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PRESS RELEASE

Spaceport Cornwall will 'not impact significantly' on greenhouse gas emissions, says independent study

27 August 2019

The proposed horizontal launch Spaceport at Cornwall Airport Newquay is not expected to impact significantly on Cornwall's overall greenhouse gas emissions and efforts in combatting climate change, according to an independent scientific study by a leading energy and environment specialist at the University of Exeter.

The study, published today, was commissioned by airport owners Cornwall Council to inform plans to offset any carbon impact from the Spaceport as part of the Council's commitment to making Cornwall's economy net zero carbon by 2030.

The research looked at projected horizontal satellite launch activity between 2021 and 2030 and calculated the likely greenhouse gas emissions per year.

The study found that total annual emissions from Spaceport Cornwall would be between 0.04% and 0.1% of Cornwall's total carbon footprint, and concluded that this was 'relatively low' in comparison to overall emissions.

There is expected to be one launch in year one, with up to no more than eight a year projected by 2025. Horizontal launches use a modified airliner to a carry a rocket to launch altitude rather than traditional vertical-launch rockets. The launch vehicle then returns to the Airport and is able to be reused repeatedly.

The aim is to ensure that any carbon emissions from the Spaceport are more than offset, in line with the Council's plan to help Cornwall strive towards becoming carbon neutral by 2030. In line with the Councils plans, satellite launch operators will be required to meet the carbon costs of operations through their launch fees.

The study was conducted by Dr Xiaoyu Yan, Senior Lecturer in Energy and Environment at the University of Exeter and part of its Environment and Sustainability Institute team based at Penryn in Cornwall.

Dr Yan said: "This report provides a rigorous assessment of the direct greenhouse gas (GHG) emissions from planned launches and ancillary activities associated with launch missions at the proposed Spaceport. The magnitude of these emissions is relatively low compared with total CO2 emissions in Cornwall. Overall, the proposed Spaceport Cornwall is not expected to impact significantly on Cornwall's total GHG emissions and efforts in combatting climate change."

Geoff Brown, Cornwall Council cabinet portfolio holder for transport said: "This report scientifically sets out the expected carbon impact of horizontal launches from Spaceport Cornwall. With this information we can make sure our plans to tackle the climate emergency offset that impact in line with our ambition to have a net zero carbon economy by 2030. By offsetting any carbon impact from the Spaceport, Cornwall could lead the way in sustainable satellite launches.

"It's important to emphasise that what is being proposed in Cornwall are horizontal launches of satellites – not vertical launches or space tourism. Leading the way in satellite based technology can help us worldwide by allowing us to collect data and explore the impacts of climate change from space. This information has global

benefits in helping to manage the earth's resources more wisely. It will also help existing industries become more efficient as we all work together, as we must, to reduce emissions overall and battle against climate change"

Government aims to grow the UK's global market share of the space sector to 10% by 2030 and create the conditions for commercial spaceflight to thrive in the UK. Horizontal Spaceports, such as the one planned for Cornwall, will play a crucial role in helping to achieve this ambition.

In June this year, Government announced its intention to award £7.85 million in funding as part of £20 million central and local government funding to support horizontal launch from Spaceport Cornwall, subject to business case approval.

The first phase of Spaceport Cornwall is expected to create 150 jobs and generate £200m for the Cornish economy. The jobs will create local employment with many roles locally sourced including opportunities across operational support and engineering. The project will offer long term opportunities for work for our local communities and we are working with our schools to raise ambitions and inspire children to consider a career in the space industry..

Around one third – more than 700 – of existing satellites in orbit are for Earth observation, and there are almost 800 for communications. It is estimated that 2,000 small satellites will be sent into space by 2030 as demand grows, but at the moment there are only enough launch facilities for 35% of them, and none in the UK.

The University of Exeter study looked at plans by satellite launch company Virgin Orbit to send small satellites into space from Spaceport Cornwall using a Boeing 747. The plane carries a rocket under its wing and drops it at high altitude, over the Atlantic, for onward travel into space, where its satellite payload is deployed into earth orbit.

Dr Yan calculated both the direct emissions from launch activity in Cornwall and the effect of greenhouse gases at high altitude, where climate impacts can be amplified.

The report calculates that carbon emissions in the first year of Spaceport Cornwall's operation would amount to 1,666 tonnes of CO2. This is equivalent to 0.04% of Cornwall's total carbon footprint of four million tonnes of CO2.

From 2025-30, when there would be up to eight launches a year, annual emissions would be 4,239 tonnes, or 0.1% of Cornwall's total carbon footprint.

By comparison, Cornish households account for 22% of Cornwall's total CO2 emissions, or 878,000 tonnes. Road transport is also 22%, at 880,564 tonnes, while agriculture accounts for 19%, or 762,225 tonnes of CO2 per year. Aviation accounts for 1.5% of total emissions in Cornwall.

The University of Exeter's study will inform a carbon offset strategy for Spaceport Cornwall which includes £50,000 for planting trees as part of a proposed Forest for Cornwall, which Cornwall Council outlined in its Climate Emergency Action Plan last month.

The aim is to ensure that any carbon emissions from a spaceport are more than offset. In time, satellite launch operators such as Virgin Orbit will be required to meet the carbon costs of operations through their launch fees, in line with the Council's vision to achieve carbon neutrality by 2030.

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Note to editors
The following table summarises annual CO2 emission in Cornwall by sector, based on 2016 figures (the latest available).

Sector	Tonnes of CO2 per year	% of total emissions in Cornwall
Commercial and Industrial (stationary)	927,265	23%
On-road transport	880,564	22%
Residential (stationary)	878,000	22%
Agriculture	762,225	19%
Waste	258,745	6%
Industrial processes	229,758	6%
Aviation	55,489	1.5%
Rail transport	33,147	0.8%
Marine navigation	28,007	0.7%
Total	**4,053,200**	
Spaceport (projected)	**4,239**	**0.1%**

A full Environmental Impact Assessment will be commissioned at the appropriate stage of the proposed project and when relevant guidance is available