

CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

Title of Airspace Change Proposal:	ScTMA FASI		
Change Sponsor:	NERL		
ACP Project Ref Number:	ACP-2019-74		
Case study commencement date:	29/04/2022	Case study report as at:	27/05/2022

Account Manager: [Redacted]	[Grey]	Airspace Regulator (Engagement & Consultation): [Redacted]	[Yellow]	IFP: [Redacted]	[Orange]	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 shortlist of options (including Do Nothing (DN) / Do Minimum (DM))		Status
1.1	Are the outcomes of the options' scenarios clearly outlined in the proposal?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.1	<p>Has the change sponsor produced an Options Appraisal (Phase I - Initial) which sets out how they have moved from the Statement of Need to the airspace change design options? [E12]</p> <p>Yes, the change sponsor has produced the IOA (Initial Options Appraisal) for 13 candidate design concepts in total that were shortlisted following the DPE (Design Principle Evaluation). The airspace impacted by the ScTMA (Scottish Terminal Manoeuvring Area) change was split into 6 geographical elements to address the ATS route network as well as an additional 3 elements to address the airport connectivity. Concepts were proposed for each element which aligned with the SoN and evaluated against the DPs (Design Principles) which is detailed in Step 2A. The IOA includes a separate analysis presented for each concept and for the baseline scenario for each element to enable better comparison.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.2	<p>Does the list of options include a description of the change proposal?</p> <p>Yes, the detailed description for each option proposed along with the baseline scenario is included in the Stage 2A document. The description for each candidate design concepts also include benefits and issues section which helps the readers to understand the designs better and the sponsor also added a conclusion section for each and emphasised their view on the preferred design concept amongst other proposed concepts. The change sponsor also added the summary of the DPE which helps the readers to find the outcome of the DPE easily.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.3	<p>Has the sponsor stated on what criteria the longlist of options has been assessed?</p> <p>Yes, the sponsor used the recommended Table E2 from CAP 1616 Appendix E and used the criteria list available there for each candidate design concept and they have used the same for the baseline option for each element to allow better comparison.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.4	<p>Where options have been discounted, does the change sponsor clearly set out why?</p> <p>The Sponsor has chosen to deselect some of the candidate design concepts as a result of the DPE. At Step 2A, they have defined multiple concepts for</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>









		<p>almost half of the elements and couple or one concept for the rest of the elements. Then some of the concepts evaluated against the design principles and the concepts that did not meet the progression requirements set for the DPE. Following the DPE, 13 concepts across the 9 elements were remained; one or two concepts were shortlisted for each element in the IOA.</p> <p>From the IOA, the Sponsor concluded that the Southern element concept 3 should be rejected in preference of concept 4 because concept 4 provides greater opportunity to deliver environmental and economic benefits and also the sponsor stated any option considered in concept 3 could be included in concept 4. Therefore, concept 3 was rejected. The same conclusion was made for the Arrival Connectivity and Departure Connectivity concepts 1 and hence they are both rejected in preference to concept 2. All other concepts brought forward with a single concept except the Eastern element. The Sponsor has not rejected any of the concepts carried forward from the DPE – concept 4 and concept 8. The sponsor concluded in the IOA that concept 4 is less beneficial than concept 8 in terms of fuel burn and CO2e emissions. However, concept 8 will require a large volume of additional CAS which will reduce the volume of the Northumbria gliding area increasing the impact on the GA community. So, The Sponsor stated even though concept 8 offers an improvement on concept 4, this will be at the expense of the GA and MoD airspace access impact. Therefore, the Sponsor has decided to keep both options for the Eastern element.</p>	
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1.1.5	Has the change sponsor indicated their preferred option in the Options Appraisal (Phase I - Initial)? [E8]	The Sponsor stated in the IOA that it'd be disproportionate for them to determine a preferred option at this stage as this is dependent on understanding the holistic system wide design. The Sponsor confirmed that they will further develop the remaining design concepts into feasible design solutions and they will indicate their preferred design at Stage 3. Also, taking into account the results of the IOA, the Sponsor managed to narrow down their longlist of options by applying a robust discounting methodology at Step 2A and Step 2B. The IOA ended up with a single concept for most of the elements and hence the sponsor would not be able to prefer one. So, it is concluded that for proportionality purposes their justification is reasonable and there is no need for the Sponsor to select a preferred option at this stage.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.6	Does the Initial Options Appraisal (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)?	The Sponsor stated in the IOA Conclusion section that the development of holistic design solutions will enable more quantitative as opposed to qualitative analysis including fuel burn, and WebTAG CO2e emissions analysis. They also confirmed all benefits and impacts will be monetised at Stage 3 which will allow the analysis for the overall benefits and costs.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.7	Does the plan for evidence gathering cover all reasonable impacts of the change? [E12]	Yes, as this airspace change will only impact flights above 7,000ft noise is not a priority for consideration as the sponsor suggested in the IOA. So, the sponsor stated they will only provide the WebTAG analysis for the fuel burn and CO2e emissions along with other economic benefits and costs that will be monetised at Stage 3.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

2. Direct impact on air traffic control		Status
2.1 <input checked="" type="checkbox"/> <input type="checkbox"/>	Are there direct cost impacts on air traffic control / management systems? If so, please provide below details of the factors considered and the level in which this has been analysed.	<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>				
		Not applicable	Qualitative	Quantified	Monetised
2.1.2	Infrastructure changes	X			
2.1.3	Deployment		X	N/A	N/A
2.1.4	Training		X	N/A	N/A
2.1.5	Day-to-day operational costs / workload / risks	X			
2.1.6	Other (provide details)	X			
2.1.7	Comments: The IOA states the proposal for the holistic ScTMA change is expected to require air traffic controller familiarisation training, in the order of 90-100 controllers and circa 50 assistants at NATS Prestwick, including extensive use of the NATS simulator facility. It is also added that support staff are required to run the simulator and operational rostering becomes a factor taking into account continuous service delivery for the occasions where operational controllers are not available due to their conversion training.				
2.2	Are there direct beneficial impacts on air traffic control / management systems? If so, please provide details and how they have been addressed:				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2.2.1	<i>Examples of benefits considered</i>	Not applicable	Qualitative	Quantified	Monetised
2.2.2	Reduced work-load		X	N/A	N/A
2.2.3	Reduced complexity / risk		X	N/A	N/A
2.2.4	Other (provide details)	X			
2.2.5	Comments: The IOA indicates for the candidate design concepts considered within the arrival and departure connectivity elements that where the airports SIDs connect to a systemised airway, arriving and departing aircraft will remain deconflicted allowing improved CCO and CDO and reducing controller workload.				
2.3	Where monetised, what is the net monetised impact on air traffic control (in net present value) over the project period? N/A				

2.4	<p>Are the direct impacts on air traffic management analysed accurately and proportionately? Yes, the sponsor provided the minimum requirement for Stage 2 which is the qualitative discussion on the potential air traffic management costs and benefits addressed in CAP 1616 Table E2.</p>	   
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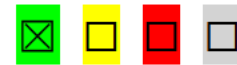
3. Changes in air traffic movements / projections				Status	
3.1	What is the impact of the ACP on the following and has it been addressed in the ACP proposal?			   	
		Not applicable	Qualitative	Quantified	Monetised
3.1.1	Number of aircraft movements		X	X	N/A
3.1.2	Type of aircraft movement		X	N/A	N/A
3.1.3	Distance travelled		X	X	N/A
3.1.4	Area flown over / affected		X	N/A	N/A
3.1.5	Other impacts	X			
3.1.6	<p>Comments: In terms of the design concepts considered within the elements addressing the airport connectivity, the IOA states the capacity of the ATS network will be increased as a result of any additional connectivity e.g. the introduction of additional holds and through STARs without having to remain within the confines of existing CAS.</p> <p>The IOA states that where a STAR commences at systemised airway, arriving and departing aircraft will remain deconflicted allowing improved CCO and CDO for the concepts considered within the airport connectivity elements. These elements are described to enable more direct routings between the surrounding elements which will reduce the flight plannable track mileage and GHG (greenhouse gas) impact.</p> <p>According to the IOA, the Eastern element seeks to introduce new arrival/departure connectivity to the ScTMA through the FoF which will enable track mileage saving of circa 72 NM per flight.</p>				
3.2	<p>Has the forecasting of traffic done reasonably using best available guidance (e.g. DfT WebTAG, the Green Book, Academic sources...etc?) Yes, the Sponsor explained the methodology they used in order to forecast the total traffic from 2025 to 2035 in Stage 2A document para 2.34. It is concluded by the CAA that the sources mentioned in the relevant paragraph and the method applied to the forecast are all reasonable and useful for Stage 2. It should be noted that in the initial</p>				   

	submission there were inconsistencies in the presented aircraft movement data which were updated post gateway. However, although the movement data has been updated, the data was not used to inform quantitative assessments and therefore has not had a material impact on the submission.			
3.3	What is the impact of the above changes (3.1) on the following factors below?			
		Not applicable	Qualitative	Quantified
3.3.1	Noise	X		
3.3.2	Fuel Burn		X	N/A
3.3.3	CO2 Emissions		X	N/A
3.3.4	Operational complexities for users of airspace		X	N/A
3.3.5	Number of air passengers / cargo	X		
3.3.6	Flight time savings / Delays	X		
3.3.7	Air Quality	X		
3.3.8	Tranquillity	X		
3.4	Are the traffic forecast and the associated impacts analysed proportionately and accurately according to available guidelines (e.g. WebTAG or the Green Book?)			<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
3.5	What is the total monetised impact of 3.3? (Provide comments) N/A			

4. Benefits of ACP				Status
4.1	Does the ACP impact refer to the following groups and how they are impacted by the ACP?			
		Not applicable	Qualitative	Quantified
4.1.1	Air Passengers	X		

4.1.2	Air Cargo Users	X			
4.1.3	General aviation users		X	N/A	N/A
4.1.4	Airlines		X	N/A	N/A
4.1.5	Airports		X	N/A	N/A
4.1.6	Local communities	X			
4.1.7	Wider Public / Economy		X	N/A	N/A
4.1.8	<p>Comments: In general, the proposed concepts in each element would introduce systemised route structures which will deconflict aircraft arriving and departing at ScTMA. It is stated in the IOA that the removal of conflicts will result in a reduction in track mileage flown by removing the necessity for ATCO intervention and this would allow aircraft to follow their planned route more closely. According to the IOA, GA airspace users may incur a minor fuel disbenefit should they are unable to obtain a clearance into the airspace.</p>				
4.2	How are the above groups impacted by the ACP, especially (but not exclusively) looking at the following factors below:				
4.2.1	Improved journey time for customers of air travel	N/A			
4.2.2	Increase choice of frequency and destinations from airport	N/A			
4.2.3	Reduced price due to additional competition because of new capacity	N/A			
4.2.4	Wider economic benefits	The proposed changes will increase the effective capacity of the airspace. So, the economic impact would be positive.			
4.2.5	Other impacts	N/A			
4.2.6	<p>Comments: For wider public, the IOA states in terms of GHG and capacity related impact that efficient connectivity will increase the capacity of the ATS network. Where this connectivity joins to a systemised route structure, departing aircraft will be deconflicted and therefore controller workload would be reduced. The efficient connectivity would also minimise the track mileage by reducing the GHG impact.</p>				
4.3	<p>What is the overall monetised impacts associated with 4.1 and 4.2 the above? N/A</p>				
4.4	<p>What are the non-monetised but quantified impacts of the above? N/A</p>				

4.5	<p>What are the qualitative / strategic impacts described above? The objective of the proposal is to modernise the route network surrounding the ScTMA in accordance with the CAA's (Civil Aviation Authority's) Airspace Modernisation Strategy (AMS) using Performance Based Navigation (PBN). The overall benefits would be reduction in complexity and fuel burn and CO2e emissions.</p>
4.6	<p>What is the overall monetised benefits-costs ratio (BCR) of the policy? Is it more than 1? N/A</p>
4.7	<p>Have the sponsors provided reasonable justification for the proportionality of analysis above? Yes, the Sponsor explained in the IOA that it'd be disproportionate for them to quantify the costs and benefits accurately at this stage due to the broad nature of the design concepts and because the Sponsor provided the minimum criteria for the IOA which is the qualitative discussion of relevant costs and benefits, it is concluded by the CAA that their approach is proportionate and in line with the CAP 1616 process.</p>
4.8	<p>If the BCR is less than 1, are the quantitative and qualitative strategic impacts proportional to the costs of the ACP? N/A</p>



5. Other aspects	
5.1	-

6. Summary of Assessment of Economic Impacts & Conclusions	
6.1	<p>The IOA for the ScTMA is based around qualitative discussion of the costs and benefits for the high-level design concepts. The Sponsor has chosen to split the impacted airspace into 6 geographic elements and 3 elements addressing the connectivity of the en-route ATS route network and the lower airspace. Within these elements, high-level concepts were considered for each element. The CAA concluded that their approach is proportionate because it allowed the Sponsor to narrow down the comprehensive list of options by the first phase of the options appraisal. The Sponsor provided the minimum requirement for the initial phase which is the qualitative analysis of the cost and benefits of the design options selected to be carried forward following the DPE. The baseline option was also described for each element and assessed against the proposed concepts to enable a robust comparison. The IOA addresses the criteria for assessing the list of options, and the application of those criteria to the list to develop the shortlist of options. At this stage, the Sponsor has chosen not to select any preferred option as in half of the elements the IOA left them with only one option for most of the elements and hence the Sponsor has decided to indicate the preferred option when the analysis is developed into a quantitative detailed form at Stage 3. This airspace change will only impact flights above 7,000 ft and therefore noise impacts are not a priority for consideration. However, the Sponsor confirmed in the IOA that by Stage 3 fuel burn</p>

	and WebTAG CO2e emissions analysis will be conducted along with monetised costs and benefits. So, it is concluded by the CAA that the list of minimum requirement for the IOA (CAP 1616 Appendix E12) has been fulfilled by the Sponsor.
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Outstanding issues?		
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Serial	Issue	Action required
1	N/A	N/A

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)			27/05/2022