

SSC- CAA1012DPQ – Stakeholder Responses

Q1 - Please list any constraints that might limit the lateral and/or vertical extent of any airspace solution that you feel SSC should consider when designing an airspace solution to protect the launches. Please list your reasons

█ I would be opposed the proposed rocket launching site because of its impact on the very special eco system that exists in this area and with the ground nesting birds and the coastal environment and seabirds that nest on the cliffs and the seals and otters that inhabit this area it would upset their breeding habitat. Also in the light o recent revelations regarding climate change and our need to urgently reduce carbon emissions and to eliminate the use of fossil fuels.I believe it would be very bad for the local environment and detrimental to the future of our planet.

█)*The multitudes of birds which are a feature of the Lamba Ness cliffs, often in the air in their thousands, along with their young in their nests or fledging.*

(Bristows)All constraints need to allow access for Search and Rescue operations 24/7, 365 days a year. Therefore, a contact frequency must be provided along with clear times of activation published accordingly (I assume this will be the case).

(NATS) SSC will be required to articulate and prove the requirement for any airspace that inhibits or impacts upon other airspace users, demonstrating that it is the minimum required to ensure their safety. Rather than focus on ‘protects launches’ as used in this question, the safety consideration should be on protecting other airspace users from launches, thus satisfying the principles associated to the establishment of segregated airspace, primarily in the form of Danger Areas. Danger Areas in themselves neither prohibit nor restrict flight but merely identify where scheduled activity likely to endanger flight is taking place. It remains the responsibility of the originator of that activity to take all reasonable precautions to ensure the safety of others as required by the Space Industry Act 2018 (SIA) which requires that licence holders minimise third party risk to an acceptable level and demonstrate this through a safety case.

Constraints are therefore placed on the originator of dangerous activity to ensure that only the minimum airspace required to support the safety of others is required.

The location of Unst and the intended northerly direction of launches, coupled with the expected size of any danger area to segregate such activity, also introduces an international aspect to this potential ACP. The Reykjavik Flight and Upper Information region exists north of 61N and the Norway Flight and Upper Information Region exists to the East of 00W. In each case these respective airspace volumes are not the responsibility of the UK CAA and as a result additional processes beyond CAP 1616 will undoubtedly be required.

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(MET) The Met Office has a station near to Lerwick that launches radiosondes twice a day, usually at the times 11:15 and 23:15 UTC and occasionally more often, as necessary. The station is listed in the United Kingdom AIP ENR section 5.3 ‘other activities of a dangerous nature’ as follows:

Name Lateral Limits	Vertical Limits	Advisory Measures	Authority responsible for information	Remarks Activity times
LERWICK 601132N 0011437W	Upper limit: UNL	80000 ft and beyond	Met Office	Hydrogen or helium- filled balloon off- white to brown/carrying 390 gm radiosonde and parachute. Launched 1115, 2315 and occasionally at other times of the day. A weekly ozonesonde launch, which is an off- white balloon carrying ozonesonde and parachute launched once a week. Weight 840 gm.

(BA) Our major concern is in terms of the fall-out area, and the amount of airspace closed as a result. This could well affect N. Atlantic flows, flights to and from Scandinavia, Iceland as well as UK domestic flights. An example of which are the numerous Indian rocket launches, that not only close vast swathes of Indian airspace, but the Indian Ocean as far east as Myanmar and as far south as Indonesia & Australian airspace.

(MRCC) Provided full communications channels are open before, throughout and post launch through an exercised and tested regime with contingencies in place I can see no disruption to Search and Rescue operations therefore preventing or delaying the launch of any projectile systems. In the event of aeronautical SAR requirement either fixed wing or rotary there will be an expectation that the planned launch is delayed until it is deemed safe for air operations to take place within the projectiles intended flight path. SAR and lifesaving must take precedence over commercial space activities in all cases

(ANSP- HIAL) Consideration should be given to the Class D Controlled Airspace surrounding Sumburgh Airport and any impact the launches would have on operations around Sumburgh.

(MOD) The MOD would wish for minimal impact to MOD activity, as required by defence operational and training requirements, by new airspace required to enable operations from SSC. Whilst the proposed location does not have any SUA structures in the immediate vicinity, with no clarity on the vertical/lateral dimensions being considered we would suggest that consideration should include airspace/activity within the confines of the proposed airspace, as well as areas adjacent to it, at all levels. The MOD believe that SSC should consider the near existing airspace structures; their location, hours of operation and the type of activity that takes place within and adjacent to any existing SUA to understand what activity currently takes place in the vicinity of proposed airspace.

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(AOC Holder)

1 Any Restricted airspace should ideally not encroach further south than Harolds Wick inlet in order than any potential traffic to the aerodrome at Unst Baltasound is unaffected. It would be expected than some refurbishment /development at Unst aerodrome would become a requirement to support the Space Centre. Most rocket launching sites have associated aerodromes. The reactivation of Saxa Vord may also make this desirable.

2 The designated airspace should definitely not encroach further south than around Rams Ness on Fetlar so as not to affect traffic inbound to Scatsta runway 24.

3 The designated airspace must not affect Shetland Mainland so as to interfere with SIC Inter Island flights. At present only to Fair Isle, Foula and Papa Stour.

(CGC)As a Grazings Committee, we control the animal grazing in the area. We have no objections or constraints to SSC use.

(LM)

- Oil Rigs & Wellheads
- Local Dwellings
- Any existing flight corridors
- Sea Infrastructure (Ships, Lighthouses)
- Any site of specific interest on down range land
- Countries who are close to flight trajectories.
- Sea areas with environmental sensitivity (considering LV pat jettison)
- Marine authorities

(Virgin)Airspace should be designed such that it does not unnecessarily impact on commercial air routes on a regular basis. In the main this refers to en-route high level operations

Q2 - Please advise us of any coordination requirements between SSC and other Air Navigation Service Providers (ANSPs) that should be considered during the development of new airspace restrictions established by SSC

Small planes use the Unst airport, as well as sea planes and helicopters who occasionally use the airspace.

(Bristows) As per question 1

(NATS) Given the expected nature of airspace segregation requirements associated with a vertically launched space rocket, and the overall launch campaign NATS would expect initial notification of any segregated airspace requirements for the campaign to be provided by at least D-21 for a launch to the UK Airspace Management Cell. With confirmatory airspace segregation activation provided no later than D-1. This would allow onward notification to the EU Network Manager via the Airspace Usage Plan (AUP) and thus the manipulation of Flight Plans to avoid the area.

To ensure that segregated airspace is only instigated for the minimum time necessary, NATS would expect notification of cancellations and early completion of activity, that would allow for an update to the AUP (UUP).

It would be highly advantageous if such notification were to be provided to the AMC via an

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automated process using the Eurocontrol Airspace management tool LARA (see LINK) Dependant on size, NATS would expect the activation of segregated airspace to be co-ordinated with both QinetiQ and the MOD to ensure that the overall effect of multiple segregated airspace requirements do not overly impact upon the UK Upper Airspace networks ability to maintain a viable solution for commercial aviation.

(MET) I have no knowledge of other Air Navigation Service Providers so am unqualified to answer the question.

(BA) All adjacent FIR's/UIR's but I am not convinced this won't close flights as far South as the London TMA.

(MRCC) Request NOTAMs and I would suggest an ERF(R) for the duration of the launch and any subsequent recovery operations through NATS Swanwick or Prestwick. Additionally, to prevent anything being lost in translation between ANSPs and operators I recommend full, open communication with Bristow Helicopters Limited and 2Excel Aviation, the contracted operators for Government Fixed and Rotary wing operations inclusive of SAR, Counter Pollution, Border Protection and Policing throughout.

(ANSP HIAL) This would be dependent on the lateral dimensions/protected area of a launch.

(MOD) It is unclear exactly what is meant by "co-ordination requirements". However, the MOD would seek opportunity to plan and deconflict of activity at SSC with MOD activity to ensure minimal impact to the MOD. E.g. MOD routine training activity, deconfliction with large scale exercises etc. Consideration should also be made to notification, activation and deactivation time scales and processes for the proposed airspace. It would also be pertinent to understand the priority afforded to the proposed airspace, in line with other government priorities. It is essential that MOD can continue to deliver defence operational activity with minimal impact.

(AOC Holder) 1 Aberdeen Radar.

(LM)

- *FAA*
- *UKSA*

(Virgin) Fully coordinate with all adjacent ANSPs.

Q3 - Are you aware of anything in the CAA Airspace Modernisation Strategy that presents a risk or opportunity to SSC in development of the airspace solution to protect the Space Centre launches? Please provide details

(Bristows) No

(NATS) The introduction of Free Route Airspace as set out in CAP 1711 will impact upon the design of associated Flight Planning Buffer Zones (FBZ) and subsequent notification requirements. See Eurocontrol design requirements for Free Route Airspace (LINK).

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(MET) I have no knowledge of the CAA Airspace Modernisation Strategy so am unqualified to answer the question.

(BA)Not wishing to be facetious, could you consider moving the SSC to Ascension Island, St. Helena or the Falkland Islands. Where they will not impinge on civil air traffic. Alternatively please ensure that the SSC has to seek our permission to close the airspace in which we operate.

(MRCC)Nothing immediately springs to mind. Recommend contact with HQ MCA Aviation.

(MOD)The MOD believe that SSC should consider the initiatives within the AMS a part of their airspace development. In particular, Free Route Airspace and Advanced Flexible Use of Airspace. Although not part of the AMS, UAS proliferation and in particular UAS operations from ships may also be relevant

(AOC HOLDER) No

(LM)Please provide the Airspace Modernisation Strategy

(Virgin) Of the 15 AMS initiatives, the most relevant here would be:

1. Free Route Airspace (FRA)
2. Advanced Flexible Use of Airspace (FUA)

For FRA, consideration will need to given to the complexities introduced by permitting airspace users to file and fly flight specific user-preferred trajectories (UPR) as opposed to a predictable trajectory in a fixed route environment. This means that there will be specific requirements to analyse potential trajectories and the interactions with any restricted areas and manage flight plan buffer zones accordingly.

For AFUA, principles around activation and deactivation of applicable areas, particularly when planned activities are delayed or cancelled, must be adhered to and follow principles laid out in CAP740.

Q4 - Do you envisage that a Letter of Agreement (LoA) or Memorandum of Understanding (MoU) or other agreement with SSC will be required? If so, please provide details of what you would expect to be required as part of this agreement

(Bristows) In conjunction with Q1, we would need a LoA drafting and agreeing to give us access in a controlled and expeditious manner, like other emergency services. Of note, our area extends well out to sea, north of the launch site.

(NATS)NATS is working with the UK Space Agency and CAA to provide them with a template LOA as NATS expects that due to the anticipated dimensions and activation cycles that all ranges as defined by the SIA will require LOAs in respect of notification principles and methodologies. Dependant on size, precedent agreements for airspace activation may be required.

(MET) If co-ordination is necessary between the Met Office station at Lerwick and SSC regarding radiosonde launches or any other matters, then I would expect the requirements of each party to be laid out and how any co-ordination should be managed to enable the

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operational activities of both to be carried out while minimising risk to both. Any service(s) supplied by the Met Office to the SSC will be supplied on Met Office Standard terms and conditions, a copy of which is available on request.

(BA) Please see my response in question 3.

(MRCC) Uncertain. I recommend continued contact with the MCA Navigation Safety Branch.

(ANSP – HIAL) This would be dependent on the lateral dimensions/protected area of a launch.

(MOD) The MOD anticipate that some formal agreements may be required to cover, but not limited to, primacy/priority of airspace and activities, notification, activation and deactivation protocols, management of priority aircraft (e.g. CAT A, Emergency or on a Defence Operational Tasking), and, depending on dimensions, co-ordination with adjacent SUA. Furthermore, all aspects of Maritime Aviation operates in all available airspace in the UK FIR.

(AOC Holder) This would depend entirely on the extent of the airspace and anticipated frequency of operations there. Any proposal would need to invite comment.

(CGC) A legal agreement between SSC & Grazings Committee and the landlord would be required, the nature of which is to be determined.

(LM) NDA, TAA and TSA are as per existing conversations.

(Virgin) Unknown exactly, but we assume that as a minimum these would need to be in place with NATS and neighbouring ANSPs such as ISAVIA and AVINOR. This very much depends on the extent of any required restricted airspace for launches and also necessary splashdown zones.

Q5 – Please let us know if there are any day-time or night-time specific constraints that you consider SSC could take into account when considering the airspace solution required to protect the vertical space launches. Please provide details and reasons.

█ Movements of birds, for example storm an other petrels.

(NATS) Given location, primary consideration is associated to the North Atlantic flow of traffic. Such traffic is concentrated in waves. The Eastbound wave arrives in European airspace between 04:00 and 08:00hrs the westbound wave emanates from or crosses UK/Norwegian/Reykjavik airspace between 10:00 and 14:00 hrs.

(MET) As detailed above, radiosonde launches at Lerwick are usually at the defined times, but they may be launched at other times due to operational reasons (repeat launches, scientific launches, delayed launches etc.). If the radiosonde launches are considered a risk to the space launches, then perhaps co-ordination between SSC and Lerwick radiosonde station could be undertaken to avoid interactions based on launch times and/or flight paths.

(BA) Possibly between 23:00 – 04:00.

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(MRCC) Providing that communications prior, during and post event are sound there should be no issue. My concern would be that if night time operations were to take place, members of the public may mistake any plume and illumination from the projectile as a maritime distress flare at a distance, therefore providing contact is made with Shetland Coastguard immediately prior to launch there should be no confusion. May I recommend monitoring of marine band radio, VHF Channels 16 and 73 throughout, a 'Securite' broadcast prior to, during launch and during recovery operations and if possible, a video link to Shetland Coastguard Operations Room in order that my team can see the launch as it happens please? This would reduce any confusion were there any reports of flares sighted.

(ANSP -HIAL) Sumburgh Airport's hours of operation are promulgated in UK Air Pilot. An on call service is provided outwith these hours to facilitate Air Ambulance and Search and Rescue Flights, which can be required at short notice.

(MOD) No specific comment at this stage as MOD activity can take place 24 hours a day, with varying notice periods for planned activities. The MOD would wish to work with SSC to ensure minimal impact to MOD activity at all times.

(AOC Holder) Daylight access must be maximised. Scatsta potentially open til 2100.

(LM) No constraints. Launch operations may be conducted day or night so the airspace solution will need to accommodate both time periods. Noise levels should be considered during launch at night time for local residents trying to sleep, see examples of EIA provided by LM.

(Virgin) NAT tracks, no difference between day and night.

Q6 - Please tell us if there are there any other operational constraints that SSC will need to consider when planning its new airspace solution

█ Damage to the environment including the peace, and dark skies.

(NATS) The required use of airspace to support the transatlantic flow is dependent on the position of weather features over the Atlantic Ocean. This in turn determines the most optimal route. This position varies on a daily basis but can be predicted on an increasingly accurate basis 3 days in advance.

(MET) The radiosonde launches at Lerwick are operational launches performed as part of the UK Met Office's support of the World Meteorological Organization's Global Climate Observing System (WMO GCOS) programme. The ozonesonde observations are operational launches performed as part of the World Meteorological Organization's Global Atmosphere Watch (WMO GAW) programme. These operational launches provide measurements that are crucial for the monitoring of our weather and climate, as used by the Met Office and other institutions internationally for operational weather forecasting, input into numerical weather prediction models, comparisons with satellite measurements, research purposes etc.

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(BA) Under no circumstances can civil aviation be affected by these launches. If they are, the compensation claims could well undermine any business case here.

(MRCC) Consider markings, colour, lighting, size and shape of any payload and colouring of payload canopies. Also consider frequencies for any tracking devices and beacons fitted to the rocket and payload. Provided that the resultant payload cannot be misconstrued for a person in the water, a liferaft or lifejacket, a vessel in distress or a hazard to navigation there should be no real issue when it comes to search and rescue. Ensure that there are no pollutants that can emit from the payload. If the recovery operation is sound, communication channels are open and stringent and HM Coastguard are kept informed throughout there shouldn't be any issues. Recommend the request for a Notice to Mariners and a NAVTEX broadcast.

(MOD) As mentioned before, primacy of the airspace as well as procedures for unforeseen circumstances such as aircraft in emergency, state/military aircraft on operational Defence Taskings, CAT A flights etc. Procedures and methods of communication with units including RAF(U) Swanwick, ASACS and Maritime forces.

(AOC Holder) Need to minimise affected area in total. Must not affect traffic to and from East/West Shetland basins or science/survey flights in that area.

*(LM) As a Mission Operator it would be nice to be provided an overview of how a launch window will be defined and communicated. How long will they be? How is this communicated to Mission Operators, LSPs and the general public?
Are the CAA likely to mandate any weather restrictions? If so, how flexible are they to re-arranging a launch window that is scrubbed?*

(Virgin) Size of splashdown zones and temp danger areas should be mindful of the impact to major commercial aviation traffic flows. Whilst it is expected that launch and splashdown envelopes would be to the North and East, we would have particular interest in any impact that may take place to the south and west instead, as this could have significant effect on the North Atlantic traffic flows on a given day. There there needs to be necessary engagement with NATS and other ANSPs with regard to the design and impact mitigation.

Q7 - Please inform us of who you consider to be the other key local aviation stakeholders that you believe SSC should engage with during the process of designing an airspace solution to protect the vertical space launches. Please provide contact details and reasons

MoD

(Bristows) All offshore helicopters that operate on Shetland in the O&G field, along with ourselves in UK Search and Rescue.

(MET) There are a number of airports on Shetland, however, I am unfamiliar with them and have no contact details or site information above that which is freely available online.

(BA) IATA, ICAO, US, Canadian & Scandinavian carriers.

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(MRCC)Bristow Helicopters Limited
GAMA Aviation
AirTask
Northern Lighthouse Board

*(ANSP, HIAL)Scatsta Aerodrome
Sumburgh Radar, NATS, Aberdeen
Scottish Area Control Centre, Prestwick
Bristow Search and Rescue, Sumburgh Airport
All offshore helicopter operators - Bristow, Babcock, CHC, NHV*

(AOC Holder)Having received this questionnaire rather belatedly (08th March 2020) we would hope all stakeholders would have already been contacted.

- 1 Offshore helicopter companies servicing the East and West Shetland basins.
- 2 Survey /Scientific Research flight operators who frequent the area. UKRI/FAAM/NERC are institutions who conduct such work.
- 3 Drone operators who operate long range Science Research/Surveys in the area. E.g Flylogix.
- 4 MCA.
- 5 OPRED.
- 6 Oil and Gas Authority
- 7 Reykjavik ATCC
- 8 British Gliding Association
- 9 Shetland Island Council

(LM)UKSA

Q8 Please provide details of any constraints imposed by restricted airspace operations in the area encompassed by SSC's Space Centre potential operating area (e.g. military operations, danger areas, restricted areas, route crossings, transit corridors, training areas etc.)

█ Don't know

(Bristows) Full access required for Search and Rescue operations 24/7, 365 days a year.

(NATS) A list of permanent airspace features are listed in the UK AIP ENR 5.1. The majority of such airspace is activated by NOTAM, agreements exist in relation to the frequency and occasions which certain airspace structures may be activated to ensure the viability of commercial aviation is not excessively impacted. Additionally, the MOD undertake periodic exercises which require the establishment of temporary segregated airspace to accommodate such activities.

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In addition, and as shown below; the position of Routes connecting Norwegian and Icelandic airspace structures should be a consideration.



(MET) As mentioned above, the Lerwick radiosonde station is already listed as a hazard in the AIP document. I can see in the AIP document that there is also a small arms range at Lerwick listed as a hazard, however I know no details of this site and would advise checking it for up-to-date information of that and any other potential listed hazards in the vicinity. The Lerwick Station Manager, [REDACTED] believes that this may be the Shetland Clay Target Club: <https://www.shetland-communities.org.uk/subsites/sctc/>

It is important to note that balloons launched from the Lerwick radiosonde station are free drifting and can travel significant horizontal distances (hundreds of km) from the launch location in line with the atmospheric wind speeds and directions. The radiosonde balloon's ascent rate is usually around 5 m/s and the balloons can reach upper altitudes in the range of 40 km. The radiosonde will also freely drift further horizontally after the balloon bursts.

(BA) This must not be published as an active danger area, as these are reserved for military purposes for defence of the realm. We do not consider this to be of this importance.

(MRCC) Search and Rescue Operations will always take precedence over launch. Please ensure that any NOTAM or ERF (R) reflects that aircraft operating on behalf of the Maritime and Coastguard Agency have dispensation to enter any ERF (R) for the purposes of search and rescue and lifesaving operations.

*(ANSP HIAL) Overflying helicopters in support of offshore oil and gas production
Military Aircraft*

(MOD) The MOD suggests that SSC should consider the existing airspace structures; their location, hours of operation and the type of activity that takes place within (and adjacent to) any existing SUA. The MOD would wish for minimal impact on MOD activity. With no clarity on the vertical/lateral dimensions being considered we would suggest that consideration

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should include but is not restricted to:

D801/802/803

D712 complex

D809 complex

Large scale military exercises will also need to be considered to ensure appropriate deconfliction of activities. (e.g. Ex Joint Warrior a bi annual UK exercise for multinational participants that uses the class G airspace in North Scotland for FJ, MPA and RW activity, 24 hrs a day. Predominately it has been 2 weeks in spring and 2 weeks in autumn, but this will increase to 4 weeks in both autumn 2020 and spring 2021). Any new segregated airspace activated during exercise dates would impact on the exercise activity therefore MOD would wish an opportunity to deconflict. Exercise planning starts months before start ex therefore as much notice as possible about planned Space Centre activity and airspace requirements would be beneficial.

It may also be worthy of considering what the second order effects that additional volumes of segregated airspace over the North of Scotland, as a result of Space Hub activity, may have in other areas.

(AOC Holder)Helicopter Main Routes UK AIP ENR 6-26.

(LM)SSC/UKSA needs to engage with neighbouring national aviation authorities that the mission/launch operator will fly through on its reference trajectory to develop a coordinated, integrated airspace solution. The integrated airspace solution needs to be closely coordinated together to ensure consistency of requirements between national aviation authorities and clear communications, both in prelaunch planning and on day of launch.

(Virgin)Extant unknown, but for future operations refer to Q6.

Q9 - Please provide details of any issues or constraints due to local helicopter operations that you believe may have an impact within the proposed area of the Space Centre Unst operating area

■ Oil flights, rescue flights.

(Bristows)All Search and Rescue within the area of Unst, mitigated by the points above and a LoA.

(NATS) Without a clear understanding of the area and example timings for activation we are cannot respond with respect to the North Sea Helicopter Operation operated by NATS from Aberdeen Airport at this time. The impact on other helicopter operations is unknown.

(MET)I have no knowledge of helicopter operation activities on Shetland so am unqualified to answer the question.

(MRCC)Provided full lines of communication are open throughout there should be no impact on SAR aviation operations.

(ANSP HIAL)This would need to be discussed with local helicopter operators.

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(MOD)Maritime Aviation, including helicopter operations may operate in the whole of the UK FIR.

(AOC Holder)Helicopter Main Routes UK AIP ENR 6-26.

(Virgin)Unknown

Q10 - Please advise us of any other issues or constraints you feel SSC could consider when designing its new airspace solution to protect the vertical space launches. Please provide details

■ Fuel on the land and sea.

(NATS) If segregated airspace is required it is not the launch vehicle that requires protection but rather other airspace users from that vehicle. This must be the premise under which airspace is designed and should guide the principles under which this ACP is conducted. Given the potential variation in launch vehicle size, possible sub-orbital sounding launches for test and differences between sun-synchronous vs polar launch trajectories the airspace should be designed in a mosaic such that only the area required for a given launch is requested rather than a single larger area as a default. Additionally a small zone within the immediate vicinity of the launch pad might be required as commissioning activities near launch, i.e. during and once fueling has completed, but the danger area for the range has not yet been activated as the launch window is not imminent.

(BA)Our concern would be the size of the fall out area and the timings of the launch running late and into our early morning arrival streams.

We would require long lead times for airspace closures, with no short notice changes allowed.

(MRCC)None that spring to mind.

(AOC Holder)As with any launch facility a method of assuring range safety is essential. Range clearance and sanitisation using combinations of live plots and statistical methods is normal. Potential debris fields need to be cleared. Radar surveillance from a shore installation may suffice or may need to be enhanced with dedicated aircraft mounted radar.

(LM) A flight corridor of available inclinations should be defined, analysed and distributed to potential Mission Operators and LSPs. Analysis should consider the probability of failure and should clearly consider geo-referenced coordinates of all infrastructure, dwellings, oil rigs and infrastructure at sea. A rough order of payload size, LV size and exclusion zones should be provided to future proof the site and allow visibility to site users of what inclinations can be provided from this new site.

(Virgin)See answer to Q3 and Q6

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Q11 - What impact or constraints will Space Centre Unst airspace solution to protect vertical space launches have on local GA/VFR operations. Please provide details.

█ Don't know

(MET)I have no knowledge of GA/VFR operation activities on Shetland so am unqualified to answer the question.

(MRCC)Unable to answer this question with any degree of confidence. I am not a pilot.

(ANSP- HIAL)See previous response regarding helicopter operators.

(AOC Holder)As per answer to Q4 this depends entirely on the proposal.

Q12 - Please provide details of any constraints that may be occasioned by local gliding activities on, or adjacent to the Space Centre Unst launch site.

█ Don't know

(MET)I have no knowledge of local gliding activities on Shetland so am unqualified to answer the question.

(MRCC)Unable to answer this question with any degree of confidence.

(AOC Holder)We would not expect gliding activity in the area given the length of sea crossings required and distance to wave producing high ground. However, it would be well to check with the BGA for any potential conflict.

Q13 - Please highlight your awareness of any particularly sensitive issues with noise associated with the vertical space launches over the night-time period.

█ Residents and holiday makers in the immediate vicinity.

(NATS) SSC would be required to undertake an environmental assessment associated to the re-routing of aircraft as a result of their requirement to introduce airspace segregation.

(MET)I have no knowledge of local noise sensitivity issues on Shetland so am unqualified to answer the question.

(MRCC)I foresee no real issues with noise when it comes to night-time launches. This is more of a concern for the local populace and provided they are consulted, full details of the launch with timings etc. posted locally there should be no issues.

(AOC Holder)Unknown.

(CGC)Animal welfare during launch, which would need to be covered by a management agreement

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(LM)Far field noise levels (dB), should be mapped at given distances from the launch pad co-ordinates to estimate the noise levels at public locations of specific interest. Consider neighbouring occupied homes, particularly people trying to sleep.

(Virgin)Unknown

**Q14 - Please state any principles you believe that SSC could adopt to mitigate (in full or in part) the direct or indirect impact of rocket launches on aviation emissions or pollution.
For example, due to the dispersal of other air traffic during launch periods.**

█) Don't know

(NATS)*The airspace construct should be the minimum required to safely accommodate the activity being undertaken. A clear understanding of why segregation is required to protect other airspace users from such activity is required. An understanding of why segregation is the only method considered appropriate and why other methods such as clear range principles have been discounted is required. Clear rationale for the size of segregated airspace based on safety traces and explosive 'Maximum Energy Boundaries' as well as fail safe destruction methodology is required.*

(MET) I have no knowledge of suitable mitigation methods for aviation emissions so am unqualified to answer the question.

(BA)*We would find any dispersal of civil air transport as unacceptable.*

(MRCC)None that spring to mind.

(AOC Holder)*Not significant as far as we are aware.*

(LM) Analyse the dispersion of LV exhaust fumes to a governing code and wind profile. This is required as part of the CAA CAP1616 process, appendix B

(Virgin)*The obvious consequence of restricted area operations is potential for route mileage extensions around the area for overflying traffic. This would need to be modelled for discussion later in the ACP process.*

Q15 - SSC is currently engaging with local and national organisations and a full public consultation is planned in due course. However, please let us know of any local or national organisations that you believe SSC should include in its formal consultation.

█ RSPB, SNH, MCS, RBS, and other Societies concerned with Lichenology , etc, Geopark.

(NATS)*Iceland and Norway aviation regulatory bodies are considered key international stakeholders.*

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(MET) Civil Aviation Authority and NATS – airspace restrictions

(BA) Air/Sea rescue, forestry service and the oil industry.

(MRCC) Please keep Her Majesty's Coastguard posted on developments. As Maritime Operations Controller for the area my principle concerns surround Search and Rescue operations and safety of vessel navigation. This operation can only be a good thing for Shetland and the UK as a whole and I wholeheartedly support your operation.

(MOD) Assuming this is specific to consultation on the ACP then MOD has no comment. For information, the MOD will need to understand any impact there will be on the Saxa Vord Radar head, whilst this is not necessarily about the ACP, liaison between the SSC and the Defence Infrastructure Organisation will be required.

(AOC Holder) See answers to Q7

(LM) Neighbouring national aviation authorities that control airspace through which the reference trajectory passes and/or jettisoned impact areas lie within.

(Virgin) Representative airspace user organisations, such as IATA, Airlines UK, A4E, ERA, AIRE, A4A and relevant ANSPs