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SPENDING BETTER FOR A STRONGER DEFENCE

How Australia could get more bang for its military buck

Victor Abramowicz

ECONOMICS

THE CENTRE FOR INDEPENDENT STUDIES

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Executive Summary

- The federal government must spend less and spend better (i.e. more efficiently) to balance the budget, meet its responsibilities, and deliver programs without cost blowouts.

- A key target is defence spending, which has grown rapidly to some $60 billion (bn) per annum today and should reach about $112bn by 2035/36, a total of around $887bn across the decade — a vast sum.[1]

- Defence procurement is particularly inefficient, with a long history of delivering projects over schedule, with cost growth, or both. And right now, the trend lines are getting worse while the system gears up to spend $425bn over the next 10 years.[2]

- The key drivers of cost and schedule growth are well recognised: a military preference for exquisitely capable weapons systems, often with requirements that cannot be met by off-the-shelf systems, and that are built in Australia even though existing production lines overseas could produce them more efficiently.

  - The AUKUS nuclear-powered submarine project alone will spend more than $48bn to 2035, and above $360bn to 2055, to deliver only eight extremely capable yet incredibly complex vessels.

  - Canberra has also extensively subsidised domestic defence production, with actual or planned support at up to $30m per job. Compared to the Australian car sector, which lost most government support from 2013-18, this equates to up to thousands of percent more assistance per role — and for less jobs overall.

- The trifecta of measures to fix these procurement issues is also well understood: controlling requirements, procuring military-off-the-shelf (MOTS)[3] equipment, and avoiding building complex weapons (notably naval vessels) in Australia.

- Yet that trifecta has not been implemented for reasons ranging from politics and bureaucracy to contestable economic and strategic arguments. But the time for delay is long past as Australia faces its worst strategic circumstances since World War II.

- This paper uses a fresh analysis to show that, with prompt government action, spending less and better could meet defence needs while saving up to $160bn and years of unnecessary delay (which risk Australia's security as old equipment is forced to continue in service). The key steps to achieving this are:

  - Employ civilian oversight of defence requirements. Canada has a system in place that provides a potential model.

  - Engage with risk sensibly by selecting equipment that meets minimum acceptable requirements and more liberally using waivers to avoid the need for Australianised or developmental weapons systems rather than off-the-shelf.

  - Conduct a holistic value for money assessment for the domestic naval construction program planned after the current batch of three *Hunter* class frigates, with a view to the benefits of instead building vessels overseas. Reverse the trend of duplicating foreign manufacturing capabilities in Australia or mandating unique local content.

  - Conduct almost all sustainment for military equipment in Australia.

- These steps will not only deliver capability earlier and save money, but also free funds to increase jobs, raise GDP, expand military capabilities, and grow necessary R&D and defence industry.

  - For the AUKUS submarine project, buying all the vessels from the United States (US) could still save some $140bn while still delivering the same number of units, with less risk to schedule, and reinvesting savings to create thousands of more job-years of employment compared to the project's current form.

- To achieve such benefits will require political courage and attention to reform from ministers, and uncomfortable changes within the bureaucracy — and the track record is not good. Yet such changes provide the best, and perhaps only, chance of securing Australia (let alone the other benefits) in our most challenging days since the 1940s.

Failure is not an option.

The Case for Spending Less and Spending Better

The federal government today faces increasing pressure to deliver on two complementary and important tasks — balancing the federal budget and increasing the efficiency of government spending.

On the burgeoning national budget, CIS economics program senior fellow Robert Carling has persuasively argued that Canberra's spending since 2012 has been expanding faster than productivity and economic growth, so consuming a larger share of national wealth. Ultimately, this makes current budget settings structurally unsustainable: you can't spend more than you make forever.[4]

Further, and prior to any fiscal implosion, increased spending must be paid for by taking on debt (which ultimately falls due) or raising taxes. Such spending and revenue raising measures (particularly when paired with inefficiency) produce a range of adverse effects which ultimately harm Australians' wellbeing — surely the opposite aim to that intended by Canberra. When government spends and taxes more, particularly to support inefficient rather than productive programs, the effects include a relative slowing of economic growth, falls in living standards, and preventing taxpayer dollars staying in the hands of citizens to be used as they would otherwise prefer.[5]

Despite this logic, there are enormous political incentives to ignore tightening spending control. Australians have shown a healthy appetite for government support, even financed by debt, and courageous is the minister seeking electoral victory on the prospect of reducing benefits or increasing taxes.

Separately there is the matter of increasing the efficiency of government spending — that is delivering the greatest amount of value to the public per dollar spent. The utility of this is not only self-evident but also a legal requirement. Ministers and officials alike need to ensure that public monies are spent in ways that are "efficient, effective, economical and ethical".[6] Further, the Commonwealth Procurement Rules that govern how federal entities buy goods and services state that *the* core rule is achieving Value for Money (VfM) — i.e. obtaining the "maximum value from the resources used".[7]

Finally, and practically, desired program ends cannot be delivered within allocated budgets, even growing ones, if they are consistently delivered inefficiently. If, for example, a procurement bungle or poor strategic decisions lead to cost growth or delays, then past a certain point there simply isn't the money to achieve what must be done. Hence projects are cancelled or delayed, scope is reduced, or funds are diverted from other needed areas to make up for mistakes made.

The Role of Defence

To spend less and spend better, the government departments with the most expansive, rising, discretionary, and inefficient budgets naturally have the greatest potential to contribute. And it is here that defence spending comes into play.

Before describing these matters in more detail, it is useful to briefly define what is being referred to when discussing the defence budget, as it covers more than just the Department of Defence. Indeed, formally, the overall Defence Portfolio is comprised of more than a dozen organisations that together are responsible for defending and advancing Australia's national and strategic interests. They do so primarily through acquiring and maintaining military and intelligence capabilities (equipment and personnel), conducting military and support operations as directed by government, and providing and executing strategic policy.[8]

The core entities that deliver these outcomes are the civilian-led Department of Defence; the military Australian Defence Force (ADF); the Australian Submarine Agency (ASA), responsible for Australia's nuclear-powered submarine (SSN)[9] project; and the Australian Signals Directorate (ASD), which provides signal intelligence services. Due to this responsibility, that these bodies consume the lion's share of the Portfolio's spending, and that they are collectively reported on in the Defence Portfolio Budget Statements, they are the ones referred to when discussing 'Defence' or the 'Defence budget'.[10]

For multiple reasons Defence is particularly attractive for, and necessary to, achieving the objectives of decreasing government spending and increasing efficiency.

Defence's budget is both inherently enormous and has experienced among the greatest increases since 2012, with an average compound growth rate of 7.3%[11] (note percentages in this paper reflect changes relative to existing baselines).[12] So, Defence has contributed disproportionately to the unsustainable rise in government spending, and thus its effective cost control is vital to achieving budget reductions.

To provide an idea of scale, in 2024/25 Defence was the fifth largest item of government expenditure, and its budget in 2025/26 was some $59bn in then-year dollars — a sum that made Australia the 17th largest defence spender in the world.[13] Further, the government has committed to increasing the Defence budget in real terms (i.e. ahead of inflation) from today's 2% of GDP to around 2.4% by 2035/36 (noting other methods of counting expenditure treat these figures as 2.8% and 3% respectively).[14] This represents a planned rise (including inflation) to around $112bn in 2035/36, with a spend across the decade from 2026 of around a staggering $887bn.

The Defence budget is also an attractive target for reduction due to being essentially a discretionary expense for Canberra: the government of the day decides how much it wishes to spend, under an annual appropriation. This is in contrast to budgets funded by special appropriations, where the amount of funding required is essentially outside the government's control. A classic example is the age pension: expenditure is determined by the number of citizens that meet the eligibility criteria, so the more pensioners there are, the more pensions that must be paid.[15]

Finally, Defence has a substantial, flexible, and often inefficiently administered budget element — the capability investment (or acquisition) program — that is thus particularly ripe for reform and so is the focus of this paper.

Defence's Contribution to Spending Less and Better: The Capability Investment Program

In overview, capability acquisition focuses on the procurement of major military systems such as jets, tanks, and submarines. In today's dollars, again accounting for inflation, the capability budget to 2035/36 is some $425bn, almost half of planned expenditure.[16] While vast, the program is also somewhat (in)famously inefficient. Defence has decades of form in delivering projects behind schedule (21 major projects were recently found to be a cumulative 404 months — more than 33 years — late).[17] As they develop, projects also often seek large growth in their provision (i.e. the estimated amount of funds to deliver the capability) or even go over their approved budget.[18]

Yet, it does not need to be so. While discussed in more detail in the following section, in short, various governments have commissioned reviews which have identified practical ways to reduce cost and schedule overruns. These include controlling the performance requirements for new equipment (compare buying a Honda rather than a Ferrari to meet a need for mobility) through to buying ready-made off-the-shelf weapons overseas versus building new factories in Australia to produce them from the ground-up.

Such options reflect the inherent flexibility with which new capability can be acquired. To the end user, it matters little whether the ship, plane, or tank was purchased overseas from an existing production line or developed from scratch and built domestically: ultimately, a spade is a spade. This is in contrast to the other main parts of the Defence budget; sustainment and personnel. These are far more inflexible and can practically only be largely diminished by reducing Defence's ability to defend Australia, which somewhat defeats the purpose of the spending in the first place.[19]

The potential scale of savings and possibilities for practical implementation make acquisition reform important to meet the structural and regulatory requirements for spending less and better. It is also necessary for Defence to deliver on its practical material obligations to government and Australians.

The latter point is perhaps the most important: reforming procurement is not so much about spending less per se (though this is useful) but on improving VfM to deliver the most defence capability per dollar spent. This is vital to defend the nation. When projects' provisions grow, or they run over budget, either in a set year or especially overall, the main options are to reduce the project's scope (such as buying fewer jets), delay the project (so monies are spent in later years) or to consume funds from other acquisition efforts — which in turn must reduce scope or be delayed. These measures are so that Defence's overall budget does not blow out.

Yet these are all bad outcomes. If scopes are reduced this results in some overall decrease in strategic potency. If projects run late, the ADF and the nation must rely on older equipment remaining in service longer, again placing Australia at greater risk.

In contrast, saving money and schedule, if it delivers the same or similar capability, in fact it increases capability and national security. More systems can be bought and placed into service earlier. Entirely new projects can also potentially be funded.

Instead, as it stands poor capability management has led to the awkward situation where Defence has both too much money and too little, resulting in wasted resources and decreased security. Those projects which run late cannot spend their allocated funds fast enough, even with this being offset to some degree by those that have budget overruns.

As a result, Defence cannot meet its spending targets for acquisition and money goes to waste and capability is not ready on schedule.[20] At the same time, new priorities arise that require funding, or existing vital projects' needs grow so greatly that they are paid for in part by delaying, de-scoping, or cancelling other capabilities,[21] not least as the amount of money available from project delays is unpredictable.

In short, Defence seems unable, without substantial efficiency reforms in capability investment, to deliver its weapons systems programs on-time and on-budget within either its existing or expanded future funding provision. And this poses a real practical risk to the security of the nation. Considering that government has been warning for years that Australia faces the worst, and worsening, strategic situation since World War II — and indeed that very situation justifies Defence funding increases — improvements in capability delivery need urgent attention.[22]

Options for Reform

The capability investment program clearly then has a great need and potential for improvement. So what can be done to increase the efficiency of the system, and if problems and solutions have been diagnosed before, why haven't they been effectively implemented? To answer these questions requires a brief discussion of the capability investment process itself, an exercise which also usefully situates the discussion in the later sections of this paper.

Capability investment is broadly comprised of two stages: capability development (deciding what to buy) and then capability acquisition (obtaining the system).[23] These stages are conducted in three steps, each of which offers the potential for reform in different and more-and-less feasible ways:

1. **Force Structure Development:** this step determines the future force structure (the numbers and types of major systems) required by the ADF to meet its objectives against current and future threats. It may determine that, for example, additional fighter jets are required, less or more submarines, and that tanks have become superfluous. Force structure development is fundamentally conducted by uniformed personnel, informed by intelligence assessments, using techniques including wargaming and modelling and simulation.

   The role that force structure plays in cost control is foundational. The more expensive systems of a certain type that are sought (noting submarines cost more than tanks), then, all else being equal, the greater the funding required. Yet despite the appeal of investigating force structure, this paper does not consider it further due to the great difficulties in doing so rigorously. It is exceedingly difficult to show, for example, that one jet provides more security than say two tanks, or any number of permutations.[24] To that end, force structure is not further discussed.

2. **Requirements Setting:** Once the outlines of force structure are determined, the requirements for the equipment to be acquired must be defined.[25] Requirements can broadly be broken into capability performance (how fast must a jet fly, how reliable must a tank be), regulatory (such as environmental compliance), and other measures (such as that the system must have maximum Australian industry involvement). Capability requirements are set by the ADF, as the professional end-user of the equipment, with regulatory and other requirements influenced by legislation, other government departments, and (in practice) often ministers' input.

   Requirements, particularly performance requirements, have an important impact on cost in two main ways. Firstly, higher performance simply requires higher cost: a Ferrari is more expensive than a Honda. Further, if requirements cannot be met by existing equipment, then they can drive acquisition strategy (Step 3, below) to go beyond off-the-shelf to instead increasingly modified-for-Australia ('Australianised') or even entirely new developmental systems.

3. **Acquisition:** Once requirements are determined, a review of military equipment will show whether they can be met by procuring existing off-the-shelf systems, or whether an Australianised or developmental approach is required.[26] Further, typically various systems with differing degrees of performance will meet requirements (at increasing costs) from low but acceptable levels to being highly capable.[27] A decision also needs to be taken about whether the desired system will be produced overseas or domestically, and to what degree. For example, a fully off-the-shelf unit in production in Italy could have an entirely separate and identical factory built to manufacture it in Australia.[28] In terms of acquisition paths and issues of local production, these are questions much more controlled by civilian areas within Defence and also influenced by ministers.

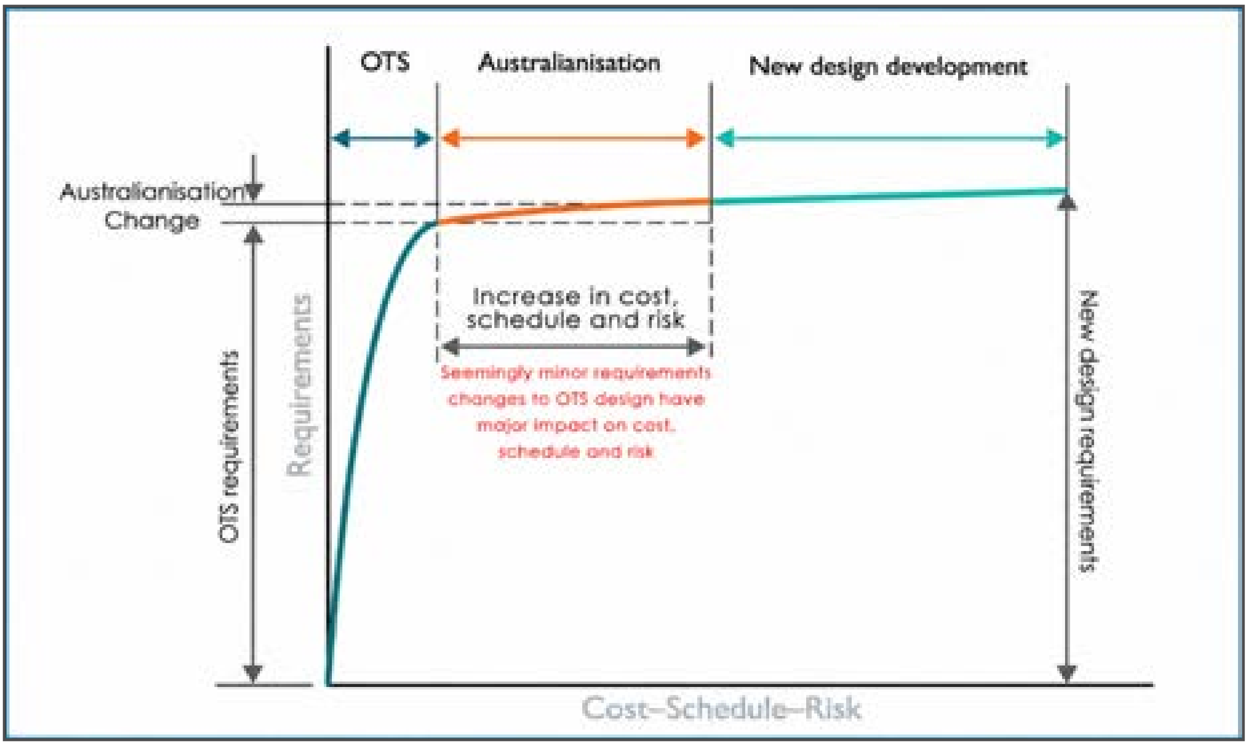
   Acquisition approaches too have an obvious impact on cost. A lower performing (but still acceptable) system can be much cheaper than an exquisite 'gold plated' unit. Also, off-the-shelf equipment can be acquired at less cost than engaging in the engineering work to deliver Australianised or developmental systems. Likewise, existing production lines are far cheaper to use than building new factories from scratch. Even if similar facilities exist both in Australia and overseas, foreign sites with consistent workflows and other structural benefits can often bring substantial economies of scale in producing the same equipment. For example, a major review found that Australian-built naval vessels were on average 30-40% more expensive than foreign-built equivalents, and even at best with sustained investment would still be around 20% more costly.[29]

Noting force structure is not considered further, the remainder of this paper focuses on the interaction of requirements and acquisition. And, unsurprisingly, the greatest cost and schedule benefits arise in projects that apply the trifecta of controlling performance requirements (rather than aiming for the stars); procuring acceptably capable (rather than gold plated) off-the-shelf equipment; and if the preferred systems are available from overseas, not unnecessarily building them in Australia. So, the trifecta generally delivers the best VfM, despite more complex efforts to do so by Defence.[30]

Cost and schedule benefits are both individually important and also combine to create greater advantages. For example, various reviews of major projects have found that off-the-shelf, Australianised, and developmental projects have respective average schedule slips of 13, 38, and 96 months respectively; with these categories also showing 6%, 25%, and 45% cost growth.[31] These trends are adroitly captured in Figure 1 below, based on the 2008 Mortimer Review into Defence Procurement and Sustainment.[32]

Further, an important note in considering any lower-performance, off-the-shelf, and nonAustralian approach is that almost all requirements can be modified or even waived (with appropriate approvals), and that performance needs exist on a spectrum from an acceptable baseline to an ideal level. Indeed, the Mortimer Review emphasised that while operational requirements must be met, doing so must be tempered with the realities of cost, risk,

Fig 1: Impact of Performance and Acquisition Approach on Cost, Schedule and Risk



Source: Based on Australian National Audits Office data. https://www.anao.gov.au/work/major-projects-report/2020-21-major-projects-report and what is available as off-the-shelf, and that regulators should consider carefully which deviations from standards might be acceptable.[33]

Finally, it is important to note that a trifecta approach does not require (and nor does this paper recommend) accepting inferior capability requirements, divesting Australia of its defence industry, or refusing to develop new capabilities here. Indeed far from this, the trifecta allows for a stronger ADF, more local industry, wider employment, and greater R&D spending for new defence technologies for Australia and exports. This stems from cost and schedule savings being able to be applied quickly to deliver key capabilities and fund ongoing improvements. These points are discussed in detail further below and also summarised in Box 1.

Box 1: What this Paper (and the Trifecta) does not Propose

- This report supports a trifecta approach being applied to Defence acquisition projects: controlling requirements overall, selecting off-the-shelf systems of acceptable performance, and harnessing existing overseas production capacity rather than ‘reinventing the wheel’ by creating duplicate fabrication facilities in Australia.
- This approach might appear to imply the acceptance by Defence and the ADF of unnecessary risks to personnel and mission success (by accepting lower requirements) and to argue against Australian defence industry writ large.
- In fact, nothing could be further from the truth. The trifecta does not require such outcomes, and this paper does not suggest them. The trifecta aims to avoid unnecessary duplication and in doing so use freed funds to support necessary or beneficial local capability development and defence industry.
- The aim of this paper is not austerity but delivering more military and ultimately industry capability, more quickly, for the same cost. Indeed, as discussed subsequently in this report, the trifecta is based on and enables:
  - Sensible acceptance of capability risk, with a view to ongoing performance improvement by system upgrades.
  - An enhanced and expanded ADF via the earlier delivery of suitably performing and more cost-effective systems, with an associated scope for increasing military force structure by investing resulting savings.
  - An expanded Australian defence industry, particularly in the vital areas of capability sustainment, which must remain locally to maintain an existing or ideally expanded ADF; and R&D, to develop and produce novel and entirely indigenous technologies, munitions, and major systems.
- More broadly a trifecta approach accepts and supports local production of complex systems as and when it is cost effective to do so. This provides considerable scope for the development of new defence production capabilities, especially in areas of novel technological development where there are few international competitors and so limited existing manufacturing.

Why aren't things better?

The above discussion presents a puzzle. Clearly, there is potential to improve capability investment performance by pursuing the trifecta, and the scope to do so exists based on the ability to be flexible with requirements, to procure off-the-shelf systems, and to have these built overseas.

Further, multiple reviews across decades (commissioned in response to Defence's poor performance) have proposed just such approaches, notably regarding controlling requirements and focussing on off-the-shelf, and had their recommendations broadly accepted by government.[34]

Yet Defence officials retain an appetite for Australianised and developmental projects, and ministers remain supportive of Australian industry in general and naval shipbuilding in particular (ships and submarines are the main types of major military system able to be largely manufactured in Australia).

Indeed, Australian National Audit Office (ANAO) reporting from 2021 — the last year that off-the-shelf, Australianised, and developmental systems were broken out — showed ever-increasing numbers of the latter two categories.

For example, of the 16 projects approved to proceed since 2014, three (19%) were off-the-shelf, six (38%) Australianised off-the-shelf, and seven (44%) developmental. This trend is also captured in Figure 2 based on the same report.[35]

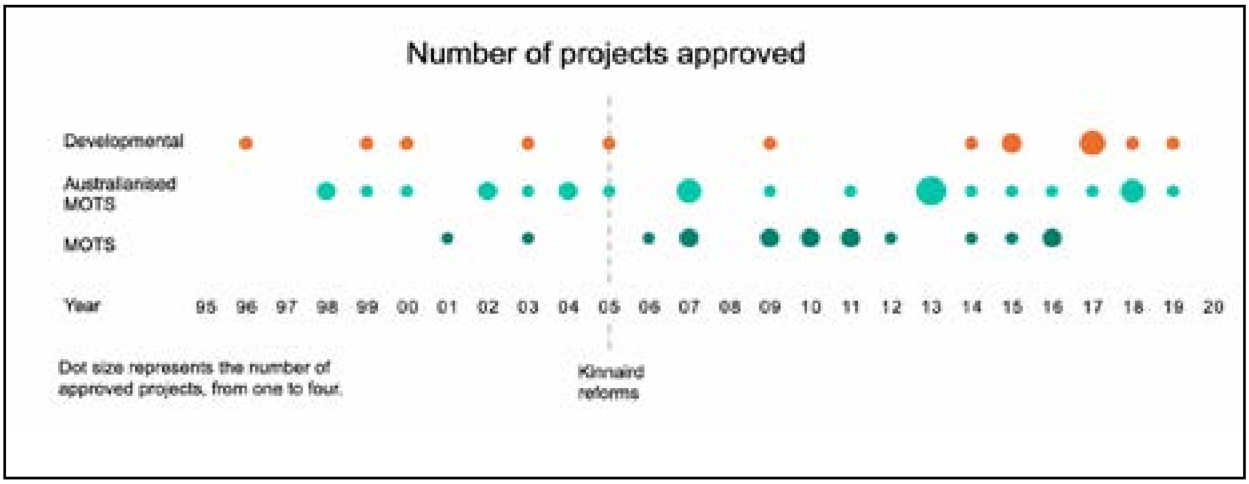
This trend continues in the most recent government documents. For example the 2024 Defence Industry Development Strategy notes that Canberra intends to increase the mandatory use of Australian companies in supporting the Sovereign Defence Industrial Priorities (SDIP).[36]

If this leads to Australianisation (by requiring domestic systems to be added to foreign-designed platforms) then greater costs and delays can be expected.[37] Also, Australianisation (and unnecessary local build) may occur ever-more widely as while the SDIP are meant to cover a defence industry subset that is vital to be based in Australia, in fact they align to older policies that, in defining 'vital capabilities', shifted the portion of local defence industry so-defined from 20% to 80% of the sector.[38]

Why has this result occurred? The reasons are diverse and complex.

On the level of officials (ADF personnel in particular), there remains an understandable and strong drive to set the maximum possible performance requirements, regardless of then needing Australianisation or developmental work done.[39]

Fig 2: Trends in Defence Project Acquisition Type



Source: Based on Australian National Audits Office data. https://www.anao.gov.au/work/major-projects-report/2020-21-major-projects-report

This reflects that new equipment will be in service, often for decades, so high performance helps deliver enduring value, and that high performance also helps assure that Australian lives are saved and mission success is more likely — the very purpose of Defence.

Further, Defence's own capability development system requires the testing of force design options against the most challenging scenarios for the same reasons, hence there is an in-built structural drive towards defining the highest performance requirements.[40]

While such incentives are understandable, their effects are adverse. When capability is delayed (or even becomes infeasible and is cancelled) then the ADF, Defence, and the nation must do without it for longer and so assume risk. Further, as discussed above, the impact of these delays on managing the budget may cause *other* projects to be reduced, postponed, or even cancelled — again harming capability and Defence's ability to fulfil its purpose. And, of course, this is in addition to high requirements hampering efforts to reduce spending or increase efficiency.

On the ministerial side, one obvious driver is politics. For example, South Australia in particular bills itself as "The Defence State" and derives important economic benefits from naval shipbuilding at the Osborne South and North facilities near Adelaide.[41]

A federal minister trifles with such sensitive matters at their electoral peril. Further, local defence spending is an easy 'win' for governments in power, as discussed below.

So, governments across decades have put forward arguments about the importance of supporting the domestic defence industry and especially naval shipbuilding. The rationales have included stimulating the economy, creating jobs, supporting export revenue, technological development, assuring sovereignty, increasing national resilience and the speed of access to capabilities. Importantly, such arguments have almost always focussed on the positive aspects of supporting domestic industry rather than a balanced and holistic appraisal against likely costs.[42]

These positions, however, have consistently been found to be contestable.[43] Multiple analyses have shown that, taking a holistic view, any economic benefits are doubtful compared to Canberra supporting more productive areas of the economy.

Indeed, funds shifted from one sector to create jobs in defence industry may result in net *decreases* in national employment due to roles lost elsewhere. Separately, arguments on sovereignty are debatable when key elements of major systems (such as weapons, sensors, and computers) are made overseas.

And noting the demonstrable delays that arise from developing new systems (in Australia or otherwise) compared to off-the-shelf, it is unclear on what basis local weapons (which by and large do not exist except as concepts) are meant to become more readily available than existing ones.

Further, to the extent that an expanded local defence industry makes strategic sense, it should centre on capabilities that should or must be located in Australia to provide benefits unavailable from overseas. Yet such areas, including the sustainment of platforms or the independent supply of advanced munitions, gain less attention than building redundant capabilities such as shipyards or factories for armoured vehicles.

To emphasise the differences between the above noted preferred arguments and counter-arguments, they are summarised in Table 1 on the next page.

Table 1: Arguments and Counterarguments for Domestic Defence Industry

Arguments For	Arguments Against
Stimulate economic growth by building defence industry	Building defence industry inefficiently grows the economy as the sector is almost entirely dependent on government spending. The same amount of funds spent on industries that are more self-sustaining will give greater growth. For example, a $1m item of defence-specific machinery must be funded by Canberra. If an equal value commercial unit brings in $0.8m of revenue, $1m may fund five machines.
Create defence sector jobs	As above. Canberra supporting more commercial industries delivers more jobs, while shifting funds from such sectors to Defence can lead to net national job decreases. Federal support to certain industries can deliver some 62 jobs per $1m invested.[44] Yet as shown in this report's Table 5, some Defence projects have required $30.2m for one job.
Export revenue	The global defence sector is well developed with diverse and entrenched incumbents with captive local markets and competitive and well-developed products. Australia has historically done poorly in defence exports and would require vast investment to only match most existing products.
Support technological development	Defence equipment uses specialised capabilities with comparatively little relevance to wider technologies.
Assure sovereignty (No dependence on overseas technologies)	Even Australian-built major systems (such as ships and submarines) are deeply reliant on overseas equipment (weapons, computers, sensors etc) to function. The cost to develop fully independent systems is essentially infeasible.
Assure capability (Build locally to assure the ability to sustain in peace and war)	The ability to build equipment is no more relevant to sustaining it than building a car in Japan prevents it being serviced in Australia.
Increase national resilience (Reduce reliance on overseas systems)	Key systems will remain sourced from overseas. Some domestic production of weapons may decrease dependency on overseas supplies.
Increase speed of access to capability (Australian industry can meet Canberra's needs more quickly than waiting in global queues)	Major systems take years to manufacture on existing production lines using skilled workforces, let alone building new facilities and training workforces. Weapons production may increase speed of access to munitions but only if entirely built domestically.

Two further points relate to shipbuilding in particular. Firstly, the infrastructure and personnel skills for submarine and especially surface ship construction are distinct from those for sustainment (i.e. maintenance, repair and upgrade work). Shipbuilding capabilities require much larger, more expensive, and bespoke facilities — and up to 70 times more labour — than is needed for sustainment. Since Australia already has a strong maintenance and repair capability, shipbuilding infrastructure and workforce (and the associated investment) is unnecessary to sustain the fleet.[45]

Secondly, the additional benefit ('multiplier effect') that flows to local economies from domestic shipbuilding is around 76% on top of the build cost. Hence should domestic premiums exceed this (which they often do), greater returns can be achieved by buying overseas and reinvesting funds saved into equally or more productive local sectors — of which there are many. [46]

Yet despite such counterarguments being well documented, and governments notionally agreeing with recommendations for increasing off-the-shelf acquisitions, it is clear that Australianisation, local development, and local production remain firm favourites. The incentives to support them are evidently too strong.

The Cost of Reinventing Wheels: Capability, Industry, R&D, and Munitions

It is worth emphasising the costs such trifecta-opposed approaches bring to the nation and industry, particular when they support unnecessary local builds of what *could* be bought more cheaply overseas. Because while such projects create capability and employment, they do so by reinventing a very expensive wheel. In doing so they take funds from capability, industry, and R&D that *should* or *must* be done in Australia. Thus, such approaches rob Peter to pay Paul, ultimately causing more harm than good.

Regarding capability, as shown in more detail later in this report, the costs of building domestically are enormous — in shipbuilding often double that of overseas. And money spent thus could instead be spent on more assets. For example, if you halve the cost of buying a ship, then all being equal you can afford two ships.

This might appear a force structure question that this paper had committed to avoiding (why would the ADF need twice the number of ships, or any platform it has?) and indeed it is, to a degree. But it's also true that militaries rarely turn down the chance to expand their asset base, and the numbers themselves are often highly contestable.

Consider that for the past 20 years' or so the number of the Royal Australian Navy's (RAN) Major Surface Combatants (i.e. its key warfighting ships) has been 11: eight *Anzac* class frigates and three *Hobart* class Air Warfare Destroyers (AWD). Yet the 1987 Defence White Paper identified a need for 16-17 MSC.[47] And until the 2024 Surface Fleet Review (SFR), the RAN's future was to be 12 MSC, yet after the review it's to be 20.[48] So, uses and justifications for more equipment can clearly be found.

Buying overseas to deliver a larger fleet more quickly also brings disproportionate benefits in availability to the ADF and industry. Consider a project that delivered a fleet of foreign-built, new ships in say 10 years in total — compared to an Australian project that delivered it in 20 (a fair estimate when building the shipyard and starting vessels from scratch).

While there's only a 10 year absolute gap between the delivery of the last overseas vessel versus the domestic one, the foreign ships provide 85 more unityears (a 42% rise) of service over the same period (unit-years being the total time that all the ships have been in service). This is because at the end of the 20 years the first foreign ship has operated for 19 years while the first domestic one has been there for 12. And if the foreign fleet was 20 vessels, the increase is 116%, as shown in Table 2.

Such an outcome, with a greater number of more modern ships in service for longer, not only benefits the ADF and Australia, it also supports industry. The more units in service, the more need (all else being equal) for sustainment to keep everything running. The 20 ships would require 40% more sustainment job-years (i.e. the total years worked by all sustainment roles to support them) than the 10 ship domestic fleet, again shown in Table 2. And these are jobs that *must* be in Australia. Of note while the build would deliver more job years overall, it's at the cost of these being unnecessary to deliver the capability, and a fraction of the equally skilled and well-paying jobs that could be created elsewhere with the same investment.[49] When seeking to optimise VfM (the most outcome for the resources invested) a foreign build is demonstrably superior.

Table 2: Years in Service: Overseas and Domestic Production

Example project	Years for Delivery & Years of Service	Gains in Absolute & Unit-Years	Sustainment Job-Years (% gain)
10 domestic ships	20 & 60	0	2,000
10 foreign-built ships	10 & 145	10 (50%) & 85 (42%)	2,000
20 foreign-built ships	20 & 190	0 & 130 (116%)	2,800 (40%)

Notes: Domestic presumes a 3-year shipyard build, five years for first vessel, 16 months per ship thereafter. Foreign build presumes one vessel delivered every 12 months. Sustainment presumes 100 annual jobs per 10 ships and is purely indicative; the results would scale with workforce size.

A further cost is the impact on R&D, for Defence in particular. Compared to similarly developed nations, Australia invests some 1.7% of GDP in R&D compared to an average of 2.7%, and small but powerful defence players such as South Korea spend 5.1%.[50] If Canberra *does* wish to develop a truly competitive local defence sector, this requires more investment in the research conducted in universities, government laboratories, and the private sector to develop truly worldleading systems. Spending billions to recreate infrastructure and equipment that can be procured far more cheaply takes away from such efforts; and Australian R&D also brings higher economic multipliers.[51]

Also, reinventing the wheel takes money away from where genuine sovereign capacity is severely lacking: guided munitions, including armed drones. As the war in Ukraine and the United States' (US) efforts against Iran have shown, modern conflict consumes staggering quantities of guided weapons. In any future war, or to deter one, as an island nation in a maritime environment Australia is likely to require vast quantities of locally made, Anti-Ship Missiles (AShM) in particular. Yet presently, Canberra's domestic investment in this area is around $850m and focussed on exceptionally capable but also costly weapons such as the Naval Strike Missile (NSM), priced at some $3.2m apiece. While these will eventually be made locally at up to 100 rounds per year, there is a lack of clarity to what degree all necessary technologies for these complex weapons will be built in Australia (leaving the potential for supplies to be cut off).[52]

A better option would be licensing cheaper, simpler, foreign weapons (such as the US Barracuda-500, 89% less costly than the NSM at $367,000 each) or supporting the R&D of fully domestic equivalents, and building them in the thousands. Such mass manufacture optimised systems are far easier to produce entirely domestically (precisely why Taiwan has contracted to build them locally) [53] and while they have lower performance than the NSM, they remain broadly comparable.

Further, such weapons force an adversary to fight not only capability but arithmetic.

That is, an ADF with 100 NSM to fire at an opposing fleet protected by 500 interceptor missiles is ultimately (and not unreasonably) relying on some NSM making it past the defences.

But an ADF with a 1,000 cheaper AShM will sink that adversary by weight of numbers alone. And do so while building a broader local defence sector with greater economic benefits. Further, at the prices involved, vast and *necessary* local munitions production could easily be funded for the cost of some expensive *unnecessary* domestic platform manufacturing — as shown in the next section.

Charging at Windmills and Considering Opportunity Cost

Despite such benefits, there has clearly been resilient resistance by officials and ministers to implementing the trifecta of changes needed to improve the capability program. As such, this may make further efforts to stimulate reform appear a dead end.

Yet the importance of the task at hand demands ongoing effort. And there are, in fact, novel avenues that have been rarely pursued and may prove persuasive. In particular, one little-utilised approach is to attempt to quantify the opportunity cost, especially in time and money, that mixes of high requirements, Australianisation, and domestic production have imposed on projects in comparison to overseas built off-the-shelf options.

Such a 'capability comparison' analysis can capture the adverse effects that otherwise can only be guessed at and so provide a real basis for arguments to pursue reform. Such an assessment also goes a step beyond other works that, for example, tend to only compare Defence projects' actual performance against their planned goals and hence do not capture the scale of benefits a different approach may have brought.[54]

Further, such a review offers the potential to hold governments to their own standards. For example, in 2015, Ministers advised Defence that a 30-40% local shipbuilding premium was unacceptable.[55] While today's government may hold a different view, an analysis of opportunity cost at least offers the potential to ask ministers what threshold would be intolerable — and then to hold them to it.

The reason capability comparison approaches are rarely taken, however, is that they are fraught with risk and the potential for error. Issues include the uncertainty that any mooted 'equivalent' or 'acceptable' capability would actually have been found so by Defence; the availability of cost and schedule data for such systems; and the fidelity of such information even if it can be found. When comparing costs in particular, the task is Sisyphean: different nations include different aspects in contract values or government provisions, and the prices of identical systems change based on the year used, inflation, and exchange rates.[56]

Further, truly off-the-shelf purchases are almost impossible. Defence at the very least would need, say, ships procured from Japan (such as the recently announced General Purpose Frigates (GPF) to be closely based on Tokyo's *Mogami* class vessels) to have their documentation and outputs from ships' system translated into English.[57] At some point, such changes may cease being off-the-shelf.

Additionally, accepting minimal change to reduce risk in the short term can impose costs in the long term. So, if Defence chose a truly off-the-shelf *Mogami*, it would need to accept these ships' current missiles, which are different to those on other ADF vessels. Accepting the Japanese weapons would save on integration costs for adding the Australian missiles but would entail separate training, weapon handling, and storage requirements down the line — all at additional unknown expense.

Despite these limitations, which may make capability comparison feel like charging at windmills, in fact careful selection of projects allows many of these constraints to be mitigated. This is because there *are* projects where international costs are more robust, where Defence *has* indicated the platform (ship, jet, tank) was notionally acceptable, and where reasonable estimates *can* be made regarding schedule. Further, of these examples there are instances where the scale of the opportunity cost is so large that even errors in the tens or scores of percent would not fundamentally affect the viability of the conclusions. In short, defensible indicative answers can be generated.

Seven Capability Comparison Projects

It is precisely such an approach that was used for this report. Seven principally naval[58] Defence projects were compared against feasible off-the-shelf exemplars[59] to determine the opportunity costs involved to deliver baseline acceptable, similar, or even identical capabilities. And the results are extraordinary.

While the outcomes are summarised in Tables 3-6, and further discussed below and in Annex A, up to $228bn and over 300 years of in-service time could have been saved using off-the-shelf approaches (unless otherwise stated, all sums related to the Tables are in average FY24/25 'constant dollars' rather than inflation adjusted 'out-turned' dollars[60]). Further, mixes of trifecta issues have led to projects having various outcomes such as being cancelled and losing 97% of the $1.8bn already invested in them; experiencing 60% cost growth (over $20bn) over two years; or becoming so unaffordable that they faced being unable to deliver their scope despite being among the most well-funded efforts in Defence history.

The picture is no better when considering the economic arguments put forward over time. For Defence projects, Canberra has spent 250-525% more in subsidies per-job, per-year ('job-years') than what might well have sustained Australia's car manufacturing industry between 2013-18, with these figures rising to some 665-1,050% when considering the forthcoming SSN.[61] Further, such spending has delivered poorer relative results in terms of jobs growth. Compared to the vehicle sector, governments have spent from 40-388% *more* on the manufacturing elements of Defence projects which have produced 24% to 73% *fewer* job-years.

Of the $228bn and 300 years of in-service time that could have been saved, some $68bn and all the historical schedule is now lost. But the good news is, up to nearly $160bn, and untold years of further delay, can still be harvested by prompt action from Canberra. Further, by taking a trifecta approach to the (admittedly behemoth) SSN project alone, the government can have a world-leading submarine capability, dramatically reduce schedule risk, and save well over $100bn out-turned. And that sum if invested even partially effectively in the economy could create 50,000-270,000 more job-years over the same period than building the SSN locally would be able to achieve.

All this information and more is in Tables 3-6 on the following pages. Each table is followed by a brief description of its contents and a discussion of results. More detailed guides to interpreting the tables, together with information on the data, methodology, and projects they contain, is at Annex A.

Table 3: Opportunity Cost Comparison — Funding and Schedule

<table>
<tr><th colspan="6">Australian Project Data</th><th colspan="6">Capability Comparison (Overseas Build)</th></tr>
<tr><th colspan="2">Project Details</th><th colspan="2">Costs ($m)</th><th colspan="2">Key Risks & Deficiencies</th><th colspan="3">System and Estimated Costs</th><th colspan="3">Australian Premiums / Savings</th></tr>
<tr><th>Designa-tion</th><th>Deliverables</th><th>Per Unit</th><th>Overall</th><th>Cost ($m)
Schedule
Capability</th><th>Causes</th><th>System</th><th>Per Unit</th><th>Overall Cost</th><th>Per Unit $ & (%)</th><th>Overall $ & (%)</th><th>Schedule: Absolute / Unit-years</th></tr>
<tr><td rowspan="3">AUKUS SSN</td><td rowspan="3">8 SSN</td><td rowspan="3">TBD</td><td>179,100-269,100</td><td>Costliest Ever Project</td><td rowspan="3">•Require-ments
•Non-MOTS
•Local Build</td><td rowspan="3">US MOTS Virginia</td><td rowspan="3">7,875</td><td>108,500-124,700</td><td colspan="2">70,600-144,400* (65-116)</td><td rowspan="3">Risk Reduction</td></tr>
<tr><td rowspan="2">261,200-392,400</td><td>TBD</td><td rowspan="2">151,600-174,300</td><td colspan="2" rowspan="2">109,600-218,100* (72-125)</td></tr>
<tr><td>TBD</td></tr>
<tr><td rowspan="3">LAND 400 Phase 3</td><td rowspan="3">129 Infantry Fighting Vehicles (IFV)</td><td rowspan="3">27.4</td><td rowspan="3">5,394</td><td>Highest Cost</td><td rowspan="3">•Require-ments
•Non-MOTS
•Local Build</td><td>Swedish CV90-IV</td><td>16.6</td><td>3,604</td><td>10.8 (65)</td><td>1790 (50)</td><td rowspan="3">Risk Reduction</td></tr>
<tr><td>High Risk</td><td rowspan="2">German KF41</td><td rowspan="2">18.2</td><td rowspan="2">4,058</td><td rowspan="2">9.2 (50)</td><td rowspan="2">1336 (33)</td></tr>
<tr><td>Mobility Lethality</td></tr>
<tr><td rowspan="3">SEA 1000</td><td rowspan="3">12 Soryu Class diesel-electric submarines (Aust'ised)</td><td rowspan="3">1,368-2,104</td><td rowspan="3">32,817</td><td>TBD</td><td rowspan="3">•Non-MOTS</td><td rowspan="3">Japanese Soryu</td><td rowspan="3">552</td><td rowspan="3">8,616-13,248</td><td rowspan="3">816-1,552 (148-281)</td><td rowspan="3">19,572-24,202 (148-281)</td><td rowspan="3">Risk Reduction</td></tr>
<tr><td>TBD</td></tr>
<tr><td>TBD</td></tr>
</table>

Australian Project Data						Capability Comparison (Overseas Build)					
Project Details		Costs ($m)		Key Risks & Deficiencies		System and Estimated Costs			Australian Premiums / Savings		
Designa-tion	Deliverables	Per Unit	Overall	Cost ($m) Schedule Capability	Causes	System	Per Unit	Overall Cost	Per Unit $ & (%)	Overall $ & (%)	Schedule: Absolute / Unit-years
SEA 1000	12 *Attack* Class diesel-electric submarines	2,183-3,358	52,400	Req: 24,175 Acq: 3,538 Sus: 7,340 25 months TBD	•Require-ments •Non-MOTS •Local Build	Japanese *Soryu*	552	8,616-13,248	1,631-2,806 (295-508)	39,152-43,784 (296-508)	10 Years 120 years
						Aus'ised *Soryu*	1,368-2,104	32,817	815-1,254 (60)	19,584 (60)	
SEA 1411	11 *Super Seasprite* Helicopters	158	1,843	Lost: 1,783 Acq: 177 Sus: 98 10 years Cancelled	•Require-ments •Non-MOTS	US MOTS *Seasprite*	125	1,370	34 (27)	473 (35)	10 Years 110 years
						US MOTS *Seahawk*	87-126	959-1,389	32-71 (25-82)	454-884 (33-92)	
SEA 3000	11 GPF (First 3 Units)	1,087-1,696	6,360	TBD TBD TBD	N/A	Japanese MOTS *Mogami*	958	3,593-5,604	129-738 (13-77)	756-2,768 (13-77)	Risk Reduction
SEA 3000	11 GPF (Fourth Unit)	3,786-7,387	4,446-8,047	Cost Growth TBD TBD	•Local Build	Japanese MOTS *Mogami*	958	N/A	2,828-6,429 (295-671)	3,488-7,089 (364-740)	Risk Reduction
						Japanese GPF	1,087-1,696	N/A	2,699-5,691 (248-336)	3,359-6,351 (309-374)	
SEA 4000	3 *Hobart* Class AWD	2910-3440	13,109	Acq: 1,345 Sus: 304 39 months	•Non-MOTS •Local Build	Spanish F105	1,639-1,876	7,203-9,366	1,271-1,564 (78-83)	3,743-5,906 (40-82)	4-5 years 10-13 years
						Spanish *Hobart*	1,810-2,070	7,942-10,318	1,100-1,370 (61-66)	2,791-5,167 (27-65)	
SEA 5000 (pre-2024)	9 *Hunter* Class Anti-Submarine Warfare (ASW) Frigates	2,039-3,163	36,813	Highest Cost Acq: Unaf-ford Sus: 3,446 3-6 years Force Re-duction	•Require-ments •Non-MOTS •Local Build	Italian FREMM	1,330	15,202-23,581	709-1833 (53-138)	13,232-21,611 (56-142)	9 years 61 years
						French FREMM	1,506	17,214-26,701	533-1,657 (35-110)	10,112-19,599 (38-114)	7 years 67 years
SEA 5000 (post-2024)	6 *Hunter* Class ASW Frigates (costs for 3)	3,675-5,701	22,380	Acq: TBD Sus: 1500 TBD TBD	•Require-ments •Non-MOTS •Local Build	Italian FREMM	1,330	5,067-7,860	2,345-4,371 (176-329)	14,520-17,313 (185-342)	Risk Reduction
						French FREMM	1,506	5,738-8,900	2,169-4,195 (144-279)	13,480-16,642 (151-290)	

*Notes: all costs are in constant FY24/25 rounded to the nearest A$-m unless otherwise noted; Land 400 Phase 3 rounded to the nearest A$100,000; SSN grey-shaded costs are FY24/25 out-turned. Acq = Acquisition cost overrun; Req = requirements-driven cost overrun; Sus = sustainment cost overrun; Lost = project cancelled, sum lost; Highest Cost = highest cost option selected by Defence. Schedule savings are rounded to the nearest year. *SSN costs reflect total program amounts and do not indicate unit prices; minimum totals reflect 0% contingency, maximum reflect 15% on MOTS Virginia project and 50% contingency on AUKUS SSN. Totals may not add due to rounding. Australian cost premiums and savings compare the actual performance of the Defence project against estimated the cost and schedule performance of the comparator. They show the $ value able to be saved per unit or the project overall, and the % cost premium that the Australian project paid in comparison. They also show the potential absolute and unit-year benefits able to be gained in schedule.*

Table 4: Summarised Potential Cost and Schedule Savings, and Munitions Production

Potential Cost ($) & Schedule	Still Achievable Cost ($) & Schedule	Cost Savings ($) & Barracuda-500 Production (4th Japanese-built GPF)
132,761 – 228,232 (constant) 31-34 (absolute years) 301-310 (unit-years)	82,954-159,746 (constant) 109,600-218,100 (SSN-only, out-turned) Schedule Risk Reduction	Savings: 3,359-6,351 Production: 9,152-17,305

Notes: all costs are in constant FY24/25 rounded to the nearest A$-m unless otherwise noted. Overall savings = SSN, Land 400 Phase 3, MOTS Soryu for SEA 1000, MOTS Seahawk for SEA 1411, MOTS Mogami for first four SEA 3000 units, F105 for SEA 4000, Italian FREMM for SEA 5000. Achievable savings = SSN, a Japanese-built fourth GPF, replacing second batch of three Hunters with three Japanese GPF. SSN-only out-turned savings are shown to emphasise their scale.

Discussion and Key Assessments: The Effects of the Trifecta

The impact of the trifecta is shown in Tables 3-4, which compare the actual performance of seven key Defence projects against their initial aims and estimated results from capability comparators.

In brief, Table 3 is in two sections and (as are all the tables) read left-to-right. The first section provides Australian project data (the project number and key deliverables),[62] and the estimated costs of the platforms being procured plus the overall cost (including aspects such as operational and any build infrastructure, spares, and munitions). It then assesses the project's performance against its aims in terms of cost, schedule, and capability, and ascribes trifecta causes for risks and deficiencies.

The second section provides data on the overseas-built comparator system(s) considered, showing costs per unit and overall, and the comparative premiums paid by the Defence project in terms of costs per unit and overall, and as percentage increases. It also assesses potential schedule benefits the comparator may have delivered. The comparators were selected due to being identified by Defence as suitable off-the-shelf options for each project or being judged so by the author as a former Defence capability analyst.

Table 4 summarises the total overall and still achievable cost and schedule savings had the comparator trifecta-based approach been used. It also shows the Barracuda-500 production available from having one more GPF built in Japan rather than Australia.

Further information on Tables 3-6 is in Annex A Sections-I and -II.

Based on these tables, seven key points stand out from highlighting the impact of the trifecta elements individually and especially cumulatively:

- Requirements drive cost tremendously. The most expensive Defence project in Australia's history prior to the SSN was the diesel-electric powered submarine acquisition under SEA 1000 to replace Australia's existing *Collins* class boats (as submarines are referred to). A change in that project's focus from procuring boats superior to *Collins*, to instead being regionally superior (i.e. better than any other submarines operated now or into the foreseeable future in our region) likely caused costs to rise by 60%, more than $24bn, in a matter of months.[63] Of note, the minimum cost of the SSN project that replaced SEA 1000 is more than three times the latter's price.
- Even minimal 'Australianisation' incurs significant immediate costs, even with overseas builds. For example, SEA 3000 is procuring 11 GPF vessels based on the Japanese *Mogami* frigate with certain 'minimal modifications' including the integration of Australian weapons, and the first three GPF will be built in

Japan. Yet even built in Japan, these 'Australianised' *Mogami* will cost 13-77% more than the Japanese baseline — a difference of some $0.7-$2.7bn across the first three ships.

- The price premiums paid for, or being considered by, government to produce capabilities locally are extraordinary. Noting a previous government considered a 30-40% domestic shipbuilding premium unacceptable, the data indicates that actual manufacturing premiums range from 60-730%, based on the degree of Australianisation and local production required. Again, SEA 3000 provides perhaps the clearest example: the first three GPF built to Australian specifications will likely cost around $1.1-$1.7bn each. To build the fourth (the first in Australia) will likely cost some $4.4-8bn (a 309-374% premium) — far exceeding the usual 76% 'multiplier effect' expected from local production.

  Of note the fourth GPF figures may seem artificial as they include the prices of the initial domestic production setup, including shipyard infrastructure, and these would eventually be amortised across multiple units. But in doing so they capture otherwise avoidable local costs.

- A trifecta approach could have delivered over 300 more unit-years of service with modern platforms. This would have substantially enhanced ADF capabilities and Australian security by having new, rather than dated, assets in wide scale use. While these schedule savings are lost for historical projects, taking this path into the future retains the opportunity to reduce schedule risk by utilising existing overseas production facilities and workforces.

- Up to $228bn could have been saved by implementing the trifecta to the listed projects, and some $68bn of this is lost. Yet there remains enormous potential to harvest nearly $160bn of still achievable cost savings with quick and courageous decisions by Government in naval projects. So, Japan clearly has the potential to build more than the first three GPF, and the savings in costs are likely to be enormous. Further, SEA 5000's three locally built *Hunter* class vessels will be among the most expensive ships of their type in the world, at around $3.7-$5.7bn per ship, and a further three are planned. Cancelling the succeeding three and replacing them with Japanese built GPF at $1.1-$1.7bn per vessel (which have comparable capabilities) would save billions needed for other ADF projects.

- The benefits that cost savings can deliver are vast if funnelled astutely. Simply producing a fourth GPF in Japan would save between $3.4-$6.4bn. Put towards Barracuda-500 production this would fund (excepting setup costs) a staggering 9,000-to-more than-17,000 missiles.

- The greatest cost savings (around 85-90% of what is achievable) can come from modifying the approach of the AUKUS SSN program. Currently this intends to acquire eight boats: three-to-five US *Virginia* class submarines, and to develop and build three-to-five AUKUS class vessels in cooperation with the United Kingdom (UK) and US in Adelaide. Simply changing this to a procurement of eight *Virginias* could save $70bn-$144bn constant dollars, or up to $218bn out-turned.[64] To illustrate where savings would come from, the shipyard to build the AUKUS boats will alone cost over $25bn, more than almost every other Defence project in history.

  As an additional comment, while the extraordinary shipbuilding premiums listed above may seem infeasibly large, it is worth emphasising that historically Australia has found such domestic work extremely expensive. Of Project SEA 4000's three *Hobart* class ships, the early vessels were (to great Ministerial upset) three times as expensive to build locally as doing so in Spain. Even the final ship saw labour productivity 50% worse than expected, with it in some ways having actually declined with experience.[65] Further, a local build of the GPF would encounter the same issues the ANAO diagnosed with the *Hobarts* in terms of it being the first export of a design for overseas construction by the builder (in this case Mitsubishi Heavy Industries) and that construction would be at Australian yards which lack recent experience in complex warship building.[66]

Table 5: Job Totals and Mean Funding Support — Domestic Vehicle Sector vs Defence (Asset Manufacture Roles Only)

Project	Job Data			Mean Government Funding ($m)			Defence Premium (%)		Defence Premium & Job Results Totals				
	Years	Jobs	Job-Years	Total	Per Job	Per Job-Year	Per Job	Per Job-Year	Funding %	Jobs	%	Job-Years	%
Veh Sector	6	10808	34,925	6,813	0.63	0.2	N/A						
AUKUS SSN	24	8,000	125,000	190,700	23.84	1.53	3,684	665	2,699	-2,808	-26	90,075	258
	24	8,000	125,000	287,050	35.88	2.30	5,595	1,050	4,113	-2,808	-26	90,075	258
SEA 1000 *Attack* class	31	1,100	26,675	33,249	30.23	1.25	4,698	525	388	-9,708	-90	-8,250	-24
SEA 4000	13	2,100	9,500	9,525	4.54	1.00	620	400	40	-8,708	-81	-25,425	-73
SEA 5000 (3 Units)	12	2,500	20,000	14,064	5.63	0.70	793	250	106	-8,308	-77	-14,925	-43

Notes: all costs are in constant FY24/25 rounded to the nearest A$-m unless otherwise noted. Support per job and job-year rounded to the nearest A$10,000. For SSN, mean funding reflects overall project costs with outturned amounts in grey. Totals may not add due to rounding.

Table 6: Job Totals and Mean Funding Support — Domestic Vehicle Sector vs Defence (Asset Manufacture & Related Infrastructure)

Project	Job Data			Mean Funding ($m)			Defence Premium (%)		Defence Premium & Job Results Totals				
	Years	Jobs	Job-Years	Total	Per Job	Per Job-Year	Per Job	Per Job-Year	Funding %	Jobs	%	Job-Years	%
Veh Sector	6	10808	34,925	6,813	0.63	0.2	N/A						
AUKUS SSN	24	13,250	167,650	224,100	16.91	1.34	2,585	568	3,189	2,442	23	132,725	380
	24	13,250	167,650	326,800	24.66	1.95	3,815	875	4,697	2,442	23	132,725	380
SEA 1000 *Attack* class	31	1,830	29,765	33,909	18.53	1.14	2,841	470	398	-8,978	-83	-5,160	-15
SEA 4000	13	2,500	10,200	9,795	3.92	0.96	522	380	44	-8,308	-77	-24,725	-71
SEA 5000 (3 Units)	12	3,230	21,630	14,724	4.56	0.68	624	240	116	-7,578	-70	-13,295	-38

Notes: all costs are in constant FY24/25 rounded to the nearest A$-m unless otherwise noted. Support per job and job-year rounded to the nearest A$10,000. For SSN, mean funding reflects overall project costs with outturned amounts in grey. Totals may not add due to rounding.

Table 7: Estimated Job Creation with SSN-Surplus

Estimated Jobs Created: 2023/24-54/55 (Low-to-High Growth Scenarios)								
SSN Surplus Min-Max ($)	Total Jobs			Total Job-Years			Medium Case vs SSN	
	Low	Medium	High	Low	Medium	High	Jobs	Job Years
109,600	5,994	6,850	7,706	191,800	219,200	246,600	-6,400	51,550
218,100	11,927	13,631	15,335	381,675	436,200	490,725	381	268,550

Notes: all costs are in out-turned FY24/25 rounded to the nearest A$-m. Jobs reflect low (1.75 jobs), medium (2 jobs), and high (2.25 jobs) return per $1m in 50/50 mixed construction and manufacturing. Minimum surplus reflects 0% contingency usage. Maximum compares 15% Virginia against 50% AUKUS contingencies.

Discussion and Key Assessments: Defence Industry Jobs and Government Funding

Tables 5-7 assess the costs, and opportunity costs, of the unnecessary (for capability delivery) jobs created by defence projects. This is conducted by first reviewing the estimated number of manufacturing and construction roles created, and funds spent (or planned to be), on four Defence projects that elected to pursue a local build. These totals are compared against an estimate of the federal funding required to sustain Australia's vehicle manufacturing sector, which lost nearly 11,000 jobs when Canberra's support largely ended across 2013-18.

Such an analysis is useful noting the previously mentioned frequent focus on jobs as a justification for local defence sector spending, and to so determine some baselines for acceptable cost efficiency. The comparison is also appropriate as these naval projects are entirely dependent on government funding, whereas while the car sector became unviable without Canberra's support, it was at least to some degree self-sustaining.

As a brief guide, Table 5 (which focuses on manufacturing jobs) is in four sections. The first provides each project's job related data in terms of the total duration of the project, the maximum number of direct jobs it will create at any one time, and the total job-years. For the SSN, depot-level maintenance jobs are also included. [67] The second provides the estimated average funding for the manufacture of the platforms alone (i.e. not the overall project cost), and so the resulting subsidy per-job and per-job-year. The exception to this rule is the SSN line item, which does use average overall costs.[68] Thirdly, the Defence funding is compared to the average funding per job and job-year for the car sector, to show the comparative premiums paid. Finally, the overall premium and results are shown, with figures for how much more each project was funded compared to the car sector, and its relative performance in creating jobs and job-years.

Table 6 provides the same data as Table 5 but includes jobs and funds for build-related infrastructure (such as shipyards). All sections are the same as in Table 5. This data is presented for completeness as government announcements for the job benefits of Defence projects routinely include the infrastructure element. Of note this comparison is arguably less even-handed as the car sector's federal funding did not support infrastructure development.

Table 7 shows job creation achievable even under unfavourable assumptions by taking the trifecta path for the SSN and reinvesting the more than $100bn savings in more productive construction and manufacturing sectors. The table shows the minimum and maximum estimated achievable savings; the total and job-years created by investing these sums in low, medium, and high job growth models; and the benefits achieved in comparison to the current SSN approach (using Table 7 data) in the medium job growth model.[69]

Further information on Tables 5-7 is in Annex A Section-III. Based on these tables, three key points stand out:

- There is a vast disparity between what governments have been willing to pay to support more commercial industries (even if still unviable without subsidies) compared to wholly unviable and unnecessary local defence production. For SEA 4000, the government of the day that was unwilling to protect the car sector accepted paying some 621% more per job and 401% per job-year to produce 81% fewer jobs and 73% fewer job-years. Similar figures exist for other projects, with one standout being the *Attack* class boats, where Canberra would have paid a $30m subsidy per job. Further, today's government is, compared to the car sector, considering paying 3,684% more per job and 665% more per job-year (5,595% and 1,050% in a worst-case scenario in out-turned dollars) for an estimated 8,000 roles associated with AUKUS SSN production and depot level maintenance. This equates to spending some $23.84m constant (or $35.88m out-turned) per role, or $1.53m constant and $2.3m out-turned per job-year to produce about 2,808 fewer jobs. Or to put it another way, spending 2,699-4,113% more to create 26% fewer roles.

Also, this forthcoming AUKUS spending (and that on other defence manufacturing projects) is occurring at a time when the Australian economy is close to full employment, with the latest Australian Bureau of Statistics reporting the jobless rate is 4.4% and close to 50-year lows apart from the Covid pandemic period. This means a smaller pool of unemployed skilled workers to draw on (with such labour rarely under-employed in any case) and so instead requires drawing workers away who are already employed in productive enterprises.

Of note, it may appear artificial to utilise the total costs to build platforms (and for the SSN the entire program cost) as a basis to calculate the subsidy per-job. After all, in the build alone these sums fund materials such as steel, ship systems such as computers, and any number of overheads beyond the mere costs of workers.

However, the comparison is appropriate for two reasons. Firstly, it captures the overall cost premium per manufacturing role: all those additional elements are paid for by the project budget as all these expenses are necessary for the manufacturing positions to be able to build the capability. Secondly, governments use precisely this approach in their public communication, for example touting the $25bn ($30bn out-turned) construction of the SSN shipyard in Adelaide as creating 4,000 direct jobs.[70] By this logic, dividing $25bn by 4,000 means each role is being supported to the tune of $6.25m constant or $7.5m out-turned dollars.

- Such disparate outcomes highlight the vastly greater job creation achievable by supporting more commercial industries. Simply put, while the car sector may have been economically unviable on its own, it still generated revenue and was to some reasonable point self-funding. Hence taxpayer dollars could be spread across this sector (and however many others) to provide the additional 'top-up' needed to support employment. In contrast, defence projects are entirely government funded and need to consume all the available funding.

- Further, if purely government-funded job creation is the key aim, and there's the presump-tion of essentially infinite capacity for growth, then many more jobs can be created by in-vesting in more productive industries compared to extremely expensive defence roles. And this occurs even under highly unfavourable assumptions where government solely funds commercial endeavours, rather than paying a 'top-up'. So, as shown in Table 7, taking the trifecta path for the SSN alone would generate more than $100bn in savings. This could be invested in a work program over the same period as the SSN build (2023-2054), focussed on a 50-50 split between residential and commercial construction (in lieu of building the SSN shipyard) and advanced manufacturing (rather than building the nuclear boats). Compared to the 167,650 job-years the SSN build should produce, the alternate investment would create between 191,800 (low growth) to up to 490,725 (high growth) job-years. Under the medium growth model an additional 51,550-268,550 job-years would be delivered compared to what the current SSN build will, as well as the ADF receiving a fleet of the world's most effective nuclear powered boats.

While it is of course up to elected officials to decide in such cases whether the juice is worth the squeeze, it is worth emphasising that the sums being considered by Canberra are unnecessary to deliver or sustain the capability. That is, if an overseas build of these or other platforms occurred this would not prevent in any way the entirely necessary sustainment work from occurring in Australia, done by Australian industry, no more than buying a car from Germany prevents maintenance being done here by a mechanic. Also, when considering the sums spent to support Defence projects it is worth noting that today's manufacturing sector employs some 868,000 people. So, in these projects Canberra is granting subsidies to a tiny fraction of the relevant national workforce.[71]

Finally, even these expenses do not capture what adverse national impacts may occur if Canberra shifts support from more productive areas of the economy to defence industry. For example, detailed economic modelling was conducted for Defence in 2016 on a potential program to build a modern equivalent for Australia's existing domestically built Collins class submarines. This modelling indicated that, compared to an overseas build, if the domestic premium was 30% and the local content was 40% of the project price then the government would be paying $23.4 million per-year, per-job ($281 million in total) as a subsidy to produce a net negative 12 jobs nationally.[72]

It is worth noting too that the AUKUS SSN will almost certainly have far less than 40% local content, considering Australia has no nuclear industry to speak of. Further, in the SSN's minimum program cost is $108bn *versus the Collins program's some $24bn.*

Conclusion and Recommendations

It is, of course, the right and responsibility of elected officials to spend taxpayers' dollars as they think best. Such expenditure, however, must align with requirements to be 'efficient, effective, economical and ethical', and there are also compelling wider structural and public good reasons to seek to reduce government spending overall. And again, the government itself defines efficient spending as obtaining the 'maximum value from the resources used'.

Taken from these perspectives, the historical (let alone intended) approach to Defence capability investment must be judged with scepticism. Governments have spent, and intend to spend, literally hundreds of billions of dollars more than are needed to deliver comparable, similar, or even identical Defence capabilities. How does this square with delivering the maximum value from the resources used?

Likewise, how does subsidising unnecessary jobs at up to millions of dollars per role per year serve as efficiency, particularly if the national net employment effect may well be negative? How can paying a local price premium that outweighs the financial benefits that could be harvested by having assets built overseas count as economical expenditure?

Further, as shown most recently in the vehicle industry, governments have made decisions to cease job subsidisation in industries where local production was otherwise long-term unviable. Hence such politically unpalatable decisions can be made based on the appropriate evidence and with the necessary will. Yet when comparing Defence projects to the vehicle sector, governments accept far higher levels of job subsidisation, affecting far fewer jobs, without justification in economic return. Nor is there evidence of a national security benefit noting acceptable or even identical capabilities can be bought overseas and then sustained in Australia.

Separately, projects that engage in Australianisation or developmental work are consistently highly delayed, over budget, or both. How does continuing to select such approaches deliver efficiency, or count as effective or economical procurement? Especially if such projects result in capabilities being delayed or cancelled, and the defence of the nation weakened?

Clearly there are solid grounds for doubt that Canberra is on the right path. Yet the good news is that should a government choose a different approach — the path of the trifecta — there remains enormous scope to rapidly harvest up to $159bn of savings, embed in Defence the principles that will continue to deliver such results, and still deliver the required military capabilities as planned out to 2035/36.

Yet the window of opportunity to deliver such outcomes grows smaller with each day that projects continue on their existing paths. To realise results promptly would require, at minimum, enacting the following recommendations:

Naval Programs

- Conducting a holistic review of the necessity, utility, and VfM of the domestic construction of major surface ships and submarines versus utilising overseas production. This review would examine national level benefits *as well as costs* of these approaches. Should this review show it is prudent to favour foreign manufacture, this could take effect immediately for the SEA 3000 and SSN programs and from the end of the current three-ship, SEA 5000 build program, with replacements secured from overseas builds (likely Japanese GPF and US *Virginias*).

  Using foreign yards for these projects alone would save some $80-$159bn. A portion of such savings could be used to support alternate, expanded, and more productive employment in areas where naval construction jobs would either be lost or not created. Indeed, even purely government backed investment should offer better outcomes. A portion of these savings could also support ADF force structure expansion using trifecta methods to deliver capability quickly.

Industry Support

- Reviewing plans to expand the mandatory use of local firms for SDIP, especially if using such companies imposes Australianisation requirements on foreign designs. Reviewing the current SDIP with an aim to reduce them back to at least 20% (from today's 80%) of defence industry capabilities that must be located in Australia.

  Instead, savings generated by trifecta approaches could support the substantial increases in R&D necessary to bring about truly world-leading sovereign domestic capabilities. This is especially so in areas where Australia cannot usefully procure the capabilities from overseas or has deep strategic reasons to be entirely selfsupporting, with munitions production a key opportunity. Separately, any expanded ADF would support an expanded sustainment base.

Capability Acquisition Processes

- Imposing greater control over capability performance requirements through requiring them to be independently validated by civilian oversight. Such an approach would draw understandable protests from military personnel, yet nothing fundamentally forbids a civilian with appropriate training from casting a critical eye over otherwise immutable military requirements. Indeed, Canada already has a version of such an approach.[73]

- Requiring Defence to always recommend to government the system that meets the minimum acceptable capability requirements, is off-the-shelf, and (if an overseas item) that will be built on existing foreign production lines. Future upgrades would be trusted to keep pace with adversaries' developments. Any recommended higher performance, Australianised or domestic-build alternatives would require presentation of detailed justifications.[74]

  As part of the above, Defence could indicate the cost premium between truly minimised changes (potentially as little as simple document translations) while keep foreign weapons and other systems, versus greater but still constrained modifications (such as integrating existing ADF missiles). Such options would, of course, need to consider the broader lifecycle costs of introducing the new systems into the wider Defence ecosystem.

To implement these reforms will require political courage and disciplined attention from ministers, and uncomfortable change for Defence at the organisational and project level. Yet the potential benefits are such that surely an attempt is warranted.

Finally, and perhaps most importantly, Canberra certainly appears to believe that Australia is facing its worst strategic situation in 80 years. The most fundamental duty of the government should be to assure the safety and security of its citizens. A key path to doing so is implementing a trifecta of changes to reform Defence capability delivery.

If the times really are so dangerous, then failure is not an option.

Annex A: Capability Comparison Discussion

This annex, divided into three sections, provides further information on the projects, data, and analysis conducted to provide the summary information in Tables 3-7. Section-I and -II of the annex relates to Tables 3-4 and respectively discuss data sources, definitions, and methodology; and selected project specific information and analysis. Section-III provides information on Tables 5-7, relating to jobs and premiums.

Section-I — Data and Methodology

Guide to Tables 3-4

Table 3 is comprised of two key sections. Australian Project Data, which provides information on current and former Defence projects, and Capability Comparison, which provides estimates for the advantages that could have accrued should the Australian project have used lower requirement, off-the-shelf, overseas-built systems. Note individual comparator systems have from one to all of the trifecta advantages (e.g. some have identical requirements but are cheaper due to being built overseas). The table is further split into five sub-sections, to be read left-to-right:

Australian Project Data

- **Project Details:** this contains information on current and former Defence acquisition projects, giving their project numbers (such as SEA 4000) and what they were intended to deliver (three *Hobart* class destroyers). While the table and project descriptions in Annex A refer only to the major systems each project was to deliver, in each case the relevant support system (such as infrastructure and munitions) was also to be delivered. This is included in the costs listed.

- **Costs:** The price paid by the taxpayer per unit and for the project overall. The latter includes supporting elements for the capability such as munitions and spare parts (normally part of the project budget), plus any amounts associated with the build infrastructure, such as shipyards, that would have been unnecessary to support a foreign-built system (such costs are often separate to the project's budget). Unless otherwise noted all costs in the tables are shown in millions of Australian (A$-m) constant dollars using an average FY2024/25 price basis. Further information on how costs were developed is on the following pages.

- **Key Risks and Deficiencies:** This captures key adverse cost, schedule, and capability outcomes incurred by the Australian project over its life. Generally, the results stem from comparing the project's initially reported cost and schedule aims to actual performance. Cost increases are generally shown for the acquisition project itself and other projects' sustainment (where procurement delays caused more spending to maintain other capabilities meant to be retired). Also shown are notable outcomes such as project cancellations leading to the sum invested was lost. This section also captures the author's assessment of the trifecta issues affecting each project and which hence drove the key risks and deficiencies.

Capability Comparison

- **System and Estimated Costs:** this provides information on which overseas comparator system is considered, and costs per unit and overall. Comparators were principally selected based on Defence assessments of being suitable as baseline capabilities for each project. Overall costs are as for Australian projects but exclude build infrastructure. All costs reflect only acquisition (i.e. procuring the main system and any supporting elements) with the exception of the AUKUS SSN project. As Defence's data on this includes sustainment funding (i.e. for supporting operations), an allowance is likewise made for the comparator project.

- **Australian Premiums and Savings:** This section compares the cost and schedule of the Australian project against what could be achievable using a foreign-built system. The premium paid by the Australian project is shown on a per-unit and overall basis, in both dollars and as a percentage. And where they exist, low-range Australian costs are paired with equivalent comparator costs (i.e. low-low and highhigh). For example, the SEA 1000 project for 12 *Attack* class submarines had a unit cost of $2,183m-$3,358m and an overall cost of $52,400m. Compared to 12 off-the-shelf Japanese-built *Soryu* submarines (unit cost of $552m, program cost of $8,616m-$13,248m), Canberra would pay a $1,631-$2,806m premium per *Attack* class boat, and a $39,152-$43,784m program premium overall. In turn, the price of an *Attack* is 295-508% more than a *Soryu*, with the project likewise costing some 296-508% more than a *Soryu*-based one. These costs could have been saved with a *Soryu* procurement.

For schedule, two figures are shown. An absolute saving in time showing when the last foreign-built system could have entered service with the ADF compared to the actual or predicted schedule of the Australian project. Secondly, a count of the unityears of additional service this would have provided. For example, each *Soryu* unit is estimated to have been able to enter service 10 years' earlier than its *Attack* class equivalent. While the overall absolute saving is 10 years (for the full capability of 12 submarines being in operation), each *Soryu* contributes 10 years of additional years in service compared to its equivalent, providing 120 unit-years of ADF service, and benefit to Australia's security, versus the *Attack*.

Table 4 summarises the estimated savings that could have been achieved by using the comparator projects. It also shows the savings that could still be achievable should such an approach be implemented, and the munitions produceable from savings via a fourth Japanese-built GPF. The combined savings across all projects (including the SSN) are shown in constant dollars. Separately, the out-turned savings for the SSN alone are shown to emphasise the scale of the sums involved.

Table 3-4 Methodology and Data

The below provides an overview of the methodology used to derive and assess, costs schedules, risks and deficiencies. Any specific divergences, other approaches used, or notable data elements are described in the individual projects' notes in Section-II.

Cost Representation

All costs in Tables 3-7 are (unless noted otherwise) provided constant Australian dollars rounded to the nearest million (A$-m) using a FY2024/25 price basis. In Table 3, Land 400 costs are to the nearest $100,000, due to vehicle unit costs being more sensitive to smaller price differences. SSN costs are provided in both constant and outturned dollars (shaded grey) to show the scale of the amounts involved.

Using constant dollars supports consideration of differing projects and international capability comparators. Constant dollars indicate how much the project would cost if the entire expenditure was in one year, and so provide a common point of comparison across diverse capabilities. This is in contrast to 'out-turned' dollars, which Defence normally uses, that captures future spending profiles and accounts for inflation.

Project Cost Estimates

A key part of comparing costs was to determine Australian and comparator project cost estimates in a form suitable for comparison. To do so, the approach used was based on how Defence develops provisions i.e. the amount of funding estimated as needed to deliver the capability. This provided the basis to consider the unit and overall costs that are presented in this paper and used in calculations. For the interested reader, a brief explanation on the methodology is below. It is based on a comprehensive guide written by the Australian Strategic Policy Institute's (ASPI) Dr Marcus Hellyer.[75]

How Defence Develops Provisions

A project's provision is comprised of three broad elements. Firstly, there is the cost for the platform (tanks, jets, submarines) being procured, including any engineering required to modify it for Australian purposes. On top of this there are the costs for what Defence refers to as Fundamental Inputs to Capability (FIC).[76] These are enabling elements (such as weapons, infrastructure, spares etc) necessary to employ a system effectively, and these costs tend to range between 30-100% of the overall platform component of the provision (so, a $10m tank may have another $3m-$10m of FIC).[77] Finally, a contingency to account for uncertainty and risk, with this typically being some 10-30% of platform and FIC costs combined. Lower contingency is assigned to lower risk projects, (e.g. off-the-shelf acquisitions). The final sum is then outturned using expected inflation and the project's spend profile (money spent later will have greater inflation than that spent earlier). Also, Defence reports its budgets ex-tax (i.e. ex-GST). Of note, build infrastructure costs are often (but not always) funded separately to the provision.

Over time, a project's provision (or its approved budget) can be affected by issues including exchange rate variations when buying overseas equipment, price movements (when items cost more than originally forecast), and indexation (changes to forecast price increases). All these may appear to increase the provision or budget without much practical effect. Although if a project spends all its budget including contingency, it may apply for a Real Cost Increase (RCI), which is genuine cost growth. As noted by ASPI, should projects seek an RCI this shows 'something has gone seriously wrong'.[78]

Developing Cost Comparisons

The approach described above provides a basis to interrogate the data sources available and develop comparisons. Overall provisions (or budgets) can be deconstructed into their constituent elements, or contract figures (such as for platforms) can be harnessed to develop broader project costs.

The challenge in developing comparison costs, however, is that the data available from Defence, let alone foreign governments, is not consistent. For example, in Australia not every project has the same contingency, and sometimes the amount of contingency is not a matter of record. For foreign equipment, sometimes the value of the platforms is known from a contract value (almost always in constant currency) and while this does not typically include tax neither does it provide any allowance for FIC. Also, foreign government provisions or budgets (when available) are often opaque on what is within scope (the platform plus some all or no FIC) or whether they are tax inclusive.

To provide the most even-handed comparison, the following high-level approach was used (discussed in more detail further below):

1) Develop project constant dollar figure — to develop a project cost in FY24/25 constant dollars, this typically involved some combination of inflating and undoing out-turning. This depends on when Defence (or the foreign government or contract) reported the project's cost, in which format, and where the project is in its life.

   For Defence projects prior to 2010, costs were reported in then-year constant dollars. These are inflated using historical Consumer Price Index (CPI) data. For later projects using out-turned dollars, this was undone using the assumption that the project had an even spend over its schedule, with inflation adjusted on a per year basis using historical data for spends prior to 2024-25, or for future spends, government economic forecasts followed by a 2.5% inflation assumption for the later out years. The same treatment is applied to any RCI. For projects procuring foreign equipment, or when developing an A$ price for comparator systems, funding amounts were escalated in accordance with appropriate regional inflation (e.g. a price listed from 2015 in Euros is escalated to 2024/25 using European average or specific national inflation data) and then converted into Australian dollars.

2) Remove contingency — in many cases information on historical contingency figures is available. In other instances, Defence reported or forecast that the project would be unaffordable within its budget (i.e. including contingency), so then the overall figure is used. In some cases, a contingency was assigned based on the author's judgement as a former Defence capability analyst. When this is done it is noted in the project data in Section-II. Foreign government provisions were treated, based on research, as not including contingency.

3) Remove tax — most contracts and foreign provisions are tax-free, if proven otherwise then a discount was applied. French (20%) and Japanese (8-10%) provisions were understood to include the shown taxes, and this was removed.

4) Additional information — Defence often provides details on project costs of the effects of exchange variations and so on. Such impacts (aside from RCI) were not incorporated, as this then provides the cleanest possible comparison against other projects and comparators where such data were not available.

Data Sources

Cost and schedule data is drawn from official Defence and overseas government sources as well as contract notifications. Especially important sources were relevant ANAO audit and Major Project Reports (MPR). Assessments of causes of project underperformance are drawn principally from ANAO reports.[79] Brief information on foreign system cost sources is provided in the project data in this annex's Section-II

Methodology — Table 3 Data and Analysis

Australian Project Costs and Schedules

For unit costs these have been determined by one of three methods. Less often, a contract value amount is available, together with details on its scope, such as for Land 400 Phase 3. This amount divided by the total number of units procured provides a unit value. In some instances data is also available that indicates a FIC allowance, which is subsequently applied when determining overseas costs.

More often a 30% and 100% FIC allowance is applied to the ex-contingency project provision or budget, with this providing a major system acquisition cost range, divided by the number of units to provide the individual cost. If a variation on this FIC range is used, this is noted and justified in the individual project section.

As a worked example, consider a project to acquire five tanks with an overall provision of $110m including 10% contingency. This results in an ex-contingency amount of $100m. If FIC was 30% and 100% of the mission system, this results in an upper and lower bound of the mission system (platforms) as $76.9m (30% FIC of $23.1m) and $50m (100% FIC of $50m), with a per-unit cost of $15.4m and $10m respectively.

Finally, for SEA 4000 and the capability comparators, unit and FIC costs were derived using the Compensated Gross Ton (CGT) methodology and costs from the RAND Corporation's review of Australian Shipyards, as applied to the project's provision.[80]

For overall costs, the entire project ex-contingency provision or budget is used together with any additional build-related infrastructure costs not covered therein, noting these are often funded separately.[81] Such infrastructure costs had out-turning removed but were presumed to be ex-contingency. Where doubt exists on whether infrastructure was funded separately, the report presumes it is funded within the provision, i.e. the project would be even more expensive if the facility costs were separate. Also, if it was unclear if infrastructure should be included in the overall costs to the Commonwealth (e.g. due to it potentially being funded by state governments) it is excluded.

Australian schedules use the actual or the most current forecast for project delivery.

Analysis of Australian Project Risks and Deficiencies

Cost and schedule over-runs are determined by comparing a project's reported original goals with actual performance.

In the case of schedule delays, additional sustainment costs for systems that the project was intended to replace (e.g. the *Anzac* frigates that were to be replaced by the SEA 5000 *Hunter* class units) are also determined. This is done by calculating the extra unit-years that outgoing systems need to serve (by comparing planned vs actual or updated retirement dates) and multiplying this by an annual per-unit sustainment amount sourced from government reporting. As an example, if the eight *Anzac* frigates were all intended to retire in 2025, and had this extended to 2026, this would comprise another eight unit-years of service. If each vessel cost $50m per annum, this would incur an additional $400m sustainment cost.

Retiring units are accounted for on a one-in and one-out basis, i.e. as a replacement unit is forecast to enter service then an outgoing unit is considered to retire. Where specific dates are unclear, an average is used dividing the planned project schedule by the number of units and presuming a rolling drumbeat of incoming and retiring units.

Overseas Off-the-shelf Comparator System Costs and Schedules

All overseas units are considered to be provided in an off-the-shelf configuration (i.e. with no Australianisation to meet any local requirements). This includes retaining their original sensors and weapons systems.

For unit costs, unless noted otherwise these are determined by applying contract values for available comparator capabilities with similar scopes of deliverables (i.e. excluding broader FIC costs). This value divided by the number of units provides a unit cost for the overseas order. Alternatively, an overseas provision or budget figure to deliver a unit of the capability is used, with this too presumed to exclude FIC costs. Note that if the provision were proven to include FIC, this would reduce the mission system cost yet further. Where necessary and judged to be implementable at low risk, costs were increased to enhance overseas units to meet Australian requirements to support a more even comparison.[82]

For overall costs, the unit cost is multiplied by the number of assets sought by the Australian project to provide an overall mission system cost. This is then increased by the appropriate FIC allowances (generally 30% and 100%, unless a different figure is used for the Australian platform) to provide a lower and upper bound. So, an overseas tank valued at $10m per unit would produce a $50m mission system cost for five tanks and an overall cost of $65m (30% FIC) and $100m (100% FIC).

Overseas schedules are based firstly on considerations of production facility availability (whether or not the factories or shipyards had or have spare capacity, based on reporting of orders and evidence of construction). Schedules are then based on the most recent production rates in the foreign facilities for the desired units, moderated by any other orders these yards would have to manage. This reflects a presumption that Canberra had placed an order for a true off-the-shelf unit in time for this to be slotted in to a 'warm' production line (i.e. no delay requiring a restart of production). Further, that manufacture would commence as soon as practical e.g. for a ship, that block construction began soon as possible, keel laying for the Australian ship as soon as the last foreign ordered ship was launched and not occupying the production hall, and so on.

Cost and Schedule Comparisons

Costs are compared between Australian and overseas unit and overall costs to show the level of Australian premium (in A$ and as a %) for the existing Australian project. These amounts also show the potential cost savings that would be achievable.

Of note, the cost comparison does not include consideration of sustainment cost savings in terms of being able to retire older assets earlier (i.e. the additional sustainment costs identified in 'Risks and Deficiencies' are not included as harvestable savings). This is because the sustainment costs of new assets can outweigh (unit for unit) those of older assets. Hence bringing a new system into service on time or early does not necessarily result in cost savings in that particular or later years, it simply obviates the need for unnecessary sustainment funding. For simplicity, and due to the difficulty of calculating any 'overall' sustainment saving, no attempt is made to do so. Instead, any additional old asset sustainment costs are simply listed as key risk or deficiency of the existing project.

Schedule shows both the absolute and unit years of time saved by using the comparator system, rounded to the nearest year. For this, delivery times are considered as a proxy for entry into service. Where 'risk reduction' is listed, this reflects where a numerical saving was difficult to calculate but an entry into service would be at lower risk due to using off-the-shelf platforms built on existing production lines.

Section-II — Project-specific Information

While the project descriptions below refer only to the major systems each project was to deliver (such as three Hobart destroyers) in each case the relevant support system (such as infrastructure and munitions) was also to be delivered. The reader is asked to consider this as implied in the descriptions and note it is included in the costs listed.

Australia-UK-US (AUKUS) Nuclear Powered Submarine (SSN)

This project aims to deliver eight SSN, comprised of three-to-five ex-US Navy (USN) *Virginia* class submarines and three-to-five new AUKUS class boats to be developed cooperatively between Australia, the UK, and the US. The project was announced in 2021, with the first *Virginia* boat scheduled to be received in the early 2030s, the first AUKUS in the early 2040s and the final AUKUS around 2054. The AUKUS vessels will be manufactured at purpose-built facilities at Osborne North shipyard, near Adelaide. Regular and deep (depot level) maintenance for all SSN will be conducted at purpose-built facilities in Henderson, near Perth in Western Australia.

Trifecta Considerations: Requirements, MOTS, Local Building

Nuclear submarines are among the most advanced weapons on the planet and have correspondingly dramatic performance requirements. It is unclear if any changes will be applied to the *Virginias* before delivery. The AUKUS boats are entirely developmental. All *Virginias* are built in the US, the AUKUS boats will be built locally.

Project Performance Issues and Causes

No cost, schedule, or capability issues have yet emerged, noting the AUKUS boats in particular have yet to begin construction. However, the effort is the most expensive Defence project in Australia's history. Such costs are doubtless caused by all three trifecta issues, not least due to Australia's lack of nuclear industry or SSN experience.

Capability Comparators and Benefits

The selected comparator is procuring eight USN *Virginia* class vessels at rate matching planned AUKUS deliveries and also relying on US facilities for depot-level maintenance — which is typically conducted every 4-6 years and takes on the order of 6 months to 3 years. The *Virginia* are considered appropriate due to already forming potentially the bulk (five of eight) of the SSN fleet and being in production until the mid-2050s.

Cost sources for the Australian project are the announced provision (up to $392bn outturned to the mid-2050s, including 50% contingency[83]), and announcements on infrastructure costs. Comparator pricing is based on official US costs for *Virginia* submarines and the author's calculations for infrastructure costs based on overseas assets. A 15% contingency was applied to the comparator as an off-the-shelf acquisition.

Cost & Schedule: Procuring *Virginias* would offer reduced schedule risk and the estimated cost savings shown in Table 3 compared to a mixed fleet of *Virginia* and AUKUS boats. These stem from being off-the-shelf systems built at existing shipyards with recent experience in building similar vessels and removing the need for highly expensive Australian nuclear shipyard and depot maintenance capabilities.

No attempt is made to differentiate unit versus program costs due to the extreme uncertainty involved, including whether some $33.4bn of infrastructure is funded separately (if so, a pure *Virginia* project would produce even greater savings). As the current provision includes sustainment costs, estimated vessel and infrastructure sustainment allowances have been incorporated to 2055. To emphasise the scale of the costs, savings are presented in both constant and out-turned FY24-25 dollars.

Capability: Additional (beyond existing quantities) *Virginia* would have equal capability to the boats already planned. Their performance compared to the AUKUS units is unclear but, noting their suitability for USN use, would be world-class vessels.

Land 400 Phase 3

This project seeks to procure 129 tracked Infantry Fighting Vehicles (IFV), with these being heavily armed and armoured vehicles that transport infantry soldiers into battle. While the project initially sought to procure 450 IFV, it was reduced in scope in 2023 due to changes in Defence priorities.

Land 400 Phase 3 received government approval to proceed with the acquisition (known as 'Second Pass') in 2023 and is due to deliver the final vehicles in December 2028. At Second Pass the successful vehicle for the project was announced as the South Korean Hanwha AS-21 *Redback* IFV. The vehicle will principally be manufactured at new Hanwha facility being purpose-built outside Geelong, Victoria.

Trifecta Considerations: Requirements, MOTS, Local Building

In the AS-21, Defence advised the ANAO it had selected the most capable but also most expensive option of the four systems that tendered for the project: the Swedish BAE Systems CV90 Mk IV, the British General Dynamics AJAX, the AS-21, and the German Rheinmetall Lynx KF-41. While Defence had intended to procure an off-the-shelf vehicle and had identified the above four as potentially meeting its requirements, in fact to meet Defence needs all required varying degrees of developmental work. Hence, no vehicle as offered was MOTS. As a local build, overseas production will not principally be utilised.[84]

Performance Issues and Causes

It is the author's assessment that all three trifecta issues are present and have adversely affected project performance.

Cost: The project has not yet indicated that it is under cost pressure. However, the AS21 had the highest price of the shortlisted vehicles.

Schedule: Defence notes the project is at high schedule risk to deliver 129 IFVs by the end of 2028.[85] The extent of any delay is to be determined. ANAO assesses schedule pressure has principally been caused by the developmental nature of the AS-21.

Capability: The project has two very high technical risks that may adversely affect the vehicle's mobility and lethality, two of the six key capability criteria where its performance led to its selection in the first place. These risks arose due to Defence imposed development requirements. These risks may relate to ongoing issues with the vehicle's weight (it is too heavy) and lack of accuracy with the main cannon.[86]

Capability Comparators and Benefits

The selected comparators used are an overseas MOTS build of the KF-41 (produced in Germany and Hungary) and the CV90 Mk IV (produced in Sweden and other nations). These were considered suitable comparators due to being on the original list of platforms that Defence sought tenders for the project. Cost data for the Land 400 Phase 3 is drawn from ANAO reporting. Cost data is drawn from contracts for recent Hungarian and Slovakian orders.[87]

Cost & Schedule: The KF-41 and CV90 Mk IV offer the estimated cost and schedule savings shown in Table 3. These would stem from being MOTS equipment built on existing available production lines.

Capability: The KF-41 likely has similar performance to the AS-21, although it suffers from the same weight and main cannon issues.[88] The CV90 Mk IV, while likely least capable overall, would arguably resolve the vehicle mass issue, being around seven tonnes lighter than either the KF-41 and AS-21 (an approximate 16% weight reduction).

SEA 1000: *Soryu* and *Attack* Class Submarine

This project aimed to deliver 12 new diesel-electric powered (i.e. non-nuclear) submarines to replace the Royal Australian Navy's (RAN) six *Collins* class submarines. In 2014 it appeared that Australia would unilaterally select the Japanese *Soryu* class, likely to be built in Japan.[89] Subsequently, a competitive evaluation process was held using updated requirements which resulted in a 2016 selection of a French design, to be named the *Attack* class once in service, with this to be built in Australia. The project was cancelled in 2021 and replaced with the AUKUS SSN effort.

Trifecta Considerations: Requirements, MOTS, Local Building

The potential *Soryu* procurement did not appear to pursue overly demanding requirements, essentially appearing broadly content with the submarine's existing performance. The subsequent *Attack* class had much higher performance requirements, needing to be superior to all other submarines in the region. The *Soryu* procurement likely included some Australianisation but the extent of this is unclear. The *Attack* class required extensive development work. The *Soryu* would likely have been built in Japan whereas the *Attack* was to be built in Australia at Osborne North.

Project Performance Issues and Causes

As the *Soryu* project did not proceed, the discussion focuses on the *Attack* class effort. In the author's assessment that all three trifecta issues (requirements, non-MOTS design, and local production) were the key causes of adverse project performance. MOTS *Soryu* cost data is drawn from Japanese government documents. Australianised MOTS *Soryu* data is drawn from media reporting. *Attack* data is from ANAO reporting.[90]

Cost: With the change in the *Attack* class's requirements, the project's provision grew by some $24.2bn.[91] For the *Attack*, it is unclear if the selected French design was the most expensive but the submarines would have been among the most expensive of their type in the world. The cost was undoubtedly driven by the increase in requirements, necessary development, and local production. At cancellation, the project had spent some $3.5bn for no capability delivered. The project also incurred at least $7.34bn of additional sustainment and upgrade spending for the Collins class, due to Defence being unable to retire the vessels as planned.

Schedule: The project's schedule at cancellation was running 25 months, late reflecting development issues.

Capability: It is unclear if capability targets would have been met.

Capability Comparators and Benefits

The selected comparators are a build in Japan of MOTS *Soryu*s against potential costs for an Australianised variant, and both such vessels against the Australian built *Attack*. *Soryu* cost data is drawn from Japanese government allocations for such vessels. These were considered suitable comparators due to being originally considered by Defence as a direct means of meeting the needs of the project.

Cost & Schedule: A true MOTS *Soryu* would offer reduced schedule risk compared to an Australianised variant. Both *Soryu*s offer the estimated schedule and cost savings versus the *Attack* as shown in Table 3. These stem from being MOTS or modified-MOTS systems built at an existing well performing shipyard with recent experience in building similar vessels.

Capability: The *Soryu*s would have reduced capability compared to the *Attack* class.

SEA 1411: *Super Seasprite* Helicopter

This project aimed to deliver 11 bespoke variants of the MOTS *Super Seasprite* helicopters to operate from *Anzac* frigates and planned (but subsequently cancelled) Offshore Patrol Combatants (OPC). The project was approved by government in 1996, and planned to be in service by mid-2002. Continuous development delays led to limited use between 2003-05, with the type withdrawn from service in 2006 and the project cancelled in 2009. No fully operational units were ever delivered. Several of the aircraft and other project assets were later operated successfully by New Zealand.

Trifecta Considerations: Requirements, MOTS, Local Building

SEA 1411 had highly demanding performance requirements, including world-firsts such as new avionics systems for the helicopters, the integration of new missiles, and developing a flight simulator. The project involved major Australianisation of an otherwise MOTS platform — the actual helicopters were refurbished second-hand units. The aircraft themselves were built in the US, which was also the location for most development and modification work for the project.

Project Performance Issues and Causes

In the author's assessment that two trifecta issues (requirements, non-MOTS design) were the key causes of adverse project performance.

Cost: The project required an RCI and also utilised sustainment funding for equipment meant to be acquired as part of acquisition, thus running some 15% over cost. With cancellation, Defence returned almost all equipment to the prime contractor, being reimbursed some $60m, for a project-related loss of $1783m. Wider costs identified by ANAO increase the loss to over $2bn.[92] These losses were driven by the high requirements and associated necessary (and failed) development. Separately, the cancellation likely caused Defence to spend some $98m of additional sustainment funds for wider use of its existing *Seahawk* helicopters to cover the capability shortfall until entirely new helicopters were later procured.

Schedule: The project's schedule at cancellation was running 10 years late, reflecting development issues.

Capability: Capability goals were never met.

Capability Comparators and Benefits

The selected comparators are a MOTS *Seasprite* (operated successfully by New Zealand) and a MOTS S-70B-2 *Seahawk*. The former would be able to operate from *Anzac* class frigates and OPC. The latter was in ADF service but could only operate from *Anzac*s. Cost data for SEA 1411 is drawn from ANAO reporting, and from New Zealand and Australian purchase prices for *Seasprite* and *Seahawk* helicopters. These aircraft are considered suitable comparators due to the MOTS *Seasprite* being essentially the identical platform chosen by Defence for the upgrade project, and the *Seahawk* being the helicopter in Defence service at the time. Further, the *Seahawk* manufacturer in fact submitted an unsolicited bid for the project which was rejected by Defence.[93]

No FIC allowance was included due to the project scope itself largely excluding such elements. The exception was the inclusion of costs for munitions as these were included in the costs associated with SEA 1411's failure even though they were funded separately and also represented in the overall costs for the New Zealand *Seasprite* helicopters.[94]

Cost & Schedule: Both helicopters offer the estimated schedule and cost savings versus the *Super Seasprite* as shown in Table 3. These stem from being MOTS units available for procurement.

Capability: Both helicopters would have offered reduced capability compared to the planned fully capable Australianised *Super Seasprite*. Both were more capable than the helicopters actually delivered for use by SEA 1411 between 2003-05.

SEA 3000: General Purpose Frigates (GPF)

This project aims to deliver 11 new GPF based on the Japanese enhanced *Mogami* class. The project was announced in 2024, and the selection of the *Mogami* in 2025. The first three vessels will be built in Japan, with subsequent production to occur at purpose-built facilities in Henderson, near Perth in Western Australia.

Trifecta Considerations: Requirements, MOTS, Local Building

The requirements for SEA 3000 have been very publicly constrained, requiring the bare minimum deviation from the MOTS *Mogami*. The delivered GPF will still have some modifications, such as Australian weapons, which prevent them being true MOTS. Building will be split between Japan and Australia.

Project Performance Issues and Causes

Due to the very early stage of the project, no cost, schedule, or capability issues have yet emerged.

Capability Comparators and Benefits

The selected comparators are a build in Japan of three MOTS *Mogami* against the costs for the three Japanese built GPF, and single instances of such vessels against the first Australian built GPF. These are considered suitable comparators due to the GPF being deliberately a minimum-modified version of the *Mogami*, and of course a Japanese versus Australian GPF being intended to be essentially identical.

For the fourth GPF, such a comparison is to a degree artificial as it combines all costs for establishing the Australian build against those spread across the Japanese production runs. This does, however, emphasise the extraordinary price associated with a domestic ship.[95] GPF cost data is drawn from the 2026 Integrated Investment Program (IIP) data and media reporting, with no contingency assigned as the IIP figures do not include contingency. *Mogami* data is drawn from Japanese government allocations for such vessels. A 25%-95% FIC allowance was applied due to various items of naval base infrastructure being separately funded by Defence.

Cost & Schedule: Any Japanese manufactured *Mogami*s would offer reduced schedule risk compared to the Japanese GPF. Either vessel offers reduced schedule risk compared to the Australian built GPF. The Japanese built vessels offer the estimated schedule and cost savings shown in Table 3. These stem from being MOTS or modified-MOTS systems built at an existing well performing shipyard with recent experience in building similar vessels.

Capability: The Japanese and Australian built GPF should have identical capabilities.

SEA 4000: *Hobart* class Air Warfare Destroyer (AWD)

This project aimed to deliver three locally built *Hobart* AWD to replace the RAN's four aging Adelaide-class guided missile frigates. The project was also intended to foster domestic naval shipbuilding. SEA 4000 received Second Pass approval of the preferred design (based on the Spanish Navantia company's F100 class ship) in 2007. All ships were assembled at purpose-built facilities at the Osborne South shipyard in Adelaide.

Trifecta Considerations: Requirements, MOTS, Local Building

The project did not pursue overly demanding requirements, with government directing Defence to pursue less capable (and costly) ship designs than that favoured by the RAN: the US Navy's (USN) standard *Arleigh Burke* class destroyer. While Defence sought a MOTS design, in practice the requirements drove an Australianised and somewhat developmental version of the F100 MOTS ship. Osborne South lacked recent experience in manufacturing vessels of such size and complexity.

Project Performance Issues and Causes

It is the author's assessment that two trifecta issues (non-MOTS design, and local production) were the key causes of adverse project performance.

Cost: The F100 design was the cheaper of two options considered (the other being an 'evolved' (modified) *Arleigh Burke*). The AWD project went substantially over cost, consuming its entire initial budget and being allocated an RCI of more than $1bn in 2015. The cost increase was attributed by various reviews to immaturity in the design (i.e. its non-MOTS nature) and problems with local shipbuilders' performance.[96] Separately, the delay in AWD entering service likely caused Defence to defer retiring the *Adelaides*, resulting in an additional $304m of sustainment costs.

Schedule: The project's schedule at completion was delayed by 39 months, reflecting the issues with non-MOTS design and local build discussed above.

Capability: All major capability targets were met.

Capability Comparators and Benefits

The selected comparators are a build by Navantia in Spain of the MOTS F105 and the full AWD design. This reflects the similarity of the F105 to the AWD and Navantia's expressed willingness to build the AWD design in Spain. Cost data is drawn from the ANAO reporting and the 2012 RAND study into Australian shipbuilding. These vessels are considered suitable comparators due to the AWD design being closely based on the F105, and a Spanish-built AWD notionally being an identical vessel to the Australian made item.

Cost & Schedule: The F105 and Spanish AWD offer the estimated schedule and cost savings shown in Table 3. These would stem from being MOTS or modified-MOTS systems built at an existing well performing shipyard with recent experience in building similar vessels.

Capability: The F105 would present a small capability decline compared to the AWD. A Spanish AWD could be expected to be identical.

SEA 5000: *Hunter* class Frigate

This project originally aimed to deliver nine locally built *Hunter* class ASW-focussed frigates to replace the RAN's eight aging *Anzac* class frigates. The project was later rescoped to six frigates, with the remainder of the *Anzac*s to be replaced under SEA 3000. This change was arguably influenced by the nine ship project proving to be unaffordable.[97] SEA 5000 received Second Pass for nine vessels in 2018 based on the British Type 26. The six ship project was approved in 2024.

Trifecta Considerations: Requirements, MOTS, Local Building

SEA 5000 has seen consistent requirements growth. The project went from seeking an ASW focussed vessel, to one that could provide wide area ASW, anti-air and anti-ship missile defence (i.e. the ability to protect a group of ships against such threats) and contribute to Ballistic Missile Defence (BMD). The project broadly sought to procure MOTS ships and identified four potential designs: the UK's Type 26, Italian and French variants of the FREMM frigate, and a modified Spanish F100 class ship. In practice SEA 5000 had Defence requirements (including integration of a developmental Australian CEA radar[98]), and selected the immature Type 26 design, that made the total project developmental. Construction is to occur at new facilities built at Osborne South.

Project Performance Issues and Causes

It is the author's assessment that all three trifecta issues (requirements, non-MOTS design, and local production) were the key causes of adverse project performance.

Cost: The Type 26 was the most expensive of the considered designs. The nine ships proved to be unaffordable, requiring either sacrificing the number of vessels to be produced or other projects. Government agreed in 2024 to reduce the total to six and approved budget for an initial batch of three. While this batch appears to be on track to not exceed its budget, it will deliver some of the most expensive vessels of their type on the planet. Costs for the final three are so far unknown.

The ANAO attributed the high levels of cost growth to the developmental nature of the project, together with productivity issues associated with local shipbuilding. Further, Defence's highly demanding requirements doubtless drove costs in all options, with Defence noting only a four percent price difference between the tendered options.[99]

Separately, the nine ship project's delays required Defence to defer retiring the *Anzac*s, with an estimated additional $3.5bn of sustainment costs. The six ship project, supported by the *Mogami*s, should reduce this to some $1.5bn.[100]

Schedule: The nine ship project's final delivery was delayed by some six years, reflecting the issues with non-MOTS design and local build discussed above.[101] The six ship project is proceeding to a re-baselined schedule.

Capability: It is yet unclear whether the *Hunters* will perform as desired; the cost of the nine ships drove a potential capability reduction by needing to reduce vessel numbers.

Capability Comparators and Benefits

The selected comparators are MOTS Italian and French FREMM variants. This reflects the identification of these vessels as being potentially suitable by Defence for the project.[102] SEA 5000 costs are drawn from ANAO reporting, with for the first batch of three ships a 9.3% contingency allocated by the author.[103] FREMM costs are drawn from Italian frigate sales to Egypt and official French government estimates.[104] A 27%-97% FIC allowance was applied due to various items of naval base infrastructure being separately funded by Defence.

Cost & Schedule: The two FREMM offer the estimated cost and schedule savings shown in Table 3. These would stem from being MOTS systems built at existing well performing shipyards with recent experience in building the same vessels.

Capability: The two FREMM are judged to be acceptable in meeting requirements, noting their original inclusion by Defence as being acceptable MOTS vessels. The French vessel also has a demonstrated BMD capability, which the Italian unit lacks.

Section-III — Data on Jobs and Premiums

Data Sources and Modelling Considerations

Job numbers reflect direct jobs only, as these provide the firmest basis for analysis. Project job totals and schedules were taken from official government announcements. For the SSN, an estimate of depot-level maintenance jobs (both for construction and operation) and depot build schedule was developed based on foreign yards.

Construction job-years were modelled by using a ramp-up to the maximum roles advised by government, affected by the project duration. Generally, the maximum number of roles was then considered to hold steady until construction completion.

For manufacturing workforce job-years, a period of maximum concurrent work was identified when the most platforms would be in production based on public Defence schedule data. Maximum workforce was assigned to this period and modelled linearly as production rose from initial units to the maximum and then a declining tail-off. While workforce from one project would likely transfer to another as production wound down, the tail would still reflect the job totals being funded by the project in particular and hence would be appropriate for considering the effort's workforce impact.

Guide to Tables

Table 5 captures the overall employment outcomes, and average funding and funding premiums paid for by the taxpayer in comparison to an estimate of the amount required to have kept some 10,808 vehicle manufacturing jobs lost between 2013-2018 when government support was cut.[105] The job and funding totals for Defence projects reflect roles associated only with manufacturing the platforms themselves (i.e. excluding FIC) although the SSN figures also include roles associated with depot-level sustainment. Average amounts for SEA 1000, 4000, and 5000 were developed by adding the assessed minimum and maximum unit production costs and dividing by two. For the SSN, due to the uncertainty involved with assessing unit costs, simply the entire provision was used, with the maximum amount including utilising the project's 50% contingency. For the SSN, costs are presented in both constant and out-turned dollars.

Also provided (in the top row) is the comparator information for the vehicle sector, which lacks an infrastructure component as the factories were already in existence. Regarding the average support required for the vehicle sector ($6.8bn), this is the author's estimate based on the amounts provided by government in the last two years (2010/11-11/12) that the workforce remained reasonably stable. It is the average of a low figure ($4.8bn) of the required direct financial support and a high figure ($8.7bn) which reflects the Effective Rate of Assistance (ERA) to vehicle manufacturers and quantifies factors such as the effect of tariffs.[106]

The table itself is comprised of four sections, read left-to-right:

- Job Data: this provides the absolute number of years that project provided roles, the maximum number of jobs at any one time in total, and the number of job-years. Note that the absolute number of years in practice always reflects the length of the platform construction period, as in some instances infrastructure may have been partially completed and in limited use by the time manufacturing work began, making separation of these dates artificial. So, as a worked example, consider a two year shipyard construction project with 100 jobs total each year for two years (200 job-years), with the yard then engaging in a 10 year manu-facturing period with 500 jobs total for 10 years (equalling 5000 job years). This would result in 10 absolute years, 600 jobs, and 5,200 job years.

- **Mean funding:** this calculates the average funding as described above then divides this by the number of jobs and job-years to provide the funding for each.
- **Defence Premium Per Job:** This shows the premium paid for roles in comparison to the vehicle sector, as a percentage increase per job and per job-year.
- **Defence Premium and Job Results:** This shows the percentage premium paid for the project overall (by comparing the funding totals of the project compared to the amount required for vehicles), and the total extra jobs and job-years the project should bring in comparison to the car sector, with percentage increases or decreases compared to what was achieved for the vehicle sector.

Table 6 captures the same data as Table 5 but includes jobs and funds for build-related infrastructure (such as shipyards). All sections are the same as in Table 5. This data is presented for completeness as government announcements for the job benefits of Defence projects routinely include the infrastructure element.

Table 7 shows an estimate of the jobs able to be created by direct government investment alone with the funds saved by pursuing a purely MOTS Virginia SSN procurement. The workforce results are based on investing the surplus funds 50-50 in mixed residential and commercial construction and then advanced manufacturing. Employment totals reflect an average (per $1m of investment) of 3 jobs in residential construction, 2 in commercial and 1, 1.5, or 2 in advanced manufacturing. The construction sector figures are well-attested, the manufacturing roles reflect the author's estimates.[107] The manufacturing totals highlight the potential for far better job creation when Canberra supports more self-sustaining private industry. As noted in Table 1, federal support of some industry projects has created up to 60 jobs per $1m.

Of note for Tables 5 and 6, these actually under-represent the degree of premium that the Defence projects received. This is because they compare these projects' funding to the absolute estimate of what was required for the vehicle sector and treat the latter as if no funding was provided. Yet, in fact, while government support declined dramatically across the period 2012-2018, there was still some funding. If the Defence funding was compared only to the variation between what was necessary from Canberra for the vehicle sector and what was provided, the figures would be even more adverse.

Endnotes

1 Department of Defence, 2026, *National Defence Strategy Budget Factsheet* (Australian Government). https://www.defence.gov.au/sites/default/files/2026-04/2026%20NDS_Budget%20factsheet%20A4_WEB.pdf

2 Defence, *Budget Factsheet*.

3 This report uses the same definition of MOTS as that provided by the Department of Defence: "…systems, hardware or software that already exists or is confirmed in service for an equivalent purpose and requires no, or minimal change." See: Department of Defence, 2019, *Defence Test and Evaluation Policy* (Australian Government), Annex 1A, Definitions, p.ii.

4 Carling, Robert, 2025, *Leviathan on the Rampage: Government spending growth a threat to Australia's economic future* (Centre for Independent Studies). https://www.cis.org.au/wp-content/uploads/2025/07/AP84-Leviathan-on-the-Rampage.pdf

5 Davies, Andrew, Henry Ergas, and Mark Thomson, 2012, *Should Australia build warships?* (Australian Strategic Policy Institute (ASPI)), 13,23.

6 Under the *Public Governance, Performance and Accountability* Act 2013 (PGPA) ministers and officials are accountable for the proper use or management of public resources, with proper defined as "efficient, effective, economical and ethical". See: PGPA Act 2013 (Cth), S.8,15, 71. https://www.legislation.gov.au/C2013A00123/2017-08-23/2017-08-23/text/1/epub/OEBPS/document_1/document_1.html

7 Department of Finance, 2025, *Commonwealth Procurement Rules* (Australian Government), 16. https://www.finance.gov.au/sites/default/files/2025-10/Commonwealth-Procurement-Rules-2025.pdf

8 Department of Defence, 2024, Defence Portfolio Budget Statements (PBS) 2024-25 (Australian Government), 3,25.

9 SSN is a term of military nomenclature and means simply a nuclear-powered attack submarine.

10 For an overview see: Defence, *PBS* 2024-25, 3-16. Of note the term 'Defence' more typically is used to refer only to the essentially unified entity that is comprised of the Department of Defence and the ADF, see: Defence. PBS 2024-25, 3.

11 Carling, *Leviathan*.

12 Meaning that, for example, a ship that costs 100% more than the baseline vessel is one that is double the price, 200% reflects tripe the baseline, and so on.

13 For spending see: Carling, *Leviathan*; Defence, *PBS* 2025-26, 18. For global rankings see: Liang, Xiao, Nan Tian, Diego Lopes da Silva, Lorenzo Scarazzato, Zubaida Karim, and Jade Guiberteau Ricard. 2026. *Trends in World Military Expenditure*, 2025. (Stockholm International Peace Research Institute (SIPRI)). https://www.sipri.org/sites/default/files/2026-04/2604_milex_2025.pdf

14 Hellyer, Marcus. 2026. "Australia's 2026 National Defence Strategy (NDS) – by the numbers you will know it." (Strategic Analysis Australia), https://strategicanalysis.org/the-2026-national-defence-strategy-by-the-numbers-you-will-know-it/

15 For a review see: Department of Finance, 2022, "Guide to Appropriations" (Australian Government), https://www.finance.gov.au/publications/resource-management-guides/guide-appropriations-rmg-100

16 Defence, *Budget Factsheet*.

17 Australian National Audit Office (ANAO), 2025, *2024–25 Major Projects Report* (MPR) (Australian Government), https://www.anao.gov.au/work/major-projects-report/2024-25-major-projects-report

18 A subtlety in cost growth is that projects start with estimates of what capability delivery will cost (a 'provision') and this may increase substantially as Defence refines its needs or obtains more solid price information. Such provisions are used for planning purposes and are not yet 'approved budgets' where Government has agreed to the sum being spent. Government approval is sought once costs are firmer, and such approved budgets more rarely see cost growth, although delays are frequent and planned annual spends are often not met. See : Hellyer, Marcus, 2022, Understanding the price of military equipment (ASPI), https://www.aspi.org.au/report/understanding-price-military-equipment, 23,39-41.

19 Capability acquisition, sustainment, and personnel comprise about equal thirds of the Defence budget, a common split in large organisations. See: Hellyer, *Australia's 2026 NDS*. Reducing sustainment and personnel budgets is difficult as costs are fairly fixed: one or one hundred fighter jets still need an airfield, one tank will require one crew, and a certain number of mechanics and spare parts are needed to overhaul a ship. To reduce such budgets generally requires government divesting quantities of military equipment and personnel, reducing Defence's ability to defend Australia and risking political backlash, although acquiring less expensive systems does also typically enable cheaper sustainment.

20 Since 2016 Defence has failed to raise its capability acquisition budget from 30% of its overall funding to various goals of 39-42%, currently operating at some 34%. See: Hellyer, *Australia's 2026 NDS*.

21 A practice referred to by the government as 'reprioritisation' and has seen changes such as cutting the numbers of armoured vehicles for the Australian Army from 450 to 129 in Project Land 400 Phase 3, or postponing for years air and missile defence projects. See: Hellyer, *Australia's 2026 NDS*. Practically, the need for additional monies is also met through the technique of 'over-programming' where more spend is planned in any given year then can actually be funded, under the expectation that some projects will slip. However, this does not necessarily provide sufficient certainty for effective management. See Davies, Andrew, and Mark Thomson, 2013, "Graph of the week: a short history of over-programming in defence acquisition." (ASPI), https://www.aspistrategist.org.au/graph-of-the-week-a-short-history-of-over-programming-in-defence-acquisition/

22 The 2024 National Defence Strategy (NDS) states that "Australia faces the most complex and challenging strategic environment since the Second World War." and that the security environment is continuing to deteriorate. These sentiments continue in the 2026 NDS. See: Department of Defence 2024, *National Defence Strategy* (Australian Government), https://www.defence.gov.au/about/strategic-planning/2024-national-defence-strategy-2024-integrated-investment-program

23 For a far more detailed exposition, see: Department of Defence, 2025, *The One Defence Capability System* (ODCS) Manual (Australian Government), https://www.defence.gov.au/about/strategic-planning/2024-national-defence-strategy-2024-integrated-investment-program

24 Further, such considerations are heavily dependent on classified data and scenarios being considered, such as an overseas peacekeeping deployment versus defending Australia from invasion or blockade.

25 In practice force structure design and requirements setting is a more dynamic, inter-related, and iterative process. If high-performing military systems of one type can be acquired (a function of requirements) then this may reduce the types and numbers needed of others (force structure).

26 Again, in practice there is a more interactive process between requirements setting and acquisition. For example, there would be little point in setting requirements for new equipment that were substantially less capable than available to adversaries on the open market.

27 A recent practical example of different aircraft meeting requirements to different levels can be found in the Canadian assessments of the F-35 and Gripen jets to meet performance requirements. Both were found suitable at minimum, but the F-35 demonstrated superior performance towards aspirational goals. See: Leblanc, Daniel. 2025. "F-35 beat Gripen fighter jet 'by a mile' in 2021 Defence Department competition." *Canadian Broadcasting Corporation (CBC) News*, 29 November 2025. https://www.cbc.ca/news/politics/f-35-gripen-dnd-competition-9.6992167

28 Indeed just such a process occurred in the 1980s with the acquisition of the ADF's Austeyr rifle, where essentially an existing Austrian production line for the basic Steyr rifle was replicated in Australia. See: Masters, Chris, 2019, *Sticking to our guns* (ASPI).

29 See: Birkler, John, John F. Schank, Mark V. Arena, Edward G. Keating, Joel B. Predd, James Black, Irina Danescu, Dan Jenkins, James G. Kallimani, Gordon T. Lee, Roger Lough, Robert Murphy, David Nicholls, Giacomo Persi Paoli, Deborah Peetz, Brian Perkinson, Jerry M. Sollinger, Shane Tierney, and Obaid Younossi, 2015, *AUSTRALIA'S NAVAL SHIPBUILDING ENTERPRISE* (RAND Corporation), xxxv, 124,131. https://www.rand.org/pubs/research_reports/RR1093.html

30 Defence of course does attempt to deliver VfM, generally via seeking higher performance systems that notionally provided disproportionate capability benefit relative to price. Yet practically, high requirements lead to substantial cost growth and especially delay, undermining achieving VfM.

31 For schedule see: Australian National Audit Office (ANAO), 2021, *2020-21 MPR* (Australian Government), 56, https://www.anao.gov.au/work/major-projects-report/2020-21-major-projects-report; for cost see: ANAO, 2013. *Capability Development Reform* (Australian Government), 202-203, https://www.anao.gov.au/sites/default/files/AuditReport_2013-2014_06.pdf

32 See: Mortimer, David, 2008. *Going to the next level: the report of the Defence Procurement and Sustainment Review*. (Australian Government), 18, http://repository.jeffmalone.org/files/defence/mortimerReview.pdf

33 See: Mortimer, *Going to the next level*, 17-19.

34 Including the 2003 Kinnaird, 2008 Mortimer, and 2009 Pappas reviews. For a discussion of these and other works see: ANAO, *Capability Development Reform*.

35 ANAO, *2020-21 MPR*, 53-54.

36 See: Department of Defence, 2024, *Defence Industry Development Strategy (DIDS)* (Australian Government), 40, https://www.

defence.gov.au/about/strategic-planning/defence-industry-development-strategy.

37 Noting the example in the DIDS is the Australian radar firm CEA, and that use of the company's systems was mandated for the SEA 5000 project which suffered delays and cost growth. See endnote 98.

38 The SDIP are "…the industrial capabilities Defence requires in Australia… rather than being sourced from an overseas supply chain", see: Defence, *DIDS*, 17. Industry percentages are author's analysis comparing the SDIP to the Priority and Sovereign Industrial Capabilities contained in earlier government documents such as the 2018 Defence Industrial Capability Plan (DICP), see: Department of Defence, 2018, *DICP* (Australian Government), https://apo.org.au/sites/default/files/resource-files/2018-04/apo-nid142496_0.pdf. Assessment of 80% industry coverage drawn from: Bourke, Rob, 2019, *Defence projects and the economy* (ASPI), Appendixes 2 and 8, https://s3-ap-southeast-2.amazonaws.com/ad-aspi/2019-08/SR 144 Defence projects and the economy_1.pdf.

39 The 2009 Pappas Review noted that "'there appears to be a deep cultural attachment [in Defence] to Developmental/Australianised projects". As quoted in ANAO, *Capability Development Reform*, 40.

40 Historically this was stated as assessing the ADF's ability to fight effectively against its "highest priority threats", whereas today it more reflects determining how it can "maximise and apply power". See: Department of Defence, 2006, *Defence Capability Development Manual* (Australian Government), 17, http://repository.jeffmalone.org/files/defence/dcdm.pdf; and Concept APEX as discussed in Department of Defence, *OCDS*, 39, and Australian Defence Force (ADF), 2025, *ASPECT ADF Air Domain Concept* (Australian Government), https://airpower.airforce.gov.au/sites/default/files/2025-08/Concept%20ASPECT%20Ed%201.pdf.

41 See: DefenceSA, 2026, "South Australia The Defence State.", Government of South Australia, https://defencesa.com.

42 See: Department of Defence, *DICP* and *DIDS*; Department of Defence, 2017, *Naval Shipbuilding Plan* (Australian Government) https://www.wa.gov.au/system/files/2020-10/NavalShipbuildingPlan.pdf; and Department of Defence, 2024, *Naval Shipbuilding and Sustainment Plan (NSSP)* (Australian Government), https://www.defence.gov.au/about/strategic-planning/2024-naval-shipbuilding-sustainment-plan.

43 For a selection of analyses on these issues see: Davies, Ergas, and Thomson, *Should Australia build warships?*; Bourke, *Defence projects*; *Building Submarines in Australia*, 2016 (Department of Defence), https://www.defence.gov.au/sites/default/files/2022-03/256_2122_Documents.pdf; ANAO, 2018, *Naval Construction Programs — Mobilisation* (Australian Government), 49-50, https://www.anao.gov.au/work/performance-audit/naval-construction-programs-mobilisation; Macroeconomics, 2014, *A Preliminary Analysis of the Economic Impact of Future Submarines,* (Macroeconomics). https://macroeconomics.com.au/wp-content/uploads/2021/04/A_Preliminary_Analysis_of_the_Economic_Impact_of_Future_Submarines_Based_on_the_Collins_Program.pdf; RAND, *AUSTRALIA'S NAVAL SHIPBUILDING;* Andrew, Davies, 2018, "Can Australia fight alone?" *Australian Foreign Affairs* (2): 43-66.

44 A $137.2m federal and industry co-funded grant program was forecast to create some 4,288 jobs. With a Canberra's contribution of not more than $68.6m (half of a planned fund), this results in around 62 jobs per $1m of taxpayer investment. See: Advanced Manufacturing Growth Centre (AMGC), 2022, "Co-investment in Australian manufacturing drives real growth." (AMGC) https://amgc.org.au/media-releases/co-investment-in-australian-manufacturing-drives-real-growth/

45 For a discussion of the differences in naval build versus support requirements see: RAND, *AUSTRALIA'S NAVAL SHIPBUILDING*. For a review of current sustainment infrastructure see Department of Defence, *NSSP,* 44-45.

46 One economic argument for domestic shipbuilding (and associated higher prices) is that for the sum invested the government reaps not only the ship but another $Xm of local economic activity (the multiplier effect) that would otherwise not occur. Australia's shipbuilding multiplier is 76%. Hence if a domestic warship is greater than 76% more expensive than a foreign vessel (or the inverse, the overseas ship is 44% cheaper) a larger economic benefit can be achieved by purchasing the overseas ship and investing the difference in price directly into other local industries with an equal or higher multiplier. For example, a $100m local warship will produce another $76m of economic activity. Buying a $56m (44% cheaper) foreign ship leaves $44m for reinvestment. Placing this sum into, for example, electricity generation (multiplier of 138%) generates some $105m of local activity, $29m more than shipbuilding. While these figures reflect overall shipbuilding rather than naval vessels specifically, studies have shown that naval multipliers are

uncertain to arise but when they do, they are generally 70-90%, hence the Australian average is considered a useful representative. For current multipliers see Table 7 in: Australian Bureau of Statistics (ABS), 2026, *Australian National Accounts: Input-Output Tables* (Australian Government), https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-input-output-tables/2023-24 or a discussion of naval multiplier rates see: RAND, *AUSTRALIA'S NAVAL SHIPBUILDING*, 134.

47 See: Department of Defence. 1987. *The Defence of Australia.* (Australian Government). https://www.defence.gov.au/sites/default/files/2021-08/wpaper1987.pdf, 62.

48 See: Department of Defence, 2024, *Enhanced Lethality Surface Combatant Fleet* (Australian Government), https://www.defence.gov.au/sites/default/files/2024-02/ELSCF_Factsheets_Larger_and_Lethal_Navy.pdf.

49 These figures are purely indicative but would scale appropriately with actual size of required workforces. They reflect that shipbuilding requires three-to-seven times more personnel than deep maintenance and upgrade work, and 30-70 times more labour than routine maintenance (see RAND, *AUSTRALIA'S NAVAL SHIPBUILDING*, 15). The figures shown treat each 10 ships as requiring 100 sustainment roles, a build requiring 500 roles (midway between the three-to-seven times more labour for builds), and 100 sustainment roles as always required at minimum each year of the 20 year period to maintain retiring vessels even as new ones took their place. Hence a 10 ship domestic build creates 12,000 job-years in total (including 2,000 sustainment), a 10 ship foreign build requires 2,000 sustainment job-years, and a 20 ship foreign build requires 2,800 sustainment years. See this report's Table 6 for an example of other job creation opportunities.

50 Totals based on current Organisation for Economic Co-operation and Development (OECD) data. While Australia does spend more on defence R&D as a percentage than most other OECD states (7.63% compared to an average of 4.75%) this share cannot compensate for the overall smaller R&D spend in total. Further, nations like South Korea spend 17.14% of their already higher R&D budget on defence research. See: OECD, 2026, *Main Science and Technology Indicators – March 2026* (OECD) https://www.oecd.org/en/data/datasets/main-science-and-technology-indicators.html.

51 Australia's professional, technical and scientific services have a multiplier of 78%. See: ABS, *Australian National Accounts*.

52 See: Defence News Army, 2026, "Australia Reinforces Allied Indo-Pacific Deterrence with Local Production of Norwegian NSM and JSM Missiles." *Global Defence News*, 15 May 2026, https://www.armyrecognition.com/news/army-news/2026/australia-reinforces-allied-indo-pacific-deterrence-with-local-production-of-norwegian-nsm-and-jsm-missiles and Department of Defence, 2024. *The Australian Guided Weapons and Explosive Ordnance Plan.* (Australian Government), https://www.defence.gov.au/about/strategic-planning/australian-guided-weapons-explosive-ordnance-plan For costs see: Rogoway, Tyler, 2024, "What The Navy's Ship-Launched Missiles Actually Cost" The War Zone (TWZ), https://www.twz.com/sea/what-the-navys-ship-launched-missiles-actually-cost

53 Cost of Barracuda-500 based on Taiwanese domestic manufacture price target. While such weapons do require the repeated use of launch platforms such as the F-35, alternatives have been developed that utilise mass launch from cargo aircraft such as the C-17 to convert them to arsenal planes. Ultimately, the key aim is the exhaustion of an adversary's defensive capacity, forcing it to retreat or face destruction. See: Lee, Yimou, and Fabian Hamacher, 2025, "Taiwan shows off first missile to be jointly manufactured with US arms maker." *Reuters*, 17 September 2025. https://www.reuters.com/business/aerospace-defense/taiwan-shows-off-first-missile-be-jointly-manufactured-with-us-arms-maker-2025-09-17/; and Trimble, Steve, 2026, "Fresh Approach Ushers In New Era For Mass-Produced Cruise Missiles" *Aviation Week*, 23 April 2026, https://aviationweek.com/defense/missile-defense-weapons/fresh-approach-ushers-new-era-mass-produced-cruise-missiles

54 The various ANAO MPR for example only measures planned versus actual schedule achievement, even though Australianised and developmental projects will generally already have factored in a schedule buffer compared to a MOTS procurement.

55 ANAO, *Naval Construction Programs*, 47.

56 For discussions see: Hellyer, *Understanding the price*, and RAND, *AUSTRALIA'S NAVAL SHIPBUILDING*.

57 As is indeed planned to occur, see: Blenkin, Max, 2025. "More on *Mogami*." *Australian Defence Magazine (ADM)* 5 August 2025, https://www.australiandefence.com.au/defence/sea/more-on-*Mogami*

58 Naval projects dominate as they represent one of the few types of major system able to be principally assembled in Australia, and

also because due to their costs they offer the greatest savings.

59 The comparators were selected due to being identified by Defence as suitable MOTS options for each project or being judged so by the author as a former Defence capability analyst. Further information is in Annex A, Section-II.

60 Constant dollars simply indicate how much the project would cost if the entire expenditure was in one year and are used to provide a common point of comparison across diverse projects. This is in contrast to 'out-turned' dollars, which Defence normally uses, that captures future spending profiles and accounts for inflation. For a discussion see Hellyer, *Understanding the price*.

61 The utility of considering job-years is they provide an even-handed way of comparing the efficacy of different projects. For example, a $1bn project that creates 500 jobs in total and lasts two years hence produces 1,000 job-years. Another $1bn may create only 200 jobs, but if it lasts a decade will produce 2,000 job-years.

62 While the table and project descriptions in Annex A refer only to the major systems each project was to deliver, in each case the relevant support system (such as infrastructure and munitions) was also to be delivered. This is included in the costs listed.

63 In October 2015 Defence publicly stated that the project's cost would be some $50bn out-turned, yet after receiving tenders based on requirements for a regionally superior submarine, by March 2016 had an internal estimate for SEA 1000 of $79.8bn out-turned, with this then being publicly reported as around $80bn out-turned some two years later. See: Hellyer, Marcus, 2020, "Has the cost of Australia's future submarines gone up? Part 2." *The Strategist*, 28 April 2020, https://www.aspistrategist.org.au/has-the-cost-of-australias-future-submarines-gone-up-part-2/, and ANAO, 2022, *Defence's Administration of the Integrated Investment Program* (Australian Government), https://www.anao.gov.au/work/performance-audit/defences-administration-the-integrated-investment-program.

64 The entirety of the potential savings identified for the project are considered as salvageable as little of the provision has been spent thus far and much of this has gone towards the US industrial base. Also, the contingency for the project is so large (50%) that the amount to be spent is essentially unknowable.

65 See: Macfarlane, Ian, 2015. "Interview on ABC Radio National Breakfast." *Australian Broadcasting Corporation (ABC) Radio National Breakfast*, 26 May 2015 https://www.minister.industry.gov.au/ministers/macfarlane/transcripts/interview-abc-radio-national-breakfast and ANAO, 2019, *Defence's Management of its Projects of Concern* (Australian Government), 67-74, https://www.anao.gov.au/sites/default/files/Auditor-General_Report_2018-2019_31.pdf

66 See: ANAO, 2014, *Air Warfare Destroyer Program* (Australian Government), 22, https://www.anao.gov.au/sites/default/files/AuditReport_2013-2014_22.pdf

67 Depot-level maintenance jobs are included as these too would not exist without the current approach of AUKUS. An alternative would be for deport-level work to be conducted at allied yards in the US. This is discussed in the comparator project in Annex A.

68 For the SSN the overall program costs are used both due to the difficulty in assessing build costs and to emphasise the project's scale.

69 Table 7 data is used as that captures both SSN manufacture and infrastructure construction jobs and job-years, providing the appropriate comparison to the proposed alternative program comprised of a mixture of manufacturing and construction work. Further information is at Annex A.

70 See: Boisvert, Eugene. 2026. "Prime Minister announces $3.9 billion 'down payment' towards $30b Adelaide submarine shipyard." *ABC News*, 15 February 2026. https://www.abc.net.au/news/2026-02-15/down-payment-for-30b-adelaide-submarine-shipyard/106346484.

71 Further, the peak job totals for these projects will only come some years in the future, and should the manufacturing sector keep growing then government subsidies will be being spent on an even smaller fraction of the workforce. For workforce numbers see: Jobs and Skills Australia, 2026, "Manufacturing." Occupation and Industry Profiles, Australian Government, Accessed 16 June 2026. https://www.jobsandskills.gov.au/data/occupation-and-industry-profiles/industries/manufacturing

72 See: *Building Submarines in Australia*, 6.

73 See: Department of National Defence. 2021. "Independent Review Panel for Defence Acquisition." Government of Canada. Last Modified 14 December 2021. https://www.canada.ca/en/independent-review-panel-defence-acquisition.html

74 The intent is similar to Defence's Minimum Viable Capability concept but with greater oversight of performance requirements,

Australianisation, or domestic production. See Defence, *ODCS*, 14.

75 See: Hellyer, *Understanding the price.*

76 See: Defence, *ODCS*, 76-77.

77 See: Hellyer, *Understanding the price*, 31.

78 See: Hellyer, *Understanding the price*, 25.

79 Examples of ANAO sources include various MPR and individual reports such as on the AWD.

80 See: RAND, *AUSTRALIA'S NAVAL SHIPBUILDING*, Chapter 5. Unit costs prices were developed from the relative cost indexes, with this then applied to the SEA 4000 budget to determine the FIC allocation. The same indexes and FIC percentages were applied to the comparator projects.

81 For example the likely funding sources of shipyard upgrades in South Australia being equity injections to the government-owned company Australian Naval Infrastructure, and these being funded by Treasury from outside of the Defence budget. See: Hellyer, *Australia's 2026 NDS*.

82 For example, the design for the Italian FREMM General Purpose (enhanced) baseline vessel (a comparator for SEA 5000) allows for fitting a variable depth sonar and additional missile launch cells, although the specific ships used as a cost basis were not fitted with these systems. So, an additional allowance based on publicly available prices for such systems was included to bring the vessel into broad alignment with the similarly equipped *Hunter* class ships.

83 In FY24/25 out-turned dollars. As announced the figure was $368bn out-turned. See: Parliamentary Budget Office. 2023. *The cost of nuclear submarines.* (Australian Government). https://www.pbo.gov.au/sites/default/files/2023-05/The%20cost%20of%20nuclear%20submarines%20PDF.pdf

84 In practice each of these vehicles' parent nations and companies can be described in different ways. The nomenclature used here is typical.

85 See: ANAO, 2026, *Defence's Procurement of Infantry Fighting Vehicles (Land 400 Phase 3)*, (Australian Government), https://www.anao.gov.au/work/performance-audit/defences-procurement-of-infantry-fighting-vehicles-land-400-phase-3

86 See: ANAO, *Land 400 Phase 3*.

87 See: Hoffmann, Oliver, 10 September 2020, "NATO member Hungary orders 218 Lynx infantry fighting vehicles from Rheinmetall worth more than €2 billion," Press Release, https://www.rheinmetall.com/en/media/news-watch/news/2020/2020-09-10_major-defence-deal and Thoren, Ola, 12 December, 2022, "Slovakia signs $1.37 billion deal for 152 CV90s under government-to-government agreement," Media Release, https://www.baesystems.com/en-us/article/slovakia-signs-deal-for-152-cv90s-under-government-to-government-agreement.

88 See: ANAO, *Land 400 Phase 3*, footnote 63.

89 See: McPhedran, Ian, 2014, "Abbott Government to spend $20 billion on Japanese submarines in major blow to SA's defence industry." news.com.au. Last Modified 7 September, https://www.news.com.au/national/south-australia/abbott-government-to-spend-20-billion-on-japanese-submarines-in-major-blow-to-sas-defence-industry/news-story/070a39ca785d2d8957212e91789fa4df.

90 See: Carney, Matthew, 2014, "*Soryu* submarine deal: Japanese insiders warn sub program will cost more, hurt Australian jobs." ABC News, https://www.abc.net.au/news/2014-09-15/japanese-concerns-over-submarine-deal/5743022; Ministry of Defence, 2014, *Defense Programs and Budget of Japan* (Government of Japan), https://www.mod.go.jp/en/d_act/d_budget/pdf/260130.pdf; and ANAO, *Defence's Administration*.

91 See this report's endnote 63.

92 $2 billion in constant FY2024/25 price basis, $1.4bn as assessed in 2009. See: ANAO, 2009, *The Super Seasprite* (Australian Government), https://www.anao.gov.au/sites/default/files/ANAO_Report_2008-2009_41.pdf, 14.

93 See ANAO, *Super Seasprite*, 71.

94 The cost of the *Penguin* missiles for the *Super Seasprite* is usefully included as no other ADF platforms used such weapons, hence they are an overall loss directly tied with the project. See ANAO, *Super Seasprite*. Further, inclusion of these weapons is appropriate as it allows for comparison against the New Zealand purchase which acquired some number of missiles but without this number being broken out in detail, see: East, Paul, 11 March 1997, "Government Chooses Kaman *Seasprite* to Replace Wasp Helicopter Fleet," https://www.beehive.govt.nz/release/government-chooses-kaman-*Seasprite*-replace-wasp-helicopter-fleet

95 The current SEA 3000 provision is $15-20bn (out-turned) to 2035-36. Media reporting indicates $10bn is allocated to the first three Japanese built units. Construction of the first Australian GPF will commence no earlier than after the current Landing Craft fabrication concludes between 2032-38. This suggests

strongly that $5bn-$10bn is assigned to the first Australian GPF. See: Department of Defence, 2026, *Integrated Investment Program* (Australian Government), 38, https://www.defence.gov.au/about/strategic-planning/2026-national-defence-strategy-2026-integrated-investment-program; Sier, Jessica, and Ronald Mizen. 2025. "Japan wins $10b deal to build three Aussie warships." *Australian Financial Review*, 5 August, 2025. https://www.afr.com/policy/foreign-affairs/japan-clinches-10bn-australian-warship-deal-20250805-p5mkby; and Department of Defence, 2026, "Press Conference, Henderson Shipyard", Australian Government, https://www.minister.defence.gov.au/transcripts/2026-02-20/press-conference-henderson-shipyard.

96 For an overview see: ANAO, *Air Warfare Destroyer*

97 The SFR undertook an analysis of the suitability of the RAN's planned surface fleet force structure (three *Hobart* and nine *Hunter* class ships) to fulfil Defence's objectives. The Review recommended, among other changes, reducing the number of *Hunters* and procuring instead 7-to-11 smaller and cheaper GPF. While this was explained as a change driven by an updated assessment of requirements, it is difficult to ignore the unaffordability of the original *Hunter* class project as influencing this decision. See Hilarides, William, Rosemary Huxtable, and Stuart Mayer, 2024, *Independent Analysis into Navy's Surface Combatant Fleet* (Australian Government), https://www.defence.gov.au/about/reviews-inquiries/independent-analysis-navy-surface-combatant-fleet.

98 SEA 5000 mandated the winning design was to integrate of the MOTS US Aegis combat system, and two developmental Australian-unique systems — the CEAFAR radar and Australian Tactical Interface. Of the contender vessel designs, only the modified F100 had Aegis integrated, and ultimately the least mature Type 26 design was selected. This required the development of the ship itself, together with integration of the above mentioned systems, two of which themselves were immature. See: Kuper, Stephen, 2018, "SEA 5000 combat system partners confirmed" *Defence Connect*, Last Modified 23 November 2018. https://www.defenceconnect.com.au/naval/3212-sea-5000-combat-system-partners-confirmed

99 See: ANAO, 2023, *Department of Defence's Procurement of Hunter Class Frigates* (Australian Government), 51, https://www.anao.gov.au/work/performance-audit/department-defences-procurement-hunter-class-frigates

100 For delays in *Anzac* sustainment see: ANAO, 2019, *ANZAC Class Frigates — Sustainment* (Australian Government), https://www.anao.gov.au/work/performance-audit/*Anzac*-class-frigates-sustainment.

101 The original schedule for SEA 5000 envisaged a delivery of the ninth and final ship around 2038 with this subsequently amended to 2044. See: Defence, *NSP*, 15, and ANAO, *Hunter Class Frigates*, 12.

102 The two designs exist in several variants, with France's included ASW and Air Defence focussed ships, and Italy's including ASW, General Purpose, and General Purpose (enhanced) ships also capable of ASW. For a useful summary see: Wikipedia, 2026, "FREMM multipurpose frigate" Wikipedia, Accessed 30 May 2026. https://en.wikipedia.org/wiki/FREMM_multipurpose_frigate.

103 A 9.3% contingency was applied to Phase 1 of the project and certain other cost allocations. Calculation based on: ANAO, *Hunter Class Frigates*, Table 1.2.

104 See: Gain, Nathan. 2021. "Second Italian-Built FREMM Delivered To Egypt Reaches Alexandria." *Naval News*, 20 April 2021, https://www.navalnews.com/naval-news/2021/04/second-italian-built-fremm-delivered-to-egypt-reaches-alexandria/ and French Senate, 2015, *Finance Bill for 2015: Defense: Equipment of Forces.* (Government of France), https://www.senat.fr/rap/a14-110-8/a14-110-819.html.

105 Author's estimate based on review of decline in category 2311 "Motor vehicle manufacturing" workforce numbers across the period based on ABS historical data. See: 2012-13 to 2017-18 of ABS, 2026, "Australian Industry", Australian Government, https://www.abs.gov.au/statistics/industry/industry-overview/australian-industry.

106 For rates of assistance see: Productivity Commission, 2013, *Trade and Assistance Review 2011-12* (Australian Government). https://www.pc.gov.au/ongoing/trade-assistance/2011-12/ and Productivity Commission, 2012, *Trade and Assistance Review 2010-11* (Australian Government). https://www.pc.gov.au/ongoing/trade-assistance/2010-11/.

107 For construction sector jobs see: National Housing Finance and Investment Corporation, 2020, *BUILDING JOBS HOW RESIDENTIAL CONSTRUCTION DRIVES THE ECONOMY* (Australian Government), https://www.housingaustralia.gov.au/sites/default/files/2022-10/building-jobs-how-residential-construction-drives-the-economy-final4.pdf and Department of Planning, Housing and Infrastructure, 2020, *Measures of construction*

and job impacts from fast-tracked projects (New South Wales Government), https://www.planning.nsw.gov.au/sites/default/files/2023-03/measures-of-construction-and-job-impacts-from-fast-tracked-projects.pdf. For manufacturing jobs, note that in certain cases (see endnote 44) government investment has produced up to 60 jobs per $1m invested (with at most equal co-contributions by industry), based on this a manufacturing job creation level of 1-2 jobs per $1m of direct investment is considered plausible.

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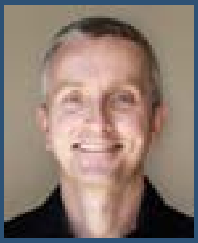

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Dr Victor Abramowicz has worked for over 20 years in the national security sector across government, industry and academia, including 13 years in the Australian Department of Defence in a range of intelligence, strategic and international policy and capability development areas. He specialises in defence policy and strategy, capability development, military technology, security relations in East Asia and Eastern Europe, and military history. His opinion pieces have been published widely, including by The Wall Street Journal, Bloomberg Businessweek, the Lowy Institute and the Australian Strategic Policy Institute.

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