberdeen Airport as a result of the CAS release. Increasing the base of CAS would enable GA transiting the airspace to remain outside of CAS at a higher altitude than today which may offer benefits.
The impact on the requirements of operators and owners of all classes of aircraft (see section 70(2)(b) of the Transport Act 2000 and the airspace modernisation strategic objectives on simplification and integration)	The PBN arrival procedures are not anticipated to directly impact General Aviation; the procedures would be contained within existing CAS, and aircraft would continue to be vectored on to final approach as they are with the baseline. The procedures are not anticipated to impact the helicopter routes to and from Aberdeen Airport.	CAS Option 1 would result in the release of 27.8nm^3 of Class D CAS within Aberdeen's CTA-3. The increase of the base of this would enable improved soaring profiles for flights to/from Deeside Gliding Club at Aboyne. In addition to this, it would enable GA transiting the airspace to remain outside of CAS at a higher altitude than today.
The impact on the interests of any person (other than an operator or owner of an aircraft) in relation to the use of the airspace (see section 70(2)(c) of the Transport Act 2000 and the airspace	Due to the similarities to the current approaches, this option is not expected to have any material impact on noise, air quality, tranquillity, or biodiversity. Aberdeen Airport's proposals for the implementation of PBN arrivals procedures has followed the	CAS Option 1 is not expected to materially alter tracks over the ground therefore will not have any impact on noise, quality of life, air quality, tranquillity, or biodiversity. Aberdeen Airport's proposals for the release of a section of CAS has followed the CAP1616 process and

Impact Criteria (CAP1616f)	RNP approaches	Release of portion of CAS (CAS Option 1)
modernisation strategic objective on sustainability)	CAP1616 process and had regard for stakeholder feedback received during that process.	had regard for stakeholder feedback received during that process.
The impact on any matters relating to spaceflight activities (within the meaning of the Space Industry Act 2018) given to the CAA by the Secretary of State (see section 70(2)(ca) of the Transport Act 2000 and the airspace modernisation strategic objective on integration)	There is no known impact.	There is no known impact.
The environmental impacts (see section 70(2)(d) of the Transport Act 2000 and the airspace modernisation strategic objective on sustainability)	Overall, the Final Options Appraisal concluded that there was no material change to noise, fuel burn and CO_2e as a result of this option.	The Final Options Appraisal demonstrated there are marginal, almost indefinable benefits and impacts to noise, fuel burn and CO_2e for aircraft arriving at Aberdeen Airport.
The impact on the air traffic services provided by or on behalf of the Ministry of Defence and other air traffic services units affected by the changes (see section 70(2)(e) of the Transport Act 2000 and the airspace modernisation strategic objectives on simplification and integration)	Based on consultation responses, there is no known impact.	Based on consultation responses, there is no known impact.
The impact on national security (see section 70(2)(f) of the Transport Act 2000)	There is no known impact.	There is no known impact.
The impact on any international obligations of the UK notified to the CAA by	There is no known impact.	There is no known impact.

Impact Criteria (CAP1616f)	RNP approaches	Release of portion of CAS (CAS Option 1)
the Secretary of State and subsequently notified to the change sponsor (see section 70(2)(g) of the Transport Act 2000)		

2.10 Assessment of Criteria for the Secretary of State's Call-in Process

2.10.1 During Stage 5, the Secretary of State may determine that an airspace change proposal should be 'called-in' and a decision made by the Secretary of State instead of the CAA. The Air Navigation Directions 2023 and Air Navigation Guidance 2017 detail the criteria an airspace change proposal must satisfy for it to be eligible to be 'called-in'.

2.10.2 Aberdeen Airport have assessed the proposals against The Secretary of State's call-in criteria and do not believe that the three conditions would apply to this ACP. Table 18 provides further details.

Table 18: Secretary of State's call in criteria

Call in criteria	Applicability to this ACP
Is of strategic national importance or,	This ACP will enable Aberdeen Airport to add resilience whilst continuing to replicate the existing routes flown today as closely as possible. It is not expected to alter the movement numbers and is therefore not considered of strategic national importance.
Could have a significant impact (positive or negative) on economic growth of the United Kingdom, or	The Final Options Appraisal has not identified any significant impact on economic growth as a result of the ACP; Aberdeen Airport are proposing to implement these changes to provide resilience to its operation and support the introduction of new routes based on satellite navigation. There is not expected to be any change to the current capacity at Aberdeen.
Could lead to a change in noise distribution resulting in a 10,000 net increase in the number of people subjected to a noise level of at least 54dB L_{Aeq} 16hr and have an identified adverse impact on health and quality of life.	The Final Options Appraisal has demonstrated that there will be no material change to the population exposed to a noise level of at least 54dB L_{Aeq} 16hr.

2.11 Timeline for Implementation

2.11.1 The target cycle for implementation is AIRAC 03/2026. This means the cut off for AIP submission would be 19 Dec 2025 and the ACP would be implemented on 19 March 2026.

2.11.2 The back up AIRAC is 04/2026 which has a cut off of the 16 Jan 26 and an implementation of the 16 Apr 26.

2.11.3 Table 19 provides a high-level overview of the activities to be completed prior to implementation and an indicative timeline.

Table 19 Activities to be completed prior to implementation and indicative timeline

Activities	Dec 24	Jan 25	Jun 25	Jul 25	Aug 25	Sep 25	Oct 25	Nov 25	Dec 25	Jan 26	Feb 26	Mar 26	Apr 26
Stage 4 submission													
Stage 5 CAA Decision													
Staff training													
Notification of changes to CAA Aerodromes and Air Traffic Management													
Completion of modifications to infrastructure, including air traffic control displays, and/or related licensing													
Submission of finalised SI/training plans													
Target AIRAC submission													
Back up AIRAC submission													
Target implementation													
Back up implementation													

2.11.4 Please note Aberdeen ATC have reviewed the proposals and determined that a final airspace validation/simulation exercise is not required for the proposed changes. Aberdeen ATC have also undertaken a review of existing unit Letters of Agreement (LOAs) and confirm that no changes are required as a result of this ACP.

3. Description of the current Airspace and Operations

3.1.1 The following section provides a full description of the current airspace which expands on the information provided in the executive summary. For non-technical audiences, we would recommend having the Glossary and Terminology explained document open when reading this section.

3.2 Airspace Description and Usage

Airspace Description and usage

3.2.1 Aberdeen Airport has one instrument runway (16/34) which is used for fixed and rotary wing aircraft.

3.2.2 The helicopters have three smaller runways they can operate from (05H/23H, 14H/32H and 36H), but the majority of arrivals are to Runways 16 and 34.

3.2.3 Over the past 10 years, 60% of fixed wing flight used runway 16 and 40% used runway 34.

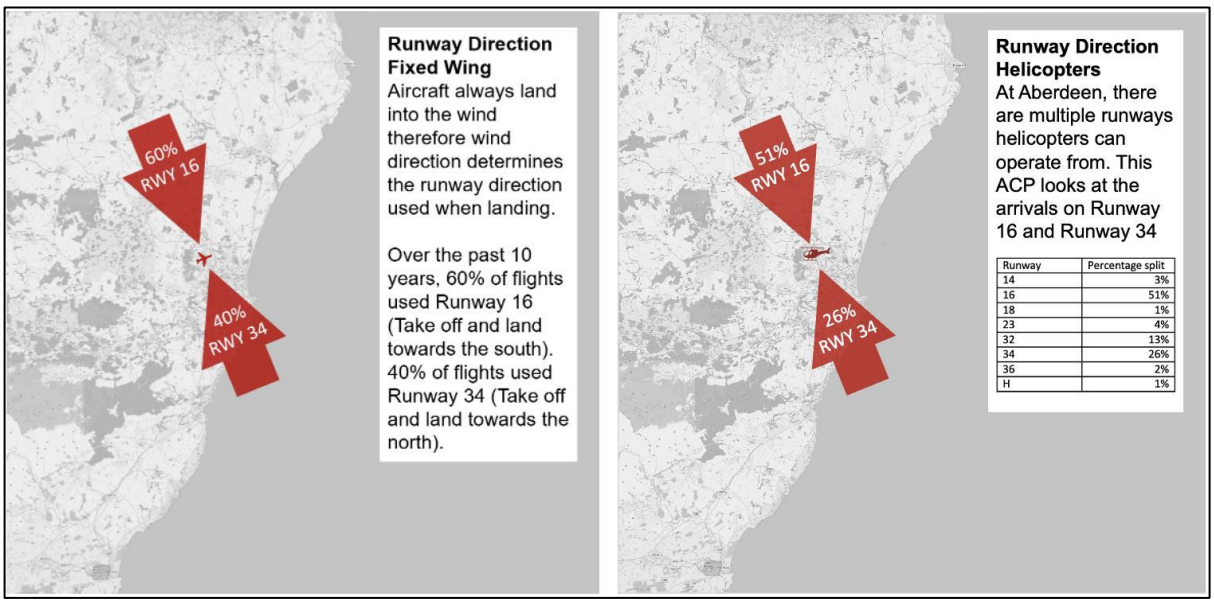


Figure 8: Modal split and Helicopter usage of Runway 16/34

3.2.4 An overview of airspace, infrastructure and operations at Aberdeen Airport is provided within the aerodrome specific section of the UK Aeronautical Information Publications (AIP) (AD2 EGPD)

3.2.5 When arriving at Aberdeen, there are no published arrivals routes flown other than on final approach and therefore all arrivals are vectored by ATC onto a closing heading to establish on the ILS localiser. Typically, aircraft are joining final approach between 8 and 12nm from touchdown although there are variances to this. Some helicopter traffic flies the ILS approaches and joins within the same swathe as fixed wing traffic, albeit at lower altitude.

3.2.6 Note helicopter use of the ILS is very weather dependent; in clear visibility helicopters are likely to arrive under VFR and take a more direct route to the airfield whereas in poor visibility almost all helicopters would use the ILS.

3.2.7 The figures over the next pages show the swathes of arrivals to runway 16 and runway 34.

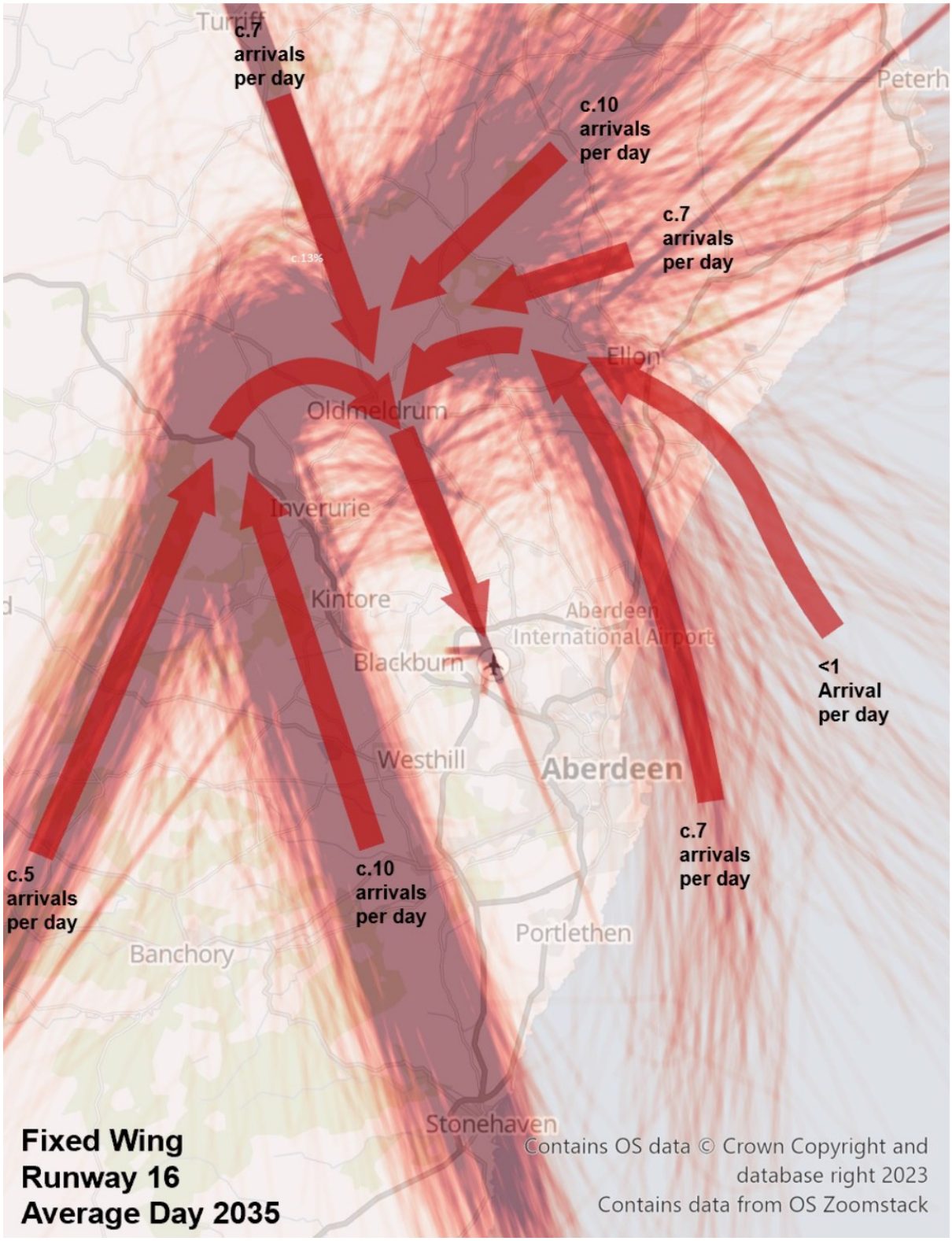


Figure 9 Baseline "Without Airspace Change" for Fixed Wing arrivals Runway 16. Note: No departure tracks are shown as they are not within scope of the ACP.

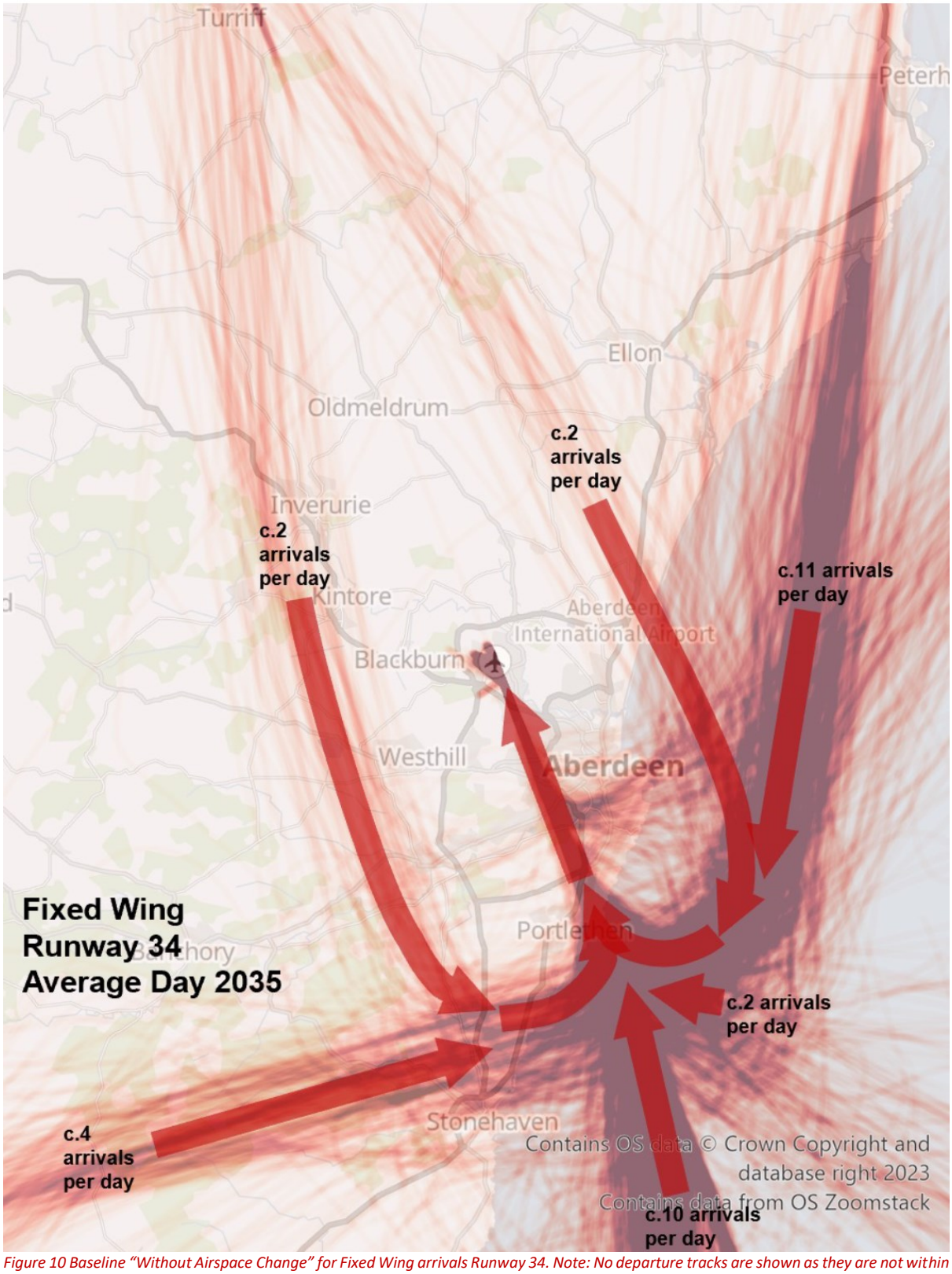


Figure 10 Baseline "Without Airspace Change" for Fixed Wing arrivals Runway 34. Note: No departure tracks are shown as they are not within scope of the ACP.

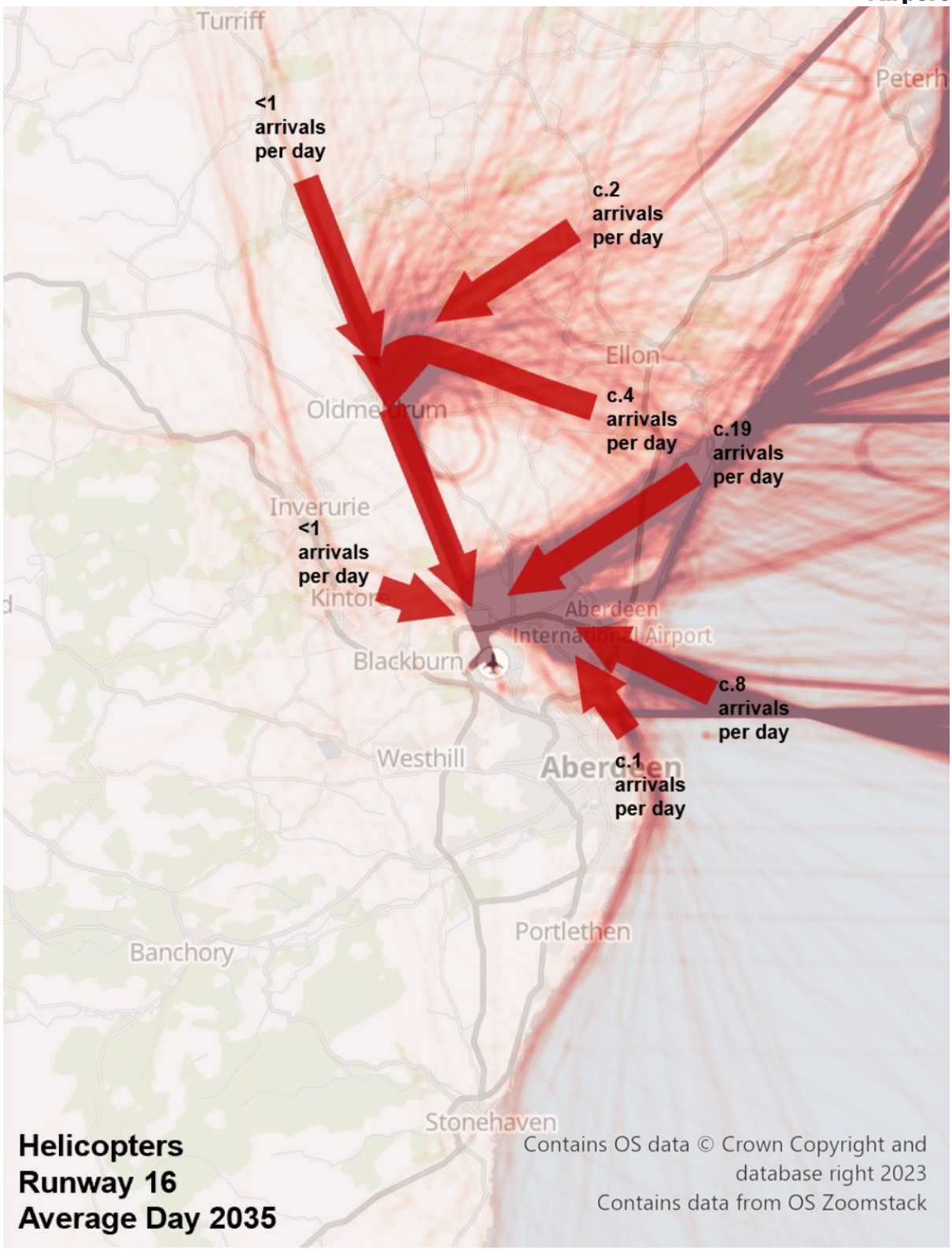


Figure 11 Baseline "without airspace change" for Helicopter arrivals Runway 16. Note: No departure tracks are shown as they are not within scope of the ACP.

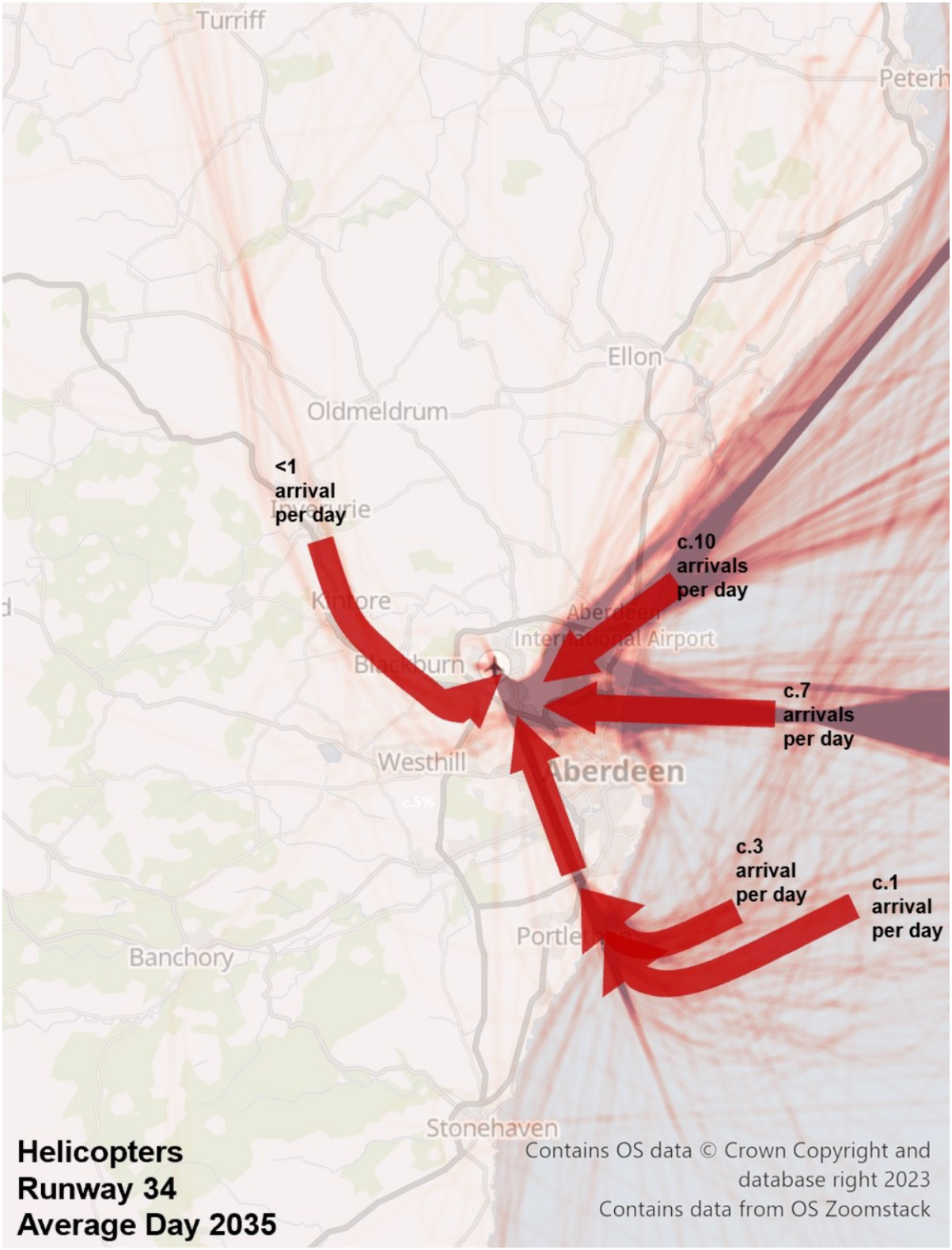


Figure 12 Baseline "without airspace change" for Helicopter arrivals Runway 34. Note: No departure tracks are shown as they are not within scope of the ACP.

Forecasts

3.2.8 Figure 9 to Figure 12 show the number of arrivals expected on an average day in 2035. 2035 is the expected year of implementation (2026) + 10 years and is one of the scenarios Aberdeen Airport are required to assess as part of a CAP1616 ACP. For further details about the Aberdeen Airport traffic forecast (which does not change as a result of this ACP) please see section 9.2 baseline scenarios and traffic forecast.

Approaches into Aberdeen Airport

(Instrument Flight Procedures and navigation aids)

3.2.9 The Instrument Landing System (ILS) is the most common approach used at Aberdeen airport, followed by a visual approach (where aircraft land without the use of a navigation aid).

3.2.10 If the ILS is not available then Aberdeen Airport also has a VOR/DME approach to Runway 16 and 34, and an NBD/DME approach for Runway 34. These types of approaches rely on ground-based navigation aids.

INSTRUMENT APPROACH CHART ILS/DME RWY 16 - ICAO
AD 2.EGPD-8-1
INSTRUMENT APPROACH CHART LOC/DME RWY 16 - ICAO
AD 2.EGPD-8-2
INSTRUMENT APPROACH CHART VOR/DME RWY 16 - ICAO
AD 2.EGPD-8-3
INSTRUMENT APPROACH CHART ILS/DME RWY 34 - ICAO
AD 2.EGPD-8-4
INSTRUMENT APPROACH CHART LOC/DME RWY 34 - ICAO
AD 2.EGPD-8-5
INSTRUMENT APPROACH CHART VOR/DME RWY 34 - ICAO
AD 2.EGPD-8-6
INSTRUMENT APPROACH CHART NDB(L)/DME RWY 34 - ICAO
AD 2.EGPD-8-7

Figure 13 Approach procedures at Aberdeen Airport

3.2.11 The approaches and the associated navigation aids are promulgated in the eAIP EGPD AD 2.24:

3.2.12 Figure 14 and Figure 15 below show the published ILS procedures at Aberdeen (please see next sections for more information about the holds and the missed approaches). For full details, please see section EGPD Section 2.24 of the eAIP.

Figure 14 runway 16 ILS approach chart. Source: EGPD Section 2.24 of the eAIP

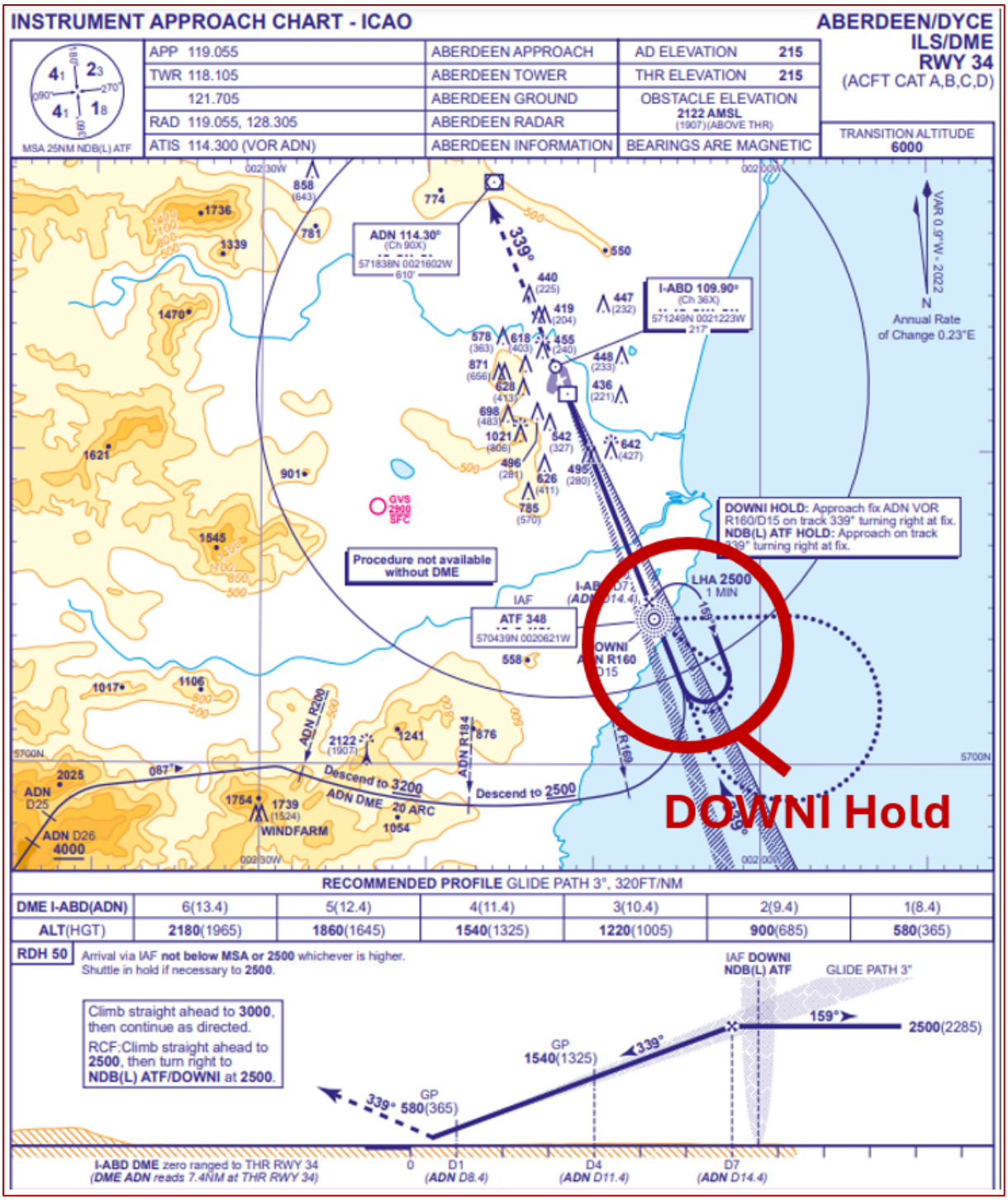


Figure 15 runway 34 ILS approach chart. Source: EGPD Section 2.24 of the eAIP

Aircraft holds

3.2.13 Some aircraft arriving at Aberdeen have to hold. A hold is an airspace structure where aircraft circle whilst waiting to land. Holds are used either when there is a lot of traffic in the airspace, and hence aircraft have to queue to land, or when aircraft are unable to land which could be due to poor visibility or the runway being temporarily unavailable.

3.2.14 2022 flight track data showed that c.1% of arriving fixed wing traffic used the holds. When considering the movement forecast data, this equates to less than one flight per day on average using the holds.

3.2.15 The ILS procedures have two associated holds; ADN (runway 16) and DOWNI/ATF (runway 34) which are predicated on the ADN VOR and ATF NDB.

3.2.16 This airspace change does not propose to make any changes to the holding procedures at Aberdeen Airport.

Missed approaches

3.2.17 If it is judged that an approach cannot be continued to a safe landing, then the aircraft will carry out a missed approach and will fly a defined procedure. Around 1.7% of fixed wing arrivals fly a missed approach, this equates to just over one a day on average across the year.

3.2.18 Missed approach procedures are promulgated as part of the approach procedures listed in **Error! Reference source not found.** above. The standard missed approach procedure at Aberdeen is 'Climb straight ahead to 3000, then continue as directed'.

3.2.19 Aberdeen Airport is not proposing to change the existing missed approach procedures as part of this ACP. The missed approach procedures for the proposed RNP approaches will replicate the existing missed approach procedures (see section 4.1 for further details),

Air Traffic Service Routes

3.2.20 There are no Standard Arrival Routes (STARS), with Prestwick Area Control Centre (ACC) typically positioning traffic towards the ADN VOR, before Aberdeen Approach vector fixed wing aircraft to join Aberdeen's final approach.

3.2.21 When arriving on runway 34, Aberdeen Airport currently promulgate a direct arrival route from Airway P600 as part of the the ILS/DME RWY 34, LOC/DME RWY 34 and VOR/DME RWY 34 charts published on the EGPD eAIP. This is shown in Figure 14.

3.2.22 Direct Arrivals are very infrequently flown, usually only on request for training purposes by pilots.

3.2.23 As part of the Stage 3 submission, we noted that the proposal to release CAS would result in a small change required to the direct arrival route so that aircraft remained in CAS. Since the Stage 3 submission, as part of the 5 year review of the Instrument Flight Procedures, Aberdeen Airport have confirmed that the Direct Arrivals are no longer required and can be removed from the charts. The remainder of this submission

document assumes that these chart amendments have taken place, and the Direct Arrivals are no longer promulgated.

3.2.24 The helicopter route structure and Helicopter Main Route Indicators out to the North Sea Offshore Safety Area (OSA) are also defined within the AIP as shown in Figure 16.

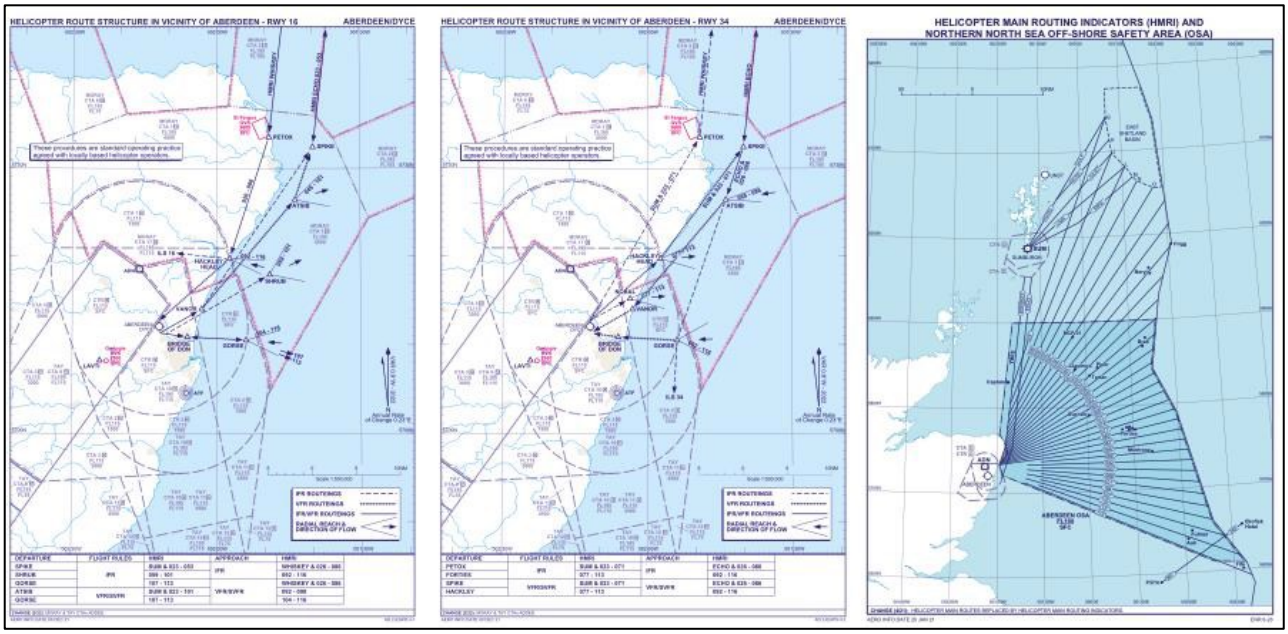


Figure 16: Aberdeen Helicopter Routes. Source: EGPD Section 2.24 of the eAIP

Controlled Airspace

3.2.25 Aberdeen Airport is contained within Controlled Airspace (CAS), it has a Control Zone (CTR) around the airport which is Class D which extends from surface to Flight Level (FL) 115. It also has additional airspace around the central CTR to offer additional protection to the aircraft flying in and out of the airport. These are Control Areas (CTA) and are known as CTA-1 and CTA-2, which have vertical limits of 1500ft to FL115 and CTA-3 which has vertical limits of 3000ft to FL115. These are all classified as Class D airspace. The CAS is shown in Figure 17.

3.2.26 P18, when active is a Class D airway which routes south of Aberdeen towards Newcastle; this airway is only currently available typically in evening periods and at weekends. In addition to P18, the airspace surrounding the CTA/CTR has two pieces of Class E + TMZ airspace from 4500ft to FL195.

Figure 17: Class D Airspace Chart Source: EGPD Section 2.24 of the eAIP

General Aviation activity

3.2.27 There are several routine General Aviation (GA) activities taking place in the vicinity of Aberdeen Airport.

3.2.28 Deeside Gliding Club lays to the West of the aerodrome and is a base for extensive wave soaring both locally and throughout the Scottish Highlands. The dense activity around Deeside Gliding Club generates traffic that navigates around or underneath CTA 3. Highland Gliding Club and Insch Airfield lies to the Northwest.

3.2.29 There are a small number of GA airfields within the CTR; Whiterashes is close to the ADN and the final approach track for Runway 16, Peterculter is a helicopter training site, Aberdeen Royal Infirmary (ARI) is located under the final approach track for Runway 34 and Trump Golf course has a helicopter landing site near Balmedie on the coast to the East of the airfield. There are a low number of GA operations to and from Aberdeen Airport each year and also a number of movements from the Air Ambulance (fixed Wing) and Search and Rescue aircraft.

3.2.30 In 2017, Airspace4All published a piece of work on VFR Significant Areas (VSA) and identified areas that are particularly important to VFR operations. Of relevance to Aberdeen is the 'Aberdeen Coastal Corridor' and the 'Inverness-Aberdeen Coastal corridor as shown in Figure 18 and Figure 19.

3.2.31 The Aberdeen Coastal corridor is an East coast transit route avoiding the Grampians and is an important recreational area for unpowered aircraft to FL195 and above. The area is approximately 30nm wide by 75nm long. It contains one airfield with an ATZ, one Danger Area, two HIRTAs, three gliding fields, one balloon launching site and several grass strips and helipads.

3.2.32 The Inverness-Aberdeen Coastal Corridor is 33nm long and 13nm wide and links the Inverness Hub and Aberdeen Coastal Corridor for VFR transit during times of low cloud base over high terrain.

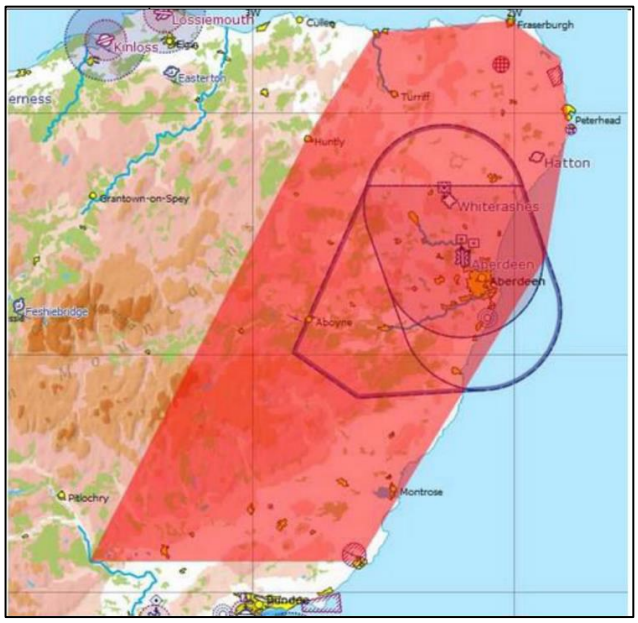


Figure 18 Aberdeen Coastal Corridor identified by Airspace4All

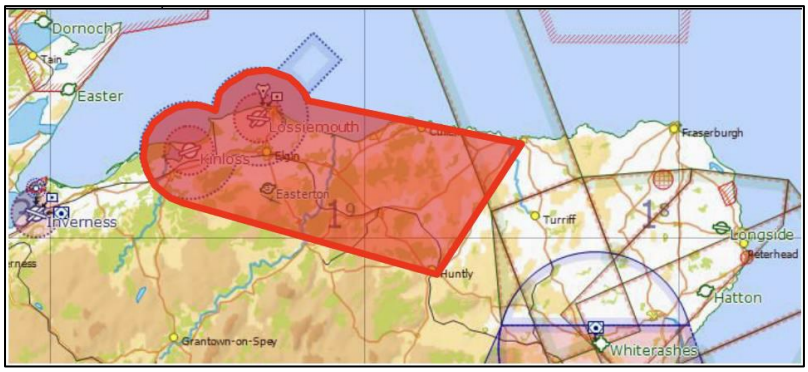


Figure 19 The Inverness-Aberdeen Coastal Corridor identified by Airspace4All

Special Use Airspace

3.2.33 There is no special use airspace applicable to this ACP.

Provision of air traffic services

3.2.34 Air Traffic Services are provided by Aberdeen Airports Air Navigation Service Provider (ANSP), National Air Traffic (NATS) Services Limited (known as NATS NSL).

3.2.35 The aerodrome operating hours are 0600-2230 (0500-2130) with PPR outside of these hours.

Operational Efficiency, Complexity, Delays and Choke Points

3.2.36 The current airspace at Aberdeen Airport does not have any efficiency, delay or choke point issues that this ACP is aiming to resolve.

3.2.37 The airspace at Aberdeen Airport is very complex due to the integration of fixed wing and rotary traffic. Rotary Wing Traffic make up approximately 40% of movements into and out of Aberdeen Airport. The majority of these movements are non-scheduled and must be tactically integrated with the scheduled fixed-wing traffic. The flexibility for ATC to vector wherever is required is of paramount importance for maintaining an efficient operation.

3.2.38 Whilst the aim of the ACP is not to try to resolve this complexity[5], it is important that the proposal does not increase complexity for Air Traffic Controllers.

Flight Planning and air traffic flow and capacity management

3.2.39 This proposal is not expected to have any impact on flight planning or air traffic flow and capacity management. The specific Instrument Approach Procedures (IAPs) do not form part of the filed plight plan.

Safety

3.2.40 There are no safety concerns raised about the current airspace at Aberdeen Airport and therefore the purpose of this ACP is not to resolve any safety issues. It is however important that the proposal maintains and where possible enhances safety.

[5] As noted in section 2.2 the introduction of a systemised PBN environment for all departures and arrivals could increase complexity

4. Detailed Description of the Changes to Airspace Design and Operation

4.1 Full Description of the proposed changes

4.1.1 As part of this ACP, Aberdeen Airport is proposing:

1. To introduce RNP approaches (also referred to as PBN arrival procedures) to runways 16 and 34 which would be used by a very small percentage of arrivals for resilience and training purposes; and
2. Release a section of the Controlled Airspace (CAS), which is not used by the aircraft arriving or departing from Aberdeen Airport, for the benefit of other airspace users.

4.1.2 The following sub sections provide detailed information about the proposal.

RNP Approaches and usage

4.1.3 As part of this ACP Aberdeen Airport are proposing to introduce satellite-based Required Navigation Performance (RNP) approach procedures which would be used by a very small percentage of arrivals for resilience and training purposes.

4.1.4 The proposed RNP approach procedures are intended to be published alongside the existing conventional approaches used by IFR flight. The vast majority of aircraft (95%+) will continue to typically use the existing Instrument Landing System (ILS) with the RNP approach procedures as an elective procedure or used for resilience in the event of conventional navigation aid outages.

4.1.5 Aircraft flying an RNP approach procedure would be vectored by ATC to final approach, as they are today. The only difference would be, whereas with the ILS, the arrivals have flexibility in where they join final approach from 8nm and beyond, RNP approach arrivals would be vectored to join final approach in the same location, at the Initial Fix (IF), usually with a closing heading of no greater than 45˚. The IF has been positioned so those arrivals would join final approach at 10.4nm on Runway 16 and 10.7nm on Runway 34, keeping the vectored arrival swathes consistent with the 'without airspace change' scenario. The vast majority of aircraft (95%+) would continue to arrive as they do today.

4.1.6 Figure 20 to Figure 23 show the expected usage of the RNP approach procedures based on an optimistic 5% usage estimate. Note: The majority of arrivals (95%+) would continue to arrive as they do within the baseline.

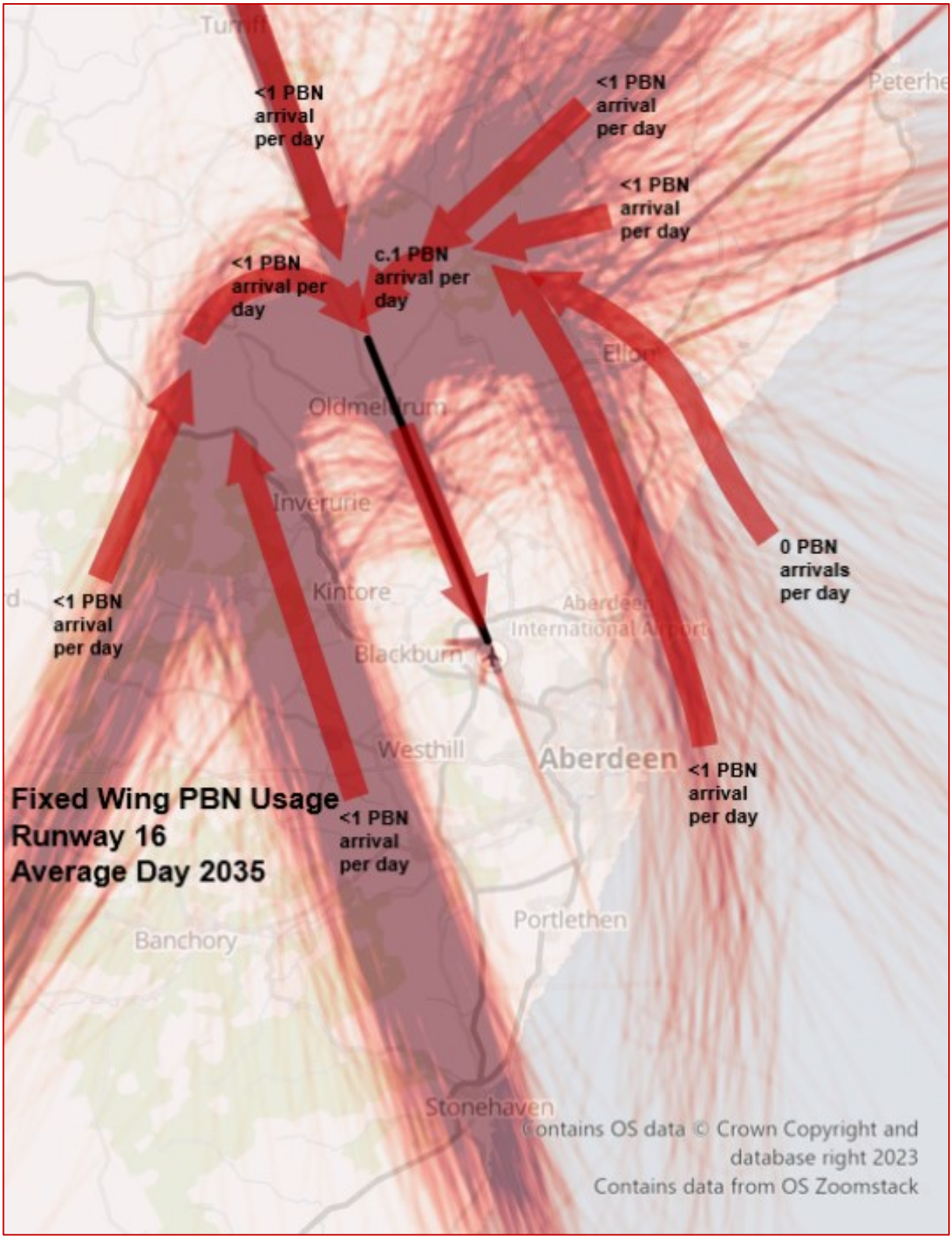


Figure 20 Expected fixed wing usage of RNP approach (Runway 16) based on an optimistic 5% estimate. Note: The majority of arrivals (95%+) would continue to arrive as they do within the 'without airspace change' scenario.

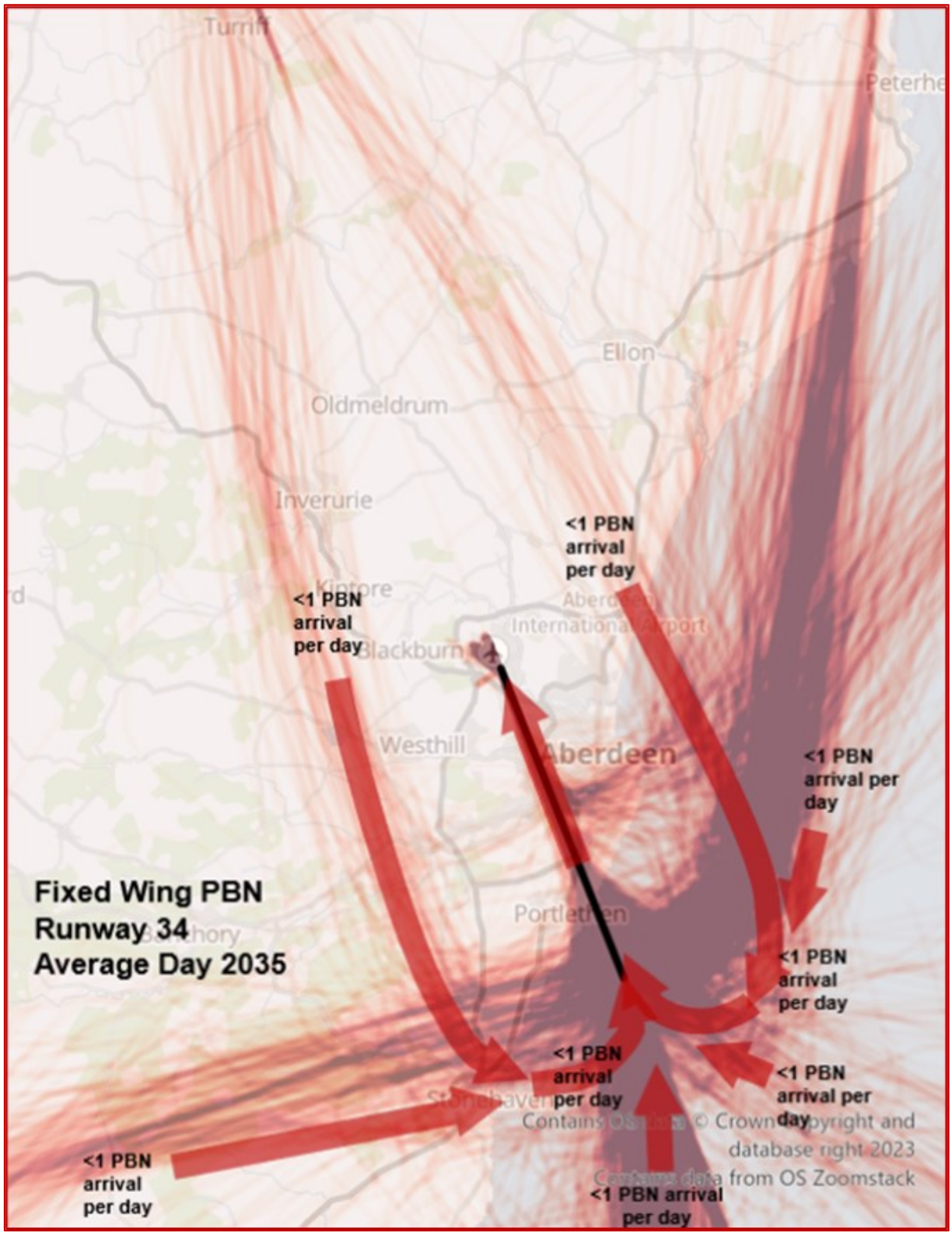


Figure 21 Expected fixed wing usage of RNP approach (Runway 34) based on an optimistic 5% estimate. Note: The majority of arrivals (95%+) would continue to arrive as they do within the 'without airspace change' scenario.

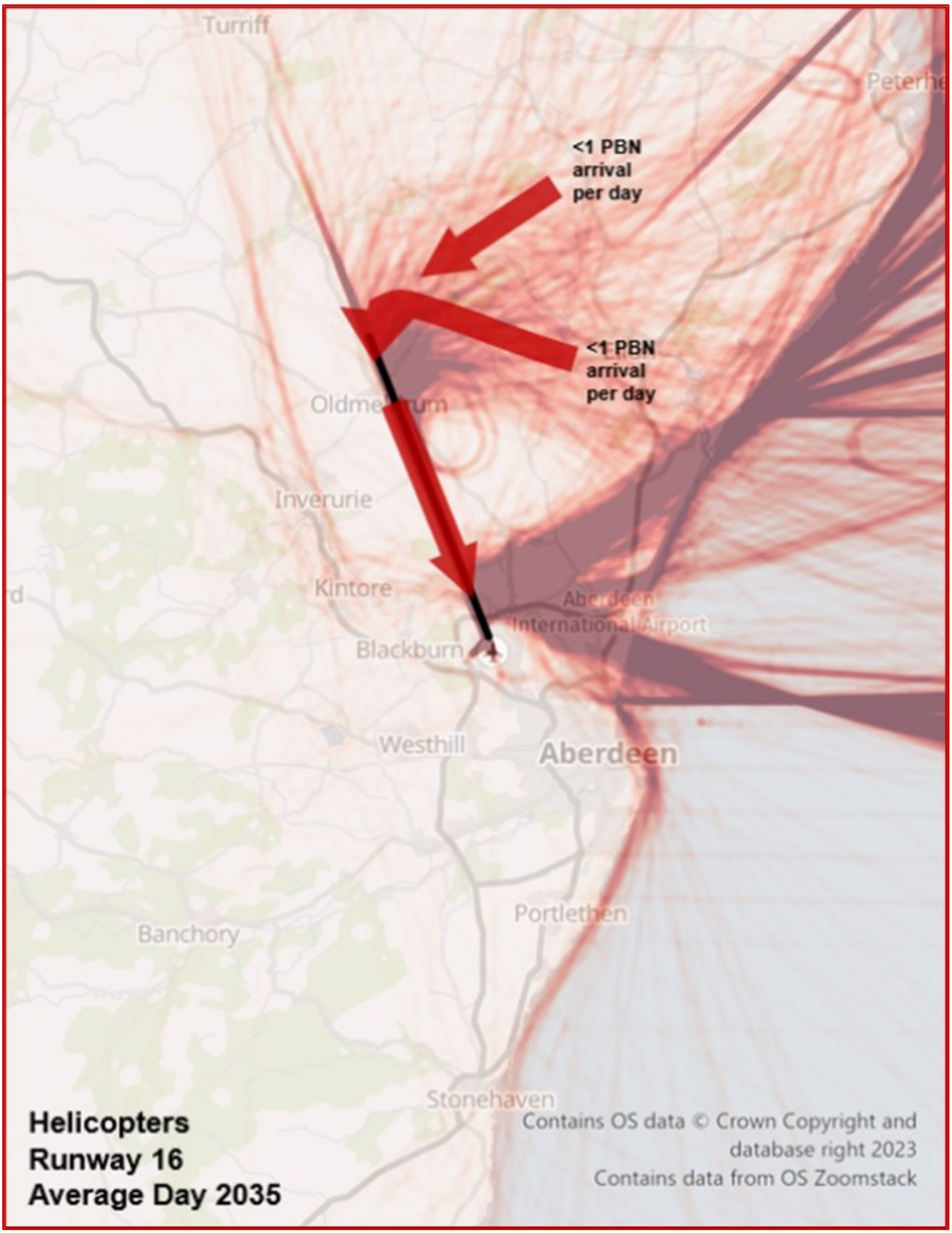


Figure 22 Expected helicopter usage of RNP approach (Runway 16) based on an optimistic 5% estimate. Note: The majority of arrivals (95%+) would continue to arrive as they do within the 'without airspace change' scenario.

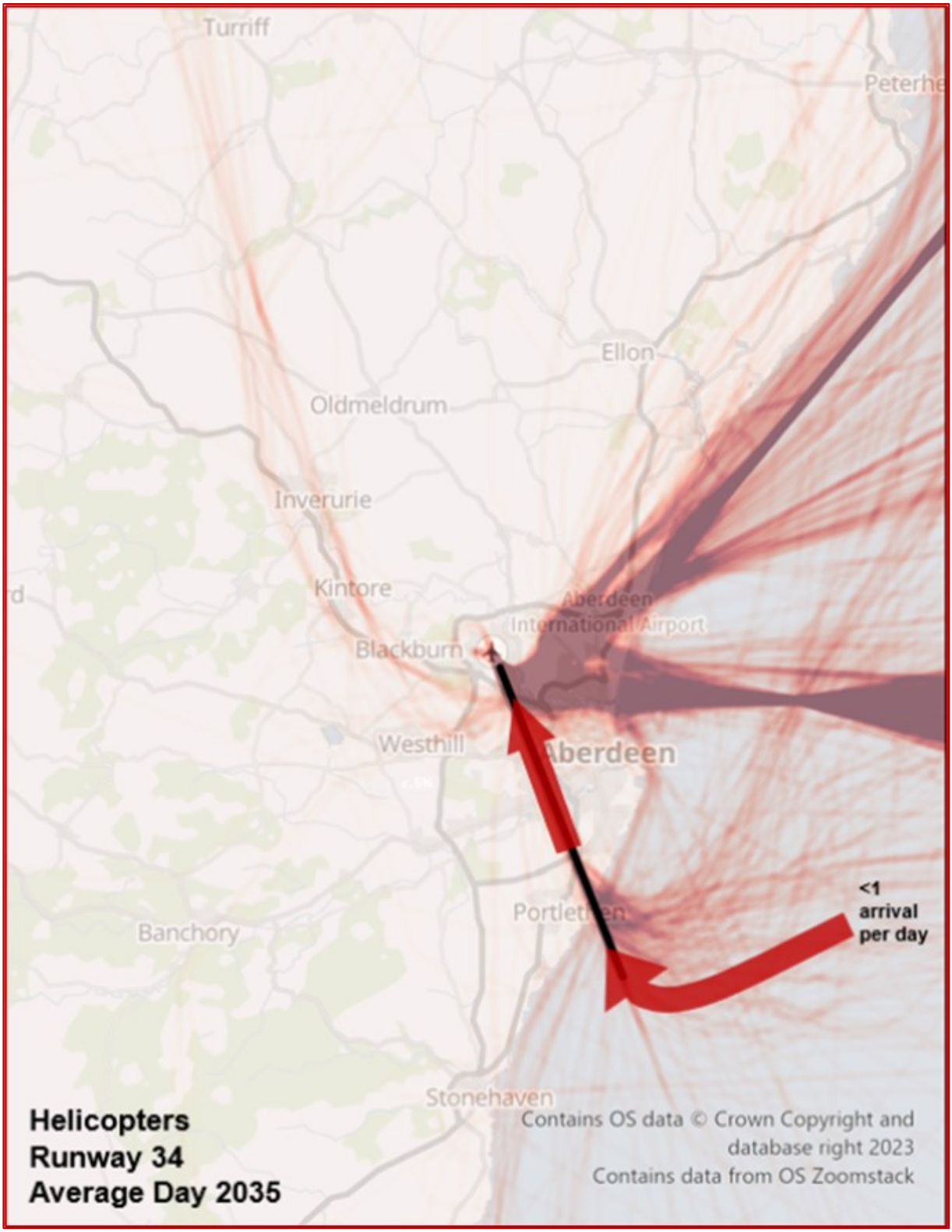


Figure 23 Expected helicopter usage of RNP approach (Runway 34) based on an optimistic 5% estimate. Note: The majority of arrivals (95%+) would continue to arrive as they do within the 'without airspace change' scenario.

Forecasts

4.1.7 Figure 20 to Figure 23 show the number of RNP approach arrivals expected on an average day in 2035. 2035 is the expected year of implementation (2026) + 10 years and is one of the required scenarios Aberdeen Airport are required to assess as part of a CAP1616 ACP. For further details about the Aberdeen Airport traffic forecast (which does not change as a result of this ACP) please see section 9.2 baseline scenarios and traffic forecast.

Proposed Instrument Flight Procedures

4.1.8 The proposed approaches will be Required Navigation Performance (RNP) Approach (APCH) standard down to LNAV & LNAV/VNAV minima at Aberdeen Airport's RWY 16 and RWY 34.

4.1.9 The following subsections provide summarised descriptions of the proposed Instrument Flight Procedures, taken from the IFP submission package (Annex H) as per CAP1616 requirements.

Runway 16 RNP APCH

4.1.10 Figure 24 shows draft indicative charts for the RNP approach procedures with the associated missed approach procedures. Sections of the chart have been redacted as the CAA does not permit draft charts to be published as part of an ACP.

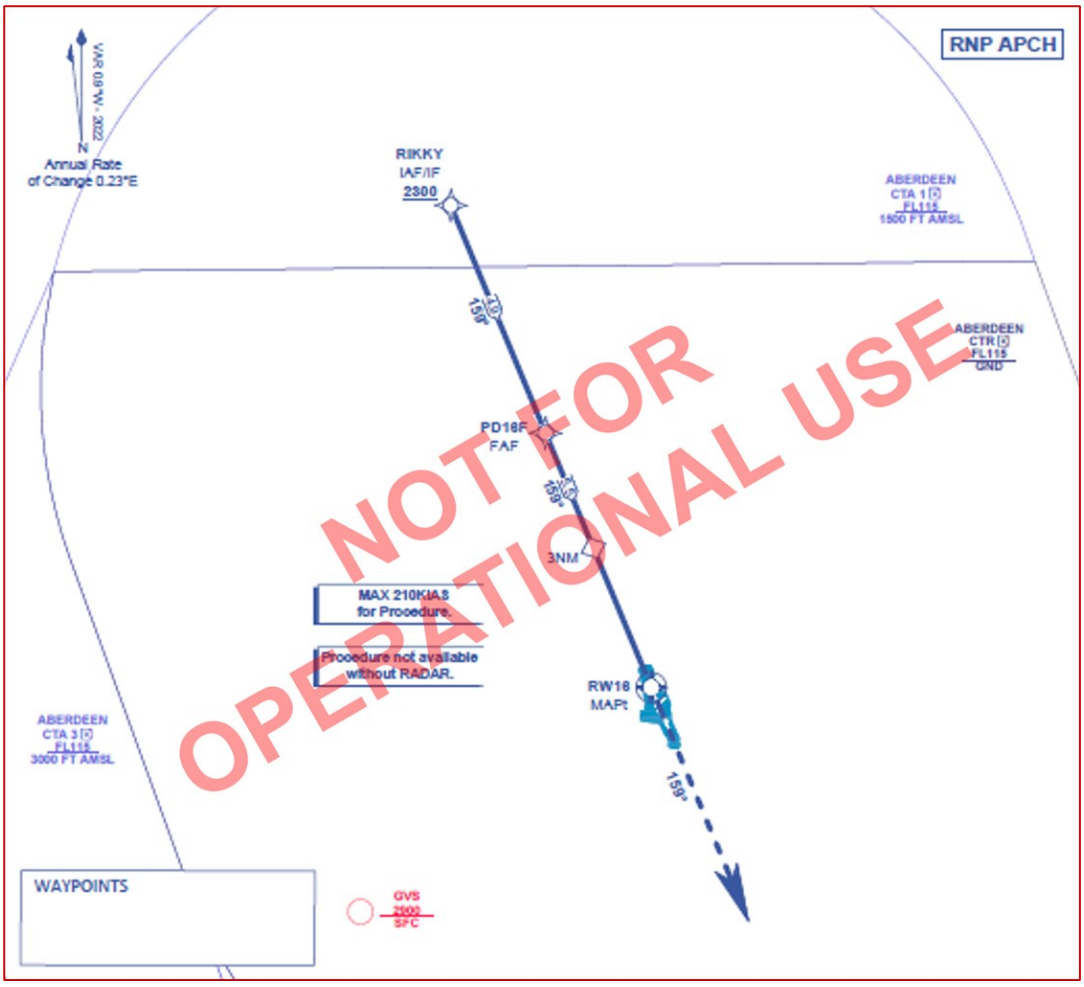


Figure 24: Draft Runway 16 RNP approach: draft indicative chart information, with missed approach. Please see Annex H IFP submission package for further information.

4.1.11 The intermediate approach consists of a Track to Fix (TF) leg between the Intermediate Fix (IF) and the Final Approach Fix (FAF) (RIKKY to PD16F), both defined as fly-by. In order to commence the approach, aircraft will be radar vectored to the IF. Therefore, this procedure will not be available without radar.

4.1.12 The following provides rationale for the placement of each waypoint and any speed/ altitude restrictions:

RIKKY (IF) is positioned 10.4NM from the approach threshold (THR16) and aligned with the runway centreline. This position, which is 4.9NM from the FAF (PD16F), has been selected to keep the vectored arrival swathes consistent with the baseline established by current operations. It also ensures that aircraft being vectored onto the approach at the IF have enough distance available to stabilize and prepare for the final approach.

The prescribed altitude at the IF is 2300ft (or above); there is a descent from the IF at 2300ft to the FAF at 2000ft over a total distance of 4.9NM.

PD16F (FAF) is positioned nominally in that it is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°. This allows the procedure to include LNAV/VNAV minima.

4.1.13 The FAF is located 5.5NM prior to the threshold. The prescribed altitude at the FAF is 2000ft.

4.1.14 The prescribed procedure altitudes ensure obstacle clearance during the intermediate segment, which has a Minimum Obstacle Clearance Altitude (MOCA) of 1400ft.

4.1.15 It should also be noted that a maximum speed restriction of 210kts is applicable to the whole procedure, as requested by Aberdeen Airport. This speed restriction is fully compliant with design criteria.

For the LNAV procedure:

4.1.16 The final descent is defined as a TF leg between the FAF-PD16F (fly-by) and the MAPt-RW16 (fly-over). A Step-Down Fix (SDF) is positioned within this descent at 3NM from the threshold.

4.1.17 The initial/intermediate missed approach is defined as a straight-ahead Course-to-Altitude (CA) to 3000ft AMSL.

4.1.18 The following provides rationale for the placement of each waypoint and any speed/ altitude restrictions:

PD16F (FAF) is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°.

The FAF is located 5.5NM prior to the threshold. The prescribed altitude at the FAF is 2000ft.

SDF (3NM) is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°.

The SDF is located 3NM prior to the threshold and at a nominal altitude of 1210ft. This SDF is established in order to enable lower approach minima.

RW16 (MAPt) is co-located with the landing threshold. This is the nominal location for the MAPt for RNP APCH procedures.

No altitude restrictions are applicable at this waypoint.

The missed approach is defined as a climb on the extension of the runway centreline up to the point where aircraft reach **3000ft** AMSL, from where they will continue as directed by ATC. The missed approach procedure in its entirety considers a minimum climb gradient of 2.5%.

For the LNAV/VNAV procedure:

4.1.19 The Approach Procedure with Vertical guidance (APV) segment of the LNAV/VNAV procedure contains the final descent segment for landing and the initial and intermediate segments of the missed approach.

4.1.20 The LNAV/VNAV procedure is used in association with the LNAV-only procedure and is therefore defined similarly (see above section). However, LNAV/VNAV procedures utilise a Decision Altitude/Height (DA/H) and not a Minimum Descent Altitude/Height (MDA/H), and neither a FAF nor a MAPt is identified (the LNAV-only FAF and MAPt are needed to define the lateral areas and to support the lateral guidance but they are not used for the vertical navigation function).

Runway 34 RNP APCH

4.1.21 Figure 25 shows draft indicative charts for the RNP approach procedures with the associated missed approach procedures. Sections of the chart have been redacted as the CAA does not permit draft charts to be published as part of an ACP.

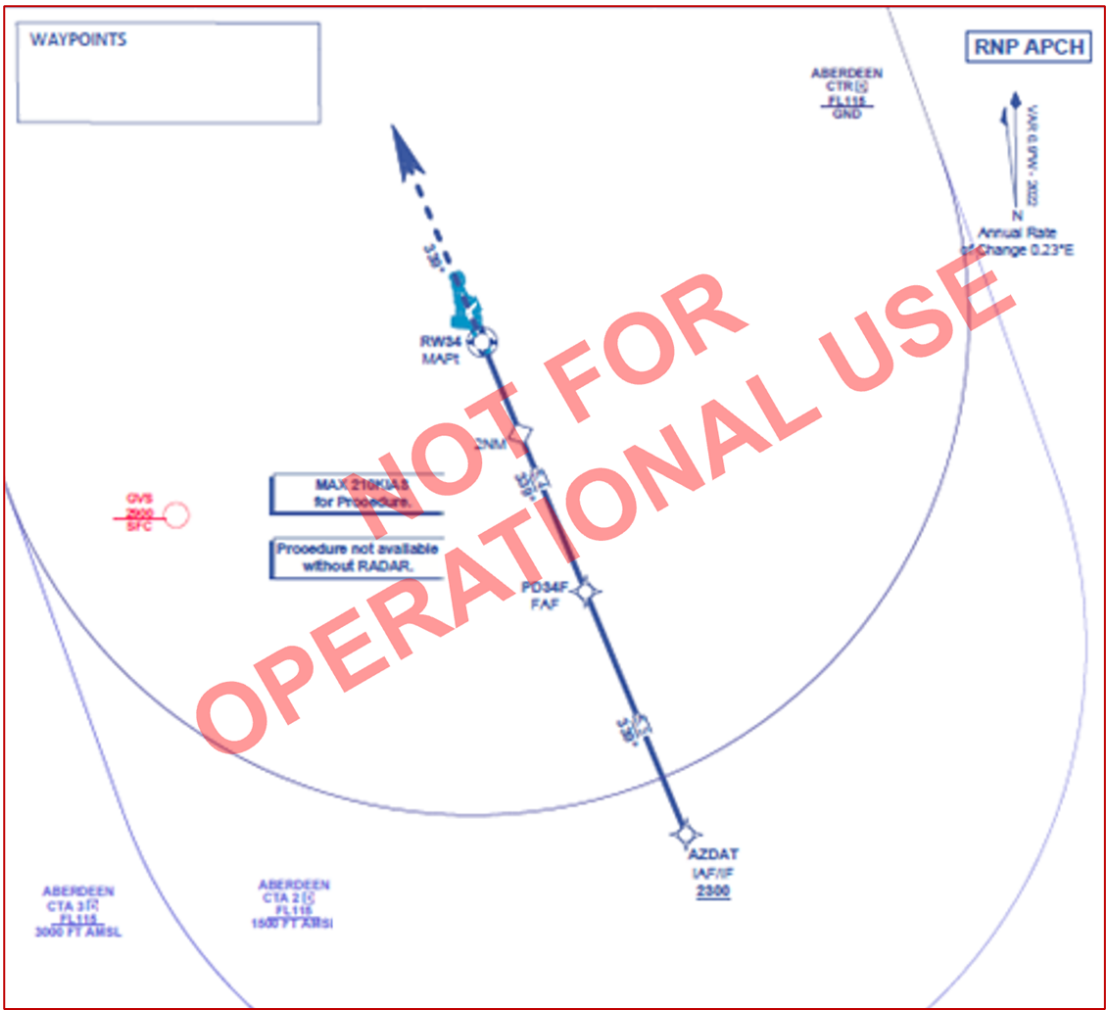


Figure 25 Draft Runway 34 RNP approach: draft indicative chart information, with missed approach. Please see IFP submission package for further information.

4.1.22 The intermediate approach consists of a Track to Fix (TF) leg between the IF and the FAF (AZDAT to PD34F), both defined as fly-by. In order to commence the approach, aircraft will be radar vectored to the IF. Therefore, this procedure will not be available without radar.

4.1.23 The following provides rationale for the placement of each waypoint and any speed/ altitude restrictions:

AZDAT (IF) is positioned 10.7NM from the approach threshold (THR34) and fully aligned with the runway centreline. This position, which is 5.3NM from the FAF (PD34F), has been selected to keep the vectored arrival swathes consistent with the baseline established by current operations. It also ensures that aircraft being vectored onto the approach at the IF have enough distance available to stabilize and prepare for the final approach.

The prescribed altitude at the IF is 2300ft (or above); there is a descent from the IF at 2300ft to the FAF at 2000ft over a total distance of 5.3NM. The gradient necessary for this descent is fully compliant with the applicable design criteria.

PD34F (FAF) is positioned nominally in that it is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°. This allows the procedure to include LNAV/VNAV minima.

The FAF is located 5.4NM prior to the threshold. The prescribed altitude at the FAF is 2000ft.

4.1.24 It should also be noted that a maximum speed restriction of 210kts is applicable to the whole procedure, as requested by Aberdeen Airport.

For the LNAV procedure:

4.1.25 The final descent is defined as a TF leg between the FAF-PD34F (fly-by) and the MAPt-RW34 (fly-over). A Step-Down Fix (SDF) is positioned within this descent at 2NM from the threshold. The initial/intermediate missed approach is defined as a straight-ahead Course-to-Altitude (CA) to 3000ft AMSL.

4.1.26 The following provides rationale for the placement of each waypoint and any speed/ altitude restrictions:

PD34F (FAF) is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°. The FAF is located 5.4NM prior to the threshold.

The prescribed altitude at the FAF is 2000ft.

SDF is located on the extension of the runway centreline and at an altitude based on a nominal Vertical Path Angle (VPA) of 3°.

The SDF is located 2NM prior to the threshold and at a nominal altitude of 900ft. This SDF is established in order to enable lower approach minima.

RW34 (MAPt) is co-located with the landing threshold. This is the nominal location for the MAPt for RNP APCH procedures. No altitude restrictions are applicable at this waypoint.

The missed approach is defined as a climb on the extension of the runway centreline up to the point where aircraft reach 3000ft AMSL, from where they will continue as directed by ATC. The missed approach procedure in its entirety considers a minimum climb gradient of 2.5%.

For the LNAV/VNAV procedure:

4.1.27 The APV segment of the LNAV/VNAV procedure contains the final descent segment for landing and the initial and intermediate segments of the missed approach.

4.1.28 The LNAV/VNAV procedure is used in association with the LNAV-only procedure and is therefore defined similarly (see above section). However, LNAV/VNAV procedures utilise a DA/H and not an MDA/H, and neither a FAF nor a MAPt is identified (the LNAV-only FAF and MAPt are needed to define the lateral areas and to support the lateral guidance but they are not used for the vertical navigation function).

ATCSMAC Chart

4.1.29 The RNP approach procedures have been designed with vectoring of aircraft onto the final approach track in mind. Due to this, all aspects of the current ATC Surveillance Minimum Altitude Chart (ATCSMAC) have been assessed as part of the IFP Submission.

4.1.30 Aberdeen Airport's 5 year IFP review submission, which occurs independently to this ACP, highlighted a small change is required to the ATCSMAC and the IFP assessment has also shown that, in order to enable the proposed altitude of 2300ft or above at the IAF/IF fixes of each of the proposed procedures, the sector on the chart will need to be altered. There are more details around this in Annex H: IFP Submission.

4.1.31 It is important to note that this small change would occur regardless of this ACP and the change to the ATCSMAC chart will not impact vectoring practices.

IFP Design criteria

4.1.32 The IFP design has been developed using the following criteria:

- ICAO Doc 8168 PANS-OPS - Volume II - 7th Edition (20/11/2020).
- UK CAP 785B: Implementation and Safeguarding of Instrument Flight Procedures (IFPs) in the UK (Version 2 September 2022).
- UK Integrated Aeronautical Information Package (IAIP) section GEN 1.7 (AIRAC 10/2024).
- UK CAA policy where it supersedes ICAO.

4.1.33 There are no parts of the design that are outside of design criteria or require any dispensation. For more details about the IFP submission, please see Annex H.

Aircraft holds

4.1.34 This airspace change does not propose to make any changes to the holding procedures at Aberdeen Airport.

4.1.35 The RNP approach procedures are not expected to result in an increase in holding. If aircraft flying the RNP approaches were required to hold, then ATC would direct aircraft to fly a hold predicated on the existing conventional ground beacon (ADN VOR) (although the vast majority of operators will already be flying an FMS overlay of the hold procedure).

Missed approaches

4.1.36 Aberdeen Airport is not proposing to change the existing missed approach procedures as part of this ACP. The standard missed approach procedure at Aberdeen is 'Climb straight ahead to 3000, then continue as directed'.

4.1.37 The proposed RNP approach procedures replicate the existing missed approach procedure, and this is shown in Figure 24. The RNP approaches are not expected to result in an increase in missed approaches.

Changes to Controlled Airspace

4.1.38 Airspace modernisation aims to improve access to airspace. Aberdeen Airport has analysed how its existing CAS is used and identified an area which can be safely released. This benefits other airspace users whilst having no material impact on the operation or environmental performance of Aberdeen Airport.

4.1.39 Aberdeen Airport are proposing to increase the base of the Southwest corner of CTA-3 (highlighted in red in Figure 26), from 3000-4500ft. This area would be re-named CTA-4 and be promulgated from 4500ft-FL115.

4.1.40 This option would result in the release of 27.8nm^3 of Class D controlled airspace to Class G airspace. The increase of the base of this part of CTA-3 would enable improved soaring profiles for flights to/from Deeside Gliding Club at Aboyne. It would also enable GA transiting the airspace to remain outside of CAS at a higher altitude than today.

Figure 26: existing class D airspace chart with proposed change shown in red (Source: Stage 3 consultation document)

4.1.41 The release in this volume of airspace is anticipated to improve safety for GA users operating outside CAS as it is expected to decrease congestion in the surrounding class G airspace.

4.1.42 The data showed that there were not any fixed or rotary wing departures from Aberdeen which used the airspace proposed to be released. For arrivals, there was on average one fixed wing and one rotary wing aircraft a week within the airspace (around 0.2% of Aberdeen arrivals).

4.1.43 The updated proposed CAS chart is shown in Figure 27. This chart has been sourced from Annex H: IFP Submission.

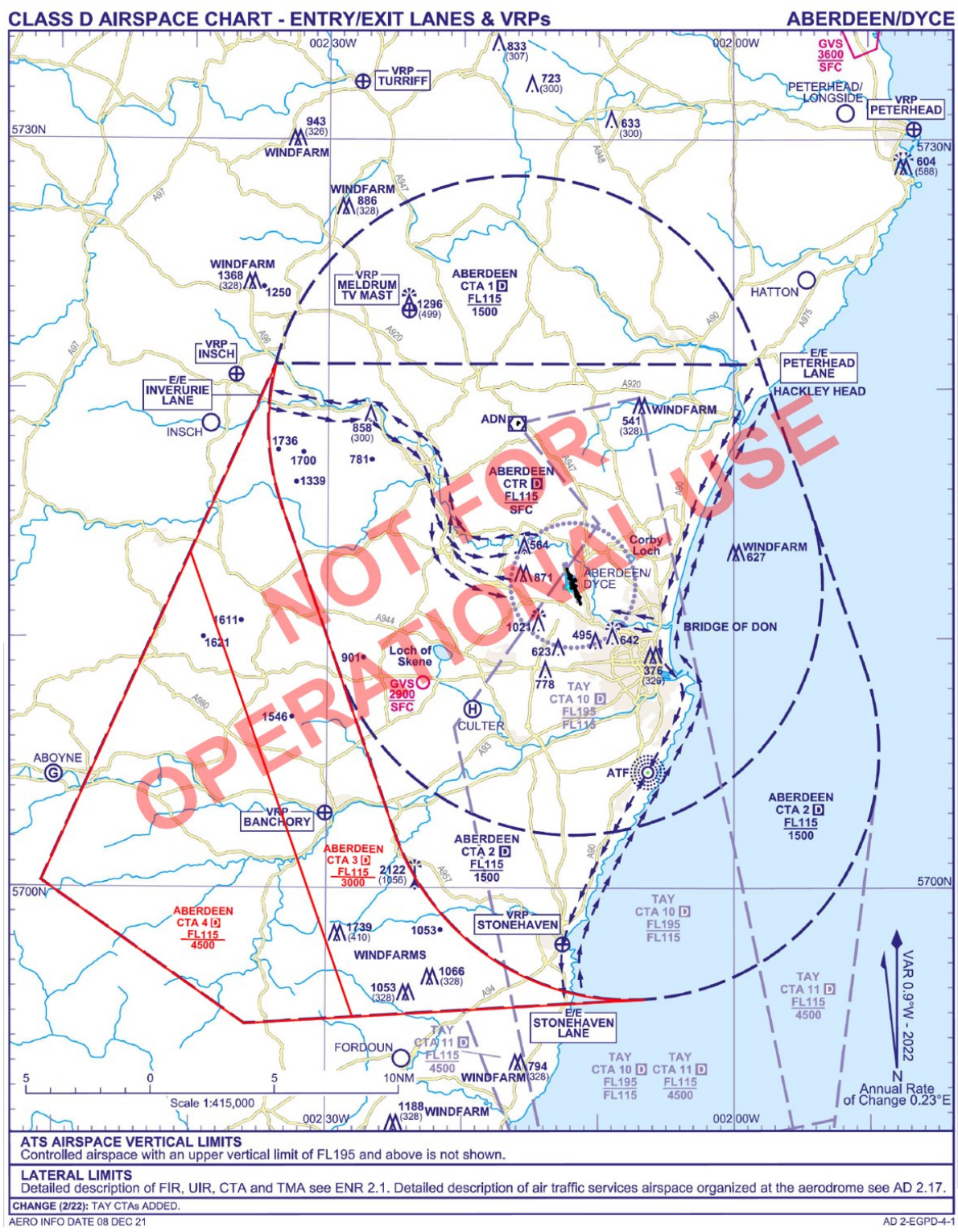


Figure 27 Draft CAS chart showing proposed changes (Source: Annex H IFP Submission)

4.1.44 Alongside promulgation of the chart shown in Figure 27, the following charts detailed in Table 20, will require amendment, subject to ACP decision, to reflect the updated boundary of CAS:

Table 20 Charts that will require updating with updated CAS boundary (See eAIP for full chart details)

Chart reference in eAIP	Chart name
AD 2.EGPD-3-1	HELICOPTER ROUTE STRUCTURE IN VICINITY OF ABERDEEN - RWY 16
AD 2.EGPD-3-2	HELICOPTER ROUTE STRUCTURE IN VICINITY OF ABERDEEN - RWY 34
AD 2.EGPD-4-1	CLASS D AIRSPACE CHART - ENTRY/EXIT LANES and VRPs
AD 2.EGPD-5-1	ATC SURVEILLANCE MINIMUM ALTITUDE CHART - ICAO
ENR 6-7	CHART OF UNITED KINGDOM ATS AIRSPACE CLASSIFICATIONS - SFC-FL195
ENR 6-26	HELICOPTER MAIN ROUTING INDICATORS (HMRI) and NORTHERN NORTH SEA OFF-SHORE SAFETY AREA (OSA)
ENR 6-27	ABERDEEN - ATLANTIC RIM HMRI X-RAY/YANKEE
ENR 6-69	LOWER ATS ROUTES (NORTH SHEET)
ENR 6-75	CHART OF UNITED KINGDOM AIRSPACE RESTRICTIONS AND HAZARDOUS AREAS
ENR 6-76	CHART OF UNITED KINGDOM AREAS OF INTENSE AIR ACTIVITY (AIAA) AND AERIAL TACTICS AREAS (ATA)

4.1.45 In addition to this, Section ENR 2.1 of the AIP will require updating to reflect the updated description of CTA 3 and the new CTA 4. Table 21 shows the proposed amendments:

Table 21 Proposed updates to AIP section ENR 2.1

Current text within AIP				
ABERDEEN CTA 3 572100N 0023356W - 570015N 0025056W - 565433N 0023557W - 565533N 0020635W thence clockwise by the arc of a circle radius 10 NM centred on 570531N 0020740W to 570214N 0022458W - 571520N 0023326W thence clockwise by the arc of a circle radius 10 NM centred on 571834N 0021602W to - 572100N 0023356W Upper limit: FL115 Lower limit: 3000 FT ALT Class: D	ABERDEEN APP	ABERDEEN RADAR English	119.055 DOC 55 NM/25,000 FT.	The Airspace remains notified even though the Controlling Authority may not be monitoring the frequency at all times. To operate UAS within this area, UAS operators are required to notify NATS via the NATS Non-Standard Flight (NSF) Portal. UAS operators are required to notify NATS at least 14 days before the date of each activity. CTA Chart published in AD-2 Section.

Proposed update				
ABERDEEN CTA 3 572100N 0023356W - 571327N 0024010W - 565450N 0022800W - 565533N 0020635W thence clockwise by the arc of a circle radius 10 NM centred on 570531N 0020740W to 570214N 0022458W - 571520N 0023326W thence clockwise by the arc of a circle radius 10 NM centred on 571834N 0021602W to - 572100N 0023356W Upper limit: FL115 Lower limit: 3000 FT ALT Class: D	ABERDEEN APP	ABERDEEN RADAR English	119.055 DOC 55 NM/25,000 FT.	The Airspace remains notified even though the Controlling Authority may not be monitoring the frequency at all times. To operate UAS within this area, UAS operators are required to notify NATS via the NATS Non-Standard Flight (NSF) Portal. UAS operators are required to notify NATS at least 14 days before the date of each activity. CTA Chart published in AD-2 Section.
ABERDEEN CTA 4 571327N 0024010W - 565450N 0022800W - 565433N 0023557W - 570015N 0025056W - 571327N 0024010W - Upper limit: FL115 Lower limit: 4500 FT ALT Class: D	ABERDEEN APP	ABERDEEN RADAR English	119.055 DOC 55 NM/25,000 FT.	The Airspace remains notified even though the Controlling Authority may not be monitoring the frequency at all times. To operate UAS within this area, UAS operators are required to notify NATS via the NATS Non-Standard Flight (NSF) Portal. UAS operators are required to notify NATS at least 14 days before the date of each activity. CTA Chart published in AD-2 Section.

Change to Special Use Airspace

4.1.46 There are no changes to Special Use Airspace routes proposed.

Changes to hours of operation

4.1.47 There are no changes to the hours of operation proposed.

Changes to Letters of Agreement

4.1.48 Aberdeen ATC have undertaken a review of existing unit Letters of Agreement (LOAs) and confirm that no changes are required as a result of this ACP.

5. Anticipated Operational Impacts

5.1 Requirements and outline concept of operations

5.1.1 The following section provides a full description of the anticipated impacts of the change on all airspace users, aerodromes, service providers and traffic levels.

5.1.2 Table 22 provides an overview of the operational impacts to various groups. It is broken down into impacts from the RNP approaches and impacts from the release of the portion of CAS.

Table 22 Anticipated operational impacts for airlines, Airport/ANSP, general aviation, communities

Group	RNP approaches	Release of portion of CAS (CAS Option 1)
Airlines and airspace users	Airlines are anticipated to be positively impacted as a result of improved resilience in the event of ILS outage. Operationally, the procedures are very similar to what happens today and therefore there are not expected to be any other material impacts to airlines.	No impacts anticipated.
Aberdeen Airport / ANSP	The airport and ANSP are anticipated to be positively impacted as a result of improved resilience in the event of ILS outage. The implementation of RNP approach procedures will be new to Aberdeen Airport, however the approaches have been designed to replicate the current conventional procedures as closely as possible and will be operated for resilience alongside the existing ILS and NBD approaches. As such, there are not expected to be any long term operational impacts of these procedures. There will however be a cost to the airport and ANSP to initially deploy the RNP approach procedures that will cover training and infrastructure updates.	No material impacts anticipated. There will be a small cost to the airport / ANSP to initially deploy due to the changes to the boundary of CAS. This will be incorporated with the introduction of the RNP approaches.
General Aviation	No impacts anticipated as a result of the RNP approach procedures; the procedures are contained within Aberdeen Airport's existing CAS.	The release of this volume of CAS is anticipated to have a positive impact on General Airspace (GA) users as it would enable improved soaring profiles for flights to/from Deeside Gliding Club at Aboyne and it would enable GA transiting the airspace to remain outside

Group	RNP approaches	Release of portion of CAS (CAS Option 1)
		of controlled airspace at a higher altitude than today.
Communities	No material impacts are anticipated.	No material impacts anticipated as a result of aircraft arriving and departing to/from Aberdeen Airport.

5.1.3 The implementation of RNP approaches will be new to Aberdeen Airport, however the approaches have been designed to replicate the current conventional procedures as closely as possible and will be operated for resilience alongside the existing ILS and NBD approaches.

5.1.4

5.1.5 Table 23 shows the anticipated operational impacts listed in CAP1616f (page 131) and then describes how this proposal is compliant with these.

Table 23: Anticipated Operational Impacts (Based on impacts listed in CAP1616f)

Operational impact area (CAP1616f page 131)	RNP Approaches Evidence of compliance/proposed mitigation	Release of CAS Evidence of compliance/proposed mitigation
Impact on the flow of Instrument Flight Rules (IFR) flights, including General Air (GA) and operational air traffic.	There is no anticipated operational impact from the introduction of RNP approaches as the proposed procedures aim to closely replicate current operations although there is an anticipated positive impact as a result of improved resilience in the event of ILS outage.	The release of the section of CAS is not anticipated to impact the flow of IFR flights to/from Aberdeen Airport.
The impact on Visual Flight Rules (VFR) operations.	There is no anticipated impact, as above, the proposed procedures aim to closely replicate current operations. Engagement and consultation with local airspace users has not suggested there would be any impacts to operations.	The release of this volume of CAS is anticipated to have a positive impact on General Airspace (GA) users, typically under VFR, as it would enable improved soaring profiles for flights to/from Deeside Gliding Club at Aboyne and it would enable GA transiting the airspace to remain outside of controlled airspace at a higher altitude than today.
The impact on existing procedures and airspace/airport capacity.	The existing procedures published as part of Aberdeen's eAIP will remain extant. Although this ACP does not seek to increase capacity, in the event of an ILS outage, the implementation of RNP approaches would enable a workload reduction for ATC, which	No impact to Aberdeen airport or airspace capacity is anticipated.

Operational impact area (CAP1616f page 131)	RNP Approaches Evidence of compliance/proposed mitigation	Release of CAS Evidence of compliance/proposed mitigation
	means they may have a greater capacity to handle traffic compared to the current day where aircraft would fly a VOR/DME or NBD approach.	
The impact on aerodromes and any other aviation activities within or adjacent to the area of the proposed change.	There is no anticipated impact. The proposed procedures aim to closely replicate current operations and are being introduced for resilience and training purposes.	There are no direct impacts anticipated impact to neighbouring aerodromes and aviation however, as described above, the changes to CAS may result in positive impacts for GA using the released airspace.
Any flight planning or navigational requirements.	There have been no additional requirements identified.	Not applicable.
Details of any changes to the provision of air traffic services, including justification for any delegation of the provision of air traffic services.	No changes are required as a result of this proposal	No changes are required as a result of this proposal
The impact of the traffic mix on complexity and workload of operations.	The RNP approaches are not anticipated to impact complexity and day to day ATC workload. In the event of ILS outage, the implementation of RNP approaches would enable a workload reduction for ATC compared to the current day where aircraft would fly a VOR/DME or NBD approach.	Not anticipated to have any impacts on complexity and workload.
Consideration of access requirements of other airspace users in accordance with the type and classification of airspace structure, including details on the ability to support the provision of air	The RNP approaches are contained within Aberdeen Airport's existing CAS and are compatible with the proposal to release a section of CAS.	The section of CAS to be released has been identified through detailed analysis of existing airspace usage. Given this, it is not anticipated to have any impacts on Aberdeen Airport and the provision of air traffic services. It is anticipated to offer access improvements for GA traffic as aircraft are able to remain outside of CAS at a higher altitude than today.

Operational impact area (CAP1616f page 131)	RNP Approaches Evidence of compliance/proposed mitigation	Release of CAS Evidence of compliance/proposed mitigation
traffic services in accordance with the nature of the operation and the classification of airspace.		
Consideration of how connectivity to/from the air traffic service network is to be achieved, including arrangements for aerodromes outside controlled airspace.	Connectivity to/from the air traffic service network will not change as result of this proposal.	

6. Supporting Infrastructure and Resilience

6.1.1 CAP1616F requires a full description of the anticipated impacts of the change on the supporting infrastructure and resilience, with details of analysis undertaken against associated regulations, policies and guidance.

6.1.2 Table 24 shows the anticipated infrastructure and resilience impacts listed in CAP1616f (page 131) and then describes how this proposal is compliant with these.

Table 24: Supporting Infrastructure and Resilience

Infrastructure and resilience impact area (CAP1616f page 131)	**Evidence of compliance or proposed mitigation**
Matters relating to communication equipment and services, including operational coverage of frequencies and contingency plans.	All changes will take place within current DOC coverage.
Matters relating to conventional navigation equipment and services, including navigation specifications and contingency procedures.	There will be no changes to conventional navigation equipment. The RNP approaches provide contingency procedures against conventional navigational outage, and the conventional approaches will remain available in the case of GNSS outage.
Matters relating to satellite-based navigation equipment and services, including navigational specifications and contingency procedures.	
Matters relating to surveillance equipment and services and associated display equipment, including electronic conspicuity, contingency procedures.	All changes take place within the current surveillance coverage. The RNP approach procedures are within the existing Aberdeen Airport Control Zone and the CAS is being reduced.

7. Regulations, Policies and Harmonisation

7.1.1 The following regulations and policies have been taken into account in the development of this ACP:

- Aeronautical Information Publication
- Air Navigation Guidance 2017
- CAP 493, Manual of Air Traffic Services Part 1
- CAP 670, Air Traffic Services Safety Requirements
- CAP 740, UK Airspace Management Policy
- CAP 760, Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases: For Aerodrome Operators and Air Traffic Service Providers
- CAP 785A, Oversight of UK Approved Procedure Design Organisations
- CAP 785B, Implementation and Safeguarding of IFPs in the UK
- SARG Policy 126: Policy for the Design of Controlled Airspace Structures
- SARG Policy for the establishment of visual reference points (VRPs)
- ICAO Doc 8168, PANS OPS Volumes 1 and 2 – Procedures for Air Navigation Services – Aircraft Operations
- ICAO Doc 9613, Manual on Required Navigation Performance (RNP)

8. Safety Assessment

8.1.1 In preparation for this Stage 4 submission, Aberdeen Airport have instructed their Air Navigation Service provider, National Air Traffic (NATS) Services Limited (known as NATS NSL) to undertake detailed safety assessments.

8.1.2 The following safety assessment work has been undertaken; these works support the proposed ATC procedures associated with the change:

- Initial Preliminary Hazard Identification at Stage 3a of options, including Preferred option.
- ATC Procedures Safety Analysis

8.1.3 In addition to this, in accordance with CAP760 Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases: For Aerodrome Operators and Air Traffic Service Providers, and in accordance with NATS SMS processes the following work will be undertaken, subject to a successful ACP, prior to implementation. To undertake these without a positive ACP decision would be disproportionate.

- Human Error Safety Assurance Process (HESAP) Activities
- Transition Assurance Activities
- Unit Safety Case Updates, if required

8.1.4 Implementation of RNP Approach procedures can be expected to enhance safety in the event of ILS unserviceability where ATC and operators would otherwise be reliant on VOR/DME or NBD approaches which are non-precision approaches (NPA). In the event of ILS outage, the implementation of RNP approaches would enable a workload reduction for ATC and operators compared to the current day where aircraft would fly a VOR/DME or NBD approach. PBN approaches are also widely claimed to enhance safety over NPAs by reducing the risk of Controlled Flight Into Terrain (CFIT).

8.1.5 Draft training needs analysis (TNA), training plans, MATS 2 supplementary instructions, ATC Procedures Safety Assessment (APSA) and IFP validation plans have been presented with the ACP submission. Following the regulatory decision on this ACP, together with IFP validation activity, Aberdeen Airport will work with our CAA ATS Inspector to refine and finalise all of this Safety Assurance documentation, training plan and MATS 2 Instructions.

9. Environmental Assessment

9.1.1 CAP1616 requires the change sponsor to complete an environmental assessment. The following information provides a summary of the information and conclusions within the Final Options Appraisal.

9.2 Baseline scenarios and traffic forecasts

9.2.1 At present the implementation date for the Aberdeen ACP is anticipated to be in Q1 2026. The Final Options Appraisal work has therefore qualitatively and quantitatively described the baseline and the anticipated factors that are expected to impact it, such as any forecast growth, fleet mix changes and planned developments based on implementation in 2026. CAP1616 also requires airspace change sponsors to forecast growth 10 years following the year of implementation and so a 2035 scenario has also been assessed.

9.2.2 Aberdeen Airport has developed the following forecast for the purposes of this ACP. The movement numbers shown in Table 25 are based on information in the airport's long term business plan (which has 5 year traffic predictions) and then an assumed average growth per annum beyond this 5 year period. For more information about the forecasts, please see section 4.2 of the Final Options Appraisal.

9.2.3 Aberdeen Airport has no planning/section 106 agreements which would affect our forecast. No growth has been assumed for Helicopters.

9.2.4 The fleet mix of this data has been adjusted to account for expected airline fleet changes. This includes transitions from A320-100/200 to A320 Neos, Embraer E195-E2 to B737-700 winglets, Embraer-145 to ATR72 212 A and ATR 42-500 to Jetstream 41.

9.2.5 The modal split, also shown in Table 25, is based on the average split over 10 years' worth of data with runway 16 being used 60% of the year, and runway 34 being used 40% of the year. Note that whilst Table 25 presents annual movement numbers, the noise modelling is based on movement numbers within the 92-day summer period from 16 June to 15 September inclusive.

9.2.6 This proposal does not seek to increase movements at Aberdeen Airport; the purpose of the change is to provide resilience and meet the requirements of the Airspace Modernisation Strategy. Therefore, the traffic forecast applied 'without ACP' will remain the same 'with ACP'.

Table 25 Aberdeen Airport 10 year traffic forecast (Source: Final Options Appraisal page 24)

Year	2022	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
		1	2	3	4	5	6	7	8	9	10
Per year											
Total movements	74,163	85,505	85,690	85,892	86,095	86,298	86,502	86,707	86,914	87,120	87,328
Total fixed wing arrivals	19,548	25,241	25,333	25,435	25,537	25,639	25,741	25,844	25,948	26,051	26,156
Total helicopter arrivals	17,675	17,675	17,675	17,675	17,675	17,675	17,675	17,675	17,675	17,675	17,675
Total fixed wing departures	19,396	25,045	25,138	25,238	25,339	25,440	25,542	25,644	25,747	25,850	25,953
Total helicopter departures	17,544	17,544	17,544	17,544	17,544	17,544	17,544	17,544	17,544	17,544	17,544
Average per Day											
Fixed Wing Arrivals per day (c.60%)	54	69	69	70	70	70	71	71	71	71	72
Helicopter Arrivals per day (c.40%)	48	48	48	48	48	48	48	48	48	48	48
Average per day Runway 16											
Fixed Wing Arrivals per day RWY16 (c.60%)	32	41	42	42	42	42	42	42	43	43	43
Helicopter Arrivals per day RWY16 (c.40%)	29	29	29	29	29	29	29	29	29	29	29
Average per day Runway 34											
Fixed Wing Arrivals per day RWY34 (c.60%)	21	28	28	28	28	28	28	28	28	29	29
Helicopter Arrivals per day RWY34 (c.40%)	19	19	19	19	19	19	19	19	19	19	19

9.2.7 The number of helicopter movements above represent the total average number of helicopter arrivals when the main landing runway is either 16 or 34 at Aberdeen. Not all of these helicopter movements actually used runway 16 or 34. In total, around 77% of all helicopter arrivals use the main landing runway, the remaining 23% use the much smaller visual runways 14,18,23,32 and 36.

9.2.8 For more information about the forecasts, please see section 4.2 of the Final Options Appraisal.

9.3 Noise

9.3.1 Overall, when considering impacts to noise, the Final Options Appraisal analysis has shown some very small changes within the noise metrics however, these are not expected to lead to any material changes for communities.

9.3.2 95%+ of traffic would continue to fly as they do today. For aircraft flying the PBN arrival procedures joining at a fixed waypoint may lead to a very small redistribution of noise, however, analysis has shown the average tracks of arriving aircraft align very closely with the position of the waypoint and, also given the small number of aircraft expected to fly the PBN arrival procedure, any change is anticipated to be so small it would not be material. Overall, it is concluded that this option is not expected to result in any significant or material positive or negative impacts to noise.

9.3.3 The following subsections provide an overview of the PBN arrival procedure performance using the CAP1616 primary and secondary noise metrics. For full details, please see the Final Options Appraisal.

TAG Outcomes

9.3.4 TAG has been used to assess total noise impacts over a 10-year appraisal period. The monetised net present value (NPV) of noise changes is -£6,963 (2024 prices).

9.3.5 It is important to highlight that this result is influenced by a limited number of receptors transitioning between 1dB bands in the TAG evaluation due to noise variations of less than 0.1dB. These changes are negligible beyond the accuracy of any noise model. Therefore, the TAG outcome for this option is not considered to be material to the assessment.

Noise exposure contours (L_{Aeq})

9.3.6 The following tables shows the difference between the option L_{Aeq} performance and the baseline for year of implementation, and 10 years following implementation.

Table 26 $L_{Aeq,16hr}$ 2026 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km²)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2026	With airspace change compared to without	$L_{Aeq,16hr}$	51	0.10	0	0	0	0	0	0
			54	0.00	0	0	0	0	0	0
			57	0.00	0	0	0	0	0	0
			60	0.00	0	0	0	0	0	0
			63	0.00	0	0	0	0	0	0

Table 27 $L_{Aeq,16hr}$ 2035 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km²)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2035	With airspace change compared to without	$L_{Aeq,16hr}$	51	0.00	0	0	0	0	0	0
			54	0.00	-100	0	0	0	0	0
			57	0.00	0	0	0	0	0	0
			60	0.00	0	0	0	0	0	0
			63	0.00	0	0	0	0	0	0

Table 28 $L_{Aeq,8hr}$ 2026 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km²)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools

2026	With airspace change compared to without	$L_{Aeq, 8hr}$	45	0.00	0	0	0	0	0	0
			48	0.00	0	0	0	0	0	0
			51	0.00	0	0	0	0	0	0
			54	0.00	0	0	0	0	0	0
			55	0.00	0	0	0	0	0	0

Table 29 $L_{Aeq,8hr}$ 2035 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km^2)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2035	With airspace change compared to without	$L_{Aeq, 8hr}$	45	0.00	0	0	0	0	0	0
			48	0.00	0	0	0	0	0	0
			51	0.00	0	0	0	0	0	0
			54	0.00	0	0	0	0	0	0
			55	0.00	0	0	0	0	0	0

9.3.7 The primary noise data shows no changes in the L_{Aeq} contour data between the PBN arrivals and the baseline, apart from two very marginal differences in the $L_{Aeq, 16h}$ outcomes. This marginal difference is due to the small increase in concentration around the waypoint for RWY16 arrivals and is negligible in terms of the potential for adverse noise effects.

N65 and N60 contours

9.3.8 The secondary N60 metric shows no changes in contour data and the N65 metric suggests very marginal differences which are not anticipated to be material.

9.3.9 Table 30 and Table 31 show the difference between the option N65 performance and the baseline for year of implementation and 10 years following implementation. Tables for the N60 contours are not shown as there are no changes in the contour data.

Table 30 N65 2026 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km^2)	Total population	Number of care homes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2026	With airspace	N65	5	-0.50	0	0	0	0	0	0
			10	-0.10	100	0	0	1	0	0

	change compared to without		20	0.00	0	0	0	0	0	0
			50	0.00	0	0	0	0	0	0
			100	0.00	0	0	0	0	0	0

Table 31 N65 2035 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km^2)	Total population	Number of care homes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2035	With airspace change compared to without	N65	5	-0.60	0	0	0	1	0	0
			10	-0.10	0	0	0	1	0	0
			20	0.00	100	0	0	0	0	0
			50	0.00	0	0	0	0	0	0
			100	0.00	0	0	0	0	0	0

Overflight Contours

9.3.10 The overflight data, which is generated between 0-7000ft, shows marginal differences in the lower frequency 5 and 10 per day contours which result in improvements to the number of people overflown compared to the baseline. It is important to note however that these improvements are based on an optimistic 5% of aircraft arriving flying the PBN procedures.

9.3.11 The following tables show the difference between the option overflight performance and the baseline, for year of implementation and 10 years following implementation:

Table 32 Overflight 2026 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km^2)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2026	With airspace change compared to without	Overflights (24hr)	5	-8.10	-900	0	0	-2	0	1
			10	0.00	-200	0	0	0	0	0
			20	0.40	0	0	0	0	0	0
			50	0.00	0	0	0	0	0	0

Table 33 Overflight 2035 comparison between 'with airspace change' and 'without airspace change'

Year	Scenario	Metric	Contour	Area (km^2)	Total population	Number of carehomes	Number of hospitals	Number of listed buildings	Number of places of worship	Number of schools
2035	With airspace change compared to without	Overflights (24hr)	5	-8.60	-1300	0	0	-3	-1	1
			10	-0.60	0	0	0	0	0	0
			20	0.50	0	0	0	0	0	0
			50	0.10	0	0	0	0	0	0

9.3.12 The full data tables are for all noise contours are presented in the Technical Appendix of the Final Options Appraisal.

Contour images and operational diagrams

9.3.13 Contour images associated with the noise data shown in Table 26 to Table 33 are shown in the Technical Appendix of the Final Options Appraisal.

9.3.14 The operational diagrams are shown in Figure 20 to Figure 23 of section 4: Detailed description of the proposed changes.

Secretary of State call in criteria

9.3.15 The Final Options Appraisal has demonstrated that there will be no material change to the population exposed to a noise level of at least 54dB $L_{Aeq\ 16hr.}$ (See Table 27 and Table 28)

9.4 Greenhouse Gas Emissions

9.4.1 TAG has been used to assess the greenhouse gas impact over a 10-year appraisal period. The change in carbon dioxide emissions over the appraisal period is 185.3t, of which 183.5t is traded. The monetised net present value (NPV) of carbon dioxide equivalent emissions of this option is -£39,233 (2024 prices).

9.4.2 The main fuel burn and carbon emissions data was based on 5% of aircraft flying the PBN arrivals and, in this scenario, the fuel burn and carbon emissions data shows a very small negative impact to annualised fuel use and carbon emissions (less than 0.1% increase in total emissions between the 'with airspace change' and 'without airspace change' scenarios).

9.4.3 However, as already noted, 5% usage is considered an optimistic estimate and therefore any negative impacts are likely to be even smaller than stated in the data.

Fuel burn data

The following tables show annual Fuel Burn, and the associated cost:

Table 34 Annual fuel burn data

Scenario	Year	Fuel use (t) (Annual)	Fuel cost (£) (Annual)
Without airspace change	2026	18,221	11,866,099
With airspace change	2026	18,227	11,869,827
Difference:		*+6*	*+3,728*

Table 35 Annual fuel burn data

Scenario	Year	Fuel use (t) (Annual)	Fuel cost (£) (Annual)
Without airspace change	2035	18,694	12,174,230
With airspace change	2035	18,700	12,178,094
Difference:		*+6*	*+3,864*

Greenhouse gas emissions data

The following tables show annual greenhouse gas emissions data:

Table 36 Annual greenhouse gas emissions data 2026

2026 Scenario	Year	Total GHG emissions (tCO_2e)	International GHG emissions (tCO_2e)	Traded (Domestic) GHG emissions (tCO_2e)	Traded (EEA) GHG emissions (tCO_2e)	UKETS Traded GHG emissions (tCO_2e)	GHG emissions per flight (tCO_2e)
Without airspace change	202	57,942	576	46,349	11,017	57,366	0.68
With airspace change	202	57,961	576	46,363	11,021	57,384	0.68
Difference:		*+19*	*0*	*+14*	*+4*	*+18*	*0*

Table 37 Annual greenhouse gas emissions data 2035

2035 Scenario	Year	Total GHG emissions (tCO_2e)	International GHG emissions (tCO_2e)	Traded (Domestic) GHG emissions (tCO_2e)	Traded (EEA) GHG emissions (tCO_2e)	UKETS Traded GHG emissions (tCO_2e)	GHG emissions per flight (tCO_2e)
Without airspace change	2035	59,447	594	47,437	11,416	58,852	0.68
With airspace change	2035	59,466	595	47,451	11,420	58,871	0.68
Difference:		*+19*	*+1*	*+14*	*+4*	*+19*	*0*

9.4.4 The tables above are based on the vast majority of IFR arrivals at Aberdeen flying an ILS approach as they do in the baseline today and they assume an optimistic 5% of arrivals will fly the RNP approach option. However, the proposed PBN arrival procedures are predominately for resilience and so they will most likely be used in the event of an ILS outage. With this in mind, Aberdeen has generated some data around

fuel burn and carbon emissions of a VOR/DME approach, which would be flown in the event of an ILS outage.

9.4.5 Owing to the frequency of ILS outages, it is not possible to meaningfully incorporate an outage scenario into the carbon emissions data above, which is required to be based on annual forecast by CAP 1616. Therefore, we have generated data for a single day of arrivals summarised by runway end which can be compared against each option as shown in Table 38.

Table 38 Fuel burn and CO2 data for a single day of arrivals

Option	Year	RWY16		RWY34		Total	
		Fuel (t) (Day)	Carbon (tCO_2e) (Day)	Fuel (t) (Day)	Carbon (tCO_2e) (Day)	Fuel (t) (Day)	Carbon (tCO_2e) (Day)
VOR/DME approach	2026	8.0	25.4	5.1	16.1	13.1	41.5
RNP approach	2026	7.8	24.7	4.7	15.1	12.5	39.8
VOR/DME approach	2035	8.3	26.3	5.3	16.7	13.5	43.0
RNP approach	2035	8.1	25.6	4.9	15.6	13.0	41.2

9.5 Local Air Quality

9.5.1 The PBN arrival procedures are not expected to impact air quality; there will be no changes to lateral tracks below 1,000ft and this ACP will not change the number of aircraft arriving at Aberdeen Airport.

9.6 Tranquillity

9.6.1 The Final Option Appraisal concluded there are no material differences in noise levels and therefore there are no material impacts to tranquillity as a result of implementing PBN arrivals and releasing a section of CAS.

9.6.2 There are no National Parks or National Scenic Areas (NSA's) within the scope of the proposed changes. The closest National Park, the Cairngorms, is overflown at altitudes above 7,000ft.

9.6.3 There are no changes in the number or area of DQA, CQA, country parks, regional parks, gardens and designated landscapes within the $L_{Aeq,}$ N65 and N60 contours. Within the 5 flights per day contour, overflight data shows very small changes to the area of already overflown designated gardens and landscapes, however, no new areas are overflown.

9.7 Biodiversity

9.7.1 The Habitats Regulations Assessment (HRA) screening assessment identified one site which is overflown below 3.000ft which is the River Dee Special Area of Conservation (SAC). However, this overflight occurs when aircraft are on final approach which means there will be no change to lateral tracks. Given this, and the ACP does not change frequency of aircraft flying an approach, there will be no impact to biodiversity.

10. Final Options Appraisal

10.1.1 Due to file size, the Final Options Appraisal document is provided in Annex B.

11. List of Supplementary Documents

11.1.1 The following table contains a summary of the supplementary documents to this ACP and where to find additional information:

Table 39: Supplementary Documents

Document reference	Supplementary document information
Annex A	Consultation response document
Annex B	Final Options Appraisal
Annex B Technical Appendix	Final Options Appraisal technical appendix
Annex C	ATC Procedures Safety Assessment (APSA)
Annex D	Draft MATS Part 2 Supplementary Instructions (SI)
Annex E	Training needs analysis (TNA)
Annex F	Draft Training Plan
Annex G	TAG workbooks and NPV calculations
Annex H	Instrument Flight Procedure design package

11.1.2 Please note the Instrument Flight Procedures package will be submitted by Aberdeen Airport's approved procedure design organisation (APDO) IFP Design Ltd as per CAA requirements. The aeronautical data spreadsheet will be submitted in Stage 6.