

Defence, Security and Space

Annex A: Detailed Information on Skills Needs Assessment



Defence, Security and Space

The National picture

The UK's defence, security and space sectors are entering a period of accelerated growth, driven by geopolitical uncertainty, national security priorities, and a renewed commitment to strengthening sovereign capability. The Invest 2035 strategy identifies defence as a growth sector, driven by a national commitment to increase defence spending to 2.5% of GDP. The strategy emphasises sovereign capability, supply chain resilience, and the integration of AI and autonomous systems into defence platforms.

Alongside this, the UK's space ambition is expanding rapidly, focused on secure communications, resilient positioning systems, satellite applications, and the development of a globally competitive domestic launch and manufacturing capability. Together, these sectors form interconnected pillars of national resilience, sharing common demands around advanced engineering, high-integrity manufacturing, secure digital systems, and a modernised supply chain.

The specific sector in the North East

The region's businesses support critical defence platforms, from armoured vehicle structures and maritime components to military turbine technology, while simultaneously contributing to the UK's evolving space ecosystem through data processing, satellite technologies, optics and materials R&D. Defence and space are no longer separate domains; they are converging around shared needs such as cyber resilience, AI-enabled systems, secure communications, and sovereign supply chain resilience.

The emergence of the North East Regional Defence & Security Cluster (NERDSC) has further strengthened this position by providing a coordinated, capability-led interface between regional industry, the UK Ministry of Defence (MOD), and national innovation programmes. At the same time, the region's space strengths, anchored by assets such as NETPark, regional universities, and Space North East England (SNEE), complement defence needs around surveillance, communications, and space-enabled services. Taken together, the North East is not only participating in these sectors but is shaping future capabilities across both.

NERDSC has become a central mechanism for aligning the region's industrial strengths with the UK MOD's evolving priorities. As one of the fastest-growing clusters in the UK, NERDSC brings together advanced manufacturers, digital innovators, materials specialists, logistics providers and research institutions to build a coherent, capability-led offer to defence. Through its convening power, the cluster provides a structured route for SMEs, who make up the majority of the regional ecosystem, to understand MOD demand signals, access procurement pathways, and position themselves against emerging requirements across land, maritime, air, space and security domains.

The North East defence, security and space sector is projected to grow annually by 3.2% in defence and 2.9% in space sectors, with the workforce expected to reach 6,503 roles by 2030. Currently, the sector generates £1.75 billion in turnover and supports 5,284 jobs across the region. It is a sector defined by a unique mix of heritage and high-tech capability, where 55.1% of the 158 regional defence employers are micro-businesses (less than 10 employees), 19.6% are SMEs (10–49 employees), and 16.5% are medium-sized businesses (less than 250 employees), creating a highly specialised and agile supply chain for larger contractors. The remaining 8.9% are large organisations. The North East also has the highest proportion of MOD spend with SMEs of any region, currently standing at 35%.

The sector workforce is notably male dominated, with women accounting for 21.9% of defence roles and 19% of director roles. The workforce is predominantly made up of mechanical, electrical, software and systems engineers, alongside specialist technicians, precision manufacturing roles and emerging space-specific occupations. Several employers report exceptionally strong retention, particularly in defence engineering, but also highlight ageing workforces, with only 5.5% of the workforce under the age of 21, and demographic gaps that threaten knowledge continuity. Defence and space employers describe a sector characterised by rapid technological evolution, highly specialised labour markets and long-term national security commitments. In the space sector, micro firms and scale-ups are expanding quickly, driven by investment, new satellite manufacturing activity and the growth of the regional space cluster.

Across the sector, employers emphasise the importance of security-cleared, safety-critical and high-consequence engineering capability.

Sector definition - Priority SIC Codes: Manufacture of weapons and ammunition (25.4), Manufacture of air and spacecraft (30.3), Manufacture of military fighting vehicles (30.4), Defence activities (84.22)

RTIC: 0006 Cyber- 000601 Cryptographic authentication, 000602 Endpoint security, 000603 Identity management, 000604 Incident detection and response, 000605 IoT Security, 000606 Network security, 000607 Risk management, 000608 Threat management, 0096 Defence- 009603 Comprehensive intelligence, surveillance and reconnaissance, 009604 Modernised logistics and support, 009602 Platforms, 009601 Space and resilient communications, 0098 Space Economy- 009822 Communications and connectivity, 009832 Computer vision software, 009818 Data infrastructure, 009839 Debris removal, 009820 Geospatial analytics, 009819 Geospatial platforms, 009816 Ground segment, 009814 High-altitude platforms, 009833 In-orbit assembly, 009831 in-Space hardware, 009828 in-Space R&D and manufacturing, 009829 In-Space robotics, 009808 Launch infrastructure, 009810 Launch services, 009809 Launch vehicles, 009821 Mapping and imaging, 009807 Operations, 009838 Orbital life extension, 009837 Orbital refuelling, 009836 Orbital servicing, 009830 Orbital transfer, 009826 Planetary and asteroid mining, 009823

Positioning, navigation and timing, 009804 Robotic systems, 009835 Satellite inspection, 009815 Satellite relay systems, 009834 Satellite testing, 09811 Satellites - Earth observation, 009812 Satellites - Global navigation, 009813 Satellites - Telecoms, 009817 Security software and services, 009801 Space ecosystem, 009806 Space engineering, 009825 Space exploration, 009805 Space hardware, 009824 Space infrastructure, 009803 Space materials, 009802 Space software, 009827 Space-based solar power ISO106 Space

Priority Occupations (SOC 2020):

SOC20 unit code	SOC2020 – Priority Occupation unit label	2021-25 monthly average actual job posting	monthly average job posting forecast by 2029	Forecasted change by 2029 in monthly job postings	Forecasted % change by 2029 in average monthly job postings
2133	IT business analysts	77.6	195	3.9	151.29%
2134	Programmers and Software Developers	56.8	145	16.9	155.28%
2125	Production Engineers	40.9	138	-0.2	237.41%
2123	Electrical Engineers	39.3	186	22.2	373.28%
2122	Mechanical Engineers	33.2	121	-10.4	264.46%
3543	Project Support Officers	33.2	75	3.8	125.90%
2135	Cyber Security Professionals	22.4	58	58.3	158.93%
2121	Civil Engineers	11.55	42.86	16	271.08%
2124	Electronics Engineers	7.6	19.4	8.9	155.26%
2126	Aerospace Engineering	6.6	17.1	62.3	159.09%
3113	Manufacturing Engineering	5.6	13.8	-3.3	146.43%
5213	Welders	3	18.5	-212	516.67%
2114	Physical Scientists	1.25	2.29	14	83.20%
2111	Chemical Engineering - Industrial Chemist - Analytical chemist	0.2	0.042	2.2	-79.00%

Real-world challenges for the sector

- Security Clearance: The requirement for high-level security clearance can act as a bottleneck for recruitment, particularly for foreign nationals or those with gaps in employment history.
- Supply chain resilience: Geopolitical and economic instability have raised supply chain security to the top of the defence agenda, requiring local supply chains to be more robust and to build in-house capacity to produce critical components.
- The Digital and AI divide: A significant gap exists between the rapid adoption of high-tech defence platforms and the manufacturing workforce's ability to operate them.
- Cybersecurity and agentic AI skills demand: Employers report growing demand for staff with expertise in cybersecurity and AI systems. There is also an increasing emphasis on combining human expertise with AI-enabled tools to stress-test systems against adversarial threats and cyber-attacks, improving overall system resilience.
- Women's participation: Gender imbalance remains a persistent challenge, with cultural barriers limiting participation in engineering and space operations.
- Recruitment pressure: Space employers struggle to attract young people with strong maths, physics, data and software backgrounds, competing directly with finance and tech sectors.
- Senior role recruitment: Across the sector, recruitment for senior roles is difficult due to the small national pipeline and limited transferability into highly specialised roles. Some firms anticipate rapid workforce expansion, but growth is constrained by funding uncertainty and limited regional talent pools.

In response to these challenges, NERDSC plays a critical role in supporting SME readiness, resilience and diversification into defence and security markets. The cluster provides targeted workshops, capability assessments, innovation brokerage and direct engagement with MOD stakeholders, enabling companies to upskill, align to defence standards and transition from adjacent sectors such as automotive, rail, offshore energy and advanced engineering. This approach strengthens the regional supply chain, enhances security of supply for defence, and ensures that the North East can meet rising demand for digitally enabled, sustainable and sovereign defence capabilities.

Skills needs, current provision and demand

Employers highlight significant gaps in both technical and transferable skills. Defence engineering firms report strong demand for software, AI, robotics and cyber security capability, alongside traditional manufacturing skills that are becoming harder to source. Space employers emphasise the need for cross-disciplinary capability, including environmental modelling, regulatory knowledge, space law and sustainability. Across the sector, soft skills gaps include communication, teamwork, leadership, autonomy, emotional intelligence and the ability to operate in secure, regulated environments. Younger recruits often lack workplace readiness, confidence and realistic expectations about progression.

Training models vary widely. Space sustainability firms rely on intensive in-house development, mentoring and long-term progression from

apprentices to analysts. Defence manufacturers invest heavily in apprenticeships across welding, machining, engineering and supply-chain roles, with some operating in-house academies to address shortages in high-integrity fabrication. Large defence primes use structured apprenticeships, day-release models and internal progression pathways, supported by mentoring and phased retirement to manage ageing workforces.

Across the sector, employers note that provision often lacks specialist aerospace, unmanned aerial vehicles (UAV), avionics and defence-grade compliance content, with existing provision often perceived as being more focused on foundational CAD and programming skills. Curriculum alignment challenges persist, with some apprentices failing due to mismatches between frameworks and operational requirements.

Engagement with education and talent pipelines is extensive. Space employers collaborate closely with universities, contributing to curriculum development, research partnerships and the creation of the UK's first Orbital Analyst apprenticeship.

Defence manufacturers maintain strong HE partnerships but face challenges with tutor continuity and restrictions from some universities due to defence-related sensitivities.

School engagement is active. Employers highlight the need for earlier STEM engagement, clearer progression pathways and stronger integration of project management, digital skills and applied technical learning into STEM degrees.

Future skills demand includes mechanical, electrical, software and systems engineering; autonomous and AI-enabled systems; robotics; cyber security; high-integrity manufacturing; and advanced data analytics. Furthermore, space sustainability, regulatory compliance and environmental modelling are expected to grow as emerging disciplines.

Satellite manufacturing expansion in the North East is expected to generate significant demand across machining, electronics assembly, software, AI, autonomous systems and space law-related roles. Defence employers anticipate rising demand for electrification, high-power systems, environmental engineering and automation capability. Across the sector, the ability to operate in secure, regulated, safety-critical environments will remain a defining requirement.

Education pathway: This follows the same route as the engineering and manufacturing technology pathway. Priority is placed on Level 6 and above training in computing and engineering, while traditional engineering and manufacturing technologies training remains important at all qualification levels.

The Regional Defence & Security Clusters (RDSCs) play a coordinated role across the UK in strengthening defence and security skills pipelines by aligning industry, academia and government around current and future Ministry of Defence (MOD) requirements. Working closely with MOD stakeholders and the Reserve Forces' and Cadets' Associations (RFCA) community, RDSCs help industry better understand how to access, integrate and support reservists and veterans as a critical part of the defence workforce. This includes promoting flexible employment models, recognising military skills and experience, and improving pathways for service leavers into high-value defence and security roles.

The North East now has the foundations for a more coherent, region-wide defence, security and space skills pipeline. The establishment of the AM-TEC, led by New College Durham, provides a practical mechanism for connecting employer demand with further education, higher education and innovation capability, while strengthening progression from Level 3 through to Level 6 and above, including apprenticeships, degree pathways and advanced postgraduate provision delivered in partnership with universities.

The Defence University Alliance (DUA) has the potential to play a pivotal role here by formally connecting regional universities with MOD priorities and innovation programmes to build a sustainable pipeline of highly skilled graduates. Ultimately, defence and security cluster development, built on the triple helix model of industry, academia and government, is critical to creating a sustainable, future-ready workforce.

What's happening in the region

- **Supply Chain Integration:** The region is actively integrating its heavy engineering capabilities with new defence contracts, playing a critical role in national security supply chains. This includes a £1.129m contract for Pearson Engineering to undertake structural scanning of the British Army's Challenger 2 tank fleet at the Armstrong Works in Newcastle.
- **Space Cluster Development:** Universities are collaborating to support the space cluster, focusing on satellite applications and data processing. Space North East England (SNEE) has officially replaced the Satellite Applications Centre for Excellence as the host for the UK Space Agency (UKSA)-funded cluster.
- **Strategic defence manufacturing assets:** BAE Systems munition facilities at Washington and Ridsdale, Openworks Engineering delivering world-leading Counter-Unmanned Aerial Systems (C-UAS) and kinetic targeting technologies, and Pearson Engineering as world leaders in combat engineering and battlefield mobility equipment. Rolls-Royce military aircraft turbine production further underpins the region's contribution to sovereign defence capability.
- **Advanced science and research excellence:** Durham University contributing optics technology to the James Webb Space Telescope. Newcastle University provides world-leading capability in materials, digital, energy systems, and cyber, while the University of Sunderland delivers excellence for military medical needs through medicine and health technologies. Northumbria University delivers strengths in satellite applications and geospatial intelligence.
- **Business Durham:** It is the host organisation for Space North East England and manages NETPark, which is home to the High Value Manufacturing Catapult and Compound Semiconductor Applications Catapult. NETPark also houses Durham University's Centre for Advanced

Instrumentation, providing world-class expertise for major telescope and satellite missions.

- North East Space Skills and Technology Centre (NESST): £50 million investment at Northumbria University, backed by the UK Space Agency and Lockheed Martin, with Lockheed Martin contributing £15 million to long-term R&D and skills development. NESST aims to be a national hub for advanced space research and satellite communications. Additionally, the £2.5 million NESCA programme, led by Northumbria University, focuses on accelerating innovation in resilient space communications.
- The Durham University Space Research Centre (SPARC) is a £5 million facility established to lead in sustainable exploration and has recently been appointed as a European Space Agency (ESA) Laboratory. From 2026, Newcastle University will begin offering an aerospace degree.
- Global players such as Airbus and Leonardo: the region also hosts Leonardo's Newcastle facility, which focuses on advanced sensing and data-driven defence technologies, while Airbus supports geospatial intelligence and situational awareness. Furthermore, APCL and UK Docks are expanding port and maritime infrastructure to support defence logistics, and organisations such as OCTRIC and Stargate UK are strengthening secure data and experimentation capabilities.

What needs to be retained

- Engineering Core: The region's deep expertise in heavy engineering and fabrication is the foundation of this sector and must be preserved through apprenticeships. The region has significant potential to attract a large share of the UK defence budget, thanks to its manufacturing capacity and ability to drive high-tech innovation, particularly in advanced materials and digital security.
- University Research: Defence-relevant research at regional universities should be supported and commercialised, particularly in materials science and digital security.

What changes are needed

- Secure Skills Pipeline: A dedicated pathway for "secure skills" is needed, combining technical training with vetting preparation to speed up the onboarding of staff into sensitive roles.
- Investment Capture: The region needs to be more aggressive in capturing a share of the growing UK defence budget by marketing its manufacturing resilience and secure infrastructure. This requires a clearer defence identity and positioning within the North East Mayoral Strategic Authority (MSA) strategic intent, alongside higher visibility of the cluster-led ecosystem (NERDSC and SNEE) to ensure stronger interaction with the MOD.

Potential benefit

Strengthening this sector reinforces the region's industrial base through long-term, government-backed contracts that are counter-cyclical to consumer markets. It also drives high-tech innovation that spills over into the civilian economy, particularly in areas such as cyber security and advanced materials. More broadly, it strengthens the domestic industrial base and helps ensure security of supply in an unstable world.