

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

<b>Title of Airspace Change Proposal:</b>	Enabling RPAS and RAFAT Operations out of RAF Waddington		
<b>Change Sponsor:</b>	MoD		
<b>ACP Project Ref Number:</b>	ACP-2019-18		
<b>Case study commencement date:</b>	18/07/2022	<b>Case study report as at:</b>	03/08/2022

<b>Account Manager:</b> [REDACTED]	[REDACTED]	<b>Airspace Regulator (Engagement &amp; Consultation):</b> [REDACTED]	[REDACTED]	<b>IFP</b> [REDACTED]	[REDACTED]	<b>OGC:</b> [REDACTED]	[REDACTED]
<b>Airspace Regulator (Technical):</b> [REDACTED]	[REDACTED]	<b>Airspace Regulator (Environmental):</b> [REDACTED]	[REDACTED]	<b>Airspace Regulator (Economist):</b> [REDACTED]	[REDACTED]	<b>ATM (Inspector ATS Ops):</b> [REDACTED]	[REDACTED]

<p><b>Instructions</b></p> <p>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:</p> <p style="text-align: center;"> <span style="background-color: green; padding: 2px;">Resolved - GREEN</span>             <span style="background-color: yellow; padding: 2px;">Not Resolved – AMBER</span>             <span style="background-color: red; padding: 2px;">Not Compliant – RED</span>             <span style="background-color: grey; padding: 2px;">Not Applicable - GREY</span> </p>
<p><b>Guidance</b></p> <p>The broad principle of economic impact analysis is <b>proportionality</b>; 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.</p>


1. Background – Identifying the impact of the shortlist of options (including Do Nothing (DN) / Do Minimum (DM))		Status	
1.1	Are the outcomes of DN/DM and DS scenarios clearly outlined in the proposal?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
1.1.1	<p>Has the change sponsor produced an Options Appraisal (Phase II - Full) which sets out how Initial appraisal is developed into a more detailed quantitative assessment, moving from qualitatively defined shortlist options to the selected preferred option? [E23]</p>	<p>Yes, the sponsor explains how the feedback received from stakeholders and interactions with Protector’s manufacturer led them to refine the airspace design and to propose “two volumes of airspace, the lateral boundaries of which overlap and which are vertically joined. The combined airspace design provides appropriate segregated airspace for the Protector and RAFAT activities”.</p> <p>The final proposed option is then the Combined airspace design cross-section WNW/ESE, which consists of:</p> <ul style="list-style-type: none"> <li>• <u>Low airspace design</u>, which is one airspace structure for the airspace in the vicinity of RAF Waddington below FL105; and</li> <li>• <u>Medium airspace design</u>, which is one airspace structure for the airspace in the vicinity of RAF Waddington FL105 - FL195.</li> </ul> <p>This description is in line with the requirement of CAP1616, but it would have been useful to associate these designs to the ones originally described in Stage2, i.e., Option 1 and Option 7 or 8.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.2	<p>Does each shortlist option include the impacts in comparison to the ‘do nothing / do minimum’ option, in particular:</p> <ul style="list-style-type: none"> <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> </ul>	<p>Yes, the sponsor assesses the combined airspace design against the Do-Nothing and includes both a qualitative and a quantitative assessment where possible.</p> <p>It is worth noting that the limited quantitative assessment is provided to justify the limited impact this airspace change is going to have, hence, to</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

		scope out any further quantification and monetisation. The assessment is in line with CAP1616 requirements outlined in Table E2	
1.1.3	Where options have been discounted, does the change sponsor clearly set out why?	The sponsor does not explicitly state why Option 7 or 8 have been discounted or whether the medium level design is a combination of the two above mentioned. However, the justification provided when describing the new combined options and their graphic representation outline the physical/geographical feasibility of these design options.	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.4	Has the change sponsor indicated their preferred option in the Options Appraisal (Phase II - Full)? [E23]	The preferred option is the Combined airspace design cross-section WNW/ESE	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.5	Does the Full Options Appraisal (Phase II - Full) 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 III - Final)? Does the plan for evidence gathering cover all reasonable impacts of the change?	The sponsor has provided a detailed description of the data and information collected until this point and it does not seem that there are any data gaps to be covered in the next stage	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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	<b>Comments:</b> The sponsor states that there will not be additional infrastructural, deployment and training costs that might affect the civil aviation because of the implementation of the proposed change.				
2.2	<b>Are there direct beneficial impacts on air traffic control / management systems?</b> <b>If so, please provide details and how they have been addressed:</b>				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2.2.1	<i>Examples of benefits considered</i>	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)				
2.2.5	<b>Comments:</b> The sponsor states that the introduction of the proposed change might increase the risk of loss of safe separation / mid-air collision (LoSS/MAC) due to re-routing aircraft creating bottlenecks and it might also increase controller workload due to funnelling, DACS requests.				
2.3	<b>Where monetised, what is the net monetised impact on air traffic control (in net present value) over the project period?</b> N/A				
2.4	<b>Are the direct impacts on air traffic management analysed accurately and proportionately?</b> The assessment provided at this stage is in line with CAP1616 requirements.				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

3. Changes in air traffic movements / projections					Status
3.1	<b>What is the impact of the ACP on the following and has it been addressed in the ACP proposal?</b>				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
		Not applicable	Qualitative	Quantified	Monetised
3.1.1	Number of aircraft movements		x	x	N/A
3.1.2	Type of aircraft movement		x	N/A	N/A
3.1.3	Distance travelled	x			

3.1.4	Area flown over / affected		x	N/A	N/A
3.1.5	Other impacts				
3.1.6	<b>Comments:</b> The sponsor provides a qualitative assessment of the impacts that the proposed military change might have on the civil aviation, clarifying that it might affect the GA users when the Protector will require the activation of the segregated airspace for up to 3 days per week during the initial stage.				
3.2	<b>Has the forecasting of traffic done reasonably using best available guidance (e.g. DfT WebTAG, the Green Book, Academic sources...etc?)</b> The sponsor has provided the annual aircraft movements for RAF Waddington for 2017 (12,431) to 2018-2021 (approximately 9,000 per year). The sponsor estimates that a reduction in movements of around 20% is likely for 2022 (7,200). 18% of these movements are practice diversions by military aircraft from RAF Cranwell. The sponsor has also provided the statistics for MATZ crossing requests for 2019 obtained from Waddington ATC which suggest that an average of 6-10 MATZ crossing requests are received per day, mostly from GA aircraft.  The sponsor has also described the various airspace users in the vicinity of RAF Waddington, indicated the likely frequency of such operations and the height at which they might be using airspace. These are the RAFAT, Protector, UK ISTAR fleet; Waddington Flying Club using PA28 and Tecnam P2008JC; Embraer Phenom 100, Tutor and 120TP Prefect from RAF Cranwell's No3 and No 6 Flying Training School (FTS) and some gliders; combat ready squadrons, Typhoons and RAF Quick Reaction Alert (QRA) from RAF Coningsby; two FTS and RAF Central Gliding School operating the Viking T Mk 1 and Robin DR400 aerotow from RAF Syerston; other MOD and USAFE military aircraft; general aviation, gliding, paragliding and parachute activity especially from Temple Bruer and Wickenby; occasional aircraft leaving ATS routes to position for Midlands airports.  The sponsor goes on the state that the ACP will not result in an increase in the number of aircraft or a change in their types. Given that this ACP is located in Class G airspace, the information provided by the sponsor regarding traffic data and forecasts is considered to be sufficient.				
3.3	<b>What is the impact of the above changes (3.1) on the following factors?</b> <ul style="list-style-type: none"> <li><b>Noise impact:</b> the sponsor states that the majority of airspace users will request and obtain a DACS while some GA and military aircraft will need to route around the segregated airspace when this is unavailable. However, these numbers are estimated to be very low (less than 30 movements) with minimal change to the areas overflowed. As the sponsor does not anticipate an increase in the aircraft numbers or types of aircraft impacted, the overall noise impact is stated to be negligible as compared to today's scenario.</li> <li><b>Fuel burn and GHG emissions:</b> the sponsor states that the proposed low level airspace option might lead to a small increase in fuel burn and emissions for those GA users that cannot or do not use the DACS and are required to reroute.</li> <li><b>Air quality:</b> the sponsor states that while two AQMAs are situated in Lincoln, this ACP will have no impact on air quality as there is no change to the volume or distribution of emissions below 1,000 ft. (no increase in the aircraft numbers or types of aircraft impacted), with impacted air traffic not rerouting adjacent to or flying below 1,000 ft. over these locations.</li> </ul>				

	<ul style="list-style-type: none"> <li><b>Tranquillity and Biodiversity:</b> the sponsor states that no AONBs or NPs will be overflowed and that no sensitive areas were identified so far by local stakeholders and therefore the impact on these metrics is considered to be very low.</li> </ul>				
		Not applicable	Qualitative	Quantified	Monetised
3.3.1	Noise		x	N/A	N/A
3.3.2	Fuel Burn		x	N/A	N/A
3.3.3	CO2 Emissions		x	N/A	N/A
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	N/A	N/A
3.3.8	Tranquillity		x	N/A	N/A
3.4	<p><b>Are the traffic forecast and the associate impact analysed proportionately and accurately according to available guidelines (e.g. WebTAG or the Green Book?)</b></p> <p>The sponsor has provided the annual traffic figures for RAF Waddington from 2017-2021 with an estimate for 2022 along with statistics for MATZ requests in 2019. The sponsor has also described the airspace users and aircraft types using the airspace around RAF Waddington along with their frequency, flight patterns and operating altitudes.</p>				
3.5	<p><b>What is the total monetised impact of 3.3? (Provide comments)</b></p> <p>N/A</p>				

4. Benefits of ACP					Status
4.1	<b>Does the ACP impact refer to the following groups and how they are impacted by the ACP?</b>				
		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	x	N/A
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	<b>Comments:</b> <u>Local communities:</u> the sponsor states that the overall impact on communities is expected to be very low, especially as most aircraft will be able to obtain a DACS. The sponsor states that the proposed airspace change might affect general aviation (GA) user access that will be maximised by the ability to obtain a crossing service (e.g. DACS).				
4.2	<b>How are the above groups impacted by the ACP, especially (but not exclusively) looking at the following factors below:</b>				
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	N/A			
4.2.5	Other impacts	N/A			
4.2.6	<b>Comments:</b> Nil				
4.3	<b>What is the overall monetised impacts associated with 4.1 and 4.2 the above?</b> N/A				
4.4	<b>What are the non-monetised but quantified impacts of the above? (Insert details of description)</b> N/A				
4.5	<b>What are the qualitative / strategic impacts described above?</b> N/A				
4.6	<b>What is the overall monetised benefits-costs ratio (BCR) of the policy? Is it more than 1?</b> N/A				
4.7	<b>Have the sponsors provided reasonable justification for the proportionality of analysis above?</b>				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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	<p>The proposed airspace change aims to optimises an approach for RPAS to operate from and to RAF Waddington. Following up from the Initial Options Appraisal, the sponsor has received feedback from both stakeholders and Protector’s manufacturer and decides to update the combined design option that is then fully assessed in the Full Options Appraisal (FOA).</p> <p><b>Despite the new combined option is the result of the low and medium airspace level, it is not clear if the sponsor has preferred to use Option 7 or Option 8 and it would be worth clarifying this point before going to consultation.</b></p> <p>The sponsor outlines that the quantitative assessment is limited due to the minimal impact of this ACP on the civil aviation pattern, i.e., 3 flights per week, hence for the purpose of this Stage no TAG tables were developed.</p> <p>In conclusion, the FOA follows CAP1616 requirements and describes how the proposed combined design option performs against the baseline (Do-nothing).</p>
-----	---

**Outstanding issues?**

Serial	Issue	Action required
1		
2		



<b>CAA Full Options Appraisal Completed by</b>	<b>Name</b>	<b>Signature</b>	<b>Date</b>
Airspace Regulator (Economist)	[REDACTED]	[REDACTED]	03/08/2022