

# Space Hub Sutherland Design Principles

Stakeholder Review Document



Highlands and Islands Enterprise  
Iomairt na Gàidhealtachd 's nan Eilean

# Space Hub Sutherland Airspace Change Proposal

## Introduction

Highlands and Islands Enterprise (HIE) is very grateful to those stakeholders who have already engaged with this process and for the views provided by the various representative bodies and individuals. The responses we have received have helped us to develop a comprehensive list of potential Design Principles that reflect the comments made during Focus Group meetings and from completed questionnaires. We are now sharing those Design Principles with all stakeholders for your views.

It is stressed that this engagement takes into consideration only those factors that affect the design of the Space Hub Sutherland (SHS) Airspace Change Proposal (ACP). Comments relating to the construction of the spaceport and launch activities themselves are addressed in other workstreams and regulatory activities.

The Design Principles will be used as the qualitative framework against which different design options will be considered. It is therefore important that your views have been accurately captured. This document has been prepared to share the potential Design Principles and we now need your help to provide further comment and to help us understand which Design Principles are most important to you or your organisation.

Any changes to airspace arrangements must maintain or enhance safety. This is the main priority of the CAA in accordance with its statutory duties set out in Section 70(1) of the Transport Act 2000. For the SHS ACP, the principal aim is to provide protection to airspace users for whom launch activities might pose a hazard. Safety is therefore the overarching principle against which the design options will be developed.

In addition, the airspace designed for Space Hub Sutherland will be managed by a Range Control Service Provider, in receipt of a Range Control Licence under the Space Industry Act (2018). However, the regulations governing the provision of a Range Control licence have not yet been finalised. As a result, the airspace management procedures identified in this ACP will be drafted so they can dovetail with the future requirements of the Range Control Service Provider.

## Stakeholder Review Requirement

Please review the Design Principles listed in Error! Reference source not found. below. For each one, we would like you to state whether or not you agree that the statement constitutes a Design Principle. If you do not agree, please provide detailed comments in the box provided.

In addition, we would like you to rank the Design Principles according to your, or your organisation's priorities. Please rank the Design Principles from 1 (Highest priority) to 12 (Lowest priority). If you feel any of the Design Principles are not applicable to you, please mark them as '0'. Please add any amplifying comments that you wish to include within the comments box.

If you would like to provide additional comments, raise any concerns that you feel have not been considered, or suggest any additional Design Principles, please complete Table 2.

## How to Respond

Please save the file that includes your responses and attach it to an email to the following address:

[spacehubsutherland@hient.co.uk](mailto:spacehubsutherland@hient.co.uk)

In addition to attachments in MS Word, we will accept .pdf, scanned, hand-written or email responses, as long as they are legible and clearly identify the Design Principle to which your response relates.

It is important that individual email responses clearly show your name and contact details; this will allow us to cross-refer to the emails that we send out.

We will also accept legible postal responses to the following address within the timescales specified below:

Airspace Change Proposal  
Space Hub Sutherland  
Osprey Consulting Services Limited  
Suite 10,  
The Hub,  
Fowler Avenue  
Farnborough  
GU14 7JP

**Responses must reach us no later than 12.00 mid-day 07 November 2019**

## Next Steps

The development of Design Principles will mark the completion of Stage 1 (Define Stage) of the SHS ACP. The response you now provide will help us to refine the Design Principles ahead of the Civil Aviation Authority (CAA) DEFINE Gateway, the first of four gateways in the seven stage CAP 1616 process.

Passing the CAA DEFINE Gateway will allow us to begin detailed airspace design work. Further engagement will be undertaken during the design phase, ahead of the DEVELOP and ASSESS Gateway which is currently planned for 31 January 2020. It is anticipated that formal consultation will be conducted no earlier than May 2020. HIE will ensure any views expressed through this earlier engagement activity will also be recorded to inform the full consultation report.

## Review of Design Principles

### Your Responses

Please complete Table 1 and Table 2 below in line with the information provided in Section 1. Please use as much space as you require, the size of the response box will expand as you type your response.

	Design Principle	Rationale	Do you agree this is a Design Principle? (Yes or No)	How would you rank this Design Principle as a priority? (1-12 or 0)
DP1	The safety of other airspace users is the paramount consideration in the design of the ACP.	SIA (2018) makes reference to ‘aircraft to which spaceflight activities might pose a hazard and aircraft that might pose a hazard to spaceflight activities’, so covering both eventualities.		
<b>Comments:</b>				
DP2	In accordance with Flexible Use of Airspace (FUA) principles, the volume of segregated Special Use Airspace (SUA) defined will be of the minimum dimensions necessary, activated for the minimum duration required, to ensure the safety of other airspace users whilst minimising its impact.	<p>The background classification of the airspace will remain Class G (uncontrolled).</p> <p>The term ‘other airspace users’ includes Commercial Air Transport (CAT), military aircraft and General Aviation (GA) and includes both fixed wing aircraft and helicopters. Although segregated SUA is being considered as the most likely solution, other methods such as ‘clear range’ as used by naval forces, will also be investigated.</p> <p>As it is assumed that the airspace will be segregated for the duration of the spaceflight activity, it is unlikely that solutions such as Radio Mandatory Zones (RMZs) and Transponder Mandatory</p>		

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		<p>Zones (TMZs) would be appropriate.</p> <p>The dimensions of the required volume of airspace will be defined by the trajectories required by spacecraft launching from SHS, supplemented by a launch safety analysis of various failure modes.</p> <p>To cater for a variety of launch vehicles, the airspace designed could form a mosaic of sectors, with only the specific sector required for a given launch activated at any one time. A small zone in the immediate vicinity of the spaceport may also be required for potentially hazardous, but non-launch, activities, such as fuelling.</p>		
<b>Comments:</b>				
DP3	SHS will only be for vertical launches to put small satellites into orbit.	No horizontal launches or manned spaceflights are proposed from SHS and there will be no runway associated with the site.		
<b>Comments:</b>				
DP4	The SHS ACP shall take into account the implications for SUA of Free Route Airspace (FRA) and CAP 1711, which will impact upon the design of associated Flight Planning Buffer Zones (FBZ) and on	The CAA is leading the UK Flexible Use of Airspace State Project (FSP) and, with NATS and the Ministry of Defence (MOD), is looking at Advanced Flexible Use of Airspace (AFUA). AFUA is considering the processes, decision-making and technology required to optimise the management of airspace including the notification, promulgation and activation of SUA. It is understood that the MOD is engaged with NATS as a stakeholder in their FRA		

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	notification requirements.	ACP. Where appropriate, the SHS ACP would like either to contribute to, or be informed by, ongoing discussions on AFUA.		
<b>Comments:</b>				
DP5	The SHS ACP shall employ current and evolving best practice in the notification, activation and deactivation of the SHS airspace.	It is recognised that for the implementation of the SHS ACP to be successful, effective interagency planning and coordination will be essential. This will include notification and coordination (in accordance with recognised timescales) utilising the UK Airspace Management Cell (AMC) and the EU Network Manager via the Airspace Usage Plan (AUP). Such notifications could employ automated processes such as the EUROCONTROL Airspace management tool LARA ( <a href="#">see LINK</a> ).		
<b>Comments:</b>				
DP6	As part of the design process, the priority afforded to the proposed airspace will need to be agreed, and subsequently managed, in line with government priorities and taking account of, for example, adjacent MOD FUA.	<p>Procedures will need to be in place to allow the transit of priority aircraft including Category A (e.g. aircraft in emergency), Category B (e.g. Search and Rescue) and, in addition, Defence Operational Tasking (e.g. Air Defence Priority Flights).</p> <p>On a broader scale, priorities will also need to be agreed between NATS, MOD and the SHS airspace operator, and 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 network ability to maintain a viable solution for commercial aviation.</p> <p>The activation of the SHS SUA should also take account of large-scale biannual military exercises, with their associated temporary</p>	No issue raised	Nil

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		segregated airspace.		
<b>Comments:</b>				
DP7	The airspace design shall include the development of Letters of Agreement (LoA) and Memoranda of Understanding (MoU) between relevant parties.	NATS is working with the UKSA and CAA to provide 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.		
<b>Comments:</b>				
DP8	The airspace design will aim to minimise the re-routing of aircraft, including those low-flying.	The re-routing of aircraft, especially those low-flying, could result in additional disturbance for breeding and wintering populations of birds in north Sutherland, which will be carefully considered in the development of the ACP.		
<b>Comments:</b>				
DP9	The proposal will comply with internationally recognised norms for related spaceflight activities that transit the airspace of other states.	The trajectories of spacecraft launching from SHS are likely to include the overflight of other states' airspace. It is understood that UK government is already in discussion with neighbouring states likely to be affected and the ACP will be guided by the outcome of those discussions.		
<b>Comments:</b>				
DP10	The ACP may seek to legally prohibit overflight of some areas associated with the SHS	There may be a requirement, rather than only to notify other airspace users of spaceflight activities from SHS by the activation of SUA, to legally prohibit overflight of some areas. If this proves		

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	operation through the application of byelaws or Statutory Instruments (SIs).	to be the case, the ACP will be developed to include this requirement.		
<b>Comments:</b>				
DP11	HIE will be required to undertake an Environmental Assessment associated with the re-routing of aircraft to avoid SUA.	The SHS ACP is not associated with an airport. While there are environmental impacts associated with spaceflight launch from SHS, with the exception of aircraft rerouted to avoid SUA, there are no aviation environmental effects associated with the proposal. Therefore, many of the aviation-related environmental impacts required by CAP 1616, such as 16 hr LA <sub>eq</sub> and 8 Hr LA <sub>eq</sub> Noise Contours, CO <sub>2</sub> emissions, tranquillity and local air quality are not applicable to the ACP. Environmental impacts will be fully addressed in other regulatory activities associated with the SHS, such as the site Planning Application and Spaceport, Range Control and Operator licence applications.		
<b>Comments:</b>				
DP12	The ACP will take into account other regulatory requirements associated with SHS and, where available and appropriate, will reuse existing assessments	The secondary legislation and guidance associated with the SIA (2018) has not yet been issued. The Act includes the requirement for the issue of several licences associated with operations from SHS, such as a Spaceport Licence, Range Control licence and Operator licence. The ACP will take account of any requirements associated with these various licences in its development.		



If there are any other areas of concern that you feel have not been considered, please provide additional comments below.

Comments:

Are there other Design Principles not included in the list that you feel should be considered as candidates for the final shortlist? If so, please provide your comments.

Comments: