CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

Title of Airspace Change Proposal:	LAMP2 DP1		
Change Sponsor:	NATS		
ACP Project Ref Number:	ACP-2017-70		
Case study commencement date:	12 March 2021	**Case study report as at**:	26 March 2021

Account Manager: [redacted]	**Airspace Regulator (Engagement & Consultation):** [redacted]	**IFP:**	**OGC:**
Airspace Regulator (Technical): [redacted]	**Airspace Regulator (Environmental):** [redacted]	**Airspace Regulator (Economist):** [redacted]	**ATM (Inspector ATS Ops):** [redacted]

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?**		☒ ☐ ☐ ☐
1.1.1	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]	Yes, the sponsor has produced the IOA where the options have been developed and assessed against the Design Principles (DPs). It includes the criteria used to discounting options and a qualitative assessment of the four shortlisted options. A concise description of the baseline is available in Step 2A and because it does not meet the DPs it is rejected and not taken forward as viable option. The baseline should still be taken forward in Step 2B and analysed following Tab E2 (Appendix E - Cap1616) to support the comparison between the proposed changes and the current situation. The sponsor refers to the baseline when analysing the CO_2 and fuel impact of the shortlisted options, but the other impacts are not explicitly explained.	☒ ☐ ☐ ☐
1.1.2	Does the list of options include a description of the change proposal?	Yes. The sponsor has developed a comprehensive list of options and assessed them against the design principles (DPs) in the Step 2A and provides a full description of the four shortlisted options in the Step 2B. • Option 2 - Maximum Systemisation using PBN routes based on 5nm radar separation: based on the use of a fixed network of systemised PBN routes to connect FRA with airports' STAR start points and SID end points for Bristol and Cardiff (note Exeter does not currently have SIDs & STARs). • Option 3 - Systemisation using PBN routes based on 3nm radar separation environment: relies on the use of a fixed network of systemised Performance Based Navigation (PBN) routes to	☒ ☐ ☐ ☐

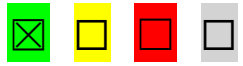
		connect FRA with airports' STAR start points and SID end points. • Option 4 - Systemised route structure with additional direct routes: relies on a fixed network of systemised PBN ATS routes with a limited network of direct routes to connect FRA with airports' STAR start points and SID end points. • Option 6 - Systemised routes with FRA above (c. FL245): it builds on Option 4 with the systemised routes up to c. FL245 with FRA above. Option 6 is the preferred option.	
1.1.3	Has the sponsor stated on what criteria the longlist of options has been assessed?	Yes, the sponsor states the criteria used to assess the longlist of options. In Step 2A, the progression criteria are as follows: *i.* if the option fully or partially meets the DPs, then it is accepted and taken forward; and *ii.* if the option does not meet with the DPs it is rejected. Options 1, 5 and the Baseline are then rejected ins Step 2A and not taken forward in Step 2B, while Options 2, 3, 4 and 6 are accepted and progressed for the assessment in Step 2B.	☒ ☐ ☐ ☐
1.1.4	Where options have been discounted, does the change sponsor clearly set out why?	The sponsor states the benefits and the issues for each option and summarises if the options fully, partially or do not meet the DPs. A brief rational for discounting the options is provided in Step 2A. In Step 2A, the baseline does not meet the DPs and it is then rejected, however, it should be taken forward in Step 2B and assessed together with the other options, as per CAP1616 requirement.	☒ ☐ ☐ ☐
1.1.5	Has the change sponsor indicated their preferred option in the Options Appraisal (Phase I - Initial)? [E8]	Yes. In Step 2B the sponsor states that Option 6 is the preferred option.	☒ ☐ ☐ ☐

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)?	Yes. The sponsor provides an initial assessment of greenhouse gas impact and fuel burn and states that a more detailed quantitative analysis of the CO_2e emissions and fuel burn will be provided in Stage 3.	☒ ☐ ☐ ☐
1.1.7	Does the plan for evidence gathering cover all reasonable impacts of the change? [E12]	The sponsor assumes an indicative scalable Level 1 for this ACP, stating that a more detailed quantitative assessment of the CO_2 and fuel burn, based on a 10-year traffic forecast, will be provided in Stage 3.	☒ ☐ ☐ ☐

2. Direct impact on air traffic control					**Status**
2.1	**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.**				☒ ☐ ☐ ☐
2.1.1	*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)*				
		Not applicable	Qualitative	Quantified	Monetised
2.1.2	Infrastructure changes	x			
2.1.3	Deployment		x		
2.1.4	Training	x			
2.1.5	Day-to-day operational costs / workload / risks		x		
2.1.6	Other (provide details)				
2.1.7	**Comments:** The sponsor states that this ACP will not have an impact on the infrastructure, except some engineering amendments on the initial deployment phase. Since airlines update flight procedures using AIRAC, there will not be additional costs for commercial airlines, i.e., training costs and other costs. The proposed airspace change will have an impact on the air traffic controllers which will need to undertake some training (i.e., 120-150 controllers, 50 assistants at NATS Swanwick and support staff to run the simulator), and the military ANSP might also need a briefing before the deployment. *The sponsor provides a justification for discarding Option 3 based on the higher infrastructure costs and multi-million-pound investment in the deployment costs for ANSP. This option would lead to an additional level of complexity and hence it is discarded.*				

2.2	**Are there direct beneficial impacts on air traffic control / management systems?** **If so, please provide details and how they have been addressed:**				☒ ☐ ☐ ☐
2.2.1	*Examples of benefits considered*	Not applicable	Qualitative	Quantified	Monetised
2.2.2	Reduced work-load		x		
2.2.3	Reduced complexity / risk		x		
2.2.4	Other (provide details)				
2.2.5	**Comments:** The sponsor states that this ACP will increase the effective capacity of the airspace and that this impact is going to be positive. The new systemised routes will provide an efficient deconflicted network with added connectivity to UK FIR exit areas yielding capacity benefits and a reduction in ATC complexity.				
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	**Are the direct impacts on air traffic management analysed accurately and proportionately?** Yes. The sponsor states that this ACP is not expected to change airport or air navigation service provider (ANSP) infrastructure, however some engineering amendments are expected in the initial deployment phase.				☒ ☐ ☐ ☐

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			
3.1.2	Type of aircraft movement	x			
3.1.3	Distance travelled	x			
3.1.4	Area flown over / affected	x			
3.1.5	Other impacts				

3.1.6	**Comments:** The sponsor does not provide information on the number of aircraft movements that will be affected by the proposed changes, nor the travelled distance. The sponsor provides a high-level qualitative assessment in regards flying over Areas of Outstanding Natural Beauty (AONB), National Parks and nominated Quiet Areas [all nominated Quiet Areas considered are in Wales] and concludes for all options that *"No flight trajectories below 7,000 ft will be altered over these AONBs, quiet areas & National Parks"*.	
3.2	**Has the forecasting of traffic done reasonably using best available guidance (e.g. DfT WebTAG, the Green Book, Academic sources…etc?)** The sponsor has not provided a 10-year traffic forecast at this stage, but this will be provided in the next phase of the options appraisal. The Statement of Need says that "Today's network...does not provide capacity for the long-term growth in aviation". If one of the aims and expectations of an airspace change proposal is to enable an increase in aircraft movements, over and above what would be expected to occur if the proposal were not implemented then the traffic forecast must reflect the anticipated growth if the proposal was not implemented, and the anticipated growth if the proposal is implemented.	
3.3	**What is the impact of the above changes (3.1) on the following factors below?** The sponsor states that this ACP is a scalable Level 1 and outlines a qualitative assessment for fuel burn and CO_2 emissions. The proposed changes in the airspace are going to produce higher disbenefits compared to the current situation (Do-Nothing). Specifically: • Option 2 would result in an increase of 79.5kg of CO_2 emissions per flight (fuel burn increase of 25kg per flight compared to the baseline) compared to the baseline. • Option 3 would result in an increase of ~79.5kg of CO_2 emissions per flight (fuel burn increase of ~25kg per flight compared to the baseline) compared to the baseline. • Option 4 would result in an increase of 30kg of CO_2 emissions per flight (fuel burn increase of 10kg per flight compared to the baseline) compared to the baselined; and • Option 6 would result in an increase of 9kg of CO_2 emission per flight (fuel burn increase of 3kg per flight compared to the baseline). In conclusion Option 6 is expected to have higher benefits, such that the combination of the airspace change, and the FRA above might provide a reduction in the CO2 emissions in the whole flight. By assuming that the proposed airspace change is a scalable Level 1, the sponsor provides a very high-level indicator of the likely noise impact and adds that: "*this airspace change only affects airspace above 7,000 ft and will therefore have no significant impact on the noise metrics (contours etc) associated with airspace change*". The same rational has been applied to justify the high-level assessment of air quality and tranquillity, since the proposed airspace change will not have an impact below 7,000ft. A qualitative assessment is provided for operational	

	complexities for each option because the airspace change aims to improve network capacity using PBN.				
		Not applicable	Qualitative	Quantified	Monetised
3.3.1	Noise	x			
3.3.2	Fuel Burn		x		
3.3.3	CO2 Emissions		x		
3.3.4	Operational complexities for users of airspace		x		
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?)** The sponsor does not provide a 10-years traffic forecast at this stage, but this will be provided in the next phase of the options appraisal. This approach is in line with CAP 1616 process. A high-level qualitative statement has been made regarding noise, air quality and tranquillity. These environmental impacts have been scoped-out on the assumption that there will be no changes below 7,000ft. For CO2 emissions, a high-level quantitative assessment of greenhouse gas impacts (i.e. CO2e) has been undertaken and shows that all options would lead to an increase in CO2e emissions of between 9 and 79.5 kg. However, the sponsor says that *"improvements in predictability leading to improved flight planning and reduced delay and holding could counter this [CO2e] disbenefit".* As per CAP1616 B44-45, if the airspace change proposal is linked in any way with another airspace change proposal (for example, it is either contingent upon or an enabler for, or is part of a 'phased' implementation programme of changes) this link must be clearly identified through the engagement and consultation processes, and in the final proposal submitted to the CAA. Such links may mean that the environmental impacts of the connected proposals need to be considered on a combined basis in order to fully and properly reflect the impacts.				

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	Monetised
4.1.1	Air Passengers	x			
4.1.2	Air Cargo Users	x			
4.1.3	General aviation users		x		
4.1.4	Airlines		x		
4.1.5	Airports		x		
4.1.6	Local communities	x			
4.1.7	Wider Public / Economy		x		
4.1.8	**Comments:** The sponsor states that this ACP might not change the GA access to the extant Controlled Airspace (CAS), but it might require an increase in CAS in some areas and reduction in others, however the airspace reclassification is not set, and it has been anticipated that will not be Class A. The sponsor anticipates that the proposed airspace change will increase the effective airspace capacity and will not lead to additional costs for: *i.* airlines, i.e., training costs; and *ii.* airports and ANSP, infrastructure and operational cost. On the basis that no changes will be below 7,000ft, the sponsor has scoped out the impact on local communities, with regards to noise, tranquillity and local air quality. For the Wider Public (i.e. CAP1616 Table E2 'Wider Society') the proposed changes are all assessed to have a negative impact on the basis that greenhouse gas emissions increase.				
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	Improving the resilience of the wider network
4.2.5	Other impacts	N/A
4.2.6	**Comments:** N/A	
4.3	**What is the overall monetised impacts associated with 4.1 and 4.2 the above?** N/A	
4.4	**What are the non-monetised but quantified impacts of the above?** N/A	
4.5	**What are the qualitative / strategic impacts described above?** N/A	
4.6	**What is the overall monetised benefits-costs ratio (BCR) of the policy? Is it more than 1?** N/A	
4.7	**Have the sponsors provided reasonable justification for the proportionality of analysis above?** The sponsor assumes this ACP is a scaled Level 1 ACP and provides a qualitative assessment of the impact that the airspace change might have on the community/society and airspace users.	☒ ☐ ☐ ☐
4.8	**If the BCR is less than 1, are the quantitative and qualitative strategic impacts proportional to the costs of the ACP?** N/A	

5. Other aspects	
5.1	Nil

6. Summary of Assessment of Economic Impacts & Conclusions

6.1	The sponsor undertakes the IOA in line with the process set out in CAP1616, complying with the minimum criteria for the first phase of the options appraisal which requires a qualitative analysis of the impacts of the proposed options (Option 2, 3, 4 and 6) against the baseline (Do-Nothing). Since the indicative level assumed for this proposal is a scalable Level 1 (i.e. impacts that would normally occur below 7,000ft have been scoped out), the sponsor outlines a qualitative assessment of the CO_2 emission and fuel burn for the four shortlisted options (Option 2, 3, 4 and 6) highlighting that each option will have a disbenefit compared to the baseline and that the only two options taken forward - Option 4 and 6 – are going to have higher benefits overall. The sponsor also confirms that a detailed quantitative greenhouse gas emissions analysis will be provided in Stage 3, as per CAP 1616 requirement. In the IOA the sponsor identifies two shortlisted options - Option 4 and 6 – and the preferred option (Option 6) that will be taken forward in Stage 3

Outstanding issues?

Serial	Issue	Action required
1	Do-Nothing/Baseline **RESOLVED 30 MARCH 2021 (INITIAL OPTIONS APPRAISAL V2.1)**	Although the Do-Nothing option does not meet with DPs in Step 2A it should be progress to Stage 2B. CAP1616 (Appendix E – E12) requires the Do-Nothing to be appraised, because this provides the baseline for testing the options against the current situation, to better understand and highlight the benefits and impacts of each proposed option. In addition, including the Do-Nothing is a useful information for the consultation exercise (Stage 3) because gives the opportunity to stakeholders to understand how the proposed change will impact the airspace. Therefore, the sponsor should include a description of the baseline in Step 2B following the same structure provided for the other options (Appendix E - Tab E2).
2	Inconsistencies in Step 2B document **RESOLVED 30 MARCH 2021 (INITIAL OPTIONS APPRAISAL V2.1)**	There are a few inconsistencies in the IOA document: *i.* The options assessed in the document are four and not two (page 3). This information should be consistent across the document. *ii.* The options should be assessed against the baseline and comparisons done against the baseline first and then with the other options. *iii.* Option 4 – Systemised routes without Free Route Airspace (FRA), should be labelled consistently, i.e. label at the starting paragraph page 9. *iv.* Typo in the conclusions of option 6: *"As such Option 4 is accepted and progressed to Stage 3".*

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[redacted]	[redacted]	25/03/2021
Airspace Regulator (Environmental)	[redacted]		25/03/2021
Airspace Regulator (Technical)	[redacted]		25/03/2021
ATM – Inspector ATS (Ops)	[redacted]		25/03/2021