

The Militarisation of Space: A primer

Space-based operations affect many aspects of modern life and commerce. The global economy relies heavily on satellites in orbit to provide communication services for a variety of services including mobile phones, the internet, television, and financial trading systems. Global positioning system (GPS) satellites play a key role in transport networks, while earth observation satellites provide information for weather forecasting, climate monitoring, and crop observation.

But space is also, unfortunately, becoming a key domain for military operations. Modern warfare relies heavily on space-based assets for command and control; surveillance, intelligence and reconnaissance; missile warning; and in support of forces deployed overseas. Satellites also provide secure communications links for military and security forces, including communications needed to fly armed drones remotely. Many guided munitions use information provided by space-based assets to correct their positioning in order to hit a target.

The militarisation of space endangers global peace and security, betrays contempt for decades of arms control efforts, and will inevitably contribute significantly to a new arms race. Wars may not begin in space or be decided by what happens in orbit alone, and space technology, for all its glamour, is not going to provide simple solutions

to long-standing strategic problems relating to relationships between nations. However, the risk of misinterpreting a complex and unforeseen situation in space has the potential to escalate into a serious crisis. As Beyza Unal from Chatham House has pointed out: "Irresponsible behaviour and disregard for the rules of outer space, especially when there is universal agreement on what those rules should be, endanger not only the space-based assets on which we all depend, but also the global system of international peace and security".

UK space programmes: an overview

Although the UK's military space programme dates back to 1952, until relatively recently it was small and extremely limited. However, as the commercial space sector has expanded and the cost of launches has decreased, the UK has begun to treat space as an area of serious national interest. The MoD and its close allies declared in 2020 that they see space as "a war fighting domain", and have since set up the UK Space Command. The Space Command's 'Defence Space Strategy' outlines how the MoD will "protect the UK's national interests in space", and announced a portfolio of new military programmes to develop space assets and infrastructure.

UK Military Space Developments

Spaceports

Through the UK Space Agency, the government is developing a number of sites across the country, from the south of England to the north of Scotland, that will be capable of launching military, civil and dual-use capabilities into space either via horizontal (aircraft) or vertical (rocket) launches.

In January 2023, Virgin Orbit attempted to launch a number of military and civil satellites via horizontal launch from Newquay airport, but the rocket failed to put the satellites into orbit. The next launch is planned to take place from SaxaVord in the Shetland Islands, though a test launch explosion here in August of 2024 may prove to be a significant setback.

The development of a spaceport in Sutherland, in the Scottish Highlands, was shelved mid-construction in December of 2024. At the time of printing, questions remain about the fate of public funds allocated to the project.



Satellites

Communications: The MoD currently operates the UK's Skynet 5 system enabling hardened communications for the UK's armed forces, intelligence agencies and government departments. The UK is currently upgrading Skynet, with plans for a Skynet 6 system that utilises UK government, allied nation and commercial satellites.

Surveillance: The UK is building a new constellation of satellites to enable it to undertake global military surveillance and intelligence

gathering operations from space. The first of the new Minerva satellites, Tyche, was launched in August 2024 from Vandenberg Spaceport in California, with Titania and Oberon to follow.

Monitoring space from earth

RAF Fylingdales in North Yorkshire is the UK's primary military space monitoring centre, providing a 24/7 missile warning and space surveillance capability for the UK and its allies. Fylingdales is a key part of the Allied Space Surveillance Network and supports the US missile defence system.

In 2023, the UK, US and Australia announced the Deep Space Advanced Radar Capability (DARC) programme to develop a network of three new ground-based radars that will undertake surveillance of satellites and other objects in space. Cawdor Barracks in Pembrokeshire, Wales is the proposed site of the new UK radar, where it has met great opposition from local campaigners PARC Against DARC.

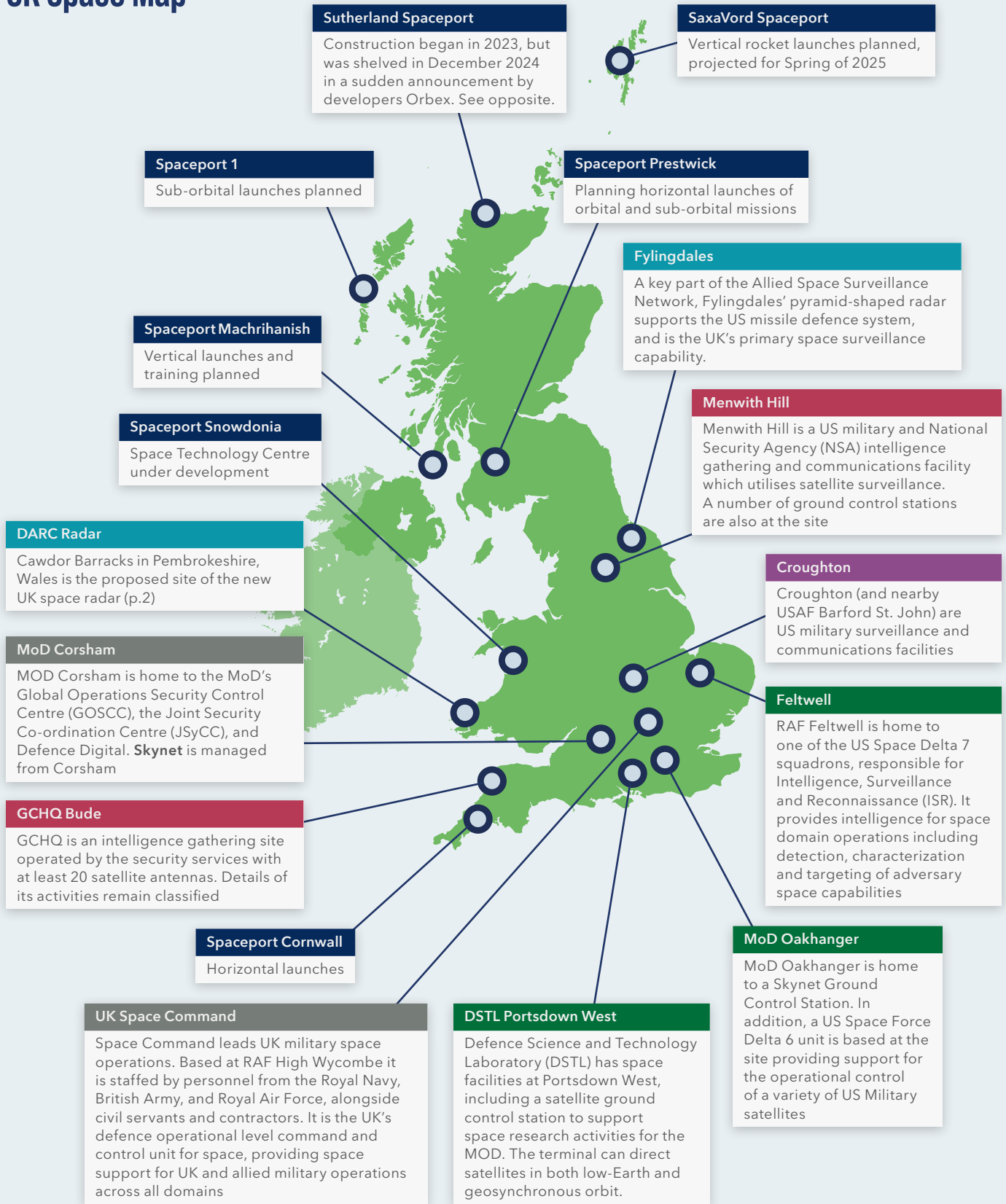
'Space Control'

Like other emerging space states, the UK insists that it opposes military action in space. Yet at the same time it is developing plans for what it euphemistically calls 'space control', i.e. space warfare. In UK policy documents, that translates as 'ensuring freedom of action in space while denying adversaries such freedom'. At one end of the scale, this likely entails electronic warfare (jamming) and cyber attacks, and at the other, anti-satellite lasers or missiles. Little is publicly known about UK 'space control' plans. In 2022, as part of a £1.4bn funding for UK military space programmes the government acknowledged £145m for 'space control'.

Command and Control

The UK Space Operations Centre, based at RAF High Wycombe in Buckinghamshire, is the UK armed forces command and control unit for space, where personnel collate, analyse space information to support UK and allied military forces. The Ground Control Stations for current Skynet satellites are located at RAF Oakington in Hampshire and MoD Corsham in Wiltshire.

UK Space Map



Spaceports	Communications
Surveillance from Space	Command and Control
Surveillance of Space	Ground Control Stations

Project Nyx Alpha, Cyprus (Not shown on map)
In 2023, UK Space Command and the UK Space Agency awarded a contract to UK company Spaceflux to build a new ground-based camera-telescope in Cyprus to monitor objects in geostationary orbit in order to help avoid collisions and protect UK satellites

Our Position

Rather than this military expansion into space, the UK should be upholding and extolling the virtue of the Outer Space Treaty, signed in 1967, which recognises that space is a 'global commons' to be used for peaceful purposes and for the benefit of all countries and humankind. The treaty - which we accept needs to be updated - was aimed at preventing national and commercial exploitation of space and the damage that would cause. Instead of upholding that common good, the UK and other states - in conjunction with a gang of billionaires - are now doing the exact opposite.

The cost to international security and the environment of a new space arms race should be at the front of our thinking, not an almost forgotten afterthought. Billions of pounds are going to be spent launching military systems into space with an untold amount of harm being done to the environment as a result. There is an urgent need for proper and detailed research into the environmental impact of a UK space programme. While individual elements of the UK military space programme, such as development of spaceport have an environmental assessment, this is often undertaken as an afterthought, once development has begun.

We believe that it is simply not good enough, legally or ethically, for the government to say in relation to

its militarisation of space 'if we don't do this then others will'. The UK must uphold the principles behind the Outer Space Treaty, working with its allies to update it to make it relevant to the current context and to technological developments rather than ignoring it as it currently seems to be.

Outer space is a region of wonder and inspiration. It continues to challenge and inspire many people who wish to explore and discover it. However, a growing number of space activities are focussing on commercial exploitation and warfighting. We urge academics, scientists, government officials, space sector businesses and all those who are inspired by space to ensure that their work is not exploited for military purposes.

We urge more public discussion and debate about this new push to exploit space for military and commercial purposes. Currently, decisions with huge implications are being made by a small elite of policymakers and wealthy entrepreneurs for their own purposes and not for the benefit of humanity. This must change.

For more information see our report *For Heaven's Sake* at spacewatch.uk/resources



Space Watch UK

Unit 34, Wincombe Business Park, Shaftesbury, SP7 9QJ

▶ info@spacewatch.uk ▶ www.spacewatch.uk