# LAUNCH UK

## A guide to the UK's commercial spaceports

# Why launch from the UK?

**The UK is the most attractive destination in Europe to host commercial launch services. We have the right geography, the right environment and the right industry.**

Geographically advantageous, the UK's long coastline and island location make it unique in easily hosting different types of launch services. Scotland is the best place in the UK to reach in-demand satellite orbits with vertically launched rockets. Spaceplanes and other space transportation can be launched at a number of aerodromes around the UK, each with their own individual geography and local infrastructure.

Our space and aerospace sector are internationally renowned and home to many thriving companies and ground-breaking capabilities. Working with pioneering launch systems and space services, each of our spaceports will provide access to a range of valuable polar and sun-synchronous orbits.

We are the first country in Europe to put in place new spaceflight laws. The Space Industry Act 2018 is a flexible high-level regulatory framework, enabling launch from 2022. Our legislation allows for the regulation of a wide range of spaceflight technologies, including traditional vertically launched vehicles, air-launched vehicles, sub-orbital spaceplanes and balloons.

We are working with international partners to develop strong global relationships, ensuring we have access to markets, financing and supply chains all around the world.

The UK-US Technology Safeguards Agreement, (TSA), allows US companies to operate from UK spaceports and export space launch technology, enabling the UK to access revenues and customers previously unavailable, while abiding by both countries' commitments to non-proliferation.

# UK Space Agency

## Spaceport 1

**Location:** Scolpaig Farm, North Uist, Outer Hebrides, Scotland
**Launch mode:** Vertical (orbital and sub-orbital)
**Orbital inclinations:** Sun-synchronous and polar orbits (North and South initial trajectories)
**Planned departures:** In negotiation with launch providers
**Operational:** 2021
**Website:** www.spaceportone.co.uk

**Air launch from a carrier aircraft**

**Ground launch directly from spaceport**

## Spaceport Machrihanish

**Location:** Campbeltown, Argyll, Scotland
**Launch mode:** Horizontal (vertical and high-altitude platform)
**Orbital inclinations:** Sun-synchronous and polar orbits
**Planned departures:** In negotiation with launch providers
**Operational:** Small rocketry: 2021 / High-altitude platforms: 2022 / Space object return: 2023 / Orbital: 2025
**Website:** www.discoverspaceuk.com

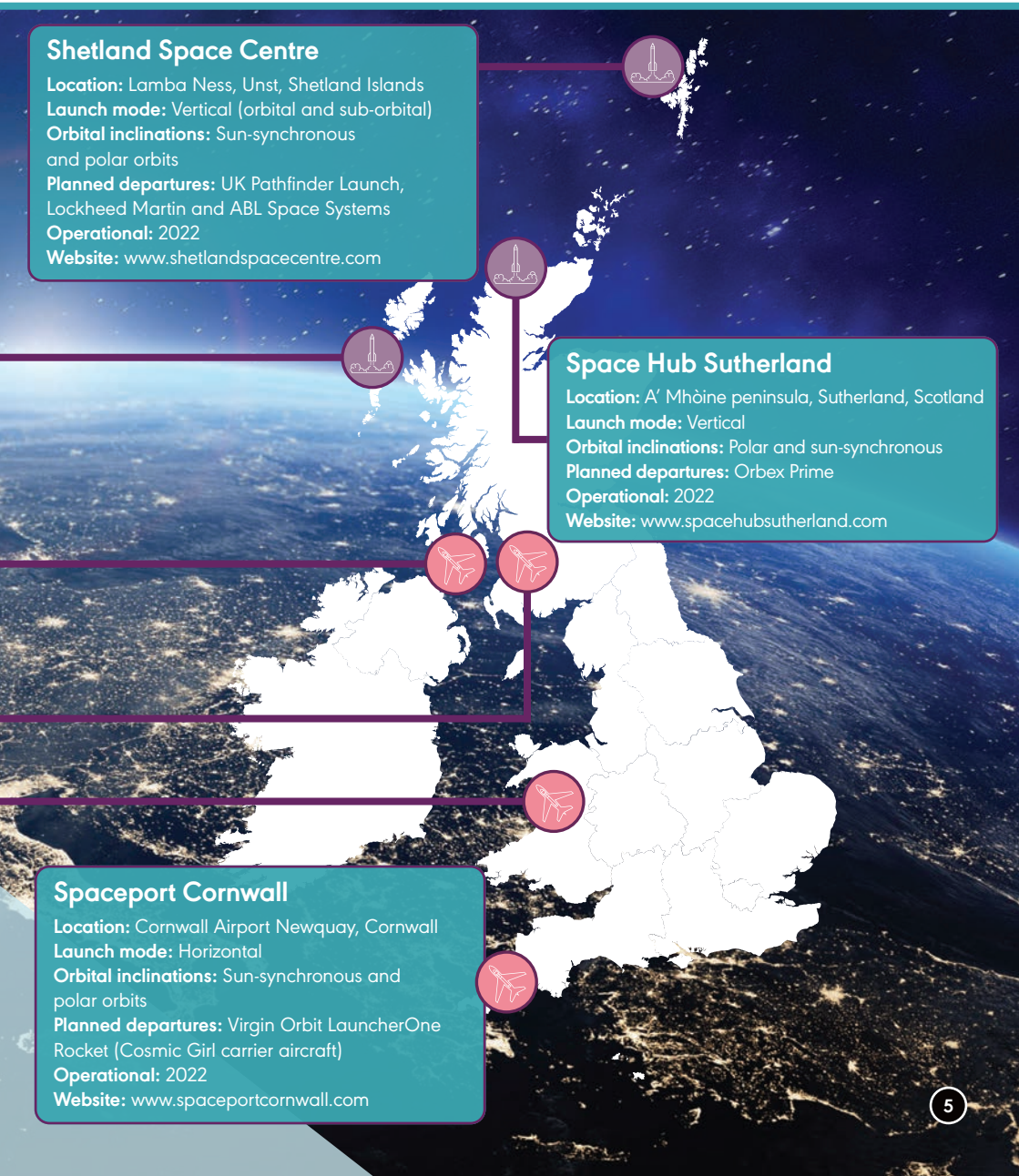
## Prestwick Spaceport

**Location:** Prestwick, South Ayrshire, Scotland
**Launch mode:** Horizontal (orbital and sub-orbital)
**Orbital inclinations:** Sun-synchronous and polar orbit, Molniya and other high inclinations (North and South)
**Planned departures:** In negotiation with launch providers
**Operational:** Sub-orbital: 2022 / Orbital: 2023
**Website:** www.prestwickaerospace.com

## Spaceport Snowdonia

**Location:** Llanbedr, Gwynedd, Wales
**Launch mode:** Horizontal
**Orbital inclinations:** Sun-synchronous, polar and sub-orbital
**Planned departures:** Multiple including research, development, test and evaluation
**Operational:** 2022
**Website:** www.spaceportsnowdonia.com

UK SPACE AGENCY



## Shetland Space Centre

**Location:** Lamba Ness, Unst, Shetland Islands
**Launch mode:** Vertical (orbital and sub-orbital)
**Orbital inclinations:** Sun-synchronous and polar orbits
**Planned departures:** UK Pathfinder Launch, Lockheed Martin and ABL Space Systems
**Operational:** 2022
**Website:** www.shetlandspacecentre.com

## Space Hub Sutherland

**Location:** A' Mhòine peninsula, Sutherland, Scotland
**Launch mode:** Vertical
**Orbital inclinations:** Polar and sun-synchronous
**Planned departures:** Orbex Prime
**Operational:** 2022
**Website:** www.spacehubsutherland.com

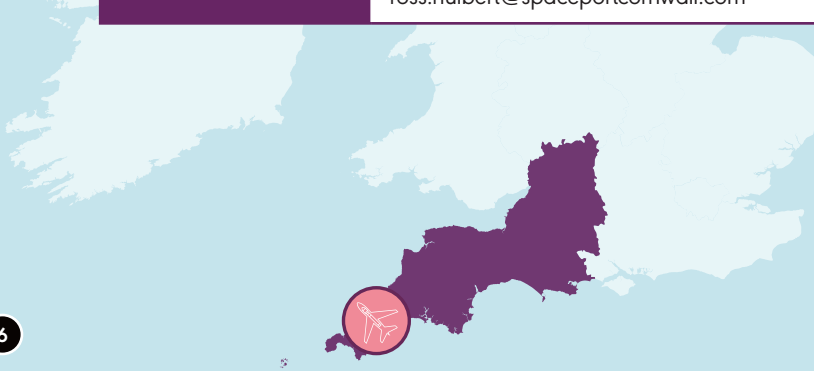
## Spaceport Cornwall

**Location:** Cornwall Airport Newquay, Cornwall
**Launch mode:** Horizontal
**Orbital inclinations:** Sun-synchronous and polar orbits
**Planned departures:** Virgin Orbit LauncherOne Rocket (Cosmic Girl carrier aircraft)
**Operational:** 2022
**Website:** www.spaceportcornwall.com

# Spaceport Cornwall

## Quick fact table

| | |
|---|---|
| **Location** | Cornwall Airport Newquay, Cornwall |
| **Coordinates** | 50°26′27.0″N, 4°59′43.0″W |
| **Launch mode** | Horizontal launch |
| **Orbital inclinations** | Sun-synchronous and polar orbits |
| **Payload capacity** | 300kg to low Earth orbit |
| **Operational** | 2022 |
| **Planned departures** | Virgin Orbit LauncherOne Rocket<br>(Cosmic Girl carrier aircraft) |
| **Facilities** | Cornwall Airport Newquay<br>Space systems integration & operations facility<br>Data room \| Collaboration workspace<br>Laboratories/R&D workspace<br>Outdoor and rocket test facility<br>Hangarage \| Fuel handling \| Business Park |
| **Website** | www.spaceportcornwall.com |
| **Contact details** | Ross Hulbert \| Business Development Manager<br>ross.hulbert@spaceportcornwall.com |



SPACEPORT
CORNWALL

Spaceport Cornwall is a project between Cornwall Council, Cornwall and Isles of Scilly Local Enterprise Partnership, Goonhilly Earth Station and Virgin Orbit. It will offer horizontal satellite launch services from Cornwall Airport Newquay by 2022.

The site offers:

- A 2,744m long runway
- Direct access over the sea
- Adjoining military site RAF St Mawgan
- Ground handling equipment
- A new Aviation Centre including Space Systems Integration, Mission Operations Facilities, Laboratories/R&D workspace
- Rocket test facility

Supported through funding by local and central government, Spaceport Cornwall is launching the region's new space ecosystem. The renowned Goonhilly Earth Station, the world's most capable satellite ground station, is also offering its services alongside the spaceport. Collaboratively, Cornwall offers broader opportunities than just launch, including:

- Mission control and tracking services
- Countless downstream application companies and
- Aerospace Cornwall which offers funding for research and development

All this activity has led the Space sector in Cornwall to successfully grow by 164 per cent since 2010. Spaceport Cornwall is determined to lead on more sustainable launch practices. Further details including a carbon impact report, sustainability action plan and ethical framework will be available soon.

The Spaceport Cornwall team is working closely with schools, colleges, and higher education institutions across the region to build the skills base to meet the needs of the space industry. An inspirational outreach programme is being rolled out across Cornwall, aiming to engage with every primary and secondary school, with live sessions with our partners, Virgin Orbit in California.


# Shetland Space Centre

## Quick fact table

| | |
|---|---|
| **Location** | Lamba Ness, Unst, Shetland Islands |
| **Coordinates** | 60°49′05.0″N, 0°47′32.8″W |
| **Launch mode** | Vertical launch (orbital and sub-orbital) |
| **Orbital inclinations** | Sun-synchronous and polar orbits |
| **Payload capacity** | Up to 1000kg |
| **Operational** | 2022 |
| **Planned departures** | Lockheed Martin & ABL Space Systems |
| **Facilities** | Launch site \| Integration hangers (launch vehicle and payload) \| Fuel storage facilities<br>Pyrotechnic storage \| Launch control centre<br>Range control centre \| Off-site offices<br>Transmit and receive ground station 5M SX and KA bands \| Data range<br>Space situational awareness |
| **Website** | www.shetlandspacecentre.com |
| **Contact details** | Scott Hammond \| Operations Director<br>scott.hammond@shetlandspacecentre.com<br>General enquiries<br>info@shetlandspacecentre.com |

Shetland Space Centre has an experienced aerospace team, with additional associated security knowledge. The company is agile and liaises regularly with domestic and international organisations regarding a number of complex spaceflight requirements, maintaining strong partnerships in the exciting new UK spaceflight sector.

Shetland itself is located at the highest latitude point in the UK, and one of the highest of Europe, allowing a greater payload to be launched for the same fuel load. The remote location and distance from heavily populated areas is a strength for both security and safety. The specialised supply chain of the Shetland oil and gas sector is also a great advantage, providing a strong lead in an established, technically skilled workforce.

The organisation collaborates with Shetland-based businesses who continue to demonstrate their ability to support the space sector. These include PURE Energy in Unst which specialise in the manufacture of hydrogen systems.

Shetland Islands Council is additionally committed to developing a Space Innovation Campus, providing incubation units specifically to support the space sector. The Campus will house research institutions supporting launch, educational and supply needs of the Shetland Space Centre.

Shetland Space Centre's Science, Technology, Engineering, Arts and Maths initiative already sees collaborative research and developments project underway with academic institutions including the University of Alaska, University of Strathclyde and Edinburgh University. A planned outreach programme to local Shetland schools and colleges will generate future technical skills in the area, ensuring a sustainable spaceflight ecosystem in Shetland and the wider UK.

# Space Hub Sutherland

## Quick fact table

| | |
|---|---|
| Location | A' Mhòine peninsula, Sutherland, Scotland |
| Coordinates | 58°30'15.5"N, 4°30'07.6"W |
| Launch mode | Vertical launch |
| Orbital inclinations | Polar and sun-synchronous |
| Payload capacity | Less than 500kg |
| Operational | 2022 |
| Planned departures | Orbex Prime |
| Facilities | Launch control centre \| Launch integration and assembly facility \| Antenna farm<br>Launch pad with commodity farm |
| Website | www.spacehubsutherland.com |
| Contact details | Roy Kirk \| Project Director, Space Hub Sutherland \| roy.kirk@hient.co.uk<br>General enquiries<br>spacehubsutherland@hient.co.uk |

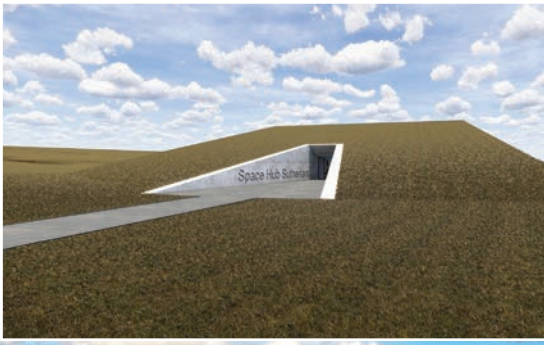
The Highlands and Islands of Scotland play a vital role in the growth of the UK space sector, and Space Hub Sutherland is ready to capture new and innovative markets.

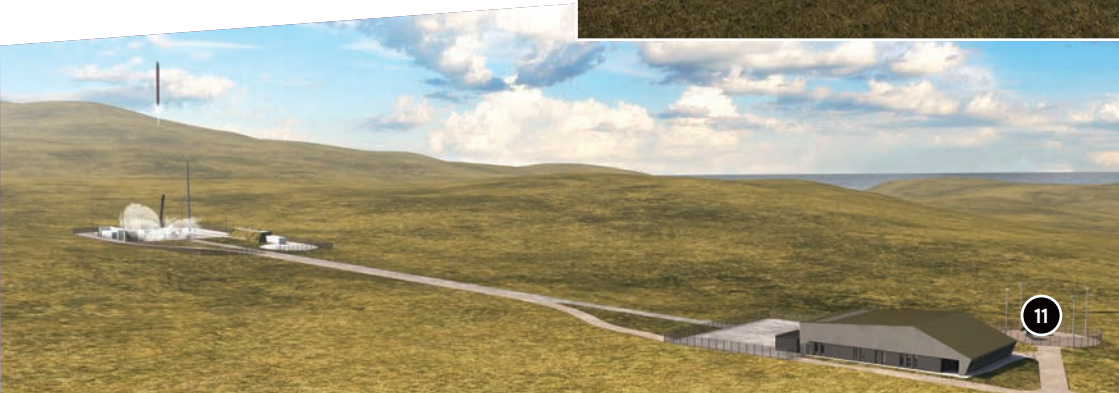
Backed by development agency, Highlands and Islands Enterprise, and supported through grant funding from the UK Space Agency, Space Hub Sutherland will be the region's compact vertical launch site. It will enable spacecraft to access valuable polar and sun-synchronous orbits from a sparsely populated peninsula on the northern Scottish mainland. The site successfully achieved planning permission in August 2020 and will feature a launch pad, operations control centre and assembly building, all covering a total area of 4.2 hectares.

Orbex's innovative Prime launch vehicle, featuring a lightweight 3-D printed engine and renewable bio-propane fuel that cuts emissions by up to 90%, is being lined up to launch from Sutherland. Orbex has already established a design and manufacturing plant in the Highlands and Islands, where the Prime vehicle will be built.

Space Hub Sutherland will launch payloads of small, nano and micro-satellites – mainly used for Earth observation and communications, including gathering data to address the global challenge of climate change. The spaceport and its facilities have also designed rigorous measures to ensure the environmental protection of land and wildlife around the site and in coastal waters.

With up to 12 launches a year, Space Hub Sutherland is expected to create around 40 high quality jobs on site, and underpin over 200 more in the wider region, including manufacturing and supply chain opportunities.



# Spaceport Snowdonia

## Quick fact table

| | |
|---|---|
| **Location** | Llanbedr, Gwynedd, Wales |
| **Coordinates** | 52°48′18″N, 004°07′38″W |
| **Launch mode** | Horizontal launch |
| **Orbital inclinations** | Sun-synchronous, polar orbits and sub-orbital |
| **Payload capacity** | Up to 200kg |
| **Operational** | 2022 |
| **Planned departures** | Multiple including research, development, test and evaluation |
| **Facilities** | Snowdonia Aerospace Centre \| 3 runways<br>Offices \| Workshops \| Hangarage<br>Mission control |
| **Website** | www.spaceportsnowdonia.com |
| **Contact details** | Lee Paul \| Chief Executive Officer,<br>Spaceport Snowdonia<br>lee.paul@snowdoniaaerospace.com |

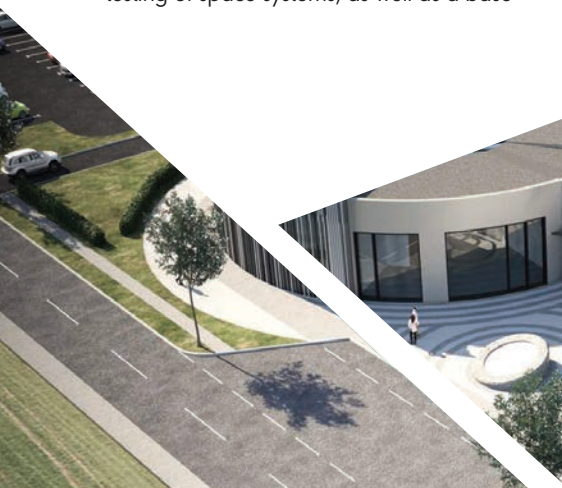
Spaceport Snowdonia has a long and distinguished track record in supporting experimental test flying in the UK. The site regularly provides air and ground services and facilities for the research, development, test and evaluation of novel aerospace systems and emerging future flight technology, such as:

- Drones
- Electric aircraft
- Urban and regional air mobility vehicles
- Balloons
- Airships and
- Near-space testing vehicles

Spaceport Snowdonia has a proven flight test heritage and unique and immediate access to the fully instrumented D201 Cardigan Bay range, with a complete array of range control capabilities from Aberporth (via a strategic relationship with QinetiQ). The spaceport is equipped in the preparation and launch of sounding rockets and the conduct of high-altitude and near-space testing of space systems, as well as a base for orbital launch. The team is experienced in supported high altitude testing of payloads at 100,000ft+ with partner, B2Space. The planned on-site state-of-the-art technology park will also offer:

- Static sea-level propulsion testing
- Static altitude propulsion testing
- Space environment testing
- A multi-axis simulator
- Centrifuge and
- Hyperbaric chamber

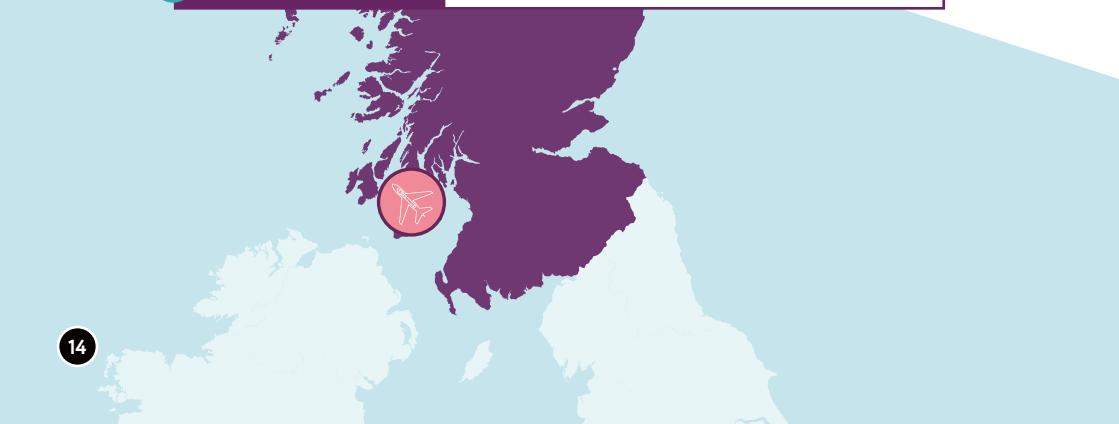
The Spaceport Snowdonia team is accomplished in supporting companies to innovate and accelerate their development from proof-of-concept through to full-scale prototype and large-scale market exploitation.



# Spaceport Machrihanish

## Quick fact table

| | |
|---|---|
| Location | Campbeltown, Argyll, Scotland |
| Coordinates | 55°26'21"N, 5°41'54''W |
| Launch mode | Horizontal, vertical and high-altitude platform |
| Orbital inclinations | Sun-synchronous and polar orbits |
| Payload capacity | Variable |
| Operational | Small rocketry: 2021<br>High-altitude platforms: 2022<br>Space object return: 2025<br>Orbital: 2027 |
| Planned departures | In negotiation with launch providers |
| Facilities | Campbeltown Airport \| Verification and validation facilities \| Pyrotechnics storage<br>Offices \| Workshops \| Hangarage<br>3000m runway |
| Website | www.discoverspaceuk.com |
| Contact details | enquiries@maccdl.co.uk |



Spaceport Machrihanish provides unique space access services outside of traditional orbital launch in order to complete the UK's national spaceflight infrastructure.

Our mission is to establish an economically and environmentally sustainable cluster of spaceflight related businesses, bringing economic and social prosperity to the local community and region.

Horizontal, vertical and high-altitude platform services have been selected with a primary aim to attract working age people to the area, create jobs, deliver research and academic excellence, as well as economic returns.

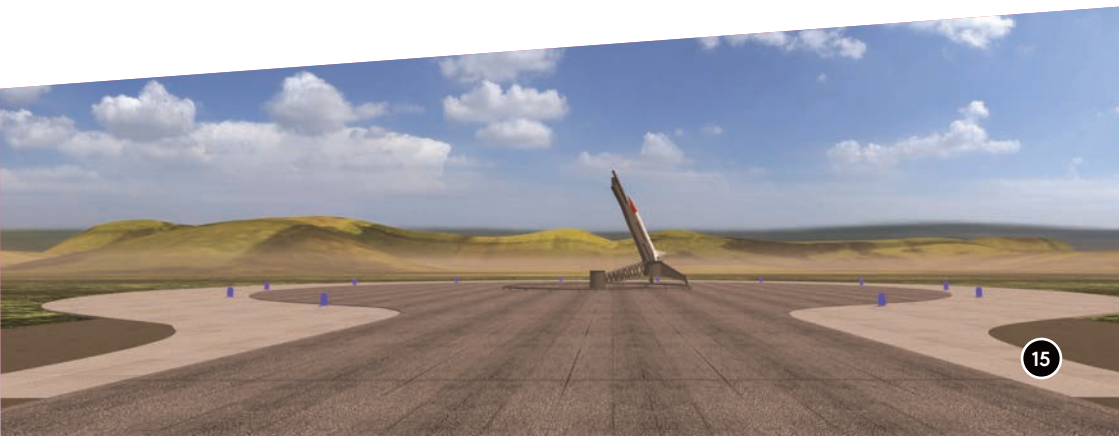
Industry, academia and the public can take advantage of our 1,000-acre site, providing:

- A 3km runway
- Hangarage
- Specialist fuelling facilities
- An engine test area
- Extensive workshop and office space
- A training centre
- Research and development centre and
- Transportable launch support and range safety systems

Once completed, alongside orbital launch services Spaceport Machrihanish will provide a unique national facility for small rocket launch that will develop the UK and Europe's new launch generation.

Industry and academia can use small rockets provided by Machrihanish or bring their own prototypes to perform a full launch operation up to 10km altitude. This activity will include all of the services associated with a complete orbital launch campaign.

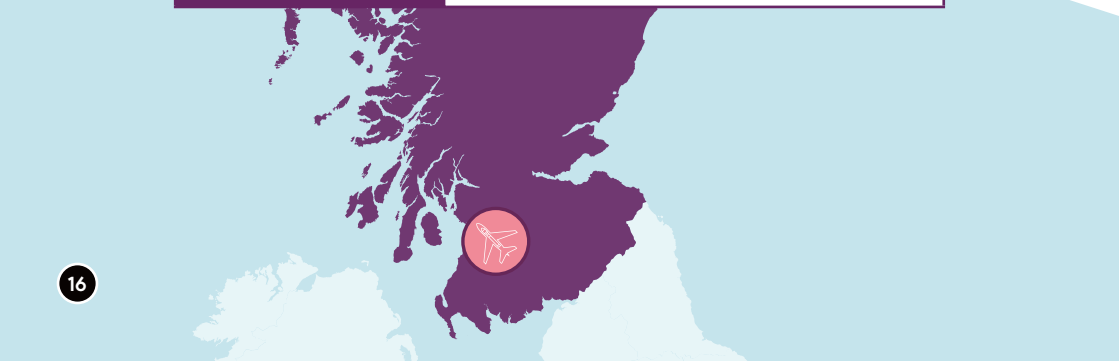
The facility can accommodate operators of high-altitude platform systems, including sufficient hangarage for inflation and test of stratospheric balloon systems. A tethered experimental platform will provide easy access to a test environment at 1km above the ground, as well as full stratospheric campaigns. The airbase is equipped to support parabolic flights up to Code-E aircraft.



# Prestwick Spaceport

## Quick fact table

| | |
|---|---|
| **Location** | Prestwick, South Ayrshire, Scotland |
| **Coordinates** | 55°30'34"N, 4°5'40"W |
| **Launch mode** | Horizontal launch (orbital and sub-orbital) |
| **Orbital inclinations** | Sun-synchronous and polar orbit, Molniya and other high inclinations (North and South) |
| **Payload capacity** | Variable dependent on launch vehicle |
| **Operational** | Sub-orbital: 2022<br>Orbital: 2023 |
| **Planned departures** | In negotiation with launch providers |
| **Facilities** | Glasgow Prestwick Airport \| 2.99km main runway \| National Air Traffic Services<br>Payload integration facilities<br>Atmospheric and exospheric flight testing |
| **Website** | www.prestwickaerospace.com |
| **Contact details** | Mick O'Connor \| Prestwick Spaceport Programme Director \| mick@haelo.io<br>Jim Johnstone \| South Ayrshire Council jim.johnstone@south-ayrshire.gov.uk |



Prestwick Spaceport aims to offer horizontal launch capabilities to lucrative orbital inclinations suitable for small satellite delivery. The potential for test and evaluation, human spaceflight and commercial sub-orbital hypersonic flight are also under consideration.

With significant potential financial investment awarded though the Ayrshire Growth Deal, a supportive local community and an active role in the developing Scottish space cluster's value chain, Prestwick is positioned as a gateway for space activity in the UK.

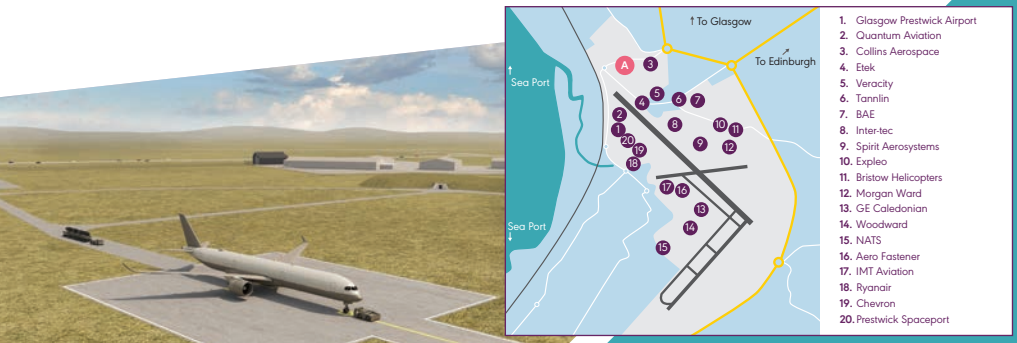
Although Prestwick focuses on launch as its flagship offering, it is the ancillary opportunities beyond launch that make Prestwick stand out. The area already boasts a strong aerospace presence with BAE Systems, Collins Aerospace, GE, National Air Traffic Services and Spirit AeroSystems.

The area's established business environment, together with the development of adjacent facilities, provide a strong platform to generate high-skilled job opportunities and growth for the region. These facilities include:

- A national flight test centre
- Innovation/Science Technology Engineering and Maths centre
- Payload integration provisions and
- Opportunities for environmental and propulsion testing

Logistically, the site hosts an international airport with a main runway just short of 3km. Strong transportation connections via rail, road and sea allow rapid access to major space industry and academic hubs in Glasgow, Edinburgh and other proposed UK launch sites. The location and access of the site is fundamental in providing collaborative opportunities across the UK's spaceflight ecosystem.

The Prestwick team is in advanced discussions with several launch service providers and building a robust strategy around leveraging existing and future space related assets for local economic development, skills training and inward investment.



# Spaceport 1

## Quick fact table

| | |
|---|---|
| **Location** | Scolpaig Farm, North Uist,<br>Outer Hebrides, Scotland |
| **Coordinates** | 57°39'00.0"N, 7°29'00.0"W |
| **Launch mode** | Vertical: orbital and sub-orbital |
| **Orbital inclinations** | Sun-synchronous and polar orbits<br>(North and South initial trajectories) |
| **Payload capacity** | Suborbital: <100kg<br>Orbital: <350kg |
| **Operational** | Sub-orbital: 2021<br>Orbital: 2023 |
| **Planned departures** | In negotiation with launch providers |
| **Facilities** | Two orbital pads \| Clean assembly building<br>Propellant storage \| Operational/admin<br>Range facilities |
| **Website** | www.spaceportone.co.uk |
| **Contact details** | Mark Roberts CBE MA MBA<br>m.roberts@rheagroup.com |

Spaceport 1's unique location and facilities will offer all the services required for:

- Sub-orbital launch (from Quarter 2 2021)
- North and South trajectory launches to sun-synchronous and polar orbits (from Q2 2023)

Located at Scolpaig in the Outer Hebrides, Spaceport 1 is suitably remote for regular operations and easily accessible by sea and air.

The site and services are adaptable and flexible to any requirement, and customers will only be charged for the services used. Spaceport 1 offers full end-to-end launch service, and in addition to a multi-user adaptable pad (two pads from 2025), the site will also offer access to:

- Sub-orbital and orbital launch vehicles
- Working accommodation
- Assembly facilities (including clean working areas)
- Licensed storage
- Range services – tracking, telemetry, FTS, air, land and sea space clearance and
- Launch communications networks

Sub-orbital and orbital launch will accommodate payload masses of <100kg and <350kg respectively. In the case of orbital, the 3-stage launch vehicle provides sun-synchronous orbit and polar orbit up to 1000km.

The team's approach is to integrate clients' launch projects with a specific operations officer. They will be allocated to provide advice and assistance with regulatory and other launch stakeholder engagement.

The environment and education are two main areas of focus for sustainability, ensuring an ecologically friendly operation and great opportunity for all types of learning experience.

UK SPACE AGENCY

Department for Transport

UK Civil Aviation Authority