

MINUTES OF SPACE HUB SUTHERLAND ASSESSMENT MEETING HELD AT AVIATION HOUSE, CAA GATWICK ON 5TH JUNE 2019

7th June 2019

CAA – Attention Mr [REDACTED] (CAA Case Officer)]

Present	Appointment	Representing
[REDACTED]	<i>AR¹ Case Officer (Chair)</i>	CAA
[REDACTED]	<i>AR Engagement & Consultation</i>	CAA
[REDACTED]	<i>AR Engagement & Consultation</i>	CAA
[REDACTED]	<i>Airspace Change Account Manager</i>	CAA
[REDACTED]	<i>AR Economic</i>	CAA
[REDACTED]	<i>AR Environment</i>	CAA
[REDACTED]	<i>AR Environment</i>	CAA
[REDACTED]	<i>AS² Environment & Analysis</i>	CAA
[REDACTED]	<i>Principal Airspace Regulator</i>	CAA
[REDACTED]	<i>Policy Specialist</i>	CAA
[REDACTED]	[REDACTED]	<i>HIE</i>
[REDACTED]	<i>Senior Consultant</i>	[REDACTED]
[REDACTED]	[REDACTED] <i>Team Leader</i>	[REDACTED]

CAA Assessment Meeting Opening Statement

CAA noted that the Statement of Need and Meeting Agenda were received in advance of the Assessment Meeting and confirmed that these documents would be published together with the presentation material and Minutes of the meeting on the CAA website. CAA explained the purpose of the meeting and confirmed that the meeting was an Assessment Meeting and not a Gateway. The CAA reinforced that the Sponsor was required to provide a broad description of their proposed approach to meeting the CAA’s CAP 1616 requirements but the CAA was not deciding whether the proposed approach met the detailed requirements of the CAA’s process at this stage. The purpose of the Assessment Meeting (set out in detail in CAP 1616) was broadly:

- for the Sponsor to present and discuss their Statement of Need,
- to enable the CAA to consider whether the proposal concerned falls within the scope of the formal airspace change process,
- to enable the CAA to consider the appropriate provisional Level to assign to the change proposal.

¹ Airspace Regulator.

² Airspace Specialist.

Additionally, the Sponsor was required to provide information on how it intended to proceed to fulfil the requirements of the airspace change process and to provide information on timescales. Lastly, the sponsor was required to provide information on how it intended to meet the engagement requirements of the various stages of the airspace change process.

	ACTION
<p>Item 1 – Introduction</p> <p>Following a mandatory Health and Safety briefing, the Chairman welcomed all attendees and led the introductions. [redacted] began the presentation by stating that the standard agenda would apply to the meeting but because this is an unusual project, in that it does not relate to an airport and does not require the addition of new instrument flight procedures, a degree of dialogue was to be expected. [redacted] explained that some additional slides had been included to provide some background and an overview of the project and to help present courses of action that might be pursued.</p>	
<p>Item 2 – Statement of Need (discussion and review)</p> <p>[redacted] read out the statement of need and described it as a broad and high-level requirement.</p> <p>[redacted] suggested discussion was needed regarding the limitation of 66,000ft and what might happen above it – 66,000ft is the notional limit of UK airspace.</p> <p>[redacted] said that the sponsor needed to understand the altitude at which the launch activities cease being a concern of the CAA. He went on to give an overview of the project in terms of socio-economic benefits to the area and space being a new Industry for Scotland. Research confirms that the UK space industry is large, but the UK does not have its own launch facility. [redacted] described the sponsor and team supporting the project and explained that the location was chosen for its low population density, access to orbits required by the users of the launch site, and that being a near-coastal location, all trajectories could be maintained over the sea and not over populated areas. [redacted] said it was a ‘supportive environment’ in terms of national government appreciation of economic benefits; local stakeholder support was mainly positive, but it was acknowledged that there may also be objections.</p> <p>[redacted] explained what a spaceport is: it is only for vertical launches. No horizontal launches or manned spacecraft are proposed. [redacted] gave an overview of current progress, next steps including community engagement, planning application and the desired first launch target in [redacted].</p> <p>[redacted] asked if the planning application was available through Local Planning Authority (LPA) portals and [redacted] stated that it would be available once the application had been submitted and validated by the local authority. The planning application is due to be submitted in [redacted] following a 12-week public consultation period.</p>	

<p>Item 3 – Issues or opportunities arising from proposed change</p> <p>Opportunities:</p> <p>█ returned to the standard Agenda and gave an overview of the Opportunities:</p> <ul style="list-style-type: none"> • Not an airport hence aspects of the airspace associated with the launches may be occasional and temporary in nature. Only 2-3 launches are expected per year initially, but this is expected to rise dependent on market demands. █ • Range controller role would be established to deliver on the opportunity to provide [positive] management of the airspace; • Low population area. <p>Issues:</p> <p>█ presented the Issues which included:</p> <ul style="list-style-type: none"> • Commercial sensitivity of the launch vehicles and payloads; • Potential of objection from local stakeholders; • Coordination with MOD ranges – [launch site] range controller role would support this • Noise assessment metrics will differ for vertical launch versus traditional noise contour assessment for airport/airspace application so looking to CAA for advice • Secretary of State call-in – the project is likely to fall within the criteria for a call-in, although if the SoS is involved in the planning application stage, the project may not be called-in under CAP 1616. 	
<p>Item 4 – Options to exploit opportunities or address issues identified</p> <p>█ raised a question whether the █ made █ will be of an established capability with a payload and not testing of a new capability. █ confirmed that it would be for the launch of established capability.</p> <p>█ gave an overview of a generic launch vehicle the use of the site.</p> <ul style="list-style-type: none"> • Activities comprise of vertical launches to put a payload (satellite) into orbit ~500km above Earth. • 90% of the weight of the launched vehicle would be liquid fuel, with the remaining 10% comprising launch vehicle and payload. • Two-stage launch vehicle meaning that at some point parts of the vehicle will separate and fall back to Earth ballistically. • The vehicle will begin its trajectory with a vertical ascent phase followed by curved phase which carries the vehicle into its target orbit. Once on orbit the remaining vehicle will be travelling tangentially to the earth's surface at approximately 8km/s. The whole process takes less than 10 minutes from lift off. 	

<ul style="list-style-type: none"> • This trajectory means that the launch vehicle will rise through usual airspace (66,000ft) in a single unit, under 2 minutes from lift off and within 20-30km lateral distance from the launch point. • Lower stage separation occurs at a point greater than 60-70km above the earth's surface [i.e. at a point further laterally than the 20-30km where the vehicle goes above 66000ft] <p>█ also provided an overview of the risks associated with the activities. The risks are considered to be well understood. The main risks [from an airspace perspective] relate to aircraft collision risk of vertical launch and ballistic re-entry of vehicle components. Other risks were outlined with an estimation of the safety envelope and the required protective areas for the launch trajectory and re-entry points. █ asked how different sizes of protective areas required for different launch types should be accounted for.</p> <p>█ confirmed that the flight corridor for intended launches is well understood.</p> <p>█ said that the concept of military range use of airspace i.e. managed through use of sectorisation of a larger piece of airspace and activation of only those sectors that are required, would be a reasonable option to consider. The CAP 1616 process would still apply, and the sponsor would be required to come up with a range of options, but these may include the military range style options.</p> <p>█ said that this is how Kennedy Space Centre operates [activation of airspace sectors].</p> <p>█ said that the range control activation procedures (notification system) would need to be developed with support from CAA/MOD/Air Navigation Service Providers (ANSPs) en-route and approach services (e.g. NATS).</p>	
<p>Item 5 – Provisional indication of the scale level and process requirements</p> <p>█ confirmed that the proposed airspace change fell within the requirements of CAP 1616 and at this stage was provisionally considered to be a CAP 1616 Level 1 project (changes below 7,000ft) but the level would be confirmed at Stage 2b of the process. With a caveat against 'solutioneering' (but recognising this is a novel project and there is a need for dialogue) it was 'technically possible' to use 90-day temporary airspace change process if launches and protective areas differed significantly between launches. However, it might be considered easier to define a boundary of airspace to protect all possible launch profiles and activate only the sectors required once the trajectory and airspace requirements have been defined for each launch. He concluded that the permanent airspace change should apply to the requirement.</p> <p>█ how different would the launch profiles need to be for the 90 day to apply?</p> <p>█: significantly different i.e. if all launches are contained within a 45 degree [caveat: example only] segment to the north, then it would be difficult to</p>	

argue that each launch is different. Essentially, a completely different airspace [parameters] volume would be required.

■ confirmed that the Head of Airspace Regulation at CAA is supportive of the project and to supporting the project timelines. He also stated that the CAA would allow the sponsor to make use of the temporary application process, run in parallel to the permanent ACP application, should launches be required earlier than the implementation date prescribed by the CAP 1616 process. Following discussion of the boundaries of this support, it was agreed that this could extend to facilitate multiple launches (3 or more) within an indicative 9-month period; the exact procedure to enable this activity will require further AR consideration. However, the sponsor must accept that approval of the temporary airspace would in no way predicate approval of a permanent airspace change. Whilst the temporary process with the CAA is still being defined, the sponsor was advised to allow 6 months for approval of a temporary change. The temporary change must be predicated on a clearly defined launch activity.

■ (on phone) said that the current process for noise assessment within the CAP 1616 was not applicable to vertical rocket launch and that a novel noise assessment for vertical launch will need to be agreed between the sponsor and the CAA. ■ noted that the work required in assessing noise for the temporary 90-day application would probably remain applicable to the permanent change. CAA would need to understand exactly what was being launched in order to assist in defining suitable metrics for measuring. Noise assessment conducted in support of the associated planning application may cross over/support the development of metrics for the airspace application. ■ said that the acoustic impact of the development is currently being assessed as part of the Environmental Impact Assessment.

The sponsor will also be responsible for assessing the environmental impact of the drop zone, even if this falls outside of the UK boundary. Most other nations are signed up to the Exclusive Economic Zone (EEZ). ■ stated that the airspace solution to protect the 'drop zone' may be provided via a temporary NOTAM. The sponsor would be responsible for liaising with the other nation to obtain permission, and for the distribution of the NOTAM to ensure that all relevant ANSPs are notified.

■ suggested early engagement with Oceanic Flight Operators, Nav Canada, FAA and Iceland would be advisable.

The Level 1 category would be confirmed at the end of Stage 2, following the Develop and Assess Gateway.

Item 6 – Provisional process timescales

Discussion on next steps; CAA confirmed that the project will fall under the remit of CAP 1616; the CAA has categorised the project provisionally as a Level 1 change. The next steps allow 2 weeks for the meeting minutes and timelines to be agreed and published on CAA ACP portal.

Item 7 – Next steps

■ showed indicative gateway dates and given the tight timeframe required for initial launch, asked if some could be combined.

■ said that it was only possible to combine 1 and 2 and showed how this might save some time. He went on to give an overview of the requirements of CAP 1616 and how they might apply in this unusual case.

■ suggested that some of the environmental assessments carried out for the planning application may have cross over/applicability to the CAP 1616 application. However, there will be an additional consideration of the environmental impact of the dispersal of traffic that has to divert around the airspace. However, due to the novel nature of the project, CAA would be open to discussion of commonality and to utilising new/different metrics; the EIA scoping responses may inform this.

■ reminded the sponsor to ensure that they clearly consult on their defined operations i.e. it would not be enough to consult on daytime launches only if night-time launches would also be required. These could be outlined within the Options Appraisal stage as some stakeholders may hold opinions on what would be more acceptable.

The team entered a discussion about the potential to align the timings associated with the planning application with the ACP gateway dates. The CAA stated that it would be a consideration at Stage 5 (DECIDE) if the planning application had not been approved since there would be little point in approving the ACP if the planning application had not been successful.

Examples

■ showed an example of how New Zealand had addressed airspace for similar launches. An example of FAA use of range control procedures appears to be a good fit for UK activities.

A discussion took place regarding Flight Information Region (FIR) boundaries and what happens when the vehicle is in another region. CAA emphasised that it was for the sponsor to determine the environmental and economic impact on other states and stakeholders, and to engage with those organisations directly. CAA will require assurance that this activity has been completed prior to assessment of the ACP. It was also stated that consideration should be given to delaying Stage 3 until a successful decision had been made on the planning application; there was concern that it would

be a waste of resources to consult on something that may not obtain planning approval; likewise, the consultation result will only remain 'alive' for a specific period of time (usually 1 year) and therefore, there may be a requirement to repeat the process if the planning approval is delayed. ■ asked how approval would be sought for access to other nations' airspace, for example for the potential for ballistic returns to fall within other FIRs.

■ said that other countries may have a similar process for airspace changes which might need to cater for these circumstances. ■ suggested that protection of the ballistic returns could be achieved via a temporary arrangement activated by NOTAM. ■ confirmed that launch operators would need to liaise directly with foreign governments, but the CAA would be happy to facilitate discussions.

■ NOTAMS would need to be [promulgated within] all affected FIRs and this is in the ICAO standards. Launch operator/range controller required to ensure that all international permissions and notifications are in place. Requests would need to be made to the local ANSP in order to notify local airspace users. ■ and ■ to liaise directly.

■ stated that from an IFP perspective, the proposed site at Sutherland would potentially affect flights routeing via the Oceanic Entry point. ■ showed a chart of current airways in the site vicinity to indicate that there was lots of en-route air traffic routeing on the airways to the north of Sutherland.

■ highlighted that any airspace solution should consider the potential impact of possible choke points between Sutherland and MOD Hebrides ranges being created.

Item 8 – Any other business

■ said the CAA would support a meeting to discuss noise metrics with the sponsor

■ reiterated the consultation requirements and stressed that collection of all evidence relating to engagement and consultation was a key part of the application. It was also stressed that the Gunning Principles would apply for the Consultation.

There was a discussion concerning whether the SoN should be re-issued to consider protection that might be needed above 66,000 ft. The sponsor will liaise with the CAA to determine whether it is appropriate to revise the SoN to cover activities above 66,000 ft.

■ advised that he and ■ (Case Officer and Account Manager) would be the point of contacts for all liaison between CAA and sponsor. Advice was given on the requirement to ensure that full traceability is required from the requirements in the SoN through all stages of the

<p>application: e.g. Design Principles, Options development, appraisal and eventual proposal must have a full audit trail of evidence. Sponsor thanked CAA for supportive engagement in this unusual case and offered availability for all technical questions from CAA.</p> <p>■ reminded the sponsor that all sensitive information, names of individuals etc. must be redacted from the minutes prior to publication. CAA would observe the sensitive classification of commercial and project information and ■ stressed that if something was sensitive but needed be shared with CAA to support the application then it should be done so. ■ sought clarification about requests made to the CAA under the Freedom of Information Act (FOI); it was confirmed by ■ that if a request is received to divulge material under the FOI, the CAA will ask the sponsor for agreement to release information or have the opportunity to redact information prior to its release. Anything that is protectively marked as Commercially Sensitive may be withheld provided that the sponsor can demonstrate why the information is commercially sensitive.</p>	
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