

CAA CAP 1616 Options Appraisal Assessment (Phase I Initial)

Title of Airspace Change Proposal:	Clash Gour Windfarm		
Change Sponsor:	Clash Gour Holdings Ltd		
ACP Project Ref Number:	ACP-2021-046		
Case study commencement date:	30/09/2022	Case study report as at:	14/10/2022

Account Manager: [Redacted]	[Grey]	Airspace Regulator (Engagement & Consultation): [Redacted]	[Yellow]	IFP: [Redacted]	[Orange]	OGC: [Redacted]	[Dark Blue]
Airspace Regulator (Technical): [Redacted]	[Green]	Airspace Regulator (Environmental): [Redacted]	[Purple]	Airspace Regulator (Economist): [Redacted]	[Light Blue]	ATM (Inspector ATS Ops): [Redacted]	[Red]

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?	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
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 Initial Options Appraisal (IOA) document and provided a supporting IOA Appendix A1 Issue 1 which is an excel spreadsheet similar to the Appendix E Table E2. The change sponsor provided the details for the progress so far with the windfarm planning process and set out how they have moved from the Statement of Need (SoN) to the airspace change design options in the IOA paragraph 1.3.1.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.2	Does the list of options include a description of the change proposal?	Yes, the change sponsor described the design options in detail in Stage 2 Engagement Airspace Change Design Options document.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.3	Has the sponsor stated on what criteria the longlist of options has been assessed?	Yes, the sponsor has stated the criteria in the Design Principle Evaluation (DPE) document to be able to evaluate how longlist of design options do perform against the DPs.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
1.1.4	Where options have been discounted, does the change sponsor clearly set out why?	Yes, the sponsor has chosen to reject few options in Stage 2A phase as a result of the DPE; the options evaluated as non-viable options were rejected and not carried forward to the Step 2B. Following from the DPE, the change sponsor conducted the IOA for all viable options and they explained the design options they'd like to discount in summary of analysis by taking into account the analysis of each impact. Option 7C – RAG blanking and TMZ over the proposed wind farm array locations and Option 7D – RAG blanking and TMZ over the proposed wind farm array locations with an extended TMZ to include a 2NM buffer were discounted as a result of the IOA because the change sponsor concluded that the design options have complicated shapes and would cause unnecessary complexity for both controllers and pilots even though they both meet the	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

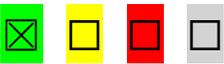
		objectives of the SoN.	
1.1.5	Has the change sponsor indicated their preferred option in the Options Appraisal (Phase I - Initial)? [E8]	<p>Yes, the change sponsor has decided to carry forward 2 options to the next stage which are Option 7E – RAG blanking over the proposed wind farm array locations with a simplified polygon TMZ ‘rubber banded’ around the proposed windfarm locations with no buffer and Option 7F- RAG blanking over the proposed wind farm array locations with a simplified polygon TMZ ‘rubber banded’ around the proposed windfarm locations extended to include a 2NM buffer. Options 7F has been selected as the preferred option as a result of the qualitative discussion conducted for each viable option. The sponsor has concluded that Option 7F provides a simpler airspace solution when compared to Option 7C and 7D leading to reduced complexity and providing an additional 2NM safety buffer which further enhances safety when compared to Option 7E.</p>	
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)?	<p>The change sponsor has included a section in the IOA para 2.3 in which they explain their intent for Stage 3. The change sponsor has confirmed that quantitative information regarding the below metrics would not be a requirement for the Full Options Appraisal (FOA) at Stage 3 with the reasonable rationale:</p> <ul style="list-style-type: none"> • 10-year traffic forecasts • Standard noise metrics: <ul style="list-style-type: none"> ○ LAeq noise contours ○ 100% noise mode contours ○ Nx contours ○ Difference contours ○ Lmax spot point levels ○ Operational diagrams ○ Overflight (based on the CAA definition of overflight) <p>The sponsor concluded that it is not appropriate to provide these metrics in Stage 3 because by looking into two-week period between 0000 06/08/2022 and</p>	

		2359 19/08/2022, the sponsor concluded that the airspace above the wind farm is a low-density air traffic environment with 14 aircraft movement in average per day. Taking into account the average aircraft movement per day, which is fewer than an average of 30 movements per day, the CAA concluded that the sponsor has taken the right and proportionate approach as WebTAG analysis and Leq contours will not be required for any airfield or aerodrome with fewer than an average of 30 movements per day (CAP 1616 Appendix B54).	
1.1.7	Does the plan for evidence gathering cover all reasonable impacts of the change? [E12]	Taking into account the average aircraft movement per day, which is fewer than an average of 30 movements per day, the CAA concluded that the sponsor has taken the right and proportionate approach as WebTAG analysis and Leq contours will not be required for any airfield or aerodrome with fewer than an average of 30 movements per day (CAP 1616 Appendix B54).	<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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.1.1	<i>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)</i>				
		Not applicable	Qualitative	Quantified	Monetised
2.1.2	Infrastructure changes		X	N/A	N/A
2.1.3	Deployment	X			
2.1.4	Training		X	N/A	N/A
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	<p>Comments: The change sponsor qualitatively discussed the cost impact on airport and air navigation service provider infrastructure, training and day-to-day operational costs in the IOA Appendix 1 Full Analysis Table. The change sponsor expects a possible small cost associated with software updates to accommodate for the establishment of the TMZ but these are expected to be minor. In terms of deployment costs, the change sponsor only mentioned potential controller training related to the management of the TMZ but again it is expected to be minimal. Last but not least, the sponsor also confirmed there may be costs incurred by the controlling authority but it is said these would be subject to commercial negotiations and likely a Letter of Agreement. The probable costs would be investigated in subsequent stages as confirmed by the change sponsor.</p>				
2.2	<p>Are there direct beneficial impacts on air traffic control / management systems?</p> <p>If so, please provide details and how they have been addressed:</p>				<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			
2.2.3	Reduced complexity / risk	X			
2.2.4	Other (provide details)	X			
2.2.5	<p>Comments: As Clash Gour Wind Farm will be a strategically important onshore wind farm development and the developers require a suitable mitigation solution in order to obtain the approval for the wind farm development, the sponsor only focussed on the potential hazards of wind turbines on MoD and other aviation stakeholder operations. The wind farm development is not expected to bring any direct benefit to the aviation stakeholders or airspace.</p>				
2.3	<p>Where monetised, what is the net monetised impact on air traffic control (in net present value) over the project period? N/A</p>				
2.4	<p>Are the direct impacts on air traffic management analysed accurately and proportionately? Yes, the sponsor focussed on the main potential hazards that might occur to MoD and other aviation stakeholders and these were explained in detail within the documents. Potential cost impacts were analysed from an airport and ANSP perspective as set out in CAP 1616 Appendix E Table E2 as required.</p>				<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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?	<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	N/A
3.1.2	Type of aircraft movement			X	N/A
3.1.3	Distance travelled		X	N/A	N/A
3.1.4	Area flown over / affected		X	N/A	N/A
3.1.5	Other impacts	X			
3.1.6	<p>Comments: The IOA indicates that a very small percentage of light aircraft (less than 30 movements per day) who do not have a transponder and who are not in communication with ATC may have to re-route around the proposed wind farm. For these rerouted aircraft, there would be increased track mileage.</p> <p>In terms of areas overflown and biodiversity, the IOA states that the wind farm is located in proximity to the Moidach More Special Conservation Area (SAC) and the Darnaway and Lethan Forest SPA. However, aircraft overflying these areas are not expected cause any significant or adverse impacts. There is no impact on maritime and aquatic ecosystems. There is unlikely to be any overflight of Cairngorm Mountains and Dornoch Firth NSAs and therefore there is no impact on these NSAs. The impact of this ACP and its design options on the Cairngorms NP is expected to be minimal as the windfarm is located 3.2 nm outside the boundary of the NP.</p>				
3.2	<p>Has the forecasting of traffic done reasonably using best available guidance (e.g. DfT WebTAG, the Green Book, Academic sources...etc?)</p> <p>The sponsor has provided a traffic survey from FlightRadar24 over a two-week period from 06/08/2022 – 19/08/2022 for a circular survey area of 10nm, surface to 12,000 ft. centred at the site of Clash Gour. Aircraft types frequenting the airspace around Clash Gour include single engine pistons (52), airliners (72), business jets (32), helicopters (12), military (10), twin engine GA (8), other GA (2), gliders (2) and others (10). As per the traffic data analysis, a total of 200 aircraft (155 below 7,000 ft.) transited this region within a span of 14 days, an average of 14 movements per day, the busiest day having 29 movements. Based on Electronic Conspicuity estimates that only 44% of GA aircraft are ADS-B equipped, the sponsor has estimated that an additional 5-6 GA aircraft might frequent the airspace today but were not captured by FR24 data. Out of the 200 movements, 50 of these were inbound to Inverness Airport, however, their approach track would lie outside the boundaries of the proposed TMZ. There are also 10 military aircraft transiting the region, although this accounts to less than 1 per day.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			

3.3 	<p>What is the impact of the above changes (3.1) on the following factors below?</p> <p>In terms of noise, the sponsor concludes that the impacted aircraft which are required to reroute may not be as widely spaced post implementation of the ACP and could change noise levels over the ground. However, due to the low levels of traffic impacted (less than 30 aircraft movements per day), the impact of noise on communities is likely to be limited and well below the LOAEL.</p> <p>The sponsor estimates that a few light aircraft might reroute around the proposed airspace structure causing an increase in track miles, fuel consumption and emissions however this impact is likely to be minimal due to the few numbers of aircraft impacted and the small scale of the TMZ dimensions and associated buffer zone. The sponsor also states that there is unlikely to be any impact on air quality, tranquillity and biodiversity as a result of this ACP.</p>				
	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	N/A	N/A
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>Are the traffic forecast and the associated impacts analysed proportionately and accurately according to available guidelines (e.g. WebTAG or the Green Book?)</p> <p>The sponsor has presented a traffic survey of the current-day airspace usage around the site of Clash Gour (see 3.2 above). The sponsor has not provided any traffic forecasts for this ACP. However, according to the CAP 1616 B32, if the proposed change is not expected to have an effect on the number of flights or the types of aircraft utilising the airspace then a traffic forecast based on the 'do nothing' scenario should suffice.</p> <p>The sponsor has provided a qualitative description of the potential impacts of this ACP, which is considered</p>				

	proportionate and adequate at this stage. Moreover, the sponsor has also presented a rationale and supporting evidence to scope out quantified noise assessments using LAeq contours and TAG at Stage 3 on the basis of the low levels of traffic in the airspace impacted by this ACP and the nature of airspace impacted i.e. Class G where monitoring of traffic movements and their frequency is not performed. As the airspace impacted has fewer than 30 aircraft movements per day, any noise impacts are likely to be below the LOAEL, the CAA accepts the rationale and supporting evidence provided by the sponsor as per CAP1616 para B26 and para B54.	
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	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	N/A	N/A
4.1.7	Wider Public / Economy		X	N/A	N/A
4.1.8	Comments: According to the IOA, the implementation of a TMZ would have a minor impact on airspace access for some GA users. As outlined by the change sponsor, this would be applicable to those GA aircraft that are not equipped with a transponder and are not in communication with ATC. It is further explained by the change sponsor in the IOA Full Analysis Table that for such aircraft a route around the proposed TMZ would be required. However, it is underlined that re-routing would be minimal given the size and scale of the option and for those aircraft equipped with a transponder and/or in communication with ATC, TMZ option would not hinder their level of airspace access.				

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	N/A
4.2.5	Other impacts	Minor impact on airspace access for some GA users
4.2.6	Comments: Please refer to the answer provided in Question 4.1.8.	
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? Clash Gour Wind Farm will be a strategically important onshore wind farm as explained in the change sponsor's SoN and developers require the mitigation options to be investigated and understood prior to a funding decision in Q3 2022. That's the main purpose of this ACP and the reason of the initiation of the ACP process as soon as possible. So, planning process for the wind farm and the ACP process will go hand in hand.	
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? As explained in questions 1.1.6, 1.1.7 and 3.2 the sponsor has provided reasonable justification for the proportionality of analysis.	<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	N/A
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6. Summary of Assessment of Economic Impacts & Conclusions

6.1	<p>Clash Gour Wind Farm is the first Level 1 onshore wind farm airspace change proposal received. The change sponsor succeeded to complete the requirements for the initial phase of the options appraisal as they provided the qualitative discussion of costs and benefits of all proposed options by providing the comparison against the do-nothing option for all the impact listed in CAP 1616 Appendix E Table E2. The established baseline scenario assumes the wind farm project not constructed in order to reflect the real current scenario which is confirmed as appropriate by the CAA. The sponsor also succeeded to provide evidence for expected traffic in the vicinity by looking into two-week aircraft movements from FlightRadar24 and showed with evidence of the data that there is less than 30 movements per day. Hence, the sponsor provided their rationale that it would not be proportionate for them to quantify the noise and greenhouse gas impact through WebTAG.</p> <p>The CAA concluded that the minimum requirement for Stage 2 has been provided in line with CAP 1616 Appendix B54 and E12 in their IOA document.</p>
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Outstanding issues?

Serial	Issue	Action required
1	-	-
2		

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)			14/10/2022