CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

Title of Airspace Change Proposal:	Stansted Airport FASI ('LTMA' Cluster)		
Change Sponsor:	Stansted Airport (MAG)		
ACP Project Ref Number:	ACP-2019-01		
Case study commencement date:	28/02/2022	**Case study report as at**:	15/04/2022

Account Manager: [redacted]	**Airspace Regulator (Engagement & Consultation):** [redacted]	**IFP:** [redacted]	**OGC:** [redacted]
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 change sponsor has produced the IOA (Initial Options Appraisal) which enabled each of the route options that together make up the comprehensive list of viable options.	☒ ☐ ☐ ☐
1.1.2	Does the list of options include a description of the change proposal?	Yes, the sponsor provided the detailed description for the longlist of options in the Design Options Report. The IOA addresses the comprehensive list of viable options which was the output of the DPE (Design Principle Evaluation) and the detailed description of the baseline options (do-nothing/do-minimum). Also, the IOA provides the broad description of arrivals/transitions and departures.	☒ ☐ ☐ ☐
1.1.3	Has the sponsor stated on what criteria the longlist of options has been assessed?	The change sponsor stated the criteria against which options are assessed as defined within CAP1616 Appendix E Table E2. The Appendix A to the IOA shows the criteria the longlist of viable options has been assessed. The change sponsor also conducted quantitative analysis where possible and provided metrics for overflight and track length to support the assessment of the criteria rather than act as additional criteria. The change sponsor also added safety assessment, tranquillity and biodiversity because CAP 1616 requires these additional assessments for Level 1 airspace changes.	☒ ☐ ☐ ☐
1.1.4	Where options have been discounted, does the change sponsor clearly set out why?	Yes, the change sponsor provided the clarification for the acceptance and rejection criteria for the DPE in the DPE document and also provided the rationale where some options in departure envelopes are carried forward to the IOA even though they are not performing well. In terms of the discounting of options in Step 2B, the sponsor provided the Appendix A IOA Full Analysis Table in which all the viable options were analysed in detail against the do-nothing option (incl.	☒ ☐ ☐ ☐

		do-minimum options as well). Where the options are rejected, it is highlighted in red and the explanation for each criteria is provided in detail in respective boxes.	
1.1.5	Has the change sponsor indicated their preferred option in the Options Appraisal (Phase I - Initial)? [E8]	Yes, the preferred options are detailed in the Appendix A IOA Full Analysis Table in comparison with the do-nothing option. They are highlighted in dark green and the rationale of the preference is articulated in the same table.	☒ ☐ ☐ ☐

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 change sponsor stated in the IOA that more information regarding quantitative environmental metrics that describe the baseline scenario would be provided during the FOA at Stage 3. The IOA referred to below metrics only:
		• 10-year traffic forecasts
		• Standard noise metrics:
		  ○ LAeq noise contours
		  ○ 100% noise mode contours
		  ○ Nx contours
		  ○ Difference contours
		  ○ Lmax spot point levels
		• Operational diagrams
		• Overflight
		The change sponsor also indicated in Appendix A IOA Full Analysis Table that it'd be disproportionate for them to calculate the economic impact from increased effective capacity as any increase in individual airline capacity or GA activity would depend on private commercial business characteristics.
		
		In terms of fuel burn assessment, the change sponsor used track lengths to enable a comparison against the baseline scenario which indicates longer track length will require a greater amount of fuel burn, therefore the option which with longer track length is of dis-benefit in
			☒ ☐ ☐ ☐

		terms of fuel burn. However, the change sponsor confirmed more in-depth analysis would be carried out in Stage 3 without touching on the data evidence for now.	
1.1.7	Does the plan for evidence gathering cover all reasonable impacts of the change? [E12]	The plan for evidence only covers the environmental data the change sponsor aims to collect at this Stage. As stated in the answer to the above question the change sponsor has chosen to confirm they will be conducting more in-depth analysis for fuel burn and they stated it'd be disproportionate for them to conduct a quantitative analysis for other economic factors such as impact from increased effective capacity, training costs and other costs.	☒ ☐ ☐ ☐

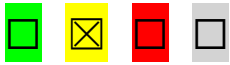
2. Direct impact on air traffic control					**Status**
2.1	**Are there direct cost impacts on air traffic control / management systems? If so, please provide below details of the factors considered and the level in which this has been analysed.**				☒ ☐ ☐ ☐
2.1.1	*Examples of costs considered (please 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	N/A	N/A
2.1.4	Training	X			
2.1.5	Day-to-day operational costs / workload / risks		X	N/A	N/A
2.1.6	Other (provide details)	X			
2.1.7	**Comments:** The IOA indicates that all options related to the implementation of Performance Based Navigation (PBN) and no additional infrastructure is required as the introduction of PBN reduces the reliance on infrastructure, in particular ground-based navigation aids are no longer needed. According to the IOA, ATC at STN is contracted out to a third-party organisation and hence the existing commercial contract between STN and				

	their chosen ANSP was considered to be an ongoing cost.				
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	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 change sponsor predicted that operational efficiency would improve and there may be potential for a net reduction in operational costs as a result of the introduction of PBN. However, possible conflict with London Luton, London City, Heathrow, London Biggin Hill and RAF Northolt traffic was identified. The Sponsor indicated in the Appendix A IOA Full Analysis Table that procedure design and ATC tactical intervention could act as mitigations in these instances but could increase complexity, leading to a possible increase in ATCO 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	**Are the direct impacts on air traffic management analysed accurately and proportionately?** Yes, the change sponsor addressed the criteria for air traffic management analysis CAP 1616 Appendix E recommends in their IOA in a proportionate way. The IOA provides the qualitative discussion for all ATC related criteria assessment in Appendix A IOA Full Analysis Table.				☒ ☐ ☐ ☐

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	N/A	N/A
3.1.2	Type of aircraft movement		X	N/A	N/A

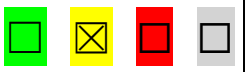
3.1.3	Distance travelled		X	X	N/A
3.1.4	Area flown over / affected		X	N/A	N/A
3.1.5	Other impacts	X			
3.1.6	**Comments:** The IOA indicates that the introduction of PBN routes is expected to deliver benefits by increasing airspace capacity which in turn will lead to more predictable flight paths and fewer delays both in the air or on the ground. This was expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements. In terms of type of aircraft movement, the IOA indicated for departure envelopes, options would support CCO (continuous climb operations). In addition, some other route options enable CDA (continuous descent approach). The Sponsor also analysed track mileage for each option and determined whether the option is shorter or longer compared against the do-nothing scenario and provided the qualitative discussion which differentiates for options proposed.				
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 forecasts but confirmed that 10-year traffic forecasts would be provided during the FOA at Stage 3. However, as detailed in CAP 1616 B32, the sponsor must provide two sets of traffic forecasts (one that is based on the 'do nothing' scenario (i.e. assumes the proposal is not implemented) and one that is based on the change option being implemented) as this airspace change is expected to have an effect on the number of flights.				
3.3	**What is the impact of the above changes (3.1) on the following factors below?** The sponsor has assessed all options against the relevant CAP1616 environmental assessment criteria for a Level 1 ACP. The sponsor undertook quantitative assessments for overflight and track mileage as a proxy for noise and CO_2 impacts respectively. It should be noted that the Initial Options Appraisal (IOA) environmental assessments have been benchmarked against the Do-Nothing baseline; however, the Design Principle Evaluation (DPE) has been benchmarked against Do-Minimum scenarios. The environmental impacts of Do-Nothing and Do-Minimum differ therefore it is not possible to conclude that a fair and consistent evaluation has been undertaken (CAP1616 Para 128).				
		Not applicable	Qualitative	Quantified	Monetised
3.3.1	Noise		X		
3.3.2	Fuel Burn		X	N/A	N/A
3.3.3	CO_2 Emissions		X		
3.3.4	Operational complexities for users of airspace		X	N/A	N/A

3.3.5	Number of air passengers / cargo		X	N/A	N/A
3.3.6	Flight time savings / Delays		X	N/A	N/A
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?)** It is not apparent that a traffic forecast has been used within the Stage 2 submission. The sponsor undertook quantitative assessments for overflight and track mileage as a proxy for noise and CO_2 impacts respectively. The methodology adopted by the sponsor to assess options is not clear and therefore it is not known whether the assessments are informed by anticipated actual behaviours, for example whether the climb profile assumptions used to inform the Do-Minimum DPE benchmark and Do-Nothing IOA baseline are robust. Therefore, the methodology adopted by the sponsor to assess options is unclear (CAP1616 Para B11).	
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	N/A	N/A
4.1.2	Air Cargo Users		X	N/A	N/A
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	**Comments:** The IOA states that the introduction of PBN will lead to more predictable flight paths and fewer delays both in the air or on the ground. This is expected to facilitate economic benefit to airlines by increasing the frequency of air transport movements, increasing passenger numbers and increasing cargo tonnage carried. It is also mentioned in the IOA that the GA community will benefit from increased predictability of commercial airline movements which is expected to lead to reduced on-ground and in-air delays for all users. However, the change sponsor prediction is that it would not be proportionate to quantify/monetise economic benefit neither to commercial airlines nor the GA community. In terms of wider public impacts, the design of the options will support CCO and CDOs which in turn have the potential to reduce fuel burn and CO_2 emissions.	
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	Positive impacts
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	Positive impacts
4.2.5	Other impacts	N/A
4.2.6	**Comments:** The introduction of PBN could lead to fewer delays both in the air or on the ground. The introduction of PBN routes is expected to deliver benefits by increasing airspace capacity.	
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?** One of the strategic impacts of the ACP would be the significant increase in operational resilience for airlines and operators as a result of the removal of the reliance on ground-based navigational aids. With this ACP, the sponsor stated they aim to make best use of navigational technologies so that the operational efficiency and environmental benefits that modern aircraft offer can be fully realised.	
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 change sponsor has chosen to conduct qualitative analysis in the IOA for this stage as it is not compulsory for sponsors to derive quantified or monetised analysis by Stage 2. However, the IOA emphasises that for some of the impacts such as economic impact from increased effective capacity, it'd be disproportionate for STN to predict the precise economic benefit to airlines and the GA community as any increase in individual airline capacity would depend on private commercial business characteristics. As CAP 1616 requires quantified analysis for the impact, the change sponsor should endeavour to search and apply methods to quantify such impact in the next stage. Also, the change sponsor should bear in mind that pragmatic approach can be taken where it is not possible to reach precise figures as explained in CAP 1616 Appendix E32.	
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	-

6. Summary of Assessment of Economic Impacts & Conclusions	
6.1	The change sponsor duly completed the minimum requirement set out in CAP 1616 Appendix E12. The IOA consists of the comprehensive list of viable options which is the output of the DPE (Design Principle Evaluation). The ancillary document Appendix A IOA Full Analysis Table draws up the qualitative discussion for each viable option along with the do-nothing option that is used as a baseline. The Sponsor has provided the rationale for options that are carried forward which perform worse than the do-minimum option or in which the acceptance/rejection criteria does not align with the decision to carry forward that option. In total, 66 options are being taken through to the next stage consisting of all route options (departures and arrivals/transitions) and the change sponsor has confirmed that they would intend to do more in-depth analysis to quantify and monetise the impacts as required for Stage 3 to enable better comparison and narrow down the shortlist of options by each stage.

Outstanding issues?

Serial	Issue	Action required
1	The rationale why the change sponsor stated it'd disproportionate to quantify economic impact from increased effective capacity was not considered as a robust justification.	The change sponsor should endeavour to search for methods and technics to quantify such impact at Stage 3 – Full Options Appraisal. For information, please also refer to CAP 1616 E32. The CAA can also provide guidance in case the change sponsor needs for further exploration.

2		

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[redacted]	[redacted]	15/04/2022