

CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

Title of Airspace Change Proposal:	Aberdeen Airport FASI (ScTMA Cluster)		
Change Sponsor:	Aberdeen International Airport Ltd		
ACP Project Ref Number:	ACP-2019-82		
Case study commencement date:	18/11/2022	Case study report as at:	16/12/2022

Account Manager: [Redacted]	[Grey]	Airspace Regulator (Engagement & Consultation): [Redacted]	[Yellow]	IFP: [Redacted]	[Yellow]	OGC: [Redacted]	[Dark Blue]
Airspace Regulator (Technical): [Redacted]	[Green]	Airspace Regulator (Environmental): [Redacted]	[Purple]	Airspace Regulator (Economist): [Redacted]	[Light Blue]	ATM (Inspector ATS Ops): [Redacted]	[Red]

Instructions

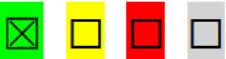
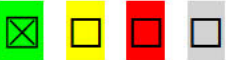
To aid the SARG project leader's efficient project management, please highlight the "status" cell for each question using one of the four colours to illustrate if it is:

Resolved - GREEN
 Not Resolved – AMBER
 Not Compliant – RED
 Not Applicable - GREY

Guidance

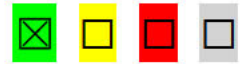
The broad principle of economic impact analysis is **proportionality**; is the level of analysis involved proportionate to the likely impact from that ACP. There are three broad levels of economic analysis; qualitative discussion, quantified through metrics, and monetised in £ terms. The more significant the impact, the greater should be the effort by sponsors to quantify and monetise the impact.





1. Background – Identifying the impact of the options (including Do Nothing (DN) / Do Minimum (DM))		Status	
1.1	Are the outcomes of the Initial Options Appraisal (IOA) (Phase I) clearly outlined in the proposal?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
1.1.1	Has the change sponsor completed an Initial Options Appraisal? [E12]	Yes, the sponsor has duly completed the IOA for all viable options and also for the two baseline options which are actually discounted due to not meeting with AMS DP but kept for comparison purposes.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.2	Does the Initial Options Appraisal include: - a comprehensive list of viable options; - a clear description of the baseline scenario; - an indication of the environmental impacts; - a high-level assessment of costs and benefit involved	Yes, the IOA is conducted for the comprehensive list of options. As the sponsor concluded that all of the approach options met DP1 (Safety) none will be discontinued on this basis. The sponsor also conducted the options appraisal for 3 baseline scenarios even though they are not found viable options due to not meeting with the AMS DP. High-level qualitative analysis of costs and benefits have been duly provided for all options in the IOA and further details e.g. overflight counts, heatmaps etc. are available in the IOA Technical Appendix.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.3	Has the sponsor stated on what criteria the comprehensive list of viable options has been assessed?	Yes, the sponsor included a separate Table E2 in the IOA (Table 4) to explain assessment criteria and methodology adopted for each impact.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.4	Where options have been discounted as part of the IOA exercise, does the change sponsor clearly set out why?	The sponsor indicated in the IOA that RWY 16 Arrival Option 2-Inner T Bar has been discounted and won't be carried forward to Stage 3. However, the sponsor only looked at the overflight numbers rather than monetising the impact through LAeq and their conclusion was that RWY 16 Arrival Option 2-Inner T-Bar has marginal negative impacts to noise compared to the baseline whereas RWY 16 Arrival Option 3-Outer T-Bar has marginal positive impacts. However, as the sponsor also concluded that in terms of track mileage Option 2 would offer marginal benefits whereas Option 3 would offer marginal disbenefit. Even though this approach and method to discontinue Option 2 was reasonable by only looking into high-level criteria (overflight counts and track mileage	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>





		difference) it'd provide a robust rationale for the sponsor to keep this option for Stage 3 to see the scope of the marginal changes and whether negative noise impact of the option outweighs the benefits of CO2 impact.	
1.1.5	Has the change sponsor indicated their preferred option(s) as a result of the IOA (Phase I - Initial)? [E12]	<p>Yes, according to the IOA the sponsor prefers the two T-Bars options (RWY 16 Option 3 and RWY 34 Option 2) as well as the curved approach options (RWY 16 Option 4 and 5 and RWY 34 Option 3). The sponsor also added their rationale along with the lines "Compared to Runway 16 Option 1 and Runway 34 Option 1 (Vectors to RNP APCH), the T-Bars offer a small reduction in ATC workload, and the IOA has demonstrated that they would present only very small changes from the baseline whilst meeting the AMS and offering resilience for Aberdeen in the event of ground based navigation aid outage. The curved approaches would offer significant track mileage, fuel burn and CO2 savings. These would however alter the distribution of traffic compared to the baseline and overfly some areas not frequently overflowed by arrivals. The centreline data has however shown that there are reductions in population overflowed by the curved approaches compared to the baseline and therefore we intend to explore the positive benefits and negative impacts in further quantitative detail as part of the Stage 3 Full Options Appraisal."</p> <p>The sponsor also indicated their preferred option around CAS is Option 1 (Raise portion of CTA3 to 4500ft) but this is subject to further safety investigation the sponsor will carry out at Stage 3.</p>	
1.1.6	Does the IOA (Phase I - Initial) detail what evidence the change sponsor will collect, and how, to fill in any evidence gaps and how this will be used to develop the Options Appraisal (Phase II - Full)?	<p>Yes, the IOA has a section 'Information to collect as part of FOA at Stage 3'. The sponsor indicated they plan to collect the following data and undertake the additional assessments as part of their FOA:</p> <ul style="list-style-type: none"> Quantify the baseline year (pre- 	














		<p>implementation and 10 years post implementation, including 10-year traffic forecast)</p> <ul style="list-style-type: none"> Quantitative LAeq contours, population counts and size (km2) Quantitative Nx contours, population counts and size (km2) WebTAG assessment Quantitative overflight contours that detail frequency of overflight including vectoring between 7000ft and joining the PBN procedures Detailed track length comparison Detailed fuel burn and equivalent CO2 emissions data Further information around any interdependencies with the NATS NERL network Quantified CAS requirements 	
1.1.7	Does the plan for evidence gathering cover all reasonable impacts of the change? [E12]	Yes, the plan for evidence gathering covers all reasonable impacts outlined in CAP 1616 Table E2.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

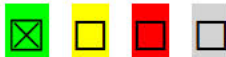
2. Impacts of the proposed airspace change		Status			
2.1	Are there direct impacts on the following:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1.1	<i>Examples of costs considered (please add costs that have been discussed, and any reasonable costs that the Airspace Regulator (Technical) feels have NOT been addressed)</i>				
2.1.2	Airport/ANSPs	Not applicable	Qualitative	Quantified	Monetised
	- Infrastructure		X	N/A	N/A

	- Operation		X	N/A	N/A
	- Deployment		X	N/A	N/A
	- Other(s)	X			
2.1.3	Commercial Airlines/General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Training		X	N/A	N/A
	- Economic impact from increased effective capacity		X	N/A	N/A
	- Fuel burn		X	X	N/A
	- Other(s)	X			
2.1.4	General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Access	X			
2.1.5	Military	Not applicable	Qualitative	Quantified	Monetised
		X			
2.1.6	Wider society, i.e., wider economic benefits, capacity resilience	Not applicable	Qualitative	Quantified	Monetised
			X	N/A	N/A
	Other (provide details)	Not applicable	Qualitative	Quantified	Monetised
		X			
2.2	<p>Are there direct beneficial impacts on air traffic control / management systems? Provide details.</p> <p>The sponsor stated in the IOA that the introduction of PBN satellite-based approaches would remove Aberdeen's dependencies on conventional ground-based navigation equipment (VORs) which contributes to a reduction in NERL's operational costs as it enables VOR rationalisation in the longer term. It is also further stated in the IOA that the availability of PBN procedures provides resilience to the loss of the ILS which should reduce the number of diversions owing to improved minima over the remaining conventional approach procedures. The sponsor anticipates this may offer increased operating revenue to Aberdeen in the event of an ILS outage.</p>				
2.3	<p>Where impacts have been monetised, what is the overall value (expressed in net present value (NPV)) of the project?</p> <p>N/A</p>				

2.4	<p>Has the sponsor provided an accurate and proportionate assessment of the proposed airspace change impacts?</p> <p>Yes, the sponsor has as a minimum qualitatively discussed all impacts addressed in CAP 1616 Table E2 and in addition to these the sponsor added another impact to discuss the performance against the vision and parameters/strategic objectives of the AMS for each option considered under the IOA.</p>	   
-----	---	---

3. Changes in air traffic movements and projections				Status
3.1	<p>If the proposed airspace change has an impact on the following factors, have they been addressed in the proposal?</p>			   
		Not applicable	Qualitative	Quantified/ Monetised
3.1.1	Number of aircraft movements	X		
3.1.2	Number of air passengers / cargo	X		
3.1.3	Type of aircraft movements (i.e., fleet mix)		X	N/A
3.1.4	Distance travelled		X	X
3.1.5	Operational complexities for users of airspace	X		
3.1.6	Flight time savings / Delays		X	N/A
3.1.7	Other impacts	X		
	<p>Comments:</p> <p>The sponsor underlined in the IOA that they do not anticipate the airspace change to alter the airspace capacity at Aberdeen but the main purpose is to provide resilience and meet the requirements of the AMS.</p> <p>The IOA emphasised Aberdeen's fleet is expected to see increases in the number of A320, B737-700, Dash-8, Saab 340 and similar sized fixed wing aircraft. The sponsor also expects decreased use of Embraers and ATR-42. It is confirmed by the sponsor that the changes to the baseline as a result of the expected fleet mix at the year of implementation will be quantified for Stage 3.</p> <p>The sponsor anticipates the highest track length reduction would be achieved by the proposed RWY 16 Option 4 Curved Approach from West and RWY 34 Option 3 Curved Approach from East for the aircraft that elect to fly the RNP-RF approaches (circa 9nm reduction in track length).</p>			

<p>3.2</p> 	<ul style="list-style-type: none"> • Has the sponsor used the most up-to-date, credible and clearly referenced source of data to develop the 10 years traffic forecast and considered the available guidelines (i.e., the Green Book and TAG models) in a proportionate and accurate manner? [B11 and E11] The sponsor stated it is very difficult at this stage to forecast growth. Firstly, because forecasts 13 years into the future are not yet available and secondly the impacts of COVID-19 brought uncertainties to traffic numbers. However, the sponsor reviewed the forecast growth for Aberdeen’s 5-year traffic predictions and applied the average growth to movement numbers between 2025 and 2035 which is reasonable for this stage. The sponsor also confirmed they will revisit this forecast when more information about Aberdeen’s recovery from pandemic is available. • Has the sponsor explained the methodology adopted to reach its input and analysis results? [B11 and E11] Yes, the sponsor explained the methodology as explained above and provided the traffic forecast in the IOA Table 2- Traffic Forecast and Estimated PBN Usage. As the sponsor doesn’t seek to increase movements at Aberdeen Airport, they stated there will be only one traffic forecast at Stage 3 which will be based on the ‘do nothing’ scenario in line with CAP 1616 B32. 	   	   		
<p>3.3</p>	<p>Has the sponsor developed an assessment of the following environmental aspects?</p>	   			
		Not applicable	Qualitative	Quantified	Monetised
<p>3.3.1</p>	Noise		X		
<p>3.3.2</p>	Operational diagrams		X		
<p>3.3.3</p>	Overflight		X		
<p>3.3.4</p>	CO2 emissions		X		
<p>3.3.5</p>	Local air quality		X		
<p>3.3.6</p>	Tranquillity		X		
<p>3.3.7</p>	Biodiversity		X		
<p>3.4</p>	<p>What is the monetised impact (i.e., Net Present Value (NPV)) of 3.3? (Provide comments)</p> <p>N/A – The sponsor has only qualitatively discussed the costs and benefits of the options and confirmed the detailed quantification and monetisation will be carried out at Stage 3.</p>				

4. Economic Indicators of the ACP		Status
4.1	<p>What are the qualitative / strategic impacts described in the ACP? The purpose of the change is to provide resilience rather than it seeks to increase movement at Aberdeen Airport. The change will also allow removal of dependencies on VORs and meet the requirements of the AMS.</p>	
4.2	<p>What is the overall monetised and non-monetised (quantified) impact of the proposed airspace change? The sponsor has not carried out the detailed analysis at Stage 2. So, none if the impact have been assessed quantitatively.</p>	
4.3	<p>What is the Net Present Value of the proposed options? Has the sponsor used this information to progress/discount options? Has the sponsor provided the benefits-costs ratio (BCR) of the proposed options and used it to support the choice of the preferred options? [E44] Neither NPV nor BCR ratio is available as the sponsor has not yet carried out the monetised CBA (Cost Benefit Analysis) at Stage 2. The only discounted option is RWY 16 Arrival Option 2 – Inner T Bar because the sponsor concluded by the IOA that this option comparatively performs less well against the baseline. The sponsor reached out to this conclusion from their qualitative discussion of the impacts. According to the IOA, even though this option offers improvements to track mileage, and associated fuel burn and CO2 benefits, these are found marginal and hence the sponsor has chosen to discontinue the option.</p>	
4.3.1	<p>If the preferred option does not have the highest NPV or BCR, then has the sponsor justified the reasons to progress this option? [B50 and E23] N/A – The CBA analysis has not yet been conducted but the sponsor confirmed it will be available at Stage 3.</p>	
4.4	<p>Have the sponsors provided reasonable justification for the proportionality of analysis above? Yes, the sponsor stated it'd be very complex to model noise impact, fuel burn and economic impact from increased effective capacity etc. at this stage due to the numerous viable options considered in the shortlist of options.</p>	
5. Other aspects		
5.1	-	
6. Summary of the Initial Options Appraisal & Conclusions		
6.1	<p>The sponsor succeeded to provide the minimum requirement for Stage 2 as outlined in CAP 1616 Table E12. The DPE document clearly explained the weighting assigned to each DP and then the rationale of the sponsor to carry out all options into the IOA. Even though the sponsor has decided not to discontinue with any of the options considered in the comprehensive list due to the fact that all options except CAS Option 1 partially met the AMS DP. The sponsor thought there are many competing factors within the parameters of the AMS and there is</p>	

	inevitably a balance to be achieved between these and hence it'd make more sense to gather more detailed information about the options to understand their benefits and impacts. According to their conclusion in the IOA, RWY 16 Arrival Option 2 – Inner T Bar performed less well against the baseline amongst other options and hence discounted.
--	---

Outstanding issues		
---------------------------	--	--

Serial	Issue	Action required
1	Discounting RWY 16 Arrival Option 2-Inner T-Bar due to marginal noise impacts	The sponsor is advised to keep this option for the next stage to develop the monetisation through TAG for both noise and CO2e analysis which will provide a robust assertion for discounting. Please refer to the Question 1.1.4 for detailed explanation.
2		

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[REDACTED]	[REDACTED]	16/12/2022
Airspace Regulator (Environmental)	[REDACTED]	[REDACTED]	16/12/2022