



SPACEPORT CORNWALL

THE PROJECT

What is the Spaceport project?

Spaceport Cornwall is a project between Cornwall Council, The Local Enterprise Partnership, Goonhilly Earth Station Ltd and Virgin Orbit, to provide horizontal satellite launch from Cornwall Airport Newquay by 2021, in order to create high paid jobs in Cornwall in a globally growing sector. Additional funding is being provided by the UK Space Agency and BEIS (Growth Deal).

The Spaceport team must be made up of external consultants?

The Spaceport core team currently consists of five local people, all of whom have been based in Cornwall for many years, plus the support services of Cornwall Council. There will be a small number of consultants with specialist space sector or Airport infrastructure knowledge advising on specific project elements.

LAUNCH MARKET

What's the market demand for commercial satellite launch in the UK?

The UK builds a large proportion of the world's small satellites yet has no launch capability. It is estimated that over 13,000 satellites are required to be launched by 2030.

Why do we need a UK spaceport if the main business is US based?

Different satellite customers need different launch trajectories for their payloads. Virgin Orbit is building up a network of five Spaceport around the globe that can access all the trajectories at very short notice, making their solution very flexible and responsive. Newquay is ideally placed to service northerly and southerly polar low earth orbits via ranges in the North Atlantic. Virgin Orbit can also access the UK and EU Space sector directly from UK.

AIRPORT INFRASTRUCTURE

Is a runway extension required?

No runway extension is required to operate Virgin Orbit. We have one of the longest runways in the UK, which is already a fantastic asset for Cornwall.

Is a new hangar or airport terminal being built?

No new hangar or terminal is planned as we can upgrade existing facilities to prepare the rocket for Launch and integrate the satellite payload into the rocket. In later stages of the project, once the Spaceport is a commercially viable and a self-sustaining organisation, new investments might be considered which may need new facilities. There are development zones already available at the airport should this be required.

Existing business will be displaced

No existing businesses will be displaced. The Virgin Orbit system will be fully integrated with Airport operations and we actively want local business to be involved. The Aerohub Enterprise Zone is actively welcoming new businesses to the Airport site. There has been strong demand from businesses for workspace at the Council's recently opened development at Sector 2 on the Aerohub Business Park, with Heads of Terms already agreed on 70% of the space available and the first tenants on site. There is also active interest in a number of development plots which are being marketed for sale on the business park.

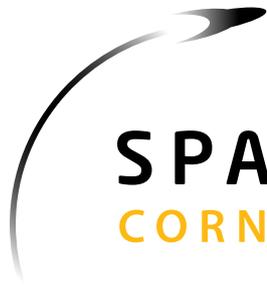
Creating a spaceport will have a negative impact on Cornwall Airport Newquay with further passenger delays?

It is not expected that Spaceport will have any impact on passenger activity. Operations will be fully integrated with airport activities and air traffic. Launch frequencies will be relatively low.

There is exotic fuel being used

No exotic fuel is required for Virgin Orbit's launch system. Cosmic Girl the B747 uses standard jet fuel (kerosene), and Launcher One the rocket uses rocket propellant RP1 (a high grade Kerosene) and liquid oxygen.

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AIRPORT INFRASTRUCTURE

Public Transportation is not being considered

The Spaceport project is part of the Airport's overall Masterplan which incorporates a surface access and public transportation strategy based on growth of the site.

Is the Councils money wasted if the project fails halfway through?

As with any technology research and development project there will be risks, however these will be monitored and capital commitments will only be made after specific milestones have been achieved. The capital money invested in the airport will mostly be committed in the second half of the project, and will benefit the airport regardless of the outcome of the Spaceport project. We have created a separate timeline to illustrate this.

LOCAL BENEFITS

How will the project benefit Cornwall?

The project will create 150 direct jobs by 2025, of which over 80 are expected to be filled by local residents, and will be 2.6 times more productive than the national average. This will add £200m Gross Value Added (GVA) to the economy and will act as a catalyst for wider growth in associated sectors which use space derived data and applications. As a truly ground-breaking initiative Spaceport has the potential to inspire a whole generation. An additional 240 jobs will be created in the supply chain and ancillary activities.

Spaceport Cornwall is stimulating the space cluster in Cornwall and wider industry by raising Cornwall's profile on a global stage

If the launch aircraft is being flown in where do all the extra jobs come from?

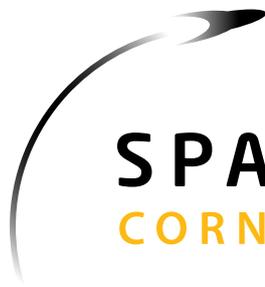
Initially the number of direct jobs will be the project team and UK manufacturers of ground support equipment. However as the Spaceport develops, and aircraft are based at the Spaceport, the number of direct and indirect jobs will increase significantly, with Spaceport operations staff, and employees for the operators, suppliers and support industries that will build up in a technology cluster around Cornwall Airport Newquay. As a comparison, Goonhilly Earth Station employs 100 new FTE's and average salaries in the sector are c£40,000, over twice the Cornish average wage of c£19,000. Spaceport Cornwall will accelerate this growth.

How will spaceport create good jobs for Cornwall residents, surely the expertise will be brought in to run the project?

Cornwall already has local expertise with over 50 companies already contributing to the Cornwall Space Sector (see map below), and new courses being developed by Cornish Further Education Colleges and Universities mean more local residents will have the skills required. Employees of the support services and suppliers to the technology companies will also benefit from increased demand.

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LAUNCH SYSTEM

Will rockets launch vertically?

Rockets will be launched from a modified Boeing 747 aircraft (horizontal launch), detaching from the wing before firing the rocket engine, at a 35,000ft altitude.

Rockets will launch direct from Cornwall?

There are no plans to launch rockets near to land. Our geographical advantage is that we are a peninsular in the Atlantic ocean. The rocket will be deployed at 35,000 feet about 300 - 500 miles off the coast west or north of Ireland depending on the required trajectory.

Is the system reusable?

The aircraft carrier system is completely reusable. In the early stages of the launch programme the expended rocket first stage will fall into the ocean, with no expected pollution impact. As the system matures the stage will be recovered for re-use.

What is "Cosmic Girl"?

Cosmic Girl is the name of the heavily modified aircraft that will carry the Launcher 1 rocket on her port wing. The Aircraft is an ex Virgin Atlantic (retired from fleet in 2015) passenger airliner a Boeing 747 -400 - manufactured in 2001. The Aircraft has retained her civilian airliner name, named after a pop song a tradition going back to Virgin's roots as a record label.

What is "Launcher One"?

It is Virgin Orbit's purpose built rocket. It is a two stage rocket that can deliver 300-500kgs of satellite/s to low earth orbit at a competitive price.

Why hasn't horizontal Launch been done before?

It has. Orbital ATK (now Northrup Grumman) have operated successfully their Pegasus system a privately developed horizontal launch system with 44 successful missions. The most recent launch was in October this year its 9th mission for NASA.

There will be frequent launches from Cornwall.

The project will be low frequency but with high quality and high value launches. The business case estimates a maximum of 8 launches a year by Virgin Orbit, however if demand exceeds expectations, there will be an environmental cap of 12 launches per year, at which point the project will come back to Cabinet with a revised environmental plan of how to mitigate the carbon impact.

The VO system is still not proven. What happens if the launch tests are a failure?

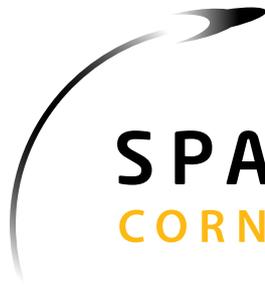
This is a research and development project, and any technology failures will be considered if and when they happen to understand the viability of the launch system. At the UK Space Conference in 2019 there was considerable industry excitement and confidence in Virgin Orbit and Cornwall launch proposals - the industry are 100% convinced about their capability to deliver reliable launch - to industry standards of reliability. This is backed up by RAF endorsement of the Virgin Orbit technology. Our programme of capital spending will allow more time for the technology to be proven before significant amounts are spent and this significantly mitigates the risk.

ENVIRONMENT

The project does not consider the Climate Change Emergency

The Spaceport project is the first Cornwall Council project to undertake an independent carbon emissions report. We have used industry recognised fuel data, independent world renowned climate change academics, and asked them to add generous multipliers to build in contingency for any uncertainties. In addition, a full environmental impact assessment will be carried out and offsetting plan will be put in place as one of the first project deliverables.

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ENVIRONMENT

Rockets will damage the environment. Why do we need more satellites and how can we justify adding to the carbon footprint of the airport?

An independent study by the University of Exeter estimates that Spaceport activities will account for a maximum 0.1% increase in annual carbon emissions from Cornwall. Impacts will be mitigated above and beyond with budget for offsetting.

Satellites are critical for keeping us connected, monitoring climate change and advising environment policy makers. Newer satellites are required as technology advances and are able to provide higher quality imagery and data.

The launches will be very noisy and disturb local residents?

The launches at Cornwall Airport Newquay will be a modern 747/400 aircraft taking off and landing in the same manner as any other aircraft movement that local residents are used to. The rocket will be fired 300 to 500 miles offshore and will not be heard from Cornwall.

HUMAN SPACE FLIGHT

Tourists will be travelling into space from Cornwall.

There are NO plans for Virgin Galactic (space tourism and human spaceflight) to launch from Cornwall in the current business plan. The regulation for this activity will not exist in the UK for many years to come, and any proposals would require their own business plan and investment proposal to be considered at that time.

Surely flying people around the world in very quick time is only for the elite and not good for the planet?

As above there are absolutely no plans for rapid travel human spaceflight from Cornwall – there is no operator that offers this service and the regulations do not exist to support it.

FUNDING

CC is disproportionately investing in the project compared to UK Government

CC investment of £12m is currently higher than the UK Government investment of £8m, however there are further rounds of national and European Space Agency funding that will become available once the Spaceport moves towards delivery.

Cornwall Council has just secured an additional £306,000 from the UK Space Agency (on top of the previous £7.85m commitment) as part of the Horizontal Spaceport Development Fund, to look in more depth at the environmental, carbon and economic impacts, seek further legal advice, and develop proposals to accept other operators to the Spaceport.

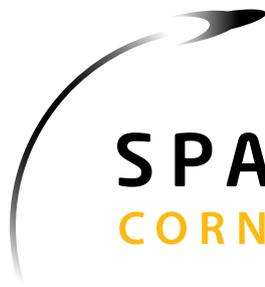
If VO are delivering the business side of the launches then they should be paying to create the Spaceport?

Cornwall Council are investing in a Cornwall owned Spaceport that can host multiple operators, in the same way the airport hosts Flybe, Jet2 and EasyJet training. Virgin Orbit will be our primary and principle operator, but after the initial setup phase they will pay launch fees, storage charges and fuel uplift like any other operator. They are also investing £2.5 M into the project as well as their system which is worth \$1Billion. The proposed model assumes a flat fee to VO of £1.6mpa to cover fees and charges and premises rent (TGOS Storage offices etc) from 2022 when over 3 launches pa. This will be reviewed when we reach 5/8 launch cadence in 2024/25.

Cornwall Council will be directly investing in Virgin Orbit

No. Council funding will be an investment in necessary Airport infrastructure that can be used for other activities, for instance new runway lighting and taxiway strengthening. Even the UK Space Agency money going to Virgin Orbit as part of the government grant funding agreement is going straight back out to UK industry in the development and manufacture of Transportable Ground Operations System (TGOS) equipment, which will be based in Cornwall generating revenue income for the project.

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FUNDING

The Council investment will take money away from NHS and schools

The revenue funding for this project will not negatively impact on the service delivery of any other service and the capital allocation will be additional funding. This project will generate inward investment to Cornwall creating new wage income being fed into the economy, which will then increase the tax base being collected by Cornwall Council to be spent on local service delivery.

£12m is just the start. CC will need to put more and more money in to the scheme?

This investment is the minimum required to achieve a licenced Spaceport and secure first market advantage with a pathfinder launch. The intention is this will attract and secure payload customers for Virgin Orbit initially, and in the future other operators, that will generate revenue income and allow the project to be a sustainable commercial operation benefiting the Council and local economy.

If later stages of the project propose capital investment into other elements such as a hangar, visitor centre or mission control, they will need to have their own investment business case and be considered by future Council administrations.

Is the Revenue funding approved by Cabinet sufficient for the two year project?

We have estimated the Revenue funding required for the core project team, and the external space sector specialist consultants, and we anticipate it will be sufficient for the project. We will work to secure additional and future funding from national and international grant awards, private investors and commercial payload customers.

VIRGIN ORBIT

Virgin Orbit is not commercially operational

Virgin Orbit have completed their test programme in the USA in California and expect to begin commercial operations before the end of the year. The rocket has not just been tested in lab (as has been noted in some press reports). There have been extensive hot fire tests at their test facility at Mojave and these tests are part of the FAA safety and compliance testing.

Virgin Orbit is not investing in Cornwall, and why is Richard Branson not putting his money in to the project?

Virgin Orbit have committed £1m to delivering a UK Spaceport to date, and are about to commit a further £1.5m to deploy the launch system to UK, plus Cornwall will benefit from \$1bn spent on the launch system technology programme in the US.

Is Virgin Orbits investment policy and funding acceptable?

No Cornwall Council money is being invested into Virgin Orbit.

Virgin Orbit has investment backing from the Middle East, which includes sovereign wealth investment from Abu Dhabi, UAE state owned companies (the Mubadala Investment Company).

Cornwall Council has an ethical investment statement in place for the depositing of its surplus cash deposits into financial institutions. This investment is a direct investment in the establishment and specific infrastructure at the airport that together with the above meets the principles within that statement.

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ENTERPRISE ZONE

The Enterprise Zone at the airport hasn't been successful

The Aerohub Enterprise Zone established in 2011 has created over 300 jobs at the airport. The Sector 2 development has just been launched and is already nearly fully let. The Sector 3 development begins construction soon. Businesses on site report the average salary is £41,645, more than double the Cornish average.

MILITARY

The Military will be launching from Cornwall.

The MoD is a partner of Virgin Orbit as part of the ARTEMIS programme which will offer responsive satellite launch for military communication satellites. Currently there is no official arrangement with MoD to use Cornwall to launch, however this would be a significant opportunity to secure a UK payload customer.

Are the RAF interested in Spaceport Cornwall?

The unique position of having an RAF base, commercial passenger airport and licenced Spaceport in one location in Cornwall should not be underestimated. The RAF St Mawgan base is exploring options to expand its capability and become the UK MoD Space Centre, and as such are fully supportive of Spaceport Cornwall. This would have significant additional benefits for the local Cornish economy.

BUSINESS PLAN

There is no Business Plan for Spaceport Cornwall

There is a fully detailed Business Plan for Spaceport Cornwall which identifies the market opportunity, Return on Investment, and full Green Book Appraisal signed off by HM Treasury. You can download a copy of the Cabinet papers with this link: <https://tinyurl.com/y6kalua4>

OUTREACH

Local schoolchildren will not be interested

The team has already engaged with over 3,000 local students and has letters of support from students and teachers across Cornwall.

A full Outreach programme is being developed, with revenue funding earmarked to develop this into a self-sufficient function over two years.

Astronaut Tim Peake has publicly stated his support for the project as a way to inspire the next generation into STEAM subjects (science, technology, engineering, arts and mathematics).

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