ADDLESHAW GODDARD

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TRENDS IN TRANSPORT

The UK's Spaceport – an opportunity in the commercial spaceflight market

THE UK'S SPACEPORT

OPPORTUNITY IN THE COMMERCIAL SPACEFLIGHT MARKET

Site selected for UK's first Spaceport

A remote area on the north coast of Scotland has been chosen by the government as the best location to build the UK's first spaceport.

The spaceport will facilitate the vertical launch of rockets carrying small satellites into orbit. Satellites can be launched from the tip of the A'Mhoine Peninsula to above the Arctic Circle, into desirable polar orbits passing over the Arctic and Antarctic.

The government considers that launching small satellites from a dedicated small satellite facility on UK territory represents an £3.8bn opportunity for the country.

Funding

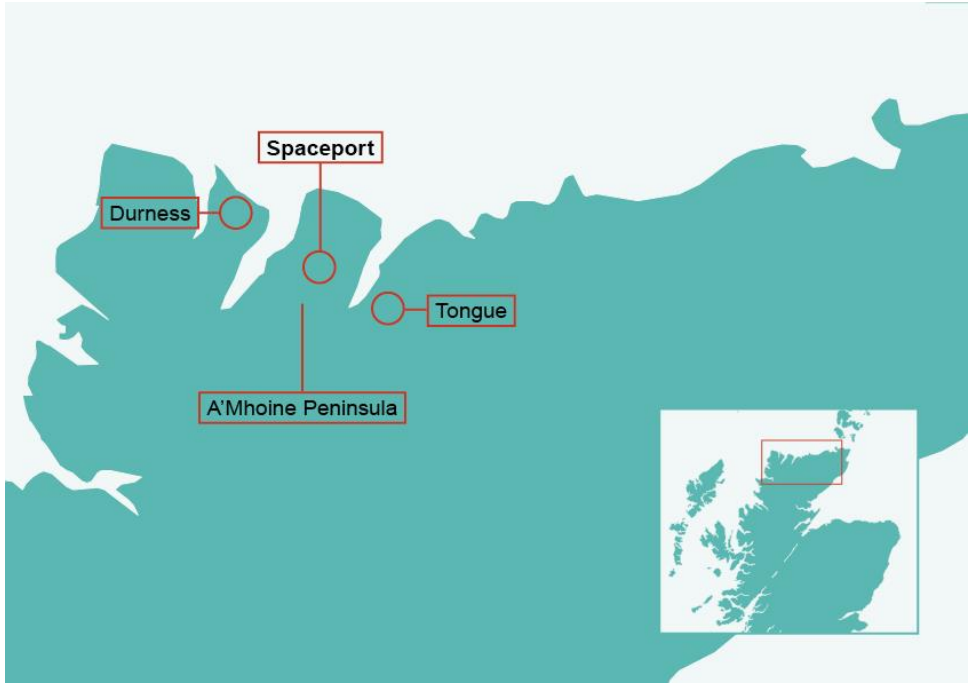
Following its call for grant proposals in spring 2017, the UK Space Agency assessed 26 proposals to determine what would deliver the best value for money and strategic opportunity for sector growth.

Two launch consortia have been selected to develop commercial launch services at the spaceport, with the government awarding a range of grants to operators and a local economic development agency to develop the first ever launch capabilities in the UK.

Lockheed Martin has been awarded government funding of £23.5m for its proposal for a vertical launch spaceport in Sutherland on the A'Mhoine peninsula between Tongue and Durness, a remote area on the north coast of Scotland.

Lockheed will use the funding to establish launch operations from Sutherland and develop its Small Launch Orbital Manoeuvring Vehicle (SL-OMV), an upper stage that will be manufactured by Moog in the UK. The vehicle will be able to launch up to six six-unit cubesats into orbit.

In addition, £5.5m in funding has been awarded to UK space company Orbex to build a new rocket for launch at the Sutherland facility, and Highlands and Islands Enterprise have been awarded £2.5m to assist with the development of the launch site.



Other sites

The site in Sutherland has been awarded funding, ahead of other proposed vertical sites at Unst, Shetland, and North Uist in the Western Isles.

There is also a development fund for horizontal launch spaceports across the UK at sites such as Prestwick in Ayrshire, Cornwall's Newquay, Campbeltown in Argyll and Bute and Llanbedr, Gwynedd, Wales. Horizontal launch systems could support the development of a market for sub-orbital flight carrying tourists and researchers travelling to low gravity environments.

Consortia involved in those projects must first submit successful business cases to the UK Space Agency, and it is generally thought that horizontal launch systems (where specially adapted aircraft launch via take off from a runway) are still in their infancy.

That said, on the same day that funding for the spaceport in Sutherland was announced, a partnership with Virgin Orbit and Cornwall Airport Newquay that could allow that company's air-launched LauncherOne system to operate from the airport was signed.

Opportunities

The UK has recognised a global shortage of small satellite launches, driven by the rapid development in small satellite capability and the relatively low cost of producing them.

Small satellites can weigh anything up to 500kg, including Nanosatellites and Cubesats under 10kgs, and Picosatellites under 1kg. Launched in constellations or using formations they can often enable missions that would not be possible or financially viable for bigger satellites.

There is thought to be a gap in the market for a launch facility designed especially for small satellite missions as their capability increases. Europe's go-to spaceport is located in Kourou in French Guiana, owned by ESA and the French space agency CNES - it provides launch facilities to agencies like ESA and big commercial space companies like Arianespace. Most launches globally are designed for the launch of large satellites weighing several tonnes, with smaller satellites 'piggy-backing' on those missions, or bulk launches consisting of many (even over 100) small satellites.

The UK government's Industrial Strategy recognised that the UK was well placed to host commercial space launch services and that this was a key enabler to future growth – the UK space sector currently generates £13.7bn of annual income and supports £250bn of UK GDP. Access to space from UK soil would allow further growth, accessing a share of the global market worth an estimated £3.8bn from 2021 to 2030. This estimate is based on commercial customers, government and military customers.

Launching satellites north from the A'Mhoine Peninsula to above the Arctic Circle will allow access to polar and sun-synchronous orbits. These orbits are in demand for small satellite missions, and deployed for purposes such as Earth observation, solar study, weather forecasting and reconnaissance.

Regulatory challenges remaining

Whilst these funding announcements mark the beginning of the UK's initiative to enter the commercial launch market, a number of regulatory challenges remain.

In addition to the industry incentives, a regulatory framework to enable the licensing, insurance and investment is required for safe and sustainable launches.

The UK is a party to a number of international conventions on space law such as the UN Outer Space Treaty, which places responsibility for national space activities at state level and requires states to have authorisation and supervision of private space activities.

If the UK is to be a state from which objects are launched, it would be classed as a launching state under international law which triggers international responsibility and liability consequences. In the UK Outer Space Act 1986 the Secretary of State did provide for licensing of activities carried out by UK nationals and companies in relation to space activities overseas but there was no provision for licensing UK spaceports or their management and associated services.

The Space Industry Act 2018

The Space Industry Act 2018 is the first regulatory step towards this, setting out a framework of regulatory requirements and giving the Secretary of State powers to develop the regulatory system and detailed requirements for licensing. The UK Outer Space Act will be amended so that it will only cover space activities overseas.

The Space Industry Act 2018 empowers the Secretary of State to enact further regulations and requirements – and so further detailed measures are anticipated in the following areas:

- Safety requirements for licenced activities
- Training requirements in respect of spaceflight activities
- Security regulations and regulations concerning the investigation of accidents
- The enactment of spaceport byelaws
- Regulations capping liability or prescribing the framework or methodology for a regulator to cap liability of licences and powers of indemnification to the Secretary of State
- Insurance required by licence holders and others engaged with spaceflight activities (and powers to make such insurance or re-insurance available)
- Restriction of use of land to ensure safety of launches and third parties on the ground and powers to make land orders

Key issues include the details of the liability and insurance regime envisaged, as potential operators and investors in spaceport and UK spaceflight activities will need clarity on affordability before commitments are made.

The government intends to consult on proposed further measures in 2019.

Comment

This is exciting news for the UK Space sector and indicates a turning point for UK space policy. The UK government has not traditionally been associated with proactive or ambitious space policy but its new spaceflight programme shows commitment to UK space industry empowerment and a new goal of becoming a competitive spacefaring nation.

The opportunity created by a booming small satellite market is arguably plain to see, but aspiring to become a base for sub-orbital spaceflight and spaceplane operations for the benefit of the UK's scientific community and possibly space tourists is a real change in tack.

Subject to the production of detailed requirements and a business-friendly licensing service, UK space industry and policy could become one of the most progressive in Europe.

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