

19 February 2024

Secretary
Joint Standing Committee on Foreign Affairs, Defence and Trade

Inquiry into the Department of Defence Annual Report 2022-23

Please consider our joint submission to the Joint Standing Committee on Foreign Affairs, Defence and Trade's inquiry into the Department of Defence Annual Report 2022-23. In line with ASPI's Charter, these represent our personal views and not ASPI's institutional position.

Our submission addresses the following topics of interest to the Committee:

- Assistance to Ukraine
- Artificial Intelligence and Autonomous Weapons related issues
- Armaments manufacture, procurement, and inventory

Assistance to Ukraine

Australians can and do take pride in our prompt and generous response to Russia's all-out invasion of Ukraine in February 2022. Such assistance reflects enlightened self-interest as well as national resolve to help a fellow democracy repel flagrant and illegal aggression. If Putin were to succeed in Ukraine, the stability of Europe would again be at risk. More broadly, it would signal a concerning lack of resolve by liberal democracies to confront aggression and coercion, including to autocrats in the Indo-Pacific whose actions directly engage Australian interests, including China's Xi Jinping and North Korea's Kim Jong Un.

Despite further packages of support since then, there are signs that Ukraine is slipping as a political priority. Some reports indicate that Australia has fallen down the rankings of donor countries,¹ and Prime Minister Albanese's initial hesitation in confirming his attendance at the 2023 NATO Summit in Vilnius also sent the wrong signal. If this were to become the trend, it could run counter to Australian interests and national sentiment favouring greater assistance to Ukraine.²

In its submission, Defence says that Australia aims, along with its partners, to 'empower Ukraine to resolve the conflict on its own terms', while 'noting Defence's primary focus on the Indo-Pacific region.' It's worth asking what Australia needs to do to achieve both these objectives at the same time.

¹ Kiel Institute for the World Economy, 'Ukraine Support Tracker': <https://www.ifw-kiel.de/topics/war-against-ukraine/ukraine-support-tracker/>; Andrew Tillett, 'This is no time to become gun-shy about backing Kyiv', *Financial Review*, 9 June 2023: <https://www.afr.com/politics/federal/this-is-no-time-to-become-gun-shy-about-backing-kyiv-20230609-p5dfao>.

² Joe Kelly et al., 'The number of Australians who want the government to provide more support to Ukraine is lifting', *The Australian*, 11 February 2024: <https://www.theaustralian.com.au/nation/politics/the-number-of-australians-who-want-the-government-to-provide-more-support-to-ukraine-is-lifting/news-story/ed9e021f9c968923677b2c7fa10590f3>.

Ukraine has maintained that it will only resolve this conflict on its terms by expelling Russia from all its territory. While that may seem difficult to envisage at this point in time, many credible analysts, including Jack Watling at the UK Royal United Services Institute (RUSI), assess that Ukraine could achieve sufficient leverage from military success on the battlefield to impose a lasting peace, if the West stands together and increases military assistance to Ukraine.³

Whatever we may hear from US presidential candidates and Congress ahead of an election, Watling argues persuasively that the likely outcome of Russian success in Ukraine would be greater US commitment to deterrence in Europe, weakening the US' capacity to deter China and North Korea in the Indo-Pacific. Avoiding this outcome provides a compelling logic for increased Australian assistance to Ukraine, in support of Defence's objectives in our region.

US distraction and global commitments outside of the Indo-Pacific have prevented full delivery of its policy of a pivot to the region (notably after 9/11 and the earlier global financial crisis). Keeping the US distracted from the Indo-Pacific is probably a key motivation behind Beijing's support for Moscow. It is in Australia's interests for the conflict in Ukraine to be resolved in Ukraine's favour as quickly and efficiently as possible, allowing the US to refocus its considerable policy and military might towards the Indo-Pacific as we face what President Joe Biden has aptly referred to as a 'decisive decade'.

Australia has limited means, but its assistance can make a meaningful difference to Ukraine. We haven't listed Australia's financial and materiel support, and its ongoing training of Ukrainian soldiers under Operation Kudu, as this is well-documented in Defence's submission to this inquiry, as well as the Auditor General's Report (No.45, June 2023). But we draw attention to the significance of the deployment of an RAAF E-7A Wedgetail early warning aircraft to Germany. The Wedgetail has formidable capabilities that can be used discretely to assist Ukraine's war effort beyond rear supply line security without crossing into Ukrainian territory.⁴ The deployment of the Wedgetail signals commitment, as well as showcasing a world-leading capability and upskilling RAAF crews in conflict conditions. We also welcome the extension and expansion of Operation Kudu.

We acknowledge Deputy Prime Minister and Minister of Defence Richard Marles' explanations to Parliament for not providing some forms of materiel to Ukraine, including Hawkei vehicles⁵ and the F/A-18 'classic' Hornet aircraft,⁶ citing a combination of factors including safety, and issues with sustainment and readiness. A similar debate is playing out with MRH-90 Taipan helicopters, which will be retired from service and buried due to safety concerns, rather than sent to Ukraine.⁷

While these may be sound reasons not to provide materiel in normal circumstances, war warrants a different approach to and appetite for risk, in both Australia and in Ukraine. Ukrainian officials should be fully apprised of any risk assessment from the Australian Government and Defence specifically, but if the goal is to empower Ukraine to win on its own terms, then surely the decision on accepting capability in less than pristine operational condition is one for Ukraine. Its soldiers

³ Jack Watling, 'The War in Ukraine Is Not a Stalemate', *Foreign Affairs*, 3 January 2024: <https://www.foreignaffairs.com/ukraine/war-ukraine-not-stalemate>.

⁴ Brendan Nicholson, 'RAAF Wedgetail to protect vital supply lines to Ukraine', ASPI, *The Strategist*, 26 October 2023: <https://www.aspistrategist.org.au/raaf-wedgetail-to-protect-vital-supply-lines-to-ukraine/>.

⁵ Richard Marles, House of Representatives, *Hansard*, 12 February 2024: https://www.aph.gov.au/Parliamentary_Business/Hansard/Hansard_Display?bid=chamber/hansardr/27600/&sid=0140.

⁶ Richard Marles, House of Representatives, *Hansard*, 13 November 2023: https://www.aph.gov.au/Parliamentary_Business/Hansard/Hansard_Display?bid=chamber/hansardr/27178/&sid=0056.

⁷ Andrew Probyn, 'Grounded Taipan helicopters already stripped for parts, Australia tells Ukraine', *Sydney Morning Herald*, 19 January 2024: <https://www.smh.com.au/politics/federal/grounded-taipan-helicopters-already-stripped-for-parts-australia-tells-ukraine-20240118-p5eycj.html>.

have proven time and again what they can do with kit that is not what we would consider fit for purpose.

We encourage Defence to adopt a more positive stance towards future Ukrainian requests for materiel, especially where capabilities are retired from service or are surplus to ADF requirements. Where Defence has firm grounds to reject requests for materiel, efforts should be made to look for alternative ways to increase our contribution, driven by needs identified by Ukraine and not solely by supply considerations in Australia. Defence should seize opportunities to support Australia's innovative defence industry in providing low-cost, highly effective capabilities to Ukraine, such as the Precision Payload Distribution System (PPDS), more famously known as the 'cardboard drone', produced by Melbourne-based Sypaq Systems.⁸

Improving the model for assistance to Ukraine also offers a unique opportunity for Defence to introduce new procurement approaches, and to make contracting authorities and export control systems leaner and faster. This aligns with Defence's national priorities beyond the Ukraine crisis.

The issues raised by assistance to Ukraine are a timely reminder that Australia must increase the capacity of sovereign defence industry, including getting kit into the hands of warfighters, our own and our partners', in a timely and efficient manner. This serves Australian national security requirements and can position us to address authoritarian threats to sovereignty and the rules-based order in our own region. We hope that this context will be recognised in the forthcoming Defence Industry Development Strategy (DIDS) and other plans.

Australia must become an important part of the emerging common arsenal for democracy by deepening research and industrial collaborations with trusted partners, including through AUKUS. Given Europe's demand for quality and dependable supplies of arms, investments in Australia by trusted foreign partners, like Hanwha's establishment of armoured vehicle manufacturing in Victoria, should also be encouraged.⁹

We make the following **recommendations relating to assistance to Ukraine**:

- 1) *The Prime Minister or Deputy Prime Minister should issue a statement that support for Ukraine is in Australia's national interest because the security of Europe and the Indo-Pacific are connected and the crisis there has direct and indirect consequences for Australia, affecting our politics, prosperity and security. The statement should explain to the Australian people that sustained assistance to Ukraine is essential because Russian victory in Ukraine would not only be a blow to democracy everywhere, it would also embolden autocrats in our region.*
- 2) *Working with the Ukrainian Government to identify priority needs, Defence should conduct a review of capabilities that are close to retirement or retired, as well as capabilities being produced by Australian defence industry, which may be particularly suited to assisting Ukraine. This review should be conducted with a particular eye on low-cost capabilities that might have an asymmetric effect, like 'cardboard drones'. This review could have positive carryover to the changes we need to make to Australia's own national defence, deploying technology for asymmetric advantage.*
- 3) *The Government should prioritise expanding production of military materiel, both for national defence and export to Ukraine and partner countries. This should include nurturing sovereign capability, developing research and industrial collaborations with the AUKUS*

⁸ Paul Smith, 'Cardboard drone maker used in Ukraine is Australia's top innovator', *Financial Review*, 27 September 2023: [AFR BOSS Most Innovative Companies: Cardboard drone maker wins for Ukraine war weapon](#).

⁹ Afeeya Akhand and Alex Bristow, 'The Australia-South Korea partnership is ripe for a refresh', ASPI, *The Strategist*, 26 October 2023: <https://www.aspistrategist.org.au/the-australia-south-korea-partnership-is-ripe-for-a-refresh/>.

coalition and a wider range of partners, and encouraging further investment from trusted partners in manufacturing facilities in Australia.

Artificial Intelligence and Autonomous Weapons related issues

The 2022-23 Defence Annual Report refers to artificial intelligence (AI) and autonomous systems as priorities for working with coalition partners through AUKUS advanced capabilities Pillar 2, and provides examples of national priority projects across the maritime, land and air domains, including the Ghost Shark uncrewed underwater vehicle (UUV), and the MQ-4C Triton, which has some autonomous capability even though it is remotely piloted.

There is evidence of Australia working alongside partners to progress a number of autonomous systems, including trials for AI in robotic vehicles in South Australia in February 2024, which was part of an ongoing series of AUKUS capability demonstrations that help reinforce deterrence.¹⁰

To realise asymmetric effects in accordance with Defence's strategy to implement the DSR, it will be necessary to develop and deploy AI and autonomous capabilities across the complete spectrum of operational domains (sea, land, air, cyber, space and information).

Defence will play a leading role in developing these capabilities and introducing them into ADF service, including through AUKUS Pillar 2 and by utilising the Advanced Strategic Capabilities Accelerator (ASCA). The authors believe that ASCA could be more effective at identifying military applications for new and emerging technologies, as well as contributing to their commercialisation and introduction into active service, if ASCA were arms-length, or 'air-gapped', from Defence. The Defence Science and Technology Group (DSTG) is not ideally placed to undertake necessary engagement with technology entrepreneurs, industry capability developers or investors, and it is hamstrung by reporting requirements and approaches to risk that inhibit its ability to achieve its objectives.

The government should prioritise establishing the necessary policy and regulatory framework for ASCA to function more collaboratively with industry, investors and end users. Success cannot allow frameworks that perpetuate the organisational and cultural barriers that have historically impeded the development of an effective innovation ecosystem in Australia. Defence must also work more closely with other government departments, as well as with a broader swathe of industry and universities, given the crossover between civilian and military applications of leading-edge AI and autonomy technologies. And Defence needs to nurture collaboration with international partners outside AUKUS. The forthcoming Defence Industry Development Strategy should outline a pathway towards achieving this.

ASPI's Critical Technology Tracker, which is regularly updated to cover AUKUS-relevant technologies, is a peerless resource for identifying which countries are leading in key sectors of civilian and potential dual-use research, and which international counterparts might be suitable partners for Australian research institutions. Worryingly, the Critical Technology Tracker reveals that China is ahead in several research fields relevant to AI and autonomy, which could translate to military advantage years from now.¹¹

The effective application of AI could support militarily relevant human-machine teaming capabilities, with applications as diverse as logistics and supply, personnel recruitment and management, and both systems-level and local-level (edge) battlefield information command and control functionality. By replacing human management of mundane tasks, AI can reserve precious human capability and decision-making for where it is needed most, including where this is ethically

¹⁰ Defence, 'AUKUS trials artificial intelligence in robotic vehicles', 6 February 2024: [AUKUS trials artificial intelligence in robotic vehicles | Defence](#).

¹¹ ASPI's Critical Technology Tracker: who is leading the critical technology race? <https://techtracker.aspi.org.au>.

and operationally advantageous or necessary. These technologies can also allow humans to operate at greater distances from risk in a vast suite of scenarios (from medical evacuation to combat).

Teaming can also deliver force multiplier effects. For example, the Boeing Australia MQ-28A Ghost Bat, which Defence is investing \$400 million to develop further, offers a path towards a future 'collaborative combat aircraft' (CCA), which is a capability that seamlessly pairs crewed and autonomous aircraft for a range of battlefield effects. CCA could be a key component in future next-generation air dominance and combat capability for the RAAF, enhancing platforms including the F-35 joint strike fighter, the E-7 Wedgetail and the P-8 Poseidon. There may be opportunities for joint development or export to a wider range of partners, including the UK, Italy and Japan under their Global Combat Aircraft Program (GCAP).¹²

In the maritime domain, UUVs like Ghost Shark and a growing range of uncrewed surface vessels (USVs) could improve the survivability and lethality of crewed vessels across the Royal Australian Navy, including the submarines we will obtain through AUKUS Pillar 1. Some of these systems might be deployed from home ports and others from crewed 'motherships' and planes, increasing the number of hulls available for a range of missions including mine clearance, surveillance, anti-submarine warfare, and potentially even surface strike roles.

The pace of innovation and effectiveness of land-based systems like drones, including some based on commercially available models, is evident in Ukraine. Uncrewed ground vehicles (UGVs) that exploit robotics will become more widespread over time. In the future, these may be deployed from, and operate in teams with, crewed armoured vehicles and infantry.¹³ To have confidence in such systems, Defence will need to mitigate the unpredictability of autonomous decisions based on algorithms.¹⁴

Further consideration should also be given to developing both AI and autonomous systems in the space domain. As one illustrative example, the US has deployed the X-37B spaceplane and China has something similar with its Shenlong spaceplane, both of which are already in orbit. India, South Korea and Japan are also developing spaceplane capabilities. A small, reusable autonomous spaceplane could be deployed from Australia using sovereign launch capability, significantly enhancing our space situational awareness, and expanding options for further operations in space. While space is not yet formally listed as an advanced capability under AUKUS Pillar 2, it is the authors' view that space as a domain offers considerable opportunities for Australia to develop unique and critical capabilities. Hypersonics is already an AUKUS Pillar 2 priority, allowing for some work in the space domain.¹⁵

Defence's research and development focus needs to cover the full range of systems: from very low-cost 'attritable' autonomous platforms that can be mass-produced, including some higher tech platforms that might be suited to deployment in 'smart' swarms; through to complex and expensive (also known as 'exquisite') capabilities, such as highly sophisticated UUVs, long-range armed uncrewed surface vessels, and advanced autonomous air platforms.

The flipside of deploying AI and autonomy for military purposes is developing effective countermeasures to their use. The utility of low-cost armed drones has been amply demonstrated in Ukraine, feeding an offense-defence competition dynamic that has put speedy commercial

¹² Malcolm Davis, 'Next Steps for the Ghost Bat', ASPI, *The Strategist*, 12 February 2024: <https://www.aspistrategist.org.au/next-steps-for-the-ghost-bat/>.

¹³ For a fictional near-future vision for how UGVs might operate in a major war, see Mick Ryan, *White Sun War* (Casemate: Havertown, USA, 2023).

¹⁴ Australian Army, 'Artificial intelligence in Army, part 1: the trouble with AI', Australian Army Research Centre, 29 November 2018: <https://researchcentre.army.gov.au/library/land-power-forum/artificial-intelligence-army-part-1-trouble-ai>.

¹⁵ Malcolm Davis, 'Defence strategic review must go boldly into space', ASPI, *The Strategist*, 24 August 2022: <https://www.aspistrategist.org.au/defence-strategic-review-must-go-boldly-into-space/>.

innovation and deployment at the heart of battlefield advantage. The ADF must prepare to defeat swarms of unmanned aerial systems (UAS), which may leverage AI for tactical command and control, potentially allowing them to overwhelm countermeasures through swarm degradation and re-allocate command authority in the moment.

Thankfully, several Australian companies are at the leading edge of counter-UAS technologies, such as DroneShield, EOS, and AIM Defence, which are developing AI-assisted directed-energy, microwave and jamming defences that could be effective against hostile drones and cost-efficient compared to interceptor missiles. AI will be essential for counter-UAS systems to operate at the machine speeds of AI-enabled hostile swarming drones, and operating across greater geographies and distances are persistent challenges.

We are reassured by Defence's commitment to legal obligations and ethical standards in the development and deployment of AI and autonomous weapons systems, as detailed in Defence's submission to this inquiry. We fully support the initiatives by the Australian Government and in collaboration with partners to develop standards, frameworks and declarations for the ethical military use of AI and autonomy. As well as being essential for accountability, such an approach can help build public trust, support appropriate ADF rules of engagement, and encourage young innovators to work in a field where ethical concerns can be a barrier to recruitment.

China and Russia are amongst the authoritarian regimes weaponising AI and autonomy without due regards to ethics and international standards, which poses a threat to Australia and our allies and partners and undermines arms control efforts. We must not cooperate with these countries in ways that could assist their AI and autonomous weapons capabilities, which includes inadvertent assistance through research collaborations on civilian technologies.

ASPI's research has revealed the brazen methods that countries like China are deploying to steal dual-use technology intellectual property from our universities with dangerous potential military applications.¹⁶ ASPI has developed tools like the Critical Technology Tracker, the China Defence Universities Tracker¹⁷ and Mapping China's Tech Giants,¹⁸ which can help businesses and academia better assess risks. But government must play a leading role in preventing international collaborations that risk giving AI and autonomy technologies to countries that could use them against us as weapons.

While preventing research collaboration that offers advantage to potential adversaries, we encourage the Australian Government along with its partners to engage in dialogue with autocratic countries that are demonstrably pursuing the military use of AI and autonomy, including China and Russia. Authoritarian regimes should know that the international community is paying attention to their unrestrained development of weapons systems that use these technologies irresponsibly. Where we have evidence that international norms are being disregarded, the Government alongside partners should fearlessly call this out, including at the UN and other multilateral forums.¹⁹ While we know that irresponsible and dangerous weapons development continues under authoritarian regimes, liberal democracies must hold both ourselves and others to account.

Defence's aim should be to develop AI-enabled autonomous systems that exploit the systemic human advantage that our highly trained, trusted and experienced military personnel offer by keeping humans 'in' or 'on' the loop for lethal capabilities. This is especially critical for command and control systems at both the headquarters and tactical level. Keeping humans 'in' or 'on' the loop can provide tailored levels of human control—neither wholly relegates operational decision-

¹⁶ For example, see Alex Joske, 'Picking flowers, making honey: the Chinese military's collaboration with foreign universities', ASPI, 30 October 2018: <https://www.aspi.org.au/report/picking-flowers-making-honey>.

¹⁷ ASPI, China Defence Universities Tracker, <https://unitracker.aspi.org.au>.

¹⁸ ASPI, *Mapping China's Tech Giants*: <https://chinatechmap.aspi.org.au/#/homepage>.

¹⁹ Samara Paradine and Marcus Schultz, 'I, Killer Robot: the ethics of autonomous weapons systems governance', ASPI, *The Strategist*, 15 February 2024: <https://www.aspi.org.au/i-killer-robot-the-ethics-of-autonomous-weapons-systems-governance/>.

making or the firing of weapons to a machine. Defence should, however, seek to optimise its human capital by automating as many tasks as possible that do not require human oversight for either ethical reasons or operational requirements. At the same time, Defence should aim to optimise its ‘tooth-to-tail ratio’ by increasing the number of autonomous systems (teeth) while remaining confident of human oversight (the tail).²⁰

We make the following **recommendations relating to artificial intelligence and autonomous weapons related issues:**

- 4) *Defence should engage in debate with industry, universities and the public about the ethical and legal dimensions of the military use of AI and autonomy to build public trust and stimulate innovation in this crucial field. A good starting place could be a public demonstration by Defence of how it applies a ‘system of control’ approach to risk management, based around a plausible hypothetical scenario.*
- 5) *As well as leveraging AUKUS Pillar 2, Defence should broaden the range of international partners that it engages on AI and autonomy collaborations. This also needs to extend beyond Defence to civil and commercial cooperation that has potential military application. ASPI’s Critical Technology Tracker is an excellent resource for identifying leading civilian research institutions in relevant fields in Australia and across a range of countries, noting the dual-use nature of many of these technologies.*
- 6) *Defence should consult with AUKUS partners about the merits of making space an additional advanced capability under AUKUS Pillar 2, noting that AI and autonomy—along with the other AUKUS Pillar 2 technologies—could have significant and potentially transformational effects on strategic stability in space, with consequences here on earth. It is also an area where Australia has geographic, industrial and technological advantages that are likely to have benefits far beyond defence.*
- 7) *The Government, working with international partners, should continue to develop ethical and regulatory frameworks for the military use of AI and autonomy. This work must include dialogue with authoritarian regimes, including China and Russia, to provide appropriate standards of accountability as well as a basis for calling out transgressions.*

Armaments manufacture, procurement, and inventory

A key theme of the 2023 Defence Strategic Review (DSR) is the prioritisation of long-range strike, continuing the focus that was emphasised in the 2020 Defence Strategic Update (DSU) and 2020 Force Structure Plan (FSP). As with the 2020 DSU and FSP, the 2023 DSR emphasises adequate munitions’ stockpiles and the selective sovereign manufacture of guided weapons and explosive ordnance (GWEO). We should expect more detail on how this can be achieved with the imminent publication of the Defence Industry Development Strategy (DIDS).

However, while we fully support the strategic logic of long-range strike and the prioritisation of GWEO, we believe that Defence must address further challenges relating to:

1. The range, capabilities and launch platforms for missiles and munitions;
2. Delivery delays and technology transfer;
3. The scale of stockpiles, including partner requirements;
4. The scope of GWEO, including Australian industry involvement, the systems required to support it, export opportunities, and working with partners on munitions management; and
5. Full and immediate funding assurance for these measures.

²⁰ Malcolm Davis, ‘Taking robots and AI to war at sea’, ASPI. *The Strategist*, 25 January 2024: <https://www.aspistrategist.org.au/taking-robots-and-ai-to-war-at-sea/>.

Firstly, the range of the capabilities that the ADF is acquiring may be insufficient for Defence's proposed strategy of deterring through denial any adversary's attempt to project power against Australia through our northern approaches. This necessitates both a reconsideration of the specific types of strike munitions we are looking to manufacture and stockpile in Australia, as well as the systems, capabilities and platforms upon which they can be deployed. Agility and the greatest number of options for the least investment is clearly a priority.

As the DSR notes, the threat of the use of military force or coercion against Australia does not require invasion, so deterrence necessitates that we have the capability to engage an adversary at significant range from Australia. This requires being able to attack or defend against the growing number of Chinese long-range strike systems that can target Australia if deployed in the region or launched from bombers or naval assets. Such systems include China's *Dongfeng* DF-26 IRBM (intermediate range ballistic missile) and DF-27 IRBM-HGVs (IRBMs with a hypersonic glide vehicle, which complicates early warning and missile defence).²¹ An ADF capability to independently counter regionally deployed Chinese missile forces would strengthen deterrence and improve integration with the 'top cover' provided by the US alliance.²²

One of the priorities for GWEO are short-range Guided Multiple Launch Rocket System (GMLRS) munitions, which have a range exceeding 70km, and an extended-range GMLRS out to 150km, with production starting by the end of 2025.²³ These can be fired from the High Mobility Artillery Rocket System (HIMARS) that the Australian Army is acquiring. However, without host-nation support forward in the region, as well as a level of sea, air or space control in the archipelago to our north, it is unclear how the Army could forward deploy HIMARS to bring adversaries within range, even with the shift towards littoral manoeuvre outlined in the DSR.²⁴

It is encouraging that Defence is pursuing the accelerated acquisition of longer-range GWEO, including 200 Tomahawk cruise missiles for the Navy's Hobart class destroyers, which have an acknowledged range of at least 1,500 km, and extended-range missiles for the Royal Australian Air Force, some of which may have range up to 900km. These capabilities will considerably expand the ADF's ability to undertake anti-access and area denial as part of deterrence by denial, as well as to impose costs on adventurous PLA Navy ships or PLA Air Force platforms operating forward. But even these capabilities lack range in comparison to Chinese intermediate missile forces.

Beyond range limitations, a second challenge is the slow pace of acquisition. The GWEO enterprise was announced in March 2021. However, Defence only announced in July 2023 that Lockheed Martin and Raytheon would be Enterprise Strategic Partners, despite them seeming the obvious choices throughout. Furthermore, Australia's production of GWEO alongside these partners will not start until late 2025.²⁵ We are awaiting further information from Defence about the production schedule for longer-range systems such as the Precision Strike Missile (PRSM).

²¹ Malcolm Davis, 'Building integrated air and missile defence for Australia', ASPI, *The Strategist*, 21 June 2023, <https://www.aspistrategist.org.au/building-integrated-air-and-missile-defence-for-australia/>

²² Kim Beazley, 'US the critical 'top cover' for the defence of Australia', ASPI, *The Strategist*, 30 May 2023: <https://www.aspistrategist.org.au/us-the-critical-top-cover-for-the-defence-of-australia/>.

²³ Lockheed Martin, 'GMLRS Munitions: The right Precision Fires solution for every mission', <https://www.lockheedmartin.com/en-us/products/guided-mlrs-unitary-rocket.html>; Max Blenkin, 'Details of Lockheed Martin missile manufacturing deal', *Australian Defence Magazine*, 18th January 2024, <https://www.australiandefence.com.au/news/news/details-of-lockheed-martin-missile-manufacturing-deal>.

²⁴ Malcolm Davis, 'Impactful Projection – from land and sea', ASPI, *The Strategist*, 17th August 2023, <https://www.aspistrategist.org.au/impactful-projection-from-land-and-sea/>; Alex Bristow and Marcus Schultz, 'Army has a critical role in defence strategic review's 'integrated force'', ASPI, *The Strategist*, 22 June 2023: <https://www.aspistrategist.org.au/army-has-a-critical-role-in-defence-strategic-reviews-integrated-force/>.

²⁵ Lockheed Martin, 'Working in partnership to deliver the Australian Guided Weapons and Explosive Ordnance Enterprise', 20 July 2023, <https://www.lockheedmartin.com/en-au/features/australian-guided-weapons-and-explosive-ordnance-enterprise.html#:~:text=First%20announced%20in%20March%202021,to%20Australia's%20modern%20Defence%20capabilities>

A third concern is that stockpiles and production capacity will be insufficient for a protracted war in the Indo-Pacific. As the conflict in Ukraine reminds us, modern warfare expends munitions at a ferocious rate. And supply must match not only the ADF's demand for ready access to long-range strike munitions, but also interceptor missiles for any integrated air and missile defence of our northern bases, which would ideally also be produced locally. We must remember that the ADF has always operated alongside allies and partners, the most important of which is several thousand kilometres away. We must therefore plan operational requirements—including manufacturing, sustainment and stockpiling—with the coalitions that we anticipate fighting alongside in mind.

While it is essential that Australia builds up its sovereign defence industry base, we must eschew delusions of autarky and avoid beggar-thy-neighbour scrapping with allies over limited supplies. It is not a contradiction to say that we need a more sovereign and internationally connected defence industry at the same time. Defence must help Australian defence industry collaborate with international partners, including through AUKUS, recognising the complexity of modern production and supply chains as well as the economies of scale achievable by accessing markets beyond our shores. To succeed at pace, Defence must be willing to take greater risks, including picking winners amongst promising Australian defence companies, underwriting certain costs and accepting losses when some capabilities don't fulfil their hoped-for potential.

Fourthly, the scope of Defence's GWEO initiative should be expanded beyond missile production to include uncrewed aerial vehicles (UAV) and loitering munitions, some of which may be able to exploit artificial intelligence for long-range swarm attacks that could help distract or overwhelm an adversary's countermeasures. One principle for GWEO should be 'low-cost, high volume' output of a range of munitions, rather than investing in 'silver bullets' that can only be acquired in limited numbers at great cost. For example, TLAM is a highly capable weapon system, but it relies on a complete sensor-to-shooter 'kill web' comprised of intelligence, surveillance, target acquisition and reconnaissance (ISTAR) and command and control (C2) capabilities, including space-based systems. In addition, the sustainment 'tail' for complex systems like TLAM are considerable. For resilience and tactical options for long-range strike, a balance should be sought between high cost, complex missile systems and low cost, high-volume munitions and UAVs.

The reshaping of the ADF towards long-range strike, including the acquisition and sovereign development of GWEO, is well justified by the loss of strategic warning time for non-nuclear attack. China and other potential adversaries continue to develop wider means of hurting us from afar and they are building relationships and infrastructure closer to our shores. These regimes also demonstrate an ongoing willingness to use coercion in military and non-military domains. Achieving the necessary changes to the ADF will require sustained and significant increases in defence spending, which need to be brought forward into this Parliament given the corrosive effects of inflation and the urgency of our circumstances.²⁶ We hope to see announcements to this effect in the forthcoming budget and Integrated Investment Plan.

We make the following **recommendations relating to support to armaments manufacture, procurement, and inventory**:

- 8) *The ADF's stockpile and production targets for GWEO should reflect evidence from modern conflicts, including Ukraine, incorporate emerging disruptive technologies, and account for a highly manoeuvrable adversary operating at closer ranges than previously assumed. The definition of sufficiency should be based on rigorous scenario-testing that includes*

²⁶ Jennifer Parker, David Uren, Bec Shrimpton and Rob Bourke, *The Big Squeeze*, ASPI, 30 May 2023: <https://www.aspi.org.au/report/big-squeeze>.

protracted warfare against a highly capable opponent like China, developing operational concepts that acknowledge and, where possible, accommodate coalition partner requirements.

- 9) *Defence should review the merits of complex missile systems and their various delivery platforms relative to low-cost munitions and UAVs, with the aim of developing a diverse and agile suite of capabilities across short, medium and long-range strike.*
- 10) *The Defence Industry Development Strategy and other key Defence planning documents must embrace the higher-speed, higher-risk approach to defence industry and procurement called for in the DSR, with the government fulfilling some key early-stage R&D investment, as well as functioning as a capability incubator and industry underwriter when appropriate. Finding the right mix between government and the free market in our defence industry means observing and understanding the civil-military fusion model adopted by Beijing and other authoritarian competitors. While government has a greater role to play, Australia and its partners must ensure that our approach exploits the advantages that free markets and liberal societies provide for innovation and the efficient allocation of scarce resources.*

We would be happy to discuss our submission with the Committee, including at any forthcoming hearing.

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