



Queensland Defence Industries 10-Year Roadmap and Action Plan

June 2018





The Department of State Development, Manufacturing, Infrastructure and Planning

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Foreword

Queensland's defence industries employ more than 6500 people, generated an estimated \$6.3 billion in revenue in 2015-16 and secured \$4.3 billion in Australian defence contract payments in 2016-17.¹

The state is underpinned by a strong defence industrial base and world-class capabilities in a range of areas including aerospace support, ship repair and overhaul, heavy vehicle support and upgrades, command and control systems, reconnaissance and surveillance systems, unmanned vehicles, and cyber security. This positions Queensland at the front line of the defence industry in Australia and an innovative science and technology hub.

Development of local defence companies, combined with access to global supply chains, has led to many technological advances in fields like nanotechnology, communications, automotive, marine, information technology, electronics, precision manufacturing and aerospace.

The Queensland Government has committed to building on our success in the sector by creating Defence Jobs Queensland, establishing advisory boards of senior defence and industry personnel, and committing \$10 million to defence supply chain logistics hubs.

This *Queensland Defence Industries 10-Year Roadmap and Action Plan* sets out our vision to significantly increase defence revenue and generate 3500 new full-time jobs by 2028 by building on these high-tech capabilities.

It is part of our economic plan to Advance Queensland and create a globally focused, diverse economy that delivers high-value, knowledge-based jobs for the future. We are driving this process through six 10-year action plans for identified priority industry sectors. As a key sector of Queensland's economy, defence is at the forefront of this process.

Our *Queensland Defence Industries 10-Year Roadmap and Action Plan* reflects feedback received during targeted consultation with defence industry stakeholders. It identifies how we will help Queensland businesses leverage our state's industry advantages to maximise opportunities and support the strategic and capability priorities identified in the Australian Government's 2016 Defence White Paper (DWP).

With 27 per cent of Australian Defence Force (ADF) personnel and 14 significant defence facilities located across the state, Defence is a fundamental part of Queensland with close ties to communities statewide. The Queensland Government has long acknowledged the skill and dedication of the ADF and has developed a range of initiatives across government to support veterans and their families outside the scope of this Roadmap.

The geopolitical shift in focus to the Indo-Pacific region suggests more of Australia's defence activities will move northward. This highlights the state's key role in creating strong, complementary defence industries, particularly in regional Queensland where a large portion of Defence personnel are based.

A hallmark of successful Queensland defence companies is their technical innovation and capacity to produce high-quality, low-volume defence products developed to global standards. Drawing together industry, researchers and businesses, Queensland is actively developing capabilities such as robotics, artificial intelligence and trusted autonomous systems, positioning the state as a global leader in innovative technologies.

Our *Queensland Defence Industries 10-Year Roadmap and Action Plan* provides the platform to further support and grow the state's recognised defence industry capability and increase its presence both domestically and internationally. With world-leading innovation and technology capability, Queensland aims to be the go-to location for the next generation of defence projects.



The Honourable Cameron Dick MP

Minister for State Development,
Manufacturing, Infrastructure
and Planning



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Executive summary

Vision

By 2028, Queensland will be Australia's front line for defence industry by increasing the revenue contribution to the Queensland economy to \$7 billion and creating a 10,000-strong, highly skilled workforce that is renowned for its agility, innovation and depth of capability in supporting the Australian Defence Force and its allies.

Key enabler - Defence Jobs Queensland

The Queensland Government's defence industries unit that will support the vision and enable delivery of the key strategies and priority actions.

Key strategies and priority actions

The *Queensland Defence Industries 10-Year Roadmap and Action Plan* builds on the state's current strengths and addresses a number of challenges identified through consultation with the Australian Defence Organisation (Defence) and industry stakeholders.

The Roadmap includes three key strategies and seven priority actions, summarised below. These actions will be supported by 27 sub-actions summarised on pages 24 and 25:

1 Grow Queensland defence industry capability

Priority actions:

- 1.1 We will work with Queensland industry to strengthen its defence business capability
- 1.2 We will work with Defence and industry to assist Queensland companies to enter defence supply chains
- 1.3 We will establish the Defence and Aerospace Industry Development Fund to assist Queensland small and medium-size enterprises (SMEs) to access defence contracts both directly and through supply chain opportunities.

2 Significantly increase Queensland's defence industry contribution to the national and global market

Priority actions:

- 2.1 We will work to secure a greater portion of national defence work, including in regional Queensland
- 2.2 We will maximise Queensland's geographic strategic significance by identifying and securing opportunities that provide regional economic activity
- 2.3 We will work with Defence to maximise opportunities for Queensland industry in planning, sustaining and developing defence facilities in Queensland.

3 Promote Queensland's defence industry capabilities

Priority actions:

- 3.1 We will promote Queensland's industry capability to national and international defence markets.

Immediate focus will be given to securing a greater portion of the record Defence spend arising from the following strategic opportunities:

- creating Defence Jobs Queensland, establishing advisory boards of senior defence industry personnel and delivering defence supply chain logistics hubs
- delivering major ADF multi-billion-dollar procurement and maintenance, repair and overhaul (MRO) projects including SEA 1000 and LAND 400
- leveraging the state's critical mass of systems development and integration capability by establishing a formal Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance and Electronic Warfare (C4ISREW) network
- supporting the establishment of the Defence Cooperative Research Centre for Trusted Autonomous Systems (DCRC TAS) headquarters in Queensland, promoting involvement from industry and research institutions to undertake vital research and development for Defence and vertical market applications, and aiding the development of STEM careers
- increasing international engagement with primary export markets including Singapore, the United States of America (USA), New Zealand, the United Kingdom (UK) and Malaysia.

Implementation of the strategies and actions contained in the Roadmap will be monitored through annual reviews of the Roadmap and biennial surveys of Queensland's defence industry, which will also provide a valuable input to future policy directions and strategies.

Defence Jobs Queensland

The creation of **Defence Jobs Queensland** will build on the work already underway by **Defence Industries Queensland (DIQ)**. Established in 2013, DIQ has supported SMEs to access local and global defence supply chains and to maximise the ADF's presence in Queensland. Building on our past success, **Defence Jobs Queensland** will oversee the continued growth of Queensland's defence industry and support the Government's commitment to attracting additional defence-related jobs to the state.

Some key achievements



Helping attract the successful tenderer for the **\$5 billion LAND 400 Phase 2** contract, Rheinmetall Defence Australia, to Queensland and establishing the **Queensland Heavy Vehicle Network**, which assisted Loganholme's Holmwood Highgate secure a **\$65 million contract** with Rheinmetall MAN Military Vehicles Australia under LAND 121 Phase 3B



Helping to secure the headquarters for the new **\$101 million** Defence Cooperative Research Centre for Trusted Autonomous Systems for Queensland



In 2017 alone, showcasing Queensland's defence capability within target markets

by supporting **over 40 Queensland companies** at key national and international trade events



resulting in the generation of a reported **380** quality business leads and potential contracts worth over **\$9.3 million**



Since 2013, delivering **56 capability workshops** across Queensland, with more than **1200 attendees**

The way forward



Defence Jobs Queensland will act as a single point of entry for Queensland defence industry enquiries and will deliver on the key strategies and priority actions outlined in the *Queensland Defence Industries 10-Year Roadmap and Action Plan* to position Queensland as Australia's front line for defence industries

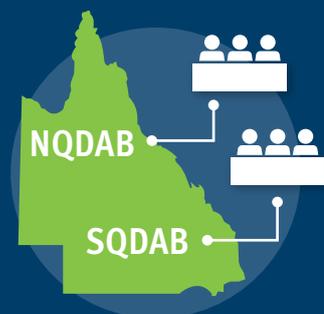
A \$195 billion investment by the Australian Government will drive expansion of Queensland's highly skilled workforce in this priority sector over the next decade



Establishment of a dedicated **Queensland Minister's defence council**, with senior representatives from government, defence industry primes, specialist defence advisors, industry associations and local government to provide policy and strategic advice on industry development and investment attraction

The North Queensland Defence Advisory Board (NQDAB) and South Queensland Defence Advisory Board (SQDAB) will **identify suitable defence contracts** and enable the delivery of the Queensland Government's defence priorities, including:

- the \$10 million defence supply chain logistics hubs in Townsville and Ipswich
- opportunities arising from the Australia-Singapore Military Training Initiative.



Unleashing Queensland's natural advantages

Strong defence presence

Queensland is home to more than a quarter of all ADF military personnel, with more than 23,000 uniformed and civilian positions and 14 significant defence facilities.²

Defence spending directly supports around 6500 jobs. More than 30 of the top defence suppliers are in Queensland with the industry generating an estimated \$6.3 billion in revenue in 2015-16.

Queensland is home to the largest amphibious Army operations and training capabilities in the country. Around 42 per cent of the Army, representing close to 70 per cent of its fighting force along with its vehicle fleets, is now based in Queensland. Two major training facilities – the Shoalwater Bay Training Area near Rockhampton and the High Range Training Area near Townsville – along with several other important training facilities are located along the east coast.

The Royal Australian Air Force (RAAF) base at Amberley plays a significant role in bolstering Defence's mobility, strike-force and heavy-lift capacity plus key elements of the RAAF Intelligence, Surveillance and Reconnaissance (ISR) capability, Airborne Early Warning and Control (AEWC) and unmanned aerial systems (UAS).

The Royal Australian Navy's Patrol Boat presence in Cairns

and the maintenance, repair and overhaul (MRO) of vessels locally plays an essential role in protecting Australia's northern maritime borders.

Many prime contractors serving Defence are moving their support and logistics infrastructure closer to key defence user facilities in Queensland to reduce costs and improve delivery and turnaround times.

Advanced capabilities

Queensland offers a diverse range of well-established defence industry capabilities including:

- aviation and aerospace manufacturing, repair and maintenance
- ballistic protection for personnel, watercraft and aircraft
- command, communication and control systems
- heavy vehicle manufacture, modification, maintenance, repair and overhaul
- maritime ship building up to 1000 tonnes, plus repair and maintenance.

Underpinning the defence industry's strengths in Queensland is a core of SMEs providing world-class technological and manufactured goods and services.

Government and industry working together

The Queensland Government's strongly articulated support for Defence operations has been

demonstrated through the development of collaborative relationships between Defence and state government agencies.

Queensland is helping our nation to maintain a technological edge to give tactical and strategic advantage to Defence, as well as the infrastructure to maintain and develop new systems and sub-systems that will support Defence and its mission.

In recognition of the state's depth of technological capability, Queensland has been named as the headquarters of the first Defence Cooperative Research Centre for Trusted Autonomous Systems (DCRC TAS). With \$50 million to be invested under the Next Generation Technologies Fund over seven years and matched by the Queensland Government, the Defence Science and Technology Group, universities and industry will work together at the DCRC TAS to deliver trustworthy smart-machine technologies of the future across maritime, land and aerospace domains. Collaborative programs such as the DCRC TAS will assist in the rapid transition of technology



Strong military presence

- Military bases across South East Queensland (SEQLD) including Amberley, Oakey, Enoggera, Pinkenba and Canungra bases
- Townsville bases and surrounding training and explosives ordnance (EO) storage areas
- Cairns bases and associated EO storage areas
- Rockhampton (Shoalwater Bay Training Area) and associated EO storage areas.

Each geographic area identified supports either a significant military presence and/or activities.



Queensland's facilities

Queensland is home to 14 significant defence facilities that support Australia's defence industry



from universities into industry and, ultimately, into leading-edge capability for the ADF.

Our defence industries have also enhanced Queensland's status as an innovation, science and technology hub. Development of local defence technology companies, combined with access to global supply chains, has led to technological advancements in fields such as nanotechnology, information technology and communications, maritime technology, precision manufacturing and aerospace.

Strength in our regions

Queensland is uniquely placed to support Defence through its strong, geographically dispersed regional

communities. No other state has as many large regional centres. Townsville, Cairns, Rockhampton, Bundaberg and Gladstone support a significant ADF presence nearby, or provide port and freight access for Defence.

Outside of Darwin, these are the only communities located north of Brisbane which can adequately provide the economic and social services that are needed to support the ADF and its families in Northern Australia.

Queensland also boasts an attractive lifestyle and climate, world-class health and education, and a strong pool of skilled workers to support the ADF and provide a suitable pool for industry recruitment.

Some of the key capabilities required by the ADF in the 21st century include:

- composite material development and manufacture
- advanced manufacturing including titanium casting, electronic systems integration, automation, autonomous unmanned systems, geospatial intelligence and analysis
- complex project management training.

All of these are well represented in Queensland. The hallmark of successful Queensland defence companies is their technical innovation and capacity to produce high-quality, low-volume

defence products developed to global standards, regulations and accreditations, and to rapidly re-tool to provide operational flexibility.

Strategic location

Queensland's highly skilled workforce, dynamic industries, strategic resources and infrastructure assets, as well as its geographic proximity to key powerhouses in the Asia-Pacific region, merits the increasing move of Defence assets and operations into Queensland.

Opportunities for Queensland's defence industries have been bolstered in recent years through changes in domestic and international policies as well as the geopolitical shift in focus to the Indo-Pacific region resulting in more of

Australia's defence activities moving northwards. This — coupled with the state's strong defence industrial base and world-class capabilities in aerospace support, ship repair and maintenance, heavy vehicle manufacture, support and upgrades, command and control systems, reconnaissance and surveillance systems, unmanned vehicles and cyber security — will see Queensland positioned as the front line for defence in Australia.

The Queensland Government is unleashing Queensland's natural advantages by developing this *Queensland Defence Industries 10-Year Roadmap and Action Plan*.

This Roadmap provides the platform for further support and growth of the state's recognised defence capability and increased presence, both domestically and on the world stage.

In particular, it contains priority actions to increase and expand the capability of Queensland businesses to take advantage of Defence priorities outlined in the DWP and related Integrated Investment Plan (IIP), Defence Industry Policy Statement and the Defence Export Strategy.





Case study: Queensland wins big with LAND 400 and Rheinmetall

In March 2018, in a historic moment for Queensland's defence industry, the Australian Government announced Rheinmetall Defence Australia as the successful tenderer for the \$5.2 billion LAND 400 Phase 2 contract with its Boxer combat reconnaissance vehicle (CRV). A key element of Rheinmetall's bid was its commitment to establish its Australia-New Zealand Headquarters and Military Vehicle Centre of Excellence (MILVEHCOE) in South East Queensland.

LAND 400 is the largest acquisition project in the history of the Australian Army, and attracting Rheinmetall and Phase 2 to Queensland is a catalytic outcome that will create unrivalled opportunities for the state's defence and advanced manufacturing industries for decades to come. Rheinmetall expects that over 450 jobs will be created for Queenslanders and \$1 billion will be contributed to the Queensland economy in the first 10 years. Rheinmetall's presence in Queensland will drive continued innovation, boost investment and create increased global export opportunities for local industry.

Rheinmetall's MILVEHCOE will be located in the heart of Australia's largest heavy vehicle manufacturing and sustainment precinct. It will not only manage the delivery and continued development and sustainment of the Boxer CRV, it will also accommodate Rheinmetall's other defence projects. The MILVEHCOE will act as a regional hub with an expected program of continuous design, manufacture and support for up to 5000 military vehicles across Australia and the Asia Pacific.

The awarding of the contract marked the culmination of a lengthy and active campaign by the Queensland Government to secure the LAND 400 Phase 2 contract for the state. Defence industry development activities began in 2012 and Defence Industries Queensland worked intensely with Rheinmetall for nearly three years prior to the awarding of the Phase 2 contract.

Rheinmetall Defence Australia Managing Director Gary Stewart said that selecting Queensland as the home for its MILVEHCOE — which will be their biggest presence outside of Germany — was a natural choice given the proximity to the largest Army presence in the nation, the existing heavy vehicle precinct, the highly skilled and ready workforce, and the ecosystem of high-tech defence companies already here.

"We are committed to transferring expertise and advanced military technology into Australia and creating an industrial hub of research and development that will create a strong sovereign military vehicle capability that will be globally competitive for infantry fighting vehicle programs worldwide," said Mr Stewart.

While the MILVEHCOE will be located in South East Queensland, the delivery of this sovereign military capability will be a truly national endeavour with a high level of Australian industry content, most notably the use of high-performance Australian steel. As Rheinmetall continues to explore Queensland's industry capability, there will be significant opportunities for local companies to participate in Rheinmetall's domestic and export markets; and with over 100 of the vehicles to be based in Townsville and Enoggera, there will undoubtedly be long-term regional support opportunities.

Rheinmetall's success in the LAND 400 Phase 2 contract is testament to all the advantages that a Queensland location offers modern land defence projects, and cements the state's reputation as Australia's front line for defence industries.

What are defence industries?

The Australian defence industry provides essential capability, services and support to the ADF, employs around 25,000 people and has over 3000 small and medium-size enterprises operating within the sector.³

Defence industries are businesses that are 'actually or potentially involved in supplying military capability and/or are influenced by defence business policies or purchasing decisions'.⁴ They encompass research and development, engineering, manufacturing, and the service of military materiel and facilities across air, land and sea domains.

Examples include ballistics, vehicles, medical equipment, electronics,

surveillance systems, and fabrication of military equipment, such as vehicle trailers and liquid tankers.

Queensland's defence industry is a significant innovator, supporting other high-value sectors such as advanced manufacturing, aerospace, automotive, communications, electronics, information technology, marine and medical technologies.

The defence supply chain includes a number of multinational companies, known as prime contractors, with well-established systems enabling

them to efficiently deliver defence projects. Prime contractors with a strong Queensland presence include Boeing Defence Australia, Northrop Grumman, Airbus, Thales, Raytheon, Sikorsky (a Lockheed Martin company) and BAE Systems.

These prime contractors regularly outsource components to subcontractors with niche capabilities, overlaying their quality management systems. In addition, many smaller defence contracts are awarded directly to SMEs.

Around two-thirds of defence suppliers in Queensland contract directly to Defence.



Growth drivers

Strategic defence priorities and record investment

The release in February 2016 of the DWP and its accompanying IIP map Australia's strategic defence priorities for the next 20 years and project investment timeframes for the next decade.

Australia's most basic strategic defence interest is a secure, resilient nation, followed by a secure nearer region (that being maritime South East Asia and the South Pacific) and a stable Indo-Pacific region.⁵ The documents outline an increase in the defence spend over the decade to 2025–26 of \$447,485 million (excluding operations).

In pursuit of a more integrated ADF, the DWP has expanded the traditional three discrete capability areas of land, sea and air into six new capability areas:

- intelligence, surveillance and reconnaissance, space, electronic warfare, and cyber security
- maritime operations and anti-submarine warfare forces
- strike and air combat
- land combat and amphibious warfare
- key enablers
- air and sea lift.

The IIP identifies numerous investments over the next 10 years to support the ADF's expanded operations in Queensland.

Examples range from redeveloped accommodation for barracks, runway hardening, new port infrastructure, high-tech upgrades to aircraft and vehicle MRO, as well as training area upgrades.

Significantly, the IIP identified \$730 million in new funds over the next decade to support the development of new technology that can enhance Australia's security. The Next Generation Technology Fund administered through the Defence Science and Technology Group will focus on priority areas. These areas include integrated intelligence, surveillance and reconnaissance, trusted autonomous systems, quantum technologies, advanced sensors, hypersonics and directed energy capabilities, multidisciplinary material sciences and cyber security.

In addition to the opportunities provided by defence-specific projects, the day-to-day operations and requirements of individual ADF bases provide direct stimulus to local economies.

To help industry become defence-business ready, Defence has established the Centre for Defence Industry Capability (CDIC) with a primary objective of developing Australian defence industry competitiveness and capability. The CDIC offers business advisory services, global supply chain access initiatives, and information about Defence's innovation requirements.

The CDIC operates a Defence Innovation Portal providing a key communication bridge between potential collaborative project partners, and is a primary source of information for the uninitiated regarding Defence capability needs.⁶

The CDIC will engage with states and territories to ensure industry programs are complementary and administrative processes are more tailored and streamlined. Defence Jobs Queensland will continue to

work with the CDIC and connect Queensland industry with CDIC services to strengthen capability in the state.

Global industry outlook

Technology diffusion into the non-defence sector is a further driver of defence industry activities. While there are some military export controls in place on products, many businesses are able to supply products and services to both the defence and civilian marketplace. Indeed, for most Queensland companies exporting defence-related products, less than 25 per cent of their export revenue actually comes from defence.⁷

Around 63 per cent of Queensland's defence industries export their goods and services, with the majority having at least one or more established international partners.⁸ Further opportunities exist for the Australian defence industry to participate in international projects delivered by multinational defence prime contractors.

There are increasing opportunities for Queensland companies to participate in the global defence supply chain. Lockheed Martin's F-35 Joint Strike Fighter (JSF) program is drawing supply support from strategic partners around the world. Queensland companies TAE Aerospace, Ferra Engineering, L3 Microe and Heat Treatment Australia are among a host of Australian companies already contributing to this once-in-a-generation project.

With half the world's shipping container traffic and a third of its bulk cargo travelling via the Indian Ocean,



Case study: Imagus Technology tackles vertical markets

Brisbane-based Imagus Technology is a global leader in advanced intelligent surveillance, image analysis and computer vision technology. The company is at the forefront of fast, accurate and robust solutions for video surveillance, access control, marketing, financial and retail applications.

The Imagus Facial Recognition Technology (Imagus FRT) delivers accurate results for facial detection, recording, matching and recognition through advanced algorithms, even with poorly lit, poor-quality, angled or obstructed samples similar to those provided by CCTV and mobile devices.

Originally targeting both public and national security applications, Imagus has broadened its market focus to accommodate the rapid integration of biometrics across other commercial and retail markets. In the finance market specifically, Imagus has partnered with global payment solutions firms Payonyx and Paytoo to develop an online payment authentication service using the Imagus FRT that allows consumers to make purchases and cash withdrawals simply by taking a selfie.

The Imagus FRT has also been incorporated into other fixed and mobile devices including the Osterhaut Design Group's augmented reality glasses, the 'R-7'.

the Indo-Pacific region has become a focal point for economic growth.

This, along with increasing geopolitical instability in the region, supports the modernisation of military forces and is reflected in the near doubling of military expenditure over the past decade to 2015 across parts of Asia and Oceania. By comparison, spending in North America has dipped below where it was a decade ago.⁹

Australia’s status as one of the few countries in the region with an advanced and robust economy and strong regional partnerships positions it well to leverage opportunities in the regional defence supply chain.

Defence relationships

The forging of closer defence ties with Australia’s regional allies will present increased economic opportunities for the country’s defence industries.

The Joint Declaration on the Comprehensive Strategic Partnership, signed on 29 June 2015, outlines

how Australia and Singapore will further strengthen their relationship, including economic, security, foreign policy and people-to-people links.

This initiative led to the two nations signing the Memorandum of Understanding Concerning Military Training And Training Area Development In Australia on 13 October 2016, enabling Singapore to significantly expand its military training and presence in Australia (primarily Townsville and Rockhampton) during the next 25 years. Singapore will invest SGD\$2.25 billion in new defence infrastructure including training facilities, barracks, roads, fencing and other measures and send up to 14,000 military personnel to Queensland for training, up from the current cap of 6000 per annum.

In recognition of its importance to Queensland as a strategic market destination, the state government has established a new Trade and Investment Queensland (TIQ) office in Singapore.

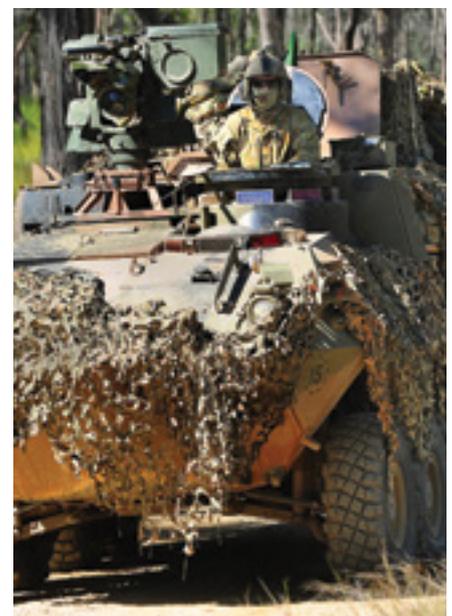
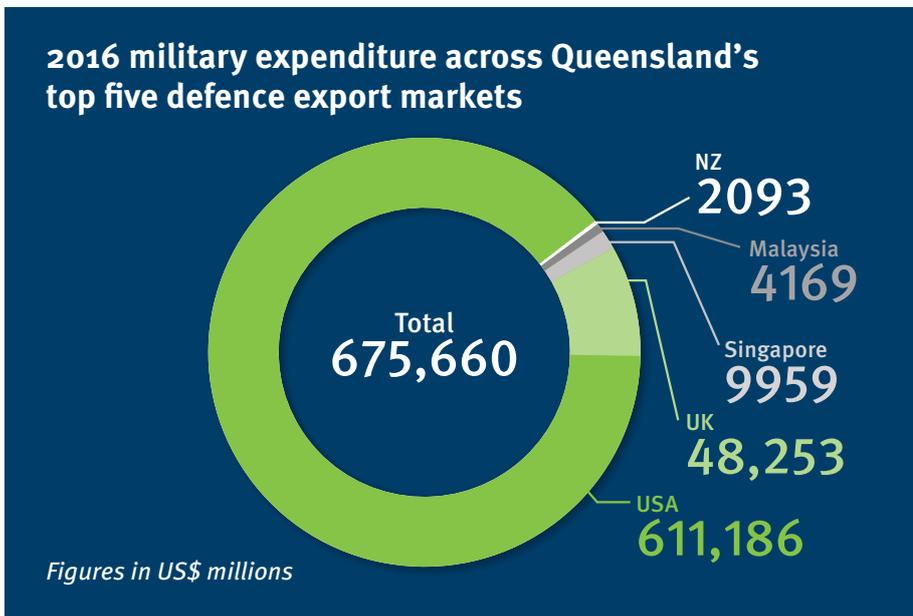
Queensland’s defence industries support an estimated 6500 jobs and received around \$4.3 billion in Australian defence contract payments in 2016-17.

Approximately 58 per cent of Queensland defence companies supply to the RAAF, 54 per cent to the Australian Army and 47 per cent to the Royal Australian Navy.¹⁰

Queensland defence industries are export-orientated, with 63 per cent currently exporting to the global market. Of these, 10 per cent derive more than 75 per cent of their sales revenue from exports.¹¹

Queensland defence industries also have a strong culture of innovation, with 68% of companies undertaking research and development (R&D) activities.

A majority (70 per cent) of Queensland’s enterprises in the defence supply chain undertake R&D activities with other industry collaborators, with a smaller percentage of R&D



Australian Defence Force in Queensland

Queensland is home to:

14 significant defence facilities



Two of the **three** Army multi-role combat brigades



16th Army Aviation Brigade, which commands all of the Army's aviation units



42% of the Army

23% of the Army Reserve



21% of the Air Force

28% of the Air Force Reserve



6% of the Navy

13% of the Navy Reserve



RAAF's entire fleet

of F/A-18F Super Hornets, C-17As heavy lift winged transport fleet, C-27J Spartan battlefield air lifter (from 2019) and the EA-18G Growler airborne electronic attack aircraft.

Conservative estimates indicate that Queensland defence industries contributed \$2 billion to the Queensland economy during 2015-16.¹²

collaborations (34 per cent and 23 per cent respectively) taking place with universities and other research organisations.¹³

Strong investments across industry in computer-aided design and manufacturing, as well as ICT and electronics-based systems, are driven by a combination of competitive pressures and project requirements.

A majority (62 per cent) of Queensland defence suppliers have a workforce development plan, demonstrating a proactive approach by industry to broaden and strengthen internal capability and be better placed to support national and global defence supply chains.¹⁴

Queensland's regional strengths

Queensland's regional centres of Townsville, Cairns, Rockhampton, Bundaberg and Gladstone all have either a significant ADF presence nearby, or provide vital port and freight access.

With approximately 42 per cent of the Army, representing approximately 70 per cent of the fighting force along with their vehicle fleets, now based in Queensland, and the majority of new fleets introduced up until 2030

also to be based in Queensland, there are tremendous opportunities for defence industry growth in regional Queensland.

Queensland also has two significant training facilities in regional Queensland – the Shoalwater Bay Training Area in Rockhampton and the High Range Training Area in Townsville, in addition to other smaller training facilities along the east coast.

The value of this infrastructure is evident in the commitment of the Singapore Government to a SGD\$2.25 billion investment in Rockhampton and Townsville over the next 25 years.

The diverse Queensland mining equipment, technology and services (METS) sector is known for its cutting-edge innovative solutions, products, processes and services. The state's METS sector has developed a significant amount of advanced manufacturing equipment and technical skills across Queensland and consists of products, services and skills that are readily transferable to the defence industry.

Mackay suppliers worked with the Department of State Development, Manufacturing, Infrastructure and Planning and the Defence Materials

Technology Centre to conduct a pilot project to develop industry capability in specialised welding to expand supply to the defence sector from its more traditional mining base, given the region's manufacturing capabilities, and port and freight access.

The strength of the Cairns marine industry capability, along with its proximity to the end users of the new boats, has ensured that the through-life sustainment of the new Pacific Patrol Boats will be undertaken in Cairns. This work is estimated to be worth up to \$400 million over the 30-year lifespan of the boats.

Cubic Corporation, a world-leading provider of realistic military training simulation systems and services, established its Australian headquarters in Townsville to better support the ADF. Cubic Defence Australia has provided integrated training systems for binational training exercises between Australia and its allies, to ensure the ADF is mission ready when deployed.

The strength of industry capability and existing infrastructure in regional Queensland all highlight the value of Queensland's regions to the ADF and the importance of further investment in these key locations.

Queensland's well-established defence sector is characterised by:

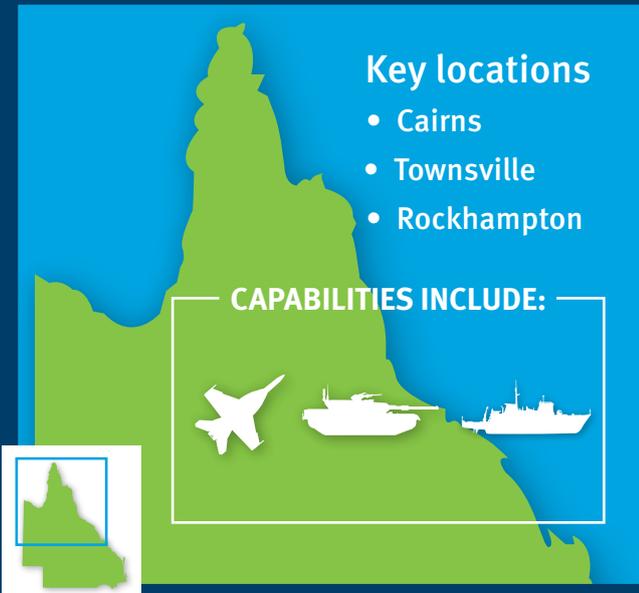


- the **largest concentration** of defence people, assets, bases, ports, training ranges and support sites in Australia
- its **innovative** thinking
- **effective** processes and **reliable, highly skilled** workforce.

Queensland's defence capabilities

Queensland offers a diverse range of well-established defence industry capabilities that support the ADF including:

- | | |
|---|---|
|  Aviation and aerospace manufacturing |  Heavy vehicle manufacturing |
|  Aircraft maintenance, repair and overhaul |  Heavy vehicle maintenance, repair and overhaul |
|  Ballistic protection for personnel, vehicles, watercraft and aircraft |  Maritime ship building up to 1000 tonnes, repair and maintenance. |
|  Communication and control systems | |



Key locations

- Cairns
- Townsville
- Rockhampton

CAPABILITIES INCLUDE:




CAPABILITIES INCLUDE:



Key locations

- Brisbane
- Gold Coast
- Ipswich
- Toowoomba
- Sunshine Coast

Top global companies have sizeable operations in Queensland, including:



Opportunities for growth

Electronic systems integration

Queensland's experience with respect to electronic systems integration, satellite communications and niche microelectronic assembly presents an opportunity to capitalise on major capability priorities identified within the DWP for Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance and Electronic Warfare (C4ISREW).

The Integrated Investment Plan (IIP) identified further planned expenditure of between \$300–\$400 million in intelligence, surveillance and reconnaissance (ISR) information integration and optimisation through until 2029. This represents an opportunity for Queensland companies with the capability to support this work.

Land, sea and air platforms and equipment manufacturing and maintenance

Queensland is Australia's leading manufacturer of heavy vehicles and equipment. This capability, coupled with the presence of the Army's two multi-role combat brigades in Queensland and the anticipated basing of two-thirds of Army's land fleet of vehicles, provides opportunities in the manufacture, system integration, maintenance, repair and overhaul of Army's heavy vehicle fleets.

Further opportunities have been identified for the repair, maintenance and overhaul of Defence's various capability fleets, including Pacific Patrol Boats and Offshore Patrol Vessels, a multitude of different aircraft operating from Amberley, Townsville and Oakey, and various

unprotected and armoured vehicle fleets.

Rheinmetall Defence Australia, the successful tenderer for the \$5 billion LAND 400 Phase 2 contract, has committed to establishing its Australia-New Zealand headquarters and Military Vehicle Centre of Excellence in South East Queensland to deliver the next generation of combat reconnaissance vehicles for the Australian Army. This regional hub with an expected program of continuous design, build and support will drive high-tech innovation and create global export opportunities across the supply chain.

Defence Jobs Queensland will continue to promote the Queensland Heavy Vehicle Precinct, a virtual network of 157 companies spread across the major hubs in the state, supporting both acquisition and sustainment of defence and security vehicle fleets.





Research and development

Queensland has advanced materials research and development capability to support defence and industry in developing and optimising new manufacturing processes.

Increased automation and use of robotics within logistics has the potential to create efficiencies and enhance accuracy and speed of delivery. The potential use of deployable rapid prototyping and development facilities offer the potential to quickly manufacture or modify equipment during military operations.

The DWP and IIP identify the development of trusted autonomous systems as a research priority to help secure future Australian defence capability.

Queensland boasts a significant depth of capability in robotics and autonomous systems.

The Queensland Government will collaborate with the Defence Science and Technology Group (DSTG) as well as local universities and businesses to establish the new

Defence Cooperative Research Centre for Trusted Autonomous Systems (DCRC TAS) in Queensland.

The Queensland Aerospace 10-Year Roadmap and Action Plan outlines plans to establish Queensland as a national and international centre of excellence for unmanned aerial systems. This activity will include identification of one or more test and evaluation sites for unmanned aerial systems to take advantage of Queensland's geographic diversity and will complement the DCRC TAS.

The DWP also identified hypersonics and directed energy as specific areas of research innovation to be supported through Defence's Next Generation Technology Fund.

Queensland researchers are already key partners in a cooperative research program with the USA and Boeing to understand hypersonic flight technology and explore its potential for next-generation aeronautical systems. This places Queensland in a prime position to capitalise on the commercial space market as it develops and matures.

The University of Queensland and the University of Southern Queensland, in conjunction with DSTG, are key

partners in research conducted through the Centre for Hypersonics. The combination of existing research excellence and a strong relationship between Queensland's research sector and DSTG ensures Queensland's researchers play a key role in further developing this critical technology.

Proximity to user facilities

Many prime contractors are moving their support and logistics infrastructure to where the fleets are located. This facilitates greater use of industry to undertake tasks traditionally carried out by Defence, improves turnaround times and reduces costs.

With the Australian Army's multi-role combat 7th Brigade and 16th Aviation Brigade headquartered at Gallipoli Barracks Enoggera; aircraft operational and maintenance support located at RAAF Base Amberley; and facilities for the maintenance, support and ongoing operation of new vehicle capabilities located at Lavarack Barracks Townsville, opportunities are available across the state.

Defence innovation in Queensland

In recognition of the state's depth of technological capability, Queensland has been named as the national headquarters of the first Defence Cooperative Research Centre for Trusted Autonomous Systems (DCRC TAS)

Queensland defence companies are known for:



technical innovation



a capability for high-quality, low-volume defence products



developing to global standards

The development of trusted autonomous systems is a **research priority** to help secure future Australian defence capability

Queensland is **actively developing** capabilities such as robotics, artificial intelligence and trusted autonomous systems

The DCRC TAS represents a

\$101 million investment

from the Next Generation Technologies Fund and the Queensland Government

With the DCRC TAS established in Queensland it will:



collaborate with the Defence Science and Technology Group (DSTG), universities and industry



assist in the rapid transition of technology from universities into industry



accelerate the delivery of smart-machine technologies of the future across maritime, land and aerospace domains

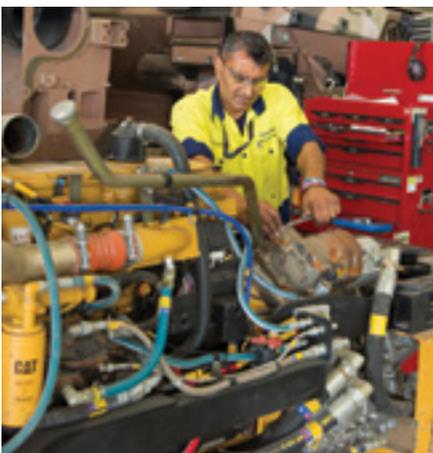




Industry challenges

Based on consultation with defence industry stakeholders, the following challenges to future growth of the defence sector have been identified and addressed through this Roadmap:

Accessing defence supply chains	While a majority (61 per cent) of Queensland defence industries report strong supply chains, challenges exist in securing local contractors/suppliers with appropriate quality management systems and other industry-relevant certifications. ¹⁵
Customer acquisition takes time and effort	'Untested' SMEs looking for new business must demonstrate not just capability but also reliability in order to reduce risk to prime contractors and the defence customer.
Long procurement lead times	The complexity of many Defence projects means they are characterised by long procurement lead times. It can take years to determine what new or enhanced capability best meets strategic goals through to project implementation and, ultimately, delivery.
Promoting capability	Queensland boasts world-leading capabilities in a number of disciplines, but it can be difficult to highlight these against competing global defence companies. Confidentiality provisions often accompany defence contracts and can stifle a company's ability to openly promote its defence activity.
Attracting and retaining a skilled workforce	This issue is not limited to defence industries. The global deficit of people holding science, technology, engineering and mathematics (STEM) qualifications significantly impacts many sectors.



Actions to date

The Queensland Government's defence industries unit – Defence Industries Queensland (DIQ) – was established in 2013 and operates as part of the Department of State Development, Manufacturing, Infrastructure and Planning. DIQ has been successful in lifting the strategic profile of Queensland's defence capability, boosting growth in the local defence sector, and driving defence investment in Queensland.

DIQ has:

- showcased Queensland's capability at 13 targeted national and international trade shows, including coordinating the Queensland Government's principal sponsorship of the Land Forces 2014 exposition, held in Brisbane
- hosted 15 industry days with more than 750 participants exploring supply chain opportunities for SEA 5000 Future Frigates, SEA 1000 Future Submarines, LAND 121 and LAND 400, and AIR 6500 Joint Battle Management System
- established the Queensland Heavy Vehicle Network to assist Queensland industry to tap into opportunities provided by Defence's LAND 121 and LAND 400 programs. As a result, Loganholme's Holmwood Highgate signed a contract with Rheinmetall MAN Military Vehicles Australia to supply over 250 liquid modules and integrated tankers estimated at \$65 million under LAND 121 Phase 3B. Additionally, Haulmark Trailers was awarded an Australian Defence contract to supply it with 2500 trailers, creating 75 jobs
- supported a Cairns consortium in a bid to secure the contract for the build and sustainment of up to 21 replacement Pacific Patrol Boats. While the contract for construction of the vessels was awarded to a Western Australia-based company, the depth of the marine industry capability in Cairns, along with its proximity to the end users of the new boats, has ensured that the through-life sustainment of the new vessels will be undertaken in Cairns. This work is estimated to be worth up to \$400 million over the 30-year lifespan of the boats
- worked with partners to deliver 56 capability workshops across Queensland with more than 1200 attendees
- worked with the Defence Materials Technology Centre to pilot a welding capabilities benchmarking program in Mackay
- established industry leaders' groups representing the traditional land, sea, air and innovation capability sectors and provided guidance on policy submissions and industry issues
- consulted with industry representatives and relevant local government stakeholders in preparing Queensland's input into the development of the 2014 First Principles Review and DWP
- engaged with the Department of Employment, Small Business and Training and Jobs Queensland to identify workforce shortages and develop Queensland Government strategies to address these, as well as secure a pipeline for the high-value, knowledge-based jobs required by Queensland's defence sector
- facilitated engagement between Defence, and local and state government authorities to ensure a coordinated approach to the expansion of RAAF Base Amberley
- actively participated in the high-level government-to-government Defence and Queensland Government Consultative Forum and other defence-related working groups
- delivered region-specific briefings across the state outlining the elements of the DWP and identifying potential supply opportunities for local industry
- undertaken two surveys of Queensland businesses contributing to the defence supply chain to develop a profile of Queensland defence industry capability. The surveys revealed a doubling of defence industry revenue identified during this period to more than \$4.2 billion and a nearly 50 per cent increase in defence industry jobs to approximately 6500 FTEs
- worked closely with other relevant Queensland Government agencies, industry and academia to help secure for the state the headquarters for the new \$101 million Defence Cooperative Research Centre for Trusted Autonomous Systems
- helped attract the successful tenderer for the \$5 billion LAND 400 Phase 2 contract, Rheinmetall Defence Australia's Military Vehicle Centre of Excellence and Australia-New Zealand headquarters to South East Queensland to deliver the next generation of combat reconnaissance vehicles for the Australian Army.



Action plan

To maximise opportunities for productivity and employment growth, the Queensland Government will expand its range of policies and programs to further enhance the business proficiency of the state's defence industries and promote that capability to a broader global audience.

These priorities have been identified as the three key strategies in the Roadmap:

1. Grow Queensland's defence industry capability
2. Significantly increase Queensland's defence industry contribution to the national and global market
3. Promote Queensland's defence industry capabilities.

Immediate focus will be given to the following strategic opportunities:

- creating Defence Jobs Queensland, establishing advisory boards of senior defence industry personnel and delivering the defence supply chain logistics hubs
- capitalising on major ADF procurement and maintenance, repair and overhaul projects including SEA 1000 and Land 400
- leveraging the state's critical mass of systems development and integration capability by working to establish a formal C4ISREW cluster to maximise opportunities to support this Defence priority capability area
- supporting the establishment of the DCRC TAS headquarters in Queensland and promoting

involvement from industry and research institutions. Together, they will undertake vital research and development for both Defence and vertical market applications and also aid the development of STEM careers

- increasing international engagement with primary export markets including Singapore, the USA, New Zealand, UK and Malaysia. Particular focus will be applied to identifying opportunities for Queensland industry arising from Singapore's investment of up to SGD\$2.25 billion in support of increased training activities in Queensland for the Singapore Armed Forces.

Addressing the challenges and opportunities

Queensland's strengths



Location



Capability and expertise



Existing industry



World-class R&D

Key strategy 1

Grow Queensland's defence industry capability

Key strategy 2

Significantly increase Queensland's defence industry contribution to the national and global market

Key strategy 3

Promote Queensland's defence industry capabilities



Accessing global defence supply chains



Customer acquisition



Customer acquisition



Long procurement lead times



Promoting capability



Attraction and retention of skilled staff

Challenges and opportunities

Priority actions 1.1, 1.2 and 1.3 supported by 13 sub-actions



Priority actions 2.1, 2.2 and 2.3 supported by 8 sub-actions



Priority action 3.1 supported by 6 sub-actions



Priority actions



Queensland Defence Industries 10 –Year Roadmap

Vision	By 2028, Queensland will be Australia’s front line for defence industry with a 10,000-strong, highly skilled workforce that is renowned for its agility and innovation.	
Strengths	Location – a significant percentage of the ADF and its fleets are based in Queensland and more of Australia’s defence activities are moving north	Capability – Queensland offers capability across the defence sector, especially heavy vehicle maintenance and repair, and systems development
Challenges	Accessing global defence supply chains	Customer acquisition
Key enablers	Defence Jobs Queensland will oversee the continued growth of Queensland’s defence industry and work closely with local stakeholders to provide leadership and advice to identify suitable defence projects for the Minister’s defence council with senior representatives from government, defence industry primes, investment attraction. Recognising that Queensland’s strengths span across the state and into the territories, work closely with local stakeholders to provide leadership and advice to identify suitable defence projects.	

Key strategy 1 Grow Queensland’s defence industry capability

Key strategy 2 Significantly increase industry contribution to the state

Priority action 1.1

We will work with Queensland industry to strengthen its defence business capability by:

- delivering new and existing capability development workshops across Queensland including accreditation and certifications, quality management systems and supply chain development workshops, Defence Business 101, Quad Chart and Tendering for Defence
- supporting the establishment of the Defence Cooperative Research Centre for Trusted Autonomous Systems (DCRC TAS) headquarters in Queensland in conjunction with the Defence Science and Technology Group to capitalise on the state’s comparative strengths in autonomous systems research, and assist in the development of a STEM-focused workforce, and promote involvement from industry and research institutions
- leveraging the state’s critical mass of systems development and integration capability by working to establish a formal C4ISREW cluster to maximise opportunities to support this Defence priority capability area
- connecting industry with the services offered by the Centre for Defence Industry Capability (CDIC), the Australian Defence Export Office, and other third-party support services, and to access available forms of financial assistance such as through the Advance Queensland suite of programs and the Australian Government’s Next Generation Technology Fund
- progressing industry development through ongoing engagement with the Australian Defence Organisation, Australian Industry Group, Australian Industry and Defence Network and other relevant industry groups
- implementing biennial surveys of Queensland’s defence industry to measure progress and identify

future trends that will inform future policy directions and industry strategies

- developing links between other manufacturing sectors, such as METS and advanced manufacturing and research institutions to encourage wider participation in defence projects and transfer of skills and technology to industry and the broader workforce.

Priority action 1.2

We will work with Defence and industry to assist Queensland companies enter defence supply chains by:

- co-ordinating project-specific supplier days
- hosting a Defence Opportunities Forum to highlight upcoming defence procurement projects
- supporting a welding capabilities benchmarking program with the Defence Materials Technology Centre.

Priority action 1.3

We will establish the Defence and Aerospace Industry Development Fund to assist Queensland SMEs to access defence contracts both directly and through supply chain opportunities by:

- helping maintain a competitive position for major defence projects with long-term (20+ years) sustainment horizons such as LAND 400, SEA 1000 or AIR 6000
- assisting companies to adopt contemporary ‘lean’ manufacturing processes and obtaining necessary accreditations such as ISO 9001
- supporting companies to access global opportunities through attending international trade shows and having employees participate in selected professional development activities such as the Defence and Industry Study course.

Priority action 2.1

We will work to secure a greater portion of national defence work, including in regional Queensland by:

- building relationships and engaging stakeholders to secure supply chain and through-life sustainment contracts relating to national and international defence projects such as LAND 400 Armoured Fighting Vehicles, SEA 1000 Future Submarines and the F-35 Joint Strike Fighter Program
- maintaining engagement with Australian and Singaporean government authorities to attract further investment from expanded training operations in Queensland and explore future opportunities including:
 - o enhancement of aviation and maritime connectivity
 - o research and development partnerships to commercialise agency, academic and private sector research
 - o private sector partnerships to advance trade and investment activities
 - o relevant elements of the Townsville City Plan
- developing a Defence projects pipeline in alignment with the Capability Acquisition and Sustainment Group (CASG) Capability Lifecycle to target projects within the Integrated Investment Program (IIP) that will increase economic growth, employment and industry participation in defence projects in Queensland and leverage innovation to positively contribute to improving the skills base within Queensland.

Priority action 2.2

We will maximise Queensland’s geographic strategic significance by identifying and securing opportunities that provide regional economic activity by:

- supporting the development of defence supply chain logistics hubs and engaging with regional

Map and Action Plan

Industry by increasing the revenue contribution to the Queensland economy to \$7 billion and creating agility, innovation and depth of capability in supporting the Australian Defence Force and its allies.

<p>and expertise across the entire manufacture, modification, development and integration</p>	<p>Existing industry – many multinational defence companies operate in Queensland, supported by a strong core of innovative small and medium-size enterprises (SMEs)</p>	<p>R&D – world-class research and development agencies boasting particular strength in autonomous systems</p>
<p>Long procurement lead times</p>	<p>Promoting capability</p>	<p>Attraction and retention of skilled staff</p>

and support the Government's commitment to attract additional defence-related jobs to the state. We will create a dedicated Queensland specialist defence advisors, industry associations and local government to provide policy and strategic advice on industry development and the regions, the defence council will oversee the newly established North Queensland and South Queensland Defence Advisory Boards that will manage contracts in each zone and enable the delivery of the Queensland Government's defence priorities.

Key strategy 2 Queensland's defence industry to national and global market

- companies to position Queensland as the primary location for the development of significant defence maintenance, supply and logistics contracts
- supporting the long-term development of the state's maritime sector including:
 - creating a long-term vision for the sector
 - conducting industry attraction and supply chain development activities
 - reviewing current and future marine infrastructure and skill requirements across the state
 - increasing domestic and foreign naval stopovers in Queensland regional ports and naval fleet maintenance, repair and overhaul (MRO)
 - leveraging the proposed manufacturing and defence hubs to further support maritime industries across Queensland.

Priority action 2.3

We will work with Defence to maximise opportunities for Queensland industry in planning, sustaining and developing defence facilities in Queensland by:

- facilitating defence-related projects and opportunities for local suppliers such as the expansion of facilities and ongoing garrison support at Queensland ADF bases
- ensuring Queensland's industry needs are recognised through input into the CDIC sector skills analysis and work to inform a Defence Industry Capability Plan that identifies essential sovereign industrial capabilities
- coordinating Queensland's response to addressing the needs of the ADF, industry and the community through participation in defence forums, sub-working groups and ad hoc working groups.

Key strategy 3

Promote Queensland's defence industry capabilities

Priority action 3.1

We will promote Queensland's industry capability to national and international defence markets by:

- showcasing Queensland defence industry capability at relevant national and international trade events
- leading Queensland's bid to attract the Australian premier land forces exposition to the state
- working in partnership with Team Defence Australia and the Queensland Government, including Trade and Investment Queensland (TIQ) and their representatives in 15 locations across the globe, to showcase Queensland's defence capability within target markets including Singapore, the USA, New Zealand, the UK, and Malaysia
- supporting the initiatives in the Defence Export Strategy to build a world-class, export oriented Australian defence industry and become a top ten global defence exporter within priority markets
- maintaining a contemporary and dynamic multi-faceted communication strategy including relevant digital and online presence that highlights Queensland's defence industry capabilities, innovation and agility
- developing a stakeholder engagement plan to enable a cohesive whole-of-government approach – involving regional councils, other relevant government departments and agencies, strategic advisors, existing manufacturing sectors, research institutions and industry representatives – to grow the defence industry in Queensland.



Glossary

ADF – Australian Defence Force

AEWC – Airborne Early Warning and Control

C4ISREW – Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance, Electronic Warfare

CDIC – Centre for Defence Industry Capability

DCRC TAS – Defence Cooperative Research Centre for Trusted Autonomous Systems

Defence – Australian Defence Organisation comprising both the military and public service elements

DIQ – Defence Industries Queensland

DJQ – Defence Jobs Queensland

DSTG – Defence Science and Technology Group

DWP – 2016 Defence White Paper

EO – Explosive Ordnance

IIP – Integrated Investment Plan

ISR – Intelligence, Surveillance and Reconnaissance

JSF – Joint Strike Fighter

METS – Mining Equipment, Technology and Services

R&D – Research and Development

RAAF – Royal Australian Air Force

RPAS – Remotely piloted aircraft systems

SEQld – South East Queensland

SME – Small and medium-sized enterprises (up to 200 employees)

STEM – Science, technology, engineering and mathematics

UAS – Unmanned aerial systems



Notes

- ¹ Deloitte Access Economics, Economic impact analysis of DSD Priority Sectors, February 2017.
- ² <http://www.defence.gov.au/AnnualReports/16-17/Chapters/chapter-7.asp>
- ³ 2016 Defence Industry Policy Statement, p.6.
- ⁴ Submission from the Australian Industry & Defence Network to the Australian Government's 2015 Defence White Paper, 27 October 2014.
- ⁵ 2016 Defence White Paper, p.17.
- ⁶ *ibid*, p.37.
- ⁷ 2015 Queensland Defence Industries Survey. Department of State Development, Queensland Government.
- ⁸ *ibid*.
- ⁹ SIPRI Military Expenditure Database 2015, <https://www.sipri.org/databases/milex>
- ¹⁰ 2015 Queensland Defence Industries Survey. Department of State Development, Queensland Government.
- ¹¹ *ibid*.
- ¹² Deloitte Access Economics, Economic impact analysis of DSD Priority Sectors, February 2017.
- ¹³ Queensland Defence Industry – 2013-14 industry survey. Industry value added estimates. Office of the Chief Economist, Department of State Development, Queensland Government. June 2016.
- ¹⁴ *ibid*.
- ¹⁵ 2015 Queensland Defence Industries Survey. Department of State Development, Queensland Government.



