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THE DEFENCE OF AUSTRALIA: A BLUEPRINT FOR THE NEXT GOVERNMENT

PAPER 3: Right Here Right Now: Unleashing Australian
know-how to grow military power fast

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The Defence of Australia: A blueprint for the next government
PAPER 3: Right Here Right Now: Unleashing Australian know-how to grow military power fast

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Overview

The Defence of Australia: A blueprint for the next government.

Australia is facing its most challenging security environment since the Second World War.

Defence planners and political leaders of both major parties agree that Australia no longer has the luxury of the once operative ten-year warning time before we need to be ready for a major conflict in our region.

Yet we are unprepared for such a crisis. For at least the past decade governments of all persuasions have struggled to translate changing perceptions into decisions and action. It is time for a reboot built on a sense of urgency. The lead up to the 2025 Federal Election is an opportunity for the Australian public, the defence community, and elected representatives, to drive that change.

To aid this process the Institute of Public Affairs, an organisation dedicated to securing the freedom, security and prosperity of Australia, is partnering with Strategic Analysis Australia to produce a blueprint for what the next Australian government needs to do to ensure that Australia can help deter a major conflict in our region and/or defend our national sovereignty if deterrence fails. In a six part series to be completed before the end of 2024, the main components of the blueprint will be mapped out:

1. National Security and Australia's Northern Defence
2. Supporting and Equipping the ADF
3. Acquisitions and the Australian Defence Industry
4. Energy and Critical Infrastructure Security
5. Funding National Security
6. Northern Australia and What is Required

Strategic Analysis Australia is an independent strategic consultancy with decades of combined experience at the highest levels of defence and national security policy and implementation in Australia. This collaboration between the IPA and SAA will produce recommendations that are practical, achievable, and about which decisions can and should be made in the next term of government. The focus is on dealing with the challenges we face right now. Long-term planning is always needed, but in the window of vulnerability Australia is in, long-term capabilities might not materialise in time.

This series intends not only to inform defence policy makers and all Australians of the immense security challenges we face but, just as importantly, to demonstrate that something can be done about them if we start with a bias towards action, and act with resolve.

Foreword

In the second paper of our Defence Blueprint series we included the unacceptably long list of defence projects that had been either indefinitely deferred or apparently shelved.¹ And it seems that worrisome process continues apace: just before I sat down to write this Foreword, I read in *The Australian* that:

- The Albanese government is poised to cancel a planned \$7 billion military-grade satellite communications system it gave the green light to just 18 months ago because there is no money in the Defence budget to pay for it.
- US defence giant Lockheed Martin was selected in April last year to deliver what was to be the nation's biggest-ever space project—a hardened sovereign system of three to five satellites boasting the highest-level protection against cyber and electronic warfare attacks.
- But *The Australian* can reveal the government will announce early this week—under the cover of the Melbourne Cup and the US election—that the project will not proceed.²

This highlights two unacceptable elements of the situation we are now in, and the urgent need for change. Firstly, the defence budget is static and being squeezed to accommodate big ticket expenditures, particularly AUKUS. We have not as a nation recalibrated to meet the new threat environment and the urgent need to increase our defence budget to accommodate both committed programs and the extra expenditures we need.

Secondly, this is no way to build a reliable supply chain of defence contractors, big or small. As this paper - number three in the Defence Blueprint series - outlines, Australia needs to have secure relationships with the 'Primes' but also build an active and engaged eco-system of smaller domestic enterprises that have the capacity to ramp up with innovative contributions to our offensive and defensive capabilities. But they in turn will not be able to invest and to attract talent and capital if the defence procurement is subject to not only ongoing funding constraints but also capricious reversals such as the example given above.

As with so many of our recommendations, to fully implement this idea we need a change of attitude in the broader Australian community. The issues we currently have were highlighted by the protests at the Land Forces 2024 defence expo that occurred in Melbourne in August.

Much of the contemporary coverage focussed on the unacceptable behaviour of the protestors, and the admixture of anti-Israel elements within contemporary radical left politics. But the more important point is that these 'anti-war' protestors are firmly in the 'chickens for KFC' camp. Australia is in the most dangerous geopolitical/military environment we have faced since World War II, and it is time therefore to be increasing our expenditure on defence and building our deterrent capabilities. Instead, we have an activist class that has constructed a narrative in which not only is Israel not allowed to defend itself against attacks by its enemies, but seemingly no other Western nation is allowed to do so either.

1 Figure 3: Budget Reallocations in the 2024 National Defence Strategy, page 18

2 Ben Packham, 'Satellite down: nation's biggest ever space program dumped over multibillion-dollar cost' (*The Australian*, 4 November 2024).

To protest against our military, and the companies that supply them, on principle is to effectively argue for unilateral disarmament, which in turn equates to a surrender of our sovereignty. A strong military is in narrow terms established to fight wars, but for a country like Australia its primary purpose at the moment is to deter potential enemies and prevent a war.

This also has implications for investors, including those who control the enormous amounts of capital tied up in Industry Super Funds. If they follow the dictates of a narrow view of ESG (environmental, social and governance), then our domestic defence industry would be starved of the capital it needs.

This is now the subject of debate within the Australian finance sector, which in turn reflects the very active pushback against the pharisees of ESG:

NATO Secretary General Jens Stoltenberg said while some investors “have the misguided idea that the defence industry is somehow ‘unethical’”, there was nothing unethical about defending allies or helping Ukrainian soldiers to defend their country.

“Indeed, without industry, there is no defence, no deterrence and no security.”³

Well said. At a recent IPA event in Perth someone reminded me of Geoffrey Blainey’s great work *The Causes of War* (1973). His central thesis/conclusion is quite simple: countries start wars when they think they can win. Putin thought he could be in Kyiv in three days. If Xi thinks he can take Taiwan without paying a price in 2027, then he might well try to do so. Raising the cost of taking such a measure is the definition of deterrence.

As Peter Jennings AO has pointed out, in an era of relative peace Australia has for a time fought wars of choice—Afghanistan and Iraq—as well as peacekeeping missions in East Timor and the Solomon Islands. The prospect now—the overwhelming geopolitical challenge—is an invasion by the PRC of Taiwan. Xi Jinping has told the PLA to be ready to undertake that mission by 2027. A strong military, and strong alliances, can raise the cost of conflict in such a way that the calculus for Xi is changed.

We have by the way, recently released a video with Peter outlining the strategic challenge to an IPA audience in Melbourne, introduced by IPA Director of Law and Policy, John Storey, which you can view at the link given in this footnote.⁴

As Peter says, what we seek is to achieve deterrence such that every morning when Xi considers whether to give the order, he says, ‘not today’.

Scott Hargreaves

*Executive Director
Institute of Public Affairs, Melbourne
September 2024*

³ Russell Baker, ‘ESG firmly in defence sector’s sights’ (*Investment Magazine*, 30 January 2024): www.investmentmagazine.com.au/2024/01/esg-firmly-in-defence-sectors-sights/.

⁴ *Is Australia prepared to defend itself from the threat of China*, IPA (www.youtube.com/@IPAaustralia), 1 November 2024, www.youtube.com/watch?v=7TXSmTintUQ.

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Executive summary

Australia faces a use it or lose it moment for our struggling defence industry base. Little or no investment from the Defence budget means that, in time, there will be little or no defence industry. The recommendations of this report propose a radical reform of Defence's procurement systems in ways that will benefit Australian industry. Our worsening strategic outlook means we must become stronger and more self-sufficient because our allies will look to their own needs first in any conflict.

As our previous reports in this series show, Australia's military force is based on a small number of complex, very expensive systems—ships, submarines, aircraft and armoured vehicles—operated by a small number of highly trained people. These aircraft, ships and vehicles take many years to develop, build and deliver to the Defence Force. For example, it will take twenty years to deliver six Hunter Class frigates to the Royal Australian Navy, and 32 years for Australia to get eight nuclear submarines under the AUKUS program. The crews also take years to train. Neither these expensive platforms nor highly trained people can be replaced rapidly if lost in combat.

The munitions and missiles that the ADF uses have some similarities to this trend: the production capacity for munitions and missiles is small and mostly runs through the supply chains of a small number of traditional defence firms headquartered in the US, UK and Europe. Order times for advanced munitions and missiles are years from placement to delivery.

Even the giant US military would deplete its stocks of precision missiles within weeks of a major conflict starting and US industry would take years to restock it—something that is a profound strategic weakness and an untenable foundation for deterrence of war or conduct of war should

deterrence fail. Australia's military depends on the resupply of these same weapons from the US industrial base, and so would also be unable to operate effectively in any major war that lasted more than a few weeks.

The force structure of our military reflects that of the much larger US military, and in response to those demand signals the defence industry both here and in America has designed itself to develop and deliver increasingly complex, increasingly expensive replacements for the current generations of ships, planes, submarines, vehicles and missiles that populate those force structures.

This is an expected result from an economic perspective. Defence is a monopsony buyer and the industry that produces for it has consolidated to be a small group of companies that are now an oligopoly meeting their single big customer's needs and preferences.

It is a comfortable incumbent situation for both customer and supplier and one that has been a durable model for the long period of peace and relative stability since the end of the Cold War.

But what was suitable for that time of relative peace is unsuitable for our increasingly dangerous times, for 6 reasons: First, ships, aircraft and vehicles lost in combat will not be able to be replaced in any timeframe that matches the need. Second, the highly trained people needed to operate these big platforms take almost as long to train and develop as the ships and aircraft they use take to produce, and so they will not be able to be replaced at the tempo war requires. Third, the force will run out of all the 'consumables of conflict'—ammunition, missiles, parts—days or weeks into a conflict and production of replacements will take months, or likely years in the case of many missiles.

A fourth reason why our current Defence Force is not suited to more risky strategic times is that our military is likely to face adversaries equipped with large numbers of diverse types of unmanned and autonomous systems, including armed, unarmed and intelligence and surveillance types but the Australian military will not be equipped with similar offensive or defensive systems in any volume. Point five: even if global supply lines remain open, resupply from our American or European allies and partners during conflict is likely to be very slow or even impractical because of the natural priority they will have to meet their own needs first. Finally, unlike the decades of the Cold War, innovation no longer comes mainly from the closed defence ecosystem made up of the Government military buyer and a small number of large defence prime companies. Instead, innovation is now mainly coming from the tech and commercial sectors outside the defence sector, with militaries including our own struggling to keep up.

The large defence incumbent firms are optimised to slowly develop and produce the traditional, large, expensive platforms our military demands. Meanwhile the wars in the Middle East and Ukraine are demonstrating the military power that comes from 'the small, the smart and the many'—large volumes of diverse types of armed and unarmed autonomous systems and cheap but precise munitions—typically produced by small to medium enterprises. In Australia, these smaller, faster firms are not supplying our military.

This presents a burning need for change that is not addressed by recent defence reviews and strategies produced by the federal government, including the 2023 Defence Strategic Review, the 2024 naval surface combatant review, and the National Defence Strategy.

If the changed directions for our military recommended by the previous paper in this series are adopted, Australia will need a new approach to Defence's engagement with Australia's defence and non-defence corporate world to produce a military that can be sustained in combat for years not weeks and which can absorb combat losses and continue to operate.

This new approach has to break the monopsony buyer-oligopoly suppliers model that has grown up in the defence sector. That's because breakthrough technologies vital for our military are now mainly coming from the commercial, non-defence parts of our economy. It's also because the diversity and volume in missiles, and uncrewed and autonomous systems that militaries now need cannot be supplied by the large incumbent Defence primes but must be sourced from more vibrant and creative medium and small companies and the tech sector (most of which are either entirely focused on commercial markets or, if they do have an existing defence focus, do this with dual use products).

This report is the third in a series of six setting out an action plan for reforming Defence. Our recommendations build on those we have made earlier. Recommendation 9 from report 2, said:

Government should establish an initial \$1 billion annual Rapid Acquisition Fund in the Defence budget getting Australian small and medium-sized enterprises to produce key "consumables", of war including munitions, autonomous systems and counter-drone systems. The Fund must bypass Defence's glacial acquisition processes. Government should direct Defence to have programs underway with industry no later than six months from the election.

Allocating part of the Defence budget to Australian defence industry is a necessary foundation for what follows. Note that the \$1 billion figure we propose is tiny relative to the \$57 billion defence budget in 2024-25. We should see this figure as a small down-payment on what needs to be a much larger budget allocation to Australian industry.

Countries win wars because they more effectively mobilise their national resources. That mobilisation needs to start before conflict starts. That doesn't mean our economy needs to permanently be on a war footing. But we need to understand how the broader technological and industrial base can contribute to defence capability – and we need to be drawing on that before conflict starts. There's no room for lazy binaries between defence industry and other industry. One of the problems with the Defence

Department's repeated, failed, policy attempts around Sovereign Industry Capabilities (SICs), Priority Industry Capabilities (PICs), Sovereign Defence Industry Capability Priorities (SICPs) and Sovereign Defence Industry Priorities (SDIPs) is that they essentially conceptually quarantine defence industry as something fundamentally different from broader industry. And the new laws bringing Australian defence industry into the US ITARS-controlled (International Traffic in Arms Regulations) Defense Industrial Base makes that quarantine wall higher.

The only way we will be able to mobilise rapidly will be to draw on civilian industrial capacity. It's not something separate from defence industry: it will be our defence industry in time of crisis and conflict. We need to understand how that will happen now, before conflict starts.

Recommendations

Our following six recommendations will change the Defence approach to working with Australian companies and equip our military with the things it needs, in the quantities needed to sustain itself in war. (We continue the recommendation count from our past papers.):

13. Government should commit to having delivered in its first term of office at least one type of armed combat drone designed and produced in Australia into service with the Australian Defence Force. Overachieving will be welcomed.

We must take advantage of the industry and economy Australia has, notably the ability of medium and small Australian companies to supply a diverse range of smaller scale products and equipment to our military that can provide mass to what is otherwise a small force.

That can start with a first critical need: armed combat drones designed and produced in Australia. This is a symbolic shift in behaviour and speed of action, but if the political will exists it is not even a demanding 'stretch' objective, as Australian designed and produced armed drones exist now although they are not yet being acquired for our own military.

14. Government must bring non-traditional firms into the defence market by launching Operation Cut Red Tape to cut barriers to entry and by creating an Australian Industry Mobilisation and Resilience Council that includes the best brains from the broader private sector.

We recognise that, unlike during the Cold War, many critical technologies and solutions vital for military power are now developed in the wider commercial world, in sectors like mining, space, agriculture, health, telecommunications and even retail but are not finding their way into systems used by our military. We think it is vital to create incentives for companies working in other sectors—notably mining, agriculture and space—to enter the defence market and do business with Defence. Current policies and regulation create large disincentives for companies operating in non-defence markets and protect the incumbents from competition. Left unchanged this will continue to prevent Australia’s military from getting its hands on some of the best systems and technologies.

15. Government must direct Defence to contract directly with medium and small Australian companies instead of its current practice of working almost solely with big traditional defence primes.

An initiative to buy Australian first where it is sensible to do so will give Australian companies acquisition contracts for militarily meaningful quantities of equipment, instead of drip feeding them on small development grants and pushing them to try to sell their IP or businesses to the big incumbent primes.

16. Start building stockpiles of ammunition and other consumables of war.

Australia’s war stocks are tiny, designed for an earlier era of deep peace and make us dependent on overseas supplies which, in all likelihood, will not be available in times of conflict or heightened tension. We need to substantially increase our stockholdings of items which could be consumed very quickly in wartime.

17. Work with the private sector to radically simplify Defence’s over-complicated contracting documentation and provide entirely new simple, short form contracts based on the core Commonwealth purchasing principle of value for money.
18. Significantly lift the offer of Australian-developed weapons and countermeasures to the Ukrainian military and cooperate with Kyiv on weapons development.

This is not simply to help Ukraine win a war against Russia’s totalitarian aggression, as vital as that interest is for all democracies. Australian military support for Ukraine will also enable us to gain direct experience of the effectiveness of these systems in intense combat. Co-developing these weapons and systems with the Ukrainians in the experimental hothouse of the war will grow the capacity and effectiveness of these Australian companies and their products, while contributing to Ukraine winning its war for survival.

3.1 How Defence designs and acquires its force— and why it's getting it wrong

Australia's military 'order of battle' would look very familiar to someone who served in the Australian Defence Force in the mid-1970s, or even 1960s. It's based around:

- a Navy with a small number of destroyers, frigates and submarines, some patrol boats, accompanied by a few transport, supply, and minehunting vessels;
- a small Army with a mix of infantry and armoured units; and
- an Air Force with around 100 fast fighter jets, along with small numbers of maritime patrol and transport aircraft.

The veteran would spot some novelties – Wedgetail Airborne Early Warning and Control Aircraft and Growler electronic attack aircraft, and the Navy's two large amphibious ships—and the fact that Australia no longer has an aircraft carrier. But the main feeling would be familiarity.

That's because, regardless of what various government-issued White Papers have asserted about ground up rethinking, Defence's force structure has been based on a simple design principle for the last 40 years—the new force should be made up of newer versions of whatever systems the ADF has now. It's a 'like for like but better' approach that has the Navy, Army and Air Force buying the latest catalogue model of the familiar things they already have, made by the big incumbent Defence Industry firms who are happy to sell them the 'next generation' surface ship, combat jet or armoured vehicle—with each generation being more complex, more expensive and slower to build than its predecessor.

The Navy's patrol boats illustrate this well. In the 1960s, Defence bought the Attack Class patrol boats—32m long, 6.1m wide with a range of 2,200km, a crew of 18, one Bofors gun and two machine guns. In the late 1970s, Defence replaced these with the Fremantle Class patrol boats—42m long, 7.7m wide, with a 9,300km range, a crew of 22, one RHIB (rigid hull inflatable boat), still a Bofors 40mm

gun and two machine guns. Bigger, more complex, more expensive. In the mid-2000s, Defence bought the Armidale Class patrol boats from Austal—56.8m long, 9.7m wide, crew of 21, 5,600 km range, Rafael 25mm gun, two machine guns, two RHIBs. And most recently, Defence has been acquiring Offshore Patrol Vessels built by Lurssen that were to replace the Armidales—80 metres long, 13 metres wide, 40 crew, 7,400km range, same Rafael gun, two machine guns and 3 RHIBs. However, this pathway seems to have hit a reality-based wall, with Defence now stating that extremely large patrol vessels with virtually no combat capability provide little value in actual conflict.

It's the same story with the RAAF's journey from the Mirage fighters and F-111s to the 'classic' F/A-18 Hornets, the Super Hornet F/A-18 and the F-35A. And the Army has been doing the same thing but in slow motion; with tanks, it moved from the 1950s era Centurion tanks to Leopard tanks in the 1970s, then to US M1A1 Abrams tanks in the 2000s, and is now replacing these with the newer M1A2 version—each more complex, expensive than its predecessor. It's taken from the Vietnam War to now to replace its M-113 personnel carriers with the much larger, more complex, much more expensive Infantry Fighting Vehicles.

It's as if someone in Defence in the 1960s defined the perfect structure for the ADF and then everyone since has just bought the next version of whatever was due for replacement. Every now and then something new came along and a champion successfully advocated to get it into service—giving the Air Force 12 Growler electronic attack aircraft and six Wedgetail AEW&C aircraft. And something else happened occasionally too: budget pressures forced the retirement of systems even if the capability was still needed. The foremost example of this is the retirement without replacement of the Navy's sole aircraft carrier *HMAS Melbourne* in 1982 after 27 years of service—it was too expensive to sustain and far too expensive to replace with the defence budget of the time.

The result is we have a military with a very small number of frontline weapon systems operated by a very small number of professional military personnel it takes years—sometimes over a decade—to train. And if this military were to be used in a serious war, even small combat losses would be impossible to replace, because the ships, aircraft, and armoured vehicles involved can't be manufactured quickly enough to replace combat losses, and the people needed to operate them are more valuable and just as hard to replace quickly when lost.

After the government selected the F-35A fighter in the early 2000s, once deliveries started a decade and a half later, it took six years for the RAAF to get to 63 F-35s, starting with the first two entering operational service in 2017, and delivery of the final nine still to come.¹ And it will take 20 years from program start for the Navy to get its first Hunter Class frigate, with around eight years of this being taken to build the first ship.² When the production line is mature, Defence hopes to be able to build one ship every two years.

This results in a boutique Australian military with an impressive small collection of high-end ships, armoured vehicles, combat aircraft and submarines perfect for maintaining operational proficiency and knowledge in peacetime, but unable to sustain combat losses in a serious war. It is as if the 'peace dividend' period since the end of the Cold War in 1989 has made planners believe that war will always look more like Australia's Afghanistan and Iraq experiences than World Wars One or Two.³ In Afghanistan, over a 20-year period, 47 Australian service personnel were killed, while in Iraq four died over a ten-year period. In World War One, 61,678 Australian servicemen were killed, and in World War Two, 39,657 Australian military personnel lost their lives.

Combat losses in existential wars or those between major industrialised powers—like the war between Ukraine and Russia, or a major conflict between the US and its allies and China—require militaries to be able to use, lose and replace fighting units, weapons, munitions and platforms (ships, aircraft, armoured vehicles) at a rate that is simply impossible for the ADF's major platforms in any of its three services. This is an enormous weakness hidden in plain sight.

So, we have a military that is fine for stable, peaceful times when technology and military capabilities are stable, maintaining professional mastery in particular areas of the military art between generations of service personnel. Unfortunately, those are not the times or the conditions we live in. For four years now, Australian governments from both sides of politics have consistently told the Australian population that our security environment is deteriorating, and that the prospects of conflict in our region are real, well within the previously assumed 10 years of 'warning time'. And that conflict is not likely to be a small one where Australian decision makers can send a tailored contribution, as we did for East Timor, Afghanistan or Iraq. It is likely to require the full mobilisation and deployment of the whole Australian Defence Force enabled and supported by our offshore partners and the full extent of the Australian economy.

Only a new approach to our military's force structure and then to the industry that supports it will allow the ADF to fight in such a war for more than a few weeks or months without exhaustion, because only a new approach can produce weapons and munitions that Australia can afford to use, lose and replace in numbers and at speed.

1 Air Force, 'Arrival of the first two Lockheed Martin Lightning II aircraft to RAAF Base Williamtown' (18 December 2018): <https://www.airforce.gov.au/about-us/history/our-journey/arrival-first-two-lockheed-martin-lightning-ii-aircraft-raaf-base-williamtown>.

2 Department of Defence, 'Hunter Class Frigate' (1 July 2024): <https://www.defence.gov.au/defence-activities/projects/hunter-class-frigate>.

3 Australian War Memorial, 'Deaths as a result of service with Australian units' (as at 11 September 2024): https://www.awm.gov.au/articles/encyclopedia/war_casualties.

3.2 Where is Defence Industry in this picture?

There are two 'defence industry' lands in Australia. One is the land of a small number of big incumbent defence primes. The other is the land of thousands of medium and small defence companies and technology and manufacturing firms supporting sectors like space, agriculture and mining. Only the big incumbent Defence primes win any significant contracts with the Department of Defence under current settings, making the second 'land' a place of unused but latent industrial capacity that could be used in our nation's defence if the federal government recalibrated policy settings to mobilise it.

The first defence industry land is populated by the happy co-dependent big defence primes, supporting and enabling Defence's approach to equipping itself, with their business models and commercial strategies aligned with Defence's replacement platform mindset. In economists' language Defence is a monopsony buyer engaging with a small number of oligopolistic suppliers. It has become a comfortable, bordering on complacent, set of relationships.

This formal Defence Industry is dominated by BAE, Thales, Lockheed Martin, Boeing and Northrop Grumman—all big foreign defence primes with bigger or smaller onshore footprints depending on who has won what from the Defence budget over the last twenty years. These firms have the catalogues from which Defence purchases its major systems. While these 'primes' subcontract work to medium and small companies, many Australian, particularly in the areas of maintenance and sustainment, they largely draw on their home nation supply chains, as a review of the origins of the key subsystems in our warships and the planned SSN-AUKUS will confirm.

All of Australia's missiles and most of the electronic systems – like the Aegis combat system on the Air Warfare Destroyers—are sourced overseas and assembled into larger systems, even if maintained and stored here. A recent decision to contract Norwegian defence prime Kongsberg to produce Naval Strike Missiles in Australia is a welcome exception to this, and will be of particular value if the factory in Australia is supplied from an alternative supplier chain to the parent factory in Norway, to produce a resilient new source of a supply for Australia and our defence allies and partners.

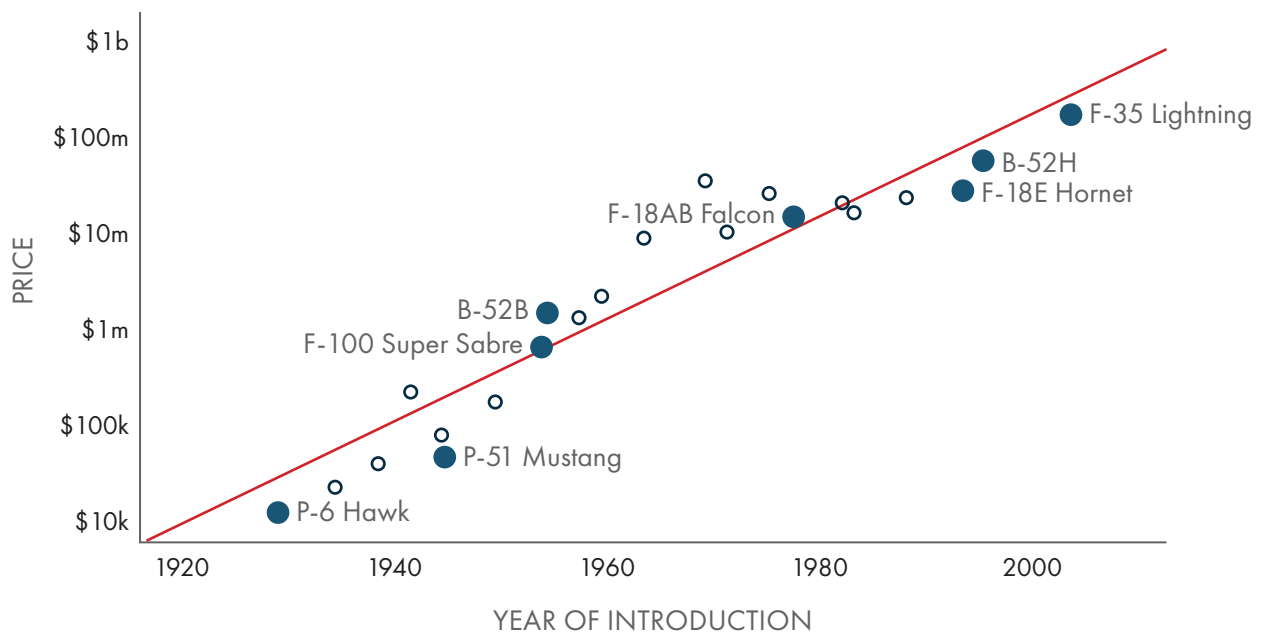
The primes have a steadily profitable business model based on selling the ADF small numbers of exquisite, increasingly expensive platforms and winning decades long maintenance, upgrade and support contracts for these same platforms. They also control what smaller subsystems and weapons systems can be acquired by the ADF. Because of Defence's core principle of deep integration across its 'order of battle', as the owners of their proprietary software and systems everything else has to work with, they control the keys to what can be integrated when into their larger system. This has the effect of further reducing competition—any maritime air-defence missile has to come from the US's Standard Missile family. A further barrier to competition from outside these incumbent primes comes from the more recent Australian Defence policy of seeking to go beyond integration across the ADF and with the US military to a force that is 'interchangeable' with our US ally's forces, resulting in an almost explicit requirement that our equipment be the same.

Such policies serve as an impenetrable barrier to competition, barring new players and effectively acting as a dead hand on innovation. In an ecosystem in which competition is eliminated, the effect on cost is entirely predictable and indeed inevitable.

Beyond the problem discussed above of being unable to replace combat losses in a real war, the commercial model brought about by these primes is resulting in each new 'generation' of weapon costing more than its predecessor, shrinking the force that Australia can buy with its defence budget. A

former head of Lockheed Martin who had also been the Secretary of the US Navy, Norman Augustine, identified the same problem with the US military's acquisition cycle and illustrated it with the cost over time of US fighter aircraft (which the RAAF also operates). He cheekily projected that by 2054, the US military as a whole would be able to afford one individual combat jet (not type, jet) and it would need to be shared between the US Navy, US Air Force and US Marines:

FIGURE 1: US COMBAT AIRCRAFT PRICE



To draw out the stark trend, the straight line in the graph is deceptive, with the rapid escalation in cost obscured by the compressed vertical axis. A post World War One Curtis P-6 Hawk fighter cost just over \$US10,000 a plane, the very capable P-51 Mustang fighter of World War Two cost around \$US100,000 a plane, a 1970s F-16 was about

\$10 million a plane, and the 5th generation F-35 costs some \$US110 million per plane. And now in 2024, the US Air Force Secretary has just paused a decision on the sixth generation US 'Next Generation Air Dominance' aircraft because the cost of each plane, the capability value weighed against the per unit cost, brings the program into question.⁴

⁴ Harrison Kass, 'Too expensive? The Air Force has "paused" NGAD 6th-generation fighter' (*National Interest*, 31 July 2024): <https://nationalinterest.org/blog/buzz/too-expensive-air-force-has-paused-ngad-6th-generation-fighter-212116>.

Defence industry's product development model—which matches both the US and Australian militaries' 'requirements' process to define its next generation weapons – is producing an unaffordable future force, and leading to a slow motion collapse in fleet and aircraft numbers in both our militaries—meaning they are being stripped of mass. Despite the massive US defence budget, all the US military services' fleets are massively undercapitalised; that is, the average age of their ships, submarines, aircraft and vehicles is growing while their numbers are shrinking. The situation is similar here.

We need a circuit breaker to get off this path to shrinking mass and bankruptcy.

Fortunately, there is a latent 'defence industry' that exists separately to the big incumbent defence primes which can produce combat systems in volumes and at prices that seem unimaginably low compared to the costs of nuclear submarines, F-35 fighters and Hunter Class frigates. One thousand long-range unmanned underwater vessels—unmanned submarines—could be bought for the same price as a single one of the government's 11 new ships in its \$11+ billion General Purpose Frigate Program.

This latent industrial capability comes from a combination of:

- medium and small Australian firms which are developing weapons and defensive systems like armed drones and counter drone systems;
- companies which are manufacturing and supplying systems to Australian mining, energy, agribusiness, surveying, resources, medical and retail sectors; and
- companies in the civil software, cyber security, data and space sectors.

Australian medium and small firms are already making weapons like loitering munitions and drones that can be armed. They are selling these to foreign militaries and even to foreign governments which then supply them to Ukraine—but they are not getting contracts from the Australian Defence organisation.

Defence's force structure model focused primarily on the big platforms—the ships, planes and armoured vehicles—sees smaller companies' systems as sub-component elements of these, with Defence preferring to work with the big primes and leaving medium and small firms to bid for work with them, instead of dealing directly with Defence. Defence's main ambition for SMEs is to encourage them to enter into the primes' global supply chains.

The primes, meanwhile, have an enduring incentive to offer their own in-house sub-systems and components to Defence and have little incentive to identify products from small Australian companies that might disrupt their business model and product sales. The result is that Australian companies are much more successful winning sustainment and maintenance work as subcontractors to the big incumbent primes than they are at getting Defence to acquire whole weapon systems like armed drones from them. Australian medium and small companies with military products routinely have more success selling their products to foreign militaries including the US military. It's only as a byproduct that doing so may generate interest later from the Australian military.

Australian companies supplying our agriculture and resources sectors with autonomous and automated systems at remote mines and across great swathes of Australia's difficult terrain could also supply Defence with their technologies, but aren't routinely doing so. Accounts from people in these companies give several reasons for this. Three primary ones are:

a. The high barriers to entry in doing business with Defence, such as getting their personnel expensive, slow, security clearances and meeting Defence's ICT and physical facility security requirements under the Defence Industrial Security Program.⁵

b. Defence's unreliability as a customer. Even after the years and expense to 'qualify' to do business with Defence, Defence's tendering and contracting models are complex and slow and projects are routinely cancelled, rephased, rescope and cut during the pre-award process (a high profile recent example is the late breaking cut from 450 to 129 vehicles in the \$multibillion Infantry Fighting Vehicle program after more than a decade of engagement with potential suppliers⁶).

c. Despite years committed to 'procurement reform' and streamlining, Defence's suite of tendering and contracting documentation (ASDEFCON) is dense and cumbersome, is best navigated by companies with decades of experience working with Defence, and operates as another barrier to entry to the sector.

All these factors impose costs on companies, deterring them from working with Defence and reinforcing their instincts to seek more reliable customers. In contrast, customers in the agribusiness and resource sectors, or any other that needs to deliver profitable business outcomes in a rapidly changing environment, are seen as decisive and fast, providing valuable business opportunities for suppliers with innovative products and solutions. This contrast is reinforced by the monopsony nature of the defence market; something designed specifically for defence users that may have few if any alternative customers. It's a high risk, low reward gamble for companies that can pursue larger markets with many potential customers. But dual-use products and services can meet Defence's needs if it expands the aperture through which it assesses its requirements.

5 Department of Defence, 'Defence Industrial Security Program': <https://www.defence.gov.au/business-industry/industry-governance/industry-regulators/defence-industry-security-program>.

6 Andrew Greene, 'The army's new infantry fighting vehicles could be built overseas to meet urgent strategic needs' (ABC News, 26 May 2023): <https://www.abc.net.au/news/2023-05-26/aus-armys-new-infantry-fighting-vehicles-could-be-built-overseas/102395168>.

3.3 Walled gardens and the untapped power of medium and small companies

Big US Defence isn't as big as you think anymore

We're used to thinking of the big US defence primes as so huge they have the scale and heft to do anything. But in the last thirty years, the US defence industrial base has been dwarfed by US tech firms, certainly by the measure of market capitalisation. Taking just Apple, its capitalisation alone is now around 7 times that of the combined values of Lockheed Martin, Raytheon, Boeing, General Dynamics and Northrop Grumman. Partly as a consequence, R&D in aerospace and defence is now only a tiny percentage of global R&D spending —by some measures making up just 1.7 per cent.⁷ Looking at the US itself, aerospace and defence contribute around 4.2 per cent of American R&D, leaving over 95 per cent outside the sector.⁸

And the Pentagon has a long history of reaching outside the boundaries of the defence industry sector to acquire products and technology that provide warfighting advantages.⁹ The problem is that that history ended abruptly in the 1990s as the Cold War defence spending contraction took hold, along with the consolidation of industry into the large defence primes we see as eternal parts of the industrial firmament now. Big companies like Ford sold off their defence arms and others simply stopped looking to the Pentagon as a customer. In 2024, that means the US military is now living in a much smaller walled garden with a shrunken, consolidated defence sector. It now has a far weaker connection to companies and sectors outside the boundaries of the

defence sector, right at a time when it needs ways to acquire and take advantage of technologies only available beyond the walls. And Australia has set up its own defence policy and industry strategies to be victim of the same problems, doubling down on high walls with its export control harmonisation with the US ITARS rules.

And small and medium enterprise can do more than you think

In Australia, in contrast with the walled garden of the big defence primes, small and medium enterprises employ 70 per cent of the Australian workforce and reach across the entire economy.¹⁰ The latent power in these medium and small companies to contribute to defence capability is clear when we consider that Australia spends 2 per cent of its GDP on defence — meaning less is spent on the defence industry sector, while medium and small companies produce 30 per cent of our GDP. That means Defence is leaving a lot of industrial capacity untapped.

Small and medium enterprises are powering the Ukrainian military's drone production system, producing multiple novel variants in numbers, in ways that large traditional defence firms have been unable to achieve. Australian firms like DefendTex, Sypaq and SPEE3D are part of the medium and small supplier network for Ukraine — although they are routinely not suppliers of these systems to Australia's military, perhaps because they are not chosen partners of the big primes.

7 Statista: <https://www.statista.com/statistics/1105959/total-research-and-development-spending-worldwide-ppp-usd/>

8 Aswath Damodaran, 'R&D Statistics by Sector' (January 2024): https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/R&D.html.

9 Gregory Allen and Doug Berenson, 'Why is the US defence industrial base so isolated from the US economy' (Center for Strategic & International Studies, 20 August 2024): <https://www.csis.org/analysis/why-us-defense-industrial-base-so-isolated-us-economy>.

10 Invoice International, 'Statistics on small and medium enterprises (SMEs): A 2024 overview': <https://www.invoiceinterchange.com.au/statistics-on-small-and-medium-enterprises-smes-a-2024-overview/>.

3.4 What war in the 2020s and 30s requires: mass and diversity

Right now, the world of warfare is undergoing enormous rapid experimentation and change in two wars – the one between Russia and Ukraine and the one between Israel and Hamas as supported and enabled by Iran. There is also a battle between world navies, led by the US Navy, and Yemeni Houthis that is disrupting, diverting and damaging world shipping that would normally operate through the Red Sea. But these are just the latest examples of actors forced by both choice and necessity to seek alternatives to the force structure and defence industrial models we have discussed

In all these conflicts, high volumes of small, cheap, replaceable systems like armed and reconnaissance drones, precision missiles, layered counter drone, air and missile defence and traditional munitions are proving essential. And, in the case of the Houthi-world navies battle, cheap drones and relatively cheap missiles (ballistic and cruise) are occupying numbers of multibillion dollar warships and still managing to strike and damage civil shipping. The US admiral in charge of the counter-Houthi mission has said that the US Navy is fighting its largest battle since World War Two.¹¹

The interesting thing here is that this is a battle not against a counterpart navy, but against an insurgent land-based enemy equipped with mobile, cheap missiles and drones. Similarly, in the Black Sea, the Ukrainian military has sunk and damaged numerous Russian warships, including its Black Sea flagship, the *Moskva*, and a Kilo-class submarine, using combinations of missiles and air and surface armed drones. This has forced the Russians to move their remaining fleet back to distant Russian ports and limit the fleet's use to attacking Ukrainian shipping, troops and territory, in another example of a navy being threatened, damaged and sunk by an adversary without a navy. Ukraine is also using locally developed drones and missiles to strike deep into Russian territory, with symbolic attacks on Moscow and militarily damaging attacks on Russian oil facilities, military bases, and arms production sites.

In the Russia-Ukraine war, attrition and combat losses by both sides are putting enormous strain on production and supply systems supporting both adversaries. Russia is refurbishing 1950s and 60s era tanks and weapons it had in storage and Ukraine's supporters are transferring some of their own stocks of vehicles, aircraft, and artillery including obsolete systems held in warehouses. And both sides are straining to produce or buy stocks of missiles, drones, and munitions. Ukrainian companies are producing thousands of indigenous drone variants and aiming to make over a million of these different types, with the diversity of these weapons being necessary to respond to and overcome Russian countermeasures and defences.

The cycle of evolution of measure and countermeasure is intense and rapid—days and weeks not months, and certainly not the Australian Defence Department's years and decades – and international defence companies and their home militaries are studying the conflicts and, where possible, learning by participation and experimentation. It is clear that lessons from many historical conflicts are being learned again:

- quantity has a quality of its own;
- war is no respecter of tradition, rank, or authority;
- simple new weapons used in creative ways can overturn assumed advantages and strengths; and
- advantages are often fleeting, but diverse capabilities for both offense and defence create options in conflict.

And it doesn't matter what stocks of weapons and military platforms (aircraft, helicopters, tanks, ships and submarines) you start the war with if you cannot repair and replace them as combat losses occur—it is key to think of war as requiring flows of systems and supplies, not being based on fixed stocks of equipment that success in a limited conflict might be achieved with.

¹¹ Business Insider, 'US admiral says the fight against the Houthis in the Red Sea is the largest battle the Navy's fought since World War II' (18 February 2024): <https://www.businessinsider.com/red-sea-conflict-largest-navy-battle-since-world-war-ii-2024-2>.



3.5 The small and many versus the large and few

Even when they do finally deliver, projects acquiring traditional large defence platforms like ships, submarines and aircraft, are beset by cost and schedule overruns and underperformance in the capability that eventuates. In contrast, capabilities based on ‘the small, the smart and the many’, like the small, modular systems being used in Ukraine, are much more likely to deliver on cost, schedule and capability than traditional defence projects. That’s because the components are simple and are easily replicated instead of being bespoke and unique. This insight has been well demonstrated outside the defence sector, with megaprojects based on large, complex items slow to deliver and often troubled, whilst large effects delivered by many small, modular systems deliver much closer to schedule and original capability goals.¹² It’s a lesson we need to apply to defence if we are to break out of the cost-capability death spiral.

Smaller, simpler systems are much faster and cheaper to design than large, complex systems. Prototypes can be built and tested sooner, to the point of failure and destruction. Their problems

can be quickly identified and rectified. Unviable systems can be cancelled without suffering huge sunk costs. ‘Beta versions’ can be quickly put into the hands of end users in the field and improved versions can be rapidly iterated and deployed. In contrast, traditional platforms take years or decades to enter production and any design changes made after the start of construction have massive implications for cost and schedule. Due to the cost and timescales involved for systems like ships, it’s impossible to develop prototypes that can be tested and destroyed before production starts. By the time defects are discovered, it’s too late.

Small, simple systems that draw on commercial technologies and components can draw on broader supply chains, including largely domestic ones. Moreover, rather than requiring production facilities that themselves require years to design and build, they can be produced at existing commercial facilities, using civilian industry’s excess capacity. Indeed, this is consistent with how economies have most rapidly and effectively switched to wartime production.

¹² See Bent Flyvbjerg, Nils Bruzelius and Werner Rothengatter, *Megaprojects and Risk* (Cambridge University Press, 2014).

3.6 America is no longer the guaranteed Arsenal of Democracy that can meet Australia's resupply needs in war

Ukraine is using large volumes of cheap components and systems to compensate for Russia's manpower and traditional defence equipment advantage, but is constrained by the limits on defence production across its European supporters and even in the US. A recent example should be making Australians question assumptions about relying on US resupplies in times of crisis and conflict: the Biden Administration has told partners and allies with contracts for Patriot missile defence systems that their orders will be delayed because the US has made supplying Ukraine its priority.¹³ Imagine who will have priority for US systems in a war directly involving the US itself.

A more disturbing analysis of broader weaknesses in America's defence industrial base came from the July 2024 report of the Commission into the National Defense Strategy, a report provided to the US President and Congress. It states that:

the Defense Industrial Base is currently unable to produce the weapons, munitions, and other equipment and software needed to prepare for and engage in great power conflict. Consolidation and underinvestment have led to too few companies, gaps in the workforce, insufficient production infrastructure, and fragile supply chains. Unfortunately, Defense R&D and procurement systems were built around a closed network of defense-funded organizations and

traditional defense companies. This does not reflect today's innovation environment, which exists across the private sector and is largely driven by commercial interests. Effectively harnessing the national security potential of this new environment will place the United States (and others) on the cusp of a revolution in military affairs.

To illustrate this dynamic, DoD has identified 14 critical technologies that are "vital to maintaining the United States' national security." Of the 14, only three (directed energy, hypersonics, and integrated sensing and cyber) are defense specific; the others are emerging fields and areas where the private sector plays the lead role in research, development, and implementation and where DoD needs to focus on adopting and adapting technology rather than driving its innovation.¹⁴

So, Australia cannot rely on the US supplying our military needs in a time of conflict. We must do more for ourselves with our own industry—with this not confined to our traditional defence sector, but also reaching out to companies in a wider economy.

¹³ The White House, 'On-the-record press gaggle by White House National Security Communications Advisor John Kirby' (20 June 2024): <https://www.whitehouse.gov/briefing-room/press-briefings/2024/06/20/on-the-record-press-gaggle-by-white-house-national-security-communications-advisor-john-kirby-15/>.

¹⁴ *Report on the Commission on the National Defense Strategy* (29 July 2024): Accessible at <https://www.rand.org/nsrd/projects/NDS-commission.html>.

3.7 What can be done to boost Australia's military power in ways current conflicts show are possible?

The answers turn out to be the same answers that will grow Australian industrial capacity. They are based on taking advantage of existing medium and small defence companies which can—but do not yet—supply our military with weapons and defensive systems proving essential in real wars; and making it easy for technology firms not in the defence sector to bring their products and services to our military.

In our previous paper in this series, we argued that the government needed to:

... establish an initial \$1 billion annual Rapid Acquisition Fund in the Defence budget getting Australian small and medium-sized enterprises to produce key “consumables”, of war including munitions, autonomous systems and counter-drone systems. The Fund must bypass Defence's glacial acquisition processes. Government should direct Defence to have programs underway with industry no later than six months from the election.

Australian defence industry will not survive without contracts and cash flow. The sector has become exhausted waiting for defence review after defence review to finally create the conditions which will allow work to flow to industry. Australia is at a point where we either decide to use our defence industry base or lose it. With the above recommendation for a Rapid Acquisition Fund, and noting that a \$1 billion annual acquisition is just a start in what should become a much greater local industry spend, we propose six initiatives to strengthen Australian defence industry and the national economy:

13. Government should commit to having delivered in its first term of office at least one type of armed combat drone designed and produced in Australia into service with the Australian Defence Force. Overachieving will be welcomed.

We must take advantage of the industry and economy Australia has, notably the ability of medium and small Australian companies to supply a diverse range of smaller scale products and equipment to our military that can provide mass and greater hitting power to what is otherwise a small force.

That can start with a first critical need—armed combat drones designed and produced in Australia. This is a symbolic shift in behaviour and speed of action, but if the political will exists it is not even a demanding ‘stretch’ objective as Australian designed and produced armed drones exist now although they are not yet being acquired for our own military.

14. Government must bring non-traditional firms into the defence market by launching Operation Cut Red Tape to cut barriers to entry and by creating an Australian Industry Mobilisation and Resilience Council that includes the best brains from the broader private sector.

We think it is vital to create incentives for companies working in other sectors—notably mining, agriculture and space—to enter the defence market and do business with Defence.

We recognise that, unlike during the Cold War, many critical technologies and solutions vital for military power are now being developed in the wider commercial sector, in areas like mining, space, agriculture, health, telecommunications and even retail. Current policies and regulation create large disincentives for companies operating in non-defence markets and protect the incumbents from competition. Left unchanged this will continue to prevent Australia's military from getting its hands on some of the best systems and technologies.

While our focus here is on Defence, the reality is that all sectors of the Australian economy—from critical infrastructure, to health care, food production, information technology, transportation and many other areas—need to be made more resilient to strategic shock. Mobilisation in this sense does not mean assembling vast armies of soldiers but rather how we can make Australia stronger and more resistant to strategic pressure. The starting point is government to put this task to industry and to act quickly on the advice which is developed.

15. Government must direct Defence to contract directly with medium and small Australian companies instead of its current practice of working almost solely with big traditional defence primes.

16. Start building stockpiles of ammunition and other consumables of war.

An initiative to buy Australian first, where it is sensible to do so, will give Australian companies acquisition contracts for militarily meaningful quantities of equipment, instead of drip feeding them on small development grants and pushing them to try to sell their IP or businesses to the big incumbent primes.

We also know from the Ukrainian experience that, in intense combat, military stockpiles of ammunition, drones, vehicles, spare parts, fuel—all the consumables of war—can be exhausted very quickly. Australian stockpiles of these items are tiny. They are designed for a different age when the risk of conflict in our region was negligible, and training needs could be tightly rationed to preserve small weapons and ammunition holdings.

The reality is that the totality Australia's ammunition holdings represent a quiet Sunday afternoon on the Donbas. Prudent risk management demands a significant increase in Defence stockpiling.

We note that stockpiling of this type helps prevent war by demonstrating to a potential adversary that Australia is serious about its defence and has the wherewithal to conduct sustained military operations. That is a seriously complicating factor to the planning of any hostile military force, one that might incline an adversary to shelve their aggressive intent. We agree with the logic of the Roman strategist Vegetius 'if you want peace, prepare for war.'

17. Work with the private sector to radically simplify Defence's complicated suite of contracting documentation and provide entirely new simple, short form contracts based on the core Commonwealth purchasing principle of value for money.

We know this has been tried before, but previous "simplification" measures have been left to the custodians of Defence's current complex procurement systems. No-one should be surprised these efforts didn't come to much. Our worsening strategic situation means that we need to act fast to bring in new, radically simplified procurement systems.

Our solution is to make the private sector a key part of the reform process; set a tight deadline for outcomes and draw on approaches to rapid acquisition which have worked well in the past. We acknowledge that a rapidly developed new procurement system will not be perfect from the start, but we think that the risk coming from rapid change is preferable to sticking with existing tried – and failed – procurement strategies.

18. Significantly lift the offer of Australian-developed weapons and countermeasures to the Ukrainian military and cooperate with Kyiv on weapons development.

This is not simply to help Ukraine win a war against Russia's totalitarian aggression, as vital as that interest is for all democracies. Australian military support for Ukraine will also enable us to gain direct experience of the effectiveness of these systems in intense combat. Co-developing these weapons and systems with the Ukrainians in the experimental hothouse of the war will grow the capacity and effectiveness of these Australian companies and their products, while contributing to Ukraine winning its war for survival.

As Australian service men and women are equipped with 'the small, the smart and the many' they will find new ways of operating the new capabilities alongside their traditional weapons and, subject to the lessons from this operational experience and experimentation, will be able to work with Australian companies to define the future directions of investment. A reassessment of the relative value of small numbers of big, complex military items like surface ships and combat aircraft relative to high volumes of cheaper, disposable systems can also occur, reassessing and revising the ADF's force structure meaningfully for the first time in decades.



3.8 Aligning Defence with the priorities of the Commonwealth Procurement Rules

These six initiatives align well with recent changes to the Commonwealth Procurement Rules produced by the Department of Finance. All Commonwealth departments are bound by these rules and must implement them in their own procurement activities, policies and guidance.

Defence officials have complained for years that the Procurement Rules are barriers to Defence putting priority on Australian sources of supply and using economic security as a criterion for evaluation of companies' bids and capacities. The recent changes Finance has made to the rules remove even perceived barriers in these areas.¹⁵ Ironically, it is Defence's own Defence Industry Development

Strategy and Defence's internal preferences to work with large primes that are now the real barriers to more effective and direct supply of our military by Australian companies.

Defence's industrial development strategy defines sovereign Australian defence industry as:

comprised of businesses with an Australian-based industrial capability and an Australian Business Number (ABN), providing products or services used in, or which can be adapted to be used in, the Australian Department of Defence supply chain and/or an international defence force supply chain.¹⁶

¹⁵ See Department of Finance, *Commonwealth Procurement Rules* (1 July 2024).

¹⁶ Department of Defence, *Defence Industry Development Strategy* (2024) 3.

Unfortunately, not only does this include the Australian subsidiaries of large US, UK and European defence primes like Lockheed Martin, Northrop Grumman, Boeing, Raytheon, Thales and BAE, it also includes Chinese firms like Huawei and Hikvision, both of whom have subsidiaries with ABNs and both of whom are able to provide services and products that could be adapted to be used in Defence's supply chain. Hikvision cameras had been installed on numerous Defence bases and in other government facilities until their removal began on security grounds, illustrating the unhelpful nature of this definition, as would DJI drones.¹⁷

The definition also overlooks the essential advantage of Australian-owned businesses with Australian (and perhaps offshore) operations. Unlike even the most positive and motivated US, UK or European firm, in a time of crisis an Australian owned and headquartered company will make supporting Australian needs its absolute priority, and to remove any doubt around this, Australian governments and Australian laws will require this. A US or UK headquartered company will be obliged to put absolute priority on their home jurisdiction's needs, with Australian needs being a lesser priority.

These behaviours are not something to get emotional about, but instead reflect the core workings of our world, with nation states and national governments' power at the centre of this. There are ample historical examples of countries being cut off from supply from even their closest partners in time of crisis and conflict. Indeed, countries that have suffered this fate have used it as the motivation to develop their own defence and high-tech industries to avoid suffering it again.

Were China to be an adversary in a conflict, then Chinese subsidiaries operating in Australia would either need to operate completely independently of their China-headquartered parents or cease operation. Given they rely on supply chains inside China, independent operation here looks unlikely.

Fortunately, the Commonwealth Procurement rules have no such confusion. They bluntly prioritise procurement from small and medium Australian companies. The recent changes include encouragement for Commonwealth procurement officials to disaggregate larger potential procurements into smaller packages to enable medium and small Australian companies to be able to bid for the resulting contracts, instead of being locked out by the scale of procurements that only large primes can provide. That change works with the grain of the analysis in this chapter about military power coming from diversity in weapons and systems that equip our military. It also works well with the analysis that a high volume of small and cheap systems – like armed and unarmed drones – is necessary in wars now and best provided by a diverse and dispersed supplier base.

¹⁷ Henry Belot, 'Chinese-made security cameras to be removed from Australian government buildings' (*The Guardian*, 9 February 2023): <https://www.theguardian.com/australia-news/2023/feb/09/chinese-made-security-cameras-to-be-removed-from-australia-government-buildings>.

3.9 Sustainment, stockpiling, and logistic support: From stocks to flows

Defence's approach to procurement, even of the consumables of conflict like munitions, missiles and cheap, replaceable drones, focuses on the technical performance specifications of the system or weapon and pays almost no regard to whether what is procured will be readily available in the quantities required for a war. This, again, is the problem of Defence not internalising the stark government direction that it needs to be prepared for conflict anytime, instead of having at least ten years to prepare – as it had for decades.

So, Defence buys very small numbers of advanced missiles and appears to be doing the same with the drones it has announced it is acquiring – such as the US-built short range loitering Switchblade.¹⁸ Impressive performance characteristics of missiles—such as the SM-6 anti-air and anti-ballistic missile¹⁹—mean little if the ADF can only acquire small numbers of them in peacetime and runs out of them weeks into a war and can get no new stocks.

It will be simply impossible to replace aircraft and ships that take years to build—close to a decade in the case of nuclear submarines and the proposed Hunter frigates—when the inevitable combat losses of a major war with an advanced military like China's occur if such a conflict breaks out in our region. Australia and our allies—even our most powerful military and industrial ally the US—will not simply be able to ramp up production of complex, expensive systems like F-35 fighters, Wedgetail AEW&C aircraft, Aegis equipped major surface ships and complex heavy armoured vehicles like M1A2 Abrams tanks or infantry fighting vehicles in the numbers required to replace combat losses.

Beyond these, the Defence Force's current—decades long—approach and habit is to have limited stockholdings of everything it would need to use to sustain our military if it were deployed in combat. Some critical items like fuel and medical supplies could be redirected from the civilian economy, depending on the supply chains for these. But military items like ammunition for small arms, armoured vehicles, artillery and naval gunfire are only available from defence production and the Australian approach has been to buy these in limited quantities without regard to supply chain assurance outside peacetime.

Advanced missiles like those used for air-to-air combat, for anti-ship strike and for long range land attack, as well as for missile and drone defence are also purchased in very small quantities, usually just sufficient for limited live firing exercises and to levels that might allow fighters and ships to be equipped for initial combat. There is no coherent plan for the ADF to be resupplied with a flow of these advanced weapons during a credible conflict that lasts beyond a few weeks. Instead, the plan appears to be to rely on core suppliers, mainly in the US, to magically ramp up and meet Australia's and other militaries' needs.

And the current plan to rely on US production to meet Australian resupply needs during a war is broken, because US defence industry is unable to meet the needs of the US military during a war, let alone having the ability to ramp up beyond that and supply the ADF. This is not a controversial assertion. As noted above, it's one that is being made publicly and bluntly by people tasked by the US Congress to study the US defence industrial base.²⁰

18 Department of Defence, 'Australian government announces acquisition of precision loitering munition' (Press release, 8 July 2024): <https://www.minister.defence.gov.au/media-releases/2024-07-08/australian-government-announces-acquisition-precision-loitering-munition>.

19 Department of Defence, 'Navy conducts firing of Standard Missile 6 as part of government push to provide ADF with enhanced capabilities' (Press release, 10 August 2024): <https://www.minister.defence.gov.au/media-releases/2024-08-10/navy-conducts-firing-standard-missile-6-part-government-push-provide-adf-enhanced-capabilities>.

20 Report on the Commission on the *National Defense Strategy* (29 July 2024): Accessible at <https://www.rand.org/nsrd/projects/NDS-commission.html>.

To address this, Defence has to change its mindset and its default policy from one of buying limited stocks of items to one that is centred on access to a flow of systems and key consumables of conflict during a time of war. But the foundations of this system need to be established in peacetime. As unappealing as it may be to policy makers, that requires funding to establish design and production capacity that likely will not be fully used in peacetime. That's why it's vital to draw on civilian capacity.

There are three answers to this resupply problem: stockholdings, co-production, and new domestic production. All three produce the best answers for Australian security, but without domestic production, the other two approaches will fail to enable the Defence Force to continue to operate during a war.

Defence must increase the stocks it holds of critical consumables of conflict so that if they are required at short notice, munitions, missiles and drones are available for deployed forces to use. This will require increased funding for these inventories, and increased facilities to hold them, but those costs are a result of the end of an era of being able to rely on a peacetime global economy to deliver what our military needs. Stocks of critical and hard to source items should be prioritised, with examples being high demand parts of key weapon platforms and rapidly depleted munitions and weapons.

Even increased stockholdings will not be sufficient to supply our defence force in a protracted war although they will be vital in the early days of conflict. Co-production of parts, consumables and weapons used by our partners and allies can complement stockholdings. So, producing GMLRS, the land attack rocket made by Lockheed Martin for the US Army here in Australia makes sense.²¹ And the advantages from setting up an Australian factory to manufacture Norwegian company Kongsberg's Naval Strike Missile, a very capable anti-ship missile used by the RAN and the US and several NATO militaries, are even more obvious. These include providing an important capability, domestic production, export opportunities, and making a contribution to alliance and other partnerships.

Co-production has limitations, however. If it relies on inputs from the existing supplier network producing the system elsewhere, then if that supply chain is fragile or disrupted, it also affects the new production facility. This has happened with Japanese Patriot missile production recently, halting Mitsubishi Heavy Industry's plans to double output from 30 missiles per annum to 60, to help meet Ukrainian needs. The constraint on production turned out to be the seeker component of the missile that is manufactured by Boeing US, with no alternative sources available.²² So, where co-production is planned, plans must include building alternative supply chains for critical components.

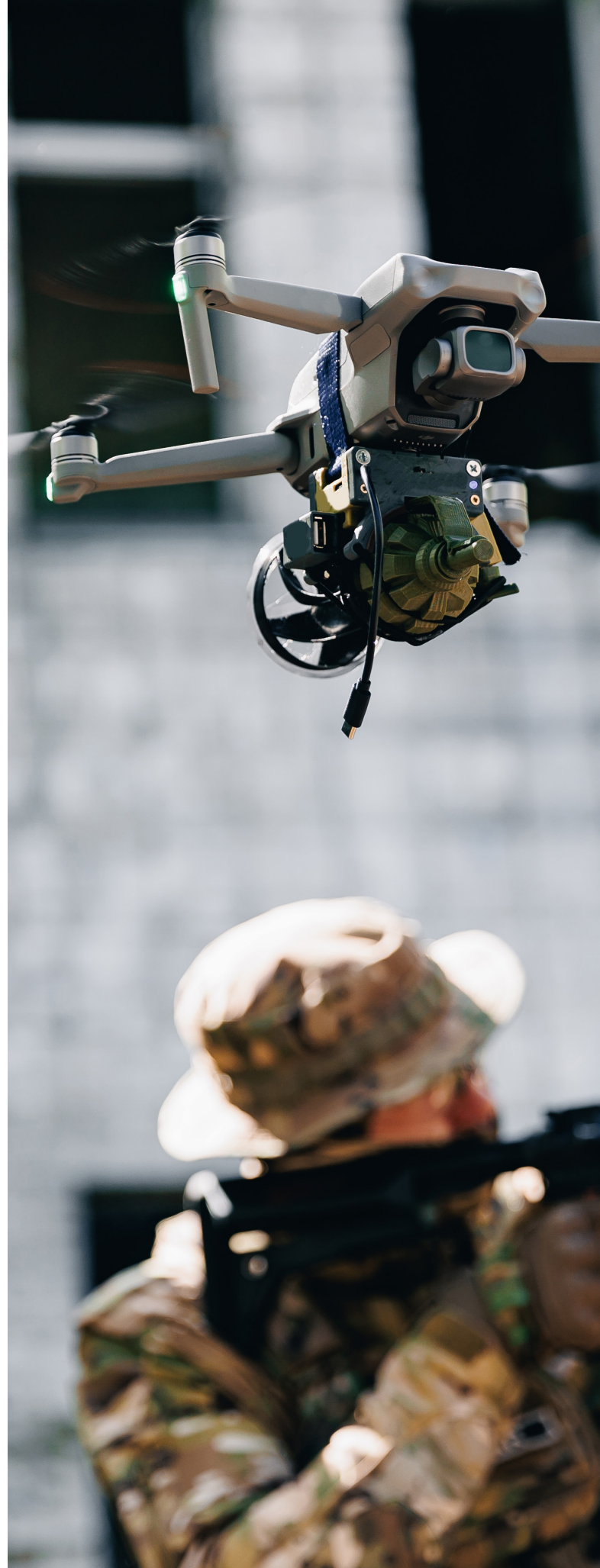
21 Department of Defence, 'Making missiles and increasing capability' (Press release, 18 January 2024): <https://www.defence.gov.au/news-events/news/2024-01-16/making-missiles-and-increasing-capability>.

22 Nobohiro Kubo and Tim Kelly, 'US-Japan Patriot missile production plan hits Boeing component snag' (*Japan Times*, 20 July 2024): <https://www.japantimes.co.jp/news/2024/07/20/japan/us-japan-patriots-component-roadblock/>.

The last path to supplying our military during conflict is to rely more on domestic production of systems and weapons not sourced from our allies or co-produced with them. This focuses on sourcing supplies directly from diverse Australian firms with equally diverse supply chains, to mitigate disruptions during times of crisis or conflict. This approach is likely to be most durable during a time of war and also provide an expansion base to support our military in such times. It also has the advantage of equipping our military with novel systems that are unlikely to have been priorities for adversary countermeasure development. US sourced systems and weapons are, in contrast, almost certain to be the focus of countermeasure development by potential adversaries.

Increasing the number of suppliers and injecting novel technologies and solutions is also consistent with the underlying philosophy of AUKUS. Australia has a real opportunity to be a technology provider and not merely a product and technology taker.

Domestic sources of supply are most likely to produce a flow of supplies our military will need, uninterrupted by partner priorities and diversion of orders. And given modern war demands militaries be equipped with large numbers of consumable capabilities like small armed and unarmed drones, it is good news that the small modular model is what Australian technology and industry is good at.



APPENDIX

Fighting the last war

It was the French Prime Minister, George Clemenceau, who complained that 'generals always prepare to fight the last war, especially if they won it'. Clemenceau was Prime Minister during the First World War, and his observation certainly applied to the French Army after that conflict.

The French experience in 1914-18 was of a grinding four-year war of attrition in the mud, barbed wire, artillery shells, and machine gun fire of the Western Front trenches. Over a million French soldiers were killed, and the army mutinied in 1917. Although they were ultimately victorious, the French had been bled white and vowed never to let it happen again.

Their solution was to build a line of concrete fortifications along the French border with Germany, known as the Maginot line (named after a French war minister). If the Germans attacked again, it would be their soldiers that would be bled white smashing themselves against these formidable defenses. Or so they thought.

The Maginot line defences would have been brilliant – in the First World War. But technology had moved on. Static defences had been surpassed by the more mobile options presented by the invention of the internal combustion engine, such as attack aircraft, tanks, personnel carriers, mobile artillery, and the trucks needed to supply an army on the move.

It was the defeated Germans who learnt the lessons of mobile combined arms warfare, not the victorious French. In 1940 when the Germans attacked France again, they simply bypassed the Maginot line, raced to the English Channel, and the French were defeated in six weeks.

It is not only that the Maginot line fortifications proved useless. They were also enormously expensive, so they diverted funds from investment in the more crucial new mobile weapons systems. And the fortifications also impacted French strategy and attitudes. They created a "Maginot mindset", a defensive mentality, when mobile warfare was transferring the battlefield advantage to the aggressor.

Australia in 2024 is suffering from its own Maginot mindset. Stuck with old combat methods, old technology and old thinking, the Australian military is unsuited to the modern realities of war.

Like the French after the First World War, the victors of the Second World War also learnt some questionable lessons. Of the three members of the victorious grand alliance, the United States, Britain and the Soviet Union, the latter suffered over 25 million deaths of soldiers and civilians during its brutal war with Nazi Germany. But the United States and Britain suffered comparatively light casualties. Britain desperately feared a repeat of the bloodbath it had endured on the Western Front during the First World War, in which it had suffered 887,000 war related deaths, but in the Second World War it suffered less than half this figure, 383,000 combat fatalities.

The United States suffered 407,000 combat fatalities during the Second World War, more than in the First World War (in which the United States only fought for one year) but of all the major combatants, the United States suffered the lowest per capita deaths during the Second World War, only about 0.3 per cent of the population.

Why? Certainly the strategic circumstances the Western allies found themselves in played a role. They were not invaded, so no ground combat took place on their territory, and they were only involved in ground combat on the Eurasian landmass for a comparatively brief period – after the D-Day landings in June 1944 – in contrast to Germany, the Soviet Union or China which suffered grievously. But the lesson the generals took out of the Second World War was that the overwhelming material dominance of the Western allies was the reason they suffered comparatively few human losses. Led by ‘the arsenal of democracy’, the United States, the Allies outproduced the Axis by huge margins, filling the air with fighters and bombers, the fields with tanks and artillery pieces, and the oceans with ships and submarines. The overwhelming use of war machines and firepower seemed to reduce the human cost of war.

This attitude prevailed throughout the 45 years of the Cold War. It was a period dominated by the relentless pursuit of a technological edge in warfare. Piston engine aircraft were replaced by supersonic jets. Unguided munitions like bombs, anti-aircraft artillery and anti-tank guns were overtaken by precision weapons like laser guided bombs, anti-aircraft missiles, and satellite guided artillery. Oil driven submarines and aircraft carriers became nuclear powered. Even the comparatively humble tank is now full of exotic equipment like laser range finders, satellite communications, reactive armour, and turbine engines.

This means that a modern military force is equipped with amazing technological capabilities, exotic works of art that are a sight to behold at any air or army expo. But the result has been an explosion in costs. Each new generation of weaponry costs many times more than the previous generation. Adjusting for inflation, a 1980s-era Royal Air Force Tornado fighter jet was 172 times more expensive than a Second World War-era RAF Spitfire.

No nation has a GDP that is hundreds of times larger than it was in the Second World War, so no nation can field as many weapons. To take just one of innumerable examples, the preeminent naval fighter during the Second World War was the F6F Hellcat, and 12,000 were produced for the US Navy during the war. The preeminent naval fighter of the Cold War was the F-14 Tomcat (of *Top Gun* fame) and only 900 were ever produced over a much longer timeframe. The size of armies, air forces and navies progressively shrunk during the Cold War, and precipitously so after the collapse of the Soviet Union.

However, was building ever more expensive, but ever fewer, weapons the right lesson to learn from the Second World War? Unlike the French generals bunkered behind their Maginot line fortifications, who rudely found out twenty years after the previous war that their strategy was the wrong one, we mercifully never saw a full-fledged great power war in which the super weapons of the modern era were pitted against each other. Some post-1945 conflicts suggested that the high-tech path of warfare was the sound one. In Iraq during the 1991 Gulf War, and again in 2003, a technological edge on the part of the American led forces resulted in crushing defeats for Iraq with minimal casualties for the coalition forces.

But would relying on a small number of expensive, highly capable weapons systems have been the right approach against a comparably equipped peer competitor? If such a war had broken out during the Cold War, it most likely would have occurred in Central Europe on the border between West and East Germany. It was here that the might of NATO and the Warsaw Pact faced off against each other. About 50 per cent of all the military equipment in the world at that time was deployed on this frontage.

NATO commanders war gamed what a conflict in Europe might look like, and it always ended the same way. NATO, with all its advanced aircraft, missiles, tanks and other expensive equipment would have run out of munitions within days or weeks. Expensive aircraft are very capable, but losses would be inevitable against a peer competitor, and such losses simply could not be replaced quickly. Guided missiles are better than unguided artillery and bombs, but similarly this means they cannot be replaced at anywhere near the pace that they would be consumed during a major war.

This was not the case in the Second World War. The weapons systems used in that war were far simpler and cheaper and so could be mass produced in such numbers that even heavy losses could usually be replaced. For example, during the greatest tank battle in history, the Battle of Kursk on the Eastern Front, the German army lost about 1,300 tanks and other armoured vehicles at the height of the fighting in July and August 1943. But in 1943 the Germans manufactured 12,000 tanks.

Similarly, at the height of the air war over Germany in 1944, the Germans lost 3,000 fighters in one month. But by that stage of the war Germany was manufacturing 3,000 fighters a month, so such crippling losses did not bring the war to an end.

In contrast, the United States during the height of the Reagan-era arms buildup in the 1980s had about the same factory space devoted to aircraft production as the Germans in 1944, but instead of 3,000 fighters, they produced about 50 a month. Or put another way, when the advanced F-22 Raptor stealth fighter was being built in the 1990s, one whole year's worth of production of this exquisite machine was the equivalent to *two hours* production of American B-24 four-engine bombers during the Second World War.

Thus, NATO commanders knew that they would only be able to fight a war with what they had at the start, which would not last long. So what would happen once it was gone? The expectation was, if few said it openly, that when that happened one side or the other would resort to battlefield nuclear weapons. A chilling prospect.

But if an advanced modern military force needs to fight a protracted conflict against a powerful adversary, and either can't or would prefer not to resort to nuclear weapons, then clearly solely equipping it with expensive, complex and exotic weapons simply will not do the job. The Iraqis and Iranians found that out in their protracted ten-year war in the 1980s. Each side started the conflict with a solid stockpile of modern American and Soviet equipment, which was quickly used up and destroyed. The war then degenerated into something familiar to a First World War veteran: trenches, barbed wire, mustard gas and the mass conscription of men (and even young boys).

Thus, the real lesson of the Second World War was not the need for advanced war machines. It was the need for war machines that were capable enough but which could be produced cheaply, on a large scale, and were simple to use by a mass conscripted army.

This of course is exactly what is playing out in the protracted war in Ukraine between two modern military forces. Old concerns like manpower recruitment, building fortifications, and artillery production have returned, and the rapacious consumption of munitions on the modern battlefield means that cheap missiles and drones that can be quickly mass produced are dominating strategic thinking.

Yet the Australian Defence Force has not yet deployed a single armed combat drone.

Since the Second World War, Australia has fought a series of smaller conflicts—whether international wars, counter insurgency operations, or peacekeeping missions – in which the Australian role was to provide a small but capable supporting force to an international alliance. In each case the Australian role, to varying degrees, has been extremely successful, in both battlefield and political terms. Australian forces in Korea, Malaya, Borneo, Vietnam, East Timor, Afghanistan, Iraq and elsewhere acquitted themselves with great professionalism, upheld a proud ANZAC tradition of courage and valour, and demonstrated solidarity with important alliance partners, particularly the United States.

So true to form, Australia has learned the wrong lessons from these successful wars. The Australian military is currently designed and equipped to fight these small wars of choice against technologically inferior adversaries, confident of the logistical support of a powerful ally. We have a small but highly trained defence force, equipped with a small amount of highly capable equipment, with a small stockpile of highly expensive munitions.

But Australia has no ability to wage a protracted conflict against a peer rival. We cannot replace equipment losses, we cannot manufacture our own munitions, we have no capability of ramping up the size of our defence forces in a crisis, and we have minimal capabilities to operate independently of a powerful ally, which may be cut off from us or distracted by its own security concerns. But this is exactly what we will be required to do if there is a major war in our region, which is becoming increasingly likely.

The good news is that turning this around is neither excessively complex nor prohibitively expensive. The new technologies of mass warfare, and how to use and produce them, are being displayed before our eyes in conflicts in Ukraine and the Middle East. We simply have to adapt our thinking and learn the right lessons. But Australia's addiction to procuring expensive, exquisite war material in small numbers, as we have done for over half a century, is our Maginot line. It prevents us from adapting and changing our thinking to the new realities of war.

If Australia continues to prepare to fight yesterday's wars, it guarantees we will lose the wars of tomorrow.

John Storey is the Director of Law and Policy at the Institute of Public Affairs and the author of *Big Wars – Why do they happen and when will the next one be?*

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