

## CAA CAP 1616 Options Appraisal Assessment (Phase II Full)

<b>Title of Airspace Change Proposal:</b>	NERL SCTMA FASI		
<b>Change Sponsor:</b>	NERL		
<b>ACP Project Ref Number:</b>	ACP-2019-74		
<b>Case study commencement date:</b>	02/08/2024	<b>Case study report as at:</b>	01/09/2025 (Post Gateway)

### 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			Status
1.1	Has the change sponsor developed the initial options appraisal into a full options appraisal? [CAP1616f: 4.12-4.15]	The initial options appraisal was a qualitative assessment completed as part of Stage 2B. At this stage, a full options appraisal was presented of the preferred design option with quantified impacts for fuel burn, CO2 emissions and delays following a shared cluster-wide methodology	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

1.2	<p>Has the change sponsor provided a robust rationale supported with appropriate evidence, justifying why certain design option(s) were not progressed to the full options appraisal?</p> <p>[CAP 1616f: 4.13]</p>	<p>The sponsor states that, following the IOA and the subsequent consultation, it has consolidated the options identified into one single option, then ensured that this is consistent with Edinburgh's and Glasgow's parallel options.</p> <p>During the assessment process, the options appraisal has been improved in response to CAA feedback. Sections 1.3.2-1.3.4 explain that it would be disproportionate to tweak preferred options as it would have implications for other ACPs in the cluster. Instead, the preferred option was developed with feedback from Edinburgh and Glasgow airports and other stakeholders such as aviation users.</p>	
1.3	<p>Has this rationale plus the supporting evidence been clearly explained in any consultation/engagement materials?</p> <p>[CAP 1616f: 4.13]</p>	<p>The Sponsor took on board Economist feedback that it should explain the process of consolidating the options more explicitly. Annex E of the Consultation Document specifically looked at option development at Stage 2 and Stage 3 showing where feedback was taken on board and refinement through simulations. Due to the interdependence of ACPs, it has been clarified that the design is compatible as the constituent airport departure options have common endpoints.</p>	
1.4	<p>Has the initial options appraisal been developed into a detailed quantified and monetised assessment for the full options appraisal?</p> <p>[CAP 1616f: 4.14]</p>	<p>The Sponsor has quantified and monetised many of the impacts in Section 3 so it feeds into the cost benefit analysis in Section 5. Sponsor has monetised changes in fuel burn and the cost of delay using fuel cost, crew cost, maintenance cost and passenger compensation costs.</p> <p>Sponsor is unclear upon source for forecast for holding. The ScTMA airspace is forecast to generate 64,185 minutes of holding. Sponsor is unclear what assumptions mean this grows to 110,596 minutes 10</p>	





		years after implementation. This was in the wider society benefits in relation to capacity/resilience.	
1.5	<p>Does the full options appraisal include:</p> <ul style="list-style-type: none"> <li>- All evidence gaps identified at Stage 2 fully assessed</li> <li>- All reasonable costs and benefits quantified</li> <li>- All other costs and benefits described qualitatively</li> <li>- Reasons why costs and benefits have not been quantified</li> <li>- Detail on the preferred design option, setting out reasons for the preference (where relevant)</li> <li>- A more detailed assessment of the impacts on safety, if completed by the change sponsor</li> <li>- A quantified and monetised environmental assessment, including all direct and consequential impacts</li> </ul> <p>[CAP 1616f: para 4.14]</p>	<p>Section 2.1.7 describes the methodology used to appraise the options quantitatively and qualitatively, including justification for the approach if not quantified.</p> <p>The Full Options Appraisal does include a full assessment of all evidence gaps identified at Stage 2. Table 3 identifies the evidence gaps as in relation to fuel burn, CO2 emissions and monetisation.</p> <p>Section 2.2 describes the methodology used to appraise the options quantitatively and qualitatively, including justification for the approach if not quantified. Sponsor has specified in key areas why there has been no quantification. This includes in relation to resilience due to complexity. Other impacts are not quantified because the proposals are not anticipated to have any impacts such as biodiversity, local air quality, operation and infrastructure costs and training costs for airlines.</p> <p>Section 3 describes the costs and benefits for each option against the "Without Airspace Change" pre-implementation Without Airspace Change.</p> <p>Section 5 provides the monetised benefit over 10 years. It is estimated at £85.1m in the Table in that section.</p>	
1.6	<p>Has the change sponsor used the most up-to-date, credible, and clearly referenced sources of data to assess the impacts of the baseline scenarios and design options?</p> <p>[CAP1616f: 4.16]</p>	<p>The Sponsor has used traffic forecasts shared with other Scottish airports. The airports have used their own traffic forecasts for their own traffic, and the remainder is sourced from NERL itself. NERL's forecast growth has provided the years between the base years.</p> <p>NERL Analytics has provided other forecasts.</p>	













		<p>For traffic forecasts, Edinburgh and Glasgow airport provided traffic forecasts for 2023, 2027 and 2036. Other traffic data came from Eurocontrol's Network Strategic Tool model and then NATS base case forecast in December 2023 was applied. It would be helpful to reference the forecast and also some further information about the holding data.</p> <p>IATA jet fuel in Europe price, £685.99 per tonne, at 861.39 USD (w/e 22nd March 2024) converted to GBP using a conversion factor 0.796. Sponsor has now indicated these will be updated at the time of the next appraisal after consultation.</p>	
1.7	<p>Has the sponsor explained the methodology it adopted to reach its input and analysis results?</p> <p>[CAP 1616f: 4.16]</p>	<p>Yes the Sponsor explains the methodology in Section 3. In addition, Appendix C provides supplementary information on the methodology used for CO2 calculations.</p>	   













2. Potential Impacts					Status
2.1	<p>Has the change sponsor conducted a full options appraisal of each of the design options which it intends to consult/engage on using the following metrics and level of analysis?</p> <p>[CAP 1616f: 4.14]</p>				   
2.1.1	Communities	Not applicable	Qualitative	Quantified	Monetised
	- Noise			X	
	- Local air quality		X		
2.1.2	Airport/ANSPs	Not applicable	Qualitative	Quantified	Monetised
	- Infrastructure		X		
	- Operational		X		
	- Deployment		X		





	- Other(s)		X		
2.1.3	Commercial Airlines/General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Training	X	X		
	- Increased effective capacity			X	
	- Fuel burn			X	
	- Other(s)	X	X		
2.1.4	General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Access			X	
	- Increased effective capacity			X	
	- Fuel burn			X	
2.1.5	Wider society	Not applicable	Qualitative	Quantified	Monetised
	- Greenhouse gas emissions			X	
	- Tranquillity		X		
	- Biodiversity		X		
	- Capacity/resilience			X	
2.1.6	Military	Not applicable	Qualitative	Quantified	Monetised
	-	X			
2.1.7	Other	Not applicable	Qualitative	Quantified	Monetised
	-	X			
2.3	Has the change sponsor discussed their methodology with the CAA when quantifying and monetising impacts in the groups 'Commercial airlines' and 'Airport/air navigation service provider'?	There was no discussion around the original submission presented at Gateway. Prior to the July Gateway, sponsor had discussed an issue arising from interdependency with Edinburgh's ACP affecting their quantification and monetisation of a minor impact. The			<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>



	[CAP 1616f: 3.42]	subsequent resolution of the issue was approved by the CAA with further detail in the appraisal.	
2.4	Has the CAA reviewed the safety implications to determine whether we agree that is the only potential design option, on the grounds of safety? [CAP 1616f: 4.15]	N/A	   

3. Economic Indicators			Status
3.1	Has the change sponsor provided traffic forecasts for year 1 and year 10? [CAP 1616f: 3.22]	Section 8.1.1 tabulates the traffic forecasts used for years 1-10. Section 2.2.3–2.2.6 and Appendix A (Table 23) outline further detail on the forecasts. The forecasts were for the period 2027-2036. Table 23 helpfully breaks down forecast traffic from Glasgow, Edinburgh and overflights during this period.	   
3.2	Has the change sponsor valued all relevant costs and benefits of the design options using: - Net present value (NPV) - Benefit cost ratio (BCR) - Cost benefit analysis (CBA)? [CAP 1616f: 3.43]	Table 7 in Section 5 contains the monetised NPV. Table 22 presents a more full net present value analysis for the preferred option breaking down the net benefits to wider society, airspace users (e.g. CO2, fuel cost, delay costs). The benefit-cost ratio has not been explicitly calculated although there is only one option and the baseline to compare the ratio with. It would be unhelpful if there are still costs which cannot be quantified at this stage such as project and deployment costs.	   
3.3	When appraising costs and benefits of a design option, has the change sponsor assessed them incrementally against the baseline scenarios? [CAP 1616f: 3.45]	The appraisal compares Option 1 (Modernised ATS Route Structure) directly against the Without Airspace Change scenario. Monetised benefits are calculated based on the difference between the proposed option and the baseline. The calculations in Table 7 in Section 5 disaggregate the baseline incrementally by impact. Tables 14–19 then show side-by-side comparisons of	   

		fuel burn and CO <sub>2</sub> e emissions for both options. This includes delta values (e.g. “–6 kT fuel” or “–25 kT CO <sub>2</sub> e”) to highlight the incremental benefit	
3.4	Has the change sponsor expressed the values derived for the costs and benefits set out above in ‘real’ rather than ‘nominal’ terms? [CAP 1616f: 3.46]	Yes, the change sponsor has expressed the values derived for the costs and benefits in ‘real’ term. In response to feedback from the economists at the CAA, the TAG outputs are presented explicitly stating that 2024 is the base year and therefore are in market prices. It is recommended to be transparent about how monetised values are adjusted for forecast inflation.	   
3.5	Have values been reported in the base year for the assessment? [CAP 1616f: 3.47]	The analysis is reported from Year 1, 2027, though Appendix A refers to 2024 as the base year.	   
3.6	As well as taking account of inflation in real prices, has the change sponsor used a social time preference rate? [CAP 1616f: 3.48]	Yes the Sponsor has used 3.5% real as required by the Green Book.	   

4. Summary of the Full Options Appraisal			
4.1	What are the qualitative/strategic impacts of the design options?	<p>The ACP forms part of the Scottish changes with Edinburgh’s and Glasgow’s parallel ACPs. The ACP identifies no significant qualitative impacts, other than small deployment costs.</p> <p>The sponsor has also attempted to calculate overflights over high altitude terrain, and population overflow in holding patterns. Improved resilience is the key qualitative impact from the preferred design option.</p> <p>The key strategic impacts include alignment with the airspace modernisation strategy through performance based navigation, systemisation of routes to reduce the burden on air traffic controllers and release unnecessary controlled airspace.</p>	   

4.2	What are the overall non-monetised (quantified) impacts of the design options?	<p>Wider Society benefits (CO2) - £16.5m  Net airspace users benefits (CO2) - £28.6m  Net airspace users benefits (Fuel) - £36.9m  Net airspace users benefits (Delay excl fuel) - £3.1m</p> <p>SF – in relation to minutes of holding under capacity/resilience, sponsor could show the year on year breakdown between 2027-2036 to aid understanding.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.3	Where impacts have been monetised, what are the overall net present values (NPV) of the design options?	Table 22 identifies a 10-year discounted net present value of £89.3m from the preferred design option in market prices for 2024.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4.4	<p>Has the change sponsor used the economic assessment to progress/discontinue design options and/or support the choice of the preferred design option?</p> <p>If the preferred design option does not have the highest NPV or benefit cost ratio (BCR), then has the change sponsor justified the reasons to progress this design option?</p>	The Sponsor only put forward one design option besides the baseline.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>

## 5. Other Aspects

5.1	Some minor typos identified during assessment were addressed by the Sponsor.
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## 6. Conclusions

6.1	<p>The appraisal was robust and required only a few changes, specifically the Sponsor should:</p> <ul style="list-style-type: none"> <li>explain the process of consolidating the options more explicitly</li> <li>note the price base for the financial calculations</li> <li>clarify the base year used</li> </ul> <p>The sponsor had addressed this feedback from the economist, but also made some general refinements of the calculations in response to issues identified in the ACP and at a cluster-wide level.</p>
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CAA Full Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[REDACTED]	[REDACTED]	19/8/24 23/07/2025 05/09/2025