

CAA CAP 1616 Options Appraisal Assessment (Phase II Full)

Title of Airspace Change Proposal:	Clash Gour Wind Farm		
Change Sponsor:	Osprey (On behalf of EDF Renewables and Force 9 Energy)		
ACP Project Ref Number:	ACP-2021-046		
Case study commencement date:	08/02/2023	Case study report as at:	24/02/2023

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]

<p>Instructions</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;"> Resolved - GREEN Not Resolved – AMBER Not Compliant – RED Not Applicable - GREY </p>
<p>Guidance</p> <p>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.</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>The change sponsor has produced the Full Options Appraisal which is still based on qualitative discussion of the typical airspace change impacts. The sponsor stated it'd be disproportionate to quantify and monetise the impacts because defined metrics are not all relevant to this unique airspace change and the wind farm development does not relate to an airport.</p> <p>The sponsor stated their preferred option is Option 7(F). The Full Options Appraisal for Option 7(E) and Option 7(F) is almost identical; the potential benefit from an additional mitigation impact of 2 nm buffer is stated to be safety enhancement. The additional mitigation will give the controller additional warning of an unauthorised aircraft entering the TMZ. The sponsor also mentioned for this option that it is simpler and easier for both pilots and controllers to interpret and manage. On the other hand, the IOA also emphasises that the larger TMZ area may result in more aircraft needing to re-route to avoid the area which will cause an increase in the impact of noise and GHG emission over Option 7(E). However, although the impact of noise on communities is likely to be slightly higher due to more aircraft needing to re-route, the sponsor stated the impact will be distributed over a greater area so the change is not considered to be significant.</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"> -all reasonable costs and benefits quantified -all other costs and benefits described qualitatively -reasons why costs and benefits have not been quantified 	<p>The sponsor provided the qualitative comparison of the two options against the baseline (Do Nothing) option which is the original state where Clash Gour Wind Farm has not been constructed. Wind farms that are already established in the immediate vicinity</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

		<p>of the proposed Clash Gour Wind Farm (i.e. Berry Burn) are included within the baseline scenario as mentioned in the IOA by the sponsor to reflect the exact current situation.</p> <p>The sponsor qualitatively discussed the outcome of the implementation of TMZ around the proposed windfarm locations with no buffer and a 2nm buffer against the baseline scenario for typical airspace change impacts listed in CAP 1616 Table E2. They did justify the reasons of scalability of the analysis for environmental impacts (i.e. noise). Basically, they assessed noise contours for a UK commercial airport of approximately 600 movements per year (comprising 35,000 ATM, 19,000 GA and 2,000 business aviation plus 3,000 other movements) against RAF Lossiemouth. It showed that the day and night-time noise contour would extend no further than 4 nm from the runway and hence is contained within the MATZ (Military Aerodrome Traffic Zone) of RAF Lossiemouth. Therefore, the sponsor concluded that the low traffic levels in the vicinity of the proposed Clash Gour Wind Farm would not produce adverse noise levels nor would they necessitate in conducting a quantified noise modelling assessment.</p>	
1.1.3	Where options have been discounted, does the change sponsor clearly set out why?	The sponsor has only rejected the Do Nothing option as part of the Design Principle Evaluation but has carried forward into the Full Options Appraisal for comparative purposes only.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

2. Impacts of the proposed airspace change		Status
2.1	Are there direct impacts on the following:	<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>				
2.1.2	Airport/ANSPs	Not applicable	Qualitative	Quantified	Monetised
	- Infrastructure		X	N/A	N/A
	- Operation		X	N/A	N/A
	- Deployment		X	N/A	N/A
	- Other(s)		X	N/A	N/A
2.1.3	Commercial Airlines/General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Training	X			
	- Economic impact from increased effective capacity		X	N/A	N/A
	- Fuel burn		X	N/A	N/A
	- Other(s)	X			
2.1.4	General Aviation	Not applicable	Qualitative	Quantified	Monetised
	- Access		X	N/A	N/A
2.1.5	Military	Not applicable	Qualitative	Quantified	Monetised
			X	N/A	N/A
2.1.6	Wider Society, i.e., wider economic benefits, capacity resilience	Not applicable	Qualitative	Quantified	Monetised
			X	N/A	N/A
2.1.7	Other (provide details)	Not applicable	Qualitative	Quantified	Monetised
		X			
2.2	Are there direct beneficial impacts on air traffic control / management systems? Provide details.			<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

2.3	<p>Where impacts have been monetised, what is the overall value (expressed in net present value (NPV)) of the project? N/A – The sponsor stated it'd be disproportionate to quantify and monetise the impacts of this unique airspace change due to the low-density air traffic environment in the vicinity of the development.</p>
2.4	<p>Has the sponsor provided an accurate and proportionate assessment of the proposed airspace change impacts? Yes, the sponsor focussed on the significant potential hazards that might occur to MoD and other aviation stakeholders and these were explained in detail within the Full Options Appraisal. Potential cost impacts were analysed from an airport and ANSP perspective as well as the qualitative discussion provided for wider society and local communities as set out in CAP 1616 Appendix E Table E2 as required.</p> <div style="text-align: right;"> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> </div>

3. Changes in air traffic movements / projections			Status	
3.1	<p>If the proposed airspace change has an impact on the following factors, have they been addressed in the proposal?</p>	<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	Number of air passengers / cargo	X		
3.1.3	Type of aircraft movements (i.e., fleet mix)		X	N/A
3.1.4	Distance travelled		X	N/A
3.1.5	Operational complexities for users of airspace		X	N/A
3.1.6	Flight time savings / Delays	X		
3.1.7	Other impacts	X		
<p>Comments: The introduction of a TMZ is not expected to change the number of air traffic movements in the area as a direct result of this ACP.</p> <p>However, the sponsor explained that for the aircraft that are not equipped with a transponder or in communication with ATC, a minor re-route may be required which may lead to a minor additional fuel cost. The sponsor stated it'd be disproportionate for them to quantify such impact due to the small number of aircraft likely to be affected (estimated as 8 aircraft per day).</p> <p>The sponsor also provided the safety analysis for each proposed TMZ option and stated that proposed options present hazards in terms of GA</p>				

	integration, but the hazards can be procedurally and tactically mitigated. On the other hand, both options provide a simplified TMZ airspace design which reduced complexity for both controllers and pilots.				
3.2	<ul style="list-style-type: none"> Has the sponsor used the most up-to-date, credible and clearly referenced source of data to develop the 10 years traffic forecast and considered the available guidelines (i.e., the Green Book and TAG models) in a proportionate and accurate manner? [B11 and E11] <p>The sponsor has provided a traffic survey over a two-week period to measure the number of traffic movements in the vicinity of Clash Gour. As per the traffic data analysis, a total of 263 aircraft transited this region within a span of 14 days, an average of 19 movements per day, the busiest day having 34 movements. 59 of the movements were aircraft inbound to Inverness Airport. The sponsor concluded that 74 of the aircraft surveyed were transponder equipped GA corresponding to Electronic Conspicuity rates of 40% for the UK. The sponsor therefore considered an additional 111 aircraft (or 8 movements per day) not fitted with the equipment which might also be operating in the airspace and which would therefore be required to reroute due to the implementation of the sponsor's design option.</p> <p>The analysis included in the Full Options Appraisal is approved to be reasonable to scale down the requirements of a Level 1 ACP for this particular ACP. In terms of traffic forecasts and longer term impacts, the sponsor states that the number of GA aircraft operating in the UK and those likely to be impacted by this ACP are expected to remain similar to today and therefore no significant changes are expected over the 10 year period.</p> <ul style="list-style-type: none"> Has the sponsor explained the methodology adopted to reach its input and analysis results? [B11 and E11] <p>The sponsor explained the data sources, results and their methodology to calculate the average movement per day for aircraft without the use of a transponder to understand the likelihood of the any re-routing required by aircraft and they justified their conclusion to expect minimal environmental and economic impact.</p>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
3.3	<p>Has the sponsor developed an assessment of the following environmental aspects?</p> <p>The sponsor has provided a qualitative description of the environmental impacts. All modelling has been scoped out in accordance with CAP1616 para B26 on the rationale that this ACP is unlikely to have any significant consequential impacts on other airspace users, supported by evidence collected through a traffic survey demonstrating low traffic numbers in the vicinity of Clash Gour. The sponsor has estimated an average of 8 movements/day of non-transponder equipped GA aircraft which may be required to reroute an extra 0.5-1 NM around the design options. The sponsor states that this rerouting would result in additional fuel burn and emissions and may cause some concentration around the periphery of the proposed TMZ or result in overflight of Cairngorms National Park to the south. However, all impacts are assessed to be minimal due to low traffic numbers. An operational diagram of the busiest day (10th Aug) with 34 movements has been presented.</p>				
		Not applicable	Qualitative	Quantified	Monetised
3.3.1	Noise		X		
3.3.2	Operational diagrams		X		

3.3.3	Overflight		X		
3.3.4	CO2 emissions		X		
3.3.5	Local air quality	X			
3.3.6	Tranquillity		X		
3.3.7	Biodiversity		X		
3.4	What is the monetised impact (i.e., Net Present Value (NPV)) of 3.3? (Provide comments) N/A – With regards to environmental factors, due to the small scale of the proposed TMZ, any re-routing required by aircraft (without a transponder and not in communication with ATC) is expected to be minimal as stated in the Full Options Appraisal and the introduction of TMZ will result in minimal additional noise, greenhouse gas, fuel burn, access and economic impacts. Therefore, the sponsor justified the rationale not to carry out any quantified analysis by evidencing the observed daily movement in the vicinity of the development.				

4. Economic Indicators of the ACP		Status
4.1	What are the qualitative / strategic impacts described in the ACP? 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. The Full Options Appraisal also stated the development consent process for the wind farm development included a detailed Environmental Impact Assessment which assessed the significant environmental effects of the development including a carbon assessment that implies the development is carbon positive for approximately 27.5 years of its 30 year lifetime, a factor which was balanced against the minimal environmental impacts of displaced air traffic.	
4.2	What is the overall monetised and non-monetised (quantified) impact of the proposed airspace change? N/A – Please refer to the answers in Question 3.4 and 4.4.	
4.3	What is the Net Present Value of the proposed options? Has the sponsor used this information to progress/discount options? Has the sponsor provided the benefits-costs ratio (BCR) of the proposed options and used it to support the choice of the preferred options? [E44] N/A – Please refer to the answer in Question 4.2.	
4.3.1	If the preferred option does not have the highest NPV or BCR, then has the sponsor justified the reasons to progress this option? [B50 and E23] N/A as explained above.	
4.4	Have the sponsors provided reasonable justification for the proportionality of analysis above? Yes, the sponsor listed their rationale in the Full Options Appraisal to justify why they concluded that it'd disproportionate for them to quantify the impacts as it is required for Level 1 ACPs. Considering the unique structure of this wind farm project, the rationale is concluded to be sufficient for this airspace change and the detailed analysis requirements for Full and Final Options Appraisal are scaled down.	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

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5. Other aspects		
5.1	N/A	

6. Summary of the Full Options Appraisal & Conclusions		
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6.1	<p>Clash Gour Wind Farm is the first Level 1 onshore wind farm airspace change proposal received. The change sponsor explained the reasons in detail to justify why it'd be disproportionate for them to carry out a detailed quantitative and monetised analysis for this particular airspace change and as explained throughout this assessment form, the CAA concluded that their justification suffices to scale down the requirements of full options appraisal process for this wind farm development. The sponsor stated the Full Options Appraisal is backed up by the quantitative data of the traffic survey conducted during the IOA. Therefore, the sponsor provided the qualitative discussion of the costs and benefits of all the 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 succeeded to provide evidence for the expected traffic in the vicinity of Clash Gour Wind Farm by looking into two-week aircraft movements in the busiest time of the year and presented the data evidence that implies there is less than 30 movements per day. So, considering CAP 1616 Appendix B54, the sponsor's justification not to carry out any WebTAG analysis for noise and greenhouse gas impact has been concluded to be reasonable. The sponsor also successfully justifies the reasons why it'd be disproportionate for them to conduct traffic forecast and a CBA analysis as detailed in the sections above. Taking into account the scope of this project, all rationales provided in sponsor's submission are concluded to be reasonable and therefore the CAA confirmed that the sponsor successfully passes Stage 3 Gateway.</p>	
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Outstanding issues		
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Serial	Issue	Action required
1	-	
2	-	

3		
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CAA Full Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[REDACTED]	[REDACTED]	03/03/2023
Airspace Regulator (Environmental)	[REDACTED]	[REDACTED]	03/03/2023