



Australian Government

Department of Defence

NAVAL SHIPBUILDING PLAN

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NAVAL SHIPBUILDING PLAN

FOREWORD

We are pleased to launch Australia's first Naval Shipbuilding Plan to complement the strategic, capability investment, and industry plans for the Defence portfolio that were set out in the Turnbull Government's *2016 Defence White Paper*, *2016 Integrated Investment Program* and *2016 Defence Industry Policy Statement*.

The Plan sets out how our Government is delivering on our commitment to build a strong, sustainable and innovative Australian naval shipbuilding industry. It provides the foundation for implementing the Government's unprecedented commitment to the greatest regeneration of our country's naval capability since the Second World War. At the same time it will create a long-term, sustainable naval shipbuilding and ship sustainment capability that will serve our strategic and economic interests for many decades.

We are a maritime nation and our security depends on a modern and effective Navy. Our investment will ensure protection of our maritime borders, secure our immediate northern approaches and proximate sea lines of communications, and enable us to project force in the maritime environment.

The Plan demonstrates how we are looking to the future and sets out the Australian Government's vision to deliver and sustain modern, capable naval vessels, on time and on budget, maximising Australian industry involvement and contributing to a secure and prosperous future for our nation.

The Coalition Government has taken decisive action to commence continuous naval shipbuilding as soon as practicable, bringing forward construction dates for both the offshore patrol vessels and future frigates. We have invested in the design and construction of the modern infrastructure needed in our construction shipyards to deliver complex warships and submarines on a continuous build basis. And we have started investing in workforce and skilling initiatives to ensure the availability of skilled workers matched to the naval shipbuilding industry's workforce demand over the coming decade and beyond. We have invested in science, technology, engineering and mathematics programs and want to inspire young people to choose these pathways with confidence, setting them on a course of success in this industry.

The Government's decisive actions to implement continuous shipbuilding will drive job creation and opportunities for business to contribute to this national endeavour.

The Plan will give competitive Australian businesses great opportunities to compete for Defence contracts and transfer knowledge, technology and skills to other areas of the economy, expand into new markets and pursue export opportunities. This will drive innovation, industry competitiveness, create jobs and accelerate the growth of Australia's advanced manufacturing sector.

The Government has already committed to the build of up to 21 pacific patrol boats, 12 offshore patrol vessels, nine future frigates and 12 future submarines. It is an investment that will generate thousands of jobs and set up the naval shipbuilding and sustainment industry for the future. These will be the first shipbuilding programs that establish Australia's continuous naval shipbuilding capability, representing a strategic national asset for future generations of Australians.

We will transform our naval shipbuilding and ship sustainment industry here in Australia: with Australian workers, in Australian shipyards, and using Australian resources.

This is truly a national endeavour – involving all States and Territories, industry and the education and training sector – to achieve the Government's ambitious agenda for naval shipbuilding.

Innovation is also critical to the success of our naval shipbuilding program. Not only will innovation ensure we maintain a warfighting advantage and capability edge, investment in innovative industrial capabilities and practices by businesses will drive cost-competitiveness, ensure we create a sustainable Australian industrial base, and increase the potential for defence exports across the supply chain.

This Naval Shipbuilding Plan is just the beginning of the journey – this national program of work will be implemented in a structured and planned way, delivering benefits that will be sustainable and enduring. We will establish advanced manufacturing, high technology research and development, and heavy engineering sectors for generations of Australians to come. We are embarking on a great national endeavour. The Naval Shipbuilding Plan is a key part of the Government's *National Innovation and Science Agenda* and the ongoing commitment to Australian jobs and Australian growth.



A handwritten signature in black ink, appearing to read 'Mal Turnbull'.

MALCOLM TURNBULL
PRIME MINISTER



A handwritten signature in black ink, appearing to read 'Chris Pyne'.

CHRISTOPHER PYNE
MINISTER FOR DEFENCE INDUSTRY

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CHAPTER 1: INTRODUCTION

- 1.1 The *2016 Defence White Paper*, launched by the Prime Minister, the Hon Malcolm Turnbull MP and the Minister for Defence, Senator the Hon Marise Payne, set out the Government's plan for the greatest recapitalisation of the Royal Australian Navy since the Second World War and went further to affirm the commitment to build a sustainable naval shipbuilding capability in Australia. Based around an investment of over \$89 billion in new naval ships and submarines, the Government commenced a generations-long ***national endeavour*** aimed at building and sustaining Australia's naval capabilities, creating economic growth through maximising Australian industry participation, and securing Australian jobs that will endure for decades to come.
- 1.2 This national endeavour is the most significant nation building project Australia has ever undertaken. Larger and more complex than the Snowy Mountains Hydro-Electric Scheme and the National Broadband Network, the Naval Shipbuilding Plan that the Government is delivering will engage all States and Territories through their contributions to naval shipbuilding and sustainment of both current and future naval vessels, or as contributors to industry supply chains, or providers of national workforce development and skilling to meet the growing need for skilled naval shipbuilding workers across the sector.
- 1.3 A national ***naval shipbuilding enterprise*** will be required to deliver on this national endeavour. An enterprise based on close partnerships between Government (at Commonwealth and State and Territory levels), industry, and the workforce.
- 1.4 The three continuous build programs, for minor naval vessels, major surface combatants and submarines, will require the very best of Australia's industrial capability – in heavy engineering, advanced manufacturing and complex systems integration – partnered with the most skilled and experienced tradespeople, professionals and managers that Australia can produce. The build programs will also require the commitment of Australia's industrial, scientific, and research and development communities, to support these new capabilities and as new technologies, business processes, quality standards and intellectual property are transferred into Australia as part of the construction processes for new surface ships and submarines.

- 1.5 Delivering the naval capabilities that the Government announced in the *2016 Defence White Paper* is predicated on four key enablers:
- a modern, innovative and secure **naval shipbuilding and sustainment infrastructure**;
 - a highly capable, productive and skilled **naval shipbuilding and sustainment workforce**;
 - a motivated, innovative, cost-competitive and sustainable **Australian industrial base**, underpinned initially by experienced international ship designers and builders who transfer these attributes to Australian industry; and
 - a **national approach** to delivering the Naval Shipbuilding Plan.

| Naval shipbuilding and sustainment infrastructure | Naval shipbuilding and sustainment workforce |
|---|---|
| <ul style="list-style-type: none"> • Modern, innovative and secure. • Upgrades planned for South Australia, with construction to start second half 2017. • Upgrades required in Western Australia, with \$100 million already committed. | <ul style="list-style-type: none"> • By 2026 over 5,200 workers will be needed, plus those in the supply chain. • Attracting, recruiting, and retaining the workers the enterprise needs. • Highly capable and productive. • The right education and training to skill the workforce. |
| Australian industrial base | National Approach |
| <ul style="list-style-type: none"> • Australian industrial base – motivated, innovative, cost-competitive and sustainable. • Includes sovereign capabilities and is a key strategic asset for Australia. • Strong partnerships between industry and government. • Industry as a fundamental input to capability. • Transfer to Australia of naval shipbuilding knowledge, skills and capability. | <ul style="list-style-type: none"> • Largest, most complex and technically difficult manufacturing challenge Australia has attempted. • Coordinated national approach critical – a national endeavour. • All States and Territories involved, and many sectors of the economy. • Build partnerships between stakeholders, nationally and internationally. |

FIGURE 1.1 Key enablers of naval shipbuilding

- 1.6 Brought together as the ***Australian naval shipbuilding enterprise***, these four key enablers will see Australia develop the sovereign Australian capability to deliver affordable and achievable naval shipbuilding and sustainment through an Australian industrial base that is reformed, secure, productive and cost-competitive.
- 1.7 The investment in new naval capabilities is a key part of the Government's commitment to a safe and secure Australia. The investment that the Government is making through this ***Naval Shipbuilding Plan*** will also generate significant economic growth across Australia, revitalise Australia's heavy engineering and advanced manufacturing industrial capability and capacity, and grow and sustain thousands of Australian jobs.
- 1.8 By making this commitment to an Australian naval shipbuilding enterprise, the Government is also ending the boom-bust cycle that has afflicted the Australian naval shipbuilding and sustainment industry, providing certainty to Australian businesses and to Australia's naval shipbuilding workers, and demonstrating that there is a long-term future for this industry. This will allow for investment in new and innovative industrial capabilities by businesses, and an investment in defence industry careers and upskilling by workers.

WHY A NAVAL SHIPBUILDING PLAN?

- 1.9 The *2016 Defence White Paper* set out the Government's plan for the greatest recapitalisation of the Royal Australian Navy since the Second World War, including 12 regionally superior conventional submarines, nine future frigates optimised for anti-submarine warfare and 12 offshore patrol vessels. These new capabilities with the highest levels of military capability and scientific and technological sophistication, will be critical to the Australian Defence Force's ability to conduct independent combat operations to defend Australia and protect our interests in our immediate region, and contribute to global coalition operations. To ensure that the investment in new naval capabilities outlined in the *2016 Defence White Paper* can be delivered, a new strategic approach is required. In April 2015, the Government released a comprehensive report into the Australian naval shipbuilding industry, prepared by the RAND Corporation. RAND's report, *Australia's Naval Shipbuilding Enterprise – Preparing for the 21st Century*, was one of the most detailed studies ever undertaken into the industry.

- 1.10 RAND's report made clear that the Australian naval shipbuilding industry was in a precarious and uncertain state as a consequence of underinvestment over many years. This underinvestment meant that the cost of building naval ships in Australia was 30–40 per cent greater than United States benchmarks, and even greater against some other naval shipbuilding nations. Australia had become one of the most expensive places to build complex naval vessels. The Defence budget could not afford to pay that premium and still deliver the naval capabilities so necessary for the Royal Australian Navy's future.
- 1.11 RAND judged that the premium could be reduced if both Government and the industry were prepared to reform. Government would need to change its demand profile for new naval vessels and reform its acquisition and contracting processes. Industry would need to reform its workplace cultures and institute productivity improvements across the board. Both sides of the demand-supply relationship would need to work more collectively – in partnership – to deliver a more productive and cost-competitive industrial capability.
- 1.12 The Government accepted the RAND principles and is making the necessary investment in a strategic national capability for naval shipbuilding and sustainment. This Naval Shipbuilding Plan provides the Government's vision of an Australian naval shipbuilding enterprise and details the investment that the Government will make in delivering on its commitment to that enterprise.
- 1.13 Since the *2016 Defence White Paper*, the Government has taken further steps to establish the enabling conditions for the success of the national shipbuilding enterprise.

Strategic Direction

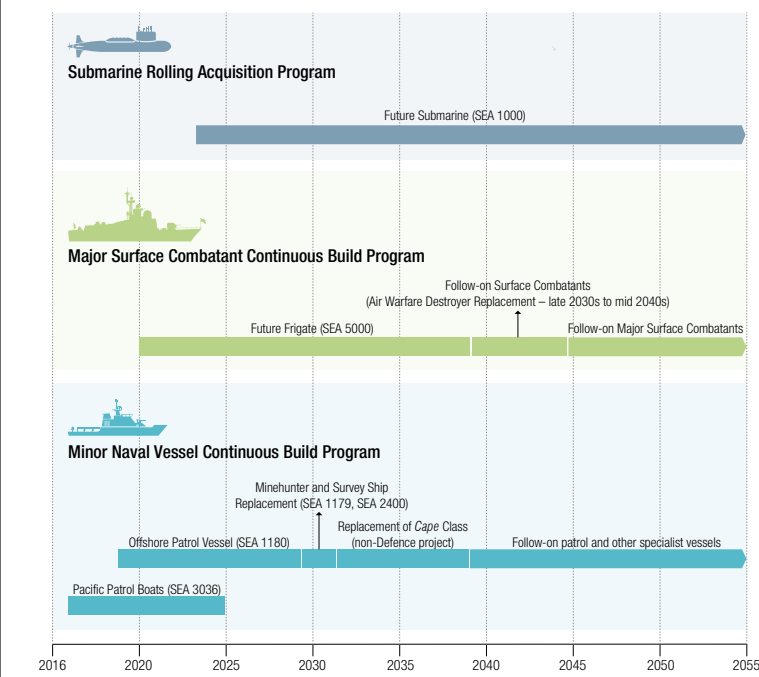
Release of the *Defence White Paper*, *Integrated Investment Program* and *Defence Industry Policy Statement* on 25 February 2016

- A comprehensive and long-term plan to ensure Australia's national security.
- Committed to a continuous shipbuilding program with the commitment to maximise Australian industry involvement in acquisition and sustainment.
- Based on a new investment in naval capability of nine future frigates, 12 offshore patrol vessels and 12 new regionally superior submarines.



Continuous Build Programs

Securing a sustainable, long-term Australian naval shipbuilding industry with a sovereign capability to build and sustain its naval vessels.



Key Enablers



Naval shipbuilding and sustainment infrastructure



Naval shipbuilding and sustainment workforce



Australian industrial base



National Approach

Note: Indicative dates.

FIGURE 1.2 Naval Shipbuilding Plan – The Context

ENABLERS OF SUCCESS IN THE NAVAL SHIPBUILDING PLAN

- 1.14 By taking a more strategic approach to its demands on the industry – through establishment of the continuous build programs and a more structured approach to through-life management – a sustainable schedule of naval vessel construction and sustainment has been developed. The Government announced the structure of the continuous build programs in the *2016 Defence White Paper*. The three continuous build programs are:
- a. A rolling acquisition of submarines, commencing with the future submarine (SEA 1000) project from 2022–23, and based at the Osborne Naval Shipyard in South Australia;
 - b. A continuous build program for major surface combatants, commencing with the future frigate (SEA 5000) project from 2020, and based at the Osborne Naval Shipyard in South Australia; and
 - c. A continuous build program for minor naval vessels, commencing with the Pacific patrol boat (SEA 3036) project in 2017 at the Austal facility at the Henderson Maritime Precinct, and the offshore patrol vessel (SEA 1180) project from 2018, initially commencing at the Osborne Naval Shipyard and transferring to the Henderson Maritime Precinct in Western Australia when the future frigate project begins construction in 2020.
- 1.15 Since the *2016 Defence White Paper*, the three continuous build programs have been progressed through the competitive evaluation processes for each project. Announcements have been made throughout 2016 and into 2017 as these projects have been progressed, and will continue over the coming years as we move towards the awarding of contracts and the commencement of construction in 2018 (offshore patrol vessels), 2020 (future frigates) and 2022–23 (future submarines). The Government's demand for naval capability is discussed further in Chapter Two.
- 1.16 The Government recognises, though, that transformation of the naval shipbuilding and sustainment industry will need more than careful demand management by the Commonwealth. Ensuring the industry is on the pathway to sustainability and productivity will require additional Government investment and significant industry engagement in the enablers for success of the naval shipbuilding enterprise.

INFRASTRUCTURE

- 1.17 The first of these enablers is a modern, innovative and secure naval shipbuilding and sustainment infrastructure. The new frigates and submarines that Australia will construct will be highly technologically capable and modern platforms. Constructing these naval vessels will require equally modern, technologically capable and productive shipyards. Given the very sensitive technologies that these naval platforms will have, these shipyards (and the companies that support the construction) will also need to be highly secure, against both physical and electronic intrusion.
- 1.18 The Government has taken decisive action to deliver the naval capabilities set out in the *2016 Defence White Paper* and ensure Australia's key construction shipyards will be appropriately structured and equipped to deliver continuous naval shipbuilding over the long-term. In April 2016, the Government announced that the Osborne Naval Shipyard in South Australia would host the major surface combatant and submarine continuous build programs, and the Henderson Maritime Precinct in Western Australia would host the minor naval vessel continuous build program. The Prime Minister, the Hon Malcolm Turnbull MP, also announced that a strategic review of the infrastructure needed to deliver on the naval shipbuilding enterprise in these two locations was underway. On 7 December 2016, the Minister for Defence Industry, the Hon Christopher Pyne MP, announced that the Department of Defence and Odense Maritime Technology had commenced work on the redesign of the Osborne South site that would host the major surface combatant continuous build program. Development of the new Osborne South surface ship construction facilities – an investment of up to \$535 million – is expected to start in the second half of 2017, following consideration of the detailed design and awarding of contracts. The Government also announced on 20 February 2017 that it will invest \$100 million in naval related industrial infrastructure and sustainment in Western Australia from 2017 to 2020. Chapter Three details the additional investments that the Government will make in naval shipbuilding and sustainment infrastructure, to support the other continuous build programs.

WORKFORCE

- 1.19 The second enabler of the naval shipbuilding enterprise is a highly capable, productive and skilled naval shipbuilding and sustainment workforce. As the air warfare destroyer project continues to wind down toward completion, the naval

shipbuilding workforce has been declining. The so-called ‘valley of death’ has seen the naval shipbuilding industry shed thousands of employees over the last five years. Critical skills have been lost from the industry as experienced workers, foremen, leaders and managers have left.

- 1.20 These workers, plus thousands more, will be needed to deliver on the three continuous build programs that commence over the coming few years. By 2026, the industry will require over 5 200 staff employed in construction activities, and more than double that number employed in sustainment activities and in supply chain and related institutions and industries that directly and indirectly support the enterprise, on both the customer (Government) and supplier (industry) sides of the activity. Over 15 000 personnel will ultimately be directly or indirectly employed in the naval shipbuilding enterprise.
- 1.21 Chapter Four details the investments that the Government will make in attracting, recruiting and retaining the workforce that the naval shipbuilding enterprise will require over the coming decades, and in educating and training that workforce to the appropriate levels of skill and experience to deliver on the high technology, advanced capabilities that the enterprise will demand.

INDUSTRIAL ECOSYSTEM

- 1.22 The third enabler of the naval shipbuilding enterprise is a motivated, innovative, cost-competitive and sustainable Australian industrial base. Industry is at the centre of the naval shipbuilding enterprise. A productive Australian naval shipbuilding and sustainment industry that is able to deliver affordable and achievable naval capability is a strategic national asset. A sovereign capability to achieve that aim is the Government’s clear priority.
- 1.23 The current industry has atrophied as a consequence of underinvestment and mismanagement of previous decades. To many Australians, the naval shipbuilding industry is perceived as an industry in decline. The Government has committed to reform of the naval shipbuilding industry and its re-energising as a critical element of the advanced manufacturing and heavy engineering capability of Australia. But this cannot be achieved through Government action alone. The naval shipbuilding enterprise described in this Naval Shipbuilding Plan must be co-created by the Commonwealth Government, State and Territory Governments, industry and the workforce.

- 1.24 Creating a new industrial ecosystem that provides and supports naval shipbuilding will require significant effort in industry and a stronger partnership between industry and Government. The *2016 Defence Industry Policy Statement* identified that industry must be considered as a fundamental input to capability, and accorded due consideration in Defence's project deliberations if we are to deliver on the capabilities of the *2016 Defence White Paper*.
- 1.25 In undertaking the competitive evaluation processes for the offshore patrol vessel, future frigate and future submarine projects, industry has been one of the fundamental considerations. In selecting experienced international ship designers and builders to deliver these three projects, the Government is identifying and mandating the technology, intellectual property, business processes and workplace cultures that must be transferred to Australian industry in order for a sovereign Australian naval shipbuilding enterprise to be delivered.
- 1.26 Chapter Five describes the reforms that are needed in industry as part of the Naval Shipbuilding Plan. Transforming the naval shipbuilding industry, including through infrastructure modernisation and workforce growth and skilling, will complement the Government's naval shipbuilding demand management reforms already underway through the unprecedented commitment to continuous naval shipbuilding in Australia. Additional Government effort, through the smart buyer and related initiatives in the *2015 First Principles Review* will support this work.

NATIONAL APPROACH

- 1.27 The final of the four enablers of the Naval Shipbuilding Plan is a national approach to its implementation. The Naval Shipbuilding Plan is the largest, most complex and technically difficult advanced manufacturing challenge this nation has ever contemplated. A national endeavour is required to deliver the Naval Shipbuilding Plan because the Plan will require contributions, support and engagement from all of Australia's States and Territories, from many sectors of the Australian industrial base, and from many other sectors of the Australian community, including the research and development and education and training sectors as well as the union movement and the professional associations.
- 1.28 In the absence of a coordinated, national approach, it would be likely that each of the naval shipbuilding projects, their industry partners and suppliers would compete with each other, and with other Defence and national projects for resources and talent. Such competition would only raise the cost to the nation of achieving the capability that is needed.

- 1.29 The Government has undertaken a considered, methodical approach to developing the Naval Shipbuilding Plan, with consultation with State and Territory governments, defence industry and Australia's education and training sector. The Government has also engaged Australian and international experts to provide independent advice across the full spectrum of the naval shipbuilding enterprise – from complex shipbuilding and systems integration to shipyard infrastructure, workforce growth and skilling initiatives. A coherent and integrated approach to creating this national capability will be critical. Partnerships between all of the stakeholders involved in naval shipbuilding, both national and international, will continue to be created to ensure that the objectives of the Naval Shipbuilding Plan can be delivered. Chapter Six describes the strategic partnerships needed to create the naval shipbuilding enterprise and details the initiatives that the Government will pursue to deliver on those partnerships.

WHAT WILL SUCCESS LOOK LIKE?

- 1.30 Delivering the Naval Shipbuilding Plan will result in a national approach to the delivery of affordable and achievable naval capability through a sovereign Australian industrial base that is reformed, secure, productive and cost-competitive.
- 1.31 Achieving this objective will result in future Australian Governments being able to plan and execute: the design, construction and sustainment of future fleets of major surface combatants and minor naval vessels; and the acquisition, construction and sustainment of submarines (designed in conjunction with an international partner) in Australia.
- 1.32 It will see a robust and sustainable Australian naval shipbuilding and sustainment industry that is not solely reliant on Australian Defence contract work for its survival. It will also see an industry that has seized the opportunity to integrate into global supply chains and is able to take advantage of export opportunities in niche export markets, supported by the initiatives underway through the implementation of the *2016 Defence Industry Policy Statement*.
- 1.33 And it will see thousands of Australians with secure jobs in naval shipbuilding and sustainment, building new skills and experience in advanced manufacturing and high technology systems integration.

- 1.34 Success will see the realisation of the significant strategic, economic and employment advantages to Australia that a national naval shipbuilding and sustainment capability can bring.

NEXT STEPS

- 1.35 This Naval Shipbuilding Plan delivers the long-term direction and guidance to create an Australian naval shipbuilding enterprise. It builds on the early achievements already delivered by the Government. And it recognises that success will require hard work, perseverance and commitment from the Government, from the States and Territories, from industry, from the education and training sector, and from the workforce.
- 1.36 The Government is committed to delivering a strong and sustainable naval shipbuilding and sustainment enterprise. Chapter Seven details the implementation schedule for the Naval Shipbuilding Plan, and the governance arrangements that will be required to oversee and direct the work of the Plan over the coming years.
- 1.37 Over subsequent years, further iterations of this Plan will be needed, as further decisions are made on each of the continuous build programs, and progress is made in delivering the initiatives of this Plan.
- 1.38 Australia has commenced a generations-long national endeavour to deliver a naval shipbuilding enterprise that will support our naval capabilities and deliver economic growth and value to Australia for decades to come. The Government has set an ambitious agenda, has already delivered on important elements of the Plan, and there is much work to be done. Australia's workforce, our defence industry, our education and training providers, and other national and international partners and stakeholders all have a role to play in implementing the Naval Shipbuilding Plan. The Government is investing in a sovereign naval shipbuilding and sustainment capability for the long-term, with the firm belief that as a nation we are up to this challenge.

The background features a large, abstract composition. A light blue area at the top is divided into several overlapping, tilted rectangular shapes by thin white lines. Below this, a large, solid brown shape with a jagged, mountain-like top edge dominates the middle section. The bottom half of the image is a light gray area with a subtle, fine-lined texture. A large, bold, white number '2' is positioned on the left side, partially overlapping the blue and brown sections.

2

CHAPTER 2: NAVAL CAPABILITY – ACQUISITION AND SUSTAINMENT

CAPABILITY ISSUES

- 2.1 Delivering enhanced modern naval capability in an affordable and sustainable way to meet Australia's future strategic requirements is at the heart of the Naval Shipbuilding Plan. Building and sustaining key naval capabilities in Australia aligns with the *2016 Defence White Paper* commitment to a strong and secure Australia.
- 2.2 On 25 February 2016, the Government released the *2016 Defence White Paper*, featuring the largest regeneration of Australia's naval capabilities ever undertaken outside of wartime. This included a doubling of the submarine fleet to 12 boats, nine new future frigates optimised for anti-submarine warfare and a fleet of 12 offshore patrol vessels. These new capabilities will provide some of the most technologically advanced, potent and capable vessels ever delivered into the Australian Defence Force's arsenal.
- 2.3 The Government's capability announcements represent the foundation of a new national approach to the delivery of affordable and achievable naval capability through an Australian industrial base that is reformed, productive, secure and cost-competitive.
- 2.4 By constructing the Navy's future capabilities in Australia while also strengthening the nation's advanced manufacturing industrial base, the Government is delivering on its unwavering commitment to both national security and economic prosperity.

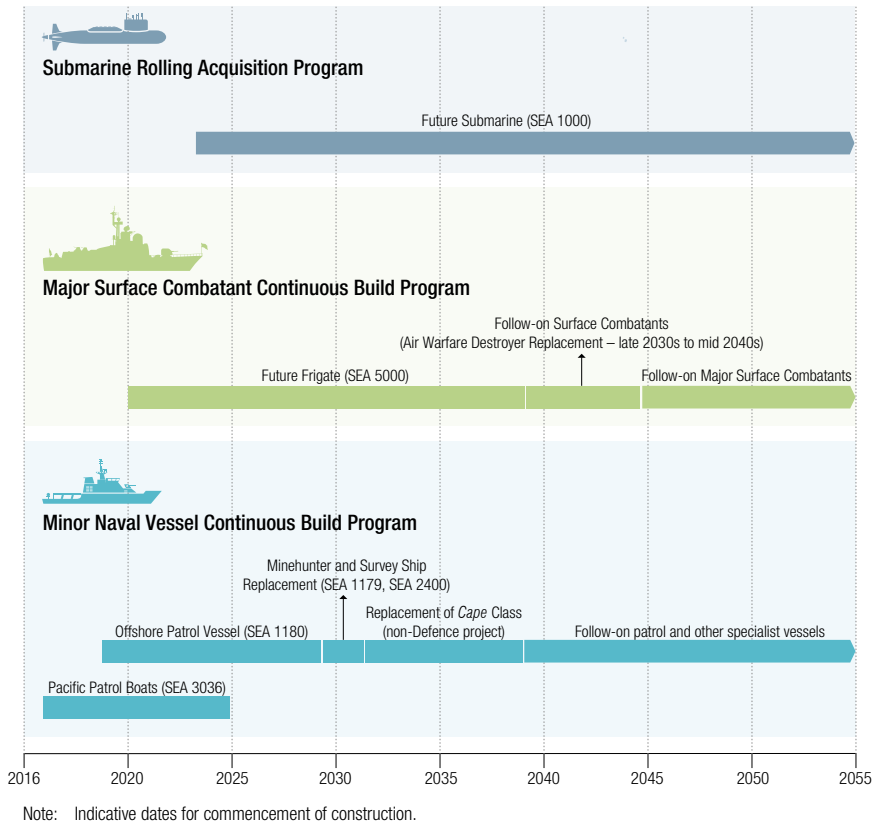


FIGURE 2.1 Naval Shipbuilding Continuous Build Programs

SUBMARINES

- 2.5 Submarines are an essential part of Australia's naval capability, providing a strategic advantage in terms of surveillance and protection of our maritime approaches.
- 2.6 The Royal Australian Navy currently maintains six *Collins* Class submarines in its fleet. The *2016 Defence White Paper* committed to Australia acquiring 12 regionally superior submarines. The doubling of the submarine fleet recognises that Australia will face a more challenging maritime environment in coming years.

- 2.7 In the *2016 Defence White Paper*, the Government stated that it was determined to ensure a long-term industrial capability to deliver support to Australia's submarines in both construction and sustainment. To meet that commitment, the Government announced that it would implement a rolling acquisition program for Australia's submarine fleet. A rolling acquisition program for acquiring Australia's submarines provides long-term planning certainty for industry, allowing those Australian companies involved in the submarine program to invest in the capabilities needed to support their involvement in the construction and sustainment activities.

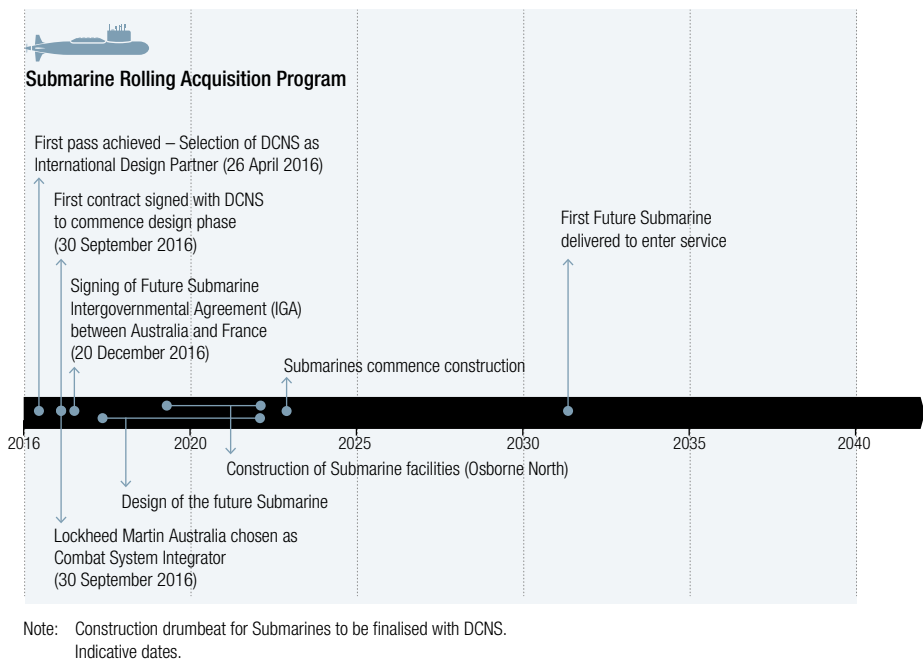


FIGURE 2.2 Submarine Rolling Acquisition Program

COLLINS CLASS SUBMARINES

- 2.8 The *Collins Class* submarine fleet will continue to serve Australia for many years before the introduction of the future submarine fleet. Further enhancements to the current submarine capability, as well as continuation of the sustainment effort, will continue into the late 2030s. The *2016 Integrated Investment Program* provides the plan to ensure that the transition from the existing *Collins Class*

submarine fleet to the future submarine fleet does not result in a submarine capability gap. The *2016 Integrated Investment Program* includes priority capability enhancements, obsolescence management and fleet sustainment investment valued at \$2.6 billion (out-turned) for approved and unapproved projects and \$6.7 billion (out-turned) for the continuation of the sustainment effort over the remaining life of the *Collins* Class submarines.

FUTURE SUBMARINES

- 2.9 Commencement of the project to deliver 12 regionally superior submarines began in 2016, with the first submarine likely to start construction in 2022–23 and enter service in the early 2030s. Construction will extend into the late 2040s with the last of the 12 boats likely to enter service in the early 2050s.
- 2.10 The length of a submarine construction process means that Australia will need to be planning for the follow-on submarine capability well before the twelfth future submarine enters service. Australia must be able to maintain a fleet of 12 regionally superior submarines as submarine and anti-submarine technologies evolve over the coming decades. An Australian industrial base better able to support that planning will take time to build. The process has commenced now.
- 2.11 On 26 April 2016, the Government announced that construction of the future submarines would occur at the Osborne Naval Shipyard. Commencing in the mid-2020s, the construction of the future submarine fleet is expected to sustain around 1 100 Australian jobs in direct build and around 1 700 Australian jobs through the supply chain.
- 2.12 The Government also announced that DCNS of France had been selected as the international partner for the future submarine project. On 30 September 2016, the Ministers for Defence and Defence Industry announced the signing of the contract between the Government and DCNS to commence the design phase of the future submarine project. The Ministers also announced that Lockheed Martin Australia has been selected as the combat system integrator for the future submarine project.
- 2.13 Through the contracts with DCNS and Lockheed Martin Australia, Australia will gain access to new technologies and advanced manufacturing capabilities from France and the United States, enhancing Australia's own capabilities in the specialised areas of submarine construction and combat system integration. The Government is committed to maximising the opportunities for Australian

industry to participate in the future submarine project. DCNS has committed to intellectual property rights and the transfer of technical data which will facilitate the transfer of knowledge to Australia to enable the sovereign operation and sustainment of the future submarine. Additional details on industry's role in this project are detailed in Chapter Five.

"The Intergovernmental Agreement is the last foundation stone needed to ensure Australia is able to develop a cutting edge sovereign submarine capability.

It follows the selection of French company DCNS as Australia's future submarine design and mobilisation partner and Lockheed Martin Australia as the combat system integrator."

The Hon Malcolm Turnbull MP
Prime Minister of Australia

Signing of the Intergovernmental Agreement
20 December 2016

INTERGOVERNMENTAL AGREEMENT WITH FRANCE

- 2.14 Australia and France have a close and long-standing relationship, based on shared interests in contributing to the rules-based global order and strong cooperation in the Pacific. This relationship will continue into future decades including in support of the future submarine project.
- 2.15 Australia has entered a long-term strategic partnership with France, recognising the two countries' enduring commitment to the success of the future submarine project and the importance of maximising Australian industry involvement in the program. France acknowledges that it is critical for Australia to achieve a full, enduring, self-reliant capability for the future submarine, especially the ability to independently operate, sustain and maintain the certification of the future submarine and this has been written into the agreement between our governments.
- 2.16 On 20 December 2016, the Australian Prime Minister, the Hon Malcolm Turnbull MP, and the French Minister for Defence, Monsieur Jean-Yves Le Drian, signed the Agreement between Australia and France concerning cooperation on the future submarine project, cementing the partnership and confirming

both countries' commitment to enabling Australia's sovereign operational and sustainment capability for the future submarine.

SUSTAINMENT OF THE SUBMARINE FLEET

- 2.17 Sustainment of the current *Collins* Class submarines is undertaken by ASC Pty Ltd. Sustainment activities, up to and including mid-cycle dockings, are undertaken at the ASC Pty Ltd facility at the Henderson Maritime Precinct in Western Australia. *Collins* Class full-cycle dockings are undertaken at the ASC Pty Ltd facility at the Osborne Naval Shipyard. The sustainment of the *Collins* Class submarine will remain within sovereign Australian control, as will the infrastructure required for that sustainment.
- 2.18 Sustainment of the future submarine fleet will also be undertaken by a sovereign Australian company, due to the classified nature of the future submarines' technologies and systems.
- 2.19 The design of both surface ship and submarine construction infrastructure at the Osborne Naval Shipyard will continue to be refined following release of this Naval Shipbuilding Plan. In this context, the Government will likely need to consider advice from Defence in coming years on appropriate long-term arrangements, including the location of *Collins* Class and future submarine sustainment activities. Decisions on this aspect of submarine capability management will not be needed for some time to come.

MAJOR SURFACE COMBATANTS

- 2.20 Australia's maritime strategic environment, including regional naval modernisation and the growing importance of the Indo-Pacific region, emphasises the need for Australia to possess a modern surface combat force of an appropriate capability level, size and scale to meet the demands likely to be placed on the Australian Defence Force in the coming decades. Consequently, the delivery of future modern surface combatants is an undertaking of significant strategic importance.
- 2.21 Highly capable and versatile naval and maritime forces are vital to Australia's defence strategy. Central to Australia's maritime strategy are capable surface naval forces able to provide combat power at and from the sea and, through their inherent versatility and flexibility, contribute to a myriad of tasks required across the spectrum of conflict – extending from peacetime constabulary operations like

border protection and anti-piracy patrols, through to high-intensity warfighting including naval surface, air and subsurface warfare and amphibious operations. The surface combatants need to be capable of operating as part of task groups as well as disaggregated into smaller formations, potentially operating at long distances from logistics support.

- 2.22 The current force comprises three (originally six) upgraded *Adelaide* Class guided missile frigates and eight *Anzac* Class general purpose frigates undergoing upgrades; both ship types are capable of operating S70-B2 Seahawk maritime combat helicopters. The *Adelaide* Class (1980s vintage) and *Anzac* Class (1990s vintage) are both relatively modest-sized surface combatants by contemporary standards, at approximately 4 100 and 3 900 tonnes respectively; they were originally designed as general purpose patrol and escort frigates and enhanced through upgrades.
- 2.23 On 18 April 2016, the Government announced a long-term continuous build of major surface warships at the Osborne Naval Shipyard in South Australia, commencing with the build of the nine future frigates following the completion of the competitive evaluation process.
- 2.24 The Government also announced in the *2016 Defence White Paper* that the ADF force structure would include 12 major surface combatants – three *Hobart* Class air warfare destroyers and nine new future frigates optimised for anti-submarine warfare. These will replace the *Adelaide* Class and *Anzac* Class frigates, providing a major surface combatant force of 12 highly capable warships to be sustained over several decades.
- 2.25 The fleet of 12 major surface combatants provides the ability to continuously generate and sustain the availability of a surface task group (one destroyer and three frigates) readied or deployed and a second task group readied at no more than 90 days readiness notice for up to six months. This will enable sea control in two geographically separate areas of operation.
- 2.26 Australia's major surface combatants will remain the most versatile platforms in the naval fleet with broad utility across the full spectrum of maritime operations.

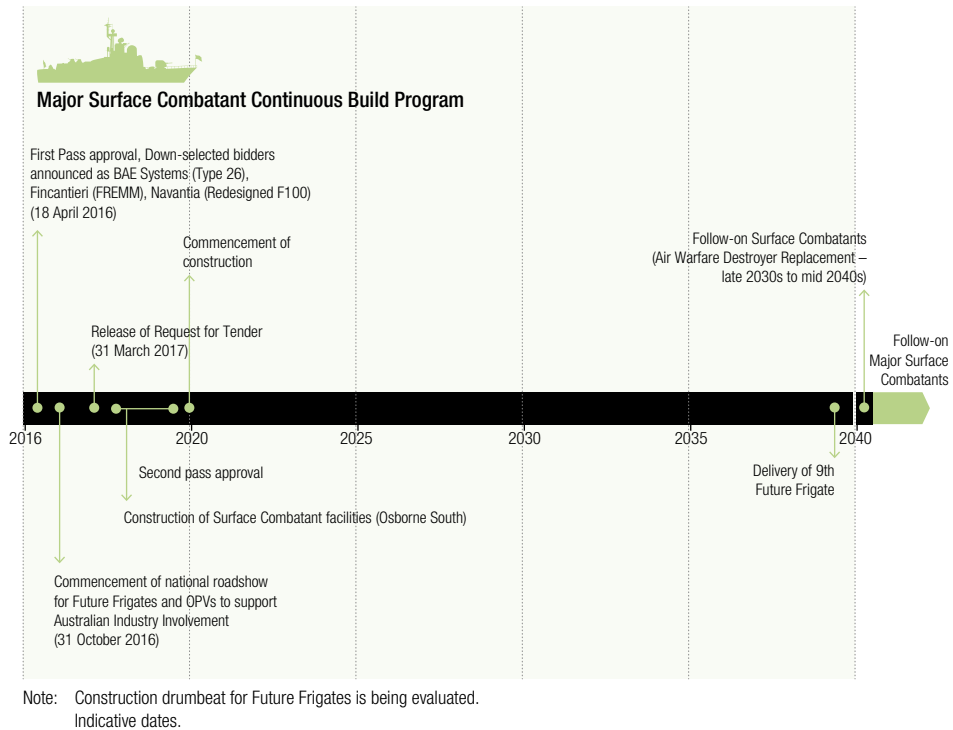


FIGURE 2.3 Major Surface Combatant Continuous Build Program

HOBART CLASS AIR WARFARE DESTROYERS

- 2.27 The *Hobart* Class destroyers will provide a generational leap in the air warfare capabilities of the Australian Defence Force and will be one of the world's most capable warships, providing air defence for accompanying ships, land forces and infrastructure in coastal areas, and self-protection against missiles and aircraft. The Aegis combat system, incorporating the phased array radar AN/SPY 1D(V), in combination with the SM-2 missile, will provide an advanced air defence system capable of engaging enemy aircraft and missiles at ranges in excess of 150km. The *Hobart* Class destroyers are based on the Navantia-designed F100 frigate, modified for Australian use and coupled with the US Aegis combat system.
- 2.28 Initial operating capability for the lead ship HMAS *Hobart* is planned for 2018; the class has a planned service life into the 2040s, which will continue to be monitored in the context of implementing the continuous naval shipbuilding program for major surface combatants.

- 2.29 The *Hobart* Class will be capable across the full spectrum of joint maritime operations, from area air defence and escort duties, to peacetime national tasking and diplomatic missions. It will operate a MH-60R *Romeo* maritime combat helicopter for surveillance and response to support key warfare areas. The surface warfare function will include long range anti-ship missiles and a naval gun capable of firing munitions in support of land forces. The *Hobart* Class will also conduct undersea warfare and be equipped with modern sonar systems, decoys, surface launched torpedoes and an array of effective close-in defensive weapons. These capabilities will ensure that the *Hobart* Class destroyers have the layered defensive and offensive capability to counter conventional and asymmetrical threats. The three *Hobart* Class destroyers will all be operational in the early 2020s and will remain in service into the 2040s.
- 2.30 To ensure that the *Hobart* Class destroyers keep pace with regional capabilities, the Navy will regularly upgrade the combat system, acquire advanced surface-to-air missiles, and upgrade self-protection systems and unmanned tactical intelligence, surveillance, and reconnaissance systems. Interoperability with other current and future platforms and systems such as the E-7A *Wedgetail*, P-8A *Poseidon*, F-35A *Lightning II* and the future frigate will require enhancements to the communications and combat systems.
- 2.31 Sustainment of the *Hobart* Class destroyers is primarily intended to occur at Fleet Base East in Garden Island, Sydney, where all ships of the class will be home-ported. Details of the long-term sustainment contract are yet to be finalised. As the destroyer is a new capability for the Navy, an initial sustainment contract of five years will be implemented while the fleet is brought into naval service.

ANZAC CLASS FRIGATES

- 2.32 Ten *Anzac* Class frigates were built between 1992 and 2006, eight for the Royal Australian Navy and two for the Royal New Zealand Navy. They were predominantly constructed in Australia and consolidated at Williamstown Dockyard, Victoria, with some sections made in New Zealand.
- 2.33 The *Anzac* Class are long range escorts and, as part of a task group, contribute to air defence, anti-ship missile defence, anti-submarine warfare, surveillance, reconnaissance and interdiction. The ships are capable of countering simultaneous threats from the air, surface and subsurface. The *Anzac* Class can embark a multi-role Sikorsky S-70B *Seahawk* helicopter or a MH-60R *Romeo*

maritime combat helicopter to enhance anti-submarine, anti-surface warfare and search and rescue capabilities. Operation of a helicopter also provides the ship with the capability to deliver air-launched torpedoes.

- 2.34 Since the *Anzac* Class frigates will remain a key component of our major surface combatant fleet for some time to come, it is essential to continue the upgrades of the fleet's sensors with the phased array radar developed by CEA Technologies in the Australian Capital Territory, as well as ensuring that the combat and weapon systems remain interoperable with other Australian Defence Force and coalition assets. The *2016 Integrated Investment Program* includes upgrades to the *Anzac* Class frigates' weapons, sensors and countermeasures to mitigate obsolescence caused by emerging air and surface threats and maintain systems supportability.
- 2.35 Sustainment of the *Anzac* Class frigates is undertaken through a strategic partnership between BAE Systems Australia Defence Pty Ltd, Saab Australia Pty Ltd, Naval Ship Management Australia Pty Ltd, and the Commonwealth. The majority of the sustainment work is undertaken at the Henderson Maritime Precinct in Western Australia, with additional work at Fleet Base East, Garden Island in New South Wales. The sustainment contract has a value of over \$2 billion for the first eight years (2016–24). The contract provides increased opportunities for the engagement of small-to-medium sized businesses in Australia.
- 2.36 *Anzac* Class frigates will not be withdrawn from service until the future frigates enter service in around 2027–30. The first future frigate will realise operational capability by that date, with subsequent ships expected to enter service every two years after that.

FUTURE FRIGATES

- 2.37 By 2035, around half of the world's submarines will be operating in the Indo-Pacific region where Australia's interests are most engaged – and the primary purpose of the future frigate is to detect, track and, if required, destroy enemy submarines. The future frigate will be required to operate independently or in a national or coalition task group.
- 2.38 When acting independently and away from the umbrella protection of more capable air warfare ships, the future frigate will be reliant upon its own capabilities to protect itself in a hostile air and surface environment. When operating with the Royal Australian Navy task group (escorting the landing

helicopter dock amphibious element for example), the future frigate will contribute to air and surface warfare defence, as well as its primary mission of anti-submarine warfare.

- 2.39 In the *2016 Defence White Paper*, the Government indicated that nine new future frigates, optimised for anti-submarine warfare, would be introduced into service from the late 2020s. The new frigates will be more capable than the *Anzac* Class that they will replace. They will have sufficient range and endurance to operate effectively throughout maritime South East Asia.
- 2.40 Since Government consideration at initial pass in June 2014, significant funding has been provided to study the requirements for the future frigate, from platform systems and warfare requirements through to sustainment requirements and integration of the class into the Australian Defence Force and allied environments.
- 2.41 On 18 April 2016, the Government announced first pass approval for the future frigate project. Three designers – BAE Systems, Fincantieri and Navantia – were shortlisted for evaluation through the competitive evaluation process, which is on schedule to return for second pass approval in 2018. As part of the competitive evaluation process, the Government will be identifying the required technology transfer from the chosen designer to Australia.
- 2.42 The Government is committed to maximising the opportunities for Australian industry to participate in the future frigate project. The future frigate project is estimated to be worth more than \$35 billion (out-turned) in capital investment and will directly create over 2 000 Australian jobs. Additional details on industry's role in this project are detailed in Chapter Five.
- 2.43 The future frigate combat system combines the ship's navigation systems, internal and external communications systems, and various sensors and weapons capabilities with associated computer network, integrated by the combat management system.
- 2.44 Generally speaking, the greater the integration between the combat management system and the sensors and weapons of the vessel, the greater the capability that can be derived from the system. The combat system is a key capability and cost driver for the project. Announcements on the selected combat system for the future frigates are expected later in 2017.

- 2.45 The location for the long-term sustainment of the future frigates is yet to be finalised. It is possible that the future frigates will follow the sustainment location for the *Anzac* Class, but the options are still being considered as part of the future frigate competitive evaluation process and are expected to be presented to Government for consideration in 2018.

"For the first time, these three naval programs together [future frigates, future submarines and offshore patrol vessels] will secure a permanent naval shipbuilding industry in Australia and naval manufacturing base in Adelaide. They will put an end to the painful boom-bust cycle that has afflicted the industry for far too many years."

Senator the Hon Marise Payne
Minister for Defence

Adelaide Advertiser Opinion Editorial
26 April 2016

MINOR NAVAL VESSELS

- 2.46 In the *2016 Defence White Paper*, the Government announced the establishment of a continuous build program for minor naval vessels. This continuous build commenced with the construction of pacific patrol boats and the construction of 12 offshore patrol vessels commencing in 2018 following a competitive evaluation process.

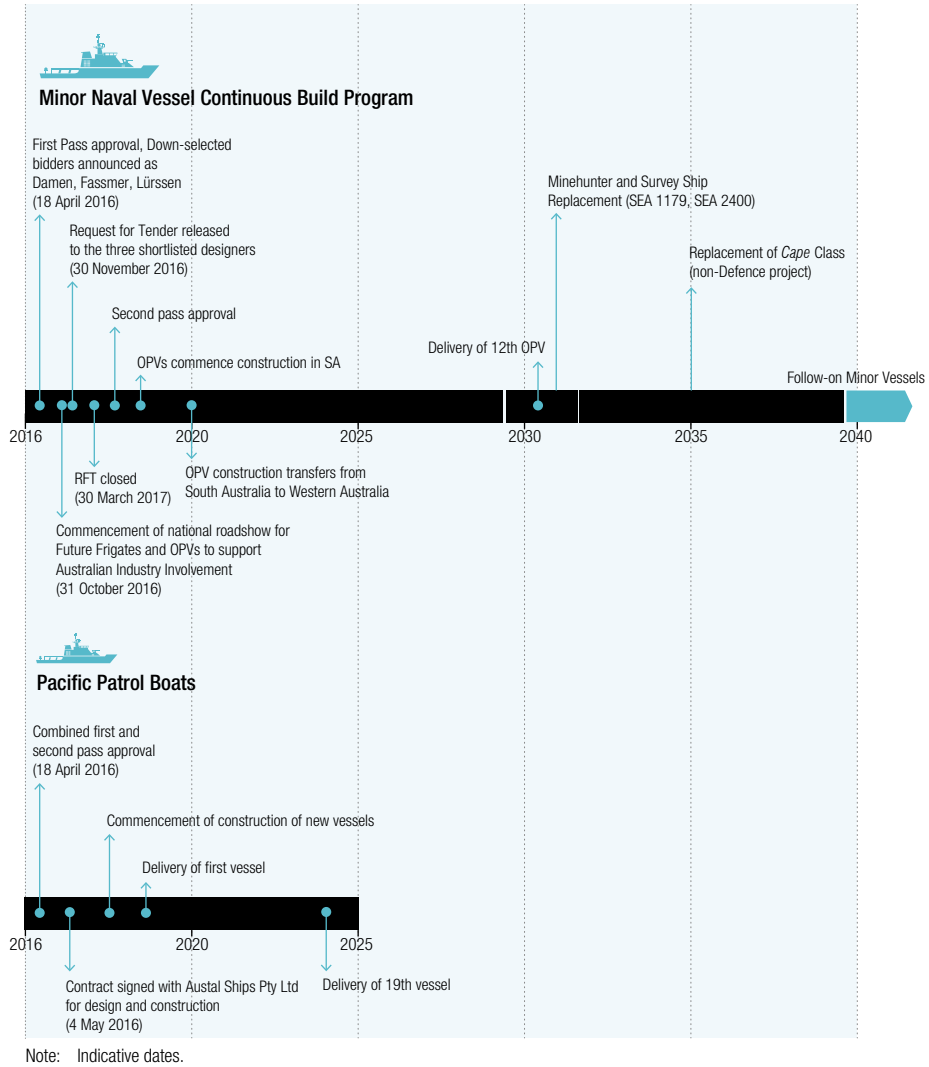


FIGURE 2.4 Minor Naval Vessel Continuous Build Program

OFFSHORE PATROL VESSELS

- 2.47 In the *2016 Defence White Paper*, the Government announced the acquisition of 12 new offshore patrol vessels that will provide greater range and endurance than the existing *Armidale* Class patrol boat fleet. The new vessels will be capable of undertaking several different roles, including enhanced border protection and patrol missions, over greater distances than is currently possible with the existing patrol boat fleet.
- 2.48 On 18 April 2016, the Government announced first pass approval for the offshore patrol vessel project, with construction to begin at the Osborne Naval Shipyard from 2018 and transferring to the Henderson Maritime Precinct when the future frigate construction program commences in 2020. Three designers, Damen, Fassmer and Lürssen, were shortlisted for further consideration under the competitive evaluation process, which will return to Government for second pass approval later in 2017.

TIMELINE FOR THE TRANSITION FROM *ARMIDALE* CLASS TO OFFSHORE PATROL VESSELS

- 2.49 All 12 offshore patrol vessels will be delivered by 2030. To ensure no gap in Navy's border protection capability, the *Armidale* Class will be supplemented by two leased *Cape* Class patrol boats to support the *Armidale* Class remediation program and lead into the introduction of the offshore patrol vessels.
- 2.50 The offshore patrol vessel project is on track with construction of the initial two offshore patrol vessels planned to commence in Adelaide in 2018 before the minor naval vessel continuous build program moves to Western Australia.

PACIFIC PATROL BOATS

- 2.51 Through the Pacific Maritime Security Program, the follow-on to the highly successful Pacific patrol boat program, Australia will provide *Guardian* Class replacement patrol boats to 12 Pacific Island countries from 2018. The Program will also expand the scope of the Pacific patrol boat program by including enhanced aerial surveillance and support for the regional security architecture. This will help to maximise the effective use of the patrol boats by Pacific Island countries to protect their national sovereignty and resources. Current Pacific Maritime Security Program partners include Papua New Guinea, Solomon Islands, Palau, the Federated States of Micronesia, Kiribati, Samoa, Vanuatu, Fiji, Tuvalu, Tonga, Cook Islands and the Republic of the Marshall Islands.

- 2.52 Timor-Leste has been invited to participate in the Pacific Maritime Security Program, as maritime security is a growing focus of the Australia – Timor-Leste partnership, given mutual interests in addressing illegal fishing, transnational crime and related security challenges. Under this program, Australia has offered Timor-Leste two new patrol boats packaged with sustainment, training for Timor-Leste naval personnel, and advisory support.
- 2.53 On 18 April 2016, the Government announced that Austal Ships Pty Ltd had been selected as the preferred tenderer to construct and maintain up to 21 replacement steel-hulled pacific patrol boats at Henderson and Cairns. On 8 March 2017, the contract to Austal was awarded for the design and construct of the first 19 vessels valued at over \$300 million in total, including an initial seven-year period of sustainment. This project will directly create around 200 jobs. Austal will support the sustainment of the replacement pacific patrol boats, including deep maintenance activities, from Cairns. In total, through-life support and sustainment for the pacific patrol boats is valued at a further \$400 million over the life of the boats.

OTHER NATIONAL PATROL VESSELS

- 2.54 Defence shares its responsibility for safeguarding the security and safety of our maritime borders with other agencies, particularly the Department of Immigration and Border Protection and the Australian Border Force.
- 2.55 At the same time Defence is planning to transition from the *Armidale* Class patrol boats to the offshore patrol vessels, the Department of Immigration and Border Protection's maritime security assets, including the *Bay* and *Cape* Class fleets, will require critical maintenance or be entering the early phase of replacement arrangements. The Naval Shipbuilding Plan accounts for this sequencing. Defence's scheduling for naval shipbuilding and sustainment is structured to avoid unsustainable peaks in demand that could affect the capacity of domestic (non-Defence) shipbuilding and sustainment.
- 2.56 Ensuring the full complement of vessels are available for the maritime security task over this period will require continued coordination of the minor vessel construction and sustainment activities across the Defence and Immigration and Border Protection portfolios and the inclusion of possible future Australian Border Force on-water assets under the Government's continuous build program for minor naval vessels.

- 2.57 The Naval Shipbuilding Plan, together with supplementation of the Defence and Australian Border Force *Cape* Class fleet over the next decade, will concentrate minor vessel shipbuilding in Henderson, Western Australia. Sustainment operations and deep level maintenance for Australian Border Force vessels will continue in Darwin, Cairns and Henderson.
- 2.58 The table below identifies the Department of Immigration and Border Protection's current major on-water assets requiring ongoing maintenance and repair, including when they are expected to reach the end of their operational life.

TABLE 1 Estimated end of life of Australian Border Force on-water assets

| ASSET | FUNCTION | ESTIMATED END OF OPERATIONAL LIFE |
|---|---|-----------------------------------|
| Two <i>Bay</i> Class vessels | Surveillance, patrol and response | 2020 |
| Four fast response boats (from 2017) | Short-range patrol and response | 2027 |
| Australian Border Force Cutter <i>Thaiyak</i> | Surveillance, patrol and response | 2030 |
| Eight <i>Cape</i> Class patrol boats | Surveillance, patrol and response | 2033–35 |
| Australian Boarder Force Cutter <i>Ocean Shield</i> | Surveillance, long-range patrol and response, Southern Ocean patrol | 2036 |

OTHER SPECIALIST MINOR NAVAL VESSELS

- 2.59 The Government announced in the *2016 Defence White Paper* that the mine counter-measure and military hydrography capability would be updated. The rapid development of new technologies, including sea-borne mining and other underwater capabilities, mean that mine counter-measure capabilities will remain relevant for many decades. Minehunting vessels, as well as smaller naval vessels capable of rapid environmental assessment and hydrography activities will remain critical to the Royal Australian Navy.

HYDROGRAPHIC DATA COLLECTION CAPABILITY

- 2.60 The *2016 Defence White Paper* outlined the Government's intention to replace the existing hydrographic capability with an efficient combination of military and commercial hydrographic and oceanographic survey capabilities.
- 2.61 There are two major components of this program that provide an opportunity for Australian industry. Firstly, opportunities exist in partnering with Defence industry to deliver the national survey functions to deliver the HydroScheme survey and charting program required under the *Navigation Act 2012*. Secondly, the option to construct a hydrographic vessel as part of the Naval Shipbuilding Plan for a strategic military survey capability will complement Government's national shipbuilding agenda. The military survey capability will be delivered in the mid 2020s.

HUON CLASS MINEHUNTERS

- 2.62 The life of the four current *Huon* Class minehunters will be extended until the early 2030s while new technologies are developed to counter the threat of maritime mines. New vessels are likely to be required at that time.

AMPHIBIOUS WATER CRAFT

- 2.63 The 2016 *Defence White Paper* identified a number of opportunities for the construction of amphibious water craft to support the Australian Defence Force's amphibious capability centred on the *Canberra* Class landing helicopter dock amphibious ships. To support battlefield logistics and sustainment systems for the amphibious force, the Australian Defence Force will acquire replacement water craft to replace the LCM8 landing craft and LARC-V (lighter amphibious resupply) capability in the 2020s. In the 2030s, the landing helicopter dock amphibious craft will be replaced.

RIVERINE PATROL CAPABILITY

- 2.64 A riverine patrol capability will be re-established in the 2020s, based on a fleet of lightly armed small patrol boats to allow mobility in a wide range of riverine environments.

SUSTAINMENT OF MINOR NAVAL VESSELS

EXISTING MINOR VESSEL SUSTAINMENT IN AUSTRALIA

- 2.65 Sustainment of the *Armidale* Class patrol boats is being transitioned to Thales Australia from July 2017, with a potential contract value of more than \$55 million per year. Routine planned maintenance will continue to be conducted at HMAS *Cairns* and at HMAS *Coonawarra* naval base in Darwin. Hull remediation is being conducted by Austal at its Henderson, Western Australia facility and will be completed in early 2018. Inservice support for the two leased *Cape* Class patrol boats that are supplementing the *Armidale* Class is undertaken by Austal at a cost of around \$10 million per year. The *Armidale* Class is expected to remain in service until the late 2020s until replaced by the offshore patrol vessels.
- 2.66 The *Huon* Class minehunters are sustained by Thales Australia. The vessels are sustained at HMAS *Waterhen*, Sydney, where the vessels are home-ported. The sustainment contract is valued at approximately \$66 million until 2021 with extension options out to 2023. The *Huon* Class vessels will likely be extended until the early 2030s until replaced by a new class of vessel.

- 2.67 The Hydrographic fleet is sustained and supported from Cairns, Queensland. BAE Systems Australia sustains the majority of the hydrographic fleet supported by Cairns based small-to-medium sized businesses. The value of the in-service support effort is approximately \$94 million until the end of 2019.

FUTURE MINOR VESSEL SUSTAINMENT IN AUSTRALIA

- 2.68 The future offshore patrol vessels that will be introduced from the early 2020s will also require a sustainment contract to be established. It is likely that the majority of deep level maintenance will be conducted in the Henderson Maritime Precinct in Western Australia close to where the minor naval vessel construction will take place. Lower level maintenance and support of the offshore patrol vessels will likely occur in Henderson, Darwin and Cairns, where the vessels will be based.
- 2.69 The Government funds deep level maintenance for the 22 pacific patrol boats operated by various Pacific Island countries under the Pacific Maritime Security Program. This contract is with SERCO with deep level maintenance conducted by their sub-contractor – Norship Marine in Cairns. The Commonwealth has contracted Austal to build and sustain the replacement pacific patrol boats, at Henderson and Cairns, with these vessels to enter service from 2018.
- 2.70 The sustainment of the minor naval vessel fleet continues to provide opportunities for small-to-medium sized businesses throughout Australia.

MANAGING THE DEMAND FOR NAVAL VESSELS

- 2.71 The Government expects that its commitment to Australian naval shipbuilding and the management of its demand for naval capability will be matched by industry. The naval shipbuilding industry will need to properly structure itself to improve productivity. The Government has an expectation that industry will make the necessary investments in the naval shipbuilding workforce and build innovative new construction practices to deliver highly capable, cost-competitive naval vessels. This is discussed further in following chapters.

GOVERNMENT'S ROLE IN SHIPBUILDING

ASC PTY LTD

- 2.72 In announcing the rolling acquisition program for submarines, the continuous build program for major surface combatants and the continuous build program for minor naval vessels, and the bringing forward of the commencement of the

future frigate and offshore patrol vessel projects, the Government has recognised that the Adelaide shipyard and its workforce are strategic national assets. The Prime Minister announced on 13 May 2016 that the physical assets of the shipyard would be maintained under Commonwealth ownership.

- 2.73 On 11 October 2016, the Government announced that further reform of ASC Pty Ltd would be undertaken to ensure Australian shipbuilding is best structured to support the continuous build programs. The Government announced changes to the structure of the ASC Group of companies to better support the Government's significant investment in naval shipbuilding capability in South Australia, resulting in the structural separation of the ASC Group into three separate companies.

"The fundamental assets of Australian Submarine Corporation will always remain under Australian ownership – Australian Government ownership."

The Hon Malcolm Turnbull MP
Prime Minister of Australia

13 May 2016

- 2.74 The creation of these three new companies follows a strategic review of ASC which was conducted in 2015. The review sought to identify the best possible corporate, capital and governance arrangements to help maximise the future success of the Australian naval shipbuilding industry.
- 2.75 The three separate ASC companies will support the key capabilities of:
- a. shipbuilding;
 - b. submarine sustainment; and
 - c. infrastructure.
- 2.76 The structural changes to ASC will allow the new shipbuilding and submarine sustainment companies to focus on their core function (the finalisation of the *Hobart* Class air warfare destroyer and sustainment of the *Collins* Class submarines). The new infrastructure company will deliver a more efficient and flexible approach to enable long-term, strategic investment in critical infrastructure to better support the continuous shipbuilding programs.

- 2.77 The ASC shipbuilding company, as part of the AWD Alliance, will continue its role in completing the air warfare destroyer project at Osborne. The ASC submarine sustainment company will sustain the *Collins* Class submarines at Osborne and Henderson. The restructure will not impact those activities.
- 2.78 The new infrastructure company, Australian Naval Infrastructure Pty Ltd, will own on behalf of the Commonwealth the critical infrastructure previously held by ASC Pty Ltd, necessary to support shipbuilding and submarine programs at Osborne and Henderson, in line with the Prime Minister's commitment that the fundamental assets of ASC remain under Commonwealth ownership. This infrastructure has been held under arrangements between ASC group companies, the Commonwealth and the South Australian Government. Different assets were also held in different companies within the ASC Group. The restructure simplifies these arrangements.
- 2.79 The transfer of the relevant infrastructure to Australian Naval Infrastructure Pty Ltd ownership occurred in March 2017. Australian Naval Infrastructure Pty Ltd operates as a government business enterprise, and is responsible for provision of critical infrastructure to the shipbuilding programs.
- 2.80 Australian Naval Infrastructure Pty Ltd will support the construction of infrastructure works at Osborne. It is the Government's intention for the full structural separation of ASC to be completed during 2017.
- 2.81 Proposed governance arrangements and the ongoing role for Australian Naval Infrastructure Pty Ltd will soon be finalised for the Government's consideration. This includes consideration of how to best structure the Board and management configurations for the various entities so as to avoid conflict of interests between them and ensure that Board decisions are made on an appropriate arm's length and independent basis. Separate governance and management arrangements are likely to be required to properly distinguish between the respective commercial roles of each of the restructured companies.
- 2.82 The structural changes to the ASC companies will ensure appropriate control of strategic national naval assets at Osborne and Henderson. This will ensure stringent security measures at the shipyards to appropriately safeguard classified and sensitive proprietary information and equipment vital to maintaining Australia's national security interests.

ACQUISITION AND CONTRACTING REFORM

- 2.83 Australia cannot afford a naval shipbuilding industry at any price. A reshaping and reform of the naval shipbuilding industry will be needed to deliver the future naval capability Australia needs, at a price the nation can afford.
- 2.84 If the Government is to ensure that the future Australian Defence Force remains a balanced force, with the highest levels of capability and protection our nation can afford, our industry base must deliver capability that is value for money and cost-competitive. Substantial reform of the naval shipbuilding industry will be necessary and hard decisions will need to be made. The Government is willing to make that commitment and expects that industry will do the same. Chapter Five addresses industry in more detail.
- 2.85 The RAND report identified that increased productivity in the naval shipbuilding industry requires as close a relationship as possible between ship designer and shipbuilder. RAND noted that both the designer and builder would need to be incentivised to make the other succeed. RAND recommended that Australia source naval ship designs from countries that possess similar naval architecture standards to Australia, and that we select designs based on their ability to be constructed in Australian shipyards.
- 2.86 The significant project demands of the continuous naval shipbuilding program will see up to three surface ship builds (air warfare destroyer, offshore patrol vessel and future frigate projects) operating at the Osborne Naval Shipyard concurrently in the early years. Major infrastructure development work will also be in progress at the shipyard.
- 2.87 There are a number of interdependencies for the continuous shipbuilding plan, including shipbuilding arrangements, shipyard infrastructure development, role of Australian Naval Infrastructure Pty Ltd, and affected projects at the shipyards (the future submarine, future frigate and offshore patrol vessel projects, as well as the existing air warfare destroyer project and *Collins* Class sustainment).
- 2.88 All projects under the continuous build program will require access to, and create significant demand on, the facilities, skilled workforce and infrastructure available at the Osborne site. Appropriate facilities, skills and infrastructure must be available to shipbuilders in an effective and commercially sound manner.

2.89 The procurement and contracting arrangements for the build (and related design) requirements under the naval shipbuilding projects are therefore a key component of the Naval Shipbuilding Plan. In line with the *2015 First Principles Review*, pragmatic and effective contracting models will form part of an overall framework for shipyard management and program dependencies. This includes procurement and contracting requirements that Defence will put in place with shipbuilders and designers relating to:

- a. the scope of particular build activities that must be undertaken at the site and the schedule/timing of those activities;
- b. the use of workforce, skills and labour at the site;
- c. the provision of, or access to, critical assets at the site; and
- d. broader naval shipbuilding plan objectives at the site including transfer of technology and skills over time, development of new skills and training opportunities and infrastructure modernisation.

2.90 Defence has examined the options available to Australia to manage the demands on the Osborne Naval Shipyard, while allowing sufficient capacity to undertake necessary infrastructure enhancements and ensure workforce growth and development. These options include alternative procurement and contracting models for the delivery of the shipbuilding capability in the shipyard. The competitive evaluation processes underway for offshore patrol vessels and future frigates will not only focus on successful delivery of these projects, but also on the commencement of the Government's long-term continuous naval shipbuilding programs for decades to come.

MEASURING EFFECTIVENESS IN DELIVERING THE GOVERNMENT'S OBJECTIVES

2.91 The regeneration of Australia's key naval capabilities is a complex, long-term national endeavour. This Naval Shipbuilding Plan is not just a series of projects; rather it is about the need for **an integrated national enterprise to build and sustain a sovereign naval shipbuilding and sustainment capability in Australia.**

- 2.92 The Government's commitment to continuous naval shipbuilding and the implementation of the capability life cycle recommendations of the *2015 First Principles Review* and the *2016 Defence Industry Policy Statement* are already contributing to the required changes to avoid a return to Australia's historical boom-bust cyclical demand for naval shipbuilding. This Naval Shipbuilding Plan demonstrates a significant shift from the traditional approach of individual projects operating independently and in isolation, towards an integrated program of investment in naval shipbuilding and sustainment.
- 2.93 Given the scale of investment to be made in future Defence capability, robust and complementary performance frameworks must be developed and reported against regularly through the National Security Committee of Cabinet. This reporting will be informed by advice from the independent Naval Shipbuilding Advisory Board established by the Government in October 2016. This will provide assurance that strategies are aligned and working to achieve Government's objectives across its defence, industry and innovation agendas.
- 2.94 As discussed in Chapter Seven, there are a number of governance mechanisms already in place to ensure the successful implementation of the Naval Shipbuilding Plan and the delivery of affordable and achievable naval capability, including the Inter-Departmental Committee on Naval Shipbuilding, the Defence Investment Committee and the Commonwealth, States and Territories Consultative Group on Naval Shipbuilding. The independent Naval Shipbuilding Advisory Board will continue to provide its independent advice to Government on all naval shipbuilding matters.

3

The background features a large, light grey trapezoidal shape on the left side, which tapers towards the bottom. To its right, there are several blue geometric shapes, including a large triangle at the top and a smaller diamond shape on the right. Thin white lines intersect these shapes, creating a network of smaller polygons and triangles across the top half of the image.

CHAPTER 3: KEY ENABLER ONE – NAVAL SHIPBUILDING INFRASTRUCTURE

- 3.1 Chapter Two identified the complex and demanding set of both concurrent and consecutive construction and sustainment activities required to deliver naval capability for Australia. Modern, innovative and secure naval shipbuilding and ship sustainment infrastructure is critical to the continuous build programs described in the previous chapter.
- 3.2 The RAND report, *Australia's Naval Shipbuilding Enterprise – Preparing for the 21st Century*, recommended Australia consolidate and maintain no more than two principal shipbuilding yards. RAND identified three main causes for the inefficiencies in the naval shipbuilding enterprise: the stop-start nature of the current shipbuilding industry; the substantial rework required on naval construction; and the need to build capacity in Australian design work. The Government announced on 18 April 2016, that naval shipbuilding in Australia will be centred on two yards: Osborne Naval Shipyard in South Australia for major surface combatants and submarines; and Henderson Maritime Precinct in Western Australia for construction of minor naval vessels. This consolidation will focus investment, industry and workforce in an effective and efficient manner. The decision bounds risk, ensures flexibility and enhances our capability and capacity to deal with unforeseen circumstances.
- 3.3 RAND's report noted that building new naval vessels, especially major surface combatants and submarines, requires specialised facilities and skills. In modern shipyards, warships are usually built in large structural blocks that are at least partially outfitted before being assembled into final configuration. These blocks are built in large, often covered, construction sheds and moved by large capacity cranes for assembly in a dry dock or on a land-level (or hard stand) facility. Modern construction techniques place a heavy emphasis on computer-aided design and manufacturing systems and integrated information technology to direct, support and enable consistency in build and design.
- 3.4 It will be critical that the two shipyards are ready to support and deliver the projects described in Chapter Two. They must be secure, modern and productive and built to accommodate the world's best shipbuilding practices. In order to achieve this outcome, it is imperative that the shipyards are flexibly designed

to accommodate the potentially varying needs of future shipbuilders on these sites. We must invest early and sufficiently in generating the most appropriate design for modernising our shipyards in order to meet the tight deadlines for commencement of the three construction programs. The shipyards must be fit-for-purpose to deliver a range of cutting edge naval platforms and, to the maximum extent possible, future-proofed to keep Australia's naval ships at the cutting edge of military capabilities into the future.



FIGURE 3.1 Principal Naval Shipbuilding Yards

- 3.5 Existing infrastructure will need to be upgraded in parallel with the delivery of existing shipbuilding and sustainment projects. The challenge will be to deliver – in close partnership with industry stakeholders and State and Territory governments – new infrastructure on time to support the commencement of the continuous build and rolling acquisition programs.
- 3.6 Central to the successful implementation of the Naval Shipbuilding Plan is a strong collaborative long-term partnership between the Commonwealth and States and Territories. At the Osborne Naval Shipyard this means working with the South Australian government to finalise appropriate long-term Commonwealth ownership and control arrangements for the Common User Facility and certain adjacent land. A further key principle to sustain this strong partnership will be the South Australian Government commitment to ensure appropriate support and amenity to the site to enable timely infrastructure improvements such as road, rail, utilities and amenities to support the redeveloped shipyards.

MASTER PLAN FOR NAVAL SHIPBUILDING INFRASTRUCTURE

- 3.7 The current infrastructure at the Osborne Naval Shipyard is suitable for block assembly and submarine sustainment. However, it is not suitable for construction of major surface combatants and future submarines. Similarly, the Henderson Maritime Precinct may also require upgrades to support the continuous build program for minor naval vessels and ongoing sustainment of *Collins* Class submarines.
- 3.8 Infrastructure development at the Osborne Naval Shipyard and the Henderson Maritime Precinct will modernise submarine and ship construction systems and processes in Australia, an important step in improving shipyard productivity and reducing the cost of Australian build programs.

OSBORNE NAVAL SHIPYARD, SOUTH AUSTRALIA

- 3.9 The Osborne Naval Shipyard comprises three discrete areas: Osborne South (surface vessels), Osborne North (submarines) and the Osborne Common User Facility (shared between the South and North facilities).

“Substantial facilities and infrastructure upgrades will take place to ensure the capacity and capability of the Osborne South Naval Shipyard.”

The Hon Christopher Pyne MP
Minister for Defence Industry

13 May 2016

- 3.10 The Osborne South facility is currently being used to complete the assembly and fit-out of Australia’s three air warfare destroyers, with that activity due to conclude in 2020. The Osborne North facility is currently used for the full-cycle dockings of the *Collins* Class submarines. Building the necessary infrastructure and facilities, utilities and access on these sites while they are being utilised for other purposes represents a significant planning and management challenge to ensure that the air warfare destroyer and *Collins* Class sustainment activities continue unimpeded, while critical infrastructure is constructed to support the future submarine and frigate projects.



FIGURE 3.2 Map of Osborne Naval Shipyard

- 3.11 A substantial upgrade to infrastructure and facilities will be critical to the capability and capacity of the Osborne Naval Shipyard to undertake the continuous build of major surface combatants and construction of the future submarines. Upgrading the shipyard to modern standards, including the introduction of advanced manufacturing capabilities, requires a consolidation of the critical assets under Commonwealth ownership during the first stage of the structural separation of ASC Pty Ltd announced by the Government on 11 October 2016, as detailed in Chapter Two.

OSBORNE SOUTH FACILITIES

- 3.12 The existing infrastructure is sufficient to enable the continuing block assembly of Australia's three air warfare destroyers (noting the majority of the block construction was undertaken in other shipyards) and is largely suitable for construction of the smaller and less complex offshore patrol vessels. However, it is inadequate for high productivity construction (versus block consolidation) of major surface combatants such as the future frigate. The capability and capacity of the Osborne South facilities will need to be upgraded substantially to support the Naval Shipbuilding Plan.
- 3.13 The Osborne South facilities are currently utilised for the final assembly of the air warfare destroyers, with completion of this project expected in 2020; the air warfare destroyer project will need to be completed alongside the early stages of offshore patrol vessel construction from 2018.
- 3.14 The first two offshore patrol vessels are likely to be built using the existing infrastructure at Osborne South, which was largely developed for the air warfare destroyer project. Defence will need to work with relevant stakeholders to enable timely and flexible access to these facilities for commencement of the offshore patrol vessel build between 2018 and 2020.
- 3.15 Preliminary studies on the surface ship infrastructure at Osborne South facilities have been undertaken by First Marine International and Odense Maritime Technology – both companies are recognised global experts in shipyard design, build and efficiency. These studies identified deficiencies in the capacity and capability of the current shipyard infrastructure to deliver the major surface combatant continuous build program.
- 3.16 An independent review of the existing facilities (by Odense Maritime Technology) highlighted that the current facilities cannot support key production activities

regarded as vital in any modern shipyard. Future build programs cannot be supported by the current layout and capacity of Osborne South facilities due to design, engineering and production limitations.

- 3.17 The design for the Osborne South facilities will continue to be refined by Defence in coming months, with construction of new surface ship infrastructure to commence in the second half of 2017. This stage of infrastructure development is expected to take around two and a half years to implement, with completion scheduled by the second half of 2019. This is the most time-critical component of the Government's planned infrastructure works to enable the future frigate construction program to commence in 2020.

OSBORNE NORTH FACILITIES

- 3.18 The current layout and facilities at Osborne North are not suitable to support the construction program for future submarines – a significantly larger and higher technology capability than the *Collins* Class submarines constructed at the shipyard almost two decades ago. Defence is in close consultation with DCNS on the future submarine construction infrastructure requirement for the Osborne North facilities. This activity will deliver a costed and detailed design of a modernised submarine construction facility at Osborne North for the Government's consideration in 2018.
- 3.19 The Osborne North facilities will continue to support *Collins* Class sustainment for some time to come. Planning will be required to ensure this activity can continue without detriment while the submarine infrastructure construction activity is underway.

HENDERSON MARITIME PRECINCT, WESTERN AUSTRALIA

- 3.20 In Western Australia, the Henderson Maritime Precinct is a focal point for shipbuilding activity. A number of commercial operators and a Common User Facility that is funded by both the Commonwealth and State governments are located within the complex.
- 3.21 One of the existing features of the Common User Facility is a floating dock, capable of accommodating vessels of up to 12 000 tonnes. Options are also under consideration to potentially add a second floating dock to this facility with an increased capacity to handle larger vessels up to 28 000 tonnes. A dock of this size would be capable of supporting sustainment of all vessels in the Royal Australian Navy, including the *Canberra* Class landing helicopter dock ships.

- 3.22 The Henderson Maritime Precinct itself incorporates around 150 businesses, including specialists in shipbuilding and fabrication, technology and support. Major work carried out in the facility has included the conversion of the Royal Australian Navy's fleet oiler from civil specifications and the ongoing *Anzac* anti-ship missile defence upgrade program.
- 3.23 The Government announced on 20 February 2017, that it will invest \$100 million in naval-related industrial infrastructure and sustainment in Western Australia from 2017 to 2020. The investment in shipbuilding, including wharves and jetties, will take place at the Henderson Maritime Precinct and defence estate, including HMAS *Stirling* (Fleet Base West). This will position the Henderson shipyard to remain a world class and internationally competitive facility for many decades to come, allowing more ships to be built and sustained at the Precinct and creating and maintaining jobs for the region.
- 3.24 Studies will be completed in the second half of 2017 to determine whether shipbuilding infrastructure at Henderson has sufficient capability and capacity to undertake the minor naval vessel continuous build program, in addition to existing commercial and border protection shipbuilding and sustainment work. Steps would need to be taken to ensure that the build, sustainment and upgrade activities in Henderson (pacific patrol boats, *Anzac* Class frigates, sustainment of *Collins* Class submarines etc.) are minimally impacted by any infrastructure development work or any new build activities. The outcome of the competitive evaluation process for the offshore patrol vessel project in 2017 will shape specific infrastructure requirements to support the build strategy of the selected tenderer. The known requirements of other minor vessels will also feed into the early design work to provide flexibility for follow-on elements of the minor naval vessel continuous build program.

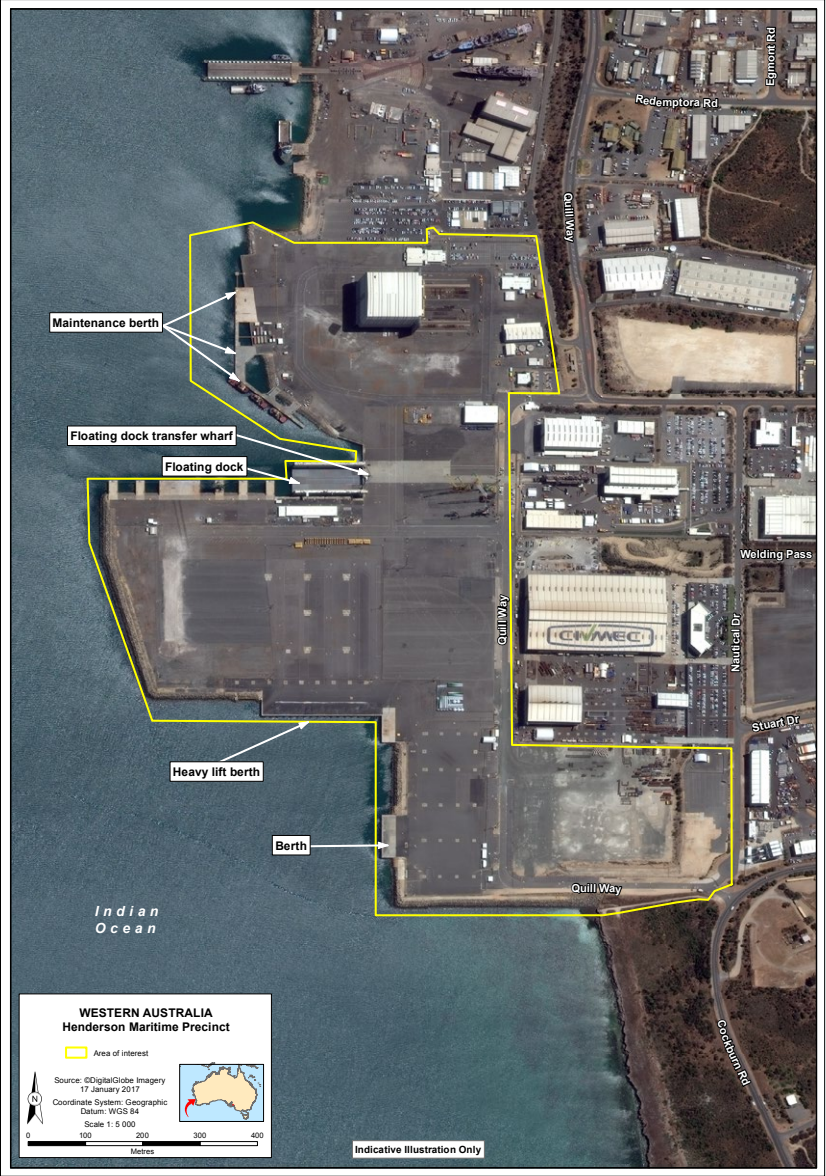


FIGURE 3.3 Map of Henderson Maritime Precinct

SUSTAINMENT SHIPYARDS

3.25 The Naval Shipbuilding Plan is based around two principal shipbuilding yards, as described in the previous section. These yards are complemented by a number of smaller sustainment shipyards around Australia which will require continued investment to support the Royal Australian Navy's expanded future fleet (expanded in both vessel size and number), as outlined in the *2016 Integrated Investment Program*. Defence will continue to develop sustainment requirements and plan redevelopment activities to meet future needs.

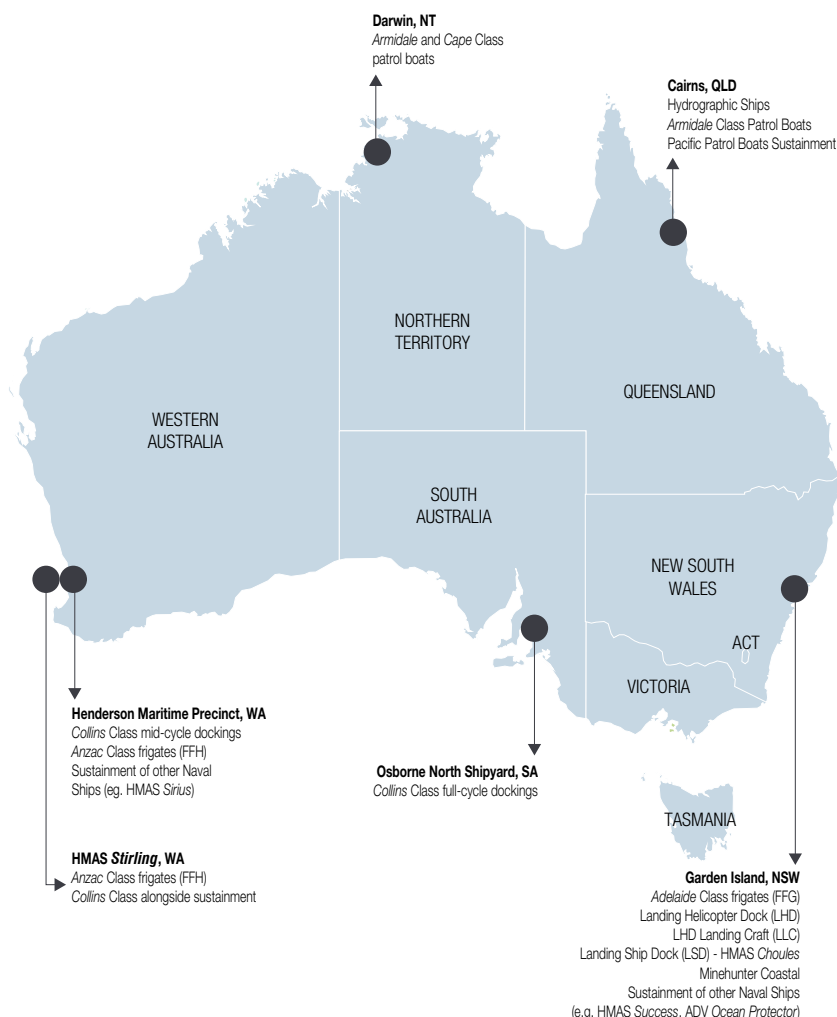


FIGURE 3.4 Principal Naval Sustainment Yards

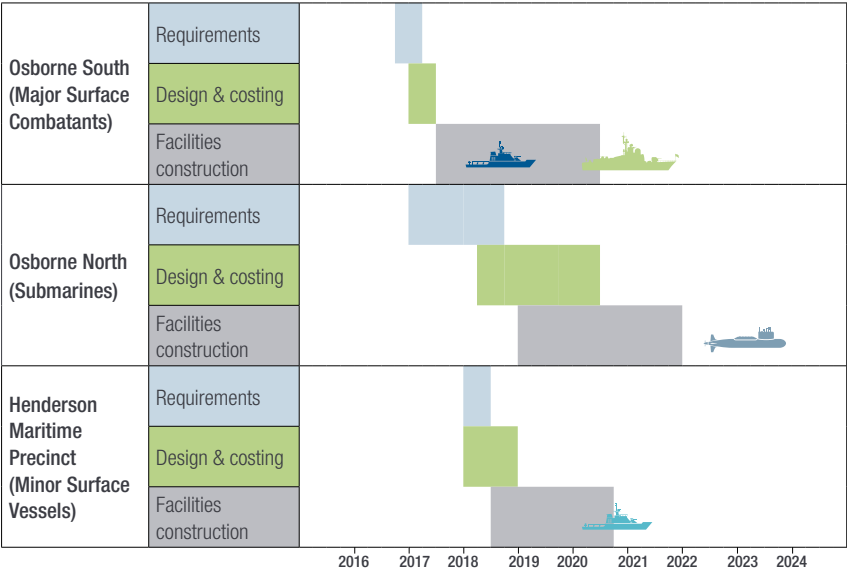
SECURITY OF AUSTRALIA'S SHIPYARDS AND THE NAVAL SHIPBUILDING INDUSTRY





- 3.26 Australia's submarines and major surface combatants include some of the most sensitive and secure technologies in the Australian Defence Force and in our partner countries. The construction of these platforms and the integration of communication, combat and weapon systems into them, some elements of which involve classified foreign technologies and systems, must have the highest levels of security. Ensuring that Australia's primary naval shipyards – the Osborne Naval Shipyard and the Henderson Maritime Precinct – along with the international and Australian naval shipbuilding industry that supports construction and sustainment, are secure and protected from compromise, including their electronic and information systems is important for both Government and industry.
- 3.27 Security requirements continue to be a critical planning consideration for the Government, just as it is for Australia's naval shipbuilding and sustainment design and construction partners and industry supplier base, both within Australia and internationally.
- 3.28 To provide for secure delivery of the future submarine project, mutual obligations between Australia and France for strong security arrangements are included in the Intergovernmental Agreement that was signed by Australia's Prime Minister and France's Minister for Defence in December 2016. Similar agreements exist with our partners from the United States.
- 3.29 Arrangements between the Commonwealth and South Australian governments regarding appropriate Commonwealth ownership and control of the Osborne Naval Shipyard, along with planned infrastructure upgrades, will underpin additional measures for secure delivery of the Naval Shipbuilding Plan.

INFRASTRUCTURE MASTER PLANNING

- 3.30 Existing Australian shipbuilding infrastructure has evolved on a project-by-project basis rather than in response to an integrated strategic national plan. The Government's naval shipbuilding strategy to deliver continuous naval shipbuilding in Australia through a long-term sustainable industrial base is ensuring a coordinated approach to infrastructure planning and development.

- 3.31 The Naval Shipbuilding Plan provides an integrated approach to the delivery of service infrastructure across the project areas and will ensure that the preparation of individual local plans and subsequent infrastructure development will occur in an organised and prioritised way.
- 3.32 Infrastructure redevelopment at Osborne South will occur first to meet the high priority requirements of the future frigate project (including program construction commencement in 2020), with Osborne North redevelopment to follow from 2018–19, as required by the construction schedule for future submarines.
- 3.33 Any additional requirement for infrastructure development at the Henderson Maritime Precinct will be scheduled to accommodate the planned transfer of the minor naval vessel program from Osborne South facilities to Western Australia in around 2020.
- 3.34 The table at Figure 3.5 provides a high-level overview of the timing and sequencing of infrastructure upgrades required to facilitate the three continuous build programs. These upgrades will be designed and delivered to support improvements in workplace productivity and ensure the potential for future growth and further enhanced capability and capacity of Australia's naval shipbuilding yards should this be required in the future.
- 3.35 While construction of the offshore patrol vessels can be largely undertaken within existing shipyard facilities at Osborne, before transferring to Henderson, the infrastructure upgrades described above represent a critical and necessary enabler for the future frigate and submarine projects. These build programs cannot be undertaken without the infrastructure master plan being successfully delivered.



-  Commencement of OPV construction 2018
-  Commencement of future frigate construction 2020
-  Commencement of future submarine construction 2022–2023
-  Transfer of construction of OPVs from Osborne to Henderson 2020

Note: Indicative dates.

FIGURE 3.5 Naval Shipbuilding Infrastructure Overview

KEY GOVERNMENT INITIATIVES FOR SHIPBUILDING INFRASTRUCTURE

- 3.36 The Government is developing an infrastructure master plan to guide development and upgrade of necessary infrastructure at Australia’s principal shipyards, as described in the previous section. The key infrastructure initiatives are:
- a. Commencement of construction of the Osborne South Naval facilities (in the second half of 2017), an investment of up to \$535 million;

- b. Finalised governance arrangements for the newly-established Australian Naval Infrastructure Pty Ltd in 2017;
- c. Completion of the structural separation of ASC Pty Ltd in 2017;
- d. Completion of an initial infrastructure master plan in 2017;
- e. Detailed costed design of a modernised submarine construction facility at Osborne North Naval facilities (due for Government consideration in 2018), with costs expected to be of a similar scale to the investment for surface ship infrastructure; and
- f. \$100 million investment in naval-related industrial infrastructure and sustainment in Western Australia from 2017 to 2020, including the Henderson Maritime Precinct and HMAS *Stirling* (Fleet Base West).

4

The background features abstract geometric shapes. A large, light green polygon occupies the upper left and top right areas. A dark grey, irregular shape is positioned in the middle right. The bottom half of the image is a light grey area with a subtle diagonal line pattern. A large, bold white number '4' is located on the left side, partially overlapping the green and grey shapes.

CHAPTER 4: KEY ENABLER TWO – THE NAVAL SHIPBUILDING WORKFORCE

- 4.1 A skilled workforce will be critical to delivering the enhanced naval capability outlined in this Naval Shipbuilding Plan. Over the next 10–15 years the size and skill levels of the naval shipbuilding workforce in Australia will need to increase significantly to meet demand created by the Government’s planned investments in naval shipbuilding and its commitment to a sustainable long-term naval shipbuilding and sustainment industry.
- 4.2 The naval shipbuilding enterprise will create thousands of jobs across Australia in direct construction, sustainment, in supply chain companies, in Navy (as the operator) and in Government service (as a smart buyer). Many of these will be highly skilled jobs involving advanced technology.
- 4.3 Significant challenges exist in ensuring a highly skilled workforce is available within the timelines required. Shipbuilders and others in the naval shipbuilding and sustainment industry have reported difficulty in sourcing workers with the required skills and experience. Many of the world’s leading shipbuilding companies have established in-house training schools, or developed partnerships with local or national training providers to provide training in naval shipbuilding.
- 4.4 The Government could leave it to the selected designers and builders of future generations of submarines, future frigates and offshore patrol vessels to source their own workforces and establish their own training requirements; however, this could result in shortages of specialist labour, and delays to shipbuilding schedules and delivery of planned naval capability. Leaving workforce development solely to industry could result in multiple different approaches to workforce skilling with little or no coordination at the national level, and little consideration to meeting the skilled workforce needs of the broader naval shipbuilding enterprise (including the supplier and sustainment base and the Commonwealth).
- 4.5 The Government considers the national naval shipbuilding enterprise too important to Australia to allow this to occur. Therefore, the Government will play an active role in managing workforce issues, at least in the initial stages of implementing the Naval Shipbuilding Plan, through a collaborative approach with key national and international stakeholders to finalise a strategic workforce plan.

- 4.6 The selected shipbuilding companies will clearly retain responsibility for the commercial recruitment and workforce development decisions that they are best placed to make. The strategic workforce plan will assist Defence and industry to work closely on meeting projected demands in a collaborative way. It will identify workforce growth targets and develop strategies to achieve required growth and skills development at the national level.
- 4.7 A Naval Shipbuilding College headquartered in Adelaide will be established to support workforce growth and skilling needs.
- 4.8 Australia's previous boom-bust cycle in naval shipbuilding has not enabled long-term shipyard productivity improvements, such as development of a highly skilled and experienced workforce able to be retained from one construction program to the next. The Naval Shipbuilding College will need to meet the demands not only of the upcoming construction projects, but also of the continuous build strategy over different classes of vessels and potentially with different prime contractors and supply chains over coming decades, which will assist in minimising unproductive hours at the commencement of each build.

WHY IT IS CRITICAL TO MANAGE THIS WORKFORCE GROWTH

- 4.9 Growing the naval shipbuilding workforce quickly to meet peak demands in the mid to late 2020s and sustaining the workforce for the long-term continuous build program will be a substantial challenge. Experiences from other sectors of the Australian economy that have gone through rapid upswings in workforce demand – such as the mining and energy sector – provide salutary lessons. High levels of workforce demand, combined with limited supply of workers increased the price of labour substantially. High wages resulted in workers leaving adjacent occupations to take up the opportunity for higher paid work, resulting in the loss of capability and capacity in other areas of the economy. Considerable skill deficits were experienced, creating unproductive work processes and increasing cost.
- 4.10 During construction of the *Collins* Class submarines and the *Anzac* Class frigates the industry struggled to develop sufficient capacity and capability in its workforce to meet productivity benchmarks, particularly early in the construction process. Shipbuilders have found it particularly difficult to recruit experienced workers with sufficient understanding of the complexities of naval construction

and systems integration – often resulting in widespread poaching from Defence's acquisition organisation and the Royal Australian Navy. Should this occur again, it would impact the Australian Defence Force's capability and reduce Defence's ability to be a smart buyer.

- 4.11 To avoid replicating these circumstances, a national approach will be taken to workforce development and skilling in the naval shipbuilding enterprise. Taking a strategic and integrated approach to workforce issues will allow Australia to increase both the capacity and capability of Australia's naval shipbuilding and sustainment workforce in a sustainable way.
- 4.12 The Government will play a role in identifying, developing and training the workforce needed for continuous naval shipbuilding, commencing with the future submarine, future frigate and offshore patrol vessel projects. Defence and industry will work together to balance the workforce requirements of *Collins* Class sustainment activities with the new requirement in the coming years for a considerable increase in a skilled workforce to begin construction of future submarines. Similarly, an appropriate balance will be needed to manage competing priorities for skilled workers to complete the air warfare destroyer project and commence construction of offshore patrol vessels and future frigates.
- 4.13 Industry will make its own commercial decisions on workforce and skilling; however, the Government recognises the need to take action now to increase student throughput in key entry-level trades for naval shipbuilding from as early as 2018, well before shipbuilders will be ready to recruit additional apprentices to meet future demand. To ensure the total number of skilled workers can grow to meet the steep increase in demand from the early 2020s, the Government will establish the Naval Shipbuilding College progressively, in consultation with DCNS for future submarines and the design and build partners for offshore patrol vessels and future frigates, once these have been selected.

WORKFORCE REQUIREMENTS

CRITICAL NAVAL SHIPBUILDING WORKFORCE SKILLS

- 4.14 Critical skills categories for the naval shipbuilding industry are general management, technical, structural, outfitting, and direct support, as described in Table 2.

TABLE 2 Taxonomy of Shipbuilding and Ship Repair Skill Categories

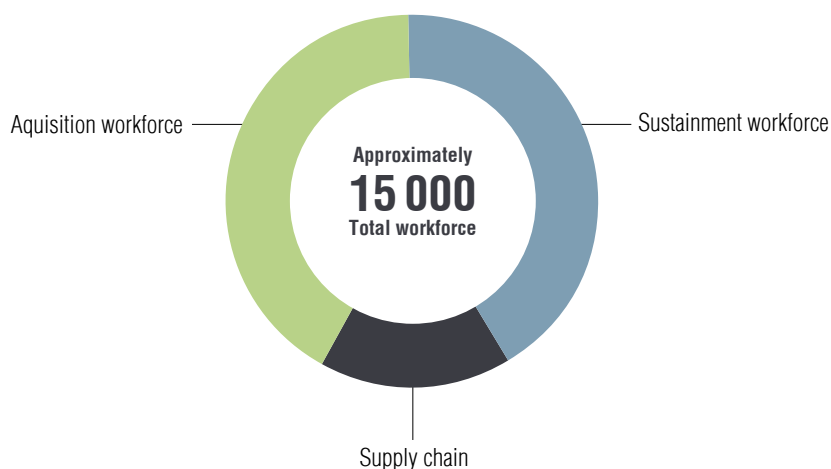
| CATEGORY | SUB-CATEGORY | SPECIFIC SKILL |
|----------------------------------|--------------------|--|
| General Management and Technical | General Management | Management Administration Marketing Purchasing |
| | Technical | Design Drafting/computer-aided design (CAD) Engineering Estimating Planning Program control/project management |
| Manufacturing | Structure | Steelworker, plater, boilermaker Structure welder Shipwright/fitter Team leader, foreman, supervisor, progress control (fabrication) |
| | Outfitting | Electrician, electrical technician, calibrator, instrument technician Heating, ventilation and air-conditioning (HVAC) installer Hull insulator Joiner, carpenter Fibreglass laminator Machinist, mechanical fitter/technician, fitter, turner Painter, caulker Pipe Welder Piping, machinery insulator Sheet metal Team leader, foreman, supervisor, progress control (outfitting) Weapons systems |
| | Direct support | Rigger, stager, slinger, crane, and lorry operators Service, support, cleaners, trade assistant, ancillary Stores, materiel control Quality assurance/control |

(Reprinted with permission from RAND Corporation, 2015, *Australia's Naval Shipbuilding Enterprise: Preparing for the 21st Century*, Table 2.2, p.12)

- 4.15 While exact workforce numbers for each of these skill sets will depend on the approach taken by each of the selected shipbuilders, a rough order of magnitude assessment can be made of likely requirements.
- 4.16 The workforce in South Australia will need to increase by around two to three times from current employment levels. South Australian shipbuilders will need to increase their workforce by some 3 600 staff from anticipated minimum levels in 2021, with a strong concentration on the skilled trades. Demand for workers with structural skills, such as fabricators and welders, will be particularly strong, and numbers will need to increase by a factor of four from current levels. Demand will also be strong for workers with outfitting skills, such as electricians, carpenters and pipe welders. Numbers of professional staff, including managers and naval engineers/architects, will also need to increase.
- 4.17 From 2022, workforce demand in South Australia will increase rapidly to meet the start of the future frigate and future submarine projects. Demand for construction workers will reach a peak of around 5 200 in 2026. As the Government's strategy for maximising Australian industry involvement in the continuous build programs is implemented, the indirect workforce is also expected to grow significantly.
- 4.18 The naval shipbuilding construction workforce is broken down by shipbuilding and repair skills categories. This consists of five categories: general management; technical (e.g. design, drafting, estimating); structure (e.g. steelworker, structure welder, shipwright); outfitting (e.g. electrician, joiner, pipe welder); and direct support (e.g. crane operator, stores, quality assurance). Similar skills and qualifications are required for shipbuilding and maintenance (sustainment), although shipbuilding places more emphasis on structural skills (e.g. steelworker, welder) and sustainment on outfitting skills (e.g. electrician, pipe welder, sheet metal worker).
- 4.19 The situation in Western Australia is qualitatively different. While Western Australia will need additional skilled labour over time for the minor naval vessel build, there is unlikely to be a requirement for a rapid increase in employment over a short period of time. Major shipbuilders in Western Australia are strongly engaged in ship sustainment (maintenance and repair) which draws on many of the same skilled trades, and they have a significant export program and multiple lines of business beyond naval shipbuilding. These factors mean they have been less effected by cyclical demand from previous government contracts and have been able to better maintain skilled workforces.

NAVAL SHIPBUILDING WORKFORCE – SOURCES OF SKILLED WORKERS

- 4.20 Workers with existing skills and qualifications relevant to the requirements of naval shipbuilding may be available from a range of sources: former shipbuilding workers; workers exiting adjacent industries experiencing downturn (such as the mining, energy and automotive manufacturing sectors) with similar heavy engineering or advanced manufacturing skills; foreign workers with shipbuilding experience; and government or Navy personnel with naval engineering or trade qualifications. Many of these individuals already possess significant and relevant skills, and could be available for naval shipbuilding with appropriate upskilling or ‘bridging’ programs.
- 4.21 The naval shipbuilding industry will also need to recruit entry-level workers in key trades and professions and support them to develop their skills.



Note: Indicative total.

FIGURE 4.1 Projected growth of naval shipbuilding and sustainment workforce

REHIRING FORMER NAVAL SHIPBUILDING WORKERS

- 4.22 A number of naval shipbuilding companies maintain records of past employees and have alumni organisations to sustain linkages with them, raising the chances that they can rehire them when demand increases. However, the longer these workers are out of shipbuilding jobs, the greater the chance they will find attractive work in another industry or exit the labour force. Mature age workers could potentially fill vital foreman and middle manager roles, or supervise the training of the future generation of naval shipbuilding workers.

MINING AND OIL AND GAS PRODUCTION INDUSTRIES

- 4.23 Workers from the mining and oil and gas sectors could be retrained to form part of the naval shipbuilding workforce. Skills from the mining industry and oil and gas industries are very compatible with naval shipbuilding. Many workers from these sectors have skilled trades or engineering backgrounds and possess skills which are highly transferable to naval shipbuilding. For example, sub-sea welding for an oil or gas platform and submarine welding both require high levels of precision to prevent catastrophic failures and loss of life, placing a premium on quality, reliability and safety.

AUTOMOTIVE MANUFACTURING INDUSTRY

- 4.24 An opportunity also exists for the shipbuilding industry to gain skilled workers who are exiting the automotive manufacturing industry, particularly engineering professionals, trades workers, administrative and clerical support staff and managerial staff.
- 4.25 The National Facilitator for the automotive Skills and Training Initiative assists automotive workers who are receiving assistance under the initiative, by identifying job opportunities and helping employers and employees manage the transition successfully. This initiative complements the Victorian and South Australian Government programs, targeting workers from the car manufacturers' supply chains. The Naval Shipbuilding College will engage with the National Facilitator to ensure automotive workers can also take advantage of the opportunities in the naval shipbuilding industry.

ADJACENT SECTORS: GOVERNMENT AND OTHER DEFENCE CONTRACTORS

- 4.26 Shipbuilders often hire former Navy personnel, given they have knowledge of Defence and Defence processes. While there are obvious benefits to this, the impact of industry demand on Navy personnel during the shipbuilding ramp-up needs to be considered. In line with the *2011 Rizzo Review*, Navy is building its engineering and technical skills, including long-term career plans. If not properly managed, there is a risk that the naval shipbuilding industry could attract people with critical skills from Navy and Defence into the commercial sector to support the shipbuilding program. The ongoing challenge will be for Defence and the industry to take a coordinated approach to provide capability management, logistic, support and technical services across the broader naval shipbuilding enterprise to utilise industry and contractor specialists.

FOREIGN WORKERS

- 4.27 Selected shipbuilders are expected to bring into the Australian shipyards workers from their home companies who are familiar with their specific production techniques and processes. These workers are likely to fill middle management and supervisory roles and will be essential to the process of knowledge transfer to the Australian naval shipbuilding industry. It is expected that over time the number of skilled workers from international shipyards will decline as the Australian workforce becomes familiar with construction requirements and develops more specialised skills. This will be an important area of discussion with selected shipbuilders as projects develop.

LABOUR MOBILITY: SOURCING QUALIFIED WORKERS FROM INTERSTATE

- 4.28 Sufficient numbers of workers may not be available in South Australia to meet the significant ramp-up in workforce demand from the early 2020s. Generally, Australia has low labour force mobility. Workers in industries with high growth in employment and high vacancy rates are more likely to move residence compared to those in other industries.
- 4.29 The Government will explore the potential for skilled workers to relocate from interstate to South Australia. A public communications strategy will be important to raise awareness of the long-term and sustainable careers which will become available in naval shipbuilding as a result of the Government's investments.

NEW ENTRANTS

- 4.30 The naval shipbuilding enterprise will offer new sustainable careers for young people and those currently outside the workforce. School students and mature age individuals with an interest in learning a skilled trade can provide a pipeline of skilled trade workers for the future. Similarly, graduates from relevant university courses such as naval engineering and architecture will help to build the long-term professional workforce. The Government will ensure that Commonwealth agencies work with their State and Territory counterparts to maximise these opportunities.

IMPLICATIONS OF WORKFORCE DEMOGRAPHICS

- 4.31 The shipbuilding workforce is fairly young on average, particularly in South Australia and Western Australia. Likewise, the sustainment workforce is also fairly young on average. This would suggest relatively few retirements over coming years. Nonetheless, it will be important to create career pathways to encourage

older workers to remain in the workforce. While shipbuilding work can be physically demanding, older and experienced workers could fill vital foreman and middle manager roles and train the future generation of shipbuilding workers.

- 4.32 Women are currently under-represented in the naval shipbuilding workforce. The Government is investigating options to promote greater representation of women. A national communications strategy to encourage workers into the naval shipbuilding industry will be undertaken. Together with national science, technology, engineering and mathematics initiatives included in the *2016 Defence Industry Policy Statement*, this will provide a focus on attracting and retaining a more diverse workforce in naval shipbuilding and defence industry more broadly, increasing access to the considerable skills and capability reflected across the Australian community.
- 4.33 Indigenous companies will also have the opportunity to contribute to the Naval Shipbuilding Plan, under the Government's Indigenous Procurement Policy. In 2015–16, Defence spent around \$149 million with Indigenous suppliers registered with Supply Nation; more than half of that year's Commonwealth Government expenditure with Indigenous companies. This achievement was recently recognised in the Supply Nation annual award for Defence as 'Government Member of the Year'. By working with Supply Nation and Indigenous companies such as Pacific Services Group, and the Indigenous Defence Consortium, Defence is enabling opportunities for Indigenous companies to be involved in this national endeavour in naval shipbuilding. By starting small and growing with the program, Indigenous companies will be able to develop their capability and capacity in a sustainable way and create enduring job opportunities for indigenous people.

OTHER WORKFORCE REQUIREMENTS

- 4.34 Due to the security and *International Treaty in Arms Regulations* requirements, the majority of naval shipbuilding construction workers employed during the workforce ramp-up, will likely need to be Australian citizens.

RAISING PUBLIC AWARENESS OF CAREER OPPORTUNITIES IN NAVAL SHIPBUILDING

- 4.35 Historically the naval shipbuilding industry has been characterised by a boom-bust cycle of workforce demand. The Government recognises that this may have created negative public perceptions of the nature and desirability of naval shipbuilding as a long-term career choice.

- 4.36 The Government will implement a national communications strategy, a key element of which will be a naval shipbuilding career awareness program. This program will focus on secondary school students, to encourage school leavers to consider the naval shipbuilding sector as a career path. It will provide students an understanding of career prospects in the industry and the importance of this enterprise to Australia's future. The school leavers' career awareness program will be supplemented by a similar program directed at experienced workers, including those in adjacent industries such as automotive manufacturing, mining and oil and gas.
- 4.37 The career awareness programs will be part of a broader national communications strategy to attract Australian workers (including qualified workers who have left the naval shipbuilding sector in recent years) and students to the naval shipbuilding industry. Those undertaking naval shipbuilding training may be eligible for an Australian Government scholarship through a program currently under consideration to provide up to 1 200 scholarships in South Australia.

SKILLING THE WORKFORCE

- 4.38 A long-term education and training approach across the naval shipbuilding industry, based around continuous learning linked to specific naval construction projects, will ensure that the workforce is well prepared to construct naval vessels effectively and efficiently, with skills regularly updated during construction activities.
- 4.39 Shipbuilders employ workers across a range of skill categories. Manufacturing naval vessels requires substantial design, engineering, management and testing skills, as well as expertise in a wide variety of trades such as electricians, welders and painters, and the integration of combat systems requires highly skilled and capable technicians. In many of the skilled trades it can take years for workers to achieve full proficiency and productivity. Given the complexity and unique technical demands of naval vessels, these skills are not typically available in the broader industrial base or even adjacent commercial shipbuilding sector. There is also a particular need in naval shipbuilding for higher numbers of highly experienced supervisors and middle managers.
- 4.40 Most management and technical skills positions in the naval shipbuilding industry require a bachelor degree in the relevant field (qualifications delivered through the higher education sector). The majority of trade positions require a Certificate III in the trade, typically earned through an apprenticeship (qualifications delivered through the vocational education and training sector).

CURRENT TRAINING PROVIDERS

- 4.41 There are a number of established training providers across Australia with capacity and expertise to assist with expanding and skilling the naval shipbuilding workforce. The TAFE systems in both South Australia and Western Australia have spare capacity. The Australian Maritime College in Tasmania focuses on skilling individuals in the maritime sector, and has high quality experimentation, simulation and educational facilities.
- 4.42 Other institutions such as the University of South Australia, Adelaide University, and Flinders University are building partnership arrangements, including with French institutions. In Western Australia, Curtin University and Edith Cowan University have various maritime focused courses. In addition to the engineering and trades skills required for continuous shipbuilding, shipbuilders and their suppliers will need staff with university-level education in areas such as business, management, and support roles.

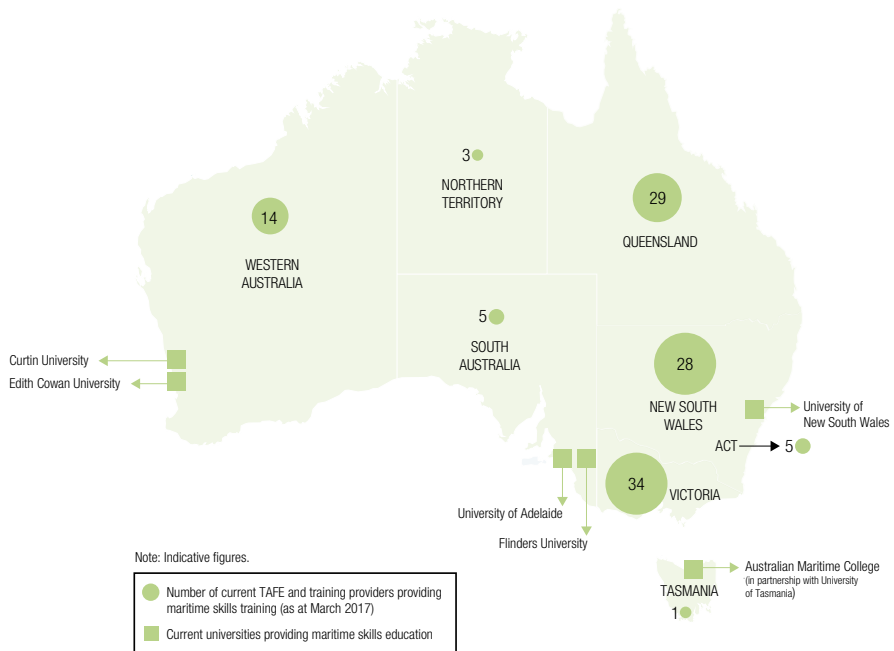


FIGURE 4.2 Education and training providers with qualifications relevant to naval shipbuilding (by location of headquarters)

ESTABLISHING THE NAVAL SHIPBUILDING COLLEGE

- 4.43 The Government has decided to establish the Naval Shipbuilding College to be headquartered in Adelaide to ensure a coordinated, national approach to workforce development and skilling across the naval shipbuilding enterprise. The College will provide opportunities for providers across Australia to collaborate in the education and training of candidates for future employment opportunities in the naval shipbuilding and sustainment industry. The College will be established progressively, to increase the capacity and capability of Australia's skilled workforce in line with naval shipbuilders' needs as they evolve.
- 4.44 Defence and the Department of Education and Training will undertake a tender process commencing in the second quarter of 2017, to identify a provider, or consortium of providers, to implement the first phase of the Naval Shipbuilding College from early 2018.
- 4.45 The Naval Shipbuilding College will involve:
- a. Strong partnerships between existing education and training providers and industry to increase the capacity and quality of training offerings in key entry-level trades for naval shipbuilding;
 - b. Regular engagement with adjacent industries (including automotive manufacturing and resources) and skilled workers who have left the naval shipbuilding industry, to identify a pool of qualified, experienced workers requiring minimal upskilling or bridging programs to assist in meeting the sector's increasing demand for a skilled workforce; and
 - c. A nation-wide communications strategy, including career awareness programs to be held at the Naval Shipbuilding College headquarters at Osborne, South Australia and at other locations around Australia, to build public interest and confidence in naval shipbuilding as a long-term career path.
- 4.46 The first phase of the Naval Shipbuilding College commencing in early 2018 will build capacity and annual throughput at existing education and training facilities around Australia, with the College headquarters at Osborne providing the central hub for managing implementation and collaboration between stakeholders, along with delivery of naval shipbuilding career awareness programs.
- 4.47 The focus will be on increasing key entry-level trade qualifications, reflecting the greatest demand expected in early years of the construction projects for trade qualified workers in structural and outfitting occupations.

- 4.48 Key entry-level trade qualifications in Australia are typically provided through a traditional apprenticeship pathway. This involves an employer recruiting an apprentice and training them mainly on the job. The employer also releases the apprentice for a period of time each week to a registered training organisation. However shipbuilders in South Australia are unlikely to recruit many apprentices before demand begins to ramp-up in the early 2020s, which raises the question of how apprentices in these trades will receive the on-the-job training required for their trade.
- 4.49 The Naval Shipbuilding College will address this in a number of ways. The College will seek to arrange for suitable group training organisations across Australia to recruit naval shipbuilding apprentices and hire them out to their member employers for on-the-job training, potentially with naval shipbuilders, suppliers and sustainment providers both in Australia and internationally. The successful tenderer implementing the first phase of the College will also collaborate with Government and education and training providers to trial alternative approaches to the traditional Australian apprenticeship scheme, such as up-front formal training, effectively delaying the job training component. Additional details will be announced later this year.
- 4.50 The second phase of the Naval Shipbuilding College will commence around 2020–21, increasing the capacity and throughput of students in key higher education qualifications (such as naval architecture and engineering) through universities. It will also develop and provide bridging programs for qualified workers from allied industries (such as automotive manufacturing and resources).
- 4.51 The third phase of the Naval Shipbuilding College will commence around 2022–23. This will see the development of a purpose-built training facility located at the Osborne Naval Shipyard. Following thorough consultation with government and industry partners, including selected designers and builders for the three build programs, the College will offer a range of naval shipbuilding education and training, arrange placements for students and graduates, and actively seek to recruit candidates from other geographic locations. This approach will ensure the numbers and types of skilled workers increase in line with industry demand.
- 4.52 The Naval Shipbuilding College must be industry-driven to be effective. The Government will contract out the management of the College to a private company or consortium. This will enable Government to potentially leverage the expertise of Australian and international shipbuilding companies and education and training providers in this major national enterprise.

- 4.53 The Naval Shipbuilding College will evolve over time to meet industry requirements and accommodate new developments in manufacturing techniques. Ultimately, the success of the College will depend on the establishment of a cooperative and consultative partnership between the various stakeholders, including defence industry, education and training providers across Australia, and Commonwealth, State and Territory governments.

STAKEHOLDER ENGAGEMENT

- 4.54 Creating a capable workforce with the capacity to effectively implement the national shipbuilding endeavour will require a national, collaborative approach. State and Territory governments play a major role in workforce and skills development. State and Territory governments are responsible for their own vocational education and training systems; they have responsibility for determining which qualifications are supported, and often work with local higher education providers and vocational education and training providers to coordinate post-school education. It will be critical to work with the State and Territory governments in planning activities in these sectors.
- 4.55 Defence industry will also be a key partner. The Government will work closely with selected naval shipbuilders, and other companies involved in sustainment and the supply chain, to ensure the training programs meet their requirements. Likewise, education and training providers across Australia will be key enablers for this national endeavour. International partners also have interests, demonstrated by the partnerships various educational institutions have already established.
- 4.56 The Government will work closely with the State and Territory governments, defence industry, education and training providers, and international partners as the Naval Shipbuilding Plan is implemented.

WORKFORCE REPRESENTATIVES

- 4.57 Real and sustainable workplace change is best realised by cooperative and open change management processes, which involves consultation and cooperation with all parties, including managers, employees and any employee representatives, such as unions, advocates and associations. Consulting with workers on workplace issues that may impact their welfare and productivity is a matter of best practice. This consultation can identify opportunities, assist decision-making and help ensure that new ideas or changes in policy and procedure work effectively in practice.

- 4.58 There are significant benefits associated with implementing and maintaining a culture of consultation and cooperation in the workplace. Australia's existing naval shipbuilding workforce will be critical to the success of the national naval shipbuilding endeavour. Their representatives, whether unions, advocates or associations, are seen as critical partners in this endeavour, not adversaries.
- 4.59 The Government will work with unions, through the Australian Council of Trade Unions, and with industry to encourage and maintain a culture of consultation, cooperation and industrial harmony so as to realise work practices that increase productivity and support the long-term growth and sustainability of naval shipbuilding in Australia.

KEY WORKFORCE AND SKILLING INITIATIVES

- 4.60 The Government is addressing naval shipbuilding workforce challenges through the new initiatives outlined below:
- a. Defence and the Department of Education and Training will undertake a tender process in 2017 to identify a provider, or consortium of providers, to implement the Naval Shipbuilding College from early 2018. Establishing the College headquarters at the Osborne Naval Shipyard will ensure a national, coordinated approach to naval shipbuilding workforce growth and skilling in a manner that does not drive up the cost of skilled labour due to increased competition between build and sustainment programs for skilled workers.
 - b. Progressive implementation of the Naval Shipbuilding College in close consultation with selected ship and submarine designers and builders to ensure targets for workforce growth and skilling are matched to projected industry demand, with the first phase from early 2018 to include:
 - i. Strong partnerships between existing education and training providers and industry to increase the capacity and quality of training offerings in key entry-level trades for naval shipbuilding;
 - ii. Regular engagement with adjacent industries (including automotive manufacturing and resources) and skilled workers who have left the naval shipbuilding industry, to identify a pool of qualified, experienced workers requiring minimal upskilling/bridging programs to assist in meeting the sector's increasing skilled workforce demand; and
 - iii. A nation-wide communications strategy, including career awareness programs to be held at the Naval Shipbuilding College headquarters at Osborne and at other locations around Australia, to build public interest and confidence in naval shipbuilding as a long-term career path.

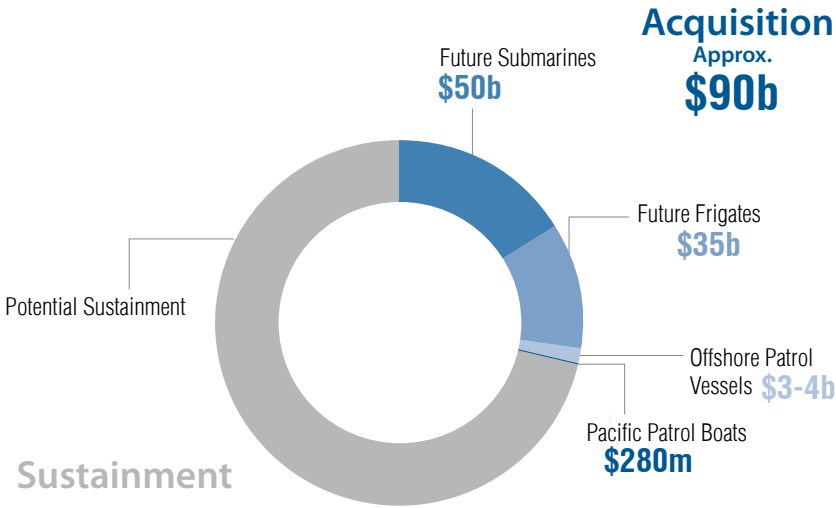
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5

CHAPTER 5: KEY ENABLER THREE – INDUSTRY’S ROLE

- 5.1 Actions taken by the Government since the release of the *2016 Defence White Paper*, including the unprecedented commitment to continuous naval shipbuilding in Australia, will put an end to the previous boom-bust cycle that has eroded Australia’s naval shipbuilding capability and prevented industry from sustaining productivity improvements from one build program to the next.
- 5.2 In line with the *2015 First Principles Review*, the Government’s *2016 Defence Industry Policy Statement* recognised for the first time the importance of Australian industry as a fundamental input to defence capability. The Government requires formal assessment of Australian defence industry considerations in Defence acquisition processes, alongside considerations of capability, cost and schedule.
- 5.3 The Government’s vision to maximise Australian industry involvement in the national naval shipbuilding enterprise will, over time, see Australian industry actively involved to the greatest extent possible across the spectrum of the enterprise – from capability design to complex project management, construction and sustainment activities, in addition to enhanced opportunities to be competitive in contributing to domestic and global supply chains and workforce development and skilling initiatives.
- 5.4 Achieving this vision will require a motivated, innovative, cost-competitive and sustainable Australian industrial base, underpinned initially through experienced international ship designers and both international and Australian builders who transfer these attributes to the Australian industry. A productive Australian naval shipbuilding and sustainment industry that is able to deliver affordable and achievable naval capability will be an enduring strategic asset for this nation.
- 5.5 The Government has committed to transform and re-energise the naval shipbuilding and sustainment industry following previous decades of underinvestment and mismanagement. The Naval Shipbuilding Plan sets an ambitious but achievable agenda to rebuild the Australian shipbuilding and sustainment industrial base: foster Australian innovation and research and development; realise substantial national economic benefits; and create thousands of new jobs with sustainable, long-term career paths for future

generations of Australians. In addition to shipbuilding and sustainment activities, the Government will work with the States and Territories to encourage the development of an industrial ecosystem including an expanding industry supplier and services base that will be attracted to Australia's key naval shipbuilding and sustainment hubs.



Note: Indicative costs over the next few decades. The whole-of-life costs for capability are typically 30% in acquisition and 70% in sustainment.

FIGURE 5.1 Projected acquisition and sustainment potential for Naval Shipbuilding involvement across Australia

- 5.6 Creating a new industrial ecosystem that provides and supports naval shipbuilding will require significant effort in industry and a stronger partnership between industry and Government to ensure agile, flexible and incentivised commercial arrangements between Defence and its industry partners, and between industry and its supply chain, in order to co-create the conditions for success.
- 5.7 Collaboration will be critical to support the national endeavour. Commonwealth and State and Territory governments must work in partnership to ensure that Australian industry has the capability, skills, capacity and infrastructure to deliver

and sustain the naval ships to be constructed. A sustainable naval shipbuilding enterprise will require improved long-term productivity and innovation – a smarter customer and a smarter provider of naval capabilities.

- 5.8 As a whole-of-government priority that promotes capability to the wider economy, innovation across Australian industry will help to maximise the potential benefits that may be carried over from the naval shipbuilding industry into the broader Australian economy.
- 5.9 The Government will support the growth of a secure and sustainable Australian naval shipbuilding and sustainment industry through:
 - a. Careful management of the demand to meet both industry capacity and the Navy’s strategic capability needs (Chapter Two);
 - b. Decisions on acquisition strategies that balance long-term program vision with value for money project development and program execution risk management, ensuring the Government supports the growth of a sustainable, cost-competitive naval shipbuilding sector (Chapter Two);
 - c. Development of flexible, incentivised commercial arrangements with industry, rather than depending on traditional contracting frameworks (Chapter Two);
 - d. Strategic planning of shipyard infrastructure (Chapter Three) and workforce requirements (Chapter Four) to meet the needs of continuous naval shipbuilding well beyond the immediate programs to construct offshore patrol vessels, future frigates and future submarines; and
 - e. Joint development of an industry ecosystem with State and Territory governments and industry itself.

“The Government recognises that an internationally competitive Australian defence industry is a fundamental input to Defence capability. Without the support of industry, Defence does not have effective capabilities.”

2016 Integrated Investment Program

- 5.10 Some of these initiatives are underway; others will continue to take shape over time.

DEFENCE INDUSTRY POLICY

- 5.11 As mentioned above, the *2015 First Principles Review* and *2016 Defence Industry Policy Statement* identified that industry must be considered as a fundamental input to capability.
- 5.12 The *2016 Defence Industry Policy Statement* provides the framework and initiatives to build Australian industrial capability, including support to a vibrant domestic naval shipbuilding industry. Four core strategic industry policy goals guide our defence industry priorities:
- a. maximise opportunities for Australian industry, including contributing to our naval shipbuilding capability needs;
 - b. develop Australian industry capability strategically with a clear plan for industry development and skilling, including in the naval shipbuilding sector to support a world class, productive and internationally competitive defence industry;
 - c. promote a highly resilient, sustainable, and innovative industry through defence exports, growth and employment; and
 - d. collaborate with industry and State and Territory governments to maximise the impact of our collective investment in developing the infrastructure, workforce and skills we need.
- 5.13 The Government's new defence industry policy, together with the *National Innovation and Science Agenda*, will enhance delivery of Defence capability through a stronger and more strategic, long-term partnership with industry, academia and research organisations – supporting innovation, cutting red tape and driving competitiveness and export potential for Australian businesses. This new approach will be instrumental in transforming Australia's defence industrial sector and assisting Australian companies to transition to support naval shipbuilding and sustainment opportunities across the country.
- 5.14 Australian industry involvement is a fundamental consideration of the competitive evaluation process for the offshore patrol vessels, future frigate and future submarine projects. In selecting experienced international ship designers and builders to deliver these projects, the Government is identifying and mandating the technology, intellectual property, business processes and workplace cultures that must be transferred to Australian industry in order for a sovereign Australian naval shipbuilding enterprise to be delivered.

- 5.15 Maximising Australian industry involvement in the continuous naval shipbuilding program will be driven through early and consistent engagement with Australian industry, and embedding industry as a normal part of force design and all phases of the capability life cycle for the new naval capabilities.
- 5.16 International design and build partners participating in Australian naval shipbuilding will be required to develop detailed Australian Industry Capability Plans outlining their strategy to maximise Australian industry involvement, including through the supply chains. These plans will also include how design and build partners will create an enduring Australian industry capability benefit, skill and knowledge transfer commitments, and global supply opportunities that will occur as a result of the continuous naval shipbuilding programs. These strengthened requirements have already been incorporated in the offshore patrol vessel request for tender, released by Government on 30 November 2016, including for the first time how indigenous companies will be considered, and the future frigate request for tender.
- 5.17 The Government recognises that growing a sustainable and internationally competitive defence industry, with potential for delivering an export capacity, is a critical enabler for meeting Australia’s defence capability needs.
- 5.18 Australian industry has demonstrated a capacity to compete globally in niche shipbuilding capabilities, including aluminium-hulled littoral vessels, expeditionary ships and naval sub-systems. Through supporting the development of innovative technologies and continuous shipbuilding capability, the Australian Government will be seeking to develop and exploit additional export opportunities through the supply chain. The continuous naval shipbuilding program will generate investment and innovation that will improve Australia’s productivity and capacity in the global naval shipbuilding sector.

AUSTRALIAN INDUSTRY CAPABILITY PROGRAM

- 5.19 The Australian Industry Capability Program will be critical to achieving the Government’s industry policy objectives for naval shipbuilding. The Program seeks to maximise opportunities for Australian industry to compete and win work in the naval shipbuilding projects, and in the shipyard infrastructure development. The Program is currently applicable to all Defence materiel procurements above \$20 million or where a Priority Industry Capability is identified. The Program aims to create opportunities for Australian companies to compete on their merits for Defence work on a value for money basis.

- 5.20 The Australian Industry Capability Program is being strengthened to more explicitly articulate the Government's expectations for how tenderers will maximise Australian industry's involvement in major capability projects. This includes measures to require tenderers to focus on:
- a. maximum Australian industry involvement in each naval shipbuilding project with additional emphasis and focus on the enduring industrial capability that will be resident in Australia to support Defence's broader needs;
 - b. the innovation, technology transfer and research and development collaboration with Australian industry, research institutions and organisations that will occur to support the long-term management of the new naval capabilities;
 - c. the establishment of Australian subsidiary companies of overseas defence industry companies to maximise investment and jobs in Australia;
 - d. the global supply chain opportunities that will be made available to Australian industry throughout each project; and
 - e. ensuring skills and training remain contemporary.
- 5.21 These changes will be critical to supporting our naval shipbuilding activities and will lead to more tangible benefits for Australian industry in terms of capacity, capability and skills development. Importantly, we will implement our Australian Industry Capability Program for naval shipbuilding as part of a holistic plan examining all elements of industrial capability.

THE DEFENCE INDUSTRIAL CAPABILITY PLAN AND SOVEREIGN INDUSTRIAL CAPABILITIES

- 5.22 The Defence Industrial Capability Plan is scheduled to be published in 2017, providing a strategic plan to grow a resilient Australian defence industry that will deliver Defence's *2016 Integrated Investment Program*. The Defence Industrial Capability Plan will baseline Australia's current defence industry capability and outline a strategic plan to grow an industrial sector that is set up to maximise its involvement in the delivery and sustainment of naval shipbuilding capability to 2025–26 and beyond. The Defence Industrial Capability Plan will provide guidance to the defence industry sector and identify how Government will support Australian industry to meet Defence's broader capability needs.

- 5.23 As the *2016 Defence Industry Policy Statement* notes, a new Sovereign Industrial Capability Assessment Framework is scheduled to be introduced in the Defence Industrial Capability Plan in 2017. A sovereign industrial capability is defined as being so important to Australian Defence missions that it must be developed or supported by Australian defence industry because overseas sources do not provide the required availability, security, or warfighting advantages we need for the Australian Defence Force. For the Australian shipbuilding industry, this will be particularly relevant to naval capabilities. For example, the sustainment of the future submarine fleet must be undertaken by a sovereign Australian company, due to the classified nature of the technologies and systems.
- 5.24 The industrial capabilities underpinning the continuous naval shipbuilding program and sustainment of our maritime capabilities in Australia will form core elements of the new Sovereign Industrial Capability Assessment Framework. While the framework will identify the industrial base critical to supporting and sustaining the naval shipbuilding industry, not all aspects will be sovereign industrial capabilities. The new framework will be the key assessment basis from which Defence and the Centre for Defence Industry Capability will identify, manage and assure critical industrial capabilities across the *2016 Integrated Investment Program*. The Government will announce a range of measures to support identified sovereign industrial capabilities with the release of the Defence Industrial Capability Plan.
- 5.25 The Australian Industry Capability Program and Defence Industrial Capability Plan, coupled with this Naval Shipbuilding Plan, complement each other to provide the foundation to plan, guide and develop the sovereign shipbuilding industry we need.

CENTRE FOR DEFENCE INDUSTRY CAPABILITY

- 5.26 The Centre for Defence Industry Capability is at the heart of the new collaborative approach required to grow and sustain Australia's defence industrial base, including the naval shipbuilding industry, and will have a key role in driving the industry's long-term development and capacity.
- 5.27 On 5 December 2016, the Minister for Defence Industry officially opened the Adelaide-based headquarters of the new Centre. The \$230 million initiative over the next decade is led by an advisory board comprised of private sector and Defence representatives and supported by around 40 staff across Australia. A key

role of the Centre for Defence Industry Capability is to help industry build supply chains and supply chain knowledge that can be leveraged by Defence and its prime contractors to maximise Australian industry involvement.

- 5.28 The Centre for Defence Industry Capability will provide specialist business skills and innovation advisers to guide and mentor businesses in defence specific business improvement, skills development, export and supply chains, including for businesses that have not traditionally worked in naval shipbuilding, provided their goods and services have a link to naval capability. The Centre will also engage with international design and build partners to support a standardised way of engaging with and developing Australian Industry.
- 5.29 This is important as the Government recognises that engagement in the naval shipbuilding enterprise is not limited to defence industry groups, but the broader Australian industry sectors. To effectively achieve a national naval shipbuilding enterprise with maximum Australian industry involvement, engagement will occur across the supply chain with recognition given to commercial innovations and civil industry suppliers, whether in the form of best practice models or development of specific manufacturing needs. Support to small to medium enterprises and potential new industry sectors seeking to build links to naval shipbuilding programs will enable Australia to maximise the potential benefits that may be carried over from the naval shipbuilding projects into the broader Australian economy.

LONG-TERM SHIPBUILDING INDUSTRY SKILLS

- 5.30 Defence and the Centre for Defence Industry Capability are partnering to develop a long-term approach to industry skilling which will also support the naval shipbuilding industry. This includes implementing a continuum of investment focused on early engagement, transition, and development, underpinned by science, technology, engineering and mathematics skills.
- 5.31 Our defence industry will be a major driver of high-end manufacturing and provide a range of challenging and rewarding careers within the future Australian economy. The Government will increase its efforts to ensure that younger Australians understand the opportunities to contribute to the nation as part of the continuous shipbuilding program.
- 5.32 The Government's commitment to a continuous shipbuilding program provides the certainty for industry to invest in growing and upskilling its workforce for the

future. The continuous build approach will do much to sustain a core set of the skilled workforce required for enduring naval capability development.

- 5.33 The expansion of defence industry-focused science, technology, engineering and mathematics initiatives and a long-term defence industry skilling strategy to be developed by Defence and the Centre for Defence Industry Capability will ensure that we effectively plan and develop the workforce and skills to achieve the objectives of the Naval Shipbuilding Plan and wider Defence Industrial Capability Plan. This strategy will address pathways into the sector, skills development and mechanisms by which Australia can maintain a regional technological edge in shipbuilding skills and technology.
- 5.34 Defence and the Centre for Defence Industry Capability will work hand in hand with the Naval Shipbuilding College, discussed in Chapter Four.

INNOVATION IN DEFENCE INDUSTRY

- 5.35 Innovation is a central part of the success of the naval shipbuilding enterprise. Innovation will ensure a naval capability edge is maintained throughout the capability life cycle of naval platforms within the continuous build programs.
- 5.36 As a whole-of-government priority that benefits the wider economy, innovation across Australian industry will help maximise the potential benefits that may be carried over from the naval shipbuilding projects into the broader Australian economy, driving a cost-competitive and sustainable Australian industrial base and increasing potential for defence exports across the supply chain. This approach to innovation in the defence sector complements the Government’s broader *National Innovation and Science Agenda*.
- 5.37 Launched on 5 December 2016 by the Minister for Defence Industry, the new \$640 million Defence Innovation Hub is bringing together Defence, industry, academia and research institutions to collaborate on innovative technologies that can deliver better Defence outcomes. The Defence Innovation Hub will be a key mechanism where Defence can provide industry the support it needs to experiment, adapt and ultimately enhance both the build processes and to the delivered capability itself.
- 5.38 The Defence Innovation Hub will play a vital role in maintaining the capability edge of all naval platforms. Over the coming decades, changes in new technology, smarter and more efficient ways of manufacturing, and the potential advent of new and more versatile materials, which could enhance the survivability

of our naval capability and personnel, will emerge, and must be brought to bear on the naval shipbuilding projects. Over the long-term the Defence Innovation Hub, supported by the Government's new \$730 million Next Generation Technologies Fund, will yield tangible benefits to the naval shipbuilding industry and naval capability outcomes, providing industry with opportunities to apply lessons learned to evolve designs and adapt better techniques and technologies.

- 5.39 This drive for innovation and manufacturing advancement, and investment in next generation technologies will have the potential to offer game-changing capabilities that Defence may wish to adopt as soon as technically feasible. This will require a shift towards a culture of continuous improvement and a significant change across Defence and industry as to how technology transitions into service.

MAXIMISING AUSTRALIAN INDUSTRY'S ROLE IN NAVAL SHIPBUILDING

- 5.40 Defence acquisition and sustainment projects must ensure that they deliver the best capability, at the best price, while maximising Australian industry involvement. The stated goal of the competitive evaluation process for future submarines, future frigates and offshore patrol vessel projects is to maximise Australian industry involvement without compromising capability, cost and schedule.

SUBMARINES

- 5.41 DCNS France has been confirmed as the international partner for the future submarine. DCNS will implement its approach to maximising Australian industry involvement, as detailed in DCNS' Australian Industry Capability Plan. As discussed above, these plans must include a strategy to transition existing supply chains to Australian supply chains and explore opportunities to integrate Australian suppliers into their global supply chains. Through this process, the Australian supply chain options for the construction phase will continue to develop over the next few years as the design of the future submarine progresses.
- 5.42 Defence and DCNS have begun a number of industry engagement activities in support of Australian industry participation in the future submarine project. These engagements form the start of a sustained campaign designed to engage, impart knowledge and requirements, and seek the expertise and support of Australian industry to ensure the success of program planning and delivery.

- 5.43 DCNS is engaging with Australian companies, helping them to register and pre-qualify as potential suppliers to the future submarine project, with Australian companies becoming more engaged as the program develops. These industry plans will be coordinated with initiatives in the *2016 Defence Industry Policy Statement* aimed at facilitating market access and improving efficiency, cost-effectiveness and capability in defence industry. Targeted investments by the future submarine project through the Centre for Defence Industry Capability, the Next Generation Technologies Fund, and the Defence Innovation Hub will also provide valuable industry support. These industry fora will continue throughout 2017. Information on these industry fora will be available on either the Centre for Defence Industry Capability or DCNS website.

MAJOR SURFACE COMBATANTS

- 5.44 Requirements for Australian industry involvement are being strengthened for the future frigate project. Through the competitive evaluation process, Government is ensuring that design and build partners deliver Australian Industry Capability solutions that maximise Australian industry involvement and contribute to an enduring shipbuilding and sustainment capability in Australia. Industry days have commenced and discussion with Australian companies has started, to build towards the goals of this Naval Shipbuilding Plan.

MINOR NAVAL VESSELS

- 5.45 The Australian industry requirements are also being strengthened for the offshore patrol vessel project. To date, this has included the release of the strengthened Australian Industry Capability Program requirements as part of the offshore patrol vessels Request for Tender, currently with competitive evaluation process participants.
- 5.46 This has been further supported with a number of workshops with offshore patrol vessel competitive evaluation process participants to ensure they are given every opportunity to comprehend the Australian industrial base involvement and development objectives over the term of build and sustainment activities that the Australian Government and Defence require.
- 5.47 In October 2016, Defence began conducting ‘roadshows’ across Australia to assist small to medium sized enterprises to identify, understand and respond to opportunities presented in the broader naval shipbuilding program. Australian industry involvement is expected to grow over the course of the build program. Workforce and supply chains around metal fabrication and support to construction

will be an important consideration, and opportunity exists for Australian industry in shipyard preparation, infrastructure, support and management at the consolidation/integration facility locations.

INDUSTRY'S ROLE IN SUSTAINMENT

- 5.48 Sustainment of naval capabilities over the life of individual platforms and systems will continue to be the area of major expenditure in the whole-of-life costs of capability, for both current and future naval capabilities. More will be invested in sustainment over the life of naval vessels than on the construction.
- 5.49 This is a key area for Australian industry involvement. It will be necessary for Australian industry to have a significant role in the sustainment of the future naval fleet. As discussed earlier in Chapter Five, the sustainment of the future submarine fleet in particular, must be undertaken by a sovereign Australian company, due to the classified nature of the technologies and systems involved.
- 5.50 Developing more efficient and effective sustainment practices and actively designing capability for sustainment will be an important part of Defence's capability management.

INDUSTRY REFORM

- 5.51 The Naval Shipbuilding Plan's industry initiatives, outlined above, will support industry to manage increasing capacity demands and develop evolving capability and technology innovations that ensure the Royal Australian Navy has the capabilities needed for the future. It will also maximise Australian industry involvement and grow Australia's potential for exports across the supply chain through new tender measures aimed at supporting Australian industry as a fundamental consideration of Defence acquisition, and the benefits of partnerships between Australian industry and experienced international ship designers and builders in establishing and growing sovereign capability.

“As a nation we want to use the skills and innovation that characterise our defence industry to form the basis of the smart, hi-tech manufacturing of the 21st century which can be exported to the world.”

The Hon Christopher Pyne MP
Minister for Defence Industry

The Daily Telegraph Opinion Editorial,
 18 November 2016

- 5.52 Under a mature continuous build philosophy, the naval shipbuilding enterprise will require industry to deliver, in addition to the vessels themselves, complex systems integration and supply chains. The scale of advanced industrial manufacturing and related activities will place increased demands on the Australian industrial base. In conjunction with the *National Innovation and Science Agenda*, industry will be encouraged to develop advanced manufacturing capabilities, including research and development capabilities, that support the highest level scientific and technological capability that our future naval capabilities require.
- 5.53 Reform in how demand for naval shipbuilding is managed in order to end the boom–bust cycle, must also be matched by reform in the naval shipbuilding sector to reduce the cost premiums for Australian build programs. The implications of not achieving substantial productivity improvements include cost and schedule overruns in the continuous build programs, resulting in risk to naval capability and to the long-term sustainability of the domestic naval shipbuilding industry. A successful naval shipbuilding enterprise will require strong and incentivised partnerships between ship designer and shipbuilder in order to meet demands and ensure productivity improvements.
- 5.54 The Government is looking to industry to invest in its own development and support the naval shipbuilding enterprise through key investments in Australia’s workforce skills base and in innovative new construction practices that will help deliver highly capable and cost-competitive naval vessels. Co-creation of the national naval shipbuilding enterprise will require industry to step forward, and reform.

- 5.55 Reforms to the industrial base will require industry to seek out opportunities to enhance productivity, promoting a culture of continuous improvement. The Government has identified core areas for industry investment in infrastructure, development of productivity-based shipyard culture and workforce skills enhancements. In addition, industry will need to be aware of their national security responsibilities in working on projects including the future submarine, future frigate and offshore patrol vessel projects. The Government will provide advice on how to appropriately manage confidentiality of intellectual property and other information.
- 5.56 Successful management of complex activities and multiple stakeholders will be critical to the realisation of the naval shipbuilding enterprise. This will prove particularly important in the Osborne Naval Shipyard with various build and sustainment programs and infrastructure development activities requiring careful coordination and planning between stakeholders from both Government and industry participants. This will be a significant undertaking in the expansion of defence industry groups working within the Osborne Naval Shipyard, alongside the ongoing assembly of the air warfare destroyers and sustainment of the *Collins* Class submarines.
- 5.57 New benchmarks will need to be established by Defence, in consultation with industry, to assess productivity and cost-competitiveness at the Osborne and Henderson shipyards. The independent Naval Shipbuilding Advisory Board will play an important role in advising Government on appropriate benchmarks and in reporting progress against them.
- 5.58 Regular audits of the sector will be undertaken, aimed at maintaining the health and security of the enterprise and its achievement of naval shipbuilding benchmarks. Strong oversight and governance and assessment of implementation effectiveness will be critical to the success of the Government's plans for the Australian naval shipbuilding industry. Building agreement on the levels of productivity around the Government's plan with the shipbuilding industry, establishing the Naval Shipbuilding College and supporting the development of a more productivity-based culture will require significant and ongoing engagement, specialist naval shipbuilding experience, and long-term collaboration across all national stakeholders.

5.59 The Government's commitment to a naval shipbuilding enterprise will transform our naval shipbuilding and sustainment industry and see huge potential for Australia's growing defence industry across the supply chain. This enterprise cannot be achieved through Government action alone. The naval shipbuilding enterprise must be co-created by Government, industry and the workforce. The Government looks forward to building on an already positive relationship and engaging industry on the challenges and opportunities of our plan for a strong, secure and sustainable future for the naval shipbuilding and sustainment industry in Australia.



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CHAPTER 6: KEY ENABLER FOUR – NATIONAL ENDEAVOUR

- 6.1 To successfully deliver the naval platforms that the Government has announced, a coherent national approach is imperative. Key to the successful delivery and sustainment of our enhanced naval capabilities will be a new industrial ecosystem formed through strategic partnerships based on a new level of collaboration with Australian defence industry, State and Territory governments, international partner governments, commercial partners, academia, and science and technology research organisations. They must work together to ensure that Australian industry has the capability, skills, capacity, and infrastructure to deliver and sustain the largest renewal of naval capability. Enhanced collaboration between stakeholders will allow us to harness the leading-edge Australian innovation and technological expertise that can provide unique capability advantages for the Australian Defence Force.

STATE AND TERRITORY GOVERNMENTS

- 6.2 All States and Territories will be involved in the naval shipbuilding enterprise. The States of South Australia and Western Australia have been selected as the construction centres of the naval shipbuilding industry. Improvements in the infrastructure, including appropriate access and amenity to the shipyards (as discussed in Chapter Three) will require long-term partnerships and collaboration between the Commonwealth and the South Australian and Western Australian governments.
- 6.3 Other States and Territories are also engaged in the sustainment of naval capabilities, hosting naval bases and maintenance activities, such as those at Fleet Base East, Garden Island in New South Wales, HMAS *Coonawarra* naval base in Darwin and at both HMAS *Cairns* and Cairns Marine Precinct.

6.4 All States and Territories support in some way local companies that are part of the supply chain for the construction and sustainment activities in the naval shipbuilding industry. For example, the Australian Capital Territory hosts CEA Technologies, supplier of radar capabilities, Victoria hosts BAE Systems Australia's naval design capabilities, and Tasmania hosts the Australian Maritime College at the University of Tasmania that provides education and training across a range of relevant naval shipbuilding qualifications and also hosts significant research infrastructure such as towing tanks, ocean wave basins and a cavitation tunnel.

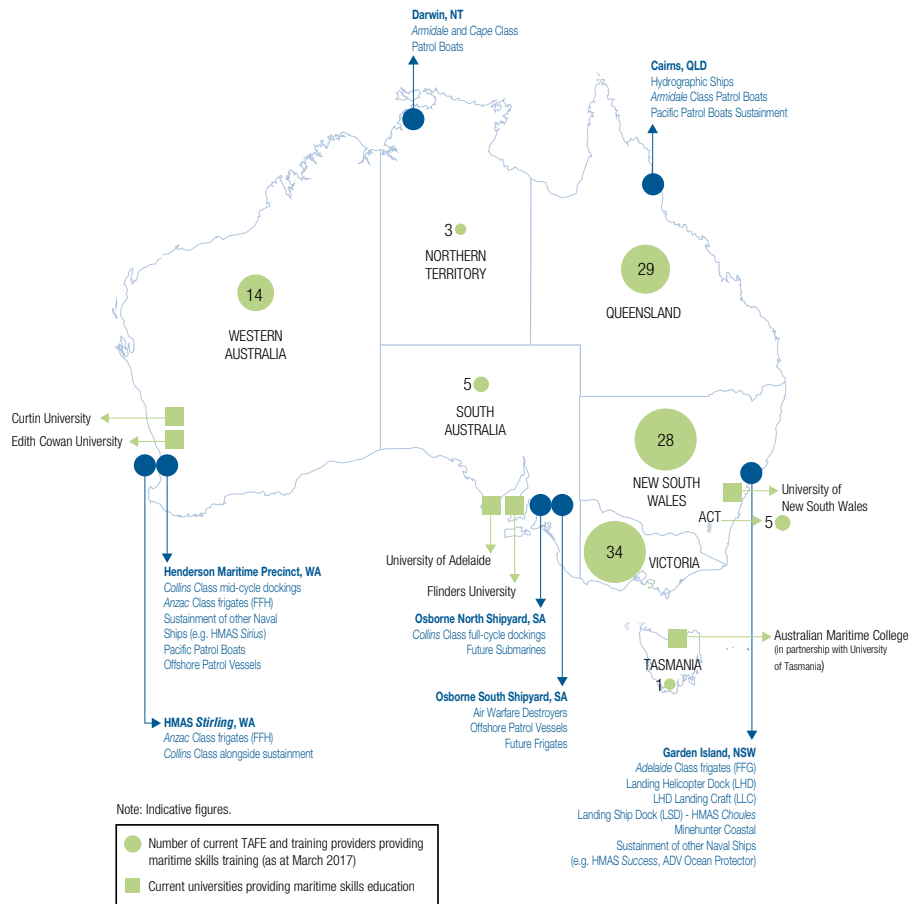


FIGURE 6.1 Naval Shipbuilding Enterprise – A truly national endeavour

- 6.5 State and Territory governments play a major role in workforce and skill development. States and Territories are responsible for their own vocational education and training systems. As part of this, State and Territory governments decide how much funding is provided to deliver training and how it should be spent. This includes responsibility for determining which qualifications are subsidised and the amount of subsidy. In addition, State and Territory governments often work with local higher education providers and vocational education and training providers to coordinate post-school education in their jurisdictions. Given this, it is important to work with the State and Territory governments in planning activities in these sectors, and to ensure States and Territories continue to make an adequate financial investment in this sector.
- 6.6 Defence has established a Commonwealth, States and Territories Consultative Group to discuss the Government's naval shipbuilding plans and facilitate regular consultation on such critical matters as infrastructure investment, workforce and skills needs and Australian defence industry. The Consultative Group will meet several times a year.

INTERNATIONAL PARTNER GOVERNMENTS

- 6.7 Developing and maintaining strong relationships with key international partners will be critical to the long-term success of the Naval Shipbuilding Plan. International collaboration will be essential to finding innovative ways to address our naval shipbuilding challenges. The national endeavour provides an opportunity for Australian industry to benefit from access to advanced manufacturing capabilities, expertise, technologies, and workforce skills and knowledge. There will also be opportunities for research and development collaboration, particularly in areas such as system integration. It will be important to maintain a dialogue with like-minded countries on strategies and lessons learned in building and maintaining a sovereign naval shipbuilding capability.
- 6.8 France will be a critical partner in building, maintaining, and sustaining Australia's future submarine capability. As outlined in Chapter Two, the Intergovernmental Agreement between Australia and France signed on 20 December 2016 provides the overarching legal arrangements to underpin a 50-year submarine acquisition program that will result in a sovereign strategic capability. In particular, the agreement will facilitate the transfer of cutting-edge

skills, knowledge, and technology, and the achievement of sovereign sustainment capability. It also recognises the importance of maximising Australian industry involvement, as outlined in Chapter Five.

- 6.9 More broadly, this growing relationship with France provides the opportunity to broaden information and personnel exchanges. Strategic dialogue and discussing France's approach to sustaining Defence industry will provide valuable insights, and help develop collaboration on the identification and development of new capabilities. Annual Defence Ministers' Meetings will be held, along with a broad range of regular strategic, policy, capability, and Australian Defence Force Service-to-Service talks. Australia will seek to further develop arrangements in the area of logistic supply and services. Specific working groups will be established under the Intergovernmental Agreement covering areas such as security arrangements and workforce planning.
- 6.10 Australia's alliance with the United States, and the access to advanced technology and information it provides, will remain critical. Lockheed Martin Australia has been selected as the combat system integrator for the future submarine project. Many systems on the future frigate, and other naval platforms, will be sourced from the United States. Through these arrangements Australia will gain access to new technologies and advanced manufacturing techniques in ship and submarine sustainment and combat system integration.
- 6.11 Australia maintains its most comprehensive level of engagement and dialogue with the United States, covering all aspects of the relationship, providing unprecedented access to information, technology, and ideas. The US naval shipbuilding industry is the most substantial in the world. The US expertise in the full life cycle of major maritime acquisitions is without peer. Australia will continue to leverage this expertise in the development of the national naval shipbuilding enterprise.
- 6.12 Spain is a valued defence partner and our increased material and defence industry cooperation has strengthened our bilateral relationship. Spanish company Navantia has been short-listed for the future frigate project. With the completion of the air warfare destroyer project, as well as the *Canberra* Class landing helicopter dock, a significant part of the Royal Australian Navy will have been constructed to Spanish designs. It will be important for Australia to maintain a close relationship with Spain and to leverage the similarities in size, doctrine, and commonality of platforms of the Royal Australian Navy

and the Spanish Armada, particularly in the area of sustainment and access to vessel supply chains. There are also opportunities to share lessons learned on sustaining a sovereign naval shipbuilding capability.

- 6.13 New Zealand is a close partner, and we often deploy together in support of shared regional and global security interests. Maintaining interoperability with the New Zealand Defence Force, including in the maritime domain, will remain important. New Zealand was a partner in the successful *Anzac Class* frigate project. Significant elements of its project Protector, including two offshore patrol vessels, were also built in Australia. New Zealand's recently released *2016 Defence Capability Plan* places an emphasis on increasing the offshore patrol vessel fleet as well as replacing various minor warfare vessels. Their *Anzac Class* frigates are scheduled to be replaced in the late 2020s and early 2030s. We recognise New Zealand, like Australia, will make capability choices based on its own interests. We will continue to maintain an extensive dialogue with New Zealand to identify areas of potential cooperation of mutual benefit, including in maritime capability development and sustainment.
- 6.14 Australia's relationship with the United Kingdom is based on deep historical ties, and we have a demonstrated history of operating together in conflicts. We share many global security interests. The Type 26 frigate has also been short-listed for the future frigate project. The United Kingdom has invested considerable resources into developing a sustainable, sovereign, shipbuilding capability, and there is significant scope to exchange information and share lessons learned.
- 6.15 Australia currently has a modest Defence relationship with Italy. The FREMM frigate has been shortlisted for the future frigate project. Italy also has a significant export oriented naval shipbuilding industry, opening opportunities for increased dialogue and information sharing.
- 6.16 Depending on the forthcoming selections for the offshore patrol vessels, Australia may develop deeper naval shipbuilding cooperation with Germany or the Netherlands. Canada and Australia also share many similar attributes and both have defence forces of similar size. There are likely to be expanded opportunities to exchange information and lessons learned in the area of naval shipbuilding.
- 6.17 Finally, under the Pacific Maritime Security Program, Australia will gift new patrol boats to 12 Pacific Island countries (and Timor-Leste should they join the program). Australia will continue to engage with these countries as the boats are constructed in Western Australia, sustained in Queensland, and the crews trained in Tasmania.

RESEARCH AND DEVELOPMENT

- 6.18 Research and development is key to ensuring Australia establishes a cost-effective continuous shipbuilding enterprise that is capable of building and sustaining regionally superior naval vessels. Targeted research and development will lead to developing efficiencies in how we work, the materials and shipbuilding techniques we apply, as well as the technologies we exploit to enhance operational capability.
- 6.19 It is crucial that a national shipbuilding enterprise is underpinned by a highly relevant research and development program, delivered by Australia's national innovation, science and research system, which includes universities, industry, publicly funded research agencies and private research institutions.
- 6.20 Defence, through the Defence Science and Technology Group, is responsible for ensuring there is a coherent and robust research and development program that supports the Naval Shipbuilding Plan. This will cover knowledge creation, science and technology maturation, and knowledge application across the national naval shipbuilding enterprise. The shipbuilding research and development program will also integrate across all Defence research and development activities (including the Next Generation Technologies Fund and Defence Innovation Hub).
- 6.21 Partnerships between Defence, research organisations and industry participants, both nationally and internationally, will be vital in the nurturing and harnessing of the shipbuilding sectors of Australia's innovation, science and research system.
- 6.22 A coordinated approach from Australian universities, publicly funded research agencies such as the Commonwealth Scientific and Industrial Research Organisation, and privately funded research investment will be required in order to evolve existing, and develop new, naval shipbuilding technologies. This is not just about ensuring the technologies required for the initial build programs are mature. It is also about ensuring that Australia is developing the technologies required for maintaining our naval capability and for improving the efficiency of our shipyards.
- 6.23 Defence and the existing Australian shipbuilding community have substantial interactions with research and development organisations including universities, publicly funded research agencies and industry research and development. The Defence Science and Technology Group is responsible for identifying high impact

areas for Defence and monitoring emerging technologies to assess their potential impact on Defence capability with a focus on knowledge and innovation integration, strengthened through partnerships with industry and academia.

- 6.24 Mechanisms exist to facilitate strategically targeted engagement with competitive and expert partners to enhance the delivery of high quality science in support of high value outcomes for Defence including direct contracting, strategic alliances, Defence Science Partnerships and industry research and development organisations such as the Defence Science Institute. External partnering also provides the flexibility to rapidly respond to emerging science and technology areas of Defence relevance.
- 6.25 Defence has established a Defence Science Partnership framework with over 30 Australian universities. The Defence Science Partnership provides the mechanism by which these universities can partner with Defence to address many of the research and development issues that arise within the naval shipbuilding sector.
- 6.26 For larger Defence research requirements, where no single university or industry sector has all of the appropriate skills to address the issue at hand, the Government will establish research networks of highly skilled members. A number of potential models, building upon current partnership initiatives are being considered. This will include research networks of multiple universities working together to address critical capabilities and the formation of Defence Cooperative Research Centres will link key universities and industries together to carry out high payoff research in the priority areas as listed in the *2016 Defence Industry Policy Statement*.
- 6.27 Much of the research and development requirements to support the Naval Shipbuilding Plan will be identified by the naval shipbuilding or supply chain sectors rather than Defence. To facilitate these industries having access to high quality researchers in Australian universities, Defence is working to expand the Defence Science Institute framework beyond Victoria and develop the recently announced Defence Innovation Partnership in South Australia.
- 6.28 Defence will also partner with international governments to address the science and technology challenges in naval shipbuilding. We will enhance our relationships with other allied defence research and development agencies, including the United States, United Kingdom, France, Japan and the Republic of Korea.

KEY INITIATIVES

- 6.29 The Government will take a collaborative approach to support a continuous naval shipbuilding program. Key initiatives are:
- a. Continue to hold regular Commonwealth, States and Territories Consultative Group meetings;
 - b. Enhance engagement with France, including the establishment of appropriate working groups to manage submarine construction challenges;
 - c. Explore opportunities to leverage the naval shipbuilding enterprise to enhance research and development opportunities with key partners; and
 - d. Enhance dialogue with international partners and countries with similar naval shipbuilding experience to share knowledge and lessons learned.

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CHAPTER 7: IMPLEMENTATION

- 7.1 The Government has set an ambitious agenda for the creation of the naval shipbuilding enterprise. The modernisation of Australian naval forces is a complex, long-term national endeavour and there will be technical, infrastructure, workforce and capability challenges to name a few. The goal of the Naval Shipbuilding Plan is to ensure that the regeneration of the Royal Australian Navy over the coming decades can be undertaken in a way that ensures a cost-effective solution for the Government and provides Navy the assured capability to fight and win.
- 7.2 Implementation of the Naval Shipbuilding Plan carries significant risks and rewards. The whole-of-life cost benefits and the return on investment for the naval shipbuilding enterprise will be potentially substantial, as long as the Plan is implemented in a coordinated and strategic manner.
- 7.3 The Plan will transform Australia's naval shipbuilding industry, generate significant economic growth, sustain thousands of Australian jobs over the coming decades and assure the long-term future of this key Australian defence industry.
- 7.4 Successful implementation of the Plan requires enhanced collaboration between Defence, Commonwealth agencies, State and Territory governments and Australian industry. This will also allow us to harness some of the leading-edge Australian innovation and technological expertise that can provide capability and competitive advantages for the Australian industry and Australian Defence Force.

GUIDING PRINCIPLES FOR IMPLEMENTATION

- 7.5 RAND's report, *Australia's Naval Shipbuilding Enterprise – Preparing for the 21st Century*, released by the Government on 16 April 2015, recommended reform in management of Defence's demands of industry through:
 - a. Establishing a consistent production and build demand;
 - b. Selecting a mature design at the start of the build and limiting the amount of changes once production starts;
 - c. Limiting the amount of unique Australian design changes; and
 - d. Introducing a continuous build philosophy for naval surface combatants and a different in-service model based on retention of vessels for no more than 25–30 years.

- 7.6 And reform in industry's management and culture by:
- a. Ensuring a well-integrated designer, builder and supplier team;
 - b. Ensuring there is visionary leadership provided by company management; and
 - c. Developing a productivity based culture of continuous improvement.
- 7.7 To ensure sustainability of a productive Australian shipbuilding industrial base, decisions about naval shipbuilding investments and implementation would necessarily need to take the RAND principles into account.

TIME TO MATURE

- 7.8 The Government's objective for the Naval Shipbuilding Plan is to detail a national approach to delivery of affordable and achievable naval capability (submarines, major surface combatants, minor naval vessels and Australian Border Force vessels) through an Australian industrial base that is reformed, secure, productive and cost-competitive. Like most far-reaching Government policy initiatives, a coherent, coordinated and nation-wide naval shipbuilding enterprise will take time to develop and mature. The Australian naval shipbuilding enterprise will need time to learn and apply lessons, skill and grow the workforce and build a competitive shipbuilding industrial base, in order to create the enduring naval shipbuilding capability that is required. The relative infancy of the enterprise will need to be taken into account as capability procurement and sustainment decisions are made.

LONG-TERM VIEW

- 7.9 There are numerous problems encountered when starting major naval shipbuilding projects from a cold start. They include the costs of finding, recruiting and training skilled workers, upgrading disused or under-utilised infrastructure, re-establishing the critical supply network, and re-learning lessons that normally would be part of the domain knowledge of a shipyard. Further, as naval shipbuilding in Australia is a monopsony (single buyer) market, the circumstances of industry participants are substantially different to many other cyclical industry sectors, thus risking the survival and growth of Australian shipbuilding companies. Breaking the boom-bust cycle will require long-term planning, consistent long-term decision-making and commitment to the continuous build strategy, to allow for the continued development of the naval shipbuilding industry, the infrastructure of Australia's shipyards and the development and skilling of its workforce.

ROLE OF INDUSTRY AS A FUNDAMENTAL INPUT TO CAPABILITY

- 7.10 The capability and capacity of the shipbuilding industry is one of the main variables for shipbuilding decisions, and will be an important part of project trade-off considerations such as cost, capability and schedule. This also means that industry will be engaged earlier in the capability life cycle, and given due weight for its role – so that the enterprise risks and rewards can both be shared responsibly between the Government and industry.

PREDICTABLE STREAM OF NAVAL SHIPBUILDING PROJECTS

- 7.11 If Australia is to have a vibrant, innovative and competitive shipbuilding industry, it must have a steady and reliable flow of work. The Naval Shipbuilding Plan is central to achieving this goal of maintaining a continuous stream of work for Australian shipyards. Major shipbuilding commitments for the next four to five decades have already been announced by the Government, and will have significant impact on shipbuilding infrastructure, workforce and industry capability in Australia. Any new investment decisions in relation to naval shipbuilding capability must be weighed in reference to the national shipbuilding enterprise, and the impact that the decision would have on the cost and schedule of existing shipbuilding and sustainment commitments.

STRATEGIC FORWARD PLANNING

- 7.12 The naval shipbuilding and sustainment industry needs a predictable and sustainable basis on which to plan ahead. This Naval Shipbuilding Plan provides the certainty that industry requires to commit resources to proposed future shipbuilding projects. It avoids volatility in demand by providing clarity about future intentions. In February 2016, the Government released the *Defence White Paper*, a fully-costed *Integrated Investment Program* and the *Defence Industry Policy Statement*. Together, these policies provide the defence shipbuilding industry with greater certainty about the Government's key shipbuilding priorities and timeframes, and ensure long-term sustainability and viability of Australia's shipbuilding industry.

FASTER DECISION-MAKING

- 7.13 In line with Defence's *2015 First Principles Review*, any existing complicated, slow and inefficient processes will continue to be discarded in favour of simplicity, greater agility, timely delivery and faster decision-making. The *One Defence* business model will ensure effective decision-making and planning

and performance frameworks required to embed transparent and accountable corporate behaviour. Faster decision-making will continue to reduce cost and waste, enhance productivity and increase levels of trust with central Commonwealth Government agencies.

GOVERNANCE

- 7.14 Development of the Naval Shipbuilding Plan has been led by Defence, in consultation with departments including: Prime Minister and Cabinet; the Treasury; Finance; Immigration and Border Protection; Industry, Innovation and Science; and Education and Training, under the guidance of the Prime Minister and the Minister for Defence Industry.
- 7.15 Existing stakeholder engagement and governance bodies such as the Defence Investment Committee, the Commonwealth Inter-Departmental Committee on Naval Shipbuilding, and regular Commonwealth, State and Territory government meetings and working groups will continue to provide oversight on and direction for naval shipbuilding matters.
- 7.16 Implementation of each stage of the Plan will need to be carefully managed to make it work, and a strategic approach is required for the governance, management and delivery of the national naval shipbuilding enterprise. The independent Naval Shipbuilding Advisory Board, which has been established to provide expert advice to Government on all matters relating to the naval shipbuilding enterprise, will assist in identifying areas for further attention or adjustment by Government as the Naval Shipbuilding Plan is implemented.

NAVAL SHIPBUILDING ADVISORY BOARD

- 7.17 In October 2016, the Government announced the establishment of the Naval Shipbuilding Advisory Board chaired by Professor Don Winter. The Board supports the Government's oversight of the coordinated national effort required to implement the Naval Shipbuilding Plan, and create and sustain a long-term naval shipbuilding industry and supporting industrial base.
- 7.18 The Board provides expert, independent advice to Government on the implementation of the Naval Shipbuilding Plan and the performance of the naval shipbuilding enterprise, to identify any emerging challenges that may require further consideration by Government.

“The establishment of the Advisory Board is an important milestone in the Government’s naval shipbuilding strategy. The Advisory Board will provide expert, independent advice to Government on all aspects of naval shipbuilding as plans are finalised for establishing and sustaining a viable, continuous shipbuilding capability in Australia.

As Chair of the Naval Shipbuilding Advisory Board, Professor Winter’s expertise will be a valuable asset in supporting the Government’s plans for a secure, sustainable, long-term future for the Australian naval shipbuilding industry.

Importantly, the board’s establishment delivers upon the significant regeneration of the Royal Australian Navy’s capability outlined in the 2016 Defence White Paper.”

The Hon Christopher Pyne MP
Minister for Defence Industry

22 October 2016

WAY AHEAD

- 7.19 The Government has progressed key initiatives of the Naval Shipbuilding Plan. The critical milestones that have been achieved since the Government’s continuous shipbuilding announcement on 18 April 2016 are reflected in Figures 7.1 and 7.2.
- 7.20 The positive momentum needs to be sustained and carried forward, as further decisions are made and implemented for this national endeavour.

CRITICAL TIMELINES

- 7.21 Successful implementation of the Plan requires a concerted, timely and coordinated national effort to bring together the enabling elements such as naval shipbuilding and sustainment infrastructure, naval shipbuilding and sustainment workforce and an Australian industrial base. Together Figures 7.1 and 7.2 also provide an overview of the milestones across the naval shipbuilding enterprise.

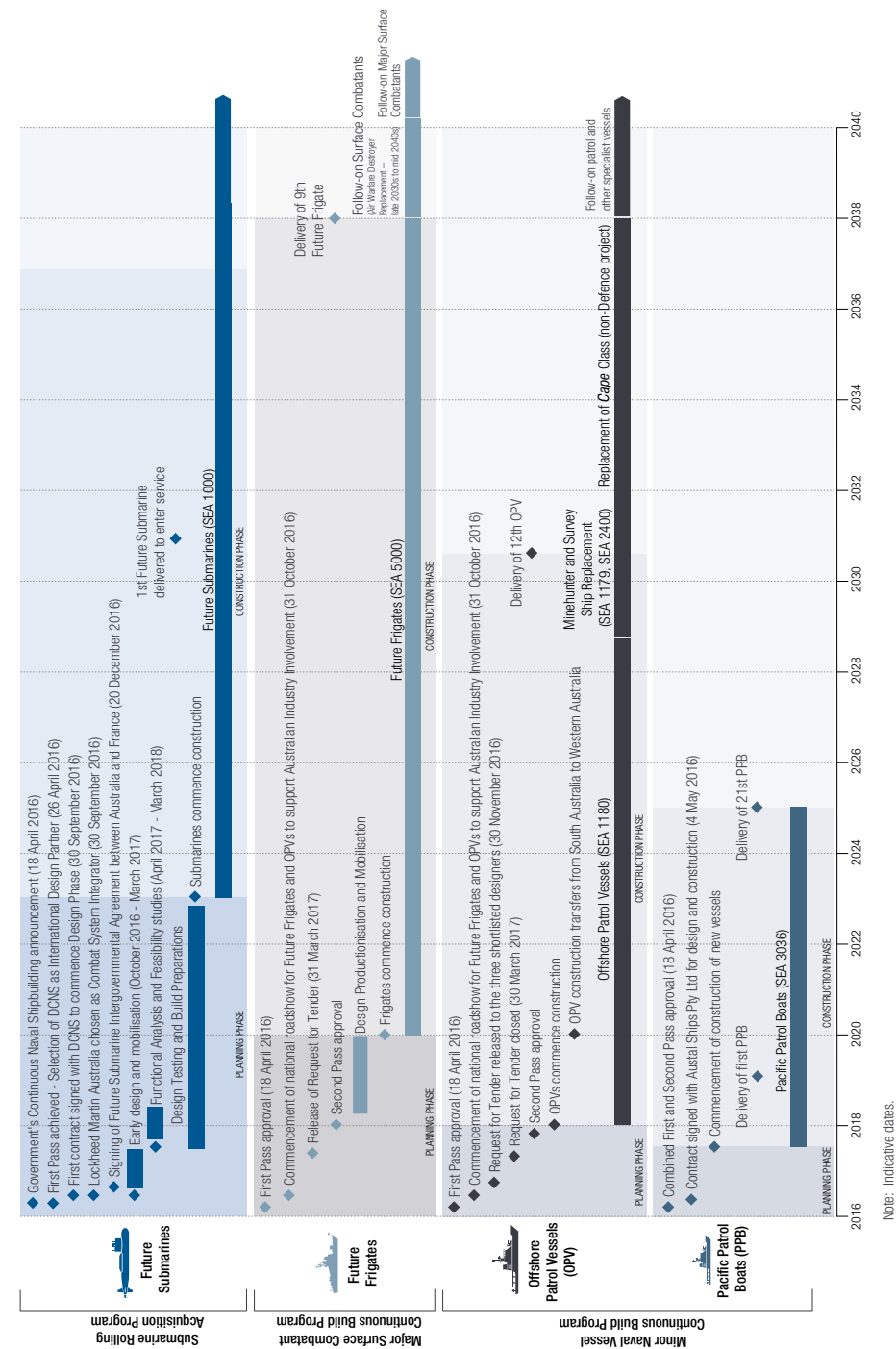


FIGURE 7.1 Implementation schedule for continuous build programs

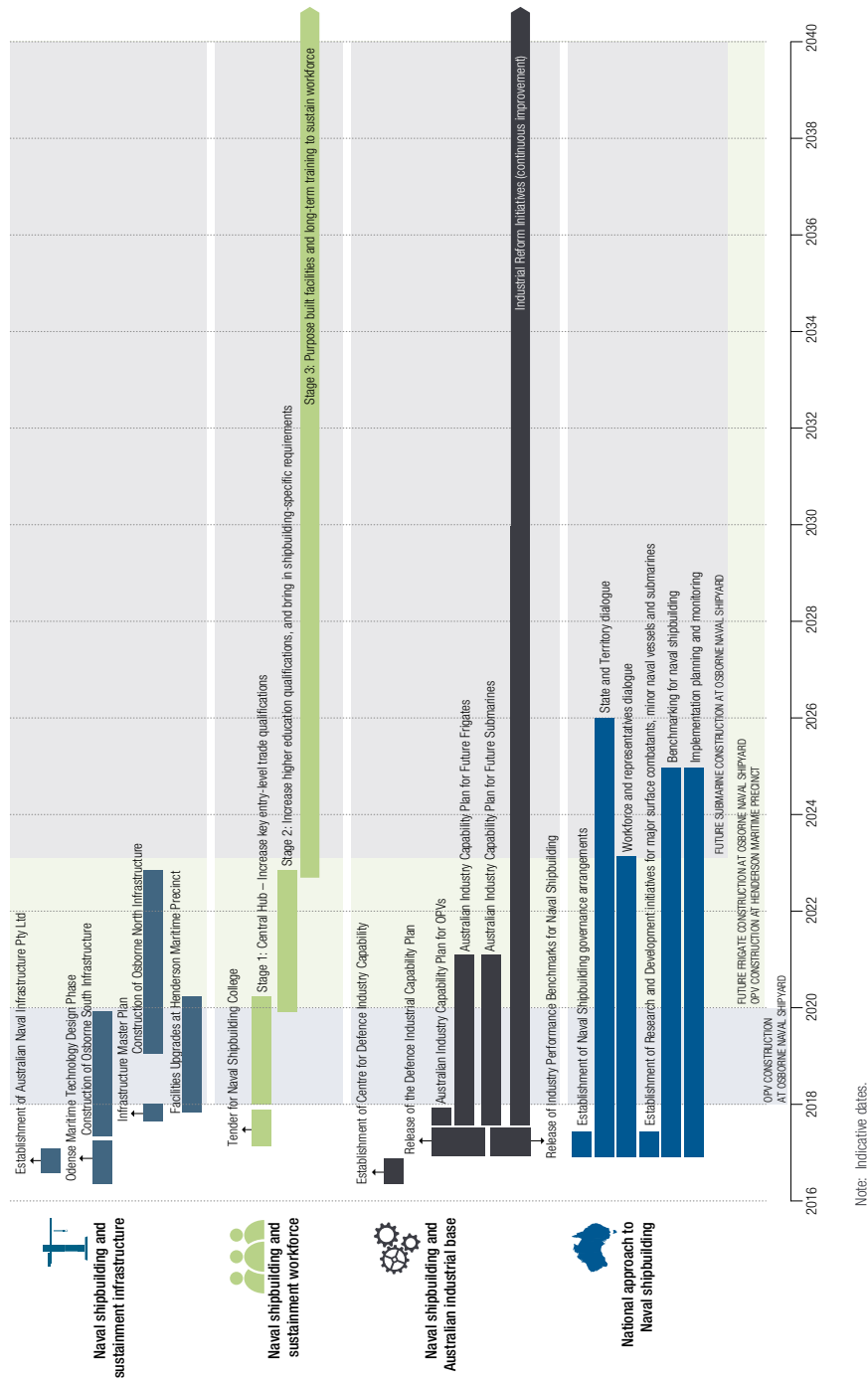


FIGURE 7.2 Implementation schedule for key enablers

MONITORING AND MANAGEMENT OF ACHIEVEMENT

- 7.22 Due to the national scope and unprecedented nature of the Naval Shipbuilding Plan it cannot be set in stone. There are many moving parts, and a change to one part of the Plan has the potential to impact on the progress of another part. The Government is adopting an active and innovative approach in ensuring security and defence policy remains agile, relevant and responsive.
- 7.23 To provide transparency and accountability, the Government will review the Plan and provide regular updates on its implementation, including through national security statements and naval shipbuilding updates to the Parliament.

FUNDING

- 7.24 The Government's investment in Navy capability and naval modernisation plans was a centrepiece of the *2016 Defence White Paper*. Investment in the Naval Shipbuilding Plan includes over \$89 billion in new naval ships and submarines and new investment in the order of more than \$1 billion in modern shipyard infrastructure for the rolling acquisition of submarines and continuous construction of major surface combatants in South Australia, and the continuous construction of minor naval vessels in Western Australia. Sustainment costs throughout the service life of future naval vessels will result in expenditure substantially greater than that invested in acquisition.
- 7.25 The *2016 Integrated Investment Program* of approximately \$195 billion over the decade to 2025–26, including already approved major investments, was developed within the agreed funding guidance for the Defence portfolio. Delivery of many investments made in the decade to 2025–26 will extend well beyond this decade.
- 7.26 The combination of the growth of the Defence budget to two per cent of Australia's Gross Domestic Product by 2020–21 and the continued investment in shipbuilding projects over the next few decades is a significant part of the Australian contribution to global peace and security.

“The Government’s Integrated Investment Program, released alongside the White Paper, will provide both Defence and Australian industry with the consistency and certainty they need to plan and implement what lies at the very heart of the Government’s plans – the largest force modernisation program in Australia’s history.

The spending is already fully costed within the Government’s funding plan. The program will not only provide a roadmap for the next 10 years, it also provides advice on broader investment plans in the following decade to 2036.”

The Hon Christopher Pyne MP
Minister for Defence Industry

7 December 2016

