

ACP-2017-79
SHETLAND SPACECENTRE LIMITED
AIRSPACE CHANGE PROPOSAL
CAP1616 STAGE 2 SUBMISSION

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INTRODUCTION

1. This document is submitted to the CAA ACP Portal for assessment by the CAA as part of the CAP1616 Stage 2 “Develop & Assess” gateway process for ACP-2017-79.

AIM

2. The aim of this document and accompanying PowerPoint presentation is to demonstrate that the Airspace Change Sponsor, Shetland Spacecentre Limited, trading as SaxaVord Space Port Limited (hereinafter referred to as “SaxaVord”), has:

- a. Produced an airspace change design option, recognising that “sometimes there will only be limited scope for multiple design options, with few realistic options available”.¹
- b. Engaged with relevant stakeholders to explore this option to the CAA’s satisfaction against the requirements in CAP1616 Appendix C.
- c. Produced design principle evaluations that the CAA can accept, showing how the design option responds to the design principles (DPs).
- d. Produced a corresponding initial option appraisal (Phase I).

OPTION APPRAISAL

3. SaxaVord has provided a summary each of its DPs for the airspace design option proffered. These summaries, set out in Tables 1-10 below, provide a high-level assessment of whether the DP is “met”, “partially met” or “not met”. It should be noted that, where SaxaVord offers an assessment of “partially met” against a particular DP, this reflects that the corresponding activity is in progress and is not anticipated to be completed successfully until a later Stage in the CAP1616 process.

4. At Table 11, SaxaVord has replicated the Stage 2 Develop & Assess process diagram from CAP1616² and, where appropriate, offered additional commentary and linkages to the attached PowerPoint presentation, demonstrating SaxaVord’s adherence to the CAP1616 Stage 2 process requirements and guidance³, pertaining to the ACP-2017-79 airspace design option.

1. CAP1616, Page 40, Para 127.

2. *id*, Page 45.

3. *id*, Page 22, Para 65.

DESIGN PRINCIPLE EVALUATION

Design Principle Evaluation		OPTION NO: N/A		
<i>Option Name:</i>	N/A	ACCEPT/REJECT		
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.				
<i>Design principle:</i> DP1. The safety of other airspace users and the public is the paramount design principle to be used in the [ACP].	NOT MET	PARTIAL	MET	
<i>Summary of Qualitative Assessment</i>				
<p>The design option accommodates multiple launch scenarios, comprising orbital and sub-orbital launches of differing types of launch vehicles with differing operating parameters.</p> <p>The dimensions of the design option ensure the safety of other airspace users from SaxaVord launch activities and the safety of SaxaVord launch activities from other airspace users.</p> <p>The design option also minimises the size of the overland airspace in the immediate vicinity of the launch site and ensures the avoidance of overflight of adjacent international land masses.</p> <p>As agreed with the CAA on 31 Jan 22, ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090.</p>				

Table 1 - ACP-2017-79 - DP1

Design Principle Evaluation		OPTION NO: N/A	
<i>Option Name:</i>	N/A	ACCEPT/REJECT	
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.			
Design principle: DP2. The environmental and noise effects of rocket launch should be minimised by the design of the airspace change.	NOT MET	PARTIAL	MET
<p><i>Summary of Qualitative Assessment</i></p> <p>The geographic location of the proposed launch site, local population density and the use of vertical launch rockets, in conjunction with the expected trajectories, will help minimise the noise impact of the operation.</p> <p>As part of both the planning process and Spaceport Licensing (for which the CAA is the regulatory authority), SaxaVord has carried out detailed environmental impact analyses and assessments, in particular noise and air quality. All of the supporting documents can be viewed on the Shetland Islands Council planning website at the following link. These documents show the minimal environmental impact from rocket launch operations at Lamba Ness, and, where appropriate, potential mitigation strategies, such as water deluge systems, to suppress engine noise while the rocket is on the launch pad.</p>			

Table 2 - ACP-2017-79 - DP2

Design Principle Evaluation		OPTION NO: N/A	
<i>Option Name:</i>		ACCEPT/REJECT	
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.			
Design principle:			
DP3. The airspace volume should be as small as possible to minimize the impact on and ensure the safety of other airspace users.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment</i>			
<p>The design option accommodates multiple launch scenarios, comprising orbital and sub-orbital launches of differing types of launch vehicles with differing operating parameters.</p> <p>The dimensions of the design option ensure the safety of other airspace users from SaxaVord launch activities and the safety of SaxaVord launch activities from other airspace users.</p> <p>A modular airspace volume designed to accommodate orbital launches would also accommodate sub-orbital launches; consequently, the airspace volume will be as small as possible, thereby minimising any impact on other airspace users.</p> <p>As agreed with the CAA on 31 Jan 22, ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090.</p>			

Table 3 - ACP-2017-79 - DP3

Design Principle Evaluation		OPTION NO: N/A	
<i>Option Name:</i>		ACCEPT/REJECT	
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.			
Design principle: DP4. The duration of the airspace activation should be the minimum required to minimize the impact on and ensure the safety of other airspace users. The possible impact of concurrent operations of other airspace should be considered.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment</i> As agreed with the CAA on 31 Jan 22 , ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090 . As such, SaxaVord is actively engaged with other airspace users and international stakeholders to develop notification and coordination procedures to enable the identification of suitable launch windows to minimise disruption to the network and other airspace users.			

Table 4 - ACP-2017-79 - DP4

Design Principle Evaluation		OPTION NO: N/A	
<i>Option Name:</i>		ACCEPT/REJECT	
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.			
Design principle: DP5. Airspace notification should be timely and accurate with an established method for rapid notification.	NOT MET	PARTIAL	MET
<p><i>Summary of Qualitative Assessment</i></p> <p>As agreed with the CAA on 31 Jan 22, ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090.</p> <p>As such, SaxaVord is actively engaged with other airspace users and international stakeholders not only to understand their respective information requirements, but also to develop the requisite notification and coordination procedures to enable the timely and accurate passing of information essential to the safe and efficient conduct of both launch operations and those of other airspace users.</p> <p>Furthermore, as part of the Space Range Operators license application (for which the CAA is the regulatory authority), SaxaVord continues to engage with impacted national and international stakeholders to agree notification and coordination procedures.</p>			

Table 5 - ACP-2017-79 - DP5

Design Principle Evaluation		OPTION NO: N/A		
<i>Option Name:</i>		ACCEPT/REJECT		
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.				
Design principle:				
DP6. A process to allow some special airspace users to enter the airspace safely and halt launch operations should be established.		NOT MET	PARTIAL	MET
<p><i>Summary of Qualitative Assessment</i></p> <p>As described above in DP5, this is part of the Space Range Operators license application (for which the CAA is the regulatory authority); where appropriate, agreements with organisations such as the MOD and the Maritime and Coastguard Agency (MCA) are being finalised.</p> <p>SaxaVord is actively engaged with other airspace users and international stakeholders to develop the requisite notification and coordination procedures to suspend launch operations to allow specific special airspace users to access the airspace safely.</p> <p>As agreed with the CAA on 31 Jan 22, ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090.</p>				

Table 6 - ACP-2017-79 - DP6

Design Principle Evaluation		OPTION NO: N/A		
<i>Option Name:</i>		ACCEPT/REJECT		
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.				
Design principle:				
DP7. Other International airspace agencies should be included in the airspace design process.		NOT MET	PARTIAL	MET
<p><i>Summary of Qualitative Assessment</i></p> <p><i>(Repeat for Each Design Principle)</i></p> <p>As agreed with the CAA on 31 Jan 22, ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090.</p> <p>SaxaVord is actively engaged with international airspace users and stakeholders.</p>				

Table 7 - ACP-2017-79 - DP7

Design Principle Evaluation		OPTION NO: N/A		
<i>Option Name:</i>		ACCEPT/REJECT		
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.				
Design principle: DP8. Airspace design should meet duties and requirements of other public agencies placed upon [SaxaVord].		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment</i> As part of the Space Range Operators license application (for which the CAA is the regulatory authority), SaxaVord must engage with other public agencies, in particular maritime agencies. SaxaVord will continue to consult with these bodies throughout both the ACP and Range licensing processes, to ensure their requirements are met.				

Table 8 - ACP-2017-79 - DP8

Design Principle Evaluation		OPTION NO: N/A		
<i>Option Name:</i>		ACCEPT/REJECT		
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.				
Design principle: DP9. Letters of Agreement and Memoranda of Understanding will be developed, if required, between relevant parties.		NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment</i> <i>(Repeat for Each Design Principle)</i> As agreed with the CAA on 31 Jan 22 , ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090 . Whilst the development of the requisite LOAs and MOUs will be an integral part of Stage 3, this duty is part of the Space Range Operators license application (for which the CAA is the regulatory authority). SaxaVord is actively engaged with other airspace users and national and international stakeholders to understand their respective information requirements and develop the requisite notification and coordination procedures; where necessary, such procedures are evolving into formal letters of agreement (LOAs) and memoranda of understanding (MOUs).				

Table 9 - ACP-2017-79 - DP9

Design Principle Evaluation		OPTION NO: N/A	
<i>Option Name:</i>		ACCEPT/REJECT	
<i>Description of option:</i> Airspace design to support vertical orbital and sub-orbital launch operations from SaxaVord Space Port, Unst, Shetland Islands.			
Design principle:			
DP10. The airspace change will take account of ongoing and continuing airspace management and policies.	NOT MET	PARTIAL	MET
<i>Summary of Qualitative Assessment</i>			
As agreed with the CAA on 31 Jan 22 , ACP-2017-79 will be informed by the ongoing activities associated with the SaxaVord Temporary ACP application (ACP-2021-090). This interdependency is also specified in the agreed Statement of Need for ACP-2021-090 .			
The engagement process will see SaxaVord engaging the relevant parties responsible for the continuance of airspace management and associated policy and regulation, within the UK and internationally.			

Table 10 - ACP-2017-79 - DP10

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STAGE 2 - DEVELOP & ASSESS PROCESS⁴

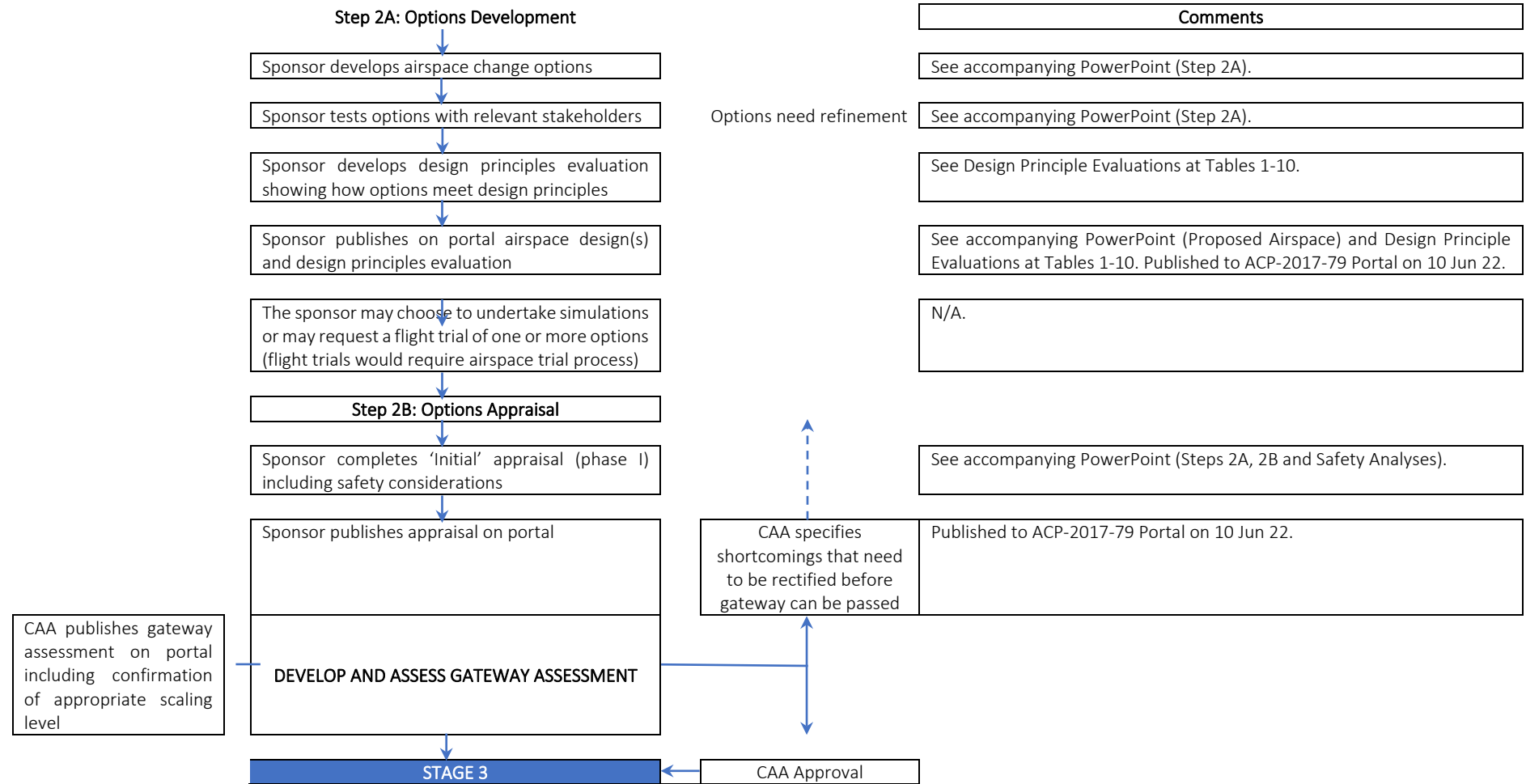


Table 11 - ACP-2017-79 - DP1

4. *id*, Page 45.

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