CAA CAP 1616 Options Appraisal Assessment (Phase III Final)

Title of Airspace Change Proposal:	Llanbedr Danger Area		
Change Sponsor:	Snowdonia Aerospace LLP		
ACP Project Ref Number:	ACP-2019-58		
Case study commencement date:	15/02/2021	**Case study report as at:**	05/05/2021

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 Do Nothing (DN) /Do Minimum (DM) scenarios			Status
1.1	**Are the outcomes of DN/DM scenarios clearly outlined in the proposal?**		☒ ☐ ☐ ☐
1.1.1	Has the change sponsor produced an Options Appraisal (Phase III - Final) which consists of the Full appraisal with any refinements or changes made as a result of the Stage 3 formal consultation with stakeholders? [E24]	Yes, the sponsor has produced the Final Options Appraisal, including some refinements because of the consultation with the stakeholders in Stage 3. To address stakeholders' feedback, the sponsor refines the original sub-divisions of design Option 2 and modifies the extent of areas A, E and F to allow an easier transit north-south to east of the airfield for general aviation users and the extent of areas C and D. The sponsor does not provide an environmental impact assessment following WebTAG, nor estimates the CO2 impacts and fuel burnt because it is anticipated that the overall impact of this airspace change is negligible, hence it would be disproportionate for the sponsor to carry out a more detailed impact analysis.	☒ ☐ ☐ ☐

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	N/A	N/A
2.1.3	Deployment		x	N/A	N/A
2.1.4	Training	x	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	**Comments:** The sponsor specifies that the Snowdonia Aerospace LLP will invest in the Aerodrome facilities to implement a UTM system as part of the investment programme at the Aerodrome and that it will also need to invest in additional FIS and RFFS training as part of deployment costs.				
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			
2.2.3	Reduced complexity / risk	x			
2.2.4	Other (provide details)		x	x	x
2.2.5	**Comments:** The sponsor cites Wavehill Ltd (2020) study to justify the potential economic impact that the implementation of a permanent DA at Snowdonia Airport might have, focussing on new job creations and quantifying its contribution to local GVA per annum and on more long-term impact (10 years) on Walsh GVA. The multi-use aerospace at Llanbedr could contribute to 515 jobs and £19.5m/annum of GVA at the local level and 756 jobs and £34m/annum of additional GVA in Wales over the next ten years. The sponsor underlines that DA airspace users do not explicitly derive income from flight operations at Llanbedr, but rather use the test and evaluation capabilities on offer to develop their products and services. This justifies why the sponsor focusses on the value provided to the wider UK aerospace industry and the derived value back into the local economy.				
2.3	**Where monetised, what is the net monetised impact on air traffic control (in net present value) over the project period?** See Q 2.2.5				
2.4	**Are the direct impacts on air traffic management analysed accurately and proportionately?** The sponsor does not provide an analysis of the direct impacts on the air traffic management due to the nature of this ACP. However, the evidence the sponsor uses, based on Wavehill Ltd (2020) economic impact assessment for the Snowdonia Aerospace Centre, is sufficient and proportionate for the nature of this ACP.				

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	x	x
3.1.2	Type of aircraft movement	x			
3.1.3	Distance travelled	x			
3.1.4	Area flown over / affected		x	N/A	N/A
3.1.5	Other impacts	x			
3.1.6	**Comments:** The sponsor states that a permanent DA will significantly enhance the UK RDT&E capability in environmentally friendly aircraft and electric technologies.				
3.2	**Has the forecasting of traffic done reasonably using best available guidance (e.g. DfT WebTAG, the Green Book, Academic sources…etc?)** ADC – No, the sponsor does not provide traffic forecast nor uses the WebTAG and states that due to the highly variable nature of the RDT&E market it seems unrealistic to forecast a 10year traffic. However, the sponsor forecasts a minimum target of 160 days occupancy per year in the period 2020 to 2024 and that growth in the novel aerospace industry is likely to sustain this figure into the longer term.				☐ ☒ ☐ ☐
3.3	**What is the impact of the above changes (3.1) on the following factors?**				
		Not applicable	Qualitative	Quantified	Monetised
3.3.1	Noise		x	N/A	N/A
3.3.2	Fuel Burn		x	x	N/A
3.3.3	CO2 Emissions		x	x	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		
3.4	**Are the traffic forecast and the associate impact analysed proportionately and accurately according to available guidelines (e.g. WebTAG or the Green Book?)** The sponsor acknowledges that estimating the noise impact of drones is not an easy task since robust noise measurements and modelling tools are not available for drones yet, however the sponsor provided flyover noise information for a variety of unmanned aircraft types and sizes to enable a robust qualitative assessment of noise. The sponsor states that the standard tools to assess CO2 emissions are not relevant for drones and therefore they had to build an annual estimate using fuel burn data of past trials aircraft. The estimated annual fuel burn would not exceed 1 tonne and the annual CO2 emissions would not be more than 3 tonnes based on the assumption that there will be approximately 200 novel airspace system flights per year in total and that 50% of these will be flown by zero-carbon electric aircraft. Due to the variable nature of the RDT&E market it seems disproportionate to provide a detailed10-year forecast.				☒ ☐ ☐ ☐
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	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	x	x
4.1.8	**Comments:** The sponsor states that due to the current level of GA traffic (789 movements in 2019) is unlikely that the airspace change is going to impact GA users since the Danger Area is expected to be active 2 days /week on average.				
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	The sponsor reports a recent economic impact assessment study suggesting that a multiuse aerospace site at Llanbedr could contribute 515 jobs and £19.5m/annum of GVA at the local level and 765 jobs and £34m/annum of additional GVA in Wales over the next 10 years.			
4.2.5	Other impacts	The creation of a permanent DA enhancement in the UK RDT&E capability and in the AMS by creating a test zone in which to explore the airspace integration issues associated with new airspace users like drones.			
4.2.6	**Comments:**				
4.3	**What is the overall monetised impacts associated with 4.1 and 4.2 the above?** As already reported in the IOA and FOA, the economic impact assessment refers to the creation of a multi-use aerospace site that could contribute to 515 new jobs and £19.5m/annum of GVA at the local level and 765 new jobs and £34m/annum of additional GVA in Wales over the next 10 years.				
4.4	**What are the non-monetised but quantified impacts of the above? (Insert details of description)** See Q 3.4 for the quantified impact analysis of fuel burn and CO2 emissions. The sponsor tried to quantify the noise levels for different types of drones by interpolating between the existing data to construct additional noise estimates for a 20kg maximum take-off weight drone (e.g., a Penguin) and a 150 kg drone (e.g., Shadow) at 100 m above ground level and presented the below figures.				

Aircraft type	Sound Pressure Level @ 100m AGL
Small fixed-wing drone *e.g.* AeroVironment Raven	50dB
Large quadcopter *e.g.* DJI Mavic Pro	55dB*
20kg MTOW drone e.g. UAV Factory Penguin B	*60dB***
150kg MTOW drone e.g. AAI Shadow 200	*70dB***
Small manned fixed-wing aircraft *e.g.* Robin DR400	75dB
Medium manned helicopter	95dB

* Consistent with a measurement of 75dB "close-in", ** Estimated

4.5 **What are the qualitative / strategic impacts described above?**

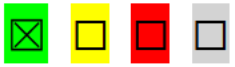
The sponsor aims to enhance the UK research, development, test and evaluation (RDT&E) capability in environmentally friendly aircraft and electric technologies in accordance with the 2018 Aerospace Industrial Strategy, also generate jobs and related economic benefit in local communities.

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 sponsor provides a justification for the level of details provided in the impact assessment, highlighting that the economic and environmental impacts to monetise would be negligible, hence both the noise model and the WebTAG greenhouse models were not used. The sponsor refers to Wavehill Ltd (2020) study to justify the potential economic impact that the implementation of a permanent DA at Snowdonia Airport might have, focussing on new jobs creation and quantifying its contribution to local GVA per annum, and on more long-term impact (10 years) on Walsh GVA.



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 None

6. Summary of Assessment of Economic Impacts & Conclusions	
6.1	This airspace change would envisage the implementation of a permanent Danger Area (DA) that would significantly enhance the UK RDT&E capability in environmentally friendly aircraft and electric technologies and, would support the CAA Airspace Modernisation Strategy by creating a test zone in which to explore the airspace integration issues associated with new airspace users such as drones. The permanent DA would enable UK business to retain future flight test programmes within the UK rather than operating abroad, thereby retaining economic activity and jobs in the UK economy. In the Final Options Appraisal, the sponsor reports the feedback received by the stakeholders, focusing on their preferred option – a slightly modified Option 2. The new Option 2 design foresees a simplified subdivision of the A, E and F areas to allow for an easier general aviation (GA) transit north-south to the east of the airfield. These improvements are included in the new design of Option 2, for which the economic and environmental impacts are the same as the ones provided in the Full Options Appraisal hence, the level of details and the justification provided are sufficient and proportionate for the nature of the ACP.

Outstanding issues?		
Serial	Issue	Action required
None		

CAA Initial Options Appraisal Completed by	Name	Signature	Date
Airspace Regulator (Economist)	[redacted]	[redacted]	26/04/2021
Airspace Regulator (Environmental)	[redacted]	[redacted]	05/05/2021
Airspace Regulator (Technical)	[redacted]	[redacted]	05/05/2021
ATM – Inspector ATS (Ops)	[redacted]	[redacted]	05/05/2021