

Developing Australia's defence industrial base:

A time for urgency, optimism and action

NIOA Group
Gilmour Space Technologies
Austal
Macquarie Technology Group
Australian Industry & Defence Network

December 2023

sovereign capability



AIDN

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Gilmore Space Technologies, Australia's leading venture-capital-backed space technology company, www.gspace.com

Macquarie Technology Group, Australia's data centre, cloud, cyber security and telecom company, www.macquarietechnologygroup.com

NIOA, Australia's largest family owned global munitions company, www.nioa.com.au

SAPA's shared goal is to advocate for Federal Government to cultivate and support Australia's sovereign prime contractor companies in the interests of achieving a more secure, self-reliant and resilient Australia.

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Executive summary

This report sets out a pathway to building genuine sovereign capability in Australia's defence industry.

It's the creation of a group of Australian companies from diverse areas, but all with the purpose of keeping our nation secure in dangerous times.

We are the NIOA Group, Gilmour Space Technologies, Austal, Macquarie Technology Group, and the Australian Industry Defence Network.

We think that a broad consensus is developing in government, parliament and society that now is the time to take bold steps to strengthen Australia's national security. The world has entered a new age of instability, strategic competition and uncertainty. We must stop the slide towards conflict by reinforcing the sinews of deterrence and stability. We can do that by strengthening our alliance and international partnerships, building up the Australian Defence Force (ADF) and boosting our industrial capacities.

The current and recent Australian governments should be applauded for their considerable efforts to deliver precisely those outcomes, but it's clear that more must be done, and done more quickly.

This report is intended to be a practical, constructive contribution to the public debate and government decision-making on how best to harness the capacities of Australian industry to equip and support our defence force and also be a better, stronger partner to our friends and allies.

The 12 chapters contain forward-looking ideas, informed by practical understanding of how Australian companies succeed, grow and deliver, combined with an appreciation of the challenges and authority that working in government can bring. We propose a deep working partnership between Australian companies, government ministers and the Defence organisation, driven by the urgency of our strategic environment and focused on results that strengthen Australia's military power and national security.

We do not think that war in our region is inevitable. We must play our part in collective security and deterrence to make conflict less likely—and we must be prepared in the event that deterrence fails, as it has in Israel and Ukraine.

We see defence industrial capacity as contributing to broader national goals beyond defence. It's an enabler of national resilience to weather unexpected shocks from multiple causes—recent examples for Australia being the Covid-19 pandemic and the national bushfire disaster that preceded it.

Given the risks of dependency on single sources of supply, a lesson from recent crises is that Australia needs multiple approaches to reduce supply-chain risks in defence and other parts of our economy. Defence industry policy done well can help here.

And, however trusted and capable offshore partners and their local arms may be, the simple fact is that those sources of supply can be stretched in meeting their own national needs. That creates a need for Australia to be able to call on companies headquartered here and with operations here. In the gravest crisis, Australian priorities will be their core focus.

The lesson from other countries, with differing political, geographical, strategic and economic environments, is that even the most open economies can provide a policy environment that grows vibrant local defence industries. Defence industries in South Korea, Sweden, Türkiye and Israel show that this is possible.

We can learn from their approaches and adapt ideas to our own environment, economy and political system.

The good news is that, despite a consistent narrative to the contrary, Australia has a highly capable industrial base that produces powerful, innovative products across a wide span of sectors. Australia is highly capable in the world of technology, all things digital and something that is becoming more obviously critical to an effective military: developing and making 'the small, the smart and the many'—systems that have a real impact on the battlefield but can be made in numbers that let them be used, lost and rapidly replaced.

We have highly capable space and counter-space firms, digital and health services, and manufacturing, from the small and the precise to complete armed surface ships.

The arms of big multinational defence and tech primes that operate in Australia are essential elements in our national defence, as are partnerships between those firms, their multinational elements and Australian-headquartered companies. However, Australia's alliance and partnerships, from AUKUS to our growing strategic partnerships with Japan, South Korea and European powers, can't thrive without a strong Australian-owned industrial base that makes Australia a contributor and not just a customer.

So, what is to be done?

We propose eight key recommendations to be acted on urgently, all of which are explored and explained in this report.

1. Declare the intent to establish Australian defence industry primes

The government should state that Australia's deteriorating strategic outlook is such that a major effort is needed to build and sustain Australian-owned defence industry prime contractors (primes).

The government must set the market conditions that will enable those firms to emerge.

Supporting the cultivation of Australian defence industry primes will not preclude using the US Foreign Military Sales program for acquisitions, or contracting foreign-owned defence industry primes, but we can't maintain our current excessive reliance on international partners at a time when those partners are facing their own crisis of defence supply.

2. Establish a Government Defence Industry Steering Council

Too much defence industry policy has been made in Australia *for* defence industry and not *with* defence industry.

A Government Defence Industry Steering Council should be established, reporting directly to the Minister for Defence. It must be drawn from leaders of companies with their headquarters in Australia and operations here and be a combination of large, medium and small Australian firms.

Its key value will be to bring Australian industry into a trusted and senior-level policy discussion with government and to ensure that direct and effective working relationships are formed between

the skilled personnel in our companies and their military customers.

Its key purpose will be to monitor the implementation of the Australian industry policy directions outlined in this report and work in partnership with government to deliver against its priorities.

3. Produce a new definition of 'industrial sovereignty'

It's inescapable that, when a national crisis occurs, a government will demand absolute priority support from companies headquartered in its jurisdiction and will use legal and regulatory measures to achieve that.

For Australia to have assured supplies in a conflict, we must have capacity in companies whose headquarters and operations are in Australia, where the Australian Government that can exercise ultimate priority. This is industrial sovereignty: Australian companies with their headquarters and operations here will make Australia their ultimate priority in times of crisis.

4. Revise the Commonwealth Procurement Rules to recognise economic security and industrial sovereignty as 'value for money'

Economic security and industrial sovereignty are policy ideas that need to be baked into Treasury and Finance policymaking more broadly as enablers that will help Australia adjust to our more dangerous world.

On procurement specifically, the Commonwealth Procurement Rules need to be updated to explicitly connect to the increasing need for economic security as a foundation of national security.

Trusted partnerships and greater Australian industry capacity will provide the ADF with assured access to what it needs to fight a sustained conflict. Those factors must be stated to be value-for-money considerations in the Commonwealth Procurement Rules and supporting guidance to normalise their application by Defence officials.

5. Change Defence's core processes and structures to enable and grow direct partnerships with Australian companies

Assured and resilient supply and rapid fielding of innovative capability are the Australian

Government's overriding priorities for defence industry. They are to be key criteria driving decision-making on how the Australian defence budget is spent.

Wholesale, not incremental, change is needed in Defence's Capability and Sustainment Group, in the Naval Shipbuilding and Sustainment Group, and in the approaches of Defence's capability managers. Defence's decision-making and business processes must now favour scale and mass, instead of the overriding single focus on the performance of individual systems that has dominated Defence acquisition in recent decades.

And it must seek assured flows of all the consumables of conflict, instead of relying on limited stockholdings and offshore supply chains that will be subject to disruption and others' priorities.

This requires direct contractual relationships between Defence and medium and small Australian firms.

6. Create a new \$1-billion budget line to fund sovereign capability pathways and products from medium-sized and small Australian companies for defence purposes

The best defence industry policy with the most willing implementation by central agency and Defence officials will fail without funding. Cash flow and reasonable profit are enablers of successful product development and capability and service delivery.

This new funding line in the defence budget is to be available in the May 2024 Budget and to grow over the following three financial years to \$1 billion annually to fund vital capabilities that must be delivered by Australian-owned companies.

7. Make AUKUS Pillar 2 deliver now, by setting industry to work

We need faster action to deliver on AUKUS Pillar 2 technologies. Australia is intended to be a technology and capability contributor to AUKUS, not simply a price and technology taker.

There is some world-leading technology resident in Australian medium and small companies that should be brought into the AUKUS conversation. And the barriers to entry to doing business with Defence must be reduced to bring in new entrants.

8. Replace the fruitless search for the perfect list of 'sovereign capabilities priorities' and detailed industry plans with practical priorities

Centralised planning models such as Defence's strategic industry capability priorities can't keep up with the pace of strategic and technological change.

Instead, the high-level priorities for Australian industry in the defence sector are to be:

- the 'consumables of conflict': supplies and services that are essential to supply our military in a time of conflict
- AUKUS Pillar 2 capability areas: cyber, artificial intelligence and autonomy, undersea capabilities, hypersonic and counter-hypersonic capabilities
- space and counter-space capabilities
- shipbuilding
- powerful battlefield and enabling innovations that deliver asymmetric effects, such as those we see in Ukraine.

Australia's riskier strategic outlook

- **Australia faces its most challenging strategic outlook since World War II.**
- **We must do more to strengthen deterrence by building up the Australian Defence Force (ADF) and our industrial capabilities.**
- **By becoming more creative, productive and self-reliant in defence industry, we will be a stronger alliance partner.**

What does a riskier strategic outlook mean for Australia?

For several years, Australian governments have been expressing concern about a deterioration of Australia's strategic outlook. The Defence Strategic Update issued by the Morrison government in July 2020 pointed to 'the most consequential strategic realignment since the Second World War' and said that 'Australia's strategic environment has deteriorated more rapidly than anticipated.' This would require major adjustments in Australia's defence posture.¹

The Albanese government's April 2023 statement, *National defence: Defence Strategic Review*, built on that assessment, saying: 'The Indo-Pacific faces increasing competition that operates on multiple levels—economic, military, strategic and diplomatic—all interwoven and all framed by an intense contest of values and narratives.' The government warned that 'Combined with rising tensions and reduced warning time for conflict, the risks of military escalation or miscalculation are rising.'²

On our worsening strategic outlook, Deputy Prime Minister and Defence Minister Richard Marles said in April this year:

So, we are thinking about this over the next three, the next ten years and beyond ... when you look at the way in which great power contest is playing out, and particularly in our region, you look at that military build-up and you look at our exposure to that through a much greater economic connection to the world, we are much more vulnerable to coercion than we've ever been before.³

The US Defense Department's annual report to Congress on Chinese military power, released in mid-October, points to 'the importance of meeting the pacing challenge presented by the PRC's increasingly capable military.' The report says:

The PRC's strategy entails deliberate and determined efforts to amass, improve, and harness the internal and external elements of national power that will place the PRC in a 'leading position' in an enduring competition between systems.⁴

The largest and deadliest conflict in Europe since World War II, heightened instability in the Middle East and continuing tensions over disputed areas throughout the Indo-Pacific region all point to increased instability and the risk of conflict. Many countries are increasing defence spending and military readiness, looking to secure critical supplies and strengthen national resilience.

The growing strategic risk impacts many countries, including our closest military ally, the US. The defence industrial capabilities of our partners are stretched thin. Australia needs to understand that, at times of heightened tension, we will need to look to our own resources first even as we call on partners to support our defence needs.

For Australian defence industry, we see some key implications of a riskier strategic outlook:

- We have lost the security of long time frames to plan, design and build critical capabilities for the ADF.
- We must be better positioned to deliver defence capabilities quickly when government and the Department of Defence (Defence) demand them.
- Australia must be able to assure supplies of critical material, be that equipment, munitions, fuel, or digital capacity (and capability)—all essential items for military operations and national security.
- If we cannot build these items ourselves, we may need to stockpile and strengthen key supply chains, understanding that our international partners may be under similar pressure.
- Sovereign service organisations must build capacity to respond to the ADF's support service needs and seek opportunities to export Australian services into our region to strengthen regional relationships.

To deter conflict, or if we are forced to fight to defend our country and its interests, Australia needs a national industry base and a strong defence industry sector just as much as we need a well-equipped and trained ADF, and without the former we cannot generate and sustain the latter. We have time—but perhaps not much of it—to better position Australian defence industry to support our national security.

China is heightening strategic risk

A key factor in heightening strategic risk is the growth of a powerful and coercive People's Republic of China (PRC), which is challenging the international strategic balance. This has been highlighted in numerous official assessments from Australian and partner governments. In recent years, developments have included:

- Beijing's rapid construction of military ports and airfields in disputed territory in the South China Sea
- Beijing's assertion of greater control over Hong Kong and subsequent repression of civil society
- its highly dangerous use of military and coastguard ships and aircraft in international waters in the South and East China seas and around Taiwan
- the rapid growth of the People's Liberation Army (PLA), and the particular priority being given to long-range force-projection capabilities
- Beijing's active use of space, undersea, cyber and intelligence capabilities for destabilising purposes.

Figure 1: PLA Navy warships transiting across Arafura Sea and the Torres Strait lased an RAAF P-8A Poseidon maritime patrol aircraft in February 2022—one example in a pattern of aggressive and unsafe behaviour by the PLA



Source: Defence Image Library, [online](#).

In this context, we welcome the re-establishment of direct political dialogue between Australia and the PRC. Strategic talks designed to address strategic perceptions will, we hope, build mutual understanding and, in Prime Minister Albanese's phrase, develop 'guardrails' preventing conflict. Mr Albanese told the Shangri-La Dialogue in Singapore last June: 'This is a matter of simple, practical structures to prevent a worst-case scenario. And the essential precondition for this is, of course, dialogue.'¹⁵

Nevertheless, given our strategic outlook, our position is that a strong Australian defence industry base is a strategic guardrail in its own right. A robust defence industry makes it clear that Australia has the intent and the capacity to build, maintain and sustain a defence force that protects our national interests.

An ADF that is armed, supplied and maintained ready for operations is a deterrent to any malign actor. It is the instrument that lends weight to our diplomatic engagement, backing up political dialogue, demonstrating commitment to friends and deterring potential aggressors.

Our industry base must make sure that it can:

- protect its intellectual property and military know-how from cyberattack
- operate independently in Australia, drawing on both domestic and trusted international supply chains to maintain continuity of operations
- be a fully trusted partner of the ADF and its international partners in AUKUS, the Quad and the Five-Eyes and with regional friends
- develop intellectual property that makes Australia a deliverer of products and services to our AUKUS, Five-Eyes and other close partners
- help to strengthen regional relationships by providing services outside of Australia to our strategic partners.

The wider world and strategic risk

Australia's defence and strategic interests are not just limited to the Indo-Pacific, as large as that geographical region is. As a democracy committed to the international rule of law, as a trading country and with a population drawn from all the countries of the world, Australia is a substantial power with global interests.

Successive Australian governments across the political spectrum have provided significant military and civil support to a fellow democracy, Ukraine, in its fight against Russia's illegal invasion of 2014 and 2021. It is fundamentally in our interests to do what we can to support democratic countries with shared values and a like-minded approach to the international rule of law. Australia can never be secure in the absence of a secure and stable international order.

In Ukraine, we have seen that Australian designed, built and/or supplied equipment has helped to make a considerable battlefield difference. This has ranged from Bushmaster protected vehicles to ammunition, drones and counter-drone systems. Australian industry has the capacity to do more, both to help Ukraine and to rebuild our own war stocks and our partners', which we can't allow to run down, given our own strategic circumstances.

Australian service providers in Ukraine have contributed through wartime health system assessments, developing new surgical techniques and delivering advanced surgical skills training for Ukrainian trauma teams.

Figure 2: Canberra-based company EOS's Slinger counter-drone service has been exported to Ukraine



Source: EOS

Ukraine has also provided an inspirational picture of what a country under attack can do to fight back with innovation, adaptation and quick manufacturing capabilities. There is much that Australia can learn from Ukraine's example, most particularly how the military, industry, international partners and the determined Ukrainian people can work together to rapidly strengthen national resilience. In doing this, Australia would be acting in partnership with our key ally, the US

and other close partners such as the UK and Japan. Sharing these efforts will strengthen all.

The appalling events in October this year when Israel was attacked by a terrorist organisation remind us that the risk of terrorism directed against civilians remains an active threat. As a globally travelling people, Australians can be at risk in many locations. Australia's global footprint means that we must think about our security broadly. The Australian Government rightly takes a deep interest in the welfare of our citizens wherever they may be.

While our defence industry base prepares for military contingencies, the reality is that industry contributes to national security in a very broad sense. Working with Australian and regional government agencies, Australian industry can deliver capabilities for peacemaking, stabilisation, disaster relief, medical and consular assistance, evacuation and climate mitigation, both providing real benefits to our Pacific neighbours and upholding Australia's strategic interests. Domestically, our cybersecurity industry protects our critical infrastructure, economy, social cohesion and way of life against a range of threats from organised crime to state-based cyber actors.

Our view is that, by drawing on Australia's defence and security companies, the Australian Government can do more to promote Australia's national interests in a global context. For example, we can:

- help like-minded partners to strengthen their own defences against aggression
- develop a strong export base for defence equipment that helps our friends and builds industry skills and jobs in Australia
- rapidly innovate when the right signals are given and the right demand conditions are set by government
- strengthen our alliance, our most important security partners and our own defence self-reliance.

The Indo-Pacific region

The Indo-Pacific is our geographical and strategic home. It has been rightly identified by successive Australian governments as our key strategic region. Australia can build security in the Indo-Pacific through our own defence efforts and, most importantly, by working to build resilience with our friends in the region.

Southeast Asia has become an area of global strategic interest and contestation. The region is vitally important to Australia because it covers our northern approaches, is a vibrant market of 650 million people directly to our north and a globally essential maritime transit point for trade in goods and commodities. Maritime Southeast Asia covering the South China Sea is also a zone of increasing international strategic competition. The PRC asserts its sovereignty over a vast swathe of sea that is the strategic heartland of Southeast Asia and an essential international waterway for much of world trade.

The 2016 *Defence White Paper* said: 'We cannot effectively protect Australia if we do not have a secure nearer region, encompassing maritime South East Asia and South Pacific (comprising Papua New Guinea, Timor-Leste and Pacific Island Countries).'⁶ The 2023 *Defence Strategic Review* identified an urgent need to strengthen our defence infrastructure in northern Australia—in effect our border zone with maritime Southeast Asia, the Indonesian archipelago, Timor-Leste and Papua New Guinea. Additionally, successive Australian governments have put priority on deepening Australian diplomatic and defence engagement with the Pacific islands, Indian Ocean states and India itself.

There are significant opportunities for Australian defence industry and companies involved in the broad sweep of national-security capabilities to strengthen the fabric of Indo-Pacific security cooperation.

- Australian industry can help build the defence and security capabilities and resilience of our regional partners. This aligns with our national priorities and interests. A stable, secure and resilient Pacific islands region is a massive Australian security asset.
- There is much Australian industry can do that reduces the direct operational burden on the ADF and other government agencies. For example, industry can help to build resilience with our Indo-Pacific neighbours in everything from health security to trusted cyber networks.
- Industry involvement in the region also builds a stronger Australian defence industrial base, which is better able to support the ADF and national-security interests.

The American alliance and key partners

The past few years have seen a significant growth in regional security instruments in which Australia plays a central part. AUKUS brings together the defence industrial, scientific and technological bases of Australia, the US and the UK in a partnership designed to reshape the military capabilities of the three countries. The decision to develop a nuclear-propelled attack submarine for the Royal Australian Navy is strategically transformative. AUKUS Pillar 2 cooperation is designed to develop new defence capabilities harnessing, among other technologies, quantum computing, artificial intelligence and machine learning, undersea technologies, hypersonic vehicles and electronic warfare.

Australia has the capability to be a powerful technology contributor to AUKUS, not simply a recipient of American and British know-how. An immediate challenge for the Australian Government is to work out how best to engage Australian industry. This is an area where private-sector technological know-how has the potential to change the strategic balance in ways that will strengthen deterrence and preserve peace. That can be achieved only by unlocking innovation in the private sector in the closest collaboration with government and Defence.

Beyond AUKUS, closer trilateral defence cooperation between Australia, the US and Japan, and Quadrilateral Security Dialogue cooperation between those countries and India, create new opportunities.

We note that the June 2023 development of an India–US Defence Acceleration Ecosystem (known as INDUS-X) provides one model for how the Australian Government could speed innovation between Defence and industry. INDUS-X creates an accelerator program for start-up companies, academic collaboration, linking smaller and larger companies, and cutting red tape.⁷

- A strong Indo-Pacific, with countries able to look after their own security, fundamentally bolsters Australia's security. Australian industry can do more to support that goal.
- We must find ways to bring forward Australian defence industry that will allow the emergence of one or more national defence industry prime contractors (primes); that is, Australian-owned and headquartered companies able to work with our medium-sized and small enterprises.

The good news is: We can do more!

The Australian Government, the Australian Parliament, Defence and defence industry understand that we need rapid change to strengthen national security, build deterrence and keep the peace. If peace fails, then we need a strong ADF backed by a defence industry base, the top priority of which is defending Australia and our interests.

It's time for the government to open a dialogue with our national industrial base. The focus must be on:

- strengthening Australian and regional resilience to help maintain peace
- building industrial self-reliance, which will make Australia stronger as well as a more capable partner
- establishing a procurement framework that ensures that large multinational defence prime companies use Australian sovereign service providers to a value equivalent to a percentage of the contract value across the life of the project program.

Building national resilience

- **National-security planning might start with Defence, but we face a much bigger challenge: making our whole society more resilient to shocks—and that requires whole-of-government and whole-of-nation efforts.**
- **The IT-enabled and interconnected nature of our economy and society brings enormous benefits at the same time as we face higher risks of disruption.**
- **An Australia that can make more sophisticated products will be stronger, more resilient and better able to withstand strategic shocks.**

A national defence plan for 2024

The government's April 2023 statement, *National defence: Defence Strategic Review (DSR)* makes it clear that building a stronger ADF and indeed a stronger defence industrial base will be effective only within a broader national effort to make our society, economy and government systems stronger. All elements of national power need to be harnessed to deal with more challenging strategic circumstances.

That covers a long list of areas to address. The DSR says:

'Resilience requires the ability to withstand, endure and recover from disruption. Resilience makes Australia a harder target and less susceptible to coercion. Critical requirements include:

- an informed public;
- national unity and cohesion;
- democratic assuredness;
- robust cyber security, data networks and space capabilities;
- supply chain diversity;
- economic security;
- environmental security;
- fuel and energy security;
- enhanced military preparedness;
- advanced munitions manufacturing (especially in long-range guided weapons);
- robust national logistics; and
- a national industrial base with a capacity to scale.'⁸

The DSR, developed by Stephen Smith and Sir Angus Houston, argued that the government needs to develop the 'most substantial and ambitious approach to defence planning since the Second World War'.⁹ The Albanese government agreed to that recommendation, indicating that its National Defence Strategy in 2024 will be developed as a whole-of-government effort, not just in the Defence Department.¹⁰

Figure 3: On 24 April, the Albanese government released the public version of the Defence Strategic Review, which emphasised the need for supply-chain diversity and enhanced military preparedness



Source: Defence Image Library, [online](#).

We welcome this approach at the same time as recognising how demanding this policy development exercise will be. Our recommendation is that the government should develop a mechanism to closely engage industry in a creative discussion about how to deliver a workable outcome.

In particular, we recommend as follows:

- Government should avoid 'box-ticking' industry consultation exercises based on large-scale briefing sessions. The need is for sustained senior-level dialogue with a broad sweep of individuals from defence industry.
- Government should make clear its interest in receiving creative, unvarnished advice based on its full acceptance of the principle of industry being a fundamental input to defence capability.
- That advice must be unconstrained by current policy settings.

An Australia that makes things: the industry challenge

To put this into context: the Australian Bureau of Statistics estimated that Australian defence industry employed 61,000 people in December 2022. That number had grown by 9,000, up from 52,600 in 2020–21. In dollar terms, that represented a direct economic contribution to the Australian economy (gross value add) of \$10.7 billion, up from \$8.8 billion in 2021–22.

In defence industry, the three biggest employing sectors were:

- professional, scientific and technical services (31.1%, or 19,100 people)
- construction (23.0%, or 14,100 people)
- manufacturing (20.3%, or 12,500 people).¹¹

While defence industry is growing, it is overall a very small part of the Australian industrial base. In 2022, the Bureau of Statistics recorded that 1.293 million people worked in professional, scientific and technical services, a subset of which is the 19,100 individuals in defence industry. There were 1.229 million in construction, of which defence industry accounted for 14,100 people. In manufacturing, there were 870,000 people nationally, but only 12,500 in defence industry.¹²

Then we should reflect that, according to the Productivity Commission, manufacturing accounts for less than 10% of the total Australian economy. Just as in other large, developed countries, the service sector makes up the bulk of the economy. In 2020, services contributed 80% of Australia's gross domestic product (GDP) and 88% of employment.

Australian manufacturing peaked in the early 1960s at around 30% of the economy and has declined since. The Productivity Commission says that 'manufacturing value added declined about \$10 billion between 2010 and 2020. By June 2020 the sector contributed \$108.4 billion. [Manufacturing] employment declined by about 100,000 workers between 2010 and 2020; by May 2020, manufacturing employed just over 863,000 Australians.'¹³

This 30-year downward trend in manufacturing puts Australia last among all Organisation for Economic Co-operation and Development (OECD) countries for

manufacturing self-sufficiency. According to the Senate Economics References Committee's February 2022 report on *The Australian Manufacturing Industry*, 'Australia now produces about two-thirds as much manufactured output as it consumes.'¹⁴

A Defence Department assessment of the strategic impact of the decline in Australian manufacturing was produced in June 2019 and released under the Freedom of Information Act in 2020. It judged that:

Australia is a largely de-industrialised multi-cultural nation. It is highly connected to the global commons and has limited diversity in imports, exports and tax revenue. This situation leaves the nation exposed to major disruptions of global governance and supply, such as could be expected in the event of a major war or global catastrophe.¹⁵

Vulnerability to disruptions

The past few years have shown that Australia's economy, infrastructure, population size and geographical location distant from suppliers combine to give the country a unique set of vulnerabilities to disruptions.

The Covid-19 pandemic highlighted vulnerabilities produced by a high level of dependence on medications and medical equipment supplied from overseas. The deterioration in bilateral relations between Australia and the PRC, which developed during the pandemic, also pointed to a broader vulnerability: Australia's dependence on China as the largest market for our exports and also as the single biggest source of many imports. Economic analyst David Uren found that 'China holds a dominant share for 68 of the top 100 goods it ships to Australia, while it controls at least 40% of the world market for 27 of those goods.' Uren's overall conclusion was that 'Australia's dependence on China both as a market for its exports and as a supplier of its imports has grown rapidly over the past decade and that this has generated an economic vulnerability should Australia ever confront a blockage to its trade.'¹⁶

Natural disasters such as bushfires and floods have also recently exposed the vulnerabilities and limitations of Australian critical infrastructure. Australians are habituated to dealing with natural disasters, approaching those experiences with resilience and stoicism. In January and February 2022, for example,

severe flooding in South Australia washed away parts of the railway track connecting the eastern states with Western Australia and the Northern Territory. What was assessed to be a one-in-200-year flood event disrupted the east-west rail link responsible for 80% of freight moving from Australia's east to Western Australia. A one-in-100-year flooding event in January 2023 cut off remote communities in Australia's northwest, leading to an ADF response to assist affected communities.

Our economy and society are also increasingly dependent on the interconnections of information technology. On 8 November 2023, the telecommunications company Optus suffered a major outage, which took 10.2 million of its customers—more than one-third of the nation—offline for up to 12 hours, unable to make calls, send texts, conduct electronic business transactions such as making payments, or access the internet. The company described the fault as one of 'multiple layers' in which 'a network event triggered a cascading failure which resulted in the shutdown of services to our customers.'¹⁷

ICT crises, including cyber events, some the product of malicious cyberattacks, highlight the potential vulnerabilities of highly networked and interconnected systems. The challenge for governments, businesses and individual Australians is to build our resilience to those challenges so we can continue to benefit from the advantages of an advanced economy with access to goods and services from around the world, delivered in a timely way without disruption.

Reasons for optimism

Notwithstanding the challenges outlined here, we think there is reason for optimism that Australia will be able to strengthen its national resilience:

- We have a well-educated and adaptable population with high participation rates in employment and a can-do cultural mindset.
- While our industrial base is small relative to the overall size of the economy, we operate with high levels of sophistication in many different sectors, ranging from resource extraction to medical technology and defence production.
- We have a first-rate research capability resident in Australian universities with growing industry partnerships.

- Our alliance with the US gives us unparalleled access to technology and, through AUKUS, the opportunity to build closer defence partnerships and find larger markets.
- We are the respected partner of choice on national security for many countries in the Indo-Pacific region, where we are seen to be a trusted, fair-minded and reliable partner.
- Our government systems rank highly in global indexes of governance. For example, the British think tank Legatum ranks Australia 11th in the world in its 2023 Prosperity Index for quality of governance and 6th on social capital, which includes an assessment of institutional trust and civic participation.¹⁸

These are the essential foundations of Australia's national capabilities, and, linked to intelligently designed and innovative policy, create pathways towards building greater national resilience. For example, we welcome the government's Buy Australia Plan, which seeks to use federal government procurement as a way to build domestic industry capability. The Future Made in Australia Office has been established in the Department of Finance to implement the Buy Australia Plan through practical steps such as improving AusTender to increase transparency and establish a supplier portal for panels and increasing engagement with medium and small enterprises to promote awareness of opportunities to sell to the Australian Government.¹⁹

Note that through this report we have chosen to use the term medium and small enterprises, rather than the more widely used, small and medium enterprises (SMEs). The reality is that Australia has a substantial number of medium-sized defence industry enterprises. We think the term SME gives rise to a misperception that Australian defence industry is comprised primarily of many small companies. That underestimates the size, scale and capability of our industry base.

We urge the government to find more ways to bring the business community into this discussion. In the defence and security sector, we think it would be valuable for the government to release material produced by Stephen Smith and Sir Angus Houston in their response to the DSR's term of reference: 'The Review must outline the investments required to support Defence preparedness, and mobilisation needs

to 2032–33.’ This material would start an important national conversation in the lead-up to the planned 2024 National Defence Statement.

Our view is that the best way to shape new approaches to defence industry policy is to bring senior industry players to the table to collaborate in the process. We recommend that a Government Australian Defence Industry Steering Council be established, reporting directly to the Minister for Defence. The council must have representatives from across the local Australian defence industry landscape.

A steering council must not become a large bureaucracy. Instead, it should draw on existing public service resources. Its key value is to bring industry into a trusted and senior-level policy discussion with government. For too long, Defence has driven industry policy in isolation from its commercial partners. That must change.

Australia needs multiple approaches to reduce supply-chain risks

- **We need multiple approaches to reduce supply-chain risk and preserve military capability in times of crisis.**
- **Stockpiling, identifying alternative suppliers and deepening cooperation with trusted partners ('friend-shoring') all have a role to play—and Australian industry will need to play a role in making those approaches work.**
- **But, ultimately, they all have risks, so boosting domestic production of essential capabilities cannot be avoided.**

The limitations of just-in-time supply-chain strategies were brutally exposed during the Covid-19 pandemic, which revealed Australia's dependence on a broad range of essential commodities. The pandemic also showed that we were dependent on a major trading partner that did not share our interests: China. Since then, the Chinese Communist Party (CCP) has repeatedly demonstrated its willingness to use trade as a tool of coercive diplomacy. Covid-19 and CCP coercion have revealed the vulnerability of Australia's supplies of critical items; considering that wars are fundamentally exercises in disrupting and destroying the adversary's supply chains, that vulnerability will be even greater in time of conflict.

Furthermore, recent conflicts have shown starkly that military supply chains are vulnerable, even if they don't lead directly back to China. Modern conflicts burn through huge amounts of the consumables of war, such as guided weapons, ammunition, drones, fuel and spares for major systems.

Conflicts such as the war in Ukraine indicate that even the US will have difficulty meeting its own military's demands, let alone those of its partners and allies. Already, the current waiting times for deliveries of guided weapons show that even our closest partners will put a priority on their own defence needs in periods of strategic risk. That means in future conflicts, the ADF will be likely to expend its limited reserves of munitions in a matter of days and have limited ability to secure resupply.

We should also note that there are risks to military supply chains that are not the result of intentional adversary actions. For example, even in relatively stable

periods, currencies can fluctuate significantly. In times of crisis, those fluctuations can be even more dramatic, particularly against the US dollar, which is still a bulwark of stability for investors and markets. A sharp fall in buying power can limit a state's ability to acquire the military capabilities it seeks.

So, while Australia will always need go to the US market for some military equipment, other approaches can hedge risks, whether they arise from peacetime crises or armed conflict.

Overall, investing in weaning ourselves off just-in-time supply chains is essential for all critical commodities, whether civilian or military.

There are essentially four broad approaches to address supply-chain risk:

1. Hold greater stockpiles.
2. Diversify suppliers.
3. Deepen cooperation with trusted partners.
4. Strengthen domestic production.

All have merit and contribute to reducing risk, but they must be implemented together as part of a comprehensive strategy. Recent Australian defence strategic documents such as the 2020 Defence Strategic Update (DSU) and the DSR indicate that the Australian Government intends, to varying degrees, to pursue all of them. Australian industry will be required to play a role in all four, although that role will be different in each. Nevertheless, the ultimate mitigation for threats to the most critical capabilities will remain the fourth approach: strengthening domestic production. We briefly examine the first three here.

Hold greater stockpiles

The ADF's approach to determining the amount of materiel it acquires (that is, its basis of provisioning) is based on peacetime usage. The calculus it uses to determine fleet sizes doesn't factor in wartime losses. Similarly, its determination of the amount of munitions and other consumables required is not based on the duration or rate of consumption that has characterised recent conflicts. Instead, we have relied on our major

ally's deep magazines to supply our needs. Whether those magazines will continue to be deep enough is now the question.

The DSU announced an intent to hold greater stockpiles of materiel such as weapons. The most recent public defence investment program, the Force Structure Plan that accompanied the DSU, contained several lines of investment for procuring greater stocks of weapons.²⁰ The government's recognition of the need for greater warstocks is certainly a good step forward in adapting to our strategic risks.

Nevertheless, stockpiling alone cannot solve all supply-chain risks. It has significant upfront costs. Also, for it to work properly, significant ongoing expenditure and effort are required to ensure that stockholdings are kept in a condition ready for use. Too often, in times of crisis, expensive and extensive stockholdings have been found to have degraded or to have reached obsolescence when they are finally called upon.

Consequently, regardless of which systems we buy and where they are built, Australian industry will need to play a vital role in ensuring that stockpiles are safely stored, properly maintained so they are ready for use, and can be transported wherever and whenever they are required. In the case of munitions, this includes building and operating storage facilities, operating safe, reliable distribution systems, and being able to maintain, repair and upgrade items in country rather than needing to return components to the country of manufacture. Other supplies will have analogous requirements.

Nevertheless, there will always be limitations on the number of weapons that governments are willing to acquire in peacetime in the face of competing calls on public funds. Moreover, stockpiling relies on correctly predicting both the number and kind of munitions and other equipment that we will need. No matter how much we hold, we are still likely to be surprised by the rate of wartime consumption. Greater stockpiles may buy us some breathing room at the start of a conflict, but ultimately we will need to acquire the consumables of war rapidly from a reliable source throughout crisis and conflict.

Figure 4: Darcy Pakura, Storage and Distribution Manager from Thales, moves a BLU-110 into the storage facility at Defence Establishment Orchard Hills; stockpiling is essential to address supply-chain risks, but is only one stream of a truly effective approach



Source: Defence Image Library, [online](#).

Diversify suppliers

During the Covid-19 epidemic, Australia learned the hard way that it needed to diversify suppliers. Just as Australia was heavily dependent on imports of essential commodities from China, so we are heavily dependent on imports of essential military equipment from the US. Unless we start to diversify suppliers now, we will have to learn the same lesson again when we are involved in military conflict.

Standardisation across democracies has benefits; for example, all Western militaries use 155-mm artillery ammunition. So, despite the increasing trend of Australia defaulting to American suppliers, there are other suppliers that Australia can draw on for staple items.

While standardisation has benefits, it's important for democracies to promote variety in the defence industrial ecosystem. Many decades of commercial consolidation have reduced the number of major defence suppliers internationally. Dependence on an increasingly narrow defence industrial base not only reduces competition, but the resultant standardisation of equipment across Western countries means that their capabilities are well known to potential adversaries that can optimise their own capabilities against them.

Consequently, sustaining a diverse ecosystem of defence companies is in itself a competitive advantage for Western democracies. Even the US turns to partner countries for equipment that its own industrial base can't provide, such as Norway for anti-ship missiles and Israel for air-defence systems (not to mention many Australian companies that have 'exported' to the US essentially by establishing production on American soil).

If we can draw on many partners, it's more likely that one will have the ability to meet our requirements in time of crisis. For example, with US production capacity under pressure, several European countries neighbouring Ukraine are currently turning to South Korea to meet their demands for armoured vehicles, artillery and long-range fires.

But, even if we do diversify to other suppliers, there are limitations to this strategy. Moving to alternative suppliers at the last minute means that such systems are unlikely to be fully integrated with ADF systems. Therefore, it's better for the time-consuming and potentially difficult work of integration to be done in peacetime.

Regardless of whether we seek additional suppliers before conflict starts or after, we will still need a capable Australian defence industry that can integrate new equipment into existing ADF platforms and command and control systems—most military equipment has limited utility 'straight out of the box'. Australian industry will also be required to repair those systems as well as to modify and improve them as the conflict evolves. Once again, the war in Ukraine shows how Ukrainian defence industry has rapidly integrated a wide range of new Western systems into its forces as well as modified them to adapt to changing Russian weapons and tactics. Without a robust local industry, those Western systems rushed into theatre would have been significantly less effective.

In sum, diversifying our suppliers, preferably before conflict starts, has much to offer. The biggest challenge with this approach, however, is that in a general Indo-Pacific conflict, likely suppliers inside the region will be hard pressed to meet the demands of their own militaries. Those outside will need to prioritise between competing customers—and some may be unwilling to antagonise China.

Deepen cooperation with trusted partners

The third approach may appear similar to the second but goes beyond it in the depth of commitment between partners. Rather than simple commercial arrangements, it seeks greater economic integration. US Secretary of the Treasury Janet Yellen has referred to 'friend-shoring' (that is, building supply chains with trusted partners) as a way to ensure free and secure trade. She observed:

We cannot allow countries to use their market position in key raw materials, technologies, or products to have the power to disrupt our economy or exercise unwanted geopolitical leverage. Let's build on and deepen economic integration and the efficiencies it brings—on terms that work better for American workers.²¹

Yellen used friend-shoring as a deliberate contrast to onshoring of production in response to recent supply-chain crises. Friend-shoring involves mitigating risk by deliberately sharing the risk with trusted partners. That involves leveraging their capabilities, which are different from our own, and not seeking to duplicate industrial capacity or technological capability.

While Yellen's remarks referred to economic cooperation more broadly, the concept of friend-shoring applies to the defence sector, in which AUKUS is the most prominent example of trusted partners cooperating closely to mutually enhance their capability.

There appear to be two main goals underpinning AUKUS. The first is that we can maximise the return on our joint technological and industrial effort by working together to find synergies. The second is that we can rely on partners to supply us with materiel we require rather than have to generate it ourselves; in return, we will supply them with things they require but don't produce. Both rely on the efficiencies delivered by not seeking to duplicate effort.

While such undertakings offer significant promise, this approach still carries risk. There are no guarantees that a trusted partner, no matter how close, will be able to meet our wartime needs. Moreover, while we may be able to craft a neat and mutually satisfactory division of labour with a trusted partner in peacetime, it's unlikely that that arrangement will be able to evolve at

a rate that keeps up with our rapidly changing wartime requirements, particularly if a trusted partner has other priorities or is committed to other theatres. As Yellen stated, even friend-shoring has to occur on terms that suit US interests.

Growing the pie

While all three of these approaches draw on partners to meet our needs, they have a flip side in common; namely, those partners are themselves in need of reliable partners to meet their requirements. Unless we all help grow the overall pie, our collective requirements cannot be met. The AUKUS nuclear-powered submarine program is perhaps the most prominent example of that.

Countering the growing weight of authoritarian states requires all members of the community of democracies to contribute their technological and industrial capacity. With more contributors, we will not only have greater mass, but also a healthier defence industrial ecosystem, capable of generating a greater variety of capabilities that are better able to adapt and meet changing contingencies and threats.

In sum, while these first three approaches to address supply-chain risk have utility, ultimately we need to develop the fourth plank: strengthening domestic production and increasing the capacity of Australian defence service organisations, particularly for the most essential elements of military capability. That will allow us to help ourselves, but also the community of democracies around the world. The remainder of this report examines how best to do that.

Building Australian defence industry is an essential part of the solution

Why does Australia need strong sovereign defence companies?

- Recent history from the pandemic and two wars has revealed the risks and dangers of dependency on even the most trusted partners.
- Covid-19 and Chinese economic coercion revealed the growing risk of supply-chain closure by the political decisions of governments that control companies incorporated within their jurisdictions.
- Lessons from technological disruption rippling across multiple industry sectors show that medium and small firms can produce outstanding breakthroughs that overturn the value and market power of big incumbents.
- A diverse set of capabilities and suppliers is the best way to avoid large and damaging effects if particular systems or weapons are either compromised or shown to have unexpected vulnerabilities.
- The value of diverse supply from Australian companies is strategically important, not just for the Australian military but also for our AUKUS and other partners.
- We should be able to export products and services into our region for the purpose of strengthening relationships and building capacity with our strategic partners.

Lessons about dependency on countries that don't share Australia's interests and goals

Resilience is a much-used word in national economic policy in many countries in our post-Covid world. Covid-19 placed significant stress on workforces as a result of reduced immigration, high demand and fatigue. The impact continues to be felt in the services industry, particularly in health care.

We lived through the ugly shocks of finding that essential items—whether pharmaceuticals,²² vaccines or even masks²³—were not available from a highly diverse set of supply chains running through our globalised economy. Instead, what looked like a

robust set of suppliers turned out to be a much more vulnerable set of arrangements, because the various companies offering solutions turned out to almost all be dependent on the same sources, which were concentrated in particular countries. Diversity of supply was an illusion. The risk that the country whose jurisdiction these companies operated in would act to constrain supply or simply consume all production to meet its own needs was real.

Since the pandemic, this same phenomenon is being discovered across other key areas of the world economy—particularly those involving digitalisation, decarbonisation, clean energy and manufacturing. And a pattern in which the PRC Government cooperates with its state-owned and controlled private companies to build dominant market positions in many supply chains has emerged and is becoming more obvious. Critical minerals, electric-vehicle batteries, solar panels and wind turbines are examples. Small, cheap commercial drones are another: China's DJI Technology Co. Ltd is the globally dominant market provider.

The national-security problem from this supply-chain dependency is real in peacetime, when China is able to constrain supplies for political purposes at short notice. That happened in 2010, when Chinese authorities put a *de facto* ban on the export of rare earths to Japan following tensions over the Senkaku Islands administered by Japan. And, this year, China has stated that it will restrict the export of gallium and germanium—minerals critical for semiconductor production—in response to the Biden administration's latest tightening of controls on the supply of high-end semiconductor manufacturing technologies to Chinese companies.²⁴

Lessons about dependency on even the most trusted partners

The Ukraine war and now the Israel– Hamas war, have been stark demonstrations of the volume of 'consumables' that war requires. Neither conflict is a large war in historical terms. The consumption of basics such as ammunition, missiles, fuel and parts in a wider conflict in Australia's region would far

outweigh the levels of consumption in either of those current conflicts.

But the scale of consumption of ammunition, missiles and drones²⁵ in Ukraine is sobering; Ukraine is reportedly using, losing and replacing 10,000 drones a month. Since the war began in February 2022, keeping Ukraine supplied with shells for its artillery, missiles for its air defence, armed drones and missiles for attacking Russian logistics, command networks and combat forces, and drones for surveillance and providing targeting information has depleted stocks across the whole of NATO.²⁶ US strategic stocks of 155-mm artillery ammunition and stocks of anti-tank weapons such as Javelin missiles have been drawn down to worrying levels,²⁷ as have worldwide stocks of key air-defence missiles such as the AMRAAM missile.

The supply pressures have intensified to the extent that the US has had to negotiate resupply from South Korea to refill its own national artillery ammunition holdings.²⁸ And the US has begun a slow reinvestment in domestic production capacity at a cost of billions of dollars.²⁹

Figure 5: A 155-mm projectile on NIOA's Maryborough, Queensland, production line; NIOA is now producing munitions for the ADF and for export to Australia's partners overseas



Source: NIOA, [online](#).

The Ukraine war is a land conflict and so puts very different demands on defence production compared with a wider conflict involving China in the Indo-Pacific. However, the lesson is that the productive capacity of the US supplemented by Western Europe's is likely to be insufficient to sustain military operations during such a possible war.

Moreover, delays aren't just caused by production bottlenecks—political factors can disrupt supply. Taiwan is experiencing years of delay in the delivery of

US systems including F-16 fighters and M1A2 tanks,³⁰ for example, without the strains on production that a conflict would bring. Many countries, including Australia, have experienced weapons boycotts in time of war, even from other democracies.

When a crisis such as a conflict occurs, the US and Australia's other defence partners will need to meet their own needs first, before making items available for even their closest allies and partners. The US will make its own forces its core priority—as we must expect and understand—but the US and its major defence companies will also have multiple other nations' militaries and governments all clamouring for the next highest priority in the production and supply queue. This will also affect large defence primes with sizeable Australian footprints whose Australian production will be dependent on subsystems from their home countries.

This is entirely natural and therefore predictable. Emotion and partnership have limits at times of national need. A metaphor to help understand this issue comes from those airline safety briefings before take-off: 'In an emergency, if oxygen masks are required, they will fall from the ceiling. Fit your own mask first before helping children and those around you.'

Large primes will all need to respond to the demands of their home governments as those governments operate the legal and financial systems that the primes depend upon—and the militaries of those home governments will have clear priority demands for supply. We can see this tension right now over supply of Patriot batteries and missiles, artillery ammunition and, in Australia protected mobility vehicles,³¹ given the demands of the war in Ukraine and now the Israel–Hamas war.

A strategy of nesting within big prime companies' wider international production systems and becoming part of their supply chains makes a lot of sense for companies making components or sub-assemblies or providing business-to-business or other digital and data services. So, precision manufacturing companies such as NuPress³² and Marand³³ growing their role as subcontractors to Lockheed Martin in its F-35 and other programs is both a profitable activity and one that thickens the defence production of both Australia and the US, but it does little to retire the risk from demand from the primes' home government and other priority partners in times of shortage and crisis.

Similarly, paying for a prime such as Lockheed Martin to set up an assembly plant for GMLRS missiles in Australia does little to reduce this risk,³⁴ because the assembly here requires access to Lockheed's existing offshore supply chain, which will be subject to those same priorities.

Australian companies are pushed by Defence and broader federal government policies and processes to see their role as working as subcontractors or suppliers to the big incumbent defence primes. Defence officials routinely emphasise that Defence's acquisition organisation—Capability Acquisition and Sustainment Group—is not structured to engage with medium and small Australian companies directly, so they must make their case to the primes.³⁵

This is a conceptual error. First, it can put Australian suppliers in competition with the primes' existing, vertically integrated supply chains for the supply of subsystems, meaning that there's little incentive for the primes to select them. Second, if the Australian medium or small company is providing a system or service that's a stand-alone product and not a sub-assembly or component in one of the prime's systems, there is no role for the prime and therefore no need to privilege them over local companies.

And, as the wars in Ukraine and now Israel and Gaza are demonstrating, things made and done by small firms can have an outsized impact in battle. The cheap, disposable drones used by Ukraine to drop small munitions onto Russian tanks and other vehicles, and even longer range drones destroying Russian weapons, headquarters, fuel depots and stockpiles, can be produced by small companies and modified to carry munitions or different sensors by soldiers in the field. The 'small, the smart and the many' are well within the capacity of numerous Australian to produce using supply chains that they have each built for their own particular purposes.

There is no intermediary required between these companies, their products and the Australian military. In fact, forcing these fast-moving and creative companies to partner with Defence only through large incumbent primes imposes a large barrier to entry to the defence market for these companies and reduces the likelihood that the ADF will ever be equipped with what they produce.

That's for two reasons. The first is that the Australian companies need to convince a big prime that their product is needed and can't be performed by the prime's in-house or existing suppliers. The second is the sheer time and effort taken to become an accredited subcontractor of the prime and then identify and participate in tendering for opportunities in Defence's acquisition program through that prime. The time frames that these lengthy business processes and tendering activities take to finalise are impossible for most medium and small firms to engage with. They don't have the cashflow to fund themselves while waiting for potential long-term future business from the remote Defence customer.

The outsized market impact of the medium and the small: fearful primes know about this

There's irony in Defence procurement practices pushing innovative Australian companies to have to offer their products and intellectual property to an incumbent prime. In many sectors across the Australian and wider international economy, the big incumbent providers are terrified that their product offerings, their market share and even their corporate existence can be challenged and changed by new competitors that start small and rapidly rise to prominence with breakthrough products. It is this disruptive innovation that powers the creative destruction of capitalism; in fact, privileging the primes through artificial protection and barriers to entry undermines the innovative drivers of liberal economies.

Tesla is an obvious example of this type of industry disruption. Every global carmaker is now desperately trying to catch up and take back market share lost to Tesla—and now to other new entrants, such as China's BYD Company.

In the digital world, big tech companies such as Amazon, Alphabet and Microsoft see the threat of start-ups (such as ChatGPT) and routinely surveil their industry sectors to spot and either acquire or copy start-ups and their products before the new players become existential challengers.³⁶

In Australia and around the world, traditional large-scale energy providers based on fossil fuels are scrambling to adjust to the disruption brought by new market players installing renewable energy. That disruption is based

on fundamentally different technology and business models in which millions of Australian families are now themselves suppliers. Privileging incumbents can mean missing the truly disruptive potential of alternative approaches and new entrants.

The insight for defence industry policy is that there's powerful capability available in the products and skills of medium and small firms, and that those are best tapped directly from the companies instead of working almost exclusively through the 'middleware' of existing big incumbents.

Countering consolidation in the defence industry

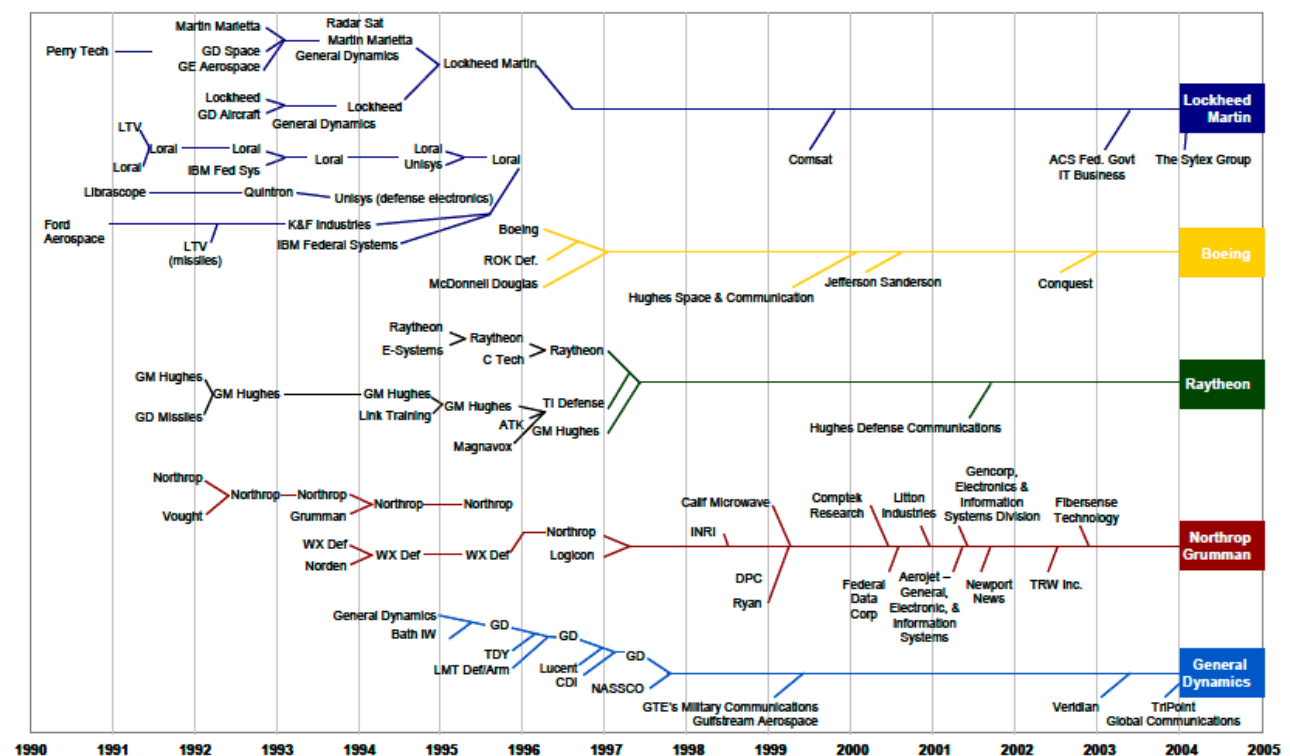
Since the end of the Cold War, there has been a process of massive consolidation in the defence industry of Western nations. That has occurred for several reasons. Shrinking defence budgets resulting in smaller fleet sizes remains a major one. With militaries able to afford only a small number of ships, aircraft or vehicles, they could not also afford the luxury of multiple different platforms in each class. In winner-take-all competitions, the losers fell by the

wayside, often being acquired by their competitors. The increasing complexity of military systems also drove the consolidation; it became increasingly difficult for a single company to design and build systems such as fighter jets, warships and submarines.

As a result, defence industry is now more concentrated than ever. According to the US Department of Defense, the number of prime companies in the US has gone from 51 in the 1990s to only five now. That consolidation manifests itself in a small number of suppliers of key systems; for example, 90% of the Department of Defense's missiles are sourced from three companies.³⁷

Even though governments and defence organisations consciously drove consolidation, we now realise that it come with significant risk. The US Department of Defense assesses that 'Growing concentration can reduce the availability of key supplies and equipment, diminish vendors' incentives for innovation and performance in government contracts, and lead to supply chain vulnerabilities.' Aside from supply-chain risks, concentration has resulted from horizontal mergers that can 'diminish innovation, or otherwise harm customers as a result of diminished competitive

Figure 6: Consolidation in the US defence industry, 1990 to 2004; there are now only five primes left



Source: David R King, 'Validating stock market reactions to acquisition announcements', *ResearchGate*, 2019, [online](https://www.researchgate.net/publication/334111111).

constraints or incentives', and vertical mergers that can create the 'incentive to take anticompetitive actions to provide it an advantage over competitors'. Put another way, if a company has no competitors, there's little incentive to innovate, and if a prime acquires a subcomponent supplier, it can stop it providing those subcomponents to other companies, preventing them from offering an alternative or supplementary source of systems.³⁸

The Australian defence market has, if anything, even higher levels of consolidation than the US market due to the central role of foreign-owned primes, particularly when we focus on military equipment (as opposed to construction or base services, for example). According to Tendertrace's analysis of Defence's contracts published on AusTender, in FY 2023, 10 companies received 44% of the Department of Defence's contracts. Only two of them were Australian-owned businesses: Sitzler, which is a construction company, and CEA Technologies, which is a supplier of phased-array radars and isn't a prime systems integrator.³⁹ Since 92% of the top 10 were overseas-owned, 40.5% of Defence's contracts went to eight overseas-owned companies. That's around \$11 billion.⁴⁰

The risks associated with excessive consolidation are now being realised. They include the dependence of democracies on a small number of exquisite, guided weapons that can be manufactured only in small numbers at very high cost, as well as the continuing cost-capability death spiral of major platforms such as warships, which results in progressively smaller fleets. Western efforts to break out of this cycle that focus on traditional platforms made by the primes have largely been unsuccessful; their ever-increasing complexity is driving them in the wrong direction.

A more promising response to the problem is the 'Replicator' initiative of US Deputy Secretary of Defense Kathleen Hicks. Replicator seeks to catalyse urgent change with the goal 'to field attributable autonomous systems at scale of multiple thousands, in multiple domains, within the next 18-to-24 months'. Hicks aims to do that by 'working closely with the private sector, including commercial, non-traditional, and traditional defense companies alike'. In essence, Replicator seeks to expand the number of participants in the ecosystem, particularly by bringing in new players who do business differently.⁴¹

Australian industry is well suited to pursue a local equivalent of the Replicator program that would reverse the process of consolidation and the less-than-optimal outcomes that it has produced. That new pathway would be enabled by drawing on the strengths of Australian technology and industry and pursuing systems that Australian industry can design and build at scale and put into service at speed.

Needle-sharing risks from all relying on the same providers

The vision in the Australian Government's DSR of deeper integration with our US ally is strong. The document goes further than earlier White Papers and the 2020 DSU by setting the objective that Australian and US military forces and their capabilities should not just be integrated and able to work together closely and easily, but that Australia and the US should aim for our forces and the systems they use to be 'interchangeable'.

The logic here is all about commonality and efficiency of supply. The idea is that sustaining our militaries will be greatly improved if Australian and the US both produce common items—such as the same air-to-air missile with the same software load, the same ground-launched missile and launcher, or the same command and control systems. This would mean that the logistics systems of our two defence organisations would be able to resupply and support not just our own military operations, but support the other alliance partners as well.

Unfortunately, this buys into the 'priority customer' risk outlined earlier, in which the home government of the producer gets first call on items in critical or short supply and the use of the supply chain that supports them.

But there's a larger advantage that's foregone if we were to ever reach the goal of interchangeability. Deterring China is about imposing costs on its military and by extension on its leadership's credibility should Beijing engage in conflict. Deterrence aims to convince the leaders in Beijing that the costs and risk of war are too high and as a result they choose not to use military force to attack Taiwan or seize more territory in the South China Sea.

When the Chinese military and intelligence agencies are assessing the risk of combat, they are interested in the capabilities of the US and its partners and allies, how many particular weapons and systems those partners have, where they are positioned, how well they are supported—and how effective specific weapons and systems are. And the Chinese spend a lot of time collecting intelligence and performance data about US weapon systems and the space, intelligence, surveillance and reconnaissance (ISR) and command and control systems that enable them to operate. US systems are priorities for China to identify vulnerabilities that can be exploited and to focus its countermeasures on to defeat.

Similarly, in the cyber area, US digital services and the products of US cybersecurity and data service companies are the similar overriding focus for Chinese penetration, vulnerability assessment and countermeasure development.

That fact produces serious risks and vulnerabilities for the US military and all militaries, such as Australia's, that are heavily dependent on US systems, weapons and technology. And interchangeability magnifies those risks.

Of course, in the case of exquisite and expensive systems such as F-35s, Aegis combat systems, nuclear submarines, Hunter frigates, P-8 maritime patrol aircraft, SM-6 missiles and hyperscale cloud computing services from firms such as Microsoft, this risk has to be accepted. We can work on security and other protective measures to reduce the risk of system or weapon compromise and attempt to limit the development of effective countermeasures that might make those capabilities obsolete, but that can't reduce the risk to an acceptable level without complementary approaches.

This is the problem of needle-sharing. If the Australian, US and allied militaries are using interchangeable systems, a vulnerability, weakness or compromise affects the whole user community,⁴² and there's limited resilience. An adversary can focus its efforts on finding vulnerabilities in a smaller number of systems and weapons than if the partners have more diversity in their inventories and organisations. The start of a war is a bad time to find out that a key, common weapon, digital tool, communication system, sensor or service has been compromised or neutralised by countermeasures—and it's only made worse if you

have no alternatives. This risk is heightened with the rise of offensive cyber capabilities when interoperable systems are 'linked' via shared networks or software.

Diversity as the antidote to needle-sharing

The strategic approach to reducing the impact of this is to not place increasing reliance on using systems that are interchangeable with those of our US ally. In fact, the alliance will be strengthened by Australia providing diverse and different capabilities and systems into it and using them in our own military and broader defence organisation. No Australian company is going to produce an F-35 or design and build a B-21, but multiple Australian companies are already designing and making loitering munitions,⁴³ armed and unarmed drones,⁴⁴ dual-use missile and space launch systems,⁴⁵ counter-drone systems,⁴⁶ capable surface ships⁴⁷ and uncrewed undersea vessels.⁴⁸ And, in the digital and services world, medium and small Australian companies are providers of secure data and communications services,⁴⁹ data centres, simulation and test⁵⁰ and evaluation services and powerful cybersecurity applications—all of which have different technical attributes and different vulnerabilities and strengths from those in use in the American national-security community.

Having a broad range of partners that are developing systems to meet their own needs means that there are more options available for each one should its own requirements change. Even the US has turned to partners when those partners had 'one they prepared earlier'. For example, when the US Marine Corps adopted 'expeditionary advanced based operations', it found the land-based anti-ship missile it needed for this concept in the Naval Strike Missile, which Norway had developed to meet its own needs for a highly stealthy weapon for complex littoral terrain. Australia's Nulka decoy missile is another example.

This diversity of systems and suppliers from having strong Australian defence companies is of strategic value not just to Australia, but to our AUKUS and other close defence partners. It should be magnified and maximised instead of being pushed to the margins by the new emphasis on interchangeability and the longstanding mindset that big foreign primes provide the best or even only solutions. That mindset needs to change.

AUKUS and Australian industry—getting out of the working groups and down to business

- **AUKUS can maximise the military power of the partners only by taking maximum advantage of each of the three countries' capacity to provide innovative and capable solutions to all of our militaries.**
- **A healthy Australian industrial sector that's able to make a contribution to our own security and that of our two partners is an essential part of the AUKUS concept.**
- **Two years on from AUKUS's birth, Pillar 2, remains three government bureaucracies designing solutions for companies that they are not engaging with.**
- **That means the makers and providers of Pillar 2 technologies and products must be directly involved and also working directly together across our national boundaries—as do those sovereign service providers that will support the delivery of Pillar 2 technologies and products being realised in Australia.**
- **Establishing an AUKUS 'commercial and dual use' element of Pillar 2 would accelerate the partnership and ensure meaningful delivery by 2025.**

A primary reason for AUKUS Pillar 2 is that technologies and systems that have already proliferated in the commercial world have not found their way at scale into our militaries' inventories. That's partly due to the commercial firms that provide these technologies not having any incentive to do business with defence organisations under current arrangements. US International Traffic in Arms Regulations (ITAR) controls flowed on to Australia must not make this problem worse.

Making AUKUS Pillar 2 far more prominent is strategically wise and also adds durability to the overall AUKUS framework as risks in the nuclear submarine pillar are realised, as they inevitably will be.

Australia radically increasing its ambition and scale of funding for AUKUS Pillar 2 systems—not merely drip-feeding technology demonstrators—is the path to fast results and rapidly increasing the level of capacity in already successful local large, medium and small firms.

If AUKUS turns into a default approach to buying US-designed and produced systems, it will radically underachieve against its potential.

Australian firms are ideally placed to deliver on AUKUS Pillar 2, as this is a field in which new entrants exploiting 'the small, the smart, the many', and digital technologies such as cyber and applied artificial intelligence (AI), can bring highly disruptive capabilities into service, even if that means also disrupting markets dominated by big global incumbents. And Australian companies already supplying effective systems to Ukraine can transfer those weapons and systems into the AUKUS partners' inventories (and our own).

The industrial vision behind AUKUS is of three vibrant economies complementing each other in developing and supplying powerful capabilities to the Australian, US and UK militaries.

That vision needs to have industry in the middle of the defining discussions and decisions, and realising it must be built on growing direct partnerships between companies. In the three AUKUS nations, the job of government is to enable and incentivise those commercial and industrial partnerships. We can't expect bureaucracies to lead the development of highly disruptive technologies or even identify what those technologies are and how they can be employed, much less what they will be in the future.

That requires the current government-centred approach to designing and implementing Pillar 2 to change—or at least be complemented by an industry-centred approach that has access to investment funding from the US, Australian and UK governments.

In our three market-based economies, companies will not make investments on hope. They need certain funding from the AUKUS governments and, given this, will work to deliver against firm contractual obligations. The end result of successful AUKUS Pillar Two policy must be vibrant Australian, UK and US firms supplying and working across our national boundaries—and making reasonable profits that provide the incentives for them to grow and succeed further.

AUKUS Pillar 2 must have a radical lift in Australian Government investment now if it's to deliver results in

a meaningful time frame. Expecting magic to happen without that is folly.

If AUKUS turns into a default approach to buying US designed and produced systems, it will underachieve its potential radically.

The current approach to implementing AUKUS that is about harmonising the three nations' industrial bases, government policies, regulations and commercial worlds is likely to remain a slow-moving tripartite political and commercial set of negotiations.

It needs a more creative and faster implementation layer to be put in place while this long-term harmonisation effort is pursued.

If Pillar 2 is to succeed, it has to be easier to employ talent from commercial and dual-use sectors and form working partnerships with companies from non-AUKUS security partners such as Japan, South Korea, India and the EU.

The ITAR reforms being proposed in the US to enable AUKUS cooperation are worthwhile; however, policy must also be put in place to avoid the unintended consequence that tightened security and technology controls required by the US to take advantage of the changes do not become new, higher barriers to entry to the defence sector in Australia and the UK. The barriers to entry for Australian industry to doing business in the defence sector are already far too high.

Instead of overly classifying and securing Pillar 2 activity (which appears to be the natural instinct of officials tasked with implementation), much of it must be about applying existing commercial technologies and solutions to military purposes. Those are not subject to national-security classifications and restrictions in their civilian applications, so it would be an own goal to inflict such controls on them and the companies providing them for Pillar 2 purposes.

The high security control mindset necessary for the nuclear submarines pillar of AUKUS must not cross-infect the approach to Pillar 2, as that would be the enemy of speed and would simply reinforce current failures to exploit technologies that have already proliferated in the civilian and commercial worlds.

Establishing an AUKUS 'commercial and dual-use' element of Pillar Two would accelerate the partnership and ensure meaningful delivery by 2025.

Industry partnerships can do that rapidly if their proposals are encouraged, supported and purchased by the AUKUS partners' militaries.

As with industry policy generally, words and documents are interesting, but it is funding, incentives, reasonable profit and a reliable Defence customer that will deliver results.

And, on AUKUS and industry, Australia and our partners must also join the dots with decision-making that affects industry. That can create and take advantage of opportunities that the original AUKUS architects might not have considered.

As an example in the digital realm, even if it's more about building on existing investment and presence, Microsoft's announcement it will spend A\$5 billion building data centres in Canberra, Sydney and Melbourne, train around 300,000 Australians in its digital tools and partner with the Australian Signals Directorate on a cyber shield program has large implications and consequences.

The big strategic fact out of the deal is that it shows that Australia has chosen to live in the US digital world, not the only other digital world on offer—the Chinese one brought to you by Alibaba, TenCent, Huawei and the CCP. That's very good news.

No Australian technology firm can provide the 'hyperscale' of Microsoft. However, as with AUKUS generally, if Australia is to be a contributor to our digital world and not just a customer of US companies, the role of the Australian tech sector has to be set out.

Australian data and cyber firms bring diversity and redundancy to mitigate compromises of Microsoft's capabilities and systems—and provide unique capabilities that big firms envy—but the Australian alliance component to this big-tech commercial world has yet to emerge in the government's thinking or policy. It should do so with an AUKUS—and industry—flavour.

Incorporating sovereign service content into future contracts and programs would be a start.

How other countries have built robust defence industries

- **Countries with comparable or even smaller populations and economies than Australia have built highly capable defence industries when faced with strategic threats and uncertainty.**
- **They include countries that, like Australia, are close US partners and allies, but they do not leave their security to others.**
- **By addressing their own priorities, they have developed capabilities that they have exported to partner countries, including the US.**
- **A key element in their success has been the development of sovereign primes.**

All advanced democracies that face strategically uncertain times and clear threats develop their defence industrial capabilities. While they may boost their military capability through the other approaches we have discussed, they all enhance their domestic productive capacity. The clearer the threat, the more they do so. The wise ones invest while there is still time; the others only do it once they have paid a heavy price for being unprepared.

Australia has a capable defence industry in some areas. However, in the absence of strategic threat, Australia has not maximised its potential. This is not due to the size of our population, economy, industrial base or defence budget. Other countries that are smaller in some or all those elements have still built robust defence industries. Where they differ from Australia is that they have recognised that conscious policy choices and sustained local investment can generate very different outcomes in terms of defence industrial capability and self-reliant military capability.

Perhaps most important for Australia to recognise is that they have done that even though they are close

partners or even formal allies of the US and can access the world's leading defence equipment suppliers. That's because they are aware, often through bitter experience, that international partners and suppliers can fall short of meeting their requirements, often at the most inopportune times.

Israel, Sweden, South Korea and Türkiye offer useful lessons. All are small-to-medium economies that have built robust defence industries. Indeed, they have become export powerhouses.

Size is not the key factor; Australia has the largest GDP of the five and the second-largest defence budget. Nor have they developed their defence industries by becoming modern versions of Sparta. Israel does spend a large percentage of GDP on defence at 4.5%, but South Korea is the only other country over 2%. Sweden and Türkiye are well below (Table 1).

Israel

Considering the existential threats it has faced over its history, it isn't surprising that Israel has developed a very capable defence industry. That investment of resources was spurred by the hard lesson that suppliers can be unreliable in a time of crisis. However, Israel has also learned that prioritisation is essential; small economies can't do everything. Therefore, it has adopted a conscious policy of 'focused self-reliance' that pursues those capabilities that can't be acquired on the international market or the availability of which must be guaranteed. It continues to acquire exquisite capabilities overseas, such as F-35 joint strike fighters from the US and submarines from Germany.

Table 1: Comparative defence industry data

Country	Nominal GDP ranking (World Bank, 2022)	Defence budget ranking (SIPRI, 2022)	Defence spending as % of GDP (SIPRI, 2022)	Average export ranking, 1988–1992	Average export ranking, 2018–2022
Australia	12	13	1.9%	23	20
Israel	27	15	4.5%	14	9
South Korea	13	9	2.7%	21	9
Sweden	23	32	1.3%	11	18
Türkiye	19	23	1.2%	Unranked	12

SIPRI = Stockholm International Peace Research Institute, *SIPRI Military Expenditure Database*, [online](#).

That approach has resulted in world-leading capabilities to equip its armed forces and defend its people (such as the Iron Dome air-defence system) as well as substantial exports that meet the needs of partners such as Australia and the US.

Israeli primes (with their global rankings and selections of their defence products) are:⁵¹

- **Elbit (28)**: satellite sensing payloads, uncrewed aerial systems, sensors, communications, battle management systems, remote-controlled weapons stations, avionics
- **Israel Aerospace Industries (38)**: unmanned aerial systems, missiles and loitering munitions, air-defence systems, radars, early warning and control aircraft, electronic warfare
- **Rafael (45)**: air and missile defence, sensors, missiles, remote-controlled weapons stations, uncrewed systems.

Sweden

Sweden, too, has faced a significant threat in the form of the Soviet Union and then Russia. Until very recently, it was not a formal treaty ally of the US or NATO; however, it was a close security partner. While it was able to draw on advanced US technologies such as jet engines, it still developed its own defence industry, drawing on its advanced technological base and educated population. While its export ranking has declined, it still supplies important systems to overseas partners. SAAB, its local prime, has a global presence.

Importantly, it has been able to sustain an advanced, competitive defence industry on the back of relatively modest defence spending and a small military, belying the claim that the ADF is too small to support an Australian defence industry.

Sweden's defence prime (with its global ranking and a selection of its defence products) is:

- **Saab (34)**: fighters, airborne surveillance, missiles, electronic warfare, submarines, ammunition, radars.

South Korea

South Korea is another country that has faced an existential threat throughout its history. While it's a strong treaty ally of the US and even has a substantial US troop presence, it has nonetheless sought to develop its defence industrial capabilities. To do that,

it has put its technological and industrial capabilities, based on heavy manufacturing, to good use, producing ships and submarines in the world's most efficient shipyards, as well as armoured vehicles. But it's also moving into areas previously the preserve of a very small number of countries, such as jet engines and fighter design.

South Korea's defence industry has provided it with security in the face of North Korean hostility. Moreover, South Korea's defence capabilities are allowing it to work with other Indo-Pacific nations to balance China's ambitions. Currently, its defence industrial capacity is also enabling it to meet the demands of NATO countries threatened by Russia's aggression by supplying hundreds of tanks, self-propelled howitzers and long-range fires in a timely way. South Korea has become a Top 10 defence exporter and is likely to improve its ranking in the coming years.

South Korea's primes (with their global rankings and selections of their defence products) are:

- **Hanwha Aerospace (50)**: jet engines, space launch systems, missiles, armoured vehicles and artillery, air defence
- **Korea Aerospace Industries (65)**: aircraft, including fighters and helicopters, uncrewed aerial systems, satellites and space launch vehicles
- **LIG Nex1 (71)**: missiles, torpedos, electronic warfare, avionics, fire control systems.
- **Hanwha Corp (82)**: see Hanwha Aerospace (above)
- **Hyundai Heavy Industries (previously 99)⁵²**: shipbuilding, including warships, submarines and replenishment ships.

Türkiye/Turkey

Türkiye is in some ways quite different from the other comparators. Historically, it was not an economically developed country and was very dependent on the US for military equipment. However, Türkiye is in a very complex security environment. It was a frontline NATO member directly bordering the Soviet Union and then Russia, but its relations with NATO have at times been difficult. Its invasion of Cyprus in 1974 brought sanctions, including on arms, and recently it was barred from the F-35 Joint Strike Fighter program due to its planned purchases of Russian air-defence systems. Moreover, it has faced instability to its south

with the ongoing conflict in Syria, and it regards Kurdish separatists as a serious threat to national unity. It's not surprising, then, that Türkiye has sought to develop a capable defence industry.

That undertaking has been remarkably successful despite starting from a very low base, demonstrating that sustained government prioritisation and investment in the defence industrial base can produce good results. While it still builds some systems under licence, such as ships and submarines, it's also developing its own advanced capabilities, such as military jet aircraft and satellites.

While Turkish defence equipment has primarily been developed to meet its own needs, the country has achieved remarkable export success. Its Bayraktar uncrewed aerial vehicles (UAVs) have become in some ways the poster children for contemporary warfare in Turkish service in Syria and as exports in Azerbaijani and Ukrainian service. Thirty years ago, Türkiye did not figure statistically among defence exporters; it is now consistently around 12th in the world.

Türkiye's primes (with their global rankings and selections of their defence products) are:

- **ASELSAN (56)**: communication and information systems, electronic warfare, air and missile defence, satellite payloads
- **Turkish Aerospace (84)**: helicopters, trainer aircraft, combat aircraft upgrades, UAVs, surveillance and communications satellites.

Common features

There is no single path or model for developing a robust, capable indigenous defence industry. However, we can identify common features from our comparator countries.

First, those countries all see strong defence industries as a vital part of broader approaches to ensuring national security and resilience. This means that there's sustained commitment to supporting indigenous defence industries from the national governments. Certainly, their spending has been dialled up and down in response to strategic circumstances, but they have continued to invest in defence industry, knowing that skills, facilities and workforce must be maintained even in 'quiet times'.⁵³

Second, small-to-medium economies don't try to do everything. Their defence industries are most successful when they draw on their broader industrial strengths and consciously employ friend-shoring for capabilities that are best sourced from partners. They rely on local primes where they can and on foreign ones when they must.

Third, related to that, they are most successful when they focus on their highest priority capabilities. Economies with limited industrial resources devote them to developing capabilities that must be held locally.

Fourth, these countries have very often started with something that was good enough, or what the DSR has termed 'minimum viable capability'. That is something the local industrial base can achieve—and then build on once in service.

Fifth, sustained investment in defence industry has resulted in significant increases in technological capability and moving up the value chain. While it can be difficult to distinguish between what was the result of broader technological and industrial development and what was the result of sustained investment specifically in the defence sector, Israel, South Korea and Türkiye have all moved from producing relatively basic defence equipment to developing world-class systems.

Sixth, those factors have led to the ability to export to support international partners and address their capability gaps. Their customers include not only countries urgently looking for whatever capability they can find in a time of strategic crisis, but also advanced militaries such as those of the US and NATO countries looking for technological advantage. That ability to export is an important form of 'soft' power.

Seventh, since these countries see defence industry as part of broader resilience strategies, they also focus on having sovereign capability in key services, such as energy, utilities, data and health. Those too, can become powerful export sectors.

Eighth, all four countries have very capable indigenous primes that produce a broad range of advanced military equipment. As shown above, all have companies in SIPRI's Top 100 defence companies producing advanced systems for their own defence forces and export.

The strengths of Australia's industrial base

- **Australia has world-leading industrial capability that is of relevance to defence, including numerous 'defence adjacent' sectors.**
- **Despite its 'visibility problem', Australia has a capable defence industry that is an excellent foundation to build on.**
- **However, to meet our strategic challenges, we need to move beyond regarding our defence industry as primarily the supplier of components and subsystems.**

Australian advanced manufacturing: small but healthy

Reports of the death of Australian manufacturing are greatly exaggerated. Like Mark Twain, Australia's manufacturing industry has had its obituary prematurely published. It's understandable, of course, that some might believe the rumours. There's no shortage of commentators posting simple statistics or metrics that supposedly sum up our manufacturing sector's supposedly pitiful state.⁵⁴

Australian manufacturing, particularly advanced manufacturing, is alive and well, but it has a visibility problem. In part, that's because the percentage of working Australians employed in manufacturing has dramatically declined since its peak in the 1960s as the service sector has surged (but that's something we have in common with many other advanced economies).⁵⁵ As manufacturing of consumer goods has been outsourced to developing countries, Australians no longer see a 'Made in Australia' sticker on the items they use in their everyday lives, so it isn't surprising that many Australians might think we don't make anything here anymore.

But Australia has a strong, vibrant, advanced manufacturing sector. That may be hidden by the scale of our resource sector and its exports, but those exports are themselves generated by very complex inputs—many of which are designed and built in Australia. They include complex metal construction, transport systems, software, and robotic and autonomous systems.

Exporting huge volumes of natural resources at globally best prices is not the result of a weak, incapable industrial base; rather, it's possible only with deep

Figure 7: Matrix Composites & Engineering manufactures composite and advanced materials for the resource and other sectors; it's an example of the skilled Australian manufacturers who may be invisible to the public but play a vital role in Australia's export success



Source: Matrix Composites & Engineering.

technical and industrial competence, provided not just by the big resource companies but also by the huge set of local suppliers and subcontractors they work with. The scale and competitiveness of Australian agriculture is also powered by inputs that are technically sophisticated and enormously capable. The sector's use of drones is a simple example.

While those primary sectors are based on 'traditional' manufacturing capabilities such as heavy engineering, they are also supported by advanced capabilities in space, aerospace, autonomous systems, AI and biotechnology. Australian mines are the most automated in the world, for example.⁵⁶

Many of our most advanced manufacturing sectors are 'defence adjacent'. That's because the civil sector is seeking many of the same capability types as the defence sector, such as trusted autonomy, space-based imaging and communications, specialist vehicles that can operate in challenging terrain, and reliable maritime propulsion systems. That means that there's significant industrial capability and capacity here that can enter the defence sector, given the right demand signals. The challenge for the Australian Government and the Department of Defence is to provide the demand signals. At the moment, based on the demand signals that Defence gives to the existing Australian defence industry, we should not assume that will happen without clear policy direction from the government.

Australian defence industry's visibility problem

We've noted that any nation's defence industries are most successful when they draw on the strengths of their broader technological and industrial bases. Here, too, Australia's defence industry is a microcosm of our broader industrial base. But that's both a good and a bad thing.

Like our broader manufacturing sector, Australian defence industry has a visibility problem. The fact that Australians don't see the work of Australian companies in building oil and gas facilities in their everyday lives doesn't make those companies' contributions to their economic prosperity any less real. It's a similar story with Australian defence industry, which is largely

invisible to the general public yet already makes vital contributions to our security.

There are a number of reasons for that. In part, it's due to the dominance of the international primes, whose megaprojects get much of the public's attention. But Australian companies supply key components into those programs, not just here but into US production lines. Marand Precision Engineering, Quickstep Holdings, Collins Aerospace Australia and many others are providing components into the F-35 Joint Strike Fighter program.⁵⁷ And those industrial capabilities are available to deliver components to projects led by Australian primes.

Also, much of Australia's defence industry is focused on supporting in-service capabilities. That's very important work—there's no point acquiring capability if you can't sustain it—but that effort again doesn't have the same visibility as acquisition projects. So, while Australian industry produces the vast bulk of the components needed to keep the Collins-class submarine fleet running, that gains far less attention than debates about where future submarines should be built. Nevertheless, that's vital industrial capability based on skilled people that we can build upon.⁵⁸

Another visibility problem again mirrors a feature of our broader industrial base. One well known feature of Australian research and development (R&D) is the commercialisation gap; Australian R&D generates remarkable technologies, but Australian companies are often forced to go overseas to commercialise them. Similarly, in the defence sector, many Australian companies have had more success selling abroad than into the ADF. To sell to the US Department of Defense, they've had to set up production in the US. This includes companies such as Austal building the Independence-class littoral combat ship and now more classes of ships as part of the US industrial landscape, Birdon building bridging boats for the US Army and cutters for the US Coast Guard, and Ascent Vision Technologies for Australia's optical and thermal imaging systems.

Currently, Australian companies are providing important capabilities to support Ukraine's struggle that have not yet been acquired by the ADF. They include EOS and DroneShield's counter-drone systems, SYPAQ's cardboard UAV and Defendtex's Drone40.

Figure 8: The Independence-class littoral combat ship USS Canberra, designed and built by the US arm of the Australia-owned company Austal, enters Sydney Harbour prior to her commissioning on 22 July 2023



Source: Defence Image Library, [online](#).

One of the more striking features of the relationship between the Australian Department of Defence and Australian defence industry is that it's an inversion of what is normal in other countries. Overseas, a country's own military is the first customer for its defence industry. Here, Australian industry has to go overseas for its first commercial successes, as if our own Department of Defence requires Australian industry to prove its worth to other governments before it will consider them viable for our ADF. Considering that the first question potential export customers always ask is 'Has your own military bought it?', it's quite remarkable that Australian defence industry has done so well in achieving export success, but any plan to grow the industry has to start with the Department of Defence opening its mind to what local industry has to offer.

The unusual Australian defence industrial landscape

Another area where our defence industry mirrors our broader industrial landscape is that Australia is largely a nation of medium and small companies. This feature is

particularly pronounced in the defence sector, which is characterised by the presence of the local subsidiaries of a small number of international primes at one end of the spectrum and literally thousands of medium and small companies at the other.

Certainly, there is a healthy middle class, but those companies tend to be ones that have demonstrated excellence in the design and production of advanced systems and subsystems, not in the production of complete platforms or the integration of subsystems into complete capabilities. Examples include CEA Technologies' active phased-array radars. But companies that excel at the production of particular technologies are not necessarily good at or interested in being the prime systems integrator for complete capabilities.

As we saw in the previous chapter, this is different from other small-to-medium-sized economies with successful defence industries. They all have strong domestic primes that make complete platforms.

Of course, we can continue to accept a situation in which our defence industrial ecosystem comprises

medium and small companies feeding components into large projects run by the local subsidiaries of overseas companies and Australian companies with large ambitions have to go overseas to turn their R&D into reality. We can continue to accept a situation in which we turn to overseas companies for the things that are now the essential consumables of contemporary conflict. However, the strategic risks associated with that situation are clear and have been spelled out in previous chapters.

Compared to other countries that have realised that they need to mobilise their industrial base in response to strategic threats, Australia is in fact in a good position. We have a strong advanced manufacturing sector that excels in many 'defence adjacent' fields. We already have a capable defence industry that's extremely competent at sustaining and upgrading platforms designed overseas, regardless of whether they were built here or not. We have a mature and highly skilled service industry. We have innovative companies that develop world-leading, advanced capabilities—but which as often as not have to seek markets overseas due to lack of opportunity here in Australia.

It's a firm foundation to build upon, but we can't simply sit back and assume that landscape will generate the defence ecosystem we need to meet our strategic challenges. A key piece is missing, and filling that gap will take conscious choices and policy decisions on the part of the Australian Government to draw on sovereign defence manufacturers and service providers who are capable of supporting Defence right now.

A vital role for Australian defence primes

- **In difficult and uncertain strategic times, having Australian defence industry primes will deliver more agency, more opportunity and more flexibility to the Australian Government.**
- **Our historical experience is that too much dependence on foreign supply can be risky.**
- **A stronger capacity to provide for some of our defence needs will make Australia a stronger ally and partner with like-minded countries.**

In its review of the Australian manufacturing industry, the Senate Economics Reference Committee pointed to what it described as a Defence Department ‘thought experiment’ that assessed the impact on Australia of major disruptions to global supply chains. The review’s defence study found that:

Australia would suffer massive upheaval within one week due to job losses, social unease and hoarding.

Within a fortnight, due to stocks of imported supplies drawing down, major social infrastructure such as treated water would begin to fail and essential services such as health care would be degraded.

By the two-month mark liquid fuel would be almost exhausted, and by three months there would be wide-spread unemployment, no transport capability, and services that rely on imported spares (such as electricity and telecommunications) would begin degrading significantly.⁵⁹

The Senate committee concluded that this ‘startling analysis of how potentially vulnerable Australia—with its now limited manufacturing sector—has become, [reinforces] the need for a diverse economy with a strong manufacturing sector’.⁶⁰

Not surprisingly, we agree with that assessment and we endorse the committee’s view that a stronger Australian-owned and -controlled manufacturing sector brings national advantages. In the defence sector, we think that building Australian primes will:

- strengthen national resilience
- add to Australia’s capacity to ride out the impacts of strategic shocks
- add more adaptability to shift manufacturing to meet pressing ADF demands
- provide an alternative to overseas supply of critical products, which might not be able to be delivered
- give the government more options for autonomous action
- make use of Australia’s abundant national resource base
- add more sophistication and diversity to our manufacturing
- drive and diversify Australian R&D
- provide a way to aggregate and focus the capabilities of our many superb defence medium and small companies
- deepen the skills of our workforce
- provide attractive and meaningful employment
- meet a bipartisan political and widely held community aspiration that Australia is a country that makes things.

We stress again that none of those advantages means that foreign defence primes are not welcome and, indeed, that Defence will at times need to look to foreign supply of critical equipment. We are making the case for Australian defence industry primes as an additional element to our industrial capabilities and one that will strengthen the whole sector.

Three scenarios

To illustrate the value of an Australian defence prime, consider these three brief scenarios:

1. Regional stabilisation task

Following a period of significant internal violence in an Indo-Pacific island state, Australia is requested by the state’s beleaguered government to deploy an ADF stabilisation mission. It’s a substantial task, and likely to involve combat operations against a well-armed militia force. As the coalition lead, Australia begins to pull together a coalition of states willing to contribute military elements to a multinational force. Australia’s expectation is that the US will provide ‘boots on the ground’ in the form of a military contingent to the operation, as well as key supplies.

The US declines to provide combat support, while politically supporting Australia. Washington's view is that Australia needs to step up to lead this demanding regional task. The US has forces committed elsewhere and there is significant demand for key defence systems such as precision guided munitions and UAVs. Although this American position surprises Australia's political and defence leadership, the expectation is that Australia needs to get on with the job while the US prosecutes its own military operations in a different theatre. Not only will Australia have to meet its own force's needs, but it will have to upgrade those of other coalition members that lack modern communications systems, protected vehicles, health support and logistics capabilities.

2. Coalition operation

Australia has deployed a substantial military force to a coalition operation in a distant country. This is a tough war involving serious combat. While the Australian Government regards this as a matter of great strategic importance, other countries not involved in the conflict are less supporting. A supplier of a key weapon in use by the Australian forces is coming under domestic pressure from opponents of the war to stop supplying the weapon and its ammunition.

3. Difficult choices in a major conflict

Australia and much of the world is at war in a desperate struggle to defeat an authoritarian power intent on dominating the wider Indo-Pacific region. Australia is under pressure to provide forces to distant theatres of the conflict even though the mainland of Australia is potentially at risk. Australia has limited capacity to equip its own forces even though it's racing to adapt industry to urgent war production.

In this scenario, Australia has little initial choice other than to accept the strategic priorities of its key allies. Earlier and more thorough preparation might have given Australia's political and military leaders more options to shape our own war aims. As it is, the government is scrambling to equip its hard-pressed military forces fighting close to home. It faces the alarming reality that its only strategic option is to help enable the fighting capabilities of its key ally rather than shape its own military options.

Many readers will realise that our hypothetical scenarios are largely drawn from Australian defence history. Scenario 1 parallels the Australian experience in preparing to deploy a stabilisation force to East Timor. When Prime Minister John Howard called US President Bill Clinton to ask for US support and, specifically, 'boots on the ground', Clinton demurred. To quote the official history: 'The Prime Minister was surprised at Clinton's reply, which emphasised the overstretched nature of the US military and the hostility within Congress to further interventions. "I was very taken aback", recalled Howard, "and I made that known to him."' ⁶¹

Scenario 2 recalls the substantial domestic pressure in Sweden in 1966 to stop the export of ammunition to Australia for the Carl Gustaf 84-millimetre anti-tank gun. The weapon was being used by Australian forces in Vietnam. It was reported in the 1980s that Sweden exported the ammunition to the UK, which then re-exported it to Australia. ⁶² Our broader point here is that dependence on a critical component for a weapon raises the risk for Australia that the exporter might not always be in a position to supply that material.

In difficult and uncertain strategic times, having Australian defence industry primes will deliver more agency, more opportunity and more flexibility to the Australian Government. An Australian defence prime will take as its primary mission providing for the needs of the ADF and for Australia's national security. No other entity can make that claim when foreign ownership and the strategic interests and priorities of a foreign government have to be taken into account.

Figure 9: The ADF's logistics system was severely stretched during the East Timor intervention in 1999; fortunately, it had commissioned the Tasmanian-made fast catamaran ferry HMAS *Jervis Bay* earlier in the year as warning signs of a regional crisis intensified



Source: Defence Image Library, [online](#).

Our third scenario track's Australia's position in the lead-up to and during World War II. The speed with which Australia shifted its economy to wartime production is a remarkable story. In 1943, defence spending represented 38.5% of GDP. Australian firms quickly adapted to very sophisticated military production. General Motors–Holden, for example, was a critical enabler of aircraft production. Ian McLean, in his book *Why Australia Prospered*, judges that 'to have produced 3,500 aircraft of nine different types and nearly 3,000 aircraft engines of three types, must notwithstanding the mistakes and miscalculations that occurred, be ranked among the great achievements of Australian industry.'⁶³ Also between 1940 and 1943, 60 Corvettes were designed and built in Australia.

According to McLean, by 1949 Australian manufacturing was 26.2% of GDP. Contrast that with the depressing reality that manufacturing was less than 6% of GDP in 2019.⁶⁴

As in all things, striking the right balance is critical. Australia will continue to work with foreign defence suppliers. All countries do that, including the US,

which has more capacity than most to provide for its own defence needs from America's industrial base. Our contention is that Australia needs to balance this necessary engagement with foreign defence primes with a stronger homegrown defence industrial capability.

What signals are needed from government?

- **The drive, urgency and partnership in the Australian Government’s energy and manufacturing policy areas must be brought to its defence industry agenda.**
- **Industry policy for our nation’s security can no longer be set by the Defence organisation, because the Defence Department’s reach across policy levers is too limited and it has failed to deliver effective policy despite multiple attempts over the past two decades.**
- **Instead of Defence industry policy—where the capital ‘D’ indicates the Defence Department—we need sector-wide defence industry policy directions set by government. Policy must then be delivered by the key central agencies of government in partnership with the Department of Defence and Department of Industry, Science and Resources, as well as the Department of Finance, which governs the Commonwealth Procurement Rules.**
- **That new defence industry policy must recognise the direct role that Australian industry must have in ensuring access to the support and systems that our military—and broader society—will need in a sustained conflict, when even our most trusted partners have their own priority national needs.**
- **Government must provide one essential thing to Australian companies that can provide powerful capabilities to our military in our dangerous world: cash flow through contracts. That requires a new, stand-alone provision in the defence budget for acquisition contracts between Defence and medium and small Australian companies, starting at \$500 million in its first year and growing to a minimum of \$1 billion a year in the next three.**
- **The government must also change the core design of wider government procurement policy to make assurance of our military and economic security an explicit and high-priority selection criterion for decision-makers.**
- **A clear public statement of government directions for the new defence industry policy, investment and approach must be issued to the federal departments and agencies involved in implementing it.**
- **That public statement must direct that barriers to Australian companies contracting directly with Defence on capabilities are to be removed.**
- **The operating principle for the new working partnership between Defence and Australian companies is to be that the actual military users of systems and technologies in the ADF work as closely and directly as possible with the developers and makers of militarily useful systems and technologies in Australia.**

The Australian Government has a growing and impressive emerging policy agenda⁶⁵ based on the new drivers of prosperity from renewable energy and manufacturing⁶⁶ and the digital revolution, building on advantages that Australia has and what we do well.

The Treasurer, Jim Chalmers with Industry Minister Ed Husic and Resources Minister Madeleine King, is leading work that is not only giving government policy direction for industry to plan and invest, but is also providing the regulatory, financial, incentive and taxation environment for practical plans to be made and shareholders to support Australian firms.

There’s a clear imperative behind this broad government effort—which is the real risk that Australia will fail to meet its net zero commitments to decarbonise and that, before then, Australia’s electricity supply and distribution networks will fail as fossil-fuel systems are retired, unless the pace of alternatives increases.

And ministers are engaging closely with industry leaders and organisations to ensure that the policy framework and practical government measures in it are understood by the people needing to make any of this happen. More must be achieved, but this looks like it could be an emerging national partnership based on cooperation, dialogue and trust—all driven by the urgency of our national need.

Prosperity and security of supply, along with securing Australian jobs in skilled work, are all by-products of this energy and digital agenda—if it is crafted to include a role for Australian providers to make Australia more than a big US customer. And this current industry

policy agenda shows a knowledge of modern financing opportunities and the types of incentives that motivate investors and boards. There is sense in working with the grain of our economy and the industry actors within it.

All of this is transferable to the area of defence industry policy—and yet, to date, it appears that the obvious parallels are not being drawn. Defence, because of its size and its deep, long-term policy settings and approaches, is still primarily elaborating and implementing variations on previous approaches to industry. It defines itself as a special case, which the Defence organisation alone is able to understand and navigate. That has not served us well. Defence has not ‘gotten’ industry policy, and, left to itself, things won’t change.

So, the first signal required from government is that Defence’s approach to industry policy needs to learn from and align much more closely with the emerging approach being taken elsewhere in government—notably on our energy and digital future.

Australia needs a defence industry policy—not a Defence industry policy.

The second signal is about breaking a deep complacency in Defence—and about Defence—on industry.

For decades, Defence policymakers, military and civilian, have advised governments that the solution for supplying the ADF has been to accept the growing dominance of a small number of foreign defence industry primes operating in Australia and to access the catalogues of their multinational (US and European) parents. This is the ‘No one ever got sacked for buying IBM’ syndrome.

A number of the primes have built—and are investing further in—Australian arms of their businesses to serve Australia’s defence needs. This has enormous power and brings unique capabilities to the ADF, but it’s no longer sufficient to ensure that the ADF has leading-edge capabilities or that it has the support in Australian industry that will allow it to use, lose and replace capabilities in a conflict, or be sustained if conflict lasts more than a few days.

That’s because, in parallel with this policy setting, Defence officials have discounted solutions and services from Australian companies—whether defence-focused or dual-use—and preferred alternatives from the foreign primes.

As a result, they have used industry policy levers to try to encourage the big primes to take on Australian firms as subcontractors and suppliers through Australian industry capability plans. And officials have relied on maintenance and sustainment contracts to spend any significant part of the annual defence budget through Australian firms. The statistics on the defence spend show this as a consistent pattern over the past 30 years; the main role for Australian industry has been to maintain foreign-sourced acquisitions.⁶⁷

There’s also the false perception of risk: local companies, due to their size, are a high-risk proposition, while the primes offer certainty. Again, that’s based on a fundamental misunderstanding of the democratising powers of modern technologies; small companies can quickly achieve major effects by combining or modifying technologies such as autonomous systems, AI, cyber, sensing, energy storage, and so on.

Defence procurement policy appears to miss the obvious connection between a strong and capable defence sovereign service industry and Australia’s regional influence and leadership. Procurement policies that ensure sovereign service providers are provided opportunities to contribute to defence capability acquisition, sustainment or workforce capability building within existing budgets can result in Australian commercial exports into our region, support Australian soft power and enhance our national security. Digital, cyber, education and health services are all capable of delivering that for Australia.

The complacency in policy comes from another source—the decades-long assessment that Australia had at least 10 years of warning time for any threat to develop that affects Australian security directly—so that would provide time to develop production and sustainment activities in Australia to enable our military to succeed should conflict occur. That meant there was a complete lack of urgency to consider how our domestic economy and onshore production and services could make Australia secure and robust during a time of conflict.

Unfortunately, the Australian Government's 2023 DSR confirms the assessment of the now three-year-old DSU that the next few years are defining for Australia and the region's security, and there's a credible risk of conflict well inside the previous 10-year time frame. Yet not much in Defence's behaviour or engagement with Australian industry has changed.

Defence hasn't yet shown the ability to get out of that time frame in its thinking or action on industry policy, so the urgency of action that we see in the government's energy and manufacturing policy areas must be brought to defence industry.

The possibility of a war involving Australia and our military should be at least as urgent a call to action as the possibility of failure in our nation's energy generation and distribution systems.

The government must tell the bureaucracy what it wants

A new approach to defence industry involves the clearest guidance from government to the wider federal bureaucracy about what it wants—and what must not be barriers to success.

A Defence-issued defence industry policy statement will not change the wider landscape. Successive industry policy statements over recent decades have shown that.

While Defence values its organisational autonomy and argues that its scale and particular needs mean that its own industry policy statement is the correct path, Defence is not sufficiently powerful or influential to have its own policy prescriptions work independently of wider government policies and approaches. Thus, worthy aspirations in Defence's industry policy statements have routinely returned underwhelming results.

The government can make a fundamental difference here by articulating what it wants to happen with defence industry—publicly and in advance of any detailed work developed in the bureaucracy.

That clear direction might look a bit like this:

Core directions to enhance Australia's military power through effective defence industry

Australia is living in a more dangerous world than in recent decades. The potential for conflict is credible and real, and we know that even our most trusted security partners will be stretched and challenged in the event of a regional conflict.

So, Australia must have more independent capacity to defend ourselves and operate and sustain our military during a wider conflict in which we play a role in collective defence. In some important ways, we must be more Ukrainian—able to generate and employ military force for our own ends, alongside support from other partners.

Industry policy for our nation's defence is no longer the Department of Defence's industry policy alone. It is our *national* defence industry policy and has to be directed by government and jointly designed and delivered by central departments including Treasury and Finance, as well as the Department of Industry, Science and Resources and the Department of Defence.

This defence industry policy is to have a much closer relationship with the innovative policy frameworks now in place for our energy transition and manufacturing revival.

The Australian military needs to have access to the growing number of novel and powerful defence and dual-use systems developed by Australian companies, such those that are being exported for democracies to defend themselves and uphold order—as in Ukraine.

Grant programs and funded product demonstrations are insufficient to build and grow the national capabilities that our defence force needs to have available in our dangerous strategic environment. Production contracts of four years—and longer where the need is clear—between Defence and Australian medium and small firms are the government's strong preference in order to build capacity, workforce and skills and incentivise new participants. Where they are successful, they should be renewed and built upon.

That has to be enabled by changes to the Commonwealth Procurement Rules that make clear that this is value for money.

The ADF needs increased assured access to key consumables of war, including munitions and missiles. Stockpiling and assembly of those supplies from foreign firms is sensible but not a complete solution.

The mindset driving our policy here is that the Australian military needs access to flows of these supplies, not to limited stocks that are difficult to maintain should a conflict occur. This is the key to our economic and national security.

The government puts a strong priority on Defence building direct, contractual, trusted partnerships with Australian medium and small firms that deliver finished systems and complete services. Defence is to structure its acquisition organisation accordingly and reshape its contractual and procurement policies to enable that.

Open competition is not the core principle that the government sees as appropriate for defence industry policy in our current strategic environment. The risks to reliable supply of our military in a time of crisis from relying on open competition have become obvious in recent years, and those risks are not retired by the current tendering and evaluation processes in Defence.

Instead, assured and resilient supply and rapid fielding of innovative capability are the government's overriding priorities for defence industry. They are to be key criteria driving decision-making on how the Australian defence budget is spent. They are an essential part of value-for-money considerations.

As we see with the example of trading nations such as Israel and Sweden, which have vibrant domestic defence industries, this approach is consistent with Australia's obligations in our various trade agreements, all of which recognise the imperative of national security and defence.

Rapid evaluation of systems and solutions from medium and small firms, followed by equally rapid conclusion of contractual arrangements, is required to achieve the results the ADF requires.

As the government's DSR recognises, time is to be valued in the entire decision-making process, which must operate to deliver results into the hands of military users at least an order of magnitude faster than the current processes, which can take four and more years for contracts to be awarded, let alone for capability to be fielded.

Defence is to fully grasp and internalise the implications of the DSR's term 'minimum viable capability'. Iterative development, building on success and learning from failure is preferable to spending years seeking perfect technical solutions that will last decades. This is the environment in which Australian companies operate and can thrive.

Long time frames are appropriate only for developmental, high-end, exquisite, systems such as advanced fighters and Tier 1 surface combatants, for which Australia must work with international partners with particular expertise and industrial capabilities. Those time frames do not apply in the case of almost all the systems, services and capabilities that Australian industry can provide to Defence.

Defence's interaction with Australian medium and small firms is to recognise that cash flow is essential for business viability, which will allow these firms to deliver, to grow as medium and large enterprises and to develop ever more successful capabilities for our military. Lengthy processes harm industry regardless of the ultimate decision.

Provision within Defence's investment program is to be made for the procurement of essential sovereign capabilities that must be made in Australia by Australian-owned firms, with an initial minimum funding provision for this year of \$500 million, growing to a minimum of \$1 billion per annum over the next three years. This is a new provision, separate from other programs such as the three-service Minor Projects Program. It's not about attributing any spend by an Australian company to a figure adding up to \$500 million but is for 'sovereign capability pathways' that only Australian-owned companies can deliver.

Initial contracts will be with companies already successfully delivering against Defence innovation funding to enable them to move to actual production, as well as with companies with a track record of delivery of successful systems and supplies to our military. Continuity of work ensures bridges to future capacity and delivery.

There is to be as direct working relationships as possible between military end users of equipment and systems and the company personnel who design, manufacture and improve them.

'Middleware', whether process or personnel, is to be minimised to the greatest extent possible.

We recognise that having Australian companies program, manage and prime complex programs, rather than building a slow-moving unincorporated public service to perform those functions, is a necessary precursor to building capacity and scale in Australian primes.

A hugely successful model of this type of interaction was the Counter IED Program used to support Australian troops in Afghanistan. International examples—like those of Israel, Sweden and Türkiye—also demonstrate this direct working relationship between users and makers.

Australian-produced solutions are to be seen as key elements of the ADF's war-fighting system, complementary to the capabilities available from large multinational defence primes. They are not merely components of the large systems offered by the primes.

Defence is to end its continued search for definitional excellence and ever more detailed strategic industry capability priorities followed by detailed implementation plans. Those have done little but recognise where the weight of defence spending in Australia goes naturally (notably on estate and sustainment activities) or sought to establish centralised planning models that can't keep up with the pace of strategic and technological change.

Priorities for Australian industry in the defence sector are to be as follows:

- The 'consumables of conflict'—supplies and services that are essential to supply our military in a time of conflict. Those consumables now include flows of 'the small, the smart and the many'—armed and unarmed drones and other disposable systems, as well as guided missiles and munitions. They also include traditional supplies such as fuel, food, medical supplies and deployable infrastructure as well as the backbone of modern military operations, such as data storage/processing and communications.
- Products and applications that deliver practical capabilities to military users in the AUKUS Pillar 2 capability areas: cyber, AI and autonomy, undersea capabilities, hypersonic and counter-hypersonic capabilities.
- Space and counter-space capabilities.
- Shipbuilding.

- Developing powerful battlefield and enabling innovations to deliver asymmetric effects, like those we see in Ukraine.

Above all, Defence is to embrace openness to ideas and solutions brought to it by medium and small Australian firms, instead of seeking to set detailed 'requirements' in areas of the commercial, digital and technology worlds where it has limited understanding. Defence's role here is to provide the military and defence problems it needs solved and work with the solution providers.

Keeping the good in existing defence industry policy

Subcontracting and supplier frameworks serve a different purpose in developing onshore capacity in Australia and should continue to be encouraged by Defence contracting with large defence primes. Similarly, the encouragement of Australian industry participation in maintenance and sustainment activities for defence systems acquired from international companies must be maintained, along with local industry's role in estate and facilities programs. These existing areas could be enhanced with a specific requirement to include sovereign service content.

What will happen from here

We are determined to have the intent and directions in this policy statement delivered not just by the Defence organisation, but by the Treasury, the Department of Finance and the Department of Industry, Science and Resources. While we believe this policy statement is consistent with the Commonwealth Procurement Rules and can be immediately implemented, there will also be explicit clarification to the rules and associated guidance to remove any confusion. Guidance will be given to the Auditor-General about the new rules and policy directions.

The key here will be defining the overriding priority of assured and resilient supply of our military and the rapid fielding of innovative capability by Australian firms in the defence and national-security sector as a core value for money determinant in the Commonwealth Procurement Rules.

What behavioural changes are needed from the bureaucracy?

- **Central agencies need to play a major roles in driving changes; this is a bigger issue than just the Department of Defence.**
- **Defence also needs to change its mindset, prioritising speed over perfection and process.**
- **Everything Defence does must aim to lower barriers to entry for new companies in the defence industry space.**
- **Cash flow is everything; real funding needs to be invested in Australian companies, not just trickles of innovation funding that barely keep them on life support.**

There are two key areas of the federal bureaucracy whose behaviours and business processes need to change for any of the government's new directions outlined above to have any effect.

The first involves the two central bureaucracies that set whole-of-government procurement policies and rules: primarily the Department of Finance and the key economic policy department, the Treasury.

Those two central agencies shape how even the large Defence organisation has to operate when thinking about and conducting acquisition. And the Department of Industry, Science and Resources must become a close partner of Defence and the central agencies in delivering this new defence industry policy, bringing its policy ideas and implementation approaches from manufacturing to this area of work.

Then Defence itself has to make major behavioural changes and shifts in both its structure and its business processes.

Clear direction from government ministers about the priority to be placed on building Australian companies as more direct and larger suppliers to Defence will fail if the current mindset and processes of Defence's key procurement arm, the Capability Acquisition and Sustainment Group (CASG), remain in place. Multiple other business processes inside the complex Defence bureaucracy also cannot remain unchanged and unchallenged.

Successful Australian medium and small industry delivery of defence capacity requires cash flow, not just policy.

Defence must make a growing budget available for procurement of capabilities from medium and small Australian firms to enable this new defence industry policy to deliver rapid, enduring results. A new fund of \$500 million should be established through the May 2024 Budget for Defence for this purpose, growing to a minimum of \$1 billion annually over the following three years.

In addition, incorporating a requirement for sovereign service content into contracts more widely will enhance capability, grow industry capacity and enable service exports into our region.

Treasury must acknowledge the role of power and security in economics

The Treasury is the key economic policy engine for the Australian Government. It has provided the intellectual foundations for government policy-making in general economic policy, including as it affects the domestic economy and industry, competition, productivity and the regulation of foreign investment.

Much of its policy-making has been informed by a strong conviction that competition in open markets is the most efficient way for economies to operate. Along with that, ideas such as comparative advantage and the overall lift in production and wealth from the last decades of globalisation have been influential in the policy ideas it generates. This has meant that it has essentially been unfazed by any negative impact that the growth of Australia's primary export industries has had on our manufacturing industries.

Treasury officials prioritise economics as a shaping force in our world and tend to discount the influence of security and geopolitical competition, including conflict. The *Australia in the Asian century White Paper* led by former Treasury Secretary Ken Henry and produced by a taskforce led under him by a senior Treasury official in 2012 is a primary example of that thinking.⁶⁸

That White Paper was almost totally devoid of any security trends or factors that could undercut its portrayal of an ever wealthier, more interconnected

Indo-Pacific region, with enmeshed supply chains and economies.

A decade later, and after Covid-19, the rise of an aggressive China and the fracturing of trust in globalised supply chains brought about by those events and the war in Ukraine, the role of strategic power and dominance of security issues in our world is obvious and growing. This reality has yet to percolate through Treasury policy-making, with the exception of limited acknowledgement of the need to build resilience in the Australian economy. Even here, the weight of thinking and effort is about capturing the windfalls from new areas of economic development such as the energy transition and the export of critical minerals and clean hydrogen.

There is, as yet, no reset of economic policy that recognises the changed world that we are living and operating in, which values economic security and the capacity to preserve our national security. And so, an earlier vision of Australia thriving in a globalised economy and playing its part by using its comparative advantages still dominates core economic policy.

The complementary stream of thinking about the need in this fractured global economy to have more ability to meet our own needs, and to deepen economic relationships, including in the defence sector, with trusted countries and their companies has, as yet, had little obvious impact.

That will remain a barrier to change across wider government, but it's an issue that the Treasurer should be well placed to address with his department, given that he has the information stream of advice from the membership of the National Security Committee of Cabinet to inform his thinking.

But Treasury leadership itself must do more to recognise the implications for its core thinking that come from the pandemic and current wars, added to by the obvious fracturing that has begun because of the very different economic and geopolitical visions of China, the US and the EU. Core economic assumptions about how the global economy and our national economy work are resistant to change, but the shocks of recent years must drive that change.

As we see in the US with the leadership of US Treasury Secretary Yellen, our Treasury policy must make room for an emphasis on economic security and national security, along with the concepts of onshoring of

activities and 'friend-shoring', in which important economic activities that must be maintained can be delivered by the economies of trusted partners.⁶⁹

The Department of Finance: the setter of procurement rules

As the owner of the Commonwealth Procurement Rules (CPRs),⁷⁰ The Department of Finance has a key role in achieving changed outcomes for Australia's military power through this new defence industry policy direction.

The overall principle for the rules is sound: Australian taxpayers' money has to be spent in ways that achieve value for money. That has to be the measure applied to the use of Australia's \$52.6 billion of defence spending, and to any subset of it spent with Australian industry.

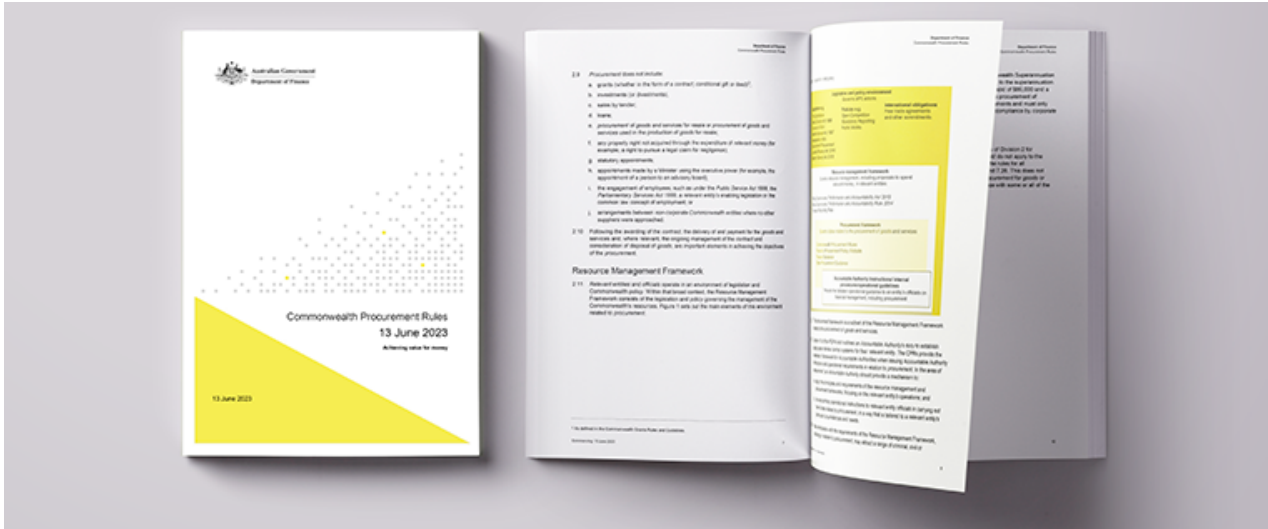
Finance officials have maintained through many reviews of Defence and its industry policy that the CPRs contain many criteria that can inform an assessment of value for money; price is only one of them. Delivering broader Australian economic benefit and building Australian industry capability are other no less important criteria.⁷¹ It is open to Defence officials to operate within the CPRs with a reasonable degree of autonomy and sensible interpretation.

However, there are aspects of the CPRs that lead implementing agencies to conduct procurement contrary to the government's priorities, and this is where change and clarification are necessary. Such change can also end Defence officials' perceptions that they are constrained in ways they know are counterproductive to equipping and supporting the ADF as effectively as possible.

Just as the Minister for Finance, Katy Gallagher, released updated CPRs in June 2023 that reinforces the central mantra of value for money,⁷² the CPRs need to be updated to explicitly connect to the increasing need for economic security through trusted partnerships and greater Australian industry capacity, so that our military has assured access to what it needs to fight a sustained conflict.

Minister Gallagher's update requires procurement officials to 'normalise consideration' of 'environmental sustainability and climate change impacts' and raised factors such as opportunities for small, regional and Indigenous-owned businesses and jobs for local

Figure 10: The Commonwealth Procurement Rules need to state that ensuring economic security and sovereign defence capability are important criteria when assessing value for money



Source: Department of Finance

communities. Those are all undoubted social and economic benefits that can be contributed towards particular types of federal government procurement.

An update that recognises achieving economic security for Australia and assured supply and support of our military during times of crisis or conflict would have a similar beneficial effect in the area of defence procurement. Finance officials will suggest that current guidance is sufficient,⁷³ but that has proven not to be the case when interpreted by Defence officials, so a clarification is necessary.

And, as raised in Chapter 9, both Finance and Treasury must implement the direction from that, in the area of defence industry and national security, open competition is not the default principle for procurement. Priority for supply and rapid fielding of innovative capabilities from Australian industry and from companies based in the jurisdiction of trusted partners is necessary—in that order.

Lastly, Finance officials will need to work with Defence procurement officials in implementing these major changed directions for policy and process to overcome inertia and mixed understanding.

The Department of Industry, Science and Resources

The Department of Industry, Science and Resources has a real role in making this changed defence industry

policy work. Its ideas and agenda in the area of national manufacturing can bring new vibrancy to the area of defence, for national security and economic benefit. The department must shift from being an interested observer kept at a distance by Defence to becoming a close implementation partner and creator of new policy ideas and directions to overcome difficulties and build on early success. And there's a role for the new Future Made in Australia Office here, by monitoring the success of government intent to uplift Australian manufacturing, and with the added roles of monitoring procurement to ensure that it enables our national security. Over time, the ideas and initiatives from the manufacturing sector and the defence sector may converge to the benefit of both.

The Department of Defence: changes in mindset and fundamentally new behaviours

Australia must be more Ukrainian—able to use an agile industrial base to support our military to protect ourselves, and only then requiring the support of partners and allies as part of wider collective defence efforts.

Defence has to base its implementation of this new partnership with Australian industry on some big ideas. Those ideas must be grounded in some key concepts about the ADF and what we will need in a conflict.

In recent decades, when the ADF was involved only in wars of choice, it made sense for its highest selection criteria to be purely military performance, in particular protection, regardless of the cost or schedule involved in delivering that.

However, in an environment in which Australia is facing the credible risk of wars of necessity, other factors should figure: scale and mass over performance of the individual system, reliability and scale of international supply chains, and so on.

Defence is still in the 'performance of the individual system above all else' mindset. That has to change.

From stocks to flows

Modern conflict requires mass. In the case of Australia, our small defence force can increase its combat mass only if it does three things:

1. Invest heavily in 'the small, the smart and the many'—expendable, inexpensive uncrewed systems for combat and surveillance across all three services to augment all the traditional capabilities used by our highly skilled, valuable ADF personnel.
2. Invest in the domestic production of key consumables of conflict that we know will be in short supply in a time of war: ammunition and other munitions, missiles (offensive and defensive), and cybersecurity tools and systems.
3. Invest in domestic capacity to produce and replace platforms that can transport and deploy 'the small, the smart and the many' and also augment the very small number of exquisitely capable ships, submarines and aircraft that the ADF has. Uncrewed surface and subsurface vessels and Tier 2 and other armed combatants able to work with other fleet elements are examples.

This is a shift from focusing on storing limited stocks of items and weapons to planning and investment to ensure that flows of those items can be maintained during conflict. Stocks that can't be replaced by a flow of resupply are a dead end in our current strategic circumstances.

Resilience in a world of disrupted data and communications

To operate in times of conflict a defence force must invest in sovereign systems to communicate, host, protect and analyse data. That capability will enable operations in a disconnected and disrupted environment where communications and data exchange with allies and partners is not assured. Reliance on single big suppliers involves large disruption, as we see with events in our broader economy such as the recent Optus outage⁷⁴ and the lengthy disruption of a major port operator, DP World, in Australia owing to a cyberattack.⁷⁵

From total integration to rapid, ruthlessly limited integration

The ADF will not keep ahead of adversaries' capabilities without changing from its current path of deep integration of everything with everything.

Capability development and delivery have to operate at the rate of technology change and outpace the changing adversary threat. This is an attribute that Defence can obtain only by shifting from its current 'One Defence capability system'. That mindset, together with its aim of total integration and 'interchangeability'⁷⁶ with our US allies, needs to shift to one more like that demonstrated by the Ukrainian military in their war with Putin's forces: limited and ruthless integration for clear operational purposes.

That shift in mindset will enable Defence to rapidly introduce novel systems and solutions and end overly complex front-end integration design work.

Australia's medium and small firms that have capabilities relevant to Defence already operate at the rate of technological change and, as we see with Australian systems successfully fielded in Ukraine, are providing effective battlefield weapons and countermeasures that are developed, delivered and improved rapidly out of this wartime use. We must take the opportunity that those firms provide to improve our own military capability rapidly.

Defence as an organisation has to end its working assumption that its capability needs are met almost entirely by products and services from the big defence primes owned by foreign corporations but operating here in Australia.

Instead, it has to recognise that there are required and powerful capabilities available to the Australian military and Defence organisation from Australia's medium and small firms. Not to do that is unsustainable, as many Australian companies will be driven out of business, with consolidation and lack of diversity the result, as we have seen in areas such as hardware and supermarkets.

The capabilities in question are complementary to the big, exquisite, complex things that the ADF acquires from the primes—but no military will be successful in war if it does not equip itself with those complementary capabilities and is able to have them replaced at scale as they are used and lost in operations.

Change within CASG, the National Shipbuilding and Sustainment Group and Defence capability managers

Much of the work to be done and changes to be made involving CASG must also be adopted by the National Shipbuilding and Sustainment Group, and Defence's capability managers must set the tone and climate that drives that process.

CASG leadership and officials emphasise that what they do is complex—and long term.⁷⁷ This is part of the problem. Exquisite, complex, expensive, high-technology military systems such as nuclear-powered submarines, fifth-generation fighters, Wedgetail aircraft and sophisticated surface ships fit that description and are essential equipment for the ADF. They are possible to have only in very small numbers in our ADF because of their complexity and the expense of their acquisition, operation and support.

However, a parallel world of technologies and capabilities has come into being that is characterised as the 'small, the smart and the many'. These are the types of weapons and systems that are destroying Russian armoured vehicles, formations, headquarters and logistics bases—sometimes at long distances

inside Russia. And, in combination with effective cruise and other advanced missiles, they have allowed the Ukrainian military to destroy Russian air defences, sink the *Moskva*, Russia's capable Black Sea flagship, and destroy a Kilo-class submarine in dry dock.

Such new systems are not complex and have not been developed for military users through years- or decades-long programs. Many are improvised for military service from civilian applications. And small uncrewed systems are being developed with those same philosophies by medium and small Australian companies and start-ups for military use. They are not deeply integrated into the other systems that the Ukrainian military operates—but only enough to meet their specific operational purpose.

CASG must shape a new part of itself to focus solely on this new world of applied systems of use to Defence and start with as simple and clean a sheet of paper in building its own business processes and its ways of partnering with Australian companies.

The starting point cannot be CASG's standing approaches,⁷⁸ business processes and suite of tendering and contracting documentation, however 'right-sized' they might propose to make it. It's unlikely that, whether civilian or military, an official steeped in CASG's current way of operating will be right to lead this new functional element. Unlike the Advanced Strategic Capabilities Accelerator, this new arm of CASG can't take 18 months to define its internal processes before engaging with companies through contracts. Short-form contracts entered rapidly to allow rapid delivery is the essential approach.

A two-week or six-week contract negotiation period should be the target time frame for CASG to settle short-form contracts with Australian medium and small firms. That time frame is achieved in the commercial world in the digital and resources sector, where urgency and timely delivery are highly valued. This also mirrors the successful approach that the US Government and its corporate partners took to mobilise in the lead-up to and during World War II.⁷⁹

CASG has an elaborate set of internal policies and rules that are built on the top of the CPRs. CASG's approaches include structuring itself so that it almost exclusively contracts with large defence primes. It conducts separate tendering for individual projects instead of building longer term relationships through

less frequent program approaches and longer multi-year contracts that are renewable based on performance. And CASG conducts extraordinarily lengthy tendering, evaluation and contract negotiation processes that create high barriers to entry, excluding all but the largest companies.

CASG as it is structured and operates now is also a barrier to providers having direct relationships with Australian military users—making it harder and slower to meet their practical military needs because of the need to work through several intermediaries inside Defence to engage service users with real-world operational problems to solve.

Roads to nowhere—grants and demonstrators

Grant programs⁸⁰ and funded prototype or demonstration programs do not remove the barriers to entry even for Australian companies that have solutions that ADF users know about and want because CASG's other business processes and timelines don't mesh with small grant and demonstrator programs. As observed elsewhere, medium and small companies have a core need for cash flow to fund their operations, so this policy failure inside Defence matters. Moreover—as many reviews have repeatedly noted—Defence's innovation programs don't link into the large acquisition provision in Defence's investment program.

Delivery of services in times of crisis requires capacity outside crises

To take one example, the ADF will not be able to sustain operations on multiple fronts, in Australia or our region, should we be drawn into conflict. The federal government will need to engage commercial service providers to deliver a part of that capability. However, it will be difficult for a service provider to rapidly raise such capability from scratch. Service organisations need cash flow and defence contracts *outside* times of crisis to be able to rapidly respond to our national-security needs, too.

Cash flow for delivery of capability, from a new Budget provision

Delivery by Australian medium and small industry requires cash flow, not just policy.

Defence must make a growing budget available for the procurement of capabilities from medium and small Australian firms to enable this new defence industry policy to deliver rapid, enduring results.

A new fund of a minimum \$500 million should be established in the May 2024 Budget for Defence for this purpose, and that provision should grow to \$1 billion over the following three years. These sovereign capability pathways must be in addition to other investment funding and sustainment funding (including existing major and minor capital programs and Defence Science and Technology Group's Advanced Strategic Capabilities Accelerator). So, it will be new money, not money from offsets within the current defence budget.

An end to the SICPs

As outlined in Chapter 9, the pursuit of detailed strategic industry capability priorities⁸¹ must end. They should be replaced with practical priorities that relate to Australian military power and the ability to sustain our military in conflict, as described in that chapter.

Many beauty pageants, not many winners

CASG's approach to running acquisition through a series of discrete projects and project phases that each have separate tendering and contracting activities to set requirements, obtain proposals from companies, evaluate them and negotiate with a preferred tenderer has perverse effects. While it's designed to maximise competition and draw on the widest possible pool of suppliers, it has the effect of reinforcing the incumbency of the small number of powerful defence primes.

The reason an approach designed to maximise competition perversely achieves the opposite is that Defence's tendering and contracting processes are very slow, and even preferred tenderers can find that the scope and budget of work changes radically at different stages through the process. Even tendering processes that are well advanced can be cancelled or paused at any time. That makes Defence a capricious, unreliable customer for companies that have a limited range of offerings.

The big defence primes with large onshore presence in Australia have large markets outside the Australian defence sector. They also have a catalogue of products and capabilities that 'cover the waterfront' in many areas. Those two attributes mean that they can bid for multiple potential Defence projects and withstand the lengthy complex evaluation and contract negotiation processes used by CASG to arrive at a suitable contract resulting in actual procurement. They win enough of those numerous beauty-pageant tenders to make their business in Australia viable.

Even large defence companies from countries such as Germany and South Korea struggle to see viability in the Australian defence market because of these CASG processes, so that approach is wholly unsuitable for medium and small Australian firms. Perversely, Defence's view of local companies being a high risk is a self-fulfilling prophecy, as it conducts business in a way that starves them of cash, creating the risk of failure and underdelivery.

Direct working relationships between military end users and Australian companies

Defence must work directly with Australian firms to create close, direct partnerships between the military users of the companies' systems and the skilled people in the companies designing, adapting, producing and putting to work those systems. This is resurrecting the successful approach that Defence and defence companies took to the counter-IED problem in Afghanistan.

The departments of Finance and Defence must work together so that probity principles enable such partnerships, not prevent them. The purpose of such direct working relationships is to achieve rapid, effective increases in Australia's military power. Close working partnerships to achieve that are not probity problems but the enablers of military capability.

Defence should use a clean-sheet approach to work with Australian firms to create close, direct partnerships between the military users of the companies' systems and skilled people in the companies.

Close working partnerships to achieve that are not probity problems generating conflicts of interest. The countries discussed in Chapter 6 know that.

Removing barriers to entry for Australian SMEs

Defence's extensive and intrusive requirements⁸² that companies must meet before gaining any work are the enemies of rapid delivery and also discourage new entrants to the defence sector. Other areas of our economy with high safety requirements and the need to operate in very difficult environmental conditions—such as our mining sector—are able to onboard new firms rapidly and utilise their goods and services.

The Defence organisation must devote people, attention and resources to removing the barriers to entry that it currently maintains. It must ensure that security and accreditation processes are implemented by working to help the companies involved, instead of the current slow and compliance-based approach. It is also not essential for high-security practices to be put in place where the risks of compromise are manageable. Civilian systems already in wide use are examples of what could be done.

DroneShield is an example of a high-tech capability developed here in Australia by a motivated Australian company.⁸³ It's being used in Ukraine to save lives and protect infrastructure—but the barriers in Defence policy and procurement have meant that it is not in service with our own military.

Creating Australian defence primes and military power

In this chapter, we set out our key recommendations for government and industry, focused on building a larger, more capable, more self-reliant defence industrial base.

We offer these ideas with some urgency because of Australia's worsening strategic situation. None of us wants to see conflict in our lifetime, or in our children's lifetimes. It's a historical truism that the best way to preserve peace is to prepare for war. A strong Australian defence industry is the foundation of a strong ADF, which is Australia's most significant contribution to deterring conflict in our region.

A stronger Australian industrial base will also make the nation more resilient, better able to handle shocks, and better positioned to function when conflict or the risk of conflict may disrupt or cut our international supply chains.

We think that a broad consensus is developing in government, in parliament and in society that now is the time to take bold steps to strengthen Australia's national security. The world has entered a new age of instability, strategic competition and uncertainty. We must stop the slide towards conflict by reinforcing the sinews of deterrence and stability. We can do that by strengthening our alliance and international partnerships, building up the ADF and boosting our industrial capacities.

The current and recent Australian governments should be applauded for their considerable efforts to deliver precisely those outcomes, but it's clear that more must be done, and done more quickly. Traditional policymaking processes are failing under the pressure and speed of strategic change. Whatever the good intent of policymakers, it's clear that defence industry policy is not delivering.

When the outcome of well-intentioned policy is to deliver failure, it would be pointless to just keep repeating the same approach. More reviews, more inquiries, more 12-, 18- and 24-month-long processes to evaluate and bed down small-scale industry policy reforms will only deliver more of the same tepid incrementalism. It's time for more fundamental change, driven by different policy approaches.

Here are eight recommendations for revitalising defence industry, thereby strengthening the ADF and making Australia more self-reliant and resilient.

1. Declare the intent to establish Australian defence industry primes

The government should state that Australia's deteriorating strategic outlook is such that a major effort is needed to build and sustain Australian-owned defence industry primes. Government must set the market conditions that will enable them to emerge.

We use the term 'prime' to mean companies with the scale and sophistication to manage large and complex projects, but we note that most of our Australian defence companies are medium or small enterprises. For this situation to change, the government needs to alter policy settings to give companies the chance to grow.

Supporting the cultivation of Australian defence industry primes will not preclude using the US Foreign Military Sales program for acquisitions or contracting foreign-owned defence industry primes. However, we can't maintain our current excessive reliance on international partners at a time when those partners are facing their own crisis of defence supply.

Australian-owned defence industry primes leveraging Australian companies and trusted international supply chains will make supplying the ADF their first priority whatever the strategic circumstances.

Australian defence industry primes will become more capable partners to international primes that are an already active and welcome part of the Australian defence landscape.

The government should set a time frame to shape capability development and procurement processes that will support Australian primes. This needs to be done quickly.

2. Establish a Government Defence Industry Steering Council

Too much defence industry policy has been made in Australia *for* defence industry and not *with* defence industry. The Defence Department and the ADF are the customer, but too often the Defence organisation seeks to shape industry policy without understanding what capabilities exist in the private sector, or how to access those capabilities in the fastest and most cost-effective way.

The best way to shape defence industry policy is to bring senior Australian industry players to the table to collaborate in the process and to have the makers and designers in industry work closely with military users inside our military units.

We recommend that, to make those connections at the top level, a Government Defence Industry Steering Council be established, reporting directly to the Minister for Defence.

The steering council must be drawn from leaders of companies with their headquarters in Australia and operations here and be a combination of large, medium and small Australian firms.

Its key value is to bring Australian industry into a trusted and senior-level policy discussion with government—and to ensure that direct and effective working relationships are formed between the skilled personnel in our companies and their military customers.

Its key purpose will be to monitor the implementation of the Australian industry policy directions outlined in this report and work in partnership with government to deliver against its priorities.

Of course, it can have no role in deciding who gets which contracts, but it has a broader implementation role.

For too long, Defence has driven industry policy in isolation from its commercial partners. That must change.

3. Produce a new definition of ‘industrial sovereignty’

We endorse the view reported by the Senate’s Foreign Affairs, Defence and Trade Legislation Committee that ‘government needs to provide clarity on which capabilities are required to be sovereign and supported onshore.’⁸⁴ This report points to a comment made in a submission to the committee (with which we agree) that ‘there is a view among some within Defence that “built in Australia” should be the acceptable threshold for being defined as sovereign (to Australia).’ That’s a risky assumption to make at a time when our friends and allies are facing immense pressures in their own defence industry systems.

The sovereign control and availability of capabilities in use by our military is separate from industrial sovereignty, which is essential to assured supply during a crisis or conflict. We should remember that services originating from Australian companies are critical defence enablers, too. Our focus must be broader than manufacturing.

It is inescapable that, when a national crisis occurs, a government will demand absolute priority support from companies headquartered in its jurisdiction and will use legal and regulatory measures to achieve that. A recent example was the emergency steps taken by government in September 2022 to stockpile and support a sovereign manufacturing capability for the diesel additive fluid, AdBlue.⁸⁵

Such policy measures exercise sovereignty over industry. So, for Australia to have assured supplies in a conflict, we must have capacity in companies whose headquarters and operations are in Australia, where it is the Australian Government that can exercise ultimate priority. It will only have that through industrial sovereignty.

4. Revise the Commonwealth Procurement Rules to recognise economic security and industrial sovereignty as ‘value for money’

Economic security and industrial sovereignty are policy ideas that need to be baked into Treasury and Finance policymaking more broadly as enablers that will help Australia adjust to our more dangerous world.

On procurement policy specifically, we fully support the recent recommendation of the Senate Economics References Committee in its review of *The Australian manufacturing industry*: 'That the Commonwealth Procurement Rules ... be reviewed for possible amendments that would support the development of Australia's domestic manufacturing capabilities and employment/training opportunities.'⁸⁶ In the words of Senator David Fawcett, 'the CPR do not recognise "sovereign capability" as value for money.'⁸⁷

The CPRs need to be updated to explicitly connect to the increasing need for economic security as a foundation of national security. Trusted partnerships and greater Australian industry capacity will provide the ADF with assured access to what it needs to fight a sustained conflict. Those factors must be stated to be value-for-money considerations in the CPRs and supporting guidance in order to normalise their application by Defence officials.

5. Change Defence's core processes and structures to enable and grow direct partnerships with Australian companies

The assured and resilient supply and rapid fielding of innovative capability are the Australian Government's overriding priorities for defence industry. They are to be key criteria driving decision-making on how the Australian defence budget is spent.

The Defence organisation must accept that its past behaviours and mindsets are obsolete in a strategic environment of no credible warning time for conflict. That means wholesale, not incremental change. Its decision-making and business processes must now favour scale and mass, instead of the overriding single focus on performance of the individual system that has dominated Defence acquisition in recent decades. And it must seek assured flows of all the consumables of conflict, instead of relying on limited stockholdings and offshore supply chains that will be subject to disruption and others' priorities.

CASG (along with the National Shipbuilding and Sustainment Group) has to begin direct contractual partnerships with Australian medium and small companies, and a new part of its organisation must be tasked with that function. Rapid contracting that is

not based on existing CASG templates and procedures is essential. CASG must facilitate direct working partnerships between the designers and makers in Australian companies and the military users of their products.

One possibility here is that a taskforce could be set up to undertake rapid acquisition and achieve immediate progress in contracting with Australian companies and building Australian primes. The Advanced Strategic Capabilities Accelerator does not appear to be meeting that need and has a different focus. A complementary approach is both necessary and beneficial.

6. Create a new \$1-billion budget line to fund sovereign capability pathways from medium and small Australian companies for defence purposes

The best defence industry policy with the most willing implementation by central agency and Defence officials will fail without funding. Cash flow and reasonable profit are enablers of successful product development and capability and service delivery. Grants and demonstrator funding do not deliver that and will not grow our industrial capacity and industrial sovereignty.

This new funding line in the defence budget should be available in the May 2024 Budget and grow over the following three financial years to \$1 billion annually. It should be reserved for Australian-owned small and medium firms so that they have certainty from their key government customer so that they can invest, employ, develop and deliver sovereign capabilities to the ADF rapidly. Multi-year contracts are the preferred mode for the expenditure of this new program funding. Australian companies with existing products and services are ready to meet Defence's needs. They are already meeting priority needs for Ukraine and our partners and allies.

The fund is to be spent on contracts to address the priority areas set out in Recommendation 8 below.

We note that contracting Australian companies to procure fully imported products, carry out introduction into service, and provide through-life support and fleet management is an essential starting point to establish the commercial arrangements to eventually support onshoring and transferring from import to domestic

production. This can also create scale that can be leveraged to build stronger Australian capability.

7. Make AUKUS Pillar 2 deliver now, by setting industry to work

We need faster action to deliver AUKUS Pillar 2 technologies. Remember that Australia is intended to be a contributor to AUKUS, not simply a price and technology taker. In fact, there is some world-leading technology resident in Australian medium and small companies that should be brought into the AUKUS conversation.

It's understandable that successive Australian governments have given most of their attention on AUKUS matters to nuclear propulsion for submarines. That's where the vast bulk of Defence money and intellectual effort has been devoted. However, 27 months into AUKUS, we need to see some results in the form of technology being turned into actionable capability-development projects.

The industrial vision behind AUKUS is of three vibrant economies complementing each other in developing and supplying powerful capabilities to the Australian, US and UK militaries.

That vision needs to have industry in the middle of the defining discussions and decisions and must be built on growing partnerships between companies. In the three AUKUS nations, the job of government is to enable and incentivise those commercial and industrial partnerships. We can't expect bureaucracies to lead the development of highly disruptive technologies or even to identify what those technologies are.

That requires the current government-centred approach to designing and implementing Pillar 2 to change—or at least be complemented by an industry-centred approach that has access to investment funding from the US, Australian and UK governments.

In our three market-based economies, companies will not make investments on hope. They need funding certainty from the AUKUS governments and, given that, will work to deliver against firm contractual obligations. The end result of successful AUKUS Pillar 2 policy must be vibrant Australian, UK and US firms supplying and working across our national boundaries to the benefit of our three militaries and to the security of our region.

As US ITAR reforms are sought and achieved through government-to-government effort, the resulting

policy and regulatory changes must not increase the barriers to entry to the defence sector for capable and innovative companies that have commercial and dual-use technologies that are fundamentally powerful for our nation's defence. The opposite must happen: the barriers to entry that have kept such technologies out of the hands of our militaries must be lowered.

8. Replace the fruitless search for the perfect list of 'sovereign capabilities priorities' and detailed industry plans with practical priorities

Centralised planning models such as the strategic industry capability priorities (SICPs) can't keep up with the pace of strategic and technological change.

Defence's continued search for definitional excellence and ever more detailed SICPs followed by detailed implementation plans must end. Those mechanisms have done little other than to recognise where the weight of Defence spending in Australia goes naturally (notably, on estate and sustainment).

Instead, the priorities for Australian industry in the defence sector must be as follows:

- The 'consumables of conflict'—supplies and services that are essential to supply our military in a time of conflict. Those consumables now include flows of 'the small, the smart and the many'—armed and unarmed drones and other disposable systems, as well as guided missiles and munitions. They also include traditional supplies such as fuel, food, medical supplies and deployable infrastructure, as well as the backbone of modern military operations such as data and communications.
- Products and applications that deliver practical capabilities to military users in the AUKUS Pillar 2 capability areas: cyber, AI and autonomy, undersea capabilities, hypersonic and counter-hypersonic capabilities.
- Space and counter-space capabilities.
- Shipbuilding.
- Developing powerful battlefield and enabling innovations to deliver asymmetric effects, such as those we see in Ukraine.

Funding and contracts are to follow these priorities.

How it should happen—a illustrative rapid Australian guided-weapons project

- **Australian primes following sovereign capability pathways have the potential to rapidly deliver affordable mass.**
- **Such pathways need to prioritise speed to capability and mass over complexity and the performance of the individual system or munition.**
- **Aiming initially for minimum viable capability followed by incremental improvements will allow Australian industry to rapidly deliver viable solutions.**
- **Such pathways will develop Australian industry's capability and capacity and allow Australian firms to be long-term partners for the ADF.**

This report has suggested a new approach to Australian defence industry. In that approach, Australian medium and small companies, each with innovative, potentially world-leading capabilities, will be marshalled by Australian-owned primes to generate robust, resilient capability for the ADF.

How could that new approach work in practice?

In this chapter, we sketch out a hypothetical case work to illustrate the core planks of the approach, including the philosophical underpinnings, the policy framework, the funding mechanisms and the achievable timelines.

The example that we have chosen involves guided weapons. There are of course many other examples we could have used, but generating new approaches to designing and manufacturing guided weapons is a particularly urgent and vital issue. That's because developing an assured supply of them is an absolute necessity for success in contemporary conflict, and one that the current and previous governments recognised and foregrounded in their strategic policy settings.

The first point to stress is that this new approach would work alongside Australia's traditional approach to acquiring guided weapons (which is to buy them from US or European manufacturers), as well as alongside the Australian Government's plan to replicate production lines for those weapons (or at least some of their components) here. Those approaches are acquiring exquisite weapons costing hundreds of thousands or even millions of dollars each. There will be a need for such weapons, but they won't be capable

of fully meeting our requirements—as the war in Ukraine shows.

Our need for an assured, high-volume flow of guided weapons is unlikely to be met just by business-as-usual approaches of going to the global market when we need them. Nor is it likely to be met by onshoring and expanding production of the same kinds of weapons that the ADF is currently acquiring. That's because the weapons that we rely on now are so complex that production is highly unlikely to keep up with consumption in a conflict in the Indo-Pacific.

All militaries, including the ADF, will need a fast, reliable supply of the small, the smart and the many that can provide affordable mass. That's what this case study is about.

The first step is that the Australian Government must state that there's a sovereign requirement for the domestic design and manufacture of cheap, yet effective, guided weapons. That means that the government triggers the policy provisions of the sovereign capability pathway. Proposals and tender responses must come from consortiums led by an Australian-owned prime systems integrator. The nature of a commercial arrangements between the participants in each consortium are open, other than that there is an assumption that a very high percentage of the content must come from Australian-owned and based companies.⁸⁸ Importantly, the capability will be funded out of the sovereign capability reserved funding in the Defence Integrated Investment Program. Foreign-owned companies are welcome to participate in the consortiums, and the consortiums may use some foreign-owned intellectual property and subsystems, but each proposal must identify any supply-chain risks and how they would be mitigated.

The second step is to identify the kind of capability required. The goal is not to produce all guided weapons here. Nor should Defence seek to define the precise solution. The consistent lesson from the history of Defence's capability development and acquisition processes is that Defence should not specify the solution. Rather, it should define the broad effect sought and let industry develop solutions; the solutions may be very different from what the operators had envisaged based on their current systems.

For example, if the requirement is for a soldier-portable system that can destroy vehicles around 5 kilometres away, the obvious solution is something like a Javelin missile—a very capable and proven weapon. However, missiles of that class cost hundreds of thousands of dollars, have many exquisite components and take many months or even years to be delivered once orders are received. The war in Ukraine has shown that even one theatre is draining global stocks of this kind of weapon. But, as combat in Ukraine has also shown, cheap hobbyist rotary-wing quadcopters armed with simple mortar rounds or anti-tank rockets can deliver a similar effect. Our goal is to provide affordable mass, sustainably delivered by Australian industry.

In this case study, we assume that the government is looking to develop a sovereign long-range fires system that can disable targets up to 1,000 kilometres away. How the system achieves that is irrelevant—it doesn't even have to be a missile. The key effect that we're delivering is creating uncertainty in the mind of an adversary, making them factor into their planning the possibility that they can be hit whenever they are within 1,000 kilometres of Australian forces.

Key selection criteria include:

- speed to capability
- cost and, consequently, mass
- mitigation of supply-chain risks, particularly in time of conflict and crisis
- development of local industry capacity, including the ability to mobilise production in conflict
- an Australian prime system integrator-led teaming arrangement.

The proposals should also show how they would move rapidly from development to production. That would include leveraging either existing public investment in government-owned facilities or proposing new government-backed, multi-user facilities that would be available for all Australian defence companies to use in future. The government should be prepared to invest in those facilities to support the chosen solutions to move to full-rate, large-scale production.

In accordance with the DSR's concept of minimal viable capability, it's very important that the capability definition is incremental. We are not seeking the world's most capable weapon from the outset (otherwise we'll be waiting a very long time); that recognition is built into the initial decision to pursue a sovereign capability

pathway. The performance of an individual munition is important but is not the key discriminator by itself, particularly if we can achieve greater operational effect with 20 \$50,000 effectors than one \$1 million effector.

Therefore, Capability Increment 1 might seek only the minimum viable capability of a land-based munition that is able to hit a fixed location at 1,000 kilometres. Prosecuting moving targets on land or sea, greater levels of survivability, longer range and a broader range of launch platforms can be delivered by later increments. Minimal levels of integration are a positive at this point, not a negative.

The first approach to industry would set out the high-level requirement and call for Australian-led consortiums to respond, specifying how they would meet the requirement. Responses would be required within three months. Defence, informed by Defence Science and Technology Group, would have no more than three months to select a maximum of three consortiums to develop prototypes of the minimum viable capability. At this point, Defence must be willing to accept the risk that not all of the technologies will prove to be viable in the available time frames.

Development of the prototypes would take 18 months. Each consortium would be provided with \$20 million, although they would be welcome invest their own funds as well or secure other sources of private funding, such as Australian venture capital. The prototypes would be evaluated after 18 months and two consortiums would be downselected.

In the next phase, the two remaining consortiums would have a further 18 months to develop combat-ready versions of the minimum viable capability, including supporting elements such as transport, storage and handling systems, interfaces with targeting and command and control systems, and so on. Each of the consortiums would be provided with (indicatively) \$50 million to develop their solutions. Again, the consortiums can draw on private-sector sources of funding.

The two systems would then be evaluated. Depending on their capability and their potential to achieve further capability increments, one or both may be given acquisition contracts and put into production and ADF service. It's important that there is the possibility of multiple solutions being adopted. First, the private sector is more likely to invest if it isn't a winner-take-all

competition. Second, multiple solutions generate greater industrial capacity and capability and provide a more diverse base to develop solutions for further capability increments.

Overall, the process would take three and a half years from initiation to having a minimum viable capability ready for production and entry into service.

Once the capability is in service, the consortium/s can address further capability increments. Systems that could be easily retrofitted to meet those requirements (for example, through software enhancements or improved seeker heads) would be assessed positively in the initial selection process.

Other progressive enhancements that could be pursued once industry is receiving consistent cash flow include addressing supply-chain risks by onshoring the production of key components (such as advanced batteries) or investing in productive capacity that could be surged in time of crisis.

It's important to acknowledge that, once successful a solution (or solutions) has been selected, the government and Defence have picked their partner for the medium term. Defence can't compete every subsequent capability increment, but that is in itself a key goal of the sovereign capability pathway: the development of local primes that can be enduring partners for Defence, capable of delivering progressively better and better capability. This is precisely the way Sweden, South Korea, Israel et al. have matured their defence industry bases into the highly effective capabilities they are today.

A similar process could be used for other high-volume consumables that will be required in large volumes in future conflicts. Those include uncrewed systems, whether for ISR, logistics or kinetic effects.

Whatever the capability, the key elements are:

- identifying it as a sovereign requirement
- leaving the solution space open
- accepting minimal viable capability as the initial goal
- setting ambitious but achievable timelines
- publicly funding development while creating the conditions that attract private finance
- leveraging publicly funded facilities for production
- perhaps most importantly, having a shared appetite for risk.

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- 54 Strategic Analysis Australia has argued: 'References to the Harvard Atlas of Economic Complexity are a standard throw-away line in dismissive assessments of Australia's technological and industrial sophistication. However the Atlas's methodology is decidedly dodgy, particularly when used to sum up the entire Australian economy. Under the bonnet, the Atlas is driven by a remarkably simple engine. First, it only looks at exports. Secondly, the Atlas assesses a country's economic complexity based on the diversity of its exports and their ubiquity. Ubiquity measures the number of countries that export that product; the more countries that export it, the more ubiquitous it is and the lower the complexity value assigned to the product. That's based on the questionable assumption that if lots of people produce it, it can't be hard and therefore isn't complex. Australia's largest export, iron ore, is ranked 1183 out of 1222 products in the Atlas's database. Coal, our second largest, is 1153. That's because lots of countries export them. Consequently, the algorithm spits out our miserable complexity ranking of 93rd in the world. In sum, we should be very wary about basing assessments of what Australia can and can't produce on our ranking in the Atlas.' Marcus Hellyer, 'How to stop underestimating Australian industry's capacity for our defence', Strategic Analysis Australia, 13 September 2023, [online](#).
- 55 Productivity Commission, submission to the Economics References Committee Inquiry into the Australian Manufacturing Industry, September 2021, 5, [online](#).
- 56 That's not to say that Australia's very successful resource sector has been an unalloyed good for Australian manufacturing. Australia has suffered from its own version of the so-called 'Dutch disease', in which resource exports drive up the value of our currency, making it difficult to price manufactured goods competitively. Resource booms have attracted skilled workers out of manufacturing—a phenomenon that the ADF has also experienced. But the fundamental point is that the resource sector has provided a very large domestic market for advanced Australian manufacturing.
- 57 Interestingly, prominent defence industry and export databases such those of SIPRI don't track the export of components or services, which are among Australia's largest defence exports.
- 58 According to Australian Department of Defence data, over the past decade Capability Acquisition and Sustainment Group's spending has been split roughly equally between acquisition and sustainment activities. However, the acquisition spend has been split two-thirds overseas and one-third local, whereas the sustainment spend has been split the opposite way, with around one-third spent overseas and two-thirds locally. We believe it is an achievable goal to increase the local acquisition spend also up to two-thirds. We certainly have a good foundation to build upon. The key is to establish a mindset in Defence to get there, supported by the right government policies.
- 59 Senate Economics References Committee, *The Australian manufacturing industry*, 24.
- 60 Senate Economics References Committee, *The Australian manufacturing industry*, 29.
- 61 Craig Stockings, *Born of fire and ash: Australian operations in response to the East Timor crisis 1999–2000*, Australian War Memorial and UNSW Press, 2022, 295.
- 62 Rolf Soderlind, 'Disarmament champion cleaning up own act: stung by new image as gunrunner, Sweden tightens weapons-export laws', *Los Angeles Times*, 17 April 1988, [online](#).
- 63 Ian W McLean, *Why Australia prospered: the shifting sources of economic growth*, Princeton University Press, 2013, 179.
- 64 Rachel Pupazzoni, 'Australian manufacturing has been in terminal decline but coronavirus might revive it', *ABC News*, 23 July 2020, [online](#).
- 65 Jim Chalmers, 'Energy, the economy, and this defining decade', keynote address to the Economic and Social Outlook Conference, Melbourne, 2 November 2023, [online](#).
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- 67 See endnote 58 above on the split between CASG's acquisition and sustainment spending. Since 2012–13, CASG has spent \$31.2 billion locally on acquisition and \$53.7 billion on sustainment. It should be noted that 'local' is any company with a local presence, not Australian-owned companies.
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- 81 Pat Conroy, 'Defence industry in a post-DSR world', speech, 14 June 2023, [online](#).
- 82 Defence Department, 'Defence Industry Security Program', Australian Government, no date, [online](#).
- 83 DroneShield, [online](#).
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- 85 Chris Bowen, 'Securing supply of diesel exhaust fluid to keep Australia moving', media statement, 15 September 2022, [online](#).
- 86 Senate Foreign Affairs, Defence and Trade Legislation Committee, *Performance of the Department of Defence in supporting the capability and capacity of Australia's defence industry: interim report*, 88.
- 87 Senator David Fawcett, additional comments, Senate Foreign Affairs, Defence and Trade Legislation Committee, *Performance of the Department of Defence in supporting the capability and capacity of Australia's defence industry: interim report*, 74.
- 88 The assumption is that any project following a sovereign capability pathway would have a very high level of Australian content. However, we are hesitant to specify a particular percentage of Australian content in case that arbitrarily restricts capability outcomes. But, since the pathway adopts an incremental capability pathway starting with minimum viable capability, a relatively high level of Australian content should be achievable from the outset.

Acronyms and abbreviations

ADF	Australian Defence Force
AI	artificial intelligence
CASG	Capability Acquisition and Sustainment Group
CCP	Chinese Communist Party
CPRs	Commonwealth Procurement Rules
DSR	Defence Strategic Review
DSU	Defence Strategic Update
EU	European Union
FY	financial year
GDP	gross domestic product
IED	improvised explosive device
ISR	intelligence, surveillance and reconnaissance
ISR	intelligence, surveillance and reconnaissance
IT	information technology
ITAR	International Traffic in Arms Regulations (US)
NATO	North Atlantic Treaty Organization
OECD	Organisation for Economic Development and Co-operation
PLA	People's Liberation Army
PRC	People's Republic of China
R&D	research and development
SICPs	strategic industry capability priorities
SMEs	small and medium-sized enterprises
UAV	uncrewed aerial vehicle
UK	United Kingdom
US	United States



This report calls for urgent action to strengthen Australia's national security.

Industry leaders could sit back and wait for the Australian Government and the Defence organisation to produce the next policy direction, but, rather than leaving all the heavy lifting in this policy area to the Defence Department and the government, we offer some constructive inputs to the public debate.

A group of like-minded Australian companies worked together to produce this report. We are the NIOA Group, Gilmour Space Technologies, Austal, Macquarie Technology Group—which together form the Sovereign Australian Prime Alliance (SAPA)—and the Australian Industry & Defence Network.

We span defence, national security, space, national and regional resilience capabilities, offering some of the best locally developed technology in Australia.

The report sets out a pathway to building genuine sovereign capability in defence industry.

This pathway would enable Australian medium-sized and small companies, each with innovative, potentially world-leading capabilities, to be marshalled together by an Australian prime contractor to generate robust, resilient capability for Defence.