Spaceport 1 Scolpaig Outer Hebrides – ACP Assessment Meeting

Briefing Prepared by:

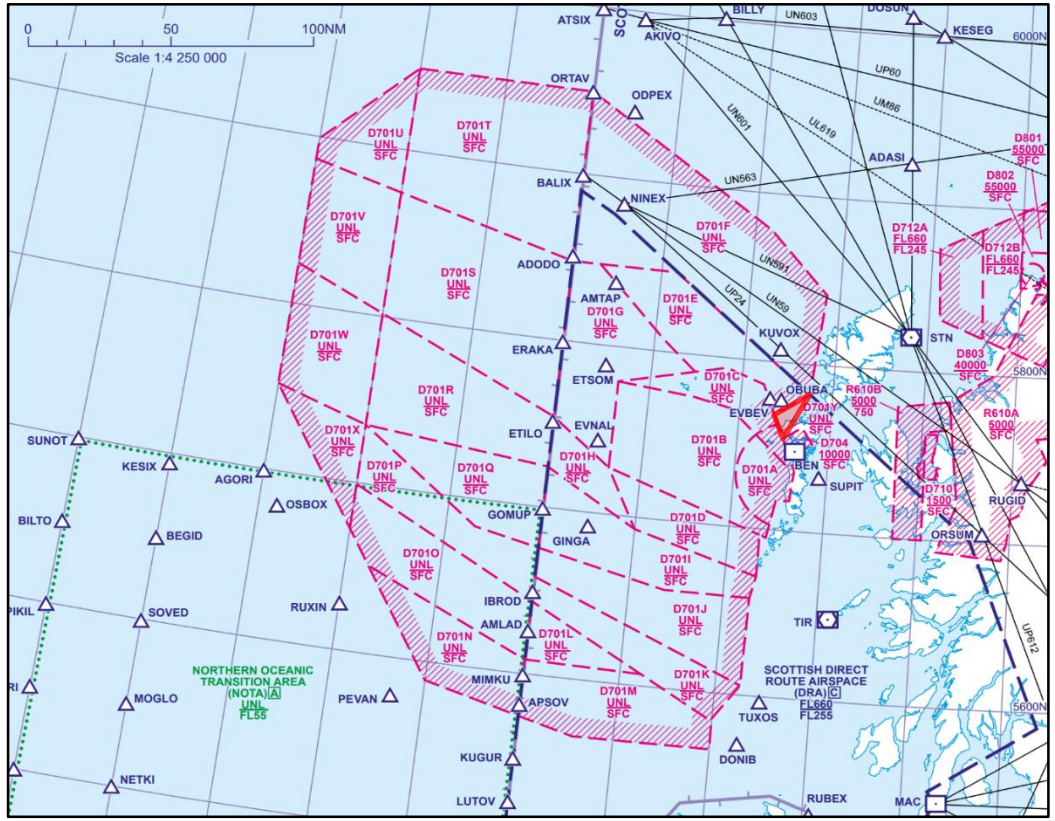
V1.3 dated 25 March 2021

ACP Stage 1 DEFINE – Assessment Meeting

1. Introductions
2. Background
3. Statement of Need
4. Issues and Opportunities arising from proposed change
5. Options to exploit opportunities or address issues identified
6. Provisional Timelines
7. Next Steps
8. AOB

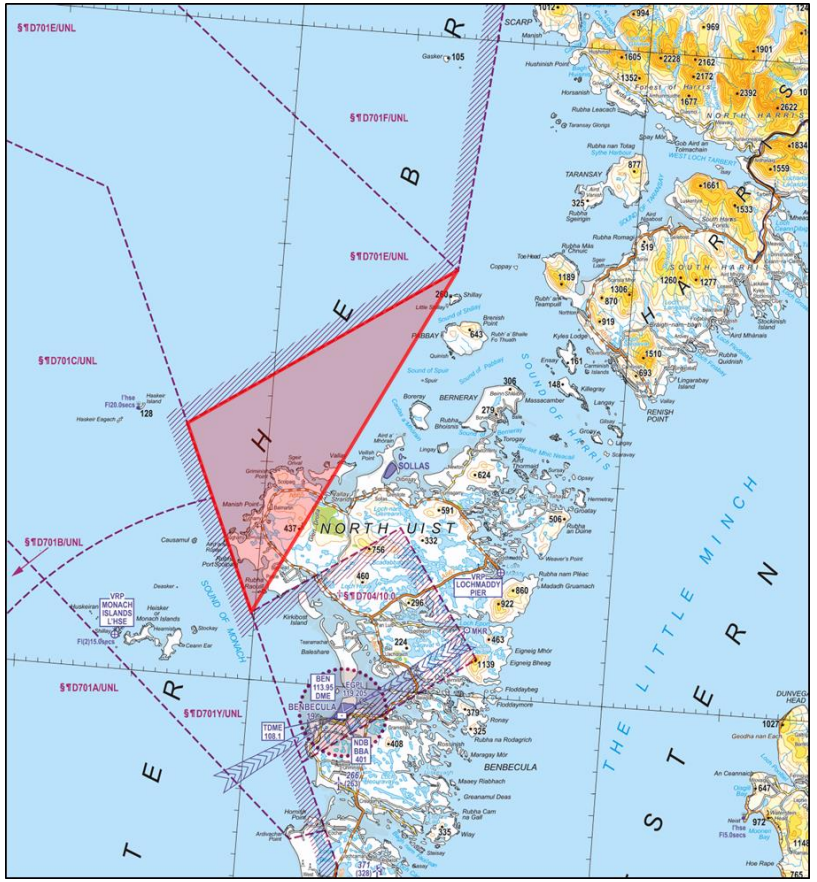
Background – SP1

- QinetiQ Manage the MOD sponsored Hebrides Range Danger Areas (EG D701)
- QinetiQ collaboration with MOD to enable access – MOD Memo
- SP1 consortium led by local council comprising Highlands & Islands Enterprises, private investors and QinetiQ
- Location – Scolpaig North Uist, Outer Hebrides
- Site sits beneath Class G, adjacent to EG D701 and EG D704
- ACP required to protect launch site/other airspace users and connect to existing Danger Areas
- SP 1 - 2 Phases:
  - Phase 1 - ‘Sounding rocket’ sub-orbital launches to West
  - Phase 2 - Small satellite orbital launches to North/North East



Statement of Need

- Opportunity under government ‘LaunchUK’ space programme
- Local government investment programme for vertical launch small satellite site
- Generate revenue for local communities and jobs
- Low population, immediate ‘over the sea’ access
- Adjacent MOD Danger Areas D701/D704 providing safe testing environment
- Use irreducible spare capacity of Danger Areas
- Capitalise extant ASM procedures for Hebs Range
- Utilise full Range capabilities, surveillance/tracking/communications/FTS
- ACP for a small fillet of airspace to connect site to Hebs Range

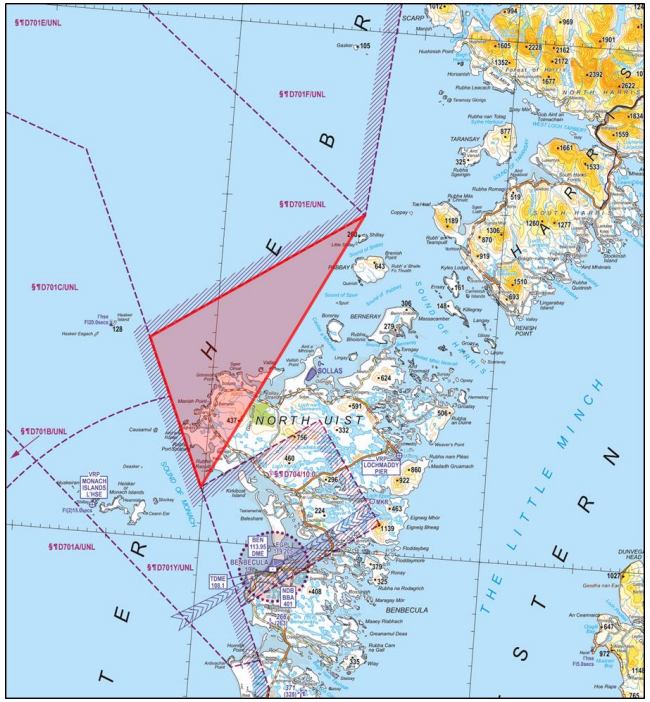


SPACE PORT 1

QINETIQ

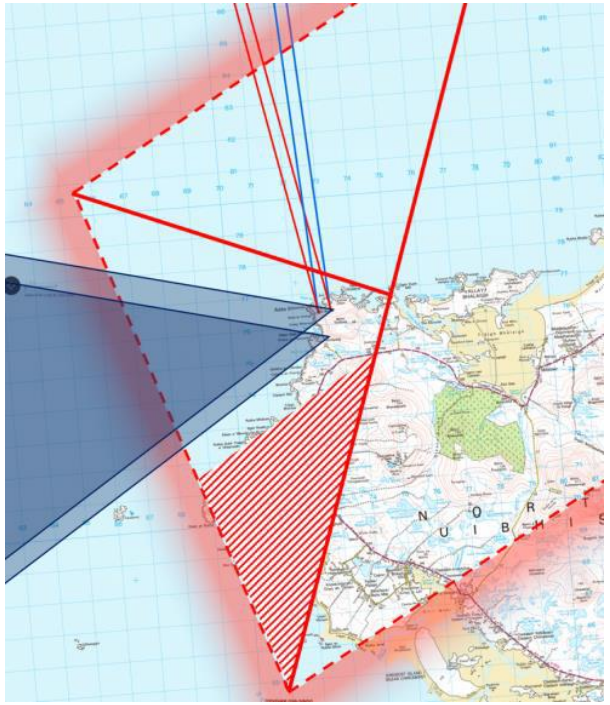
Options

Option 1



Option 1 will satisfy both Sounding Rockets and Polar/Sun Synchronous launches

Option 2

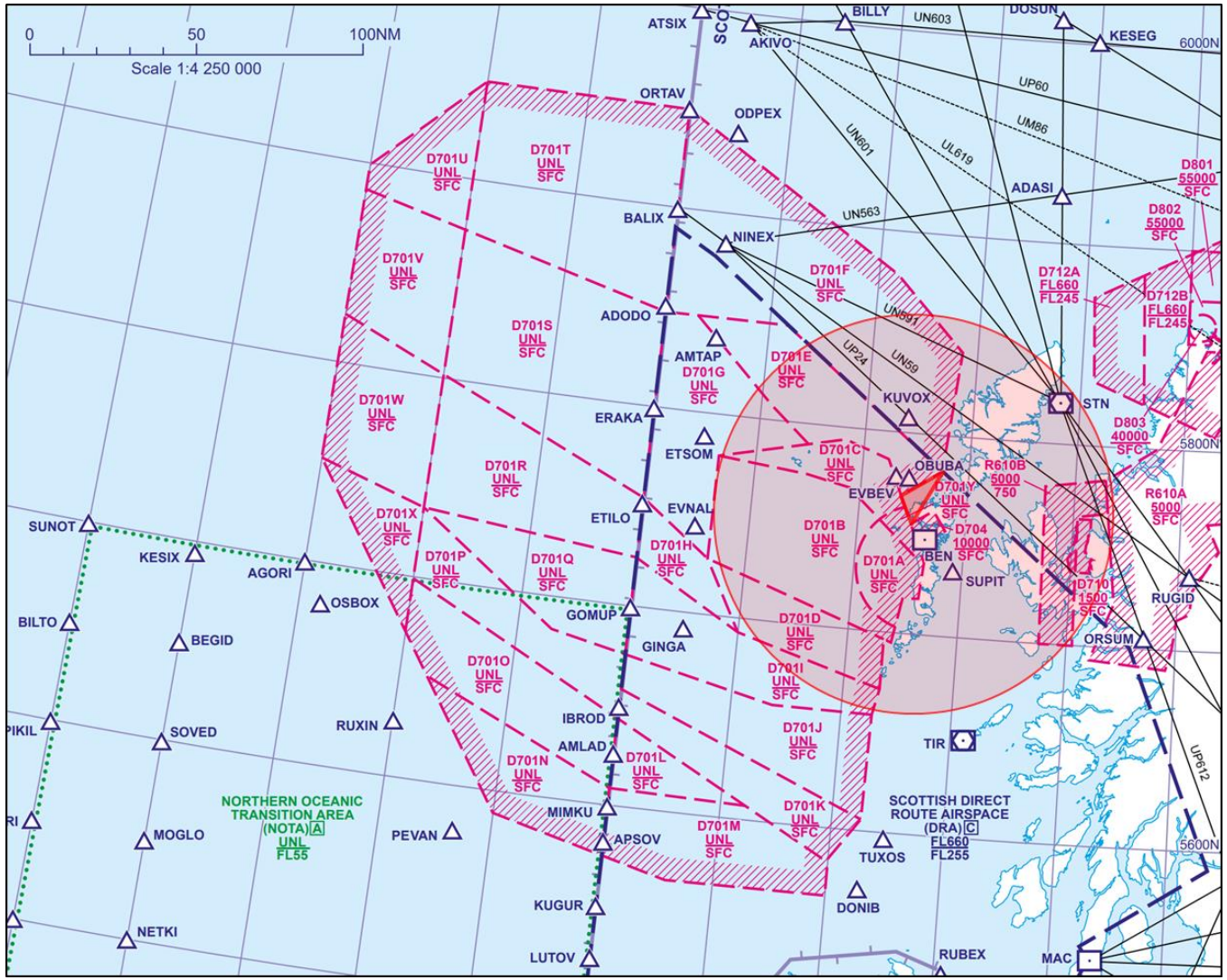


Option 2 allows less airspace to be active for Sounding Rockets. Hatched area may not be needed

SPACE PORT 1

QINETIQ

ACP Relative To Hebrides Danger Areas EG D701 and D704 – Potential Affected Area as per SoN



- Affected area is relatively small from an airspace perspective, even with the larger of two options
- The ACP SoN uses a circle of approximately 30 NM radius in order to capture a wide area of those potentially affected by the airspace change – we consider:
  - Potential Noise
  - Potential light pollution/i.e. launch may be visible from several miles away

SPACE PORT 1

QINETIQ

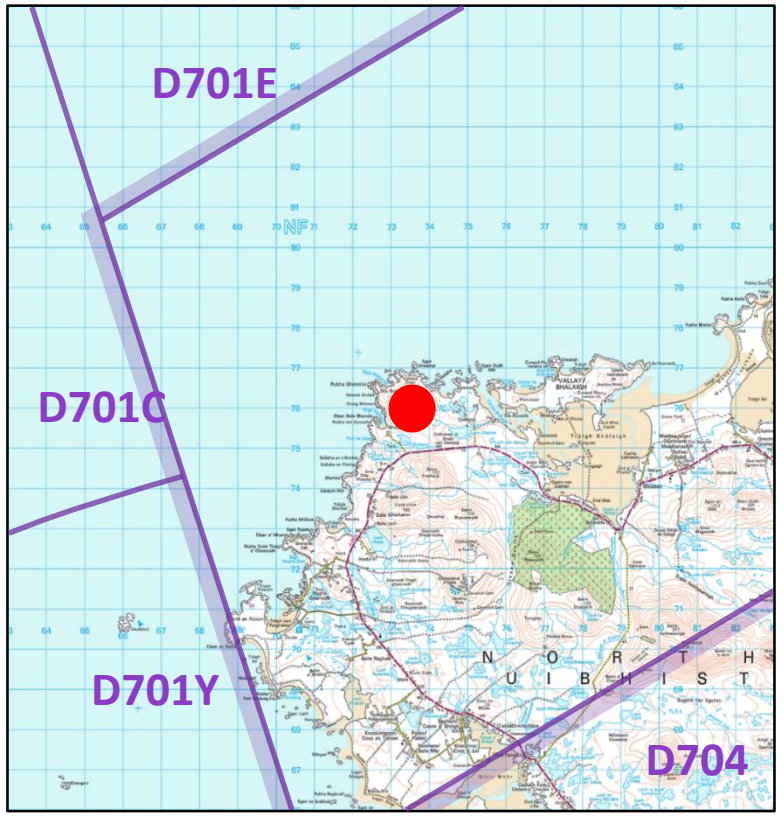
Issues and Opportunities

Issues:

- SP1 site sits beneath Class G airspace - hazardous activity (rocket launch) will require segregation
- ACP will provide the necessary segregated airspace with minimum impact on other airspace users
- Increase use of EG D701 – Potential impact on CAT
- Potential impact on Northern Lighthouse board & Fisheries protection/survey flights/SAR
- No impact on Benbecula airport operations but could increase ATC workload

Opportunities:

- Principle opportunity = enablement use of suborbital and orbital vertical launch operations from Scolpaig



SPACE PORT 1 QINETIQ

Options to Exploit Opportunities & Address Issues

Exploit Opportunities:

- Exploit the UK governments LaunchUK programme and assist in growing the UK's global market share of the space sector.
- Enabling rocket developers to conduct testing in an existing safe and fully instrumented environment that is the Hebrides Range.
- Using irreducible spare capacity of Danger Areas without the need to develop large new areas of segregated airspace
- Exploiting QinetiQ's experience in rocket launch from ASD/FS ballistic missile defence exercises
- Market for scientific use of suborbital rockets a growth market, real opportunity to exploit this market
- Exploit use of an affordable launch site that is likely to be a market accelerator for and in the UK
- Strong market demand for both test and scientific suborbital launch – several companies in discussion with SP1

SPACE PORT 1

QINETIQ

Options to Exploit Opportunities & Address Issues

Exploit Opportunities – continued:

- Opportunity to provide much needed revenue and job openings for the local community
- Increased revenue for supporting sectors in particular Benbecula airport (HIAL), Loganair and local tourist industry

Addressing Issues:

- Minimise impact on CAT by avoiding peak periods, DAs fully integrated into existing ATM systems enabling harmonised and dynamic planning
- Benbecula airport LOA with QinetiQ expanded to capture SP1 activities
- QinetiQ can micro manage DAs expeditiously between MOD and SP1 use with opportunity for coincident activities, embracing FUA concepts
- Airspace only activated when needed; infrequent use
- Extant Range procedures easily expanded to capture SP1 activities for Northern Lighthouse board, Fisheries protection/survey and SAR

SPACE PORT 1

QINETIQ

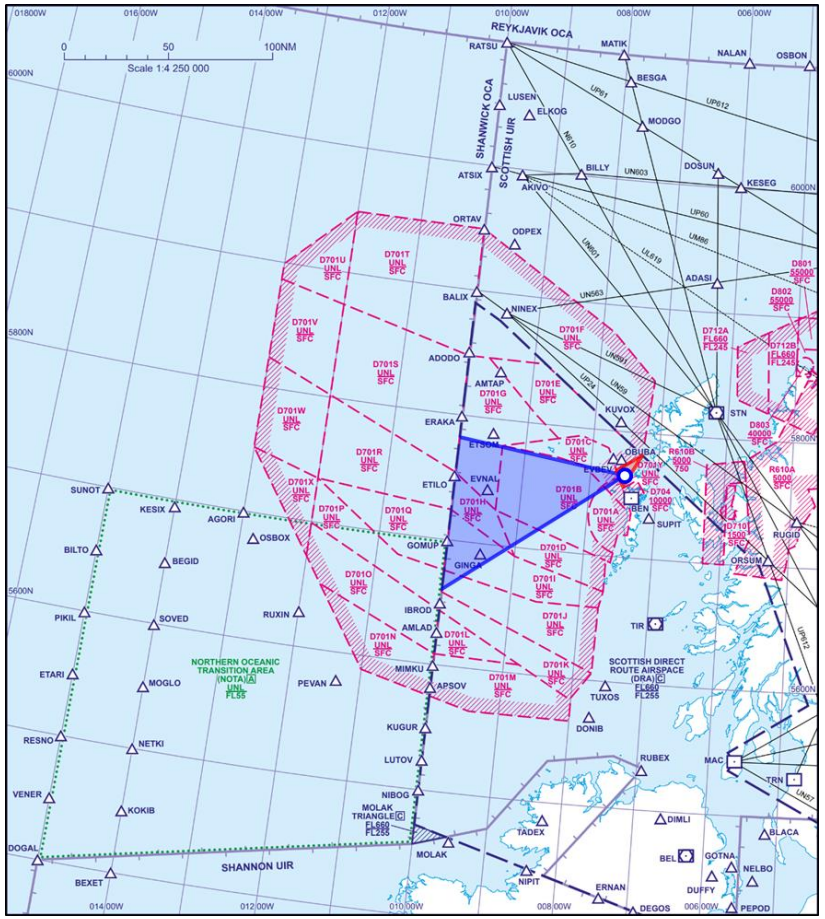
Timelines - First Launches

- These will be suborbital ‘Sounding Rockets’, contained within D701 complex – Approvals under ANO (rocket capability < 50Km <10,240Ns or large rocket permission), possible TDA requirement by Sep 21
- Indicative vehicles (not to scale)

<u>T-Minus Dart</u>
Length 2.3m
Mass 30 kg
Passively guided single stage

<u>ESS DORADO</u>
Length 6.5m
Mass 370 kg
Guided single stage

<u>Skyrora SkyLark L</u>
Length 11m
Mass 2500 kg
Guided single stage



Timeline - Full Operating Capability Circa Early 2023

Sun-synchronous & Polar Orbits

- Rockets will be at altitude circa 69,000ft on entering D701E
- Rocket will be at altitude circa >300,000ft on leaving D701F

SPACE PORT 1

QINETIQ

Provisional ACP Timeline – Spaceport 1

Step 1 DEFINE

- Step 1B – 10* weeks

DEFINE Gateway – Fri 25 June 2021

Stage 2

- Step 2A & B – 13* weeks

DEVELOP and ASSESS Gateway – Fri 24 September 2021

Stage 3

- Step 3A & B – 13* weeks

CONSULT Gateway – Fri 17 December 2021

- Step 3C & D and Step 4A & B – 32* weeks

Formal ACP Submission – Thu 21 July 2022

DECIDE Gateway – Fri 23 December 2022

Target AIRAC – 04/2023 AIRAC effective date Thu 20 April 2023

*Duration of Steps is only an estimate and assumes a level of scalability

SPACE PORT 1

QINETIQ

ACP Beyond Launch Site - Requirements

Sun-synchronous & Polar Orbits

- Given rockets will be at altitude >300,000ft on leaving D701F if catastrophic failure were to occur, it is most probable the rocket would not re-enter the ‘manned aircraft airspace’ (nominally below 60,000ft) until >120NM from launch site (Reykjavik OCA) – Airspace Options:
  - Design another Danger Area over the ocean and extend beyond FIR and activate for short launch sequence periods
  - NOTAM Temporary Reserved Airspace (TRA) to cover stage drop/catastrophic failure events on case by case basis (as for Soyuz launches)
- Challenges:
  - Insufficient data to develop airspace of appropriate dimension (would be best endeavours)
  - Insufficient data on demand for each orbit type

Summary

- Statement of Need
  - Supporting Government LaunchUK
  - Opportunity for local community & businesses
  - Safe operating area
  - Utilising Range spare capacity/extant procedures
- Issues and Opportunities
- Options to exploit opportunities
- Timelines
- Additional airspace requirements beyond D701

SPACE PORT 1

QINETIQ

QINETIQ IN CONFIDENCE