



**NORTH HIGHLAND & MORAY**  
**SPACE CLUSTER**  
**STRATEGY**

Version 1

**Executive Summary**

September 2021

# North Highland and Moray Space Cluster Strategy – Executive Summary

September 2021

Developed for Caithness and North Sutherland Regeneration Partnership (CNSRP) through Caithness Chamber of Commerce (CCoC).

Funded by Dounreay Site Restoration Ltd (DSRL) and Highlands and Islands Enterprise (HIE).

Prepared by Jacobs, Caithness Chamber of Commerce and UpNorth! Community Trust.

Supported by a Space Cluster Steering Group comprising government, public, private and community organisations.



## Foreword

Foreword to the Strategy for the North Highland and Moray Space Cluster. By Ian Ross, Chairman of Caithness and North Sutherland Regeneration Partnership.



I am delighted to present this Strategy and Action plan for the development of a new Space Cluster in the North of Scotland, with a particular focus on the North Highland and Moray. This sets out a justifiably ambitious approach to taking forward the actions that have been developed in the area over the last few years.

The report recognises the vision that 'By 2026 North Highland and Moray will have established one of the most significant Space Clusters in the UK' and aims to deliver a set of actions that will see real activity and positive progress in the North of Scotland Space sector.

The report demonstrates the very effective and wide ranging partnership based approach to the formulation of the strategy and action plan, with over 20 separate organisations taking part. This includes the UK and devolved governments, agencies, industry, academia and community bodies. I would highlight the important formation of the local Space Leadership Group for the areas identified and consider this a key means of ensuring that the key actions and tangible benefits will be delivered.

The strategy builds on recent documents from the UK Space Agency and BEIS; and also the Scottish Space Leadership Council. Partnership working with these bodies will form an important part of the delivery of this strategy.

The development of this Strategy and the gathering of organisations aiming to create a working Space Cluster, demonstrates the real opportunity that exists with the key assets of a Spaceport; a Launch Vehicle manufacturer approaching an operational state; and crucially the wealth of skills and resources that the North of Scotland is well placed to deliver for an emerging Space sector. This is the right place with the right people at the right time.

I congratulate those that have brought this strategy forward and look forward to seeing the results of this work in developing the Space sector in the North Highland and Moray.

W.J (Ian) Ross OBE

CNSRP Executive Board Chairman  
Caithness and North Sutherland Regeneration Partnership

## Acknowledgements

Name	Title	Organisation
Alasdair Pettigrew	<i>Advisory Board Member</i>	<i>Caelus Partners</i>
Andrew Horner	<i>Business Development Director, Strategic Campaigns</i>	<i>Jacobs</i>
Andrew Stanley	<i>Head of Regional Development, Moray</i>	<i>Highlands and Islands Enterprise</i>
Andy McCann	<i>Economy and Regeneration Manager</i>	<i>Highland Council</i>
Audrey Decou	<i>Curriculum Development Employer Engagement Officer</i>	<i>University of Highlands and Islands</i>
Calum McCallum	<i>Scotland Trade and Investment Sector Lead</i>	<i>Department for International Trade</i>
Cathy Souter	<i>Administration Assistant</i>	<i>Caithness and North Sutherland Regeneration Partnership</i>
Catriona Francis	<i>Chief of Staff</i>	<i>Orbex</i>
Chris Larmour	<i>Chief Executive Officer</i>	<i>Orbex</i>
Colin Baldwin	<i>Head of Local Growth Strategy</i>	<i>UK Space Agency</i>
Craig Coulson	<i>Project Manager Moray Growth Deal (MAATIC)</i>	<i>University of Highlands and Islands</i>
David Calder	<i>Business Development Manager</i>	<i>Caithness and North Sutherland Regeneration Partnership</i>
Derek Cairns	<i>Growth and Inward Investment Manager</i>	<i>Skills Development Scotland</i>
Diletta Invernizzi	<i>Project Manager</i>	<i>Jacobs</i>
Dorothy Pritchard	<i>Chair</i>	<i>Melness Crofters Estate</i>
Eann Sinclair	<i>Area Manager, Caithness and Sutherland</i>	<i>Highlands and Islands Enterprise</i>
Frances Gunn	<i>Chair</i>	<i>UpNorth! Community Trust</i>
Prof Gary Campbell	<i>Vice Principal Strategic Developments</i>	<i>University of Highlands and Islands</i>
Giles Huby	<i>Director of External Engagement &amp; Facilities</i>	<i>North Highland College, University of Highlands and Islands</i>
Jack Price	<i>Graduate Economist</i>	<i>Jacobs</i>
Jacob Nowak	<i>Local Growth Manager</i>	<i>UK Space Agency</i>

Name	Title	Organisation
Jim Grant	<i>Head of Economic Growth and Development, Economy, Environment and Finance Department</i>	<i>Moray Council</i>
Joe Ling	<i>Associate Director</i>	<i>Jacobs</i>
June Love	<i>Stakeholder Relations &amp; Socio Economic Manager</i>	<i>Dounreay Site Restoration Ltd</i>
Ken Munro	<i>Space Sector Lead, UK</i>	<i>Tetra Tech</i>
Prof Margarethe Theseira	<i>Head of Economics</i>	<i>Jacob, University College London</i>
Michael Curtis-Rouse	<i>Head of Manufacturing for Space</i>	<i>Satellite Applications Catapult</i>
Peter Faccenda	<i>CNSRP Programme Manager</i>	<i>Caithness and North Sutherland Regeneration Partnership</i>
Rory McGregor	<i>Manufacturing Policy Advisor - Space, Aerospace, Defence &amp; Marine</i>	<i>Scottish Government</i>
Roy Kirk	<i>Space Hub Sutherland Project Director</i>	<i>Highlands and Islands Enterprise</i>
Scott McClelland	<i>Policy Manager Aerospace</i>	<i>Scottish Government</i>
Shona Kirk	<i>Project Development Manager</i>	<i>Caithness and North Sutherland Regeneration Partnership</i>
Sion Edwards	<i>Programme Director Space: Hydrogen</i>	<i>Jacobs</i>
Dr Stuart Black	<i>Area Manager, Moray</i>	<i>Highlands and Islands Enterprise</i>
Trudy Morris	<i>Chief Executive Officer</i>	<i>Caithness Chamber of Commerce</i>

## Executive Summary

The purpose of this strategy is to set the high-level direction for the development of North Highland and Moray as a centre of the burgeoning UK commercial space industry – a space cluster. This strategy is driven by both ambition – and evidence.

The strategy reviews the global space economy, space sector needs; the existing North Highland and Moray ecosystem and the requirements and key focus areas pertaining to achieving a sustainable Space Cluster. Space Hub Sutherland has a valuable opportunity to take a leading position not only in the emerging small satellite launch sector and in the wider space sector. This is captured in the vision for the space cluster:

'By 2026 North Highland and Moray will have established one of the most significant Space Clusters in the UK'

The Strategy contains six chapters. These are:

- **Chapter one:** the economic opportunity on a global, national and local basis.
- **Chapter two:** space sector needs of the upstream, midstream and downstream segments and how those needs can be met in a number of areas.
- **Chapter three:** the existing ecosystem in the North Highland and Moray.
- **Chapter four:** what the area has to offer currently in meeting space sector needs.
- **Chapter five:** the economic opportunity, the size of the prize for the North Highland and Moray.
- **Chapter six:** the steps that should be taken to develop the local Space Cluster.

### Chapter one: the economic opportunity on a global, national and local basis

Commercial space activity is creating rapid changes within key organisations, funding models and sources, and technological advances. The global space economy, incorporating both commercial space activity as well as government spending by space faring nations, has grown at an average annual rate of approximately 7% to reach a total of nearly \$447 billion in 2020.

As an enabler for all other space activities, the orbital launch industry has been the focus of a great deal of attention in recent years. The reliable and frequent access to space is essential if there is going to be a sustained expansion of commercial activities in space. Nearly \$31 billion has been invested in more than 400 space companies by non-government sources of capital since 2011, and a new annual record of \$8.9 billion was set in 2020. Behind the headline figures, it is important to note that most private funding has flowed to a relatively small number of companies and almost all of the capital was dedicated to launch vehicle development and satellite manufacturing and operations.

A further challenge facing the space industry is that the sources of private capital are not very diverse with the majority from government funding and venture capital. Governments have consciously supported the growth of space start-ups, including through direct and indirect investment in incubators and accelerators, however many businesses that emerge from these programmes fail to secure the additional investment or sales revenue to enable them to thrive. The space sector needs to be able to attract funding from a more diverse range of

funding sources, including institutional investment and debt. To do so, requires clearer identification of risks and potential mitigations and business strategies that provide investors with multiple paths to generating returns. There is a need to educate private investors on how the space industry works and how to reduce the risks of space investments to an acceptable level. To ensure that stakeholders and potential funders can make informed decisions on how to manage their resources and policies the space sector needs to develop a more comprehensive and integrated approach to estimating its direct value and how it supports wider value creation through the services and products that it enables across society.

Supporting the steady increases in traditional launches, advances in technology combined with lower launch costs have led to a boom in nanosatellites (spacecraft weighing 10kg or less) and small satellites being launched. In the case of both small-satellite launch vehicles and spaceports, there will likely be a first-mover advantage that enables some participants to take a commanding lead, and there is now a global race to secure that position. In this respect, the UK is positioned well, with space legislation in place, a regulatory framework being formulated, two launch sites funded for development, and commitments from three launch operators. Space Hub Sutherland is in a particularly good state, with two launch operators developing vehicles specifically with the spaceport in mind, and the capacity to bring in additional operators.

The development of Space Hub Sutherland is a natural addition to the portfolio of space activities already present in Scotland, offering customers a complete value chain from design and manufacture to launch and operation of satellites.

*According to Size & Health of the UK Space Industry 2020, 17% of all UK space jobs are based in Scotland. Looking across the entirety of the Scottish space sector, the value in 2017 was estimated to be £2.5 billion, and there are ambitions to grow to £4 billion per year by 2030.*

Space Hub Sutherland will support this goal in the coming years by spurring the creation of new businesses headquartered in Scotland to be closer to Sutherland and other space industry clusters.

## Chapter two: space sector needs

To understand the needs of the space sector, and how North Highland and Moray can seize its opportunities, Chapter two of the strategy defines a model comprising of three supply chain “segments” of the space value chain – Upstream, Midstream and Downstream.

The Upstream sector, often termed “space manufacturing” accounts for 10-20% of the potential space market. The development of Space Hub Sutherland and the vehicle assembly, engine testing and mission control centre at Forres means that the upstream sector provides a specific opportunity for North Highland and Moray.

In terms of the value, the Midstream segment currently accounts for 5-10% of the potential space market. The Midstream is less dependent on close physical proximity to space manufacturing and launch facilities than the upstream, but the skill sets, and supply inputs

are common to both segments, meaning that a midstream cluster is more likely to form around a focus of existing upstream activity.

The Downstream segment involves the processing (adding value to) data collected in space and sale to end consumers, and the development and manufacture of equipment and provision of ancillary services for the application of space data. Together, provision of these services and the development and manufacture of equipment account for 70-85% of the total space market – the largest segment.

*While the greatest economic opportunities are concentrated in the downstream segment, these industries are far more mobile and globalised – and can be located anywhere in the world, wherever the comparative advantage dictates that it is most economic for the firms to do so.*

Chapter two also addresses infrastructure gaps, leveraging workers from adjacent sectors such as Nuclear, Oil & Gas and Defence; providing support such as the development and rapid scaling of early-stage companies; the attraction, retention and skilling of a diverse workforce to support the sector.

The space sector employs the most highly educated workforce of any sector in the UK. The UK Government has announced ambitions for 119,100 people to be working in the space sector by 2030. In 2019, some 45,100 people were already doing so. Scotland accounts for 17% of space sector employees (around 7,700 jobs) and is home to 173 space organisations including 96 space sector company head offices.

In 2020, around two-thirds of space sector companies reported difficulty in recruiting into their company. For the North Highland and Moray to overcome these skills challenges will require leveraging the existing skills advantages that the region can offer in other sectors over elsewhere in the world and building and expanding on the many schemes that are already developed to support skills training and increasing diversity across the UK, Scotland and locally.

The strategy identifies the needs of the space industry with particular focus on case studies from the US, Europe, New Zealand and the UK. The case studies consider the supply chain, skills, infrastructure, regulatory environment, and access to investment.

Geography is a key component, as latitude and the availability of real estate for launch ranges is a factor in where the upstream space launch operations locate. Higher latitudes are more optimal for the launch of satellites into Low Earth Orbits and a location near the sea and remote from population centres mitigates the risks from abortive launch. While this is only relevant for one small part of the overall space sector, the potential for space launch and spaceports to form the nucleus of a wider cluster, including ground stations and vehicle assembly means that geography may also be a differentiator in the midstream and downstream segments.



### Chapter three: the local area ecosystem

In the North Highlands region, several firms are already engaged in high value manufacturing – including optics, imagery and advanced materials, supplying the Dounreay nuclear research facility and the oil and gas sector. None currently supply the space sector. Business services, construction and general support services are well represented.

In the Moray Region, the expanding Orbex launch vehicle development and manufacturing facility at Forres forms a growing nucleus for the space sector. There is the potential for a clustering of innovative businesses at the Forres Enterprise Park, complementing the existing aviation and defence sector supply chain and talent pool serving RAF Lossiemouth. The food and drink sector in Moray also sustains a highly skilled workforce and advanced engineering supply chain.

*Across the region, the Defence and Energy sectors are specifically contributing highly skilled technical engineers with continued investments and project opportunities.*

There are several local programmes that support the development of the skills required by space. The Moray Aerospace, Advanced Technology and Innovation Campus (MAATIC) and co-located Manufacturing Innovation Centre for Moray (MICM) at Lossiemouth, due to start on site in 2022 will create a supply of engineering talent – and incubation space for innovative engineering businesses, serving space and other sectors.

While a large number of premises in the North Highlands Region are not connected to the UK gas network, the region has a plentiful and expanding supply of renewable energy (wind and tidal) and benefits from the existing and planned onshoring of HV power cables, providing an affordable and stable energy supply.

In the Moray region more than 40,000 homes and businesses have access to the fibre network, making it one of the best-connected local authority areas in the Highlands and Islands region. However, there are still some areas of the North Highlands which lack access to superfast broadband or 4G mobile connectivity. Business facilities are available in North Highland and Moray with gigabit / full fibre connections. The onshoring of international data cables offers the potential for hyper-connectivity businesses in the medium to long term.

The region is ranked as one of the most deprived in Scotland for accessibility by land (road and rail), although connectivity within the Moray sub region is good. Air and sea links to the North Highland region are however well-developed, a legacy of the oil and gas industry.

While equatorial launch is more efficient, North Highland proves launch access to the Polar and Sun-Synchronous orbits due to the trajectories that can be achieved from the region. The north coast of Scotland provides geographic advantages for small rocket launch facilities. Within the North Highland and Moray there are multiple business parks and commercial facilities suitable to host SMEs and startups. While there is the potential for pressure on the local housing supply, community and educational services in the North Highlands region are of a high standard and able to accommodate growth. The liveability of

the region and outstanding natural environment are key strengths in attracting inward investment.

Responses to an online survey sent to businesses within the region demonstrated the self-sufficiency within the North Highland and Moray businesses with most respondents claiming that on average over 60% of their supply chain is local. The manufacturing, engineering and designs firms identified that key barriers to their future growth plans were 'Regulation/Red Tape', 'Macro Economic Disruption' and 'Quality of digital infrastructure'. In terms of space awareness, all respondents expressed interest at the opportunities proposed by Scotland's Space sector.

#### Chapter four: the area offering

Chapter four of the strategy considers the gap analysis between the needs of the Space sector and the existing ecosystem in North Highland and Moray.

*The gap analysis indicates that the cluster has advantages in terms of launch vehicle development and operations with potential for development of midstream applications (ground stations and data centres) in the mid to long run, due to the strategic advantages of the onshoring of HV power lines and international data cables.*

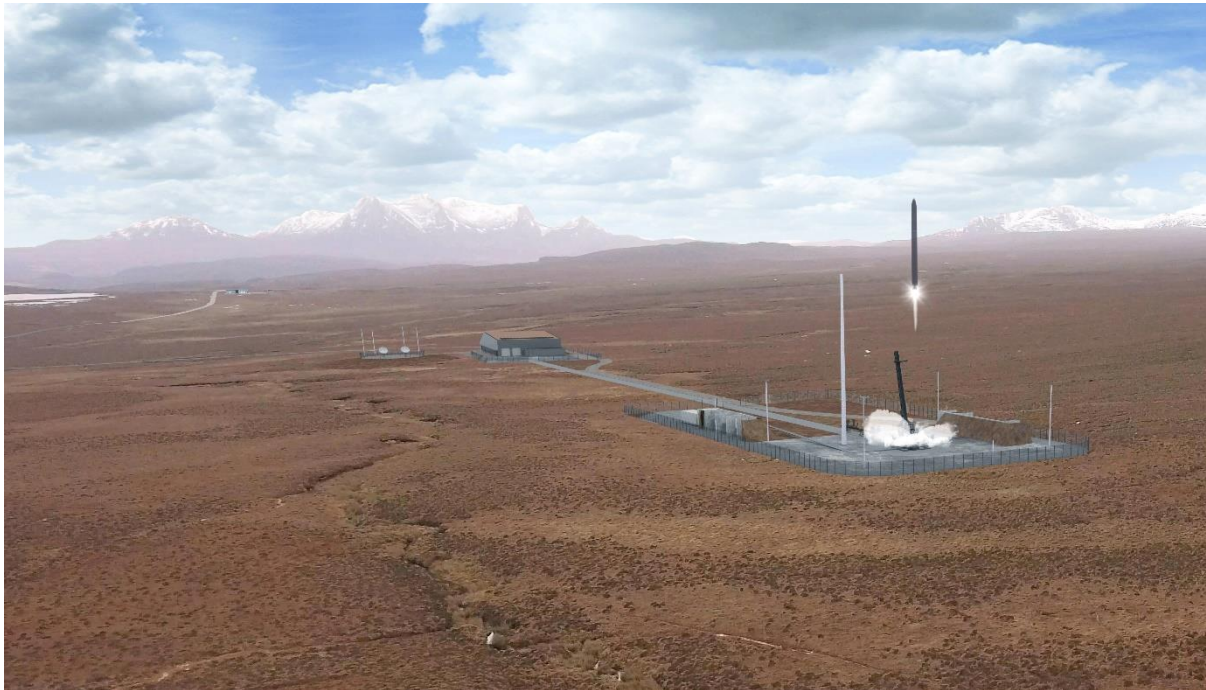
Supply of Services and Skills as well as infrastructure are examined with strengths identified in the areas of geography, existing aerospace and advanced engineering supply chain and potential cluster nuclei centred around Space Hub Sutherland in North Highland and Orbex in Moray. The analysis also identifies a lack of specialist space launch services, no specific comparative advantage for downstream growth and potential challenges in attracting talent to the area.

There are clear opportunities identified such as leveraging the synergies with the hydrogen economy, existing oil & gas, renewables, precision engineering and clean facilities from the food and drink sector, life sciences, nuclear and aerospace skills base. HVDC and data cable landings in the area provide power and data capability in support of midstream and downstream activity, while tourism and the visitor economy could build on the success and learnings of the NC500 and Malt Whisky Trail. Taking advantage of these opportunities would mitigate several risks the report identifies including the declining population in the area, competition from other UK and European space clusters for midstream and downstream growth and uncertainty around the size of the total addressable market for small launch of satellites in support of constellations.

#### Chapter five: the size of the prize

Chapter five of the strategy considers the 'size of the prize' for North Highland and Moray on 2026, 2030 and 2050 time horizons. Developing the UK's launch capability at Sutherland brings a multitude of benefits. It will provide vital local economic impacts for the region by offering a range of locally based employment opportunities and the chance to be at the forefront of an exciting emerging sector which will also bring indirect impacts to boost the already thriving tourism economy in the region. It will help to retain highly skilled

individuals in the North Highlands and offer opportunities to young people to help stem the flow of depopulation.



It is vital to sustain the emerging Moray space cluster as without a space port it is highly likely that existing launch providers will relocate. Space Hub Sutherland will unlock further development of the Moray space cluster and support UK and Scottish government objectives for growing the space sector.

Jobs figures are presented including direct jobs associated with the construction and operation of Space Hub Sutherland and indirect and induced jobs at a Highlands and Islands (including Moray), Scotland and UK level. GVA is also estimated at these same three levels. Three scenarios; baseline, Scenario 1 and Scenario 2 are presented highlighting different launch cadences and visitor numbers which in turn have an impact on jobs and GVA over the time horizons indicated. In 2020, it was estimated that the space economy contributed £6.6bn of GVA to the UK's economy and unlocked at least £360bn of GVA by supporting industries that are dependent on satellite services including navigation, meteorology, communications and earth observation.

*By 2030 it is anticipated that other launch providers will be using Space Hub Sutherland and that growth in the midstream and downstream segments will support 740 full time equivalent jobs and value for upstream, midstream and downstream activities of £56m GVA for the Highlands and Islands.*

## Chapter six: next steps

Chapter six of the strategy considers the way forward in developing the Space Cluster. Opportunities in the midstream could include ground station and data centre capability in the North and downstream applications could leverage space infrastructure to enhance activities in sectors where the area is already strong such as energy, the environment and

tourism. This will be achieved by aligning efforts with the findings of the UK Space Agency's Space Sector Skills survey through leveraging the existing area skills base and developing new offerings through the University of the Highland and Islands (UHI) and its partners.

*The strategy and recommendations which follow will be distilled into a clear action plan owned by the Local Space Leadership Group.*

The positive impact of the local rural communities, particularly around the Spaceport through cluster development could include projects such as a space education centre, social housing provision, small scale business support and a community-based fund for sustainable community initiatives.

They will meet regularly to ensure that the actions assigned are being taken forward and that the participating organisations have the drive and ambition to deliver. Progress will be reported on regularly and a review of progress on the Strategy should be planned for 2025/26.

No.	Recommendation	Timescale
1	Create specific programmes through universities and supply chain partners to <b>address the science/engineering skills shortages in space industry</b> leveraging nuclear, oil & gas and MOD know-how. (Address early years engagement, Space STEM, technician level training and sector specific qualifications).	4 years
2	Explore area wide interventions to <b>stimulate downstream growth</b> in the area (70-85% of the market). This would likely need an understanding of market need. While this will involve appropriate connectivity and property it is likely to focus on labour supply and working with academia to deliver a labour pipeline.	4 years
3	Consider the use of job creation and training fiscal incentives to <b>stimulate employment</b> and how they can focus on the space sector.	4 years
4	Review options for <b>Accelerator Programmes</b> as an enabler of start-ups and existing tech supply chain to diversify and engage (networking) with the (upstream in first instance) space sector.	Within 12 months
5	Ensure provision of the necessary <b>residential and business infrastructure</b> and resilience in the area to meet the needs of a growing high-tech data driven space ecosystem.	5 years
6	Develop an <b>incubation centre</b> (hub) associated with Space Hub Sutherland leveraging existing resources to give growing companies the opportunity to learn from an operational spaceport.	Within 36 months

No.	Recommendation	Timescale
7	Enhance talent attraction capability through focused efforts on <b>promoting the liveability</b> of the area.	2 years
8	Create a <b>Local Space Leadership Group</b> to champion the interests of the area and to drive forward the recommendations from the Strategy.	Within 3 months
9	Unlock further public and private investment through regional planning initiatives integrating other sectors leveraging a <b>'Space Growth Deal'</b> akin to the 'Moray Growth Deal'. This needs input from UK and Scottish Government who fund these initiatives.	Within 24 months
10	Educate the wider investment community on the benefits and risks of investing in the space industry in the area. Consider an <b>'Investor Ready'</b> approach to help both the company and investor.	24 – 48 months
11	Create a <b>dedicated structured and resourced effort</b> to attract inward investment (new businesses) to the area through a coordinated and collaborative approach.	Within 6 months
12	Create a shared vision across the private and public sector to realise the benefits locally and regionally through a <b>'Space Coast 2030'</b> conference.	12 months

## Summary

This strategy offers an excellent opportunity for North Highland and Moray to develop a Space Cluster which could deliver 740 jobs and £56m of GVA to the Highlands and Islands by 2030. The recommendations identified in the strategy have been developed through a detailed understanding of the space sector needs and the strengths and areas for development in the North Highland and Moray. These recommendations will lead to actions focused on inward investment, business support, infrastructure enhancements and skills development critical to the success of the Space Cluster. The creation of a Local Space Leadership Group to develop and drive forward the action plan will be instrumental in the Space Cluster achieving its forecast potential.

