

## CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

<b>Title of Airspace Change Proposal:</b>	Introduction of RNP AR Procedures at EGLC		
<b>Change Sponsor:</b>	London City Airport		
<b>ACP Project Ref Number:</b>	ACP-2025-003		
<b>Case study commencement date:</b>	15/08/2025	<b>Case study report as at:</b>	29/08/2025

### 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 considered the initial options appraisal against the statutory factors and where applicable, government policy that the CAA is required to consider? [CAP1616f: 3.50-3.53]	The change sponsor has undertaken the initial options appraisal using the impact criteria outlined in CAP1616f 3.40. The sponsor has undertaken the assessment qualitatively at this stage. The sponsors DPE also includes a policy alignment principle (M_DP02) which was used to screen design options prior to the initial options appraisal. It is considered that the appraisal is aligned to the statutory factors and policy required.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

1.2	Has the change sponsor ensured that the initial options appraisal is objective (unbiased and evidence based), repeatable and consistent? [CAP1616f: 3.54-3.57]	The change sponsor has utilised the same criteria when assessing the design options during the IoA and has applied these in a consistent and fair manner. Evidence has been used to inform the appraisal of design options in the form of forecasted aircraft fleet and fleet composition.	   
1.3	Has the change sponsor identified criteria for the initial options appraisal and applied these to narrow down the design options to a selected shortlist? [CAP 1616f: 3.55]	Yes, the sponsor has used the relevant criteria outlined in CAP1616f 3.40 to undertake the initial options appraisal. The design options selected during the IoA were subject to DPE and then further shortlisted through the IoA process.	   
1.4	Do the criteria set out clearly why options have been discontinued? [CAP 1616f: 3.55]	<p>Within the IoA the design options have been assessed against the relevant criteria set out in CAP1616f 3.40. The high-level design options have been split into two parts, the initial approach and final approach segments of the proposed RNP approach.</p> <p>Initial approach options:</p> <ul style="list-style-type: none"> <li>- IA09 Option 1 (Rejected)</li> <li>- IA09 Option 2 (Rejected)</li> <li>- IA09 Option 3 (Progressed)</li> </ul> <p>Final approach options:</p> <ul style="list-style-type: none"> <li>- FA09 Option 1 (Progressed)</li> <li>- FA27 Option 1 (Progressed)</li> </ul> <p>The initial approach options have primarily been discounted / progressed on the grounds of design flexibility that is afforded by Option 3. Although as each high-level option is one of an RNP based approach, environmental and other impacts are assessed as to be positive due to the enablement of fleet change and better navigational accuracy / track with respect to the current day. Therefore, the justification is deemed appropriate and proportionate</p>	   

















		at this stage.	
1.5	Has the change sponsor undertaken a qualitative and where possible, a quantitative assessment according to the scale of the design options and the nature of the potential impacts? [CAP1616f: 3.58-3.59]	Yes, the sponsor has conducted a qualitative appraisal of the high-level design options (Potential RNP approach paths and final approaches). No quantitative assessments have been undertaken, and quantified assessments will be undertaken at Stage 3. The sponsor has used some quantified metrics for Air Quality and Greenhouse gases by calculating the landing and take-off cycles (LTO's) for year 1 and year 10 baseline / do-something scenarios but this is a indicative assessment and only serves to inform qualitative statements made during the initial options appraisal. Given the early nature of the work this is considered proportionate.	   
1.6	Is the initial options appraisal included in the change sponsor's subsequent consultation material? [CAP 1616f: 3.59]	N/A – consultation to be undertaken at Stage 3.	   
1.7	Has the change sponsor conducted an initial options appraisal of the potential impacts of each design option against the baseline scenarios? [CAP1616f: 3.60-3.62]	Yes, the change sponsor has conducted the IoA against the year 1 and year 10 comparison periods as required in CAP1616f. Design options have been compared against the baseline scenario.	   
1.8	Does the initial options appraisal for each design options include, as a minimum: <ul style="list-style-type: none"> <li>- A qualitative assessment of the likely environmental impacts, including all direct and consequential impacts</li> <li>- A high-level assessment of all reasonable costs and benefits involved</li> <li>- A qualitative assessment of the potential impacts on safety</li> </ul> [CAP 1616f: 3.61]	For each of the high-level design options, the change sponsor has undertaken a qualitative assessment of impacts. The sponsor has considered direct environmental impacts such as carbon emissions, local air quality, noise, fuel burn, and biodiversity. Other indirect impacts such as training costs, Airport / ANSP costs and economic impacts arising from increased effective capacity have also been assessed qualitatively. The IoA process does not assess safety directly, but the sponsor has undertaken DPE and considered safety implications of the design options and provided an initial safety assessment in Chapter 6	   

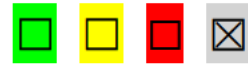
		of the Stage 2 IoA.	
1.9	Has the change sponsor provided an indication of the preferred design option(s)? [CAP1616f: 3.63]	Initial approach options: - IA09 Option 3 (Progressed)  Final approach options: - FA09 Option 1 (Progressed) - FA27 Option 1 (Progressed)	   
1.10	Has the change sponsor used the most up-to-date, credible, and clearly referenced sources of data to assess the impacts of the baseline scenarios and design options? [CAP1616f: 3.65]	The change sponsor has utilised 2024 air traffic data from LCY to inform the forecasting of traffic volumes and to inform the current day scenario. To forecast the future fleet (and supplement forecasting of the current day scenario across the appraisal period), the sponsor has used data from the fleets available to airlines and future orders identified from ch-aviation (and other sources). These forecasts are used to inform the appraisal of the current day and design options.	   
1.11	Has the sponsor explained the methodology it adopted to reach its input and analysis results? [CAP 1616f: 3.65]	The change sponsor has explained the methodology of both the DPE and IoA processes they have adopted for this ACP. The IoA outcomes and relevant justification for each of the impacts has been detailed in tables for each of the design options. Where options have been progressed or rejected, suitable narrative and justification has been provided.	   
1.12	Has the change sponsor identified any evidence gaps in the initial options appraisal and described what evidence will be collected, and how, to fill such gaps and develop the full options appraisal? [CAP1616f: 3.66-67]	The change sponsor has not explicitly outlined any evidence gaps within the IoA but there is some, albeit limited acknowledgement on where assumptions may not be as strong or have weaknesses contained mostly within the supplementary technical annexes. To further meet the requirements of Stage 2 fully, the change sponsor should explicitly outline evidence gaps and how they intend to resolve these. The change sponsor has outlined their approach to developing the FoA in Chapter 8.2, noting the use of TAG to monetise costs/benefits <b>where possible</b> and to undertake detailed noise	   



















		<p>modelling, calculation of fuel burn impacts, CO2 emission impacts. As per the environmental regulator (AV) comments in the Gateway assessment sheet, the change sponsor should expand the list of metrics to cover off all potential impacts and provide detail on proposed methodology in line with requirements set out in CAP1616f para. 3.67.</p> <p><b>Requirement for Stage 2:</b> The change sponsor should expand the list of metrics to cover off all potential impacts and provide detail on proposed methodology in line with requirements set out in CAP1616f para. 3.66 &amp; 3.67. <b>Updated on 01/09/2025:</b> Following gateway assessment and the feedback session on 01/09/2025, the sponsor has addressed these requirements satisfactory within the V1.1 submission. Therefore the decision pending award is now a pass for Stage 2.</p> <p><b>Recommendation for Stage 3:</b> It is noted the use of “where possible” for the assessment of monetised impacts in the IoA. Where impacts cannot be monetised, suitable justification or alternative (such as qualitative approaches if appropriate/proportionate) should be included within the FoA. <b>Updated on 01/09/2025:</b> Following gateway assessment and the feedback session on 01/09/2025, the sponsor has added narrative on evidence gaps and what impacts are going to be assessed at Stage 3 highlighting methodology and data as necessary within the Stage 2, v1.1 submission.</p>	
2. Potential Impacts			Status
2.1	<p>Has the change sponsor conducted an initial options appraisal of each of the design options using the following metrics and level of analysis?</p> <p>[CAP 1616f: 3.40]</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		
	- 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		


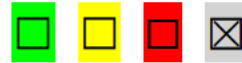

2.1.6	Military	Not applicable	Qualitative	Quantified	Monetised
	-	X			
2.1.7	Other	Not applicable	Qualitative	Quantified	Monetised
	-	X			
2.2	Has the change sponsor set out why it has not undertaken specific quantified and monetised analysis as part of its assessment? [CAP 1616f: 3.41]	The change sponsor has not set out explicitly why quantified and monetised assessments have not been undertaken but has undertaken qualitative assessments of potential impacts. Given that detailed designs of the approach procedures have not been undertaken, this approach is considered proportionate.			   
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]	No monetisation of impacts to Commercial Airlines and ANSP's have been undertaken during Stage 2. Quantification of impacts are expected to be undertaken at Stage 3.			   
2.4	Has the change sponsor included an initial indication of safety implications in the initial options appraisal? [CAP 1616f: 3.52]	The sponsor has undertaken an initial safety assessment in Chapter 6 of the IoA submission. The sponsors design principles and DPE has a safety design principle as to which design options have been evaluated against. The sponsor notes that following engagement, stakeholder feedback raised potential concerns on TCAS nuisance alerts that could be associated with a shallower approach path. The sponsor has taken this feedback onboard and will assess this during the Stage 3 safety work.			   
3. Economic Indicators					Status
3.1	Has the change sponsor provided traffic forecasts for year 1 and year 10? [CAP 1616f: 3.22]	Yes- the change sponsor has provided traffic forecasts for both baseline and with airspace change scenarios. Traffic and fleet mix has been forecasted from 2027 to 2038 (12 years) since the sponsor has forecasted out			   

		<p>their passenger cap. For the purposes of the IoA impacts have been assessed against the 10-year forecast period. Detailed methodology on the development of the forecasting has been provided by the sponsor in Appendix E of the Stage 2 submission.</p> <p>Within Appendix E, 13.2.2 the change sponsor notes that future traffic forecasting is “reliant on forecaster judgement to a significant degree as transition is not something can be modelled”. The change sponsor has noted that the fleet mixes are based upon an analysis of growth scenarios, aircraft currently operating and third-party data sources but lacks detail on how this has been used to produce the future forecast. It is appreciated that forecasting future fleet mixes is reliant on assumptions or judgement. For transparency any assumptions made should be clearly outlined.</p> <p><b>Recommendation for stage 3: Outline any assumptions made to produce the traffic forecasts for the purposes of transparency. Updated on 01/09/2025: Following gateway assessment and the feedback session on 01/09/2025, the sponsor has added narrative on evidence gaps and what impacts are going to be assessed at Stage 3 highlighting methodology and data as necessary within the Stage 2, v1.1 submission.</b></p>	
3.2	<p>Has the change sponsor valued all relevant costs and benefits of the design options using:</p> <ul style="list-style-type: none"> <li>- Net present value (NPV)</li> <li>- Benefit cost ratio (BCR)</li> <li>- Cost benefit analysis (CBA)?</li> </ul> <p>[CAP 1616f: 3.43]</p>	N/A – no impacts have been monetised during Stage 2.	



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]	N/A – no impacts have been monetised during Stage 2.	   
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]	No values have been monetised during Stage 2.	   
3.5	Have values been reported in the base year for the assessment? [CAP 1616f: 3.47]	No values have been monetised during Stage 2.	   
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]	No values have been monetised during Stage 2.	   

4. Summary of the Initial Options Appraisal			
4.1	What are the qualitative/strategic impacts of the design options?	<p>Initial approach option progressed - IA09 Option 3 &amp; Final Approach options FA09 Option 1 / FA27 Option 1:</p> <ul style="list-style-type: none"> <li>- Introduction of RNP AR approach to facilitate potential fleet change to newer and more efficient aircraft (A320neo).</li> <li>- Final approach utilising lower Top of Descent, with no changes to lateral track. Potential noise benefits due to newer aircraft and reduced engine thrust settings during descent.</li> <li>- Shallower final approach angle / Glideslope of &lt;4.5 degrees</li> </ul>	   

		<ul style="list-style-type: none"> <li>- Increased passenger capacity and reduction of overall air traffic movements due to higher occupancy (Positive impacts on Capacity and Resilience owing to less air traffic movements, lower controller intervention and workload).</li> <li>- Associated potential positive benefits of using newer aircraft in fleet – impacts associated with noise, biodiversity, tranquillity, GHG emissions, air quality and fuel burn.</li> <li>- Negative impacts primarily related to training costs, other costs for RNP AR equipment for airlines, deployment costs related to ATC.</li> <li>- Neutral cost impact to airport infrastructure.</li> </ul>	
4.2	What are the overall non-monetised (quantified) impacts of the design options?	<p>No quantified impacts have been assessed in relation to the design options – some quantitative information on carbon emissions and air quality has been provided, but this is based on projected landing and take-off cycles. These have been provided to support qualitative statements within the IoA but are not derived from detailed modelling and appraisal of design options as these are currently high-level.</p> <p>The sponsor notes “that the reduction in air traffic growth (compared to the baseline ('do nothing') option is as follows: Year 1 (-7%); Year 10 (-4.1%) and Year 12 (-23.7%).”</p>	
4.3	Where impacts have been monetised, what are the overall net present values (NPV) of the design options?	N/A – no impacts have been monetised during Stage 2.	
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(s)?  If the preferred design option(s) does not have the highest	No quantified or monetised assessments have been used to progress/discontinue options, this has all been done qualitatively in the IoA.	

	NPV or benefit cost ratio (BCR), then has the change sponsor justified the reasons to progress this design option(s)?	<p>Initial approach options:</p> <ul style="list-style-type: none"> <li>- IA09 Option 1 (Rejected)</li> <li>- IA09 Option 2 (Rejected)</li> <li>- IA09 Option 3 (Progressed)</li> </ul> <p>Final approach options:</p> <ul style="list-style-type: none"> <li>- FA09 Option 1 (Progressed)</li> <li>- FA27 Option 1 (Progressed)</li> </ul>	
<b>5. Other Aspects</b>			
5.1	N/A.		
<b>6. Conclusions</b>			
6.1	<p>The change sponsor has undertaken a robust and detailed Initial Options Appraisal for this ACP. The change sponsor has satisfactorily met the requirements of CAP1616f for a Stage 2 submission, providing a comprehensive overview of the current day scenario and “with airspace change” scenarios relevant to each high-level design option. Traffic forecasting has been undertaken and described in detail within the technical annex (Appendix E of the IoA). The sponsors DPE is generally robust and has been undertaken fairly and in a consistent manner across all design options (including the baseline).</p> <p>Where the submission falls short is on the narrative around evidence gaps. The sponsor has not explicitly outlined evidence gaps within the IoA and when detailing the future methodology / approach to the FoA, other impact streams are absent.</p> <p><b>Requirement for Stage 2:</b> The change sponsor must highlight evidence gaps within the IoA and expand the list of metrics that will be assessed at Stage 3 to cover off all potential impacts, providing detail on proposed methodology in line with requirements set out in CAP1616f para. 3.66 &amp; 3.67. <b>Updated on 01/09/2025: Following gateway assessment and the feedback session on 01/09/2025, the sponsor has addressed these requirements satisfactory within the V1.1 submission. Therefore the decision pending award is now a pass for Stage 2.</b></p> <p><b>Economist SME points to note for Stage 3 &amp; Recommendations:</b></p>		

**Traffic forecasting** - Within Appendix E, 13.2.2 the change sponsor notes that future traffic forecasting is “reliant on forecaster judgement to a significant degree as transition is not something can be modelled”. It is appreciated that forecasting future fleet mixes is reliant on assumptions or judgement. For transparency any assumptions made should be clearly outlined.

**Recommendation for stage 3** - Outline any assumptions made to produce the traffic forecasts for the purposes of transparency. **Updated on 01/09/2025: Following gateway assessment and the feedback session on 01/09/2025, the sponsor has added additional narrative in Appendix E, paragraphs 13.3.2 / 13.3.3 within the Stage 2, v1.1 submission.**

**Evidence gaps** - The change sponsor has outlined their approach to developing the FoA in Chapter 8.2, noting the use of TAG to monetise costs/benefits where possible and to undertake detailed noise modelling, calculation of fuel burn impacts, CO2 emission impacts. It is noted the use of “*where possible*” phraseology for the assessment of monetised impacts in the IoA.

**Recommendation for stage 3:** Where impacts cannot be monetised, suitable justification or alternative approaches (such as qualitative approaches if appropriate/proportionate) should be included within the FoA. **Updated on 01/09/2025: Following gateway assessment and the feedback session on 01/09/2025, the sponsor has added narrative on evidence gaps and what impacts are going to be assessed at Stage 3 highlighting methodology and data as necessary within the Stage 2, v1.1 submission.**

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	██████████	██████████	01/09/2025