

CAA CAP 1616 Options Appraisal Assessment (Phase II Full)

Title of Airspace Change Proposal:	Network Improvements on the UK Dover (DVR) Interface		
Change Sponsor:	NATS		
ACP Project Ref Number:	ACP-2025-006		
Case study commencement date:	18/8/26	Case study report as at:	11/8/26

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]	Sponsor has matured the preferred design from the initial options appraisal to the full options appraisal. Due to the altitude of the airspace change proposal, sponsors largely disregarded the impact on communities. The full options appraisal does not contain any impacts with respect to noise, tranquillity and biodiversity.	☒ ☐ ☐ ☐

		The appraisal largely focuses on the greenhouse gas emissions being monetised. The key impact is around capacity which is assessed qualitatively. Following implementation of the airspace change proposal, the sponsor also considers consequential risk of delays experienced by aviation users. Sponsor acknowledged that there will be a cost to the airspace navigation service provider. However the sponsor has declined to quantify this impact. Therefore this impact also needs to be assessed qualitatively.	
1.2	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? [CAP 1616f: 4.13]	Option 2 was discontinued as a result of the design principle evaluation and with the assistance of stakeholder input. The benefits realised did not justify the additional complexity and consequential workload on air traffic controllers. Sponsor appraised the baseline scenario which was similarly unsuitable in the design principle evaluation, but purely for the purposes of comparison with the other option.	   
1.3	Has this rationale plus the supporting evidence been clearly explained in any consultation/engagement materials? [CAP 1616f: 4.13]	Sponsor has summarised the rationale for discontinuation of option 2 in the consultation paper. Sections 2.4.7 - 2.4.8 set out that the more complex airspace will require additional air traffic control intervention. However this will result in limited environmental impacts and less flexible airspace.	   
1.4	Has the initial options appraisal been developed into a detailed quantified and monetised assessment for the full options appraisal? [CAP 1616f: 4.14]	as per 1.1	   
1.5	Does the full options appraisal include: - All evidence gaps identified at Stage 2 fully assessed	Sponsor has endeavoured to ensure all reasonable costs and benefits have been quantified. Sponsor has quantified	   

	- All reasonable costs and benefits quantified - All other costs and benefits described qualitatively - Reasons why costs and benefits have not been quantified - Detail on the preferred design option, setting out reasons for the preference (where relevant) - A more detailed assessment of the impacts on safety, if completed by the change sponsor - A quantified and monetised environmental assessment, including all direct and consequential impacts [CAP 1616f: para 4.14]	the fuel burn, carbon dioxide emissions reviewed the impact on safety and air navigation service providers. This address the evidence gaps identified in the previous stage. Sponsor also utilised BADA to help address the evidence gap on environmental impacts of aircrafts. The partial approach to quantifying the benefits is proportional to the level 2 airspace change proposal. Other impacts are qualitative of which the key impact is in relation to airspace capacity. Section 2.4.4 outlines the impact on capacity within the baseline scenario with traffic growth. The preferred option is then set out in sections 2.5.1 to 2.5.2 in relation to three coordination points plus other related changes. The environmental assessment has been monetised through modelling simulation; sponsor acknowledges that emission benefits can be attributed to more efficient flight paths within airspace adjacent to UK airspace. Within the baseline scenario, sponsor outlines how airspace for commercial airlines need to be more actively managed by air traffic controllers or reroute to avoid the risk of delays, which could have consequential environmental impacts. Recommendation: Sponsor should amend the appraisal to label the economic impact on general aviation and commercial airlines as qualitative.	
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		Recommendation: Sponsor should qualitatively set out the consequential environmental impacts within the baseline scenario as a result of traffic growth	
1.6	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? [CAP1616f: 4.16]	The key data in this airspace change proposal is the air traffic forecasts. Footnote 10 in the consultation forecast came from NATS November 2025 base forecast. This is based on market knowledge and economic forecasting by the sponsor. Table 3 in the consultation paper in relation to average speed did not have an identifiable source. Recommendation: Sponsor should include a list of sources which inform the tables in the consultation papers and accompanying documents	   
1.7	Has the sponsor explained the methodology it adopted to reach its input and analysis results? [CAP 1616f: 4.16]	Sponsor has set out methodology in some detail in the documents in relation to the modelling approach. The key point in relation to the quantified impacts is that the sponsor has set out that it is used carbon dioxide emissions as a proxy for greenhouse gas emissions. The key point in relation to the modelling approach is set out in section 2.2.1 where sponsor explained that it has analysed at least 90% of all traffic through focusing modelling on 543 routes. There were significantly more permutations, but the approach taken is proportionate. Sponsor also explains that it has made no assumption of airport expansions.	   
2. Potential Impacts			Status
2.1	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? [CAP 1616f: 4.14]		   

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		
	- Increased effective capacity		x		
	- Fuel burn				x
	- Other(s)	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'? [CAP 1616f: 3.42]	Sponsor presented to the CAA on its high level approach in relation to the modelling of delays and CO2 emissions. This was as part of general engagement with the CAA over upcoming airspace change proposals.			   
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]	This matter will be addressed by the technical regulator.			   

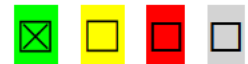
3. Economic Indicators			Status
3.1	Has the change sponsor provided traffic forecasts for year 1 and year 10? [CAP 1616f: 3.22]	Sponsor has provided forecasts for ten full calendar years from 2028 to 2037. Table 1 breaks down the traffic forecasts by airports and overflights. In section 2.2.1, the sponsor describes the forecast as the "lower forecast" and it has ignored westbound traffic through the konan coordination point. Recommendation: Sponsor should be clearer on what it means by the lower forecasts in relation to the figures, preferably by summarising how other forecasts compare	   

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]	Sponsor has prepared a net present value approach but has not monetised the costs. This makes the results look more like a present value flow of the benefits. Recommendation: Sponsor should at least note the qualitative costs in each option accompanying the valuation of relevant costs and benefits.	
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]	Most costs and benefits of the preferred design option have been compared against the narrative or valuations in the baseline scenario. Section 2.4.5 set out the baseline scenario of the number of flights but uses the lower estimate of traffic growth. Given that the preferred option means that flights from Biggin hill and Farnborough will result in longer journeys, it would have been helpful to understand how much vectoring is forecast to go on from departures from at least these airports, if not the rest. Recommendation: Sponsor should set out in the baseline scenario, the extent by which track miles of departures from each of the airport are affected by air traffic control interventions.	
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]	It is difficult to tell in table 11 whether this sponsor has set out the figures adjusted for inflation. Requirement: Sponsor should set out in section 2.2 whether monetised figures are set out in real terms and also the base year	

3.5	Have values been reported in the base year for the assessment? [CAP 1616f: 3.47]	As above	   
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]	Footnote 8 confirms that the sponsor has used appropriate discounting. Recommendation: Sponsor should transfer footnotes in relation to methodology or presentation of the quantified or monetised impacts into the main text or a separate methodology section.	   

4. Summary of the Full Options Appraisal			
4.1	What are the qualitative/strategic impacts of the design options?	The key strategic impacts were implementing the airspace modernisation strategy, ensuring alignment with the UK airspace design service by defining entry and exit points up the boundary where UK airspace meets European airspace. Section 2.6.1 of the consultation paper also outlines obligations on the UK to consider interaction with neighbouring airspace navigation services. This airspace change proposal is part of a broader European network modernisation proposal being taken forward by authorities in Belgium and France. The key qualitative impacts include safety through lower air traffic control interventions. Section 2.1.4 of the consultation paper explains that the reduction in air traffic controller workload will also lead to improved traffic presentation to air navigation service providers in France	   

		and Belgium. The preferred option will allow for more efficient flight planning and increased traffic throughput leading to associated environmental benefits, of which some can be accounted for by a reduction in carbon dioxide emissions. The sponsor also mentions that the preferred option design will help with the modernisation of LTMA airspace by providing flexibility in the airspace design for systemisation.	
4.2	What are the overall non-monetised (quantified) impacts of the design options?	Sponsor sets out the quantified impacts in year 1 and year 10 of the appraisal. The CO2 emissions reduction was 5450 tonnes in 2028 and 5752 tonnes in 2037. Table 8 breaks down the above into the constituent airports and overflights. In the final appraisal year, 2037, Farnborough Airport emissions are forecast to rise by 45 tonnes and Biggin Hill by 125.5 tonnes. Table 7 breaks down the CO2 emissions over the appraisal period in the baseline scenario. [Fuel burn is forecast to rise from 1,714 tonnes in 2028 to 1,810 in 2037]. Table 10 then sets out the total change in track miles and fuel burn savings against the baseline by the constituent airports and overflights. Sponsor also mentions that there is an increase in the number of routes which would be able to cross the boundary through the co-ordination points in the preferred design options. However, this was a narrative of the quantification as the detail of how many was omitted. Recommendation: Sponsor should set out cumulative quantified impacts over the appraisal period. Recommendation: Table 10 should be presented in the consultation paper.	   
4.3	Where impacts have been monetised, what are the overall net present values (NPV) of the design options?	The present value of the impacts of the design options exclude monetisation of the costs to stakeholders, such as air navigation service providers.	   

		Table 11 shows the total present value of £17m across the appraisal period which is due to fuel burn savings from track mile reductions and monetisation of CO2 reductions for traded and non-traded emissions. Recommendation: Qualitative costs to stakeholders should be presented in context to the presentation of the monetisation of the value of the option including the timing and magnitude of each category of cost.	
4.4	Has the change sponsor used the economic assessment to progress/discontinue design options and/or support the choice of the preferred design option? 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?	The present value of the preferred design option has been used to justify the preference to the baseline, but the baseline scenario was already discontinued at the design principle evaluation. The preferred design option was the only viable option which also at least maintained levels of safety.	

5. Other Aspects			
5.1	Requirements Sponsor should set out in section 2.2 whether monetised figures are set out in real terms and also the base year Recommendations Sponsor should amend the appraisal to label the economic impact on general aviation and commercial airlines as qualitative. Sponsor should qualitatively set out the consequential environmental impacts within the baseline scenario as a result of traffic growth Sponsor should include a list of sources which inform the tables in the consultation papers and accompanying documents Sponsor should be clearer on what it means by the “lower” forecasts in relation to the figures, preferably by summarising how other forecasts compare Sponsor should at least note the qualitative costs in each option accompanying the valuation of relevant costs and benefits. Sponsor should set out in the baseline scenario, the extent by which track miles of departures from each of the airport are affected by air traffic control interventions. Sponsor should transfer footnotes in relation to methodology or presentation of the quantified or monetised impacts into the main text or a separate methodology section. Sponsor should set out cumulative quantified impacts over the appraisal period – specifically in relation to changes in fuel burn, emissions and track miles		

Table 10 should be presented in the consultation paper.

Qualitative costs to stakeholders should be presented in context to the presentation of the monetisation of the value of the option including the timing and magnitude of each category of cost.

6. Conclusions

6.1

Has sponsor developed the initial options appraisal into a full options appraisal?

Sponsor has matured the preferred design from the initial options appraisal to the full options appraisal albeit with some issues in relation to the presentation of the figures. Due to the altitude of the airspace change proposal, sponsors largely disregarded the impact on communities. The full options appraisal does not contain any impacts with respect to noise, tranquillity and biodiversity.

The appraisal largely focuses on the change in greenhouse gas emissions. Sponsor should ensure it is clear to the reader up front the base year in which monetised values are being presented, and whether the figures are adjusted for forecast inflation.

The key impact is around capacity which is assessed qualitatively. Following implementation of the airspace change proposal, the sponsor also considers consequential risk of delays experienced by aviation users.

Sponsor has endeavoured to ensure reasonable costs and benefits have been quantified. Sponsor acknowledged that there will be a cost to the airspace navigation service provider. However the sponsor has declined to quantify this impact. Therefore this impact also needs to be assessed qualitatively with respect to timing and magnitude although this could be done after consultation with affected stakeholders.

Sponsor has quantified the fuel burn, carbon dioxide emissions reviewed the impact on safety and air navigation service providers. This address the evidence gaps identified in the previous stage. Sponsor also utilised BADA to help address the evidence gap on environmental impacts of aircrafts. The partial approach to quantifying the benefits is proportional to the level 2 airspace change proposal but where those impacts are not fully reflected in monetisation, the Sponsor should present the cumulative quantified impacts over the appraisal period for each category of impact. The presentation of quantified impacts forecast from the modelling approach by constituent airports and overflights was particularly helpful and should be reproduced in the consultation paper for the benefit of stakeholder to comment.

Other impacts are qualitative of which the key impact is in relation to airspace capacity. Section 2.4.4 outlines the impact on capacity within the baseline scenario with traffic growth. Sponsor should ensure greater care is taken in relation to labelling qualitative costs and benefits and ensuring they clearly show the change from the baseline scenario, and indicate magnitude and timing. This would be particularly helpful when accounting for consequential environmental impacts in both the baseline scenario and the preferred design options.

The preferred option is then set out in sections 2.5.1 to 2.5.2 in relation to three coordination points plus other related changes. In the appraisal, when summarising the monetised impacts, the Sponsor should take care to ensure the present value of benefits is presented alongside the costs to stakeholders which have been qualitatively assessed, and ensure in the consultation paper that stakeholders impacted are able to comment on the appraisal.

The environmental assessment has been monetised through modelling simulation; sponsor acknowledges that emission benefits can be attributed to more efficient flight paths within airspace adjacent to UK airspace. Within the baseline scenario, sponsor outlines how airspace for commercial airlines need to be more actively managed by air traffic controllers or reroute to avoid the risk of delays, which could have consequential environmental impacts.

Sponsor has summarised the rationale for discontinuation of option 2 in the consultation paper. Sections 2.4.7 - 2.4.8 set out that the more complex airspace will require additional air traffic control intervention. However this will result in limited environmental impacts and less flexible airspace.

Has 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?

The key data in this airspace change proposal is the air traffic forecasts. Footnote 10 in the consultation forecast came from NATS November 2025 base forecast. This is based on market knowledge and economic forecasting by the sponsor. Table 3 in the consultation paper in relation to average speed did not have an identifiable source. Sponsor should ensure an external reader is able to understand underlying sources if they are not publicly available via an external link. Similarly, descriptions such as “lower” forecast are unhelpful without additional context. Sponsor should ensure all data presented, particularly in tables, are clearly referenced.

Sponsor has set out methodology in some detail in the documents in relation to the modelling approach. The key point in relation to the quantified impacts is that the sponsor has set out that it is used carbon dioxide emissions as a proxy for greenhouse gas emissions.

The key point in relation to the modelling approach is set out in section 2.2.1 where sponsor explained that it has analysed at least 90% of all traffic through focusing modelling on 543 routes. There were significantly more permutations, but the approach taken is proportionate. Sponsor also explains that it has made no assumption of airport expansions under the planning system.

Update 07/09/26 – key recommendations addressed and sole requirement has been addressed

CAA Full Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[REDACTED]	[REDACTED]	22/8/26