Australian Government

Department of Defence

2020 FORCE STRUCTURE PLAN

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Chapter One: 2020 Force Structure Plan

1.1 This *2020 Force Structure Plan* details the Government's intentions for new and adjusted Australian Defence Force (ADF) capability investments to implement the new strategic objectives in the *2020 Defence Strategic Update*. It links Defence's capability plans with Defence's reform program, the *More Together: Defence Science and Technology Strategy* 2030 for innovation, and resourcing plans. This Plan also builds on existing defence industry initiatives, such as the *2016 Defence Industry Policy Statement* and the *Defence Export Strategy*, to maximise Australian industry involvement in Defence projects.

1.2 The *2020 Defence Strategic Update* sets out the Government's new strategic policy framework for Defence, providing clearly identified geographic, operational, and capability priorities. It sets out three new Government-directed strategic objectives for Defence: to **shape** Australia's strategic environment; **deter** actions against Australia's interests; and **respond** with credible military force, when required. This framework is intended to provide a focus for planning, and alignment with broader Government initiatives.

1.3 To meet these goals the ADF needs to adjust, adapt and respond on a continual basis. As a result of the major force structure changes initiated by Government in the *2016 Defence White Paper*, the ADF is a more capable, agile and potent force. Delivery of the majority of these plans will continue under the *2020 Force Structure Plan*.

1.4 In line with the *2015 First Principles Review*, Defence undertakes regular reviews of its planning to ensure alignment of strategy, capability and resources in ways that are responsive to the evolving strategic environment.

1.5 The *2020 Force Structure Plan* is the product of this regular review, which found that adjustments are now required to further improve the lethality of the ADF, provide the Government with more flexibility to deal with grey-zone challenges, adapt to accelerating technological advances, and increase Defence's ability to successfully project military power. This review has been informed by assessments from Australia's security agencies and partners, as well as clear guidance from Government. Experimentation and analysis, conducted in Australia and overseas, tested both the current force and proposed new capabilities against a broad range of classified scenarios over a 20 year period and managing a number of concurrent tasks. The major decisions, key capability plans, and significant adjustments to the *2016 White Paper* plan informed by this work are outlined in the *2020 Defence Strategic Update* and this Plan.

1.6 The *2020 Force Structure Plan* also expands on the *2016 Defence White Paper* investment to build a sovereign industrial base that is internationally competitive, innovative and high-tech to meet Australia's defence capability needs and national economic goals. This investment will deliver an ADF better suited to meet Australia's most pressing defence challenges, to deny or defeat threats as they arise and provide significant opportunity for Australian industry. It will ensure the ADF is better supplied, more resilient and able to sustain a technology edge into a more challenging future.

1.7 The range of capabilities that Defence will maintain, develop, enhance and acquire under the *2020 Force Structure Plan* will provide the Government with a flexible range of options to deliver the Government's objectives to **shape** Australia's strategic environment; **deter** actions against Australia's interests; and **respond** with credible military force. While all capabilities can contribute military effects relevant to the Government's objectives, examples of the *Force Structure Plan's* support for the Government's priorities include:

- *Arafura* and *Guardian* class patrol vessels, a new Pacific support vessel, an expanded replacement for the C-130J fleet, and new amphibious vessels will support an enhanced Defence posture and whole-of-government efforts to build Australia's partnerships and influence in the region, including the Pacific Step-up objectives.
- *Attack* class submarines, advanced long-range strike weapons, remotely piloted combat aircraft, sea-mining and offensive cyber capabilities able to hold adversary forces and infrastructure at risk further from Australia.
- Increased weapons inventories, expanded domestic munitions capacity, additional fuel storage capacity and increased domestic industry participation will provide a more durable supply chain and strengthen sovereign industrial capabilities to enhance the ADF's self-reliance.
- Enhanced special forces capabilities, strengthened operational cyber, integrated intelligence surveillance and reconnaissance, and increased space tracking and sovereign satellite systems will better enable the ADF to respond to grey-zone activities, including cyber and information operations.
- Expanded deployable health care and combat engineering capabilities, future multi-role sealift and replenishment vessels, and further mobilisation measures will enhance ADF support to civil authorities in response to national crises and natural disasters, such as pandemics, bushfires or floods.

1.8 The Government will also continue to invest in the highly skilled Defence workforce, which will be critical to the successful delivery and operation of the capabilities set out in the *2020 Force Structure Plan.*

1.9 To deliver the *2020 Force Structure Plan,* the Government intends to provide Defence, including the Australian Signals Directorate, with total funding over the decade to 2029-30 of $575 billion, including $270 billion in capability investment.

1.10 To ensure Defence remains responsive to the challenges of today and to those in the future, adjustments have been made to several investments planned in the *2016 Defence White Paper.* These are necessary to deliver other priorities that will ensure the future ADF can project military power to shape our environment, deter actions against our interests and, when required, respond with effective military force.

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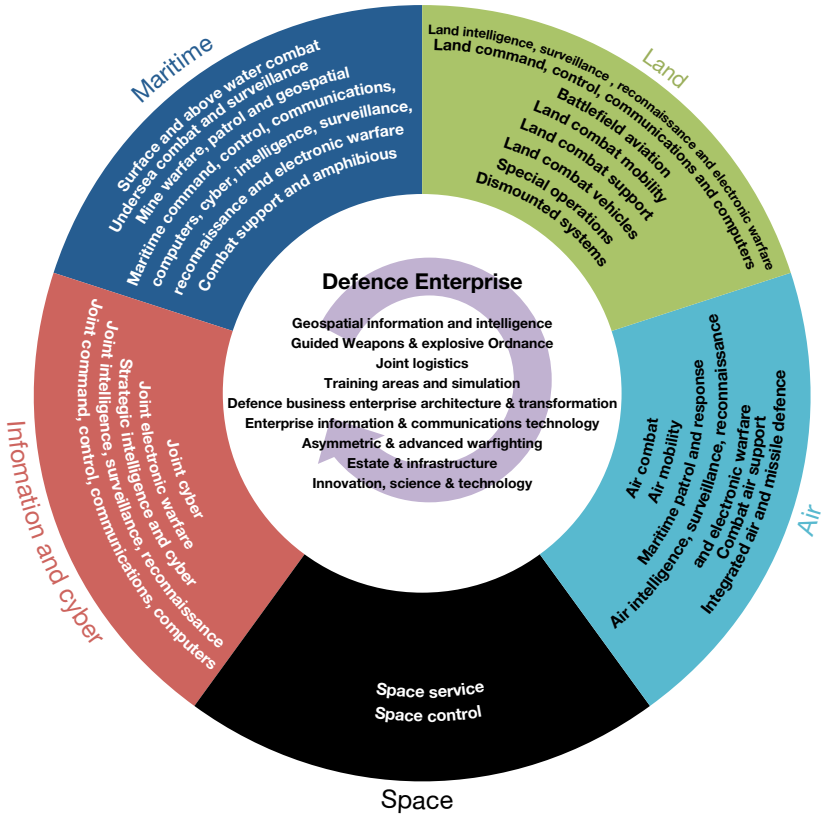
Chapter Two: A New Way Of Managing Capability And Preparedness

2.1 The *2016 Defence White Paper* introduced a framework for Defence capability based around streams and programs, to ensure a joint and integrated approach to capability, rather than a focus on individual projects.

2.2 Building upon the *White Paper* intent to move toward improved joint and integrated program outcomes, the capability streams have been refined into five operational domains: **Information and Cyber, Maritime, Air, Space, and Land,** supported by the critical enabling capabilities of the Defence Enterprise. To effectively manage and deliver capability across each domain, they are broken into 35 future capability programs with dedicated capability managers. This new architecture is detailed in Diagram 1.

Diagram 1 – Defence's Capability Program Architecture



2.3 Effective delivery of Defence capabilities requires the holistic employment of a range of assets (such as equipment) and resources (such as personnel) to generate a greater impact than could otherwise be delivered by individual projects. Defence will adjust and refine its investment across capability acquisition, sustainment and personnel costs to ensure a balanced capability outcome. Modern warfare is a joint activity and requires the greatest possible degree of integration across all elements.

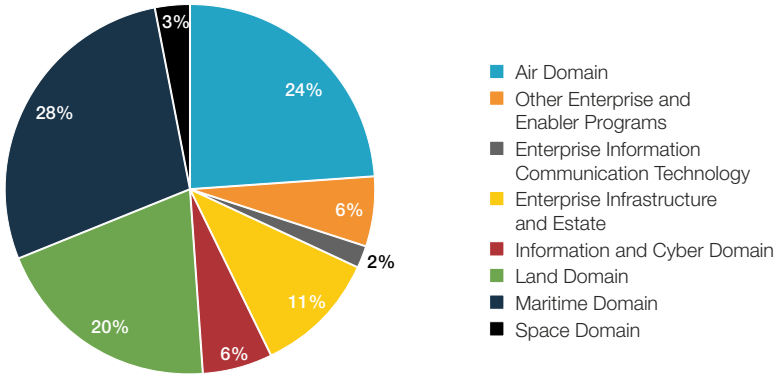
2.4 Viewing capability through this model is intended to ensure a more comprehensive approach to modernisation and force planning. This will be implemented through an improved capability development architecture that strengthens the roles, responsibilities and accountabilities of those tasked with delivering capabilities in each domain. It will focus on achieving the greatest possible warfighting effects with a clear framework for engaging with industry.

2.5 The Government is providing long-term funding certainty for Defence so it can deliver the Force Structure Plan set out in this document. To provide this certainty, the Government is continuing its policy of providing a 10-year funding model for Defence, first articulated in the *2016 Defence White Paper*. This will provide Defence, including the Australian Signals Directorate, with total funding of $575 billion to 2029 30.

2.6 The total funding of $575 billion over the decade includes around $270 billion in capability investment, compared to $195 billion in capability investment for the decade to 2025-26 when the *2016 Defence White Paper* was released. The Defence budget has been decoupled from GDP forecasts to avoid the need for adjusting Defence's plans in response to future fluctuations in GDP.

2.7 While the investment profile outlined in the *2020 Force Structure Plan* focuses on the first ten years of investment, it also includes forecasts for the second decade for key capability investments. A simple breakdown of investment by domain for the next decade is outlined in Chart 1.

Chart 1 – Proportional Capability Investment for the Decade 2020-2030*



* These percentages are rounded numbers and may not equate exactly to the domain capability investment figures.

INVESTMENT FUNDING DEFINITIONS

(1) **2020-2030 Capability Investment** – All 2020-2030 planned investment figures provided for Capability Domains are in price basis 2019-20 Mid-year Economic and Fiscal Outlook (MYEFO) Out-turned Price and Exchange unless otherwise stated. These figures comprise acquisition and future sustainment funding of Defence capabilities. Figures provided in this publication are point-in-time estimates and will be regularly adjusted in line with Commonwealth Budget processes.

(2) **Key Investment Chart Forecasts** – All capability forecasts included in the domain investment charts are in price basis 2019-20 MYEFO Out-turned Price and Exchange unless otherwise stated. These figures incorporate forecasted Defence capability investment out to FY2039-40, comprising acquisition (only) estimates unless otherwise stated. Figures provided in this publication are point-in-time estimates and will be regularly adjusted in line with Commonwealth Budget processes.

(3) **Out-turned vs Constant Year dollars** – The out-turned values within the *2020 Force Structure Plan* are projections of expenditure over time based on estimates of when expenditure is anticipated to occur into the future, adjusted for inflation and foreign exchange. These expenditure projections are calculated using economic parameters that are periodically updated by the Departments of Finance and Treasury. While this Plan reflects only out-turned dollars, Defence projects may sometimes also be expressed in constant dollar terms. This is where the cost of a project is described in 'current day' dollars as opposed to its cost into the future. For projects of shorter duration and low exposure to

foreign currencies the difference between out-turned and constant dollars is generally small. For projects that run for many years, or even decades, and that have higher exposure to foreign currencies, the differences between out-turned and constant dollars can be substantial for the same project value. For example, the *Attack* class submarine acquisition cost is currently $89.7 billion in 2019-20 MYEFO out turned dollars, which adjusts for inflation and projected foreign exchange variations; when isolated from these factors, the cost remains $50 billion in 2016 constant dollars. The out-turning of project estimates enables the purchasing power of a project budget to remain current in the year expenditure and capability delivery is planned to occur.

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Chapter Three: Information And Cyber Domain

3.1 Defence is becoming more reliant on fast, reliable and secure internet-based communications. But the threat to this connectivity from malicious actors is also growing. There has been a marked increase in cyber-attacks against Australia by foreign actors and criminals.

3.2 Secure and resilient information systems are essential to Defence's ability to conduct operations. The Government's plans for investments in Defence's information warfare capabilities in the Information and Cyber domain are critical to ensure information can be securely and reliably shared across Defence, with other Government agencies, and with international partners. Future planned investments will protect Defence in cyberspace and enable operations against adversary systems. These plans include investments in offensive cyber and operational cyberspace capabilities for deployed forces.

3.3 In addition to cyber capabilities, the Government plans to make additional investments in enhanced information and electronic warfare systems, and in improved joint command, control and communications systems to strengthen Defence's warfighting capability. Proposed investments would improve network security and resilience, and the capacity to share information with international partners. Furthermore, Defence intelligence capability will be bolstered with funding to integrate intelligence, surveillance and reconnaissance programs and data, and continued investment in signals intelligence capabilities. Funding will be set aside to ensure Defence remains competitive in the future as emerging technologies, such as artificial intelligence, arise in this domain.

3.4 The total program of investment in strengthened Information and Cyber domain capabilities is expected to comprise approximately $15 billion over the next decade.

Joint cyber

3.5 In an environment where threats to connectivity are becoming more prevalent, the ability of the ADF to operate in a contested, congested and degraded communications environment forms the foundation of joint cyber effects. Investment in joint cyber provides strategic response options for Government in the increasingly important information-enabled environment, complementing the capability of the Australian Signals Directorate. This requires cyber capabilities able to exploit and attack adversary information networks, while protecting our own networks, mission systems and platforms across the tactical to strategic spectrum. This program provides the systems to enable Defence to conduct defensive and offensive cyber operations against a range of adversaries for military purposes, and to effectively counter cyber attacks on Australia, on Defence, and on deployed forces.

Joint command, control, communications and computers (C4)

3.6 Synchronised control of forces across the spectrum of operational and strategic effects is vital to realise the full value of existing and new capabilities. C4 capabilities enable decision-making superiority, enhance situational awareness and synchronise the employment of military power. Secure connectivity of this kind will be a force multiplier for Australia, and an important element of Defence's capability edge. It will allow the sharing of secure information among Defence units, with other Government agencies, and – importantly – with our coalition partners.

3.7 The Government's plan for the ADF's joint C4 capabilities include upgrades to the Deployable Joint Force Headquarters and the 1st Signals Regiment, to make Headquarters' communications capability more deployable and survivable. This will complement ongoing investment in

tactical datalinks, cryptographic equipment, multinational information sharing systems, command and control software applications, and high frequency radios.

Joint intelligence, surveillance and reconnaissance

3.8 To ensure the ADF has superior situational awareness and the data necessary to support the use of precision weapons, an integrated joint intelligence, surveillance and reconnaissance capability is vital. Government is already investing in the integration of intelligence, surveillance and reconnaissance data, and the ADF Navigation Warfare Capability.

3.9 The Government will expand on this investment with additional funding for joint processing, exploitation and dissemination capabilities, and infrastructure. This includes enhanced architecture to allow the coordination and integration of intelligence, surveillance, reconnaissance, and electronic warfare capabilities across the Joint Force.

3.10 As part of an integrated approach to capability, additional investments in training, joint skilling and security are planned, including:

- Upgrades of joint intelligence training facilities to meet the needs of a larger intelligence workforce working within an increasingly challenging intelligence environment;
- The modernisation of ADF influence activities with an advanced internet operations capability to support Defence's capacity to shape Australia's operating environment; and
- Establishment of a dedicated and leading-edge counter-intelligence capability to account for a growing range of threats to intelligence security.

Joint electronic warfare

3.11 In addition to having secure communications of its own, it is equally important that Defence can degrade the electronic systems of adversaries. The Government is already investing in joint electronic warfare battle management and analysis, which will be further enhanced through investment in capability to enable operations and activities in the electromagnetic spectrum. This will include the delivery of tools, techniques and systems that can be incorporated into existing and related joint and Service projects.

Strategic intelligence and cyber

3.12 The Government has previously committed to significant ongoing investment in signals intelligence systems and cyber operations to respond to the growing role these play in meeting requirements for national intelligence. With the significant expansion and use of platform sensors and systems by military forces, the ability to utilise this information environment will strengthen Defence's warfighting capability. This includes capabilities that will improve Australia's capacity to collect, exploit, and analyse foreign electronic signals. The Government plans further investment in expanding and upgrading systems for delivering top secret information and communications within Defence and across the broader national security community.

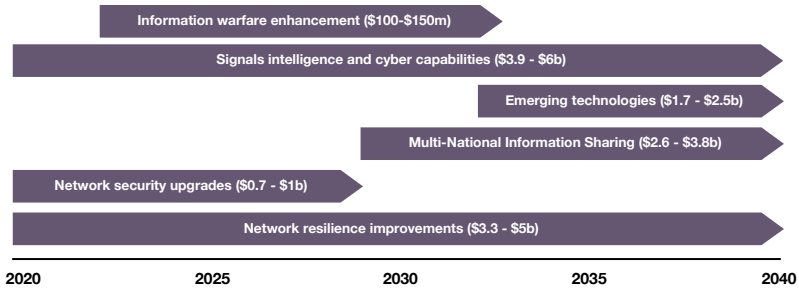
Enhanced cyber security defences

3.13 The Government's strategy includes continuing to strengthen the intelligence and cyber capabilities of the Australian Signals Directorate, which are critical for identifying and responding to foreign threats targeting Australian interests. The Government has committed to enhance the Australian Signals Directorate's capability to protect government

agencies, critical infrastructure, businesses and the Australian community from the growing scale and severity of malicious cyber activity.

3.14 The Government has also committed to expand the Australian Signals Directorate's counter-cybercrime capability to disrupt malicious actors offshore that are targeting Australians, and build new strategic mitigation options to block malicious cyber activity before it can impact networks in Australia. Enhanced support will also be provided to critical infrastructure providers across Australia, strengthening their cyber defences and building resilience in essential services.

Chart 2 - Key Information and Cyber Domain Investments



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Chapter Four: Maritime Domain

4.1 The Maritime domain is of particular significance to Australia, an island nation surrounded by one of the world's largest exclusive economic zones, rich in resources, through which the vast majority of our international trade transits. Countries across the Indo-Pacific region are expanding and modernising their maritime forces. Within our region, a range of advanced technologies are being fielded, including stealthy, long-range, high-speed weapons; modern warships; growing numbers of advanced submarines; and advanced strike capabilities. These have the potential to challenge our ability to protect our maritime resources, borders and trade, and our ability to project power.

4.2 The *2016 Defence White Paper* laid the framework for the largest expansion of the Royal Australian Navy since the Second World War. The *2020 Force Structure Plan* sets out a total planned capability investment of approximately $75 billion over the next decade in enhancing Australia's maritime capabilities.

4.3 This expanded maritime force will provide greater capability for anti submarine warfare, sealift, border security operations, maritime patrol and reconnaissance, air warfare, area denial, sea control and undersea warfare. It will also provide more opportunities for Australian industry, to be reflected in an update to the *Naval Shipbuilding Plan* in late 2020.

Maritime surface and above water combat

4.4 Under the *2016 Defence White Paper*, Government made extensive investments in Australia's surface warfare capability to safeguard Australia's maritime approaches and sea lines of communication. As a result, Defence has made significant progress toward building a more robust capability for maritime air and missile defence, maritime strike, anti-submarine and anti-surface warfare.

4.5 The Government will continue with its investments in:

- Acquisition and sustainment of nine *Hunter* class frigates optimised for anti-submarine warfare, for an increasingly competitive undersea environment;
- Sustainment and upgrades to the three *Hobart* class destroyers to maintain these as leading-edge air warfare platforms to protect deployed naval forces;
- Sustainment and upgrades to the eight *ANZAC* class frigates to maintain the Navy's strategic edge in surface combatant capability.
- Acquisition of maritime strike and advanced surface-to-air weapon systems to give the ADF more options to project force and protect itself in an environment where more countries have increasingly advanced systems;
- Acquisition and through-life upgrades of the MH-60R anti-submarine helicopter;
- Expanded acquisition of maritime tactical remotely piloted aerial systems to enhance situational awareness across Australia's vast maritime operating environment; and
- Provision of a torpedo self-defence suite to the surface fleet to counter advances in torpedo systems in our region.

4.6 To project and maintain sea control the Government has put in place investment plans to:

- Acquire a range of advanced maritime guided weapons, including long-range anti-ship and land strike weapons, and extended range surface-to-air missiles, to give Defence more options to deter aggression against Australia's interests;

- Acquire advanced anti-submarine torpedos for air and surface assets, to build collaborative anti-submarine capability among Australia's partners;
- Participate in the development of directed energy weapons for the close range defence of naval vessels against advanced and emerging weapon systems;
- Expand and rationalise the support and logistics helicopter fleet consistent with the expectations for larger naval operations;
- Upgrade maritime tactical remotely piloted aerial systems to ensure they are equipped with the latest intelligence, surveillance and reconnaissance capabilities to support the fleet;
- Upgrade the *Hunter* class frigates throughout their service life to ensure tactical superiority and commonality across the fleet; and
- Build a replacement for the *Hobart* class destroyer following the completion of the *Hunter* class frigate build, to sustain the Navy's air warfare capability while also supporting the Government's continuous Australian shipbuilding model.

Undersea warfare

4.7 Under the *2016 Defence White Paper*, Government set out extensive plans for investments in Australia's undersea warfare capability to safeguard Australia's maritime approaches and sea lines of communication. The Government remains committed to the delivery of a regionally superior submarine capability. This submarine will be fully interoperable with the United States to enhance Australia's own deterrent, and contribute to regional anti-submarine warfare. Further priorities for investment in the undersea domain include persistent undersea surveillance; undersea combat; command, control, communications; support; sustainment; and training sub-systems.

4.8 In addition to the acquisition and sustainment of 12 Australian-built *Attack* class submarines, the Government intends to continue with:

- Sustainment, capability enhancements, and life of type extensions to the *Collins* class submarines, which are halfway through their life, to maintain a capability advantage until the transition to the *Attack* class;
- Continued upgrades to the submarine combat system and heavyweight torpedo; and
- Facility and infrastructure upgrades to support the expanding submarine fleet.

4.9 To further safeguard Australia's undersea capability, the Government will also invest in an integrated undersea surveillance system (including exploration of optionally crewed and/or un-crewed surface systems and un-crewed undersea systems), an undersea signature management range, and expanded undersea warfare facilities and infrastructure.

Maritime mine warfare, patrol and geospatial

4.10 Protecting Australia's large exclusive economic zone requires understanding of the maritime environment under our control, sustained presence, and adapting to new technological developments that could increasingly complicate our ability to keep Australian interests safe in the Maritime domain.

4.11 Government will continue with its investment in:

- The acquisition and sustainment of 12 *Arafura* class offshore patrol vessels, to enhance Australia's capacity to patrol its maritime territory and near region;

- Support for the HydroScheme Industry Partnership Program to boost Australia's commercial hydrographic industry;
- A replacement for the sail training ship *Young Endeavour*, to continue the Government's commitment to national youth development; and
- The procurement of six evolved *Cape* class patrol boats to de-risk the transition to the new *Arafura* class from the Navy's ageing *Armidale* class patrol boats. This provides better value for money than a planned life extension, lowers operational and transition risk, and supports Australian shipbuilding industry.

4.12 To support further advanced operations throughout the ADF's strategic operating environment, the Government will improve its capability options through:

- Mine warfare capabilities to secure Australia's maritime approaches, focused on modern, smart sea mine systems.
- Enhancements to mine countermeasures and hydrographic capabilities through the acquisition of up to eight additional vessels, built in Australia – potentially based on the Arafura class Offshore Patrol Vessel design.
- Clearance diving and therapeutic hyperbaric systems to support ship and clearance diving capabilities across the spectrum of operations.

Maritime combat support and amphibious

4.13 Amphibious operations, sea lift and maritime combat logistics are essential for Australia to be able to project power, and to provide Defence with the flexibility to support a broad range of responses to national crises and regional humanitarian assistance requirements.

4.14 The acquisition of two new *Supply* class replenishment ships is progressing alongside sustainment and capability enhancements to the two *Canberra* class and HMAS *Choules* amphibious vessels, as announced in the *2016 Defence White Paper*.

4.15 To further expand the ADF's ability to support an increased presence in the region, Government's plans include:

- Design, development and acquisition of two Australian-built multi-role sealift and replenishment vessels to replace HMAS *Choules*. This will greatly extend Navy's ability to project and sustain the joint force;
- Life extension of Australian Defence Vessel *Ocean Protector* and the acquisition of a replacement vessel with an ice-rated hull capable of operating in the Southern Ocean, as well as the acquisition of another vessel built in Australia to support the Australian Government's Pacific Step-up initiatives; and
- The acquisition of a support and salvage vessel to enable the recovery and at-sea repair of large warships.

Maritime command and control, communications, computers, cyber, intelligence, surveillance, reconnaissance and electronic warfare (C5ISREW)

4.16 The ADF's maritime strategy requires naval and maritime forces to be highly capable, adaptable and versatile to respond across a range of contingencies within Australia's region.

4.17 To enable decision superiority in the Maritime domain, the Government is investing in systems that provide high-quality situational awareness and improved identification of threats.

4.18 This investment will see the delivery of enhanced secure satellite communications, advanced tactical networks, mission data support for surface combatants, and new acoustic analysis capabilities.

4.19 These enhancements build on existing *2016 Defence White Paper* investments in maritime communications, the Nulka missile decoy and electronic warfare systems for the surface fleet.

SHIPBUILDING PLAN UPDATE

Building on the *2016 Defence White Paper*, in 2017 the Government launched the *Naval Shipbuilding Plan*, setting out a long-term vision for a strong, sustainable and innovative naval shipbuilding industry in Australia. The three years since launching the Plan have seen solid progress in the delivery of this vision and, in light of this progress and the additional shipbuilding programs flagged in the 2020 Force Structure Pan, the Government will update the *Naval Shipbuilding Plan* at the end of the year.

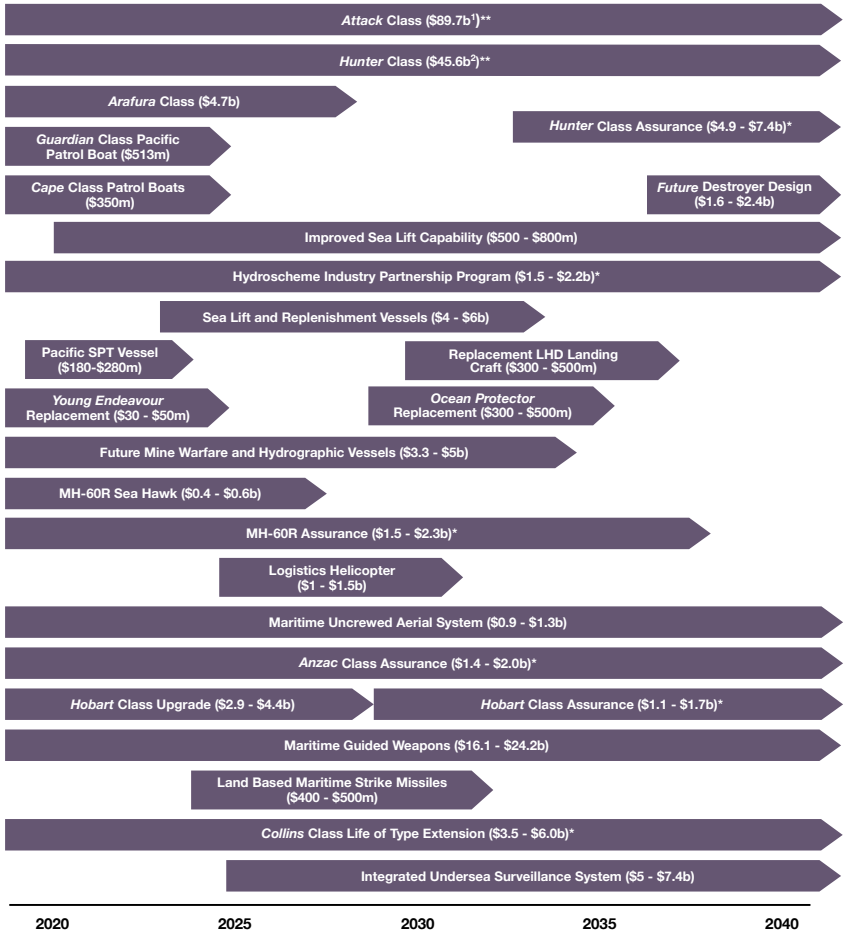
The two largest programs in the 2017 Plan – the *Attack* class submarines and *Hunter* class frigates – are now both on contract and well into the design phase. The *Arafura* class offshore patrol vessel program is in production, with the first two vessels under construction in South Australia and the third under construction in Western Australia. The fast-tracking of the *Arafura* and *Hunter* programs have saved naval construction jobs in South Australia. The Government has also prioritised developing a sustainable, continuous shipbuilding industry to end the 'boom and bust' cycle of naval shipbuilding, delivering sovereign capability and certainty for industry. In its decision to approve the *Hunter* class frigate program, the Government allocated additional funding to enable construction of ships at a deliberate drumbeat over a longer period of time than originally planned to achieve a continuous shipbuilding program.

In South Australia the Government has built a new world-class naval shipyard at Osborne South to support the *Hunter* build program and work on the new *Attack* submarine construction yard at Osborne North is underway. The Government funded Naval Shipbuilding College is working with industry and the education and training

sector Australia-wide to ensure a pipeline of job-ready workers is available to feed the naval shipbuilding workforce as it grows over the coming decade.

The *2020 Force Structure Plan* includes plans for the acquisition or upgrade of up to 23 different classes of Navy and Army vessels representing a total investment of $168 billion to $183 billon. While most of this investment is planned over the next two decades, the scope of some projects including the *Hunter* and *Attack* class programs will carry into the 2040s and beyond. The updated *Naval Shipbuilding Plan* will provide further detail on the critical role of Australian industry in delivering this enterprise.

Chart 3 – Key Maritime Domain Investments



Note:

* Denotes capabilities which include future sustainment

** Denotes capability acquisition forecasts extending beyond FY2039/40

1. Additional information on *Attack* class costs can be found on page.22
2. Additional information on *Hunter* class costs can be found on page.43

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Chapter Five: Air Domain

5.1 The Air domain is critical to situational awareness during peace time operations and rapid response in times of disaster or conflict. Throughout our region, countries are acquiring advanced aerial capabilities, including networked fifth-generation combat aircraft and high-speed, long-range weapons.

5.2 The *2016 Defence White Paper* outlined the requirement for a potent and technologically advanced strike and air combat capability, supported by airborne early warning and control aircraft and sustained by air-to-air refuelling. The *2016 Defence White Paper* also set out planned investments in sophisticated air intelligence, surveillance and reconnaissance systems and air lift.

5.3 The *2020 Force Structure Plan* sets out the Government's plans for further enhancements to some existing capabilities and investment in new systems, including remotely piloted and autonomous aerial systems. This will ensure Australia continues to have a potent, networked force able to undertake a wide range of activities across huge distances.

5.4 The Government also intends to build on previous commitments with plans for new sophisticated command, control, communications, computers and intelligence systems to fuse information from multiple sources. This, coupled with an expanded Jindalee Operational Radar Network, will enhance Australia's situational awareness.

5.5 Government capability investment in the Air domain will total around $65 billion over the next decade. Improved weapon systems, with longer range and greater survivability, will give Defence the capability to deter or defeat attacks as far from Australia as possible. New and existing aircraft will combine with remotely piloted and autonomous systems to provide increased lethality and survivability. An expansion of the air mobility fleet

will improve Defence's ability to support and project our forces across Australia, the Indo-Pacific and further afield, when required.

Air combat

5.6 Air combat power is a critical capability, both in protecting Australia and deployed forces from adversary threats, and giving Australia a credible capability to hold at risk an adversary's forces and infrastructure at distance from Australia.

5.7 The Government is committed to the procurement and introduction of the F-35A Lightning II Joint Strike Fighter aircraft, support of the F/A-18F Super Hornet strike aircraft and acquiring enhanced air-launched munitions.

5.8 The Government's commitment to the ADF's air combat capability includes the development of options to invest in:

- A fully integrated air combat management system to meet future air combat and air control management needs, and assure the ADF's ability to deter or defeat threats to Australia's interests amid rapid modernisation of air combat capability in the Indo-Pacific;
- A development, test and evaluation program for high-speed long-range strike and missile defence, including hypersonic weapons, leading to prototypes to inform future investments;
- Acquisition of remotely piloted and/or autonomous combat aircraft, including teaming air vehicles, to complement existing aircraft and increase the capacity of the air combat fleet;
- Procurement and integration of advanced longer-range strike weapon systems onto combat aircraft to allow the Air Force to operate at greater range and avoid increasingly sophisticated air defences;
- The acquisition of advanced loitering munitions to give the ADF more options for persistent presence and strike in an increasingly complex environment;
- The installation and integration of improved self-protection systems on a range of aircraft to enhance the survivability of aircrew and aircraft against modern weapons; and
- Enhanced Joint Terminal Attack Controller training through enhancements to the fleet of training aircraft that allow dedicated air-to-ground attack controller training.

Air intelligence, surveillance, reconnaissance and electronic warfare

5.9 To ensure Australia retains an effective air intelligence, surveillance and reconnaissance and electronic warfare capability, Government has invested in support and upgrades to the EA-18G Growler electronic attack aircraft, and to the Jindalee Operational Radar Network. Defence will also bring into service the MQ-9B Sky Guardian remotely piloted aerial system and the MC-55A Peregrine airborne electronic warfare aircraft.

5.10 Building on these capabilities, the Government is planning investments to further strengthen our intelligence, surveillance and reconnaissance capabilities to support the ADF's awareness of our region through:

- Expansion of the Jindalee Operational Radar Network's site in Longreach, Queensland, to provide wide area surveillance of Australia's eastern approaches and enhance Australia's strategic situational awareness;
- Development and acquisition of additional crewed and remotely piloted intelligence, surveillance and reconnaissance aircraft, to increase both the numbers and sophistication of the ADF's tactical and strategic situational awareness;
- Replacement and expansion of the airborne electronic attack capability upon the retirement of the EA-18G Growler to ensure Australia retains an advanced electronic attack capability; and
- Ground control systems to enable situational awareness in heavily defended environments and/or where the electromagnetic system is contested by adversaries.

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Air mobility

5.11 Air mobility is a core air power role, and its availability underpins most Defence Force activities and Australia's ability to project power. As a result of previous significant Government investment, Australia has a robust air mobility capability. Government will maintain this through continued investment in support and upgrades to the C-130J Hercules medium mobility aircraft, the C-17A Globemaster III heavy mobility aircraft, the existing KC-30A Multi-Role Tanker Transport aircraft, and the C-27J Spartan light mobility aircraft.

5.12 Government intends to further strengthen the ADF's air mobility capability to project and sustain the ADF's presence in the strategic operating environment, including through:

- Procurement and integration of a Large Aircraft Countermeasures System across the Air Mobility Group to enhance the survivability of aircrew and aircraft against modern threats;
- An expanded replacement fleet for the C-130J Hercules aircraft to improve the lift capacity of the ADF in response to growing demand for these assets; and
- An expanded replacement fleet for the KC-30A air-to-air refuelling aircraft, including crewed and/or remotely piloted platforms, to enhance the capacity of the Air Force to operate at long range and sustain operations.

Combat air support

5.13 Ongoing investment will be required in a range of projects and activities to enable air operations, including air base operations, air traffic management and air crew training activities. This includes the continued development of the Woomera Range facility; the upgrade of Defence air

traffic management systems; and upgrades to Air Force training systems such as the PC-21 fleet, simulators and training aids.

5.14 The Government's plans include the following investments to better sustain operations and strengthen the resilience of Australia's air power:

- Three deployable hangars to cater for Boeing 737-sized aircraft and eight fighter aircraft or troop-lift helicopter-sized airframes, to better sustain operations when deployed away from bases;
- Training and deployable kits for repairing damaged aircraft, to better sustain aircraft deployed on operations;
- Acquisition of equipment to decontaminate aircraft or an airbase in the event of a chemical, biological, radiological or nuclear attack; and
- Infrastructure enhancements to improve the capability, capacity, and survivability of Northern Australian air bases, to boost the resilience of Australian air power.

Integrated air and missile defence

5.15 To protect the joint force, the Government will continue to invest in support and upgrades for the E-7A Wedgetail airborne early warning and control aircraft, as well as the development and support of a joint air battle management system to better coordinate and synchronise ADF operations. In addition, plans for the E-7A replacement will now involve increasing the fleet to provide greater coverage of the highly-complex future air and joint-battlefield environment that will include a proliferation of autonomous systems and long-range and high-speed weapons.

5.16 The proliferation of ballistic and very high-speed missiles means our deployed forces require enhanced deployable air and anti-missile defence when on operations. In addition to investment in defensive systems, the Government will continue to work closely with the United States on countering ballistic missile threats.

Maritime patrol and response

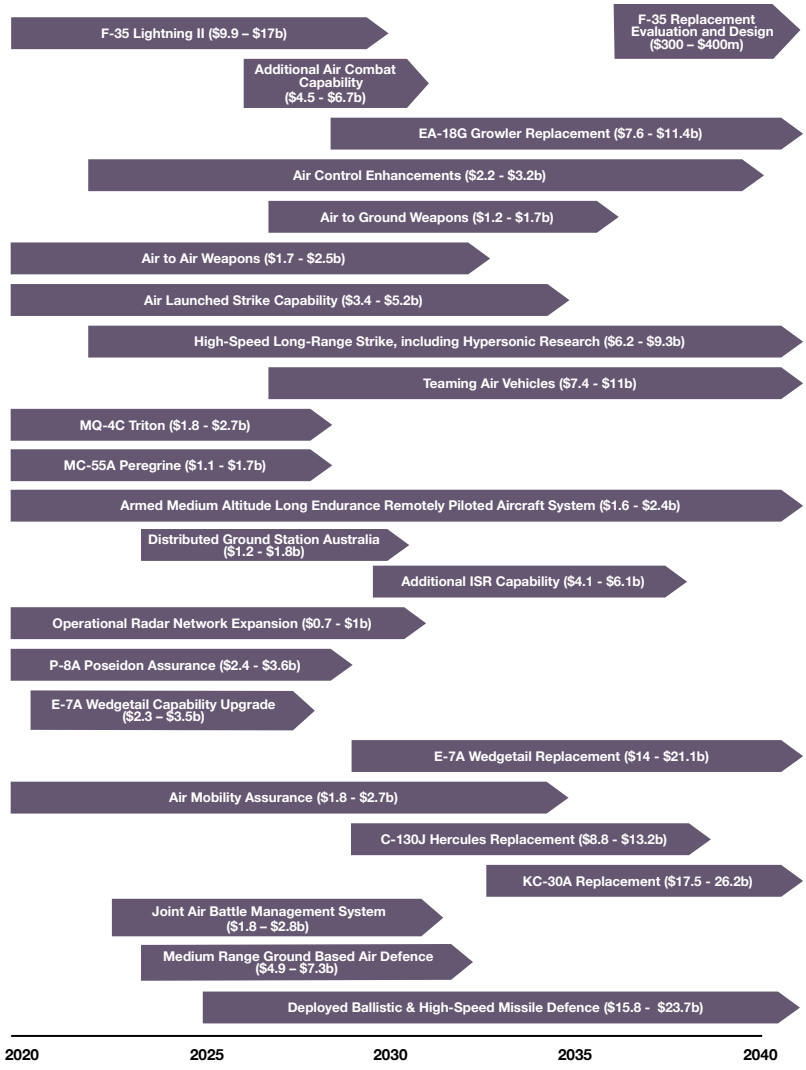
5.17 To complement the investment being made in the maritime intelligence surveillance and reconnaissance program, Defence will continue with the procurement and introduction into service of the MQ-4C Triton remotely piloted system, and support and upgrades to the P-8A Poseidon maritime patrol aircraft. Compared to legacy systems, these provide a significant enhancement in Defence's ability to maintain situational awareness of Australia's maritime approaches.

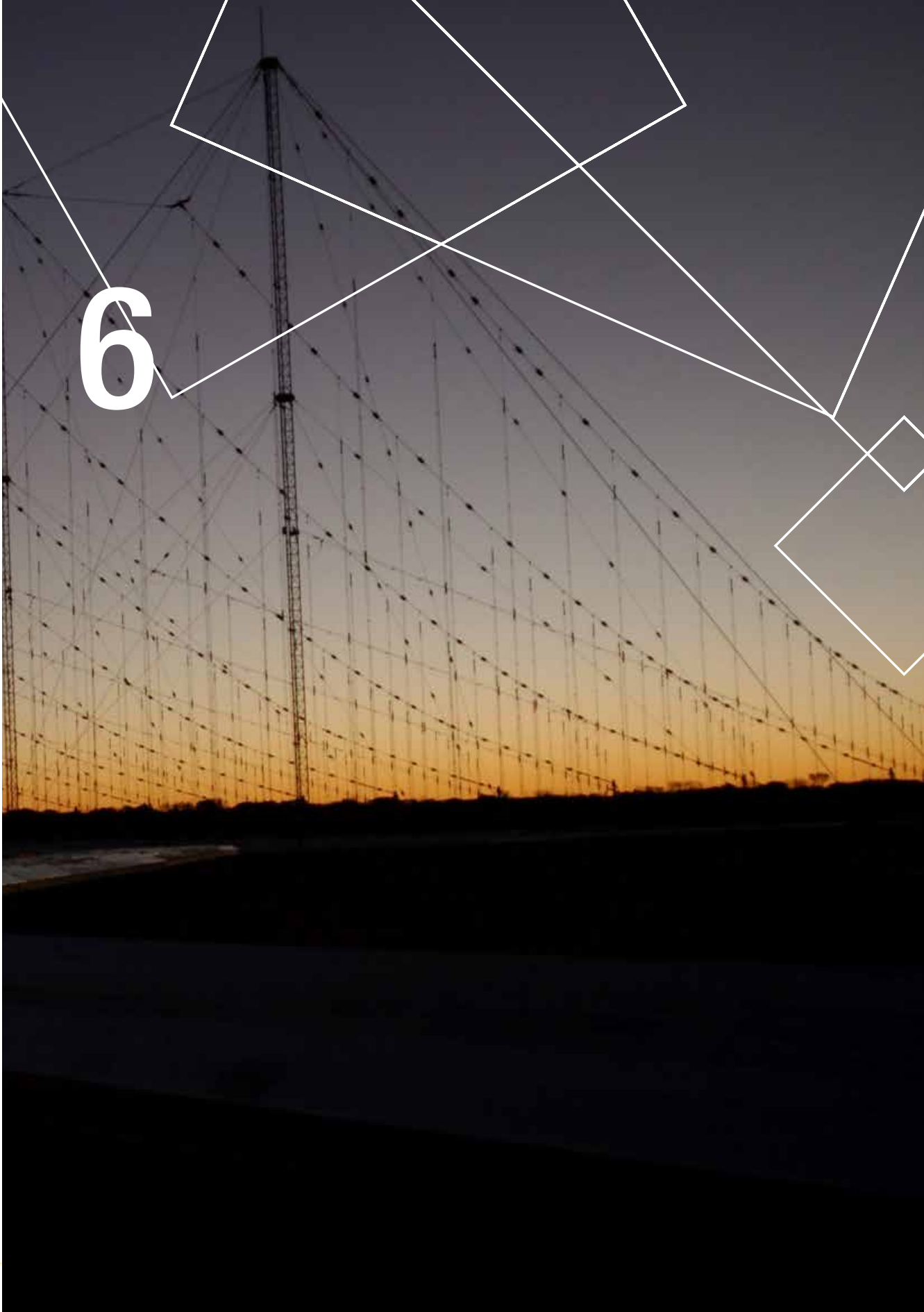
5.18 In addition, Government will keep under review the future balance between the MQ-4C Triton, the P-8A Poseidon, and other capabilities in light of emerging technological and strategic change.

5.19 To balance its investments in future initiatives, Defence will not proceed with plans for:

- Two additional KC-30A Multi-Role Tanker Transports, with increased funding directed towards sustainment and spares to allow for greater availability of current aircraft;
- Additional C-17 heavy-lift aircraft, as the C-17 is no longer produced. Funding for the C130J replacement program has been increased to provide for an expanded replacement fleet; and
- A dedicated long-range search and rescue capability, with this role to be managed by introducing search and rescue capability into planning for future air mobility platforms.

Chart 4 – Key Air Domain Investments

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Chapter Six: Space Domain

6.1 Australia is increasingly reliant on satellite-based capability and services, particularly where digital data and information drives decision-making. At the same time, low-Earth space orbits are becoming congested with increasing numbers of satellites being launched around the world every year. The combination of an increasing reliance on space capabilities with the capacity limitations of Australia's legacy systems must be addressed.

6.2 Defence is working closely with the United States and other Combined Space Operations Initiative partners, the Australian Space Agency and industry to transform the way the ADF operates in space, including in relation to satellite communications, space domain awareness, precision navigation and timing, and intelligence, surveillance and reconnaissance.

6.3 Our space services and space control programs, along with the Geospatial Information and Intelligence program, contribute to Defence operations by providing assured access to space capabilities, enabling situational awareness and delivering real-time communications and position, navigation and timing information.

6.4 Continued investment and development of space capabilities will be required to further improve Defence's resilience and enhance a large number of space-dependant capabilities across the Joint Force. Investment of around $7 billion in space capabilities over the next decade, which includes investment in sovereign-controlled satellites, will provide assured access to these services when needed.

Space services

6.5 Satellite communications and position, navigation and timing data are essential for the command and control of deployed forces. These systems enable the sharing of real-time operational and logistical information and for the placement, navigation and synchronisation of Defence assets. This does not include geospatial-intelligence capabilities which are included in Enterprise Programs.

6.6 The Government's plans include a rolling upgrade program to assure position, navigation and timing information in a contested environment. Defence is also exploring cutting edge research into additional precision timing means.

6.7 The Government will also continue to invest in upgrades and support to existing and future satellite communications systems. This investment seeks to increase our worldwide capacity through enhanced allied and commercial arrangements and includes the provision for network growth if the Government deems this desirable in the future. The Government's plans include communications satellites and ground control stations that will be under sovereign Australian control, increasing our self-reliance and resilience.

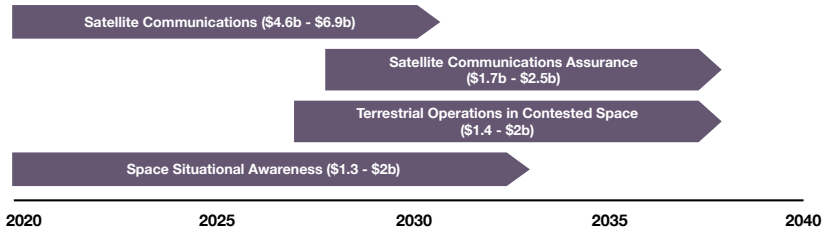
Space control

6.8 Australia holds a unique geographical position to contribute significantly to collective space domain awareness with our allies and partners. Space domain awareness enables better tracking and identification of space objects and threats, such as space debris, as well as predicting and avoiding potential collisions. Defence currently hosts a United States C-Band Radar and Space Surveillance Telescope and will continue to build our space domain awareness capabilities with the United States and other

key partners into the future. To ensure that we can take full advantage of the large volumes of information that will be developed, the Government is also investing in growing the intelligence and supporting workforce.

6.9 In addition, Defence will need capabilities that directly contribute to war fighting outcomes in the space domain using terrestrial and/or space based systems. The Government's plans include the development of options to enhance ADF space control through capabilities to counter emerging space threats to Australia's free use of the space domain and that assure our continued access to space-based intelligence, surveillance and reconnaissance.

Chart 5 – Key Space Domain Investments



Chapter Seven: Land Domain

7.1 Throughout its history, Australia's land forces have responded to a wide variety of tasks from humanitarian assistance and disaster relief, to peacekeeping and, ultimately, to combat operations. To equip the land forces to meet these challenges into the future, new investments are planned in strike weapons, watercraft, helicopters, information effects, logistics resilience and emerging robotics and autonomous systems.

7.2 These capabilities will increase the land force's combat power, and give the Government more options to deploy the ADF in the more competitive environment Australia now faces, and is expected to face into the future. Australia's land forces will be connected, protected, potent and enabled. Enhanced mobility, firepower, protection, and situational awareness will allow them to rapidly deploy where they are needed, achieve their missions, and return home safely. They will be better able to operate independently and to integrate with Australia's partners and allies.

7.3 The programs outlined here will also enhance the ADF's ability to support the nation in times of domestic crisis and to respond into the region for humanitarian assistance or stability operations. Enhancements to mobility, intelligence and reconnaissance, and special operations forces, among others, will give the Government more options to deploy the ADF across the full spectrum of national interests. This total package of capability investment in the land forces will be worth around $55 billion over the next decade.

Land combat vehicles

7.4 The Government has made significant investments in the ADF's amoured fighting vehicle capability. Australia has the capability to conduct sustained close combat in the land domain, which is critical to ensuring the ADF provides a credible deterrent to any threats to our interests. To build the ADF's capability in this regard, the Government's plans include:

- Procurement of the Boxer combat reconnaissance vehicle, to be built in Queensland, which will enhance the survivability of mounted land intelligence, surveillance and reconnaissance elements of the combat force;
- Selection and procurement of infantry fighting vehicles to replace the M113AS4 armoured personnel carrier and provide soldiers with a modern close combat vehicle with improved survivability;
- Procurement of a new armoured combat engineering capability to ensure the survivability of engineers while supporting land force vehicles to bypass or penetrate obstacles during combat; and
- Upgrades to ensure the M1 Abrams fleet remains a regionally superior main battle tank, and measures to improve the sustainability of the tank fleet.

7.5 Defence will also develop options for a system to replace the current tank capability when it reaches its end of life. This new system will integrate with reconnaissance and infantry fighting vehicles to ensure the land force retains a decisive land combat capability into the future.

Land combat support

7.6 To enable joint land operations, particularly in high-intensity conflicts, Defence will require protected capabilities that give land forces the ability to shape the battlefield and strike adversaries at a distance. Land forces will also require expanded combat engineering capabilities to enable mobility and provide survivability and sustainment support.

7.7 Within this program the Government has existing plans for the procurement of a long-range rocket artillery and missile system and new engineering vehicles.

7.8 To further strengthen capability to shape the battlefield and strike in contested environments, enhancements to land combat are planned, including:

- Two regiments of Self-Propelled Howitzers (the core of the Protected Mobile Fires capability), to be built in Geelong, Victoria to complement existing land-based strike capabilities. This includes a future program of upgrades to hardware and software to ensure these systems retain their potency over time;
- The enhancement or replacement of the M777 155mm lightweight towed howitzer with a rapidly-deployable and lightweight artillery to maximise the flexibility of the ADF's suite of artillery capabilities;
- The procurement of a battery of long-range rocket artillery and missile systems, upgrades to the range of these systems to enable a land based operational strike capability, and the purchase of additional units to enable the capability to be expanded into a full regiment of three batteries;
- A future program to develop a directed energy weapon system able to be integrated onto ADF protected and armoured vehicles, and capable of defeating armoured vehicles up to and including main

battle tanks. The eventual deployment of directed energy weapons may also improve land force resilience by reducing the force's dependence an ammunition stocks and supply lines;

- Introduction of smart anti-tank mines, which will strengthen the ADF's ability to shape the battlefield;
- Provision of additional protective equipment, sensors and medical supplies for the ADF in operations in chemical, biological, radiological and nuclear contaminated environments; and
- The establishment of a coordination office for the implementation of robotics and autonomous systems across the land force to enable, enhance and protect platforms and personnel in combat.

Land combat mobility

7.9 To provide land forces with the mobility, protection and sustainment they require, a range of investments are being made by the Government in land mobility and support capabilities, including:

- The continued construction and maintenance of the Australian built Bushmaster and Hawkei protected mobility vehicles in Victoria to ensure ADF personnel are protected against explosive and ballistic threats on the battlefield;
- Replacing the ageing fleet of medium and heavy fleet trucks with modern, high-capacity vehicles that will protect crews, carry greater loads and ensure continuous logistic support to land forces;
- A bulk fuel storage and distribution system to sustain deployed forces across the spectrum of operations; and
- An ADF Deployable Health System to ensure the best medical care for ADF personnel, and to provide a flexible capability for use in humanitarian assistance and disaster relief operations.

7.10 To enhance the ADF's ability to respond to a range of circumstances across the region, further enhancement will be made to land mobility and support through planned investment in:

- New Army watercraft basing in Northern Australia to support an expansion of the Army's watercraft fleet.
- Several large amphibious vessels to enhance the amphibious lift capacity of the ADF, especially in Australia's territorial waters and near region;
- A fleet of inshore patrol craft able to expand the Army's capability to patrol and operate in the riverine environment;
- Additional medical equipment for vehicles and helicopters to ensure the safe evacuation of casualties from the battlefield to suitable medical facilities;
- An active protection system for Bushmaster, Hawkei and heavy truck protected vehicles and landing craft able to defeat modern anti-armour weapons and protect vehicle crews;
- Acquisition of a fleet, up to a brigade in size, of un-crewed systems, to include vehicles, to support operations by land forces. This will enhance the war-fighting capability of the ADF while also protecting Australian personnel; and
- Upgrades to the ADF's current Bushmaster protected mobility vehicles to a common standard, incorporating lessons from Afghanistan and recent disaster relief operations.

Battlefield aviation

7.11 Crewed and remotely piloted airborne platforms and capabilities are critical for land manoeuvre, by providing transport, battlefield support and intelligence, surveillance and reconnaissance. The Government will continue with its investments in key battlefield aviation capabilities including:

- Replacement of the Tiger Armed Reconnaissance Helicopter from the mid-2020s;
- Procurement of a special operations rotary wing capability to meet the niche demands of special operations;
- Continued operation of a multi-role troop lift helicopter and the CH-47F Chinook multi-mission heavy-lift transport helicopter for the provision of mobility, logistic support and aeromedical evacuation of land forces; and
- Continued operation of tactical remotely piloted aerial vehicles to provide intelligence, surveillance and reconnaissance in support of land forces.

7.12 Investment is also planned in future aviation capabilities to ensure the land force maintains flexibility in movement and superiority in battlefield surveillance and reconnaissance networks, including:

- Small remotely piloted aerial systems to support the land force's surveillance and reconnaissance capabilities;
- The acquisition of long-range rotorcraft to enable land force projection and support at greater ranges; and
- In the longer term, the acquisition of a Next Generation Rotorcraft will replace elements of battlefield aviation with enhanced capabilities.

Dismounted systems

7.13 The ADF must have the ability to have a persistent ground presence, operate in complex terrain, and defeat adversaries through close combat.

7.14 Government will continue to invest in enhanced equipment to enable and protect soldiers on the modern battlefield. This includes small arms and heavy weapons systems, night vision equipment, personal ballistic protection and load carrying equipment. To support these programs, Defence plans to establish a contested urban environment research office to coordinate research into, and the rapid fielding of, constantly evolving combat equipment.

Special operations

7.15 The Defence special operations capability provides Government with response options for irregular and conventional threats beyond the capability of general-purpose forces or other government agencies. This capability will be increasingly important to countering the grey-zone threats Australia is likely to face in the future.

7.16 The Government is committed to maintaining Australia's special forces capability, and is planning investments in the Special Operations Continuous Development Program and a deployable special operations engineering capability. The Government's plans also include investment in a replacement fleet of medium/heavy special operations vehicles and the acquisition of small submersible and surface boat capabilities to support maritime counter-terrorism, special reconnaissance and warfare, and precision strike missions.

Land intelligence, surveillance, reconnaissance and electronic warfare

7.17 Defence requires technologically advanced, networked and integrated systems – including land intelligence, surveillance and reconnaissance and electronic warfare capabilities – for joint and coalition operations. The protection of land forces also requires cyber and counter improvised explosive device (CIED) capabilities. To provide these capabilities, the Government will continue its investment in the enhancement of CIED protection, geospatial support to land forces, and a land tactical electronic warfare capability.

7.18 The Government also plans to acquire a next-generation counter remotely piloted aerial system to help counter the proliferation of these systems, and to raise a new Army unit dedicated to information warfare activities.

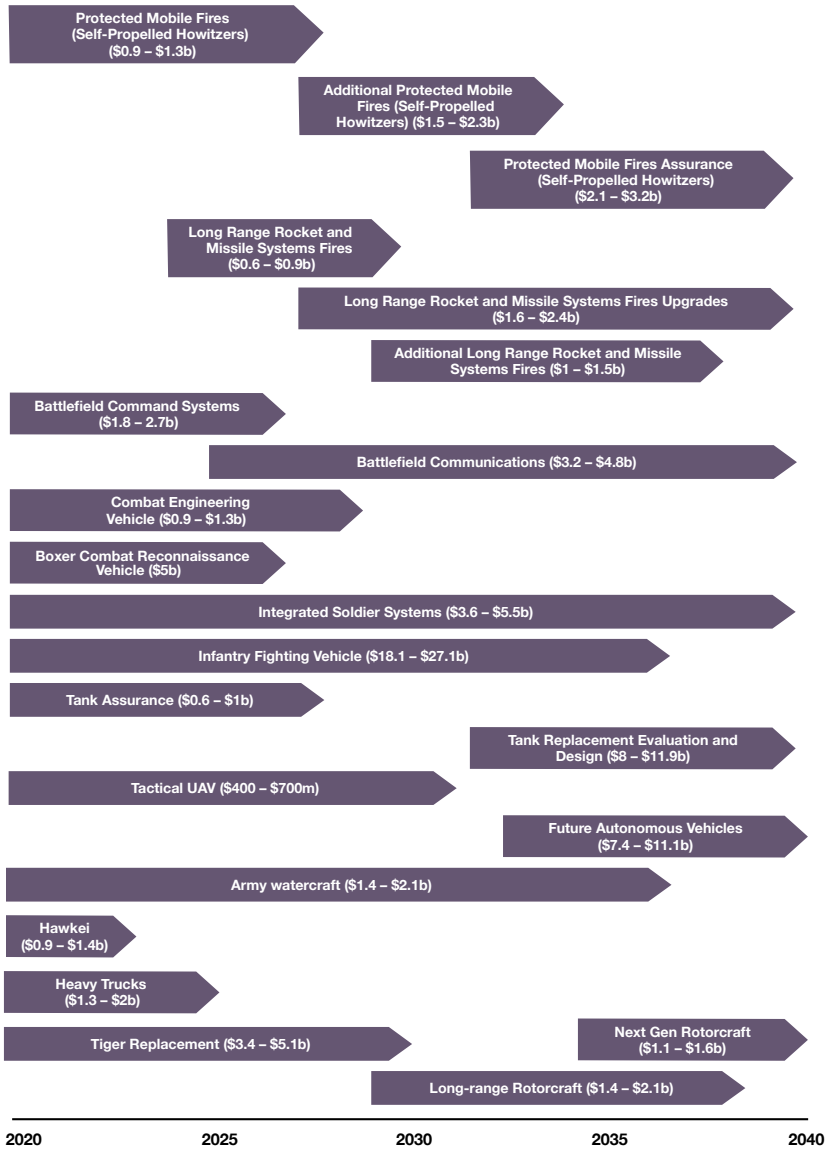
Land command, control, communications and computers (C4)

7.19 Land C4 will need to be enabled through technologically advanced, networked and integrated systems that support joint and coalition operations. The Government will continue investments in battlefield command, control and communications systems; battle management systems; and deployable computer networks. Investment is also planned in new satellite communication terminals to support the land forces.

17.20 To align the future land force structure with the strategic objectives in the *2020 Defence Strategic Update*, Government has agreed to minor scope and timing adjustments to several Land domain projects that will not impact on the ADF's land force capability. Notably, Defence will substantially reduce the planned modernisation and consequent replacement of the G-Wagon vehicle fleet. Due to a lack of protection, these vehicles will not be deployable to future battlefields and their role

will be accommodated by other vehicles such as the Bushmaster, Hawkei and heavy truck protected mobility fleets.

Chart 6 – Key Land Domain Investments



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Chapter Eight: Defence Enterprise Programs

8.1 In a strategic environment that is more complex and contested than in the past, it will be more important for Defence to have the ability to sustain a wider range of missions for longer periods of time. It is also important to manage the risk of relying on highly efficient global supply chains for critical capabilities that would be in high demand in times of crisis.

8.2 The Government will invest around $15 billion over the next decade in Defence capabilities critical to the generation of military power. This does not include the investments in Enterprise Information and Communications Technology; Estate and Infrastructure; or Innovation, Science and Technology, which are detailed in the following chapters.

Geospatial information and intelligence

8.3 This program covers those major capabilities that are used by the Australian Geospatial-Intelligence Organisation to deliver geospatial intelligence, data and services (collectively known as 'GEOINT') to the ADF, the National Intelligence Community and broader whole-of-Government partners. GEOINT can range from a simple map through to complex, highly-accurate three dimensional models of an urban area that assist in the deployment of precision-guided weapons.

8.4 The Defence GEOINT capability has been the subject of significant investment by Government, as a component of improving Defence's sovereign capacity to maintain awareness of a rapidly-changing strategic environment. The Government will also continue to build Australia's self reliant geospatial-information and intelligence capability, both to support strategic intelligence requirements and support precision guided weapons. This will include acquisition of a sovereign space-based imagery capability to enhance coverage of the Indo-Pacific region.

8.5 The Government is also planning enhancements to:

- GEOINT satellite data acquisition from commercial and sovereign sources; and
- Specialist GEOINT exploitation and dissemination systems to ensure that the ADF and other national security customers have reliable access to GEOINT.

Guided weapons and explosive ordnance

8.6 One of the most consistent and important lessons from previous conflicts around the world has been how quickly supplies of precision munitions can come under stress, especially for those nations that possess little domestic capacity to manufacture them. In a world that is becoming more contested and where supply chains have been shown to be fragile in moments of crisis, it is important for Defence to re-evaluate its capacity to sustain the ADF on operations.

8.7 The Government has directed Defence to develop options to increase supplies of munitions through:

- An increase in weapon inventory across the ADF to ensure weapons stock holdings are adequate to sustain combat operations if global supply chains are at risk or disrupted;
- The redevelopment of the Mulwala explosives and propellant facility to expand its capacity for munitions production, thus enhancing the resilience of ADF ammunition supply; and
- Exploring the potential for a new sovereign guided weapons and explosive ordnance production capability to mitigate supply risks, especially for those munitions with long lead-times.

Defence training and simulation

8.8 Training and simulation is critical to prepare Defence for the range of missions it will face now and in the future, and the cutting-edge technology it will need to maintain its competitive advantage. The ADF is world-class in the quality of its training, and the Government is investing to keep it that way through enhancements to Defence training areas and facilities, live and simulated, and through simulation software and technology refreshes.

8.9 The Government will also consider future investment in a joint forces battle laboratory, the use of simulation to support operations, simulation interoperability with allies and Defence simulation support to whole-of-Government activities.

Recapitalisation of Reserves

8.10 The Government plans further investment in the Reserves in the longer term to equip and enhance the ADF Reserves to a level commensurate with the ADF in important warfighting and operational support capabilities. This will allow a more rapid and sustainable mobilisation of Defence Reserves for a broad range of tasks.

Defence business enterprise architecture and transformation

8.11 For Defence to function effectively and adapt to a strategic environment that will be changing more quickly, the way Defence functions to support its frontline capabilities, including its people in uniform, will be as important as the capabilities themselves. Driving improved business processes, enterprise information management, enterprise resource management and broader transformational reforms across Defence will be

critical to future Defence effectiveness. The Government is committed to improving enterprise business processes by implementing reform across Defence to maximise business commonality and effectiveness.

8.12 Upgrades and improvements to these critical support functions will be comprehensive in their scope and include human resource management systems, including health, Defence's information management systems and technology, and resource planning.

Joint logistics

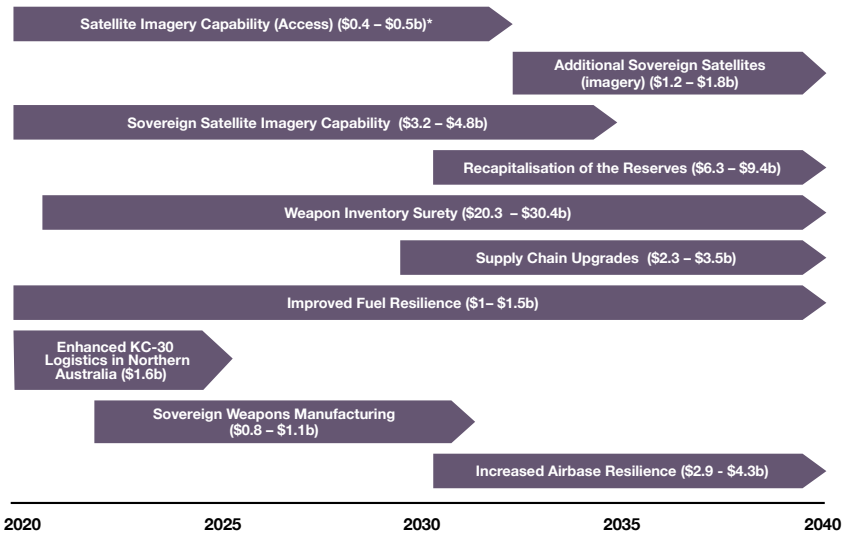
8.13 Strengthening the logistics supply chain, and optimisation of key enablers – such as the supply of fuel and the movement and storage of explosive ordnance – are vital to the future operational capability of Defence. Developing more durable supply chain arrangements and strengthened sovereign industrial capabilities will be critical to the ADF's self reliance, including in the context of high-intensity operations.

8.14 To build Defence's joint logistics capacity, the Government is continuing the Defence Fuel Transformation Program and is planning further joint logistics investments in:

- Improved fuel resilience through the acquisition of a deployable fuel storage capability of increased scale and capacity to assure longer or larger-scale ADF deployed operations;
- Additional fuel storage infrastructure across a number of Defence sites to enhance the capacity, survivability and redundancy of the integral fuel supply system, and ensure the ADF can conduct operations when global supply chains may be disrupted;
- Digitalisation and modularisation of the existing supply system to increase its responsiveness and the agility of the ADF supply chain; and

- Development of a Defence mobilisation plan to increase the ADF's ability to support a range of scenarios, including in response to future large-scale domestic natural disasters and national emergencies.

Chart 7 – Key Defence Enterprise Program Investments



Note: * includes future sustainment.

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Chapter Nine: Australia's Defence Industry

9.1 The *2020 Force Structure Plan* outlines the Government's commitment to a program of future investment and opportunity for defence industry, further cementing the role of Australian industry as a fundamental input to capability. The plan reinforces the Government's commitment to build a resilient and internationally competitive defence sovereign industrial base. Over the next decade, the Government's vision is for an Australian defence industry with the capacity, posture and resilience to help meet the ADF's acquisition and sustainment needs.

9.2 Australia's defence industry has delivered key elements of the *2016 Defence White Paper*, including:

- The introduction into service and export of the most advanced phased array radar in the world;
- Critical parts for the worldwide in-service F-35A Lightning II fifth generation stealth aircraft;
- Implementation of the *2017 Naval Shipbuilding Plan*, including the Government's commitment to nine *Hunter* class frigates; 12 Offshore Patrol Vessels and 12 regionally superior conventional submarines – all to be built in Australia;
- The design, production and introduction into service of protected vehicles; and
- New industries to produce the next generation of combat reconnaissance vehicle and advanced armoured vehicles.

9.3 Global strategic trends, the increasing rate of technological and military modernisation, and sharper awareness of supply chain resilience mean Defence requires strong partnerships with Australian industry. This partnership continues to grow, with this Government maximising defence industry opportunity to further build a sovereign industrial base on which the ADF can rely.

9.4 The Government recognises that building Australia's sovereign defence industrial base is a long-term body of work that requires coordinated effort. Through the **Australian Industry Capability (AIC) Program,** the Government will ensure Australian companies can participate in high value, high-tech projects that will support the development of Australia's sovereign defence industrial base. Large companies competing for Defence contracts are expected to transparently build Australian companies into their supply chains, particularly where those contracts include identified sovereign defence industrial capability priorities.

9.5 The **AIC Program** supports Australian industry involvement in Defence procurement and projects. The program requires that prime companies competing for Defence contracts demonstrate how they will maximise Australian industry involvement. Examples include the acquisition contract for 211 Boxer Combat Reconnaissance Vehicles, involving an AIC commitment of $1.3 billion in the acquisition contract, and the more than 300 Australian companies that are currently associated with the construction of the Offshore Patrol Vessels.

9.6 Analysis of spending flowing from the *2016 Defence White Paper* indicates that Australia's defence industry is growing, with over 4,000 businesses employing approximately 30,000 staff. An additional 11,000 Australian companies directly benefit from Defence investment, and when further downstream suppliers are included the benefits flow to approximately 70,000 workers in total. Investments set out in this Plan will support continued growth of Australia's defence industry. Further economic benefit analysis is under way to provide greater understanding of the effects of Defence spending.

9.7 The Government acknowledges that investment in Defence capabilities supports Australia's economy by creating and sustaining Australian jobs and growth in industry, and builds on links with other sectors in the economy, including mining, the space industry and advanced manufacturing. The *2020 Force Structure Plan* continues the Government's investment in Australian industry and builds on existing Defence initiatives to maximise defence industry opportunity.

9.8 The strengthened **AIC Program** requires tenderers to provide a proposed approach to supporting innovation, technology transfer, research and development, veteran employment and indigenous businesses as they develop their AIC plan. To ensure support for Australian industry, the Government is establishing an independent AIC audit program in 2020. The audit program will investigate and report on prime contractors' performance in delivering their contracted Australian industry obligations. The Government proposes to enhance the AIC contractual framework to give greater prominence to AIC terms and increase enforceability using contractual and non-contractual mechanisms. The AIC Program was expanded in 2019 to include non-materiel and infrastructure procurement.

9.9 **Local Industry Capability Plans** (LICP), set out in the *Defence Policy for Industry Participation* in 2019, are an initiative to maximise the opportunity for local business to be involved in Defence infrastructure projects. All construction-related procurements above $7.5 million require tenderers to develop a LICP to outline how local industry has been, or will be, engaged in the development and delivery of the proposed solution, and the work proposed to be undertaken by local industry.

9.10 Work is under way to strengthen the consideration of Australian industry in the Capability Life Cycle. This formalises the requirements on Defence officials to consider Australian industry involvement at the early stages of capability development and at each stage of the life cycle, including conducting early engagement with industry and updating Ministers on actions taken to maximise opportunities for Australian industry.

Engagement with partners in industry and academia also occurs via the **Force Exploration Hub** which supports Defence to better match the development of future capability needs with industry's ability to deliver them.

9.11 An initial list of ten **Sovereign Industrial Capability Priorities** (Priorities), set out in the *2018 Defence Industrial Capability Plan* provides a focal point for the industrial capabilities we need access to, or control over, in Australia. The first two implementation plans were released in December 2019 and the remaining plans will be available by the end of 2020.

9.12 The **Sovereign Industrial Capability Priority Grant Program** provides funding support to small and medium businesses that contribute to one or more of the Priorities. The Sovereign Industrial Capability Priority Grants program is currently funded up to $17 million per year. Since the program began in December 2018, 50 businesses have been awarded a total of $24.5 million.

9.13 The **Australian Defence Export Office**, a key initiative of the Defence Export Strategy, provides advice and support to Australia's defence industry to increase its presence at international and domestic trade shows and trade missions, which is facilitating increased exports and government-to-government arrangements. The office also coordinates with the Global Supply Chain Program to maximise the number of Australian businesses in the supply chain of global defence companies.

9.14 The **Defence Global Competitiveness Grants Program** provides support to businesses that are investing in projects that build export capability and a stronger, more sustainable and globally competitive Australian defence industry. The Global Competitiveness Grants are currently funded up to $4.1 million per year out to 2028-29. Since the program began in January 2019, 27 businesses have been awarded over $3.1 million.

9.15 The **National Defence Industry Skills Office**, a key initiative of the Defence Industry Skilling and Science, Technology, Engineering and

Mathematics (STEM) Strategy, oversees the delivery of skilling grants, the **Schools Pathways Program** and the **Defence Industry Internship Program**. The Office also coordinated the National Defence Industry Skilling and Workforce Summit in November 2019. Complementing this effort is the work of the Naval Shipbuilding College, which is focused on creating the shipbuilding workforce of the future.

9.16 The **Centre for Defence Industry Capability** (CDIC) assists Australian businesses to navigate the defence sector landscape and prepare to meet current and future Defence requirements. Since December 2016, the centre has provided over 830 advisory services to Australian organisations and awarded over 220 grants to the value of $27.9 million.

9.17 The Government is reviewing the operational model of the CDIC to ensure it is appropriately equipped to deliver a robust defence industry that is sustainable and internationally competitive. The review will assess how the CDIC can continue supporting the growth of Australian defence industry now and into the future. The investments outlined in the 2020 Force Structure Plan will enhance the CDIC's programs to stimulate defence industry through providing more opportunities for Australian businesses to become involved in major Defence projects.

> Australia's growing defence industry now has more than 4,000 businesses that employ approximately 30,000 staff. An additional 11,000 Australian companies directly benefit from Defence investment, and when further downstream suppliers are included the benefits flow to approximately 70,000 workers in total.
>
> Conservative estimates place the Defence industry's contribution at $3.45 billion in value-add to Australia's Gross Domestic Product (GDP) (2017-18).

Maximising industry opportunities

9.18 The *2020 Force Structure Plan* provides Australian industry with insight into future Defence procurement plans. A close partnership between Defence and industry is required across the full spectrum of capability requirements. This ranges from high-end technology to deliver the edge to the war-fighter through to enabling capabilities, such as logistics, information and communications technology (ICT), and health support.

9.19 Defence will facilitate an ongoing dialogue with industry that builds on existing programs and networks to ensure Defence provides industry with a sufficient level of fidelity on capabilities to inform industry planning and choices for investment, including through Defence Environmental Working Groups and major conferences. Through the ongoing force design process, industry will be provided regular updates on the planning of individual capability proposals, aligned with Government's strategic priorities.

9.20 New investments outlined in the *2020 Force Structure Plan* demonstrate the potential for increased involvement of Australian industry. Investments in cyber, autonomous systems, artificial intelligence, radar, communications and space-based capabilities and sensors offer the opportunity for Defence to work with industry to strengthen the Australian industrial base in these advanced technological areas.

9.21 The *2020 Force Structure Plan* also includes a number of significant investments in infrastructure and the supply of critical commodities such as deployable fuel, spare parts and stocks of advanced guided weapons and explosive ordnance. Currently, Australia has a munitions manufacturing capability at Benalla which ensures the supply of ammunition in times of need. Defence will explore options to assure the supply of larger, critical munitions including propellants and missiles. This will present opportunities for Australian industry.

9.22 The ongoing production of the Hawkei vehicle, and the decision to build the new Boxer combat reconnaissance vehicle, the self-propelled howitzers, and the new infantry fighting vehicles in Australia create significant long-term opportunities, including the potential for export. Defence will work with industry to ensure work is sequenced to manage peaks and troughs in demand, to harness as much as possible the benefits of steady-state work.

9.23 The *2020 Force Structure Plan* provides Australian companies with information on new and emerging projects, as well as projects that are delayed or no longer required. Changes in the strategic environment or technology means some investments previously foreshadowed in 2016 have been prioritised to adapt to an ADF structured for a new era of strategic challenges. The overall impact on Australian industry of removing or delaying projects will not have an immediate impact, as most of these prioritisation decisions relate to investments that had not been approved and were not due to start for many years.

Driving innovation

9.24 The *2020 Force Structure Plan* delivers increased funding to innovation and capability acceleration programs to generate and deliver on Australian industry's innovative solutions for Defence capability.

9.25 Sustained investment in innovation is necessary to enable Defence to maintain a capability advantage over potential adversaries. The rapid pace of technological change and shifting geopolitical dynamics make it more challenging for Defence to maintain this advantage and it is increasingly important that Defence is able to leverage the best innovation on offer within Australia.

9.26 Central to this mission is the Defence Science and Technology Group. The second largest publicly funded research and development organisation in Australia, Defence Science and Technology Group works in partnership with academia, industry and other government departments to provide specialist advice and solutions across the spectrum of Defence activity – from ground-breaking technologies through to research that enhances operational readiness and sustainability, and support of Australian personnel on operations.

9.27 The Defence innovation ecosystem has grown significantly since the release of the *2016 Defence White Paper.* The Government will further invest in this sector to rapidly develop technology into capability and feed the innovation pipeline through the exploration and development of disruptive, leap-ahead technologies and technological adaptations and innovation emerging from Australian industry. The Government has committed around $3 billion of capability investment across Defence innovation, science and technology over the next decade.

Defence's current innovation system

9.28 The release of the *2016 Defence Industry Policy Statement* was an important step forward in improving coherence and reducing fragmentation across the Defence innovation system. The two innovation funding mechanisms announced in the *2016 Defence Industry Policy Statement* were the Next Generation Technologies Fund and the Defence Innovation Hub.

9.29 These programs have been supported by the CDIC through the Defence Innovation Portal. The Portal has facilitated engagement between Defence and innovative research across Australia, and provides another avenue for innovative small to medium enterprises to connect with Defence.

The future Defence innovation system

9.30 Further work is needed to develop a more comprehensive, coherent and agile innovation system able to bridge the divide between technology development and acquisition. The *2020 Force Structure Plan* aims to do so by strengthening the link between Defence's capability plans with industry policy initiatives, Defence's reform program, the *2030 More Together: Defence Science and Technology Strategy* for innovation and clear resourcing plans.

9.31 The **Next Generation Technologies Fund** engages Australian industry, universities and research organisations to research emerging and future technologies with the potential to deliver game-changing capabilities for Defence. It has invested more than $164 million in 204 research activities and will make further investments worth approximately $1.2 billion over the next decade.

9.32 **The Defence Innovation Hub** funds Australian and New Zealand entities to develop innovative technologies with the potential to enhance Defence capabilities. It has invested $237 million to Australian businesses to develop innovative technology and over $800 million of further investment is planned over the decade.

9.33 The Innovation Hub will continue to enable investment in potentially high-payoff research and in relatively lower risk incremental innovation through technology prototyping and development by industry and the research sector. This reinforces Defence's commitment to stability and continued growth in the innovation sector.

9.34 To ensure Defence's innovation system has the capacity to meet the demands of future technological development, a new **Capability Acceleration Fund** will also be introduced from the middle of this decade. Through this fund the Government will invest over $130 million this decade to support the intensive development of key disruptive technologies with industry beyond the early-stage research and demonstration stages, taking promising technologies all the way through to acquisition. This is intended to bring together industry participants, Defence personnel and technical subject-matter experts to provide the support needed to build prototypes to demonstrate capability and set requirements for future projects.

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Chapter Ten: Defence Workforce

10.1 The military and civilian personnel of the Defence and Australian Signals Directorate workforce are the most important capability for the defence of Australia and its national interests, and the investments outlined in this document will require a highly-skilled workforce to deliver them. The Government will implement an initial increase in ADF and Australian Public Service (APS) personnel over the next four years, and longer term growth across the next two decades. Defence will undertake further planning and return to Government in 2021 with a detailed proposal for this growth.

People are key to Defence capability

10.2 Defence continues to implement the comprehensive program of modernisation identified in the *2016 Defence White Paper*. However, the demands on the Defence workforce are changing. A larger number of more-complex capabilities requires growth in the size of the workforce, both ADF and APS personnel. Defence must also reshape and reskill its workforce to transition to new platforms and build capacity in emerging capabilities such as cyber, intelligence, electronic warfare and space. An increased operational tempo, rapid technological advancement within our region and increasing commitments to international engagement are also placing considerable pressure on the workforce.

Defence is transforming its workforce

10.3 Since 2016, Defence has been delivering on planned workforce growth, with a strong focus on workforce modernisation through the ADF Total Workforce System, recruitment in the ADF and improving recruitment and retention in the APS. Defence operates as an integrated workforce, in which the APS workforce and ADF workforce deliver specialised and interrelated contributions. The total workforce currently stands at around 59,200 permanent ADF personnel, which includes 550 Australians undertaking a gap year. There are around 40,000 Reserve personnel, including around 29,000 personnel who are available to render service and an additional 11,000 contingent workforce personnel who may be called on as required. The APS has around 16,400 full-time equivalent employees. These workforce numbers do not include personnel in the Australian Signals Directorate, which became a statutory authority in July 2018.

A skilled and professional workforce to meet changing requirements

10.4 Defence will continue to optimise and embed its Total Workforce System, implemented in 2016, to provide enhanced flexibility and agility to address current and emerging workforce demands. The Total Workforce System enables different types of employment including full time, part-time, a dual employment option where skills are shared between Defence and Industry; and the use of contingent workforces providing new approaches to delivering capability.

10.5 Based on detailed analysis of a range of military scenarios, from humanitarian assistance and disaster relief operations to combat, the Government has identified a need to grow the ADF and the APS beyond the size approved under the *2016 Defence White Paper*.

10.6 A detailed proposal for this longer term growth will be considered by Government in 2021. As an initial step, Government has committed to grow the ADF by around 800 and the APS by approximately 250 personnel in the short term. Additional growth is also planned for the Australian Signals Directorate.

The Australian Defence Force

10.7 The investment in leading edge maritime capabilities requires significant **Navy** workforce growth by the end of the decade. Under the *2020 Force Structure Plan*, Navy will initially grow by around 650 personnel by 2024. This larger workforce will support increasing maritime commitments in the region, including increased presence and engagement in the Pacific, and enhanced border security. Government will consider options for workforce growth beyond this level to support the full crewing of an expanded naval fleet and workforce reforms to reintroduce a sustainable sea-shore balance for Navy personnel to promote stronger recruitment and retention.

10.8 **Army** is entering a period of significant modernisation, while also balancing an expanding commitment to regional partnerships. Under the *2020 Force Structure Plan*, Army will initially experience modest growth of around 50 personnel to 2024. Government will consider additional growth beyond 2024 to strengthen a wide range of Army capabilities including intelligence, cyber and electronic warfare; aviation and land combat capabilities; special operations; and vital health, engineering and logistics support functions.

10.9 **Air Force** is upgrading to a fifth-generation, networked force of crewed and remotely piloted platforms. These systems bring unprecedented capabilities and demand a comprehensive reshaping of workforce and skills to take full advantage of them. As a result, Air Force will grow by

around 100 personnel by 2024. Government will consider additional options for workforce growth beyond 2024 to strengthen a wide range of capabilities including space control, and additional aircrew to generate increased flying hours for greater responsiveness, presence and persistence. Workforce growth will also enhance intelligence, cyber and essential airbase support capabilities.

10.10 **Joint Capabilities Group** was established in 2017 to elevate the priority of designated joint capabilities such as logistic support, information warfare, health, and education and professional development. The establishment of the Joint Capabilities Group has improved the ADF's capacity to conduct increasingly self-reliant and complex operations across multiple domains. Joint Capabilities Group will experience modest personnel growth by 2024, and Government will consider additional options for workforce growth beyond 2024 to strengthen joint information warfare capabilities in intelligence, cyber, electronic warfare and satellite communications; and joint support functions of health, logistics, training and youth development programs.

Australian Public Service

10.11 The APS has an essential role in delivering Defence capability, such as strategy and planning; intelligence; capability acquisition and sustainment; health support; and critical enabling functions such as financial, workforce, and information technology management.

10.12 Defence relies on an integrated workforce model in which the APS is key to Defence capability modernisation and future force posture. Additional workforce growth will strengthen capacity to:

- Meet commitments under the Pacific Step-up;
- Acquire and sustain new and increasingly complex military platforms and networks;
- Support the Naval Shipbuilding Plan;

- Continue research and innovation to ensure the ADF maintains a technological advantage in the region; and
- Strengthen the intelligence and cyber capabilities of the Australian Signals Directorate.

Enabling functions

10.13 Growth in the Defence workforce also requires new investments in supporting estate and infrastructure, and services. The *2020 Force Structure Plan* includes investments to enlarge or update training facilities and associated support infrastructure such as accommodation; increased provisions for health care for ADF members; facilities and garrison services on Defence bases; and increased capacity for ICT support and personnel enabling services. These improvements will be delivered to the Defence presence in all states and territories.

Delivering the future workforce

10.14 In 2016, Defence developed a *Strategic Workforce Plan* to address key workforce risks, support future growth in the workforce and provide the reshaping and reskilling necessary to deliver new Defence capabilities. This Plan comprises ten action areas targeting recruitment, retention, training, education and development; career and talent management; and workforce planning.

10.15 Significant progress has been made in these areas, and work is now underway on a major revision to produce a new strategic plan looking out to 2040. The *2020 Force Structure Plan* workforce outcomes will form the foundation of this update, driving adjustments to existing action areas and possible new initiatives. The new *Defence Strategic Workforce Plan*, to be released in late 2021, will provide further detail on Defence's strategy to achieve workforce growth and plans for further growth beyond 2024.

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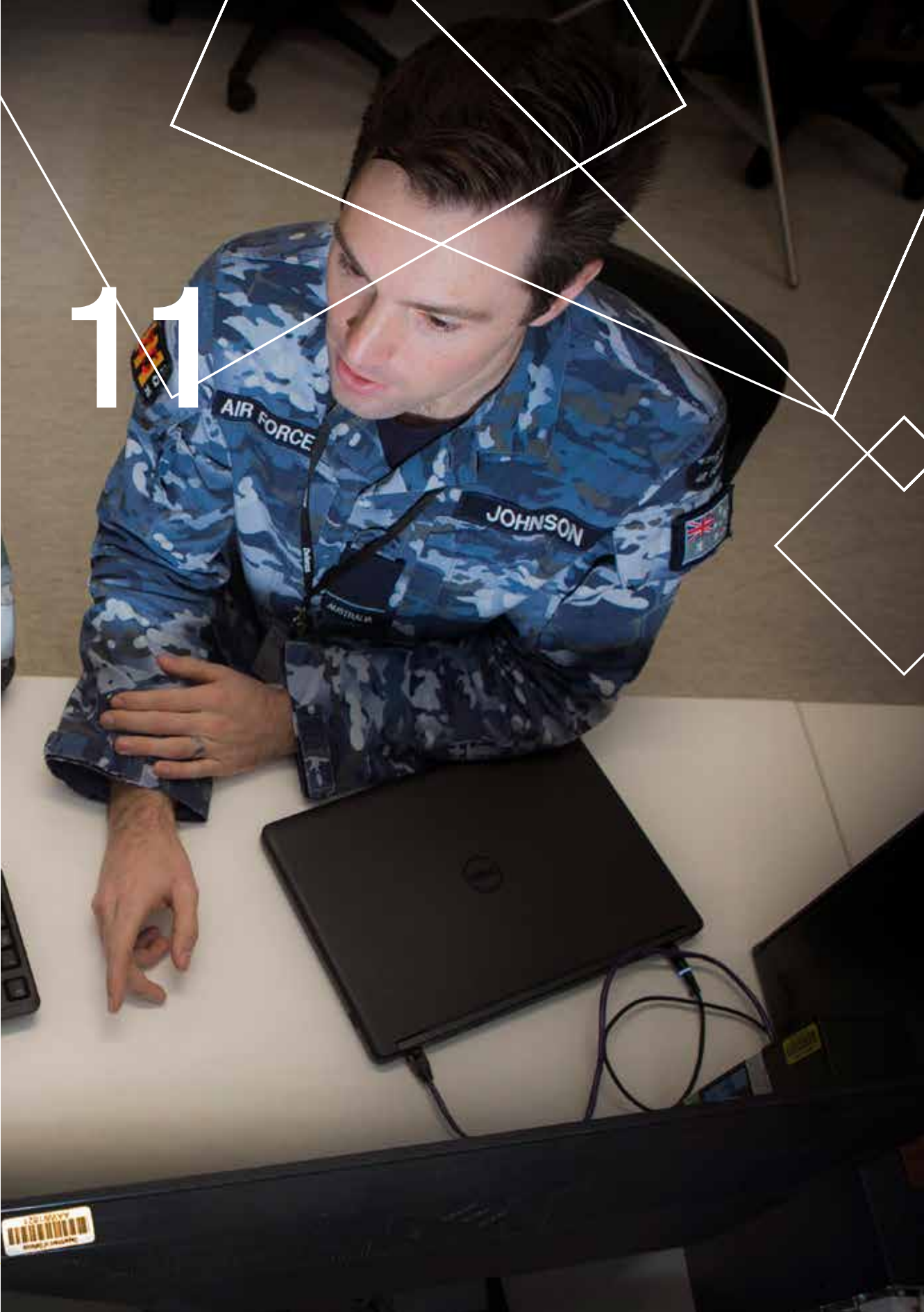
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Chapter 11: Defence Information And Communications Technology

11.1 Modern, secure, sustainable and scalable information and communications technology (ICT) is critical to enable current and future military and business operations. Defence operates one of the largest and most complex information environments in Australia. It is required to collect, process, store, and transmit information that underpins the ADF's capabilities. Ensuring information is secure and gets to where it is needed, at the right time, is crucial to enabling a competitive warfighting advantage over Australia's adversaries.

11.2 The ADF's increased investment in capabilities to respond to grey-zone activities, including improved situational awareness, cyber capabilities, electronic warfare and information operations is dependent on an information environment that is modern, secure and highly effective. Recognising the critical role of Defence's information environment, Government will invest around $5 billion over the next decade to meet these requirements.

Defence ICT transformation

11.3 Defence has undertaken significant investment in ICT in the wake of the *2016 Defence White Paper*, including provision of a new Defence terrestrial communications network and the modernisation of desktop computing and infrastructure.

11.4 The current and emerging technologies Defence will consider over the next five years include next generation wireless networks, cloud computing, artificial intelligence, augmented analytics, and edge computing. Over the next six to ten years, Defence ICT capability is likely

to need to include robotics, block chain, immersive technologies, artificial intelligence and quantum computing. These technologies will inform Defence's approach to ICT investment and technology pathways.

11.5 An **ICT Capability Assurance Program** will maintain existing ICT capabilities; ensure systems and applications continuously updated and patched; extend life-of-type; and upgrade capacity. It will reduce the requirement for concurrent complex, disruptive and expensive technology transformations across the enterprise, and provide a continuous program to ensure ICT capabilities remain modern and secure.

11.6 The Government plans further investments in new ICT capabilities aligned to security, information access and management, applications, connectivity, and processing and storage. These will allow Defence to harness opportunities from emerging technology, including for the upgrade of the Defence secure networks, and capabilities enabling better information sharing with Australia's allies and partners.

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Chapter 12: Defence Estate

12.1 Critical infrastructure and facilities such as military bases, wharves, ports, airbases, training ranges, and fuel and explosive ordnance infrastructure are vital enabling capabilities for the ADF to conduct and sustain military operations. The *2016 Defence White Paper* identified the need for greater investment in enablers essential to the delivery of capability, including estate and infrastructure, and funded measures to remediate them.

12.2 Defence undertakes frequent reviews to ensure that all estate and infrastructure projects are prioritised to reduce risks that may adversely impact on capability. The Government has committed to strengthening the Defence estate and infrastructure portfolio with capability investment of around $30 billion over the next decade.

12.3 To ensure this investment benefits local industry, Defence has introduced Local Industry Capability Plans. Under these Plans, Defence has let approximately 76 per cent of sub-contractor work packages to local industry, representing a $1.0 billion investment into local economies to date. Even projects that commenced prior to the introduction of Local Industry Capability Plans are now achieving approximately 61 per cent local participation, representing a $2.4 billion investment into local economies to date.

12.4 As a result of the policy, a clear trend can be seen in tender submissions of more robust Local Industry Capability Plans and increasing local content targets. Prime contractors are also demonstrating an increased commitment to engaging with local industry.

Defence estate investments

12.5 To support the generation and sustainment of current and future capability, the Government will continue with implementation of *2016 Defence White Paper* estate investment plans in the following areas:

- HMAS Stirling in Western Australia will continue to be enhanced through wharf upgrades and new training and support facilities;
- Garden Island in New South Wales will continue to be upgraded to support the expanded fleet and to better accommodate larger vessels such as the *Canberra* class amphibious ships and *Hobart* class destroyers;
- New and upgraded facilities will be constructed at RAAF Bases Richmond, Williamtown, Tindal, Townsville, Darwin, Curtin, Scherger, Learmonth, Pearce and Edinburgh; Defence Establishment Myambat; and the airfield at Cocos (Keeling) Island;
- Base infrastructure measures to remediate and expand Defence's fuel storage capacity and distribution installations as part of improved fuel resilience plans; and
- Provision of additional investment in the Woomera Range Complex to support leading-edge systems development.

12.6 The Government is also planning to introduce new facilities and enhance the existing estate to accommodate new capabilities proposed under the *2020 Force Structure Plan*, including workforce growth. This will include:

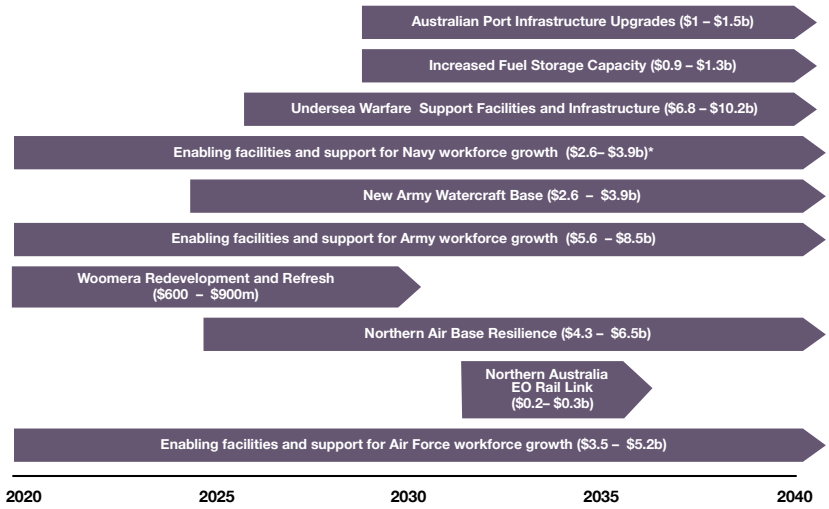
- The development of a new Army watercraft base in Northern Australia to support the expansion of the Army's watercraft fleet. Defence will seek to establish a new base in Northern Australia to consolidate all Army watercraft, enhancing amphibious ship loading capacity, and allowing the docking of patrol vessels and minehunters;

- Upgrades to key ports and infrastructure to better support Australia's larger fleet of amphibious vessels, to enable loading of troops and equipment, cargo, and supplies;
- An additional docking facility to complement the Captain Cook graving dock to support the anticipated build and sustainment of new and larger vessels;
- Increased investment in infrastructure to support and maintain the *Collins* class submarines and the expanded *Attack* class fleets;
- Enhancements to airbases around Australia, including RAAF Bases Edinburgh, Tindal, Amberley, Richmond, and Williamtown. Storage facilities at Hobart Airport will also be upgraded to enable long-range operations to Antarctica;
- Infrastructure upgrades to key headquarters facilities, such as ADF Headquarters in the Australian Capital Territory and Joint Operations Command in New South Wales;
- Facility upgrades to Army bases in south-east Queensland and Townsville, and Robertson Barracks in the Northern Territory; and
- The upgrade of training facilities and logistics infrastructure in South Australia and Northern Territory.

12.7 As a result of evolving requirements and subsequent investments that will deliver the required capability, the *2020 Force Structure Plan* identifies a small number of proposed *2016 Defence White Paper* projects that are no longer required, including a Darwin roll-on/roll-off wharf and a new Northern Advanced Joint Training Area. While these proposed investments will not go ahead, planned capability investments, and commensurate workforce increases, combined with the US Force Posture Initiative commitments, will match the *2016 Defence White Paper's* $8 billion Northern Australia investment commitment in this

decade. These capability investments are also expected to result in significant further investments and opportunities in the subsequent decade. There have also been some adjustments to other estate projects.

Chart 8 – Key Defence Estate Investments



*Denotes workforce growth related forecasts out to 2040 subject to future Government approval.

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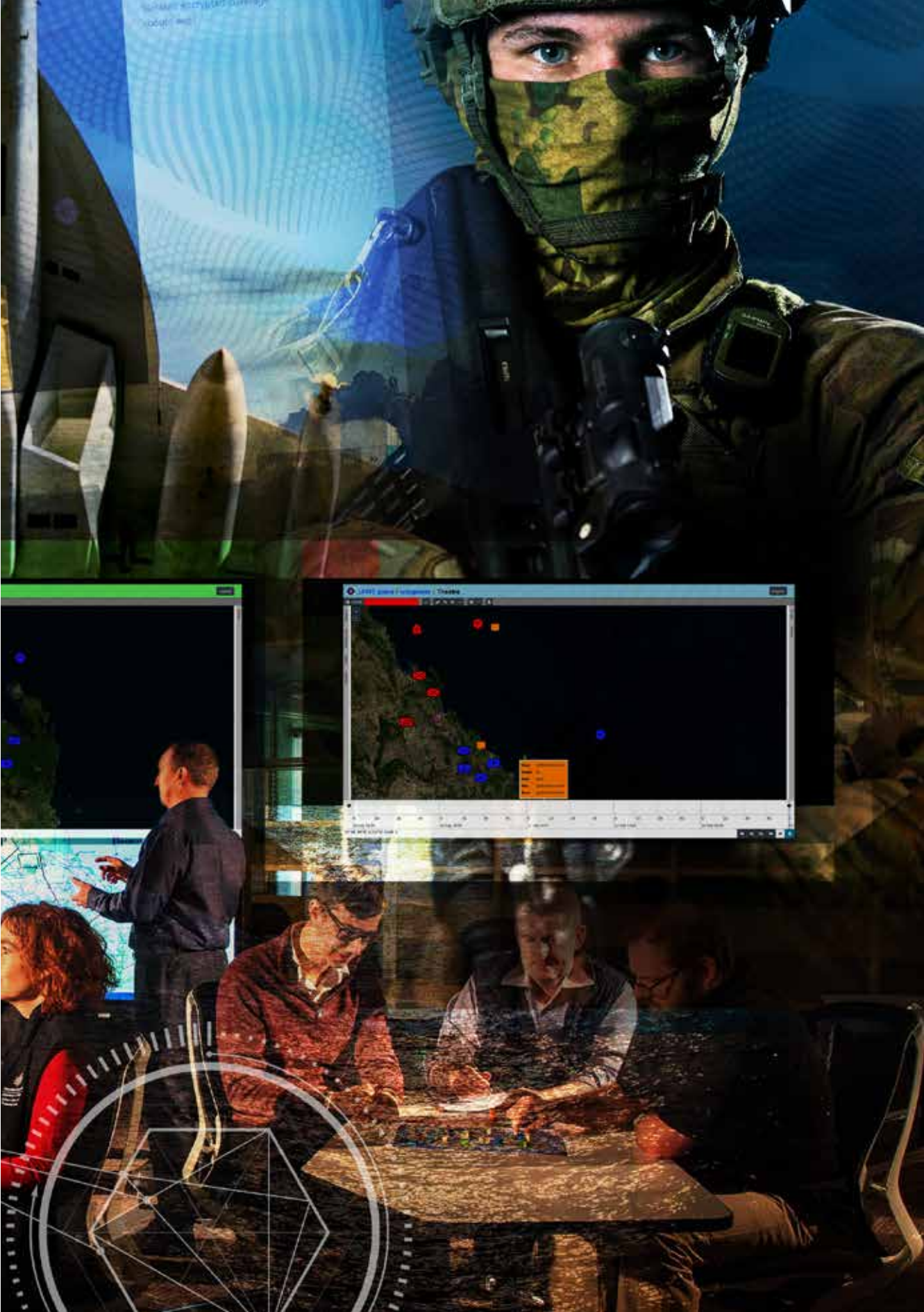

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