Ministry of Defence

Defence Airspace & Air Traffic Management
CAA Aviation House, 1E
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West Sussex
RH6 0YR

Telephone: [redacted]

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Airspace Change,
Space Hub Sutherland,
Osprey Consulting Services Ltd,
Suite 10, The Hub,
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Farnborough
GU14 7JP

21 Oct 19

Dear Sir / Madam,

MINISTRY OF DEFENCE (MOD) RESPONSE TO SUTHERLAND SPACE HUB ACP DESIGN PRINCIPLE QUESTIONNAIRE

1. Thank you for your recent engagement and the opportunity to attend the aviation users focus group in relation to Stage 1 of the Sutherland Space Hub ACP. Please see below our response in relation to the questions posed in your aviation stakeholders design principles questionnaire.

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

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 Sutherland Space Hub. The MOD believe that HIE 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 to understand what activity currently takes place in the vicinity of proposed airspace. 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.

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

It is unclear exactly what is meant by “co-ordination requirements”. However, the MOD would seek opportunity to plan and deconflict of activity at Sutherland Space Hub 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.

Q3 – Are you aware of anything in the CAA AMS that presents a risk or opportunity to HIE in development of the airspace solution to protect the Space Hub Launches? Please provide details.

The MOD believe that HIE should consider the initiatives within the AMS a part of their airspace development. In particular, Free Route Airspace, Advanced Flexible Use of Airspace and Airspace Classification Review.

Q4 – Do you envisage that a letter of Agreement (LoA) or Memorandum of Understanding (MoU) or other agreement with HIE will be required> If so, please provide details of what you would expect to be required as part of this agreement.

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), co-ordination with adjacent units e.g. ranges.

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

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 HIE to ensure minimal impact to MOD activity at all times.

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

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 adjacent units (e.g. RAF(U) Swanwick, ASACS, local stations (e.g. RAF Lossiemouth) or ranges (e.g. Tain /Cape Wrath).

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

No comment.

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

The MOD suggests that HIE 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 should include but is not restricted to:

D801/802/803
D701 complex
D712 complex
D809 complex
R610

LFA14T
HRA

Noting that the proposed launch site lies within EG D802, it is anticipated that co-ordination and deconfliction will be required in order to ensure no impact to MOD activity. It is anticipated, at this stage, that any activity at Sutherland Space Hub would potentially result in the non-availability of Cape Wrath Range throughout the launch period. It should be noted that requests for use of Cape Wrath can come at short notice (1 week or less).

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 Hub 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 e.g. limitations this may have in other areas.

Q9 – Please provide more 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 Hub Sutherland operating area.

Military rotary activity does take place in this area in accordance with defence operational and training requirements. Rotary activity by the emergency services and air ambulance should also be considered.

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

No comment.

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

No comment.

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

No comment.

Q13 – A thorough Environmental Impact Assessment is being conducted by HIW as part of the Planning Application process. Are there any specific environmental factors associated with the airspace change application that you believe should be considered by HIE?

No comment.

Q14 – Please state any principles you believe that HIE 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.

No comment.

Q15 – HIE 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 HIE should include in its formal consultation.

Assuming this is specific to consultation on the ACP then MOD has no comment. If consultation is related to planning then HIE should engage with the Defence Infrastructure Organisation (DIO).

2. The MOD remains committed to ensuring airspace is used safely, efficiently and flexibly. Future airspace design must consider and allow for continued MOD access to airspace in order to meet defence operational and training requirements.

3. The MOD welcomes continued engagement throughout the ACP process. Please do not hesitate to contact the undersigned if you require any further information at this stage.

Yours faithfully,

[*signed electronically*]

[redacted]
Squadron Leader
SO2 Airspace Plans

Space Hub Sutherland Design Principles Questionnaire
Non-Aviation Stakeholders

Representative Organisation:

Scottish Natural Heritage

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

Given the wide coverage of areas protected for their breeding and wintering populations of birds in north Sutherland, any increase in activities such as low flying, which could result in additional disturbance should be carefully considered.

Q2 - Please let us know if there are any day-time or night-time specific constraints that you consider HIE could take into account when considering the airspace solution required to protect the vertical space launches. Please provide details and reasons.

As above.

Q3 - Please inform us of who you consider to be the other key non-aviation stakeholders that you believe HIE should engage with during the process of designing an airspace solution. Please provide contact details and reasons why you feel they are relevant.

N/A

Q4 - Please highlight your awareness of any particularly sensitive issues with noise associated with the vertical space launches over the day or night-time period.

Evaluation of the likely effects of sudden, loud noise and sonic booms on breeding birds, seals and wintering birds while feeding or roosting, should be carried out in order to assess the likely impacts on nationally and internationally important populations of birds and seals known to use the area.

Q5 - Please tell us of any locations of any particularly sensitive wildlife habitats, not already notified (linked to AONB, SSSI etc), that might be sensitive to noise from the vertical space launch area.

None in addition to those already notified as SSSI, SPA, SAC, Ramsar sites and designated seal haul outs.

Q6 - A thorough Environmental Impact Assessment is being conducted by HIE as part of the Planning Application process. Are there any specific environmental factors associated with the airspace change application that you believe should be considered by HIE?

Proposed changes to airspace use should consider possible impacts on breeding or wintering birds which are listed as qualifying features of protected areas, and on protected species in the wider countryside. It should be noted that these changes may apply to areas some distance from the space hub. SNH will be happy to provide further advice and enter into discussions about this as appropriate.

Q7 - Are there any other local development projects that HIE should be aware of and consider when planning its airspace solution for the Space Hub Sutherland? Please provide details.
N/A
Q8 – HIE 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 HIE should include in its formal consultation.
N/A
Q9 - Please state any principles you believe that HIE 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.
We advise HIE to consider the principle of avoiding net biodiversity loss as a result of the proposal.
Q10 - Please advise us of any other issues or constraints you feel HIE could consider when designing its new airspace solution to protect the vertical space launches. Please provide details.
N/A

British Microlight Aircraft Association
Policy for Design Principles during ACP engagement

Introduction

The following text describes the underlying principles that the British Microlight Aircraft Association (BMAA) believes must be followed by applicants for airspace change proposals.

Consultation

1. The BMAA welcomes the opportunity to engage in consultation at an early stage within the ACP CAP 1616 process.
2. Sponsors are encouraged to engage with the BMAA and its members as early as possible during the development of the ACP. Previous ACPs have missed the opportunity for early engagement and dialogue resulting in significant and costly delays.

Airspace classification

1. The BMAA considers that the UK airspace's default classification is G and that sponsors must establish a safety case for proposing to change this class or add any further restrictions or requirements by their ACP.
2. All sponsors must demonstrate that alternatives have been considered such as RMZ and TMZ before considering controlled airspace.
3. Class E without a TMZ should be considered as a normal option.

Access by GA

1. Sponsors must accept the assumption that GA including sporting and recreational aviation is entitled to continued safe use of airspace and that commercial aviation does not have a right to limit airspace access.
2. Sponsors should ensure that there will be measures to allow flexible use of airspace and prepare for the wider use of electronic conspicuity devices and interoperability with existing e-conspicuity, e.g. FLARM and Pilot Aware etc...

Airspace volume

1. In line with the principles of the Airspace Modernisation (was FAS) principles the ACP must respect the requirement for minimum airspace volumes designed for efficiency and reduced environmental impact. These principles will include:

- Minimum size of controlled airspace
- Minimum number of departure/arrival routes
- Steeper and continuous climbs and descents for cost and environmental benefits as well as minimisation of CAS footprint.

Justification

1. Sponsors must conduct and present proper analysis of overall airspace safety changes i.e. based on modelling and evidence rather than purely subjective opinion.
2. Sponsors must provide proper validation of forecast traffic levels. There is an expectation that data used, particularly forecasts, will be verifiable including details of any and all assumptions.

Airspace integration

1. Sponsors must show how they are integrating their proposal within the overall UK airspace modernisation context, for example proposals which do not connect efficiently between upper and lower airspace (potentially under different airspace "management") would only inhibit overall airspace efficiency and therefore not receive our support)
2. Optimisation of the development work above and below the 7,000ft NATS en-route split.

NATS Response to Space Hub Sutherland Aviation Questionnaire – Received 24th October 2019

Response To Sutherland Spaceport Airspace Design Principles

Action	Role	Name	Signature	Date
Author	PC Airspace Development	[redacted]	Not Required	20/10/19
Input	Principal Specialist SMS Dev & Comm Space	[redacted]	Not Required	20/10/19

Q1 - Please list any constraints that might limit the lateral and/or vertical extent of any airspace solution that you feel HIE should consider when designing an airspace solution to protect the launches. Please list your reasons.
HIE 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.
Q2 - Please advise us of any coordination requirements between HIE and other Air Navigation Service Providers (ANSPs) that should be considered during the development of new airspace restrictions established by HIE.
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 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 affect of multiple segregated airspace requirements do not overly impact upon the UK Upper Airspace networks ability to maintain a viable solution for commercial aviation.
Q3 - Are you aware of anything in the CAA Airspace Modernisation Strategy that presents a risk or opportunity to HIE in development of the airspace solution to protect the Space Hub launches? Please provide details.

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)
Q4 - Do you envisage that a Letter of Agreement (LoA) or Memorandum of Understanding (MoU) or other agreement with HIE will be required? If so, please provide details of what you would expect to be required as part of this agreement.
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.
Q5 - Please let us know if there are any day-time or night-time specific constraints that you consider HIE could take into account when considering the airspace solution required to protect the vertical space launches. Please provide details and reasons.
Given location, NATS primary consideration is associated to the North Atlantic flow of traffic. Such traffic is concentrated in waves. The Eastbound wave arrives in UK airspace between 04:00 and 08:00hrs the westbound wave emanates from or crosses UK airspace between 10:00 and 14:00 hrs.
Q6 - Please tell us if there are there any other operational constraints that HIE will need to consider when planning its new airspace solution.
The required use of airspace to support the transatlantic flow is dependant on the position of weather features over the Atlantic Ocean. This in turn determines the most optimal route in or out of UK airspace. This position varies on a daily basis but can be predicted on an increasingly accurate basis 3 days in advance
Q7 - Please inform us of who you consider to be the other key local aviation stakeholders that you believe HIE should engage with during the process of designing an airspace solution to protect the vertical space launches. Please provide contact details and reasons.
No response
Q8 Please provide details of any constraints imposed by restricted airspace operations in the area encompassed by HIE's Space Hub Sutherland's potential operating area (e.g. military operations, danger areas, restricted areas, route crossings, transit corridors, training areas etc.)
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.
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 Hub Sutherland operating area.
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.
Q10 - Please advise us of any other issues or constraints you feel HIE could consider when designing its new airspace solution to protect the vertical space launches. Please provide details.
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 premis 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

commisioning 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.
Q11 - What impact or constraints will Space Hub Sutherland airspace solution to protect vertical space launches have on local GA/VFR operations. Please provide details.
No response
Q12 - Please provide details of any constraints that may be occasioned by local gliding activities on, or adjacent to the Space Hub Sutherland launch site.
No response
Q13 - A thorough Environmental Impact Assessment is being conducted by HIE as part of the Planning Application process. Are there any specific environmental factors associated with the airspace change application that you believe should be considered by HIE?
HIE would be required to undertake an enviromental assessment associated to the re-routing of aircraft as a result of their requiment to introduce airspace segregation.
Q14 - Please state any principles you believe that HIE 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.
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 methodolgy is required.
Q15 – HIE 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 HIE should include in its formal consultation.
No response

ID	Start time	Completion time	Email	Name	Please provide your name and the name of the organisation that you represent (if applicable).
1	10/8/19 14:38:21	10/8/19 14:42:37	anonymous		[redacted]
2	10/16/19 13:23:37	10/16/19 13:40:21	anonymous		[redacted] RSPB Scotlan
3	9/19/19 18:10:41	9/20/19 10:01:39	anonymous		Far North Aviation

4	9/23/19 7:45:12	9/23/19 8:19:52	anonymous		[redacted]
5	10/8/19 9:34:44	10/8/19 9:42:10	anonymous		[redacted] Bristow Helicopters, Stornoway and Sumburgh

Please provide a valid email address that we can use to provide feedback on this engagement activity.	As a Non-Aviation Stakeholder, please state your specific area of responsibility or interest. Multiple answers are acceptable.
[redacted]	Vulcan NRTE;
[redacted]	Charitable organisation; Environmental Organisation;
Aviation fuel suppliers (Jet A1, AVGAS 100LL);General Aviation - Fixed Wing Pilot;General Aviation - Rotary Pilot;General Aviation - Non-Powered Flight e.g. glider, ;	[redacted]

General Aviation - Fixed Wing Pilot;	[redacted]
Search & Rescue;Commercial Air Operator;	[redacted]

Please list any constraints that might limit the lateral and/or vertical extent of any airspace solution that you feel HIE should consider when designing an airspace solution to protect the launch...

None, however debris schedule/ no risk to site expected in the future.

RSPB Scotland has provided detailed comments to the potential impacts that must be assessed in our letter dated 11 July 2019, in response to the applicants scoping request to The Highland Council.

As discussed in our scoping comments, the potential impacts on birds using the airspace must be fully assessed. The introduction of vertical launches is likely to result in potential detrimental impacts on birds in the area. The proposal site is located within a particularly sensitive environment, close to and directly affecting several designated national and internationally designed nature conservation sites, including the Caithness and Sutherland Peatlands Special Protection Area (SPA), Special Area of Conservation (SAC) and Ramsar wetland, North Sutherland Coastal Islands SPA as well as the Ben Hutig and A' Mhoine Sites of Special Scientific Interest (SSSIs). The A' Mhoine peninsula is known for its extensive blanket bog habitat and deep peat in particular, on which a variety of rare and important bird species depend, many of which are extremely sensitive to disturbance, particularly during the breeding season (April to July inclusive). There will be likely impacts for birds commuting over or past the site; as well as residing within the site's vicinity. It is not currently known what levels of noise pollution, light pollution and vibration the rocket launches would cause, so it is not clear how far around the development site (laterally and vertically) the likely impacts would extend.

Development on designated sites should be avoided. However, it is important to note that there may be indirect adverse impacts on species for which wildlife sites are designed.

Therefore, the disturbance and displacement impact of noise, light, vibration, personnel/vehicle presence (e.g. patrols), loss of habitat, on these protected species and habitats must thoroughly assessed for the development which should then inform the airspace change application.

A reasonable exclusion zone objectively based on safety and security requirements that is time bound in accordance with the launch programme
As a SAR operator, we would need the ability to approach all areas in the vicinity, both safely and in a controlled and timely manner

Please let us know if there are any day-time or night-time specific constraints that you consider HIE could take into account when considering the airspace solution required to protect the vertica...	Please inform us of who you consider to be the other key non-aviation stakeholders that you believe HIE should engage with during the process of designing an airspace solution. Please provide con...
None	ONR [redacted]
Detailed comments were provided in our scoping letter dated 11 July 2019. Impacts on birds in the airspace from launches are likely to be similar, day or night. However, floodlighting and light emitted from launches at night could also have a negative impact on sensitive bird species. Such displacement and disturbance would be particularly detrimental during the breeding season. If there is lighting it should be designed to minimise light pollution into the surrounding area.	We are not aware of any other particular stakeholders, apart from the local community.

n/a	A significant and regular number of US / UK aircraft ferry movements take place throughout the year. These aircraft typically route bakwards and forwards from Iceland. Large exclusion areas accompanied with extended periods will significantly impact this traffic resulting in financial consequences to both operators and resuppliers such as Far North Aviation at Wick John O Groats airport.
As per point 4	

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

none

As stated above and in our scoping letter dated 11 July 2019, potential vibration and noise during construction and operation of the site is a key concern, especially with regards to likely impacts on the qualifying species of the SPA. SPA's and SAC's have special legal protection. The EIA Report must include sufficient information to inform The Highland Council's Habitat Regulation Appraisal including any Appropriate Assessment. If the potential impacts of the proposal cannot be sufficiently mitigated and there could be adverse impacts on the integrity of any SPA or SAC, then it is unlikely that the Council would be able to grant consent in accordance with the Habitat Regulations requirements.

We are also uncertain of the potential environmental impacts of the LV propulsion system during lift-off and any associated sonic booms.

For example, noise assessment at any eagle eyries within 6km should be undertaken and include an assessment of any impacts resulting from sonic booms. We would also recommend a noise assessment at any regular greylag and barnacle goose roosts and foraging areas linked to the North Sutherland Coastal Islands SPA and the Caithness and Sutherland Peatlands SPA and Ramsar site.

We have concerns that it may not be possible for birds to habituate to activities on site which may result in disturbance to breeding birds that are looking after eggs or dependant young. As noted above, the disturbance and displacement impact of noise and vibration from launches and personnel/vehicle presence (e.g. patrols), on species will need to be thoroughly assessed through the EIA process.

An MOU would appear proportionate.
Yes, we would need to discuss 24hr, 365 day access to the site and associated area in a controlled and timely manner

Please tell us of any locations of any particularly sensitive wildlife habitats, not already notified (linked to AONB, SSSI etc), that might be sensitive to noise from the vertical space launch area.	A thorough Environmental Impact Assessment is being conducted by HIE as part of the Planning Application process. Are there any specific environmental factors
none	none
There are a number of nationally and internationally protected sites in the area. This includes the following which are designated for bird species that may be sensitive to noise: •Caithness and Sutherland Peatlands Special Protection Area •A' Mhoine Site of Special Scientific Interest (SSSI) •North Sutherland Coastal Islands Special Protection Area •Foinaven SPA and SSSI •Eilean Hoan SSSI •Eilean nan Ron SSSI •Caithness and Sutherland Peatlands Ramsar The following protected area is designated for mammal species that may be sensitive to noise: •Caithness and Sutherland Peatlands Special Area of Conservation	RSPB Scotland provided a detailed response in relation to the scoping request in our letter dated July 2019. The environmental factors associated with the airspace are affected. For instance, any commonly used bird migration flyways or foraging routes over the site should be investigated. The proposal should be designed so that there are no adverse effects on the integrity of European sites and no unacceptable impacts on protected species and habitats.

Traffic into Wick from or to the US generally centres on day-time operations therefore night time operations would have a lesser impact. I personally would be operating daylight hours only therefore night time operations are of no consequence in aviation terms.	
24hr access required, deconfliction required to ensure	

Are there any other local development projects that HIE should be aware of and consider when planning its airspace solution for the Space Hub Sutherland? Please provide details.	HIE 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
no	Vulcan NRTE (already engaged).
Full comment is made in our letter dated 11 July 2019 in relation to the scoping request. All developments (operational, consented and at scoping) with known and predicted impacts on migration routes and commuting routes for the same bird populations associated with NHZ 5 and the SPAs, SSSIs and Ramsar sites should be considered in combination with the Spacehub airspace application in order to assess cumulative impacts.	Environmental Research Institute (ERI), Thurso Highland Raptor Study Group

Far North Aviation [redacted]- Ferry and refueling operations for Northern Scotland	Will limit my GA freedoms however content that if airspace management is proportionate and time bound the impact will be minimal.
	Like all restrictions, we need the ability to access quickly and safely

Please state any principles you believe that HIE 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 ...
The Environmental Impact Assessment should inform required mitigation. However, avoidance of disturbance during bird breeding seasons is likely to be an important consideration. There is a climate emergency and peatland and active blanket bogs are capable of absorbing and storing large amounts of carbon dioxide. In addition to the direct emissions from launches, the construction and operation of the site, it is likely that peatland will be lost and damaged during the construction of this scheme resulting in increased carbon emissions. Deep peat and particularly sensitive areas should be avoided. The design of all roads and infrastructure and the operation of the site should be designed to minimise carbon emissions. Scottish Planning Policy (SPP) states that new development needs to contribute to achieving 4 planning outcomes, including 'A low carbon place – reducing our carbon emissions and adapting to climate change'. Paragraph 205 states that where peat and other carbon rich soils are present, applicants should assess the likely effects of development on carbon dioxide (CO2) emissions and developments should aim to minimise this release. The EIA should assess likely effects on CO2 emissions for construction and the lifetime of the development.

All of the above that allow 24/7 SAR to happen

Please advise us of any other issues or constraints you feel HIE could consider when designing its new airspace solution to protect the vertical space launches. Please provide details.
We have no further issues to add at this stage.

Installation of innovative equipment designed to scrub air of CO2 emmissions.