

# APDR

**ASIA-PACIFIC DEFENCE REPORTER**

AUSTRALIAN DEFENCE IN A GLOBAL CONTEXT



## AUKUS & DSR

– industry makes their assessment

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Interview: Andrew Clark,  
Chief of RNZAF

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The problem of disposing of  
nuclear-powered submarines

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Several MLRS alternatives  
to HIMARS



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Cover: A Royal Australian Air Force F-35A Lightning II aircraft taxis to the runway Exercise High Sierra 23 at RAAF Base Townsville in Queensland. (CoA / Ryan Howell)



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# Government deception rejecting Hawkei vehicles for Ukraine

People are always disappointed when they are misled by politicians – a process that seems to be currently underway concerning our refusal to supply Hawkei 4x4 vehicles, rejecting a request from Kiev. In doing so the government has used the most feeble excuse – advice from the Defence Department.

One does not have to have worked in the office of a Minister to know that when unacceptable advice comes through you send it back and ask for options. Everyone in Canberra knows how this game works. For any Minister hiding behind that excuse, the reply should be: who is running the country – you or the Department?

In turn, the position of the Department itself does not stand up to scrutiny. Excuse #1 is that the ABS on the vehicles has problems and that they are unsafe to deploy. It is correct that there are still some ABS issues – the severity of which is very much contested – but this in no way makes them unsafe to use. The Army is getting them ready to deploy to Exercise Talisman Sabre and if they can cope with those conditions then they should be fine anywhere else (notwithstanding the fact that winter in Ukraine is somewhat colder).

Whenever a Hawkei goes off road the ABS system is always switched off. It is required only so that they can be registered and legally driven on Australian roads. The issue is a regulatory one, not a technical one. Ukraine already knows all about the ABS issue and is not in the slightest concerned. Their soldiers do not need to drive them legally on Australian roads – they need them to save lives in their own country.

Excuse #2 is that because Hawkei is an Australian vehicle, it would be impossible to support in Ukraine and therefore cannot be donated. This is not quite as bad as Excuse #1, but still comes close.

It is true that the Hawkei assembly line is at the Thales facility in Bendigo and that more than 50% of the parts are from Australian

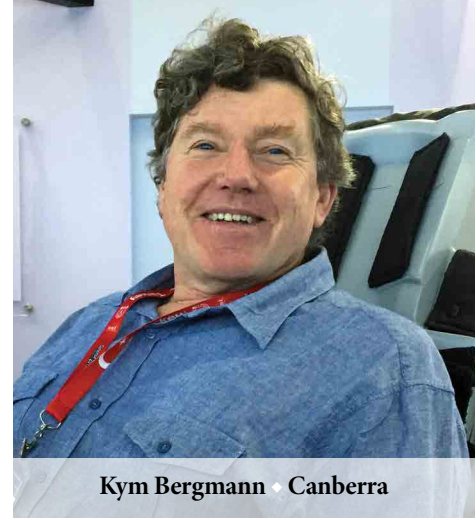
suppliers, but many major items are built elsewhere. The engines come from Steyr in Austria; the transmission from ZF in Germany; the add-on armour from Plasan in Israel; some specialised components are from the US.

Even a cursory look at a map will show that all these places are a lot closer to Ukraine than is Australia. This means that the task of supporting a Hawkei fleet in eastern Europe would be slightly more complicated than doing so in Australia – but not much. To this can be added the assessment that Ukraine's logistic system appears to be far more efficient than ours – hardly a surprise since they are fighting for their lives.

What is lacking in getting Hawkei to Ukraine is political will. In one sense Army cannot be blamed because they have to provide assistance within existing resources. This is code for them receiving no extra money, meaning that there is a natural tendency for them to give away things that they neither want nor need. The way forward is for the government to come up with extra funding and make it clear that for every Hawkei delivered to Ukraine a new one will be built for them in Bendigo.

A quick skim of Ukraine media shows that they have been underwhelmed by the latest Australian package – though still enormously grateful for anything at all. Even antiquated M-113s can still be used as gun tractors; 105mm artillery shells can be fired from donated New Zealand howitzers; all logistics vehicles can help offset losses to date. However more could, and should, be done – if not for purely ethical reasons then to send out powerful signals in this region that Australia stands by our allies.

Speaking of Departmental deception, another case in point is the purchase of the US Surveillance Towed Array Sensor System (SURTASS). We have previously provided some details of this unannounced but confirmed decision to spend \$309 million on a fully imported product when Australia has an



Kym Bergmann • Canberra

excellent underwater technology sector that could have developed the same product here, for less.

There are still many aspects of this appalling decision to be revealed – including its precise connection to AUKUS. At first glimpse, it looks like a further mechanism for transferring hundreds of millions of dollars to the US industrial base – on top of our voluntary \$3 billion contribution to their submarine industry – that will gut Australia's capabilities.

The Department has used the excuse that after a Request for Information (RFI) for the surveillance program SEA 5012 they concluded that Australia was unable to meet the SURTASS requirement. There are several problems with this, not the least of which no one was asked specifically about providing something like SURTASS. After this there was no further contact with Australian industry – not so much as a single follow up question or even a phone call.

Despite the Department's statement to the contrary, they received plenty of information about how the equivalent of SURTASS could be produced locally with at least one submission going into a great deal of detail about how this could be done. While no costing information appears to have been supplied, the work could be done in Australia for far less than the staggering amount going instead to the US.

Two final points: SURTASS is obsolete and the US is in the process of phasing it out. Also, to work properly it needs to be streamed behind a purpose built ultra-quiet ship, which Australia does not possess. One does not know whether to laugh or cry.

We have previously suggested that this decision be reversed as soon as possible. In the light of additional information, it seems that either the Department has engaged in a major deception or the government is indifferent to the future of Australian industry.

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*Carl Gustaf M4  
with FCD 558  
(Saab photo)*



## SAAB RECEIVES ORDER FOR CARL-GUSTAF M4 FROM AUSTRALIA

**4 July 2023**

Saab has received an order from the Australian Department of Defence for the supply of additional Carl-Gustaf® M4 weapons. The order value is AUD 56 million with deliveries during 2024-2025.

The Carl-Gustaf M4 weapons will be delivered with Saab's new Fire Control Device, FCD 558.

"This order continues Saab's longstanding relationship with the Australian Defence Force and again demonstrates the diverse range of products and services we offer," said Saab Australia Managing Director, Andy Keough CSC.

"We are proud to deliver modern and user-focused weapon systems that ensure the ADF's ability to meet a wide range of challenges on the battlefield. Saab's support for the ADF extends from these advanced weapons through to ground based air defence solutions, battle management systems and world-leading deployable health and infrastructure services."

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The Carl-Gustaf system is supplied to more than 40 countries around the world.

## WESTERN AUSTRALIA TO HOST LAND-BASED LONG-RANGE MISSILE EXERCISE

**27 June 2023**

Western Australia is set to host a key US and Australian exercise that will develop how the Australian Defence Force employs land-based precision long-range rocket artillery and maritime strike missiles.

Commencing in late July, Exercise HIGBALL is a combined Australian Headquarters Joint Operations Command (HQJOC) and US Indo-Pacific Command (INDOPACOM) initiative.

The exercise is being conducted from Lancelin (north of Perth) and into the Western Australia Exercise Area (WAXA, situated in the Indian Ocean to the west and southwest of Perth). It will use a range of air, land, space and maritime capabilities to send targeting data to a US Army High Mobility Artillery Rocket System (HIMARS) platoon to test long-range fires concepts.

Chief of Joint Operations, Lieutenant General Greg Bilton said the exercise demonstrates the ADF's commitment to the Defence Strategic Review 2023 recommendation that the introduction into Australian service of a HIMARS and a land-based maritime strike capability is accelerated and expanded.

"The need to integrate land-based long-range fires into the ADF's operational capability is urgent, and the close and dynamic relationship we enjoy with INDOPACOM means we can meet this priority," Lieutenant General Bilton said.

"By using a US Army HIMARS strike package and US military shipping already in Australia for Exercise Talisman Sabre 2023, we can advance our understanding of projecting and employing HIMARS and maritime strike missiles within a shorter timeframe.

"The exercise will also enhance US interoperability with the ADF's targeting capabilities and the operational employment of land-based precision multi-domain fires."



*A HIMARS strike package vehicle commander from the 17th Field Artillery Brigade at Joint Base Lewis-McChord, Washington, receives the order to move his convoy to the Port of Tacoma in preparation for shipping the vehicles to Australia for Exercise Talisman Sabre. (US Army photo)*

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**SAAB**

T-7A (Boeing photo)



## BOEING COMPLETES T-7A FIRST FLIGHT WITH U.S. AIR FORCE

ST. LOUIS, June 28, 2023

Boeing and the U.S. Air Force today completed the inaugural flight of the service's first T-7A Red Hawk, marking the start of the engineering and manufacturing development (EMD) phase of the program.

During the 1 hour and 3 minute flight, U.S. Air Force Maj. Bryce Turner, 416th Test Squadron, and Steve Schmidt, Boeing T-7 chief test pilot, validated key aspects of the aircraft and demonstrated the power and agility of the Air Force's first advanced trainer to be digitally designed, built and tested. The aircraft is one of five EMD aircraft that will be delivered to the Air Force Air Education and Training Command for further testing.

"The stable performance of the aircraft and its advanced cockpit and systems are game changers for U.S. Air Force student pilots and instructors alike," said Turner, whose grandfather and father were both U.S. Air

Force fighter pilots. "We've come a long way in training since my family role models flew."

The T-7A's vibrant red tails are a tribute to the Tusgee Airmen, the first African American U.S. military aviators who flew red-tailed fighters during World War II.

The T-7A will enhance warfighter training through:

- **Improved pilot readiness:** The all-new advanced pilot training system uses high resolution ground-based training systems and simulators to deliver robust and realistic integrated live, virtual and constructive training capabilities.
- **Safety:** Model-based engineering enabled testing throughout the aircraft's design and build to help ensure safety before the first flight. The T-7A's cockpit egress system is the safest of any trainer.
- **Flexibility for any mission:** With open architecture software and digital fly-by-wire controls, the T-7A supports training for a wide variety of fighter and bomber pilots and can evolve as technologies, threats and training needs change.

"This first flight with the Air Force represents our team's commitment to delivering a new level of safety and training for fighter and bomber pilots," said Evelyn Moore, vice president and program manager, Boeing T-7 Programs. "We remain focused on engineering ways to better prepare warfighters for changing mission demands and emerging threats."

"This is an exciting time for the entire team," said Col. Kirt Cassell, U.S. Air Force T-7A Red Hawk program manager. "The Red Hawk's digital design integrating advanced training capabilities will drastically improve pilot training for the next generation of fighter and bomber pilots."

The T-7A moved from firm concept to flight testing in 36 months. A combination of model-based engineering, 3D design and advanced manufacturing increased first-time quality by 75% and reduced assembly hours by 80%.

In 2018, the Air Force awarded Boeing a \$9.2 billion contract for 351 T-7A advanced trainers, 46 simulators and support. The T-7A will replace the Air Force's aging T-38 aircraft.





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*JOINT BASE PEARL HARBOR-HICKAM (July 3, 2023) The Virginia-class fast-attack submarine USS Illinois (SSN 786) returns to Joint Base Pearl Harbor-Hickam following a scheduled deployment in the U.S. 7th Fleet area of operations. (U.S. Navy photo by Lt. Cmdr. Amelia Umayam)*

# The nightmare of disposing of nuclear-powered submarines

Kym Bergmann • Canberra

As time elapses it is becoming easier to understand why Defence and the government are reluctant to provide too many details about the AUKUS submarine deal. To do so risks losing public support because the implications of agreeing to purchase second-hand platforms and then dispose of them in Australia are not well understood – and would horrify many people if they were.

No country on earth has solved the long-term problem of radioactive waste disposal and Australia – lacking a nuclear industry – is poorly equipped to handle this major challenge.

In evidence to the Senate, the RAN says that the second-hand Virginia class submarines Australia will purchase are likely to be Block IV vessels, though Block III cannot be ruled out. This level of uncertainty is because the US has not yet decided which – if any – of their platforms will be available for sale. On June 26 no less a figure than US Chief of Naval Operations, Admiral Michael Gilday, said of the proposed deal with Australia, it is:

“...too early to give you an answer on precisely where those submarines will come from, whether that’s excess capacity or whether that comes out of U.S. inventory.”

Nevertheless, both he and influential State Department US Indo-Pacific Coordinator Kurt Campbell expressed confidence that the deal would proceed, noting bipartisan support in Congress.

The first Virginia Block III was commissioned on October 25, 2014, with construction of the class of eight starting in 2009. The last of ten Block IV submarines is under construction, with the suggestion that Australia’s will be somewhere in the middle of this spread. Obviously, there would be no point buying a submarine at the very end of its life, unless we were total idiots.

For the sake of argument, let’s assume that the submarines for Australia will have been launched between 2015 and 2020 – and given that they have a maximum life of 33 years the first of our two submarines will go out of

service in 2048. That might seem a comfortable distance in the future, but when it comes to planning for their disposal it is not.

In the US when a nuclear-powered submarine is decommissioned, it is a major undertaking. When it is docked, the still highly radioactive Uranium 235 is removed after the pressure vessel has been cut open – a slow and cautious process since it is so dangerous – and then transported to a huge facility in Idaho, managed by the Department of Energy. Called the Idaho National Laboratory, it stores nuclear material from numerous reactors, including from nuclear-powered aircraft carriers as well as USN submarines.

Once the U235 arrives it has to be placed in very large holding tanks full of water because it still emits huge amounts of heat, though it does cool down fairly quickly and after a couple of years can be moved to a secure dry storage facility.

If used nuclear material is stored incorrectly it can have catastrophic consequences, as the USSR discovered on September 29, 1957. Because of improper processes – admittedly back then nuclear energy was not as well understood as now – the material placed in concrete holding tanks

## If used nuclear material is stored incorrectly it can have catastrophic consequences, as the USSR discovered on September 29, 1957.

slowly increased in temperature. As a result of the presence of various chemicals – particularly ammonium nitrate, the preferred explosive of truck bombers – the subsequent explosion was rated as being the equivalent of 70 tonnes of TNT.

Known as the Kyshtym disaster, it still ranks as the third worst release of radioactive contamination after Chernobyl and Fukushima. Typical of the Soviet attitude at the time, the event was kept secret and evacuations of people in the area was slow and spasmodic. The event spread hot particles across an area with a population just shy of 300,000 – most of whom were left without a clue about what had occurred.

Meanwhile, back at the dock, the rest of the reactor is cut up and transported to Washington State to be buried.

Even the Idaho National Laboratory has not figured out a permanent solution for all of the waste in dry storage, though it is expected that eventually it will all be buried deep underground in a geologically stable area.

The AUKUS fact sheet of March 13, 2023, says:

- “Australia has committed to managing all radioactive waste generated through its nuclear-powered submarine program, including spent nuclear fuel, in Australia.”
- “Australia will not enrich uranium or reprocess spent fuel as part of this program”

Why Australia has committed to this expensive process, hazardous to human life is unknown. In summary form, we will need to put in place facilities for the following:

- To remove the fuel from the sub.
- To store the recently removed fuel in pools of water.
- To transfer the fuel from the pools to dry casks.
- To store the dry casks on an interim basis.
- To permanently dispose of the spent fuel deep underground.
- To permanently dispose of the rest of the reactor (excluding the fuel).

It is unknown whether the estimated project cost of \$368 billion covers



GROTON, Conn. (May 12, 2023) The Virginia-class attack submarine USS California (SSN 781) transits the Thames River during a change-of-command ceremony for the Navy's Undersea Warfighting Development Center (UWDC) at the Submarine Force Museum in Groton, Connecticut, May 12, 2023. (U.S. Navy photo by Chief Petty Officer Joshua Karsten)

this. It is unknown where the facilities will be built. It is unknown whether the decommissioning of submarines will occur at their east coast base. In

addition, the U235 will have to be in a secure location and then guarded forever to prevent its theft for conversion into weapons.

Australia will need to create a nuclear waste disposal industry from scratch. Incidentally, this would seem to be contrary to ALP national policy. The document has a lot to say about Uranium – since we mine and sell so much of it – saying that the ALP will:

- Remain strongly opposed to the importation and storage of nuclear waste that is sourced from overseas in Australia.

This contradicts not only the AUKUS fact sheet about our commitment to managing nuclear material in Australia it also contradicts the reality that the nuclear waste which will come from Virginia class submarines is definitely sourced from overseas.

To date, this deliberate intention to breach policy does not seem to trouble Cabinet, though ALP branches are restless. The party's national conference will be held in Brisbane from August 17-19 and perhaps supporters of AUKUS are planning some sort of policy carve out – but if not the government will stand accused of hypocrisy, at the very least.

With a few exceptions, members of Cabinet have never felt that strongly bound by party policy, taking the view that the document is more to keep the rank-and-file membership happy rather than being a strict blueprint for government. This is based in part on the fairly cynical assumption that most supporters will remain loyal, providing that the overall direction of the government is moving in aligns with a multitude of policy objectives.

When ALP Ministers attempt to enforce policy regarding nuclear safeguards it can be hazardous for their political survival – as Defence Minister Gordon Scholes found out in 1983. In December of that year he blocked the British aircraft carrier HMS Invincible docking in Sydney on the basis that it might be carrying nuclear weapons, in breach of government (ALP) guidelines.

Gordon Scholes – who the author had the pleasure of knowing – was the member for Corio and a man of great personal integrity. As a consequence of his stand, he was overruled, lost his job as Defence Minister and not



FORT LAUDERDALE, Fla. (April 30, 2023) The Virginia-class attack submarine USS Indiana (SSN 789) is moored to the Arleigh Burke-class guided-missile destroyer USS Cole (DDG 67). (U.S. Navy photo by Chief Petty Officer Joshua Karsten)

long after retired from Parliament at the end of a long and distinguished career. The current member for Corio is Defence Minister Richard Marles.

Not long after in another matter of ALP policy – this time successfully implemented - Prime Minister Bob Hawke was forced to back down over the issue of the US wanting to test fire its MX nuclear capable missiles into the Tasman Sea. Initially a vigorous supporter of the idea, he was faced with a party revolt that was so strong he folded – to the great chagrin of Washington. He survived politically but took a large, if temporary, hit in the polls.

One of the many mysteries around the AUKUS deal is why Australia has agreed to disposing of the Virginia class submarines here. Surely the logical thing would be to have an agreement where the US took them back at the end of their lives and decommissioned them using their well-established procedures.

Who benefits from compelling Australia to develop our own waste-disposal industry? Why not lease the used Virginia class subs rather than purchase them outright?

**Critics of LEU reactors say they have to be refuelled every 10 years. But so what? Either the submarines could go to France once every decade for this process to occur – or LEU cores could be stored in Australia and swapped out here.**

To this can be added the mystery of why agree to second hand submarines at all? Australia is in the process of voluntarily transferring \$3 billion to subsidise US industry – with no deliverables – to build new submarines and in return we will receive ones that are around one third of their lives old.

It seems like turning up to a car showroom, handing over the cash for a new vehicle but leaving with one that's several years old. No one has been able to explain how this is even remotely a good deal for Australian taxpayers.

Previous purchases of second-hand naval materiel have been disasters: HMAS Manoora; HMAS Kanimbla; HMAS Choules; Seasprite helicopters.

One is left with the clear impression that the nuclear-powered submarine task force has been so desperate to succeed in their mission that they have agreed to everything the US wants, no matter how ridiculous. There has been no public scrutiny of these enormously consequential commitments, let alone any serious analysis of whether they constitute value for money.

This is a huge topic and there are a multitude of issues still to consider, including ones of Virginia class reliability. The USN has concerns that the class is maintenance-hungry with some estimates indicating that they are only on station for 25% of their lives. To put it another way, to be guaranteed of having one submarine on deployment you need to have acquired a minimum of four of them.

To labour the point, if Australia starts to receive second hand Virginias in the mid 2030s – an optimistic assessment in the view of APDR – we will not have a viable minimum fleet until the fourth one is delivered sometime in the 2040s. That means that Australia's contribution to AUKUS and regional security will be a solitary nuclear submarine until the eighth one arrives, probably in the 2050s – at which point the RAN will be able to constantly deploy two of them.

As we have pointed out before, all of this is contingent on the US industrial base being able to ramp up production of Virginias from the current 1.5 per year to around 2.5 per year. It is possible that the US

**Who benefits from compelling Australia to develop our own waste-disposal industry? Why not lease the used Virginia class subs rather than purchase them outright?**

economy – still the world's largest – is up to the challenge, but the number one priority for the USN is the construction of Colombia class SSBNs. This program has been pulling resources – people and money – away from SSN construction.

Another assumption is that the threat from China will remain constant – but if the current submarine building race accelerates, what then? Congress still needs to approve the sale to Australia and will only do so without compromising their own national capabilities.

Australia runs the risk of spending billions of dollars and getting nothing. This is a pessimistic scenario, but one that needs to be taken into account.

Wishful thinking is no substitute for prudent planning.

If Australia wanted to be certain of acquiring nuclear-powered submarines it should resurrect the relationship with France – and that's assuming Paris would be interested. We could resume

the Attack class program (hopefully all the files have not been shredded) to be built at Osbourne and with a nuclear reactor using low enriched uranium coming from France – and returned there for disposal.

Critics of LEU reactors say they have to be refuelled every 10 years. But so what? Either the submarines could go to France once every decade for this process to occur – or LEU cores could be stored in Australia and swapped out here. This is not without cost or program risk, but at least Australia would once again be in control of our own destiny.

# HDA is here to stay



## Hanwha Defense Australia

**Hanwha Defense Australia (HDA) is committed to its Australian presence. We are ahead of schedule in the construction of the Hanwha Armoured Vehicle Centre of Excellence (H-ACE) next to Avalon Airport due for handover completion and the start of operations in Q3 2024.**

This facility is supported by the Victorian Government and is the foundation of our Australian defence programs both current and future. The Huntsman family of vehicles will be manufactured here, bringing back high technology vehicle manufacturing to the Geelong region for Australian and international customers into the future.

# Interview with Air Vice-Marshal Andrew Clark, Chief of Air Force, RNZAF

Gordon Arthur • Christchurch

The centenary of the founding of Wigram Air Base in Christchurch was celebrated on 17 June. Although it is no longer an active base, the Royal New Zealand Air Force (RNZAF) got in on the action by planning a flypast with representation from its entire fleet of aircraft. Unfortunately, due to inclement weather, the aerial parade was cancelled.

Nonetheless, Air Vice-Marshal Andrew Clark, Chief of Air Force, was at Wigram for the centennial celebrations. During the event, he spoke to Asia-Pacific Defence Reporter about the status of the air force, which was simultaneously celebrating 100 years of organised military aviation in New Zealand. The New Zealand Permanent Air Force was gazetted on 14 June 1923, initially staffed by just four officers and two other ranks as full-time staff.

The RNZAF was later officially founded in 1937 with approximately 200 personnel. Today, the RNZAF contains 2,390 fulltime members and 454 reservists. AVM Clark outlined two main roles for the modern RNZAF. One is maritime surveillance over the nation's "enormous maritime area", while the second role is transport.

The RNZAF's newest asset is the P-8A Poseidon, ordered under an NZ \$2.346 billion (US \$1.6 billion) contract signed on 9 July 2018. The first aircraft arrived on 12 December 2022, the second in March and the latest on 19 May. The RNZAF chief revealed that the quartet's final member will be delivered in July.



*Air Vice-Marshal Andrew Clark, Chief of Air Force, was at the Air Force Museum of New Zealand on 17 June to commemorate the Wigram base's centenary. (Gordon Arthur)*

"You know, the role of the P-8 is right in the same niche as the P-3. When I ask, why did the P-3 last for us for 57 years, why was it so successful? It's because it really did two things for us. One is it had that contingent military capability. Fundamentally, we're a defence force, we're an air force, and we've got to be ready to get into harm's way and be involved in a security or defence environment and the P-3 did that. But the other thing that it had was the daily, weekly utility to patrol New Zealand's EEZ, the South Pacific fisheries and so on. Search and rescue. So it's kind of a do everything aeroplane, but also able to get involved in the gnarlier stuff when it's required."

AVM Clark continued: "The P-8 does exactly the same; it's in that same niche. A P-8, of course, is newer, has more advanced systems, and it has arrived on the scene in the information age. Yes, it has good sensors as the P-3 had good sensors, but fundamentally it is an information-centric aeroplane."

New Zealand operates the world's smallest Poseidon fleet, so APDR was keen to learn how well just four P-8As can replace six Orions. The Chief of Air Force said it definitely can. He noted that a 21st-century aircraft is so much more reliable than a 1960s aeroplane, especially since "the serviceability and availability rate of the P-3 towards the end of its life was really getting quite low. So you've got a basic reliability difference there." But there is another reason too: "...Around about a third of our flying on the P-3 fleet used to be what we would call core training. You're just keeping some of those core competencies for the

**"The P-8 does exactly the same; it's in that same niche. A P-8, of course, is newer, has more advanced systems, and it has arrived on the scene in the information age. Yes, it has good sensors as the P-3 had good sensors, but fundamentally it is an information-centric aeroplane."**

crew going, and we never had a high-level simulator. Now, in this case we're buying four P-8s and a high-fidelity simulator, for both the front end and the back end ... What that allows us to do is shift a bunch of that training into a simulated environment. So you don't actually need to extend the hours on that flying fleet to the same degree."

Indeed, if a third of the old maritime patrol fleet is removed, that leaves four aircraft, which is exactly what the RNZAF has ended up with. "Actually, we're pretty happy with four; that's a reasonable

number.” Incidentally, AVM Clark began his career as a navigator, moving on to eventually command No. 5 Squadron that operated the P-3K2 Orion.

AVM Clark said “the last six months have been used in doing training of the crews, trials and development in the roles they will be used for”. One P-8A even reached Fiji in early April, operating out of Nadi as part of these trials. He said the first milestone will be July, where the P-8 will pick up domestic and regional standby requirements. From July onwards, the P-8 will formally take up responsibilities for regional search and rescue, for example. It will be out and about doing fisheries patrol out in the South Pacific too. “There are a couple of other milestones that will play out over the twelve to 18 months after that, and that’s really around making sure that our crews are proficient in some of those more military roles,” such as anti-submarine warfare.

AVM Clark also explained why No. 5 Squadron, which operates the P-8 fleet, moved from Whenuapai in Auckland, to RNZAF Base Ohakea. “The P-8 is a heavier aircraft and – when you’re going to operate it fully laden, fully loaded with fuel and stores – then it needs a longer take-off roll.” It thus came down to the physical equation that Ohakea has a longer runway than Whenuapai.

Turning attention to helicopters, APDR was curious whether the RNZAF would join Australia in ditching the NH90 and adopting the Black Hawk, or even in obtaining second-hand MRH90s from Australia.

AVM Clark, who has held his current post since 7 September 2018, said: “First of all, the NH90 is a great helicopter. It’s got great utility, carries good-sized loads for us and, yes, we have had higher availability rates than other users. But also I think we’ve been pretty open about the fact that the support that we’ve had, and the availability rates, are not as high as we would like. If you talk to any of the NH90 customer community, then you’ll find the same thing, so we would like that support to be better.”

“I think where we are now is looking around and just seeing if some other countries – Australia is one of them, it’s not the only one – make the decision to get out of the NH90. We’re just going to take the time to ask, ‘what was their thinking, what was their reasoning? What are the capabilities they are looking at instead?’ And, actually we just need to, in the cold light of day, look at it for ourselves and say, does the case still stack up? You know, is it still right for us? ... Are we still getting the value for money out of this that we had intended from the beginning? We need to be just asking those questions in the light of decisions that other people are making.” He pointed out that the RNZAF is still “pretty early in that process” of reviewing this requirement.

The RNZAF has eight NH90 TTH helicopters. Last year, Squadron Leader Jamie Wallace, the Maintenance Flight Commander of No. 3 Squadron, told APDR that Kiwi availability rates were approximately 60%, “something that we’re very proud of”. New Zealand’s availability rate is almost double that of the international average. Sqn Ldr Wallace put this down to three things: packaging of the maintenance program, whereby a lot of maintenance is done early at major scheduled inspections where access is available, in order to reduce out-of-phase work between maintenance stops; superior performance



*NH90 and A109 helicopters of the RNZAF fly during the Wigram centenary in mid-June. The RNZAF currently has eight NH90s and five A109s that are based at Ohakea. (Gordon Arthur)*

**“I think where we are now is looking around and just seeing if some other countries – Australia is one of them, it’s not the only one – make the decision to get out of the NH90.”**

of the squadron’s deeper maintenance team; and close collaboration between fleet planners, operational planners, maintenance and logistics teams to ensure servicing is deconflicted where possible.

AVM Clark’s comments about the NH90 lead on to the RNZAF’s 24 April request for information (RfI) regarding a maritime helicopter replacement for eight SH-2G(I) Seasprites. “We’ve just gone out to market for that so, as usual with any procurement process, it just needs to play out through those stages. Most large projects are always a series of three business cases that go to government, and so we’ve just had that first one that’s gone.”

A representative from Airbus Helicopters confirmed to APDR



*One of the RNZAF’s two ageing Boeing 757s, up for replacement soon, comes in to land at Christchurch International Airport in time for the Wigram centenary celebrations.*



*The RNZAF has done far better than most in keeping its NH90 fleet flying. Here, one of the air force's eight NH90s performs mountain flying during Exercise Blackbird. (Gordon Arthur)*

## **Militaries around the world are increasingly adopting UAVs, but the RNZAF has not yet leaped in with both feet.**

that the OEM is offering the navalised NH90 for this competition. Airbus' potential success with the NH90 NFH therefore hinges on the RNZAF's decision about the NH90's future in the country. The other likely contenders for this competition will be Sikorsky's MH-60R and Leonardo's AW159.

Responses to the maritime helicopter RFI were due on 21 June, and first aircraft deliveries are expected from mid-2027. According to the 2019 Defence Capability Plan, at least NZD1 billion (USD612 million) will be allocated to the project.

The RNZAF's transport aircraft fleet is up for renewal too. It has been flying the Hercules for about 57 years, but these will soon be replaced by new C-130Js. The first C-130H was retired in February. AVM Clark commented: "You might have seen that the physical construction of those aircraft over in the US is well under way so we expect the first aircraft to be delivered around about this time next year. That's well on track and, of course, the C-130 production line is like a well-oiled

sausage machine. It's been turning out C-130s for years, so we're quite comfortable with that."

New Zealand had ordered five C-130J-30s via the Foreign Military Sales avenue in mid-2020. The sole-source procurement worth NZ \$1.52 billion (US \$990 million) includes a full-mission flight simulator. All are to be delivered before the end of 2025.

For longer-range transport, the RNZAF needs to replace two Boeing 757s. Their lifespan matures at the end of the decade, and they regularly suffer embarrassing breakdowns such as when transporting VIPs. AVM Clark said, "work has now begun on the project for the replacement of the 757. I'd expect, probably, that first approach to government will be sometime next year."

Militaries around the world are increasingly adopting UAVs, but the RNZAF has not yet leaped in with both feet. AVM Clark said UAVs are a real conundrum. The New Zealand Defence Force (NZDF) has some small quadcopters, and it has experimented with midsized UAVs. "We don't have any larger ones at the moment, but the most recent Defence Capability Plan...has got larger UAVs for regional surveillance...sitting out there [for] 2030 or just the other side of it."



“We’re just going through a defence policy review process at the moment, and out of that we expect that there’ll be a fresh Defence Capability Plan. So I think the question will be, how has the change in technology and New Zealand’s strategic environment changed things? What does that mean for drones, for UAVs? Does it change that current capability plan that we’re working to, or is it going to shift things around?”

Considerable attention has been given to retention and recruitment issues for the NZDF. Trade, specialist and management personnel have been hit particularly hard, and personnel problems were exacerbated by Operation Protect, the government’s response to COVID-19. This operation occupied more than 6,200 military personnel (more than 50% of the total military headcount) from February 2020 till February 2022. This “created significant fragility in the NZDF’s output delivery system,” according to Air Marshal Kevin Short, Chief of the Defence Force. “This protracted commitment affected NZDF capability and readiness states, including detrimental workforce impacts.”

Attrition rates actually increased after Operation Protect ended, driven by uncompetitive remuneration. NZDF pay grades are 5-16% behind equivalent labour market medians. There is no quick fix either, as it takes 5-15 years of education, training and experience to develop staff. “This puts the NZDF’s ability to generate outputs for the next ten years or more at considerable risk,” said AM Short.

As at September 2022, the NZDF had 650 fewer personnel than planned. The army had an annual attrition rate of 16%, the navy 12% and the air force 10%. “Workforce gaps are now placing limitations on how the NZDF can respond to domestic needs, sustain operational activity and generate outputs,” warned AM Short.

The NZDF reported on the RNZAF’s plight: “The air force is managing



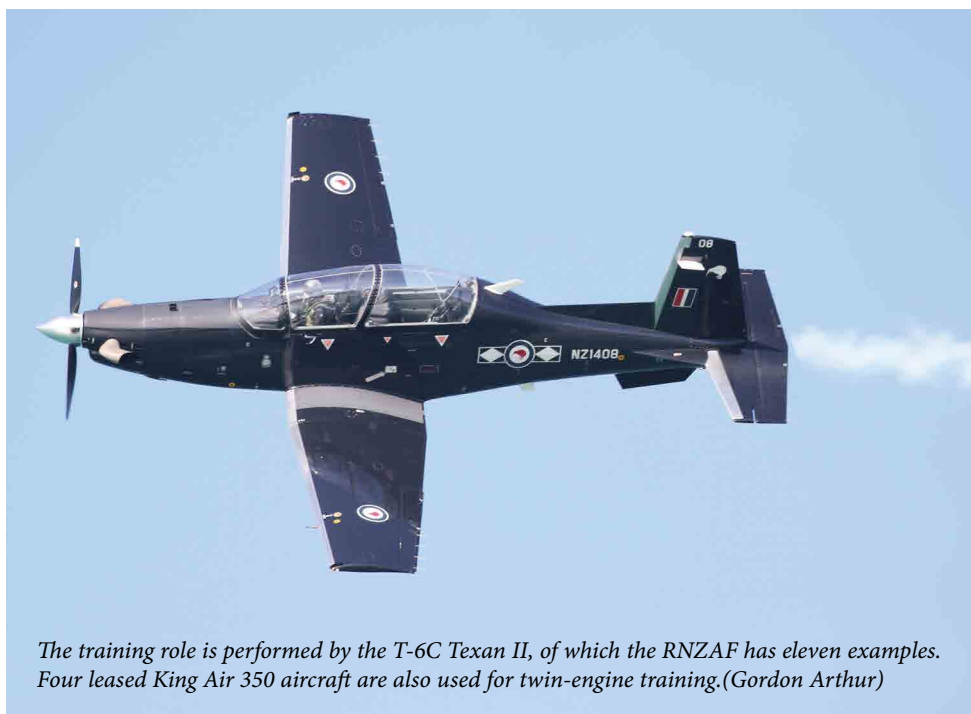
*The third P-8A Poseidon belonging to the RNZAF touched down in New Zealand on 19 May. The final aircraft will arrive in July (Gordon Arthur)*

**He said something had to give, and it “made sense to get out of the old kit and throw everything into the new”.**

a number of workforce vulnerabilities due to ongoing attrition and recruitment challenges, particularly within technical trades. While operational capabilities have been retained, they are often ‘one-shot’ in nature, with limited or no capacity to sustain over an extended period of time. The air force’s reduced capacity to sustain concurrent activities, such as managing obsolescence, preparing for the imminent introduction of new capabilities into service, regeneration training following Operation Protect commitments, and delivering outputs, is taking a toll on the workforce.”

AVM Clark agreed. “It’s a very significant issue for us, and attrition rates over the last eight, nine months have been very high across the defence force. It has meant that we’ve had to make some difficult decisions and, in my case from the air force, I had to decide to retire the P-3s ahead of schedule back in January.” The final two Orions retired on 31 January.

He said the limiting factor was technicians. “Really, what it meant was it was no longer possible for us, for a period, to operate both the new aircraft and the P-3 concurrently... in terms of needing the right numbers of engineers and technicians” He said something had to give, and it “made sense to get out of the old kit and throw everything into the new”.



*The training role is performed by the T-6C Texan II, of which the RNZAF has eleven examples. Four leased King Air 350 aircraft are also used for twin-engine training.(Gordon Arthur)*

# New Zealand implements new Defence Aviation Rules

Geoff Slocombe ♦ Victoria

The New Zealand Permanent Air Force was established on 14 June 1923, a centenary which was being celebrated throughout New Zealand in June this year. It became the Royal New Zealand Air Force (RNZAF) in 1937.

Since then, many different types of aircraft have joined the RNZAF fleet and been flown in both peacetime and war. Each has brought different flight operating and maintenance requirements which in turn have necessitated additions to the airworthiness rules controlling their missions.

Although continuously safe and effective, over time these regulator-driven 'top down' airworthiness rules became increasingly unique and unnecessarily complex, making the system harder to maintain and operate.

For example, in the past few months the RNZAF has received three P-8A Poseidons from Boeing with a fourth due to arrive shortly. These replace the venerable P-3K2 Orions which have been in service since the mid-1960s, but are now all retired. The P-8As are bringing new and improved capabilities which have modern airworthiness and safety requirements to maximise their employment.

The RNZAF has chosen to change its airworthiness system to the Defence Aviation Rules (DARs), developed from European Military Aviation Requirements (EMAR), which use a common language to describe airworthiness and safety standards across trades and aircraft types.

The RNZAF, from 1 March 2023, is now using a globally recognised airworthiness framework that improves commonality with many other Air Forces and civilian aviation operators, with a benefit being the improved performance and interoperability between these organisations.

Noting the European origins of the base-EMAR framework, the RNZAF remains connected to the international development and maintenance of these core standards. With a unique adoption approach due to their size and structure, the RNZAF has been invited to present to the international community



Wing Commander Hilton Baker RNZAF. (NZDF)

on their implementation journey at the EDA Military Airworthiness Conference 2023 in Bonn, Germany on 18-19 October of this year.

Attending this conference will also give the RNZAF team the opportunity

to participate in discussions on the possible future development of the EMAR framework, taking into account the importance of airworthiness in hi-intensity conflict situations and the challenges of information security management.

Geoff Slocombe had the opportunity to ask the DARs program manager, Wing Commander Hilton Baker, RNZAFs Deputy Chief Engineer, for more information about the new DARs and their implementation in New Zealand.

**Geoff: "How has the March 2023 implementation of the New Zealand Defence Aviation Rules been received by RNZAF, RNZN and visiting military pilots?"**

**Hilton:** "I'm told that the RNZAF has taken a slightly different path to some of our international friends in that we've incorporated our Operations (pilots and aircrew) into our DARs, whereas others have perhaps seen the EMARs as being a purely technical (engineering and maintenance) system.

"In general, the feedback I've had from our operator community has been largely positive, with the new system bolstering some areas of our decision-making, and better aligning parts of our organisation towards delivering efficient and effective military air operations".

**Geoff: "Do you expect any further changes to the NZ DARs following discussions at the October EDA Military Airworthiness Conference 2023 in Bonn?"**

**Hilton:** "Our DARs are linked into the international EMAR system that allows us to keep them updated and relevant well into the future. While I'll be joining the New Zealand contingent at this year's annual conference to share our implementation experiences and lessons-learnt, I'll be very interested to learn how other nations have tackled a number of the 'curly' elements that we've worked our way through."

**Geoff: "Where have you seen the biggest changes and benefits from the new DARs system?"**

**Hilton:** "The key change that we're coming to terms with is the empowerment and greater degree of 'freedom' that this new system offers us. Rather than being led down a directed path of compliance that we might have followed with our older system, the DARs allow us a left and right of arc within which we can safely and compliantly conduct military air operations. Our focus is shifting back towards organisational performance and outputs, rather than being solely focused on compliance."

In conclusion, implementation of the RNZAF's new DARs system has not added additional rules or compliance requirements, it has simply brought the RNZAF up to date with a realigned and complete system of regulation.

For many in the RNZAF, their actual roles and tasks have not changed, but there is now a common language to describe airworthiness and safety standards across trades and aircraft types.

An additional benefit is that the RNZAF are now using a globally recognised airworthiness system with a common lexicon, thus aligning the RNZAF to the widely recognised system used by dozens of Air Forces.

# Infantry Fighting Vehicles final bids submitted

Kym Bergmann ♦ Canberra

This long-running competition – some would say interminable – is hopefully entering its final phase with both Hanwha and Rheinmetall understood to have submitted revised bids on June 30. This was necessitated by a controversial decision in the Defence Strategic Review that cut the number of vehicles from an aspirational 450 down to a bare minimum of 129.

Since the purpose of the project is to replace more than 600 vintage M-113 armoured personnel carriers, it's clear that Army's combined arms doctrine has taken a big hit – even though the new vehicles will be far more capable than the ones they are replacing. Whether this number of IFVs is set in stone or whether towards the end of the production run in the early 2030s a few more are added on is anyone's guess.

Speaking of timing, the best case for an evaluation of a BAFO (best and final offer) is 60 days; add to that another 60 days for a recommendation to reach government – and add further to that the need to schedule at least one meeting of Cabinet's national security committee – cumulatively it might not be possible to announce a decision before Christmas. We hear the groans of industry, but this is the world that we now live in.

This will be followed by contract negotiations. If we use the recent example of negotiations with Hanwha for the local construction of self-propelled howitzers – which was a sole-source acquisition, by the way – that took a year. Putting all of that together, serious work might not start until 2025. It is all very well for the DSR to recommend that things happen faster, but Defence seems to have no collective idea about how to press the accelerator pedal when it comes to local production.

The fundamentals of the two vehicles – the Hanwha Redback and Rheinmetall Lynx – have not altered, though both bidders will be worried about the increase in unit price that will be an inevitable consequence of a reduction in overall



*Hanwha Defense Australia Redback Infantry Fighting Vehicle (front) and Rheinmetall Defence Australia LYNX KF41 Infantry Fighting Vehicle (back), conduct LAND 400 Phase 3 user evaluation trials at Puckapunyal Military Area, Victoria. Credit: CoA / Sagi Biderman*

numbers. Non-recurring costs – especially design, prototype engineering, and facilities – will now be divided across fewer platforms, with the inevitable results.

Before the BAFO process was required, Canberra rumours had Hanwha very slightly in front because of the better performance of the Redback during the 12-month Risk Mitigation Activity, which is now a distant memory. At this stage one wonders if there was any point to the RMA at all since the importance of vehicle performance now seems to be far less consequential than price, and this might assist the German bid.

This is pure speculation, but Korea is brilliant at manufacturing to scale – and that advantage might be reduced as the number of vehicles is cut. However, Army is still believed to have a preference for the design of the Redback based on a number of factors, including greater reliability and a more versatile 30mm main gun.

With a decision of this magnitude, international politics comes into play – and the perception is that the German government is playing very hard, emphasizing a recent decision to purchase additional Rheinmetall Boxer 8x8s from the Australian production

line rather than from the European one.

With Anthony Albanese attending the NATO meeting in Vilnius on July 11 & 12 he is certain to receive an earful from his colleagues from Berlin while there.

Rheinmetall is also highlighting the fact that they have been shortlisted in the US for the Bradley IFV replacement program. Known as the XM30 Mechanized Infantry Combat Vehicle – or optionally manned IFV – the decision was announced on June 26, pitting Rheinmetall against their old foe General Dynamics. Hanwha missed out. However, this vehicle will be substantially different from the one Australia wants being even larger and sporting a 50mm main gun – compared with 30mm here – and is not scheduled to enter service until 2027.

For their part, Hanwha continues to receive strong international interest in the Redback, most recently from Romania, which was an active process underway to acquire 298 IFVs. Other interested countries include Italy, Greece and Morocco – not to mention South Korea itself. However, many – if not all – of those potential customers are waiting to see which way Australia jumps.

That's going to take a while yet.

# European countries slowly turning away from HIMARS

Kym Bergmann ♦ Canberra

As we have written previously, HIMARS is an excellent Multiple Launch Rocket System (MLRS) as events in Ukraine are showing – but it's not the only one currently on the market. Many nations with advanced militaries have had longstanding interests in rocket artillery – Australia has not been among them until recently – and the two standout alternatives are PULS from Israel's Elbit and Chunmoo from Hanwha of South Korea.



*PULS predecessor: the Lynx (Elbit Systems)*

Both claim to have a number of advantages over HIMARS (High Mobility Artillery Rocket System) including: better performance; lower cost; earlier delivery; and higher levels of technology transfer.

In Australian Defence circles there has been overwhelming, if belated, interest in HIMARS with even the Defence Strategic Review recommending that we buy more of them, faster – seemingly unaware that such decisions are made not by us but by the US State Department. Defence seems indifferent to the fact that viable alternatives to HIMARS exist.

The European launch customer – pardon the inevitable pun – for PULS (Precision & Universal Launching System) was the Netherlands, with sales also confirmed to Denmark and an announcement for Spain expected soon. Germany is another strong possibility, especially as Elbit has established a relationship with Diehl for the manufacture of rockets in Europe. In our region, it is being tested by Thailand.

On April 3, the Dutch Ministry of Defence released a very lengthy, detailed statement about the purchase – an event that would leave secretive Australian decision makers shocked by the level of information it contains. This is in the extremely unlikely event that anyone in Canberra has even bothered reading it. Thanks to the wonders of Google translate, key passages in the seven-page

statement – yes, seven pages – read in part:

- The PULS system distinguishes itself in a number of aspects.
- PULS is equipped with two pods in the launch system and can therefore carry more missiles compared to the HIMARS system, which has one launching pod. This leads to greater operational sustainability. In addition, the PULS system simultaneously carries different types of ammunition in two pods.
- PULS has an open architecture which makes it suitable (in the near future) for munition of European producers. This contributes to increasing the European strategic autonomy. There is already a close cooperation between the German missile manufacturer DIEHL and the Israeli Elbit.
- Also the missiles are cheaper, so that more are included in the stock. The PULS systems can be delivered in the period from 2023 to 2026, the HIMARS systems are available significantly later. In addition, due to its open architecture, PULS versus the closed architecture of HIMARS, suitable for ammunition in the future from European producers.

In summary: the PULS launcher is vehicle-agnostic and contains 8 tubes rather than the 6 for HIMARS. Remarkably, the Dutch say that it is about one fifth of the price of the US system.

Not only can the system fire more rockets, they are larger (306mm v 227mm) but in the most common version they also have much longer range than the GMLRS launched from HIMARS (160km v 80km). In some variants they also offer terminal guidance, which is not yet a feature of HIMARS because it still relies on a combination of GPS and INS to send the weapon to a fixed point. Both HIMARS and PULS can fire large volleys of smaller unguided rockets, but they are of diminishing military value.

An early version of PULS called the Lynx MLRS – originally developed by IMI - was used to devastating effect by Azerbaijan against Armenian forces in the high intensity Nagorno-Karabakh war of 2020. In terms of conflicts, this was a prelude to the Russian invasion of Ukraine, with modern weapons inflicting huge losses on Soviet era massed formations of armour, vehicles and air defence systems.

If Australian planners are now obsessed with long range strike and keeping the enemy at a distance it seems remarkable that PULS has been ignored. Perhaps the logic is that we have invested \$70 million

*Chunmoo MLRS (Hanwha image)*

in the US Precision Strike Missile (PrSM) – Defence refuses to say what we are getting for that investment – which is a next generation HIMARS rocket with course correction and 500km range. The only problem with that is both the Israeli and South Korean systems already have rocket options in production that exceed this level of performance.

It should also be noted that the Netherlands is internationally recognised as being a very shrewd purchaser of defence equipment, running detailed engineering and cost evaluations of various products. They are one of the world's best-informed customers – and have a reputation for thoroughness and transparency.

The Hanwha Chunmoo MLRS is in a similar position of offering better performance than HIMARS at a lower cost. With the blood pressure of some readers in mind, we repeat that HIMARS remains an excellent product but in some respects, it is being overtaken by technology, price, and schedule.

In the configuration for the South Korean Army, Chunmoo has a dozen launch tubes in two canisters – meaning that they are typically deployed on an 8x8 truck, also made by Hanwha, rather than the 6x6 used for HIMARS. This means that it will not readily fit on a C-130J – unlike PULS – but it means that each launcher unit has a massive amount of firepower.

It is also gained success on the international market and has already been purchased by Saudi Arabia, the UAE and Poland – the latter ordering it in addition to HIMARS because deliveries can begin instantly. Norway is also a likely purchaser. Spain is evaluating it, but the latest information available to APDR is that PULS has its nose in

front. Romania is actively considering both systems.

Like HIMARS and PULS, it fires a variety of missiles of different calibres, so sometimes an apples-for-apples comparison is fraught. The equivalent of the 227mm GMLRS rocket in the Korean arsenal is the 239mm version that in its extended range configuration can hit targets at a distance of 200km with a variety of warheads. Larger rockets with ranges of +500km are available with four per launch vehicle, compared with the planned two PrSM rockets for HIMARS.

For Australian readers in particular, Hanwha has already offered local manufacture of the entire system based on full technology transfer. The company can do this because it owns the intellectual property for the lot – the missiles, launcher and vehicles. HIMARS requires US State Department approval for any technology transfer, which to date has not been forthcoming. Lockheed Martin is the prime system integrator, but components for the basic GMLRS weapon come from a variety of suppliers.

Given that Chunmoo and PULS have been ordered by several NATO nations, with more to come – not to mention South Korea and Israel – surely they are worth a proper look. Perhaps HIMARS will win an evaluation, but the alternatives should not be ignored just because they might take people out of their FMS comfort zone.

The Australian Guided Weapons and Explosive Ordnance Enterprise (GWEO) now has about \$4 billion available to spend on developing advanced Australian systems. Perhaps a few phone calls to Elbit and Hanwha are in order to find out how quickly they could begin manufacturing here in partnership with local companies.

# Introduction

## Defence industry cautious optimistic about consequences of AUKUS and the Defence Strategic Review

Kym Bergmann ♦ Canberra

As regular readers are aware, we turn a large section of the July/August edition over to Australian industry to seek their thoughts on recent topics of importance. The two most obvious – and connected – national security issues are the AUKUS agreement and the release of the public version of the Defence Strategic Review. We extended invitations to almost 40 companies, of which about half decided to share their views.

What comes across is a picture of guarded optimism based in part on the expectation that Defence spending will experience a real increase in funding in the medium term even though it will be going backwards for the next three years. However, this is tempered by commentary in the DSR about the need for more off the shelf purchasing, most of which unsurprisingly comes from the US.

Since Washington spends more on defence than the next ten countries combined, it is hardly a surprise that they are the world's largest arms exporter by far. Having said that, Australia spends a disproportionately large part of its budget on importing products rather than developing our own. The numbers jump around a bit but Australia is often one of the top five purchasers of US equipment along with countries lacking a meaningful industrial base of their own, such as Saudi Arabia and Qatar.

There are decidedly mixed feelings on the heavy use Australia makes of the US Foreign Military Sales system. While it is reliable, it is bureaucratic and relatively slow with very little chance for Australian industry involvement in production, although there are commercially significant opportunities for in-country support.

Perhaps it is time for the government to conduct an objective arms-length study into the costs, benefits and downsides from a local industry perspective of FMS purchasers so there can be a better informed debate on the topic. Such a study should not be conducted by the RAND Corporation, a perennial favourite of the Department of Defence and the findings of which have already done significant damage to the fabric of local industry, particularly for shipbuilding.

That should also be paired with a system that requires the service wanting the FMS product to show that they have made a genuine effort to do the work in Australia but for whatever reasons that has been impossible. And what we recommend is that real efforts must be made, not some type of bogus RFI the results of which are then completely ignored.

If it is good enough for employers to have to justify overseas recruitment, then there is no reason why the same principle should not



*HMAS Stuart undocks at the BAE Henderson shipyard in Western Australia on 22 February 2023. Credit: BAE Systems / CoA*

be applied to spending taxpayer dollars on equipment. Lip service is paid to the idea, but there are simply far too many cases of Defence making decisions to buy FMS without a serious look at local alternatives. It is also up to Ministers to behave more critically and push back whenever they hear assertions that it's impossible to do the work in Australia.

Another area where a great deal of improvement is necessary is to supply industry with accurate information about what projects are in the pipeline with approximate budgets. This is how the system works in the US and Europe – there are open discussions so that companies know what technologies to invest in and what sorts of skills they need to focus on over what timeframes. Australia used to be good at that, but now we are not.

If one were a conspiracy theorist, one might suspect that the current Defence system is designed to handicap local industry. Companies can justify investing in – for example – a new laboratory if they can point to several major opportunities coming up in the next five years where having cutting edge technologies will give a competitive advantage.

However, the process is now so opaque – and seemingly getting worse – that shareholders or international parent companies will find it increasingly difficult to justify investing in Australia. This will guarantee an outcome where only overseas companies have products judged to be good enough for the ADF.

Hopefully the following feature will provide further important information about how industry views future opportunities and challenges. While not everyone chose to participate, this is an impressive cross-section of local talent and experience.

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*Sir Nick Hine, Babcock Managing Director  
- AUKUS & International*

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Our marine Defence work includes everything from sustaining the entirety of the Royal Navy's nuclear-powered submarine fleet to owning and operating the UK's only licensed facility for refitting, refuelling and defueling nuclear submarines.

Babcock has lived and breathed nuclear safety and stewardship for more than 50 years, we therefore bring the knowledge and experience required to accelerate the capability in Australia and support the delivery of the SSN-AUKUS submarines.

As the premier warship sustainment company in Australia and New Zealand, underpinned by our global expertise, Babcock is ready to play our role in growing the nation's sovereign defence capability to support the

acquisition and sustainment of the new nuclear-power submarines.

Babcock is a proven, established capability partner to the Australian Defence Force, and we will continue to support the Commonwealth with the delivery of capability stewardship and complex support systems wherever and whenever required.

But now, more than ever before, delivering capability at pace is crucial.

In the short-term, Australia needs to urgently upskill and grow the relevant workforce and engage the workforce of the future in schools, universities and in further education institutions, creating a sense of nationalism and pride for anyone who chooses the Defence industry as their future pathway.

We need shovels in the ground now to prepare the relevant infrastructure for build, support, operation and ultimately disposal, and we need to turn our minds to the regulatory and support requirements needed to maintain and sustain nuclear-powered submarines into the future.



*Babcock Devonport*

# Birdon



One of the key recommendations of the Defence Strategic Review (DSR) is to accelerate and expand the Army's Littoral Manoeuvre capability, particularly the Medium and Heavy Landing Craft, LMV-M and LMV-H respectively. This capability is much needed to provide impactful projection into our region and will herald a change in Army's composition.

LMV-M and LMV-H are being acquired under the LAND8710 program, which also covers a replacement for the Vietnam War era LARC-V (LMV-A) and riverine tactical watercraft (LMV-P).

Australian owned Birdon, which is one of the tenderers competing for the LMV-M project, decided last year to invest in the construction of a prototype LMV-M, at their own cost and risk based upon an entirely Australian design, utilising extant Henderson WA shipbuilding capacity, and sovereign supply chain.

Given the DSR's focus on both the amphibious force but also on speed to capability, this initiative has proved insightful. The introduction of the term Minimum Viable Capability, which features heavily in the DSR, seems ideally suited to the development of rapid prototypes, such as Birdon's VESSEL-ZERO, which is our nickname for the LMV-M demonstrator.

Other projects such as Anduril's Ghost Shark, are applying a similar philosophy, where initial capability is delivered quickly and then iterated through subsequent releases. Early testing, user interaction, and ongoing refinement in conjunction with the customer are key.

Birdon's General Manager Defence, Joe Smith, said "The overriding rationale to design and manufacture a rapid prototype was to de-risk the project from a technical and schedule perspective. This entirely self-funded investment, advances any resultant project by a minimum of two years, and provides opportunities to obtain real-life learnings that

can be applied to subsequent iterations."

If Australia is to successfully implement the recommendations of the DSR then the Department of Defence will need to adjust their existing practices, which are referred to in the DSR as risk averse. Taking advantage of initiatives, such as Birdon's VESSEL-ZERO, could be a prudent start.

Birdon has successfully applied similar approaches in the US, most notably on the US Coast Guard 47' foot Motor Life Boat (MLB) Service Life Extension Program, where they acquired and refitted a commercial MLB to



*Phantom Works Global and Insitu Pacific demonstrated innovative capabilities at the inaugural AUKUS AI and autonomy trial.*

prove up their design and manufacturing approaches. This contract was followed by an even larger contract with the US Coast Guard to design and construct 27 Waterway Commerce Cutters that will be used to preserve trade through America's inland riverways. With contract wins in the US military sector exceeding AUD2.5 billion across four separate shipbuilding sites, Birdon is one of a number of Australian privately held firms that are gaining scale and capability through their endeavours abroad.

Whilst the DSR seems to open up the prospect of even greater overseas acquisition (Australia is already the fourth largest importer of Defence arms in the world) it remains critical that Australia grows its own Prime Contractors to increase our industrial

resilience by ensuring that Intellectual Property is created and owned in Australia. Proven Australian owned organisations such as Birdon should be preferred Defence Industry partners. CEA Technologies is one example, albeit in this case they have received the ultimate government backing by being acquired by the Commonwealth of Australia to become just the third Defence Government Business Enterprise (GBE).

AUKUS has the potential to increase opportunities for Australian owned businesses, particularly those such as Birdon with a footprint in the US. LMV-M, LMV-A and LMV-H all have equivalent projects in the US that have stalled and provide a rare opportunity for Australia to become the world leader in the design, development and export of these products. Aligning comparable Australian and US projects could realise significant export benefits.

As the only company to tender for both LMV-M and LMV-A, Birdon believes it is well placed to take advantage of these opportunities, to not only maximise commonality and interoperability across the LAND8710 products, but also more broadly with our AUKUS alliance partner. Birdon's experience designing and constructing over 500 Bridge Erection Boats for the Australian Army and US Army provides tangible confidence in their ability to replicate that success.

Mr Smith said "The DSR provides clear impetus to all things amphibious and provides great opportunity to realise export potential. Made possible by our ongoing investment in our Integrated Product Development Environment we can readily distribute shipbuilding across multiple sites and locations to suit the needs of the customer and projects. Our build strategy for the Littoral Manoeuvre Vessels supports the Government's commitment to continuous naval shipbuilding capability."



BMT



Graeme Nayler

Australia's shift towards acquiring nuclear submarines through AUKUS has garnered significant attention for its transformative impact on the country's defence strategy. While the focus often lies on the submarines themselves, it is crucial to recognise the importance of the support systems that brings them to life as a capability. The early stages of the nuclear-powered submarine program aim to support a rotational submarine capability, presenting significant opportunities throughout the submarine support system.

Graeme Nayler, Regional Business Director APAC, BMT, expresses readiness to support Australia's submarine capability, drawing on the organisation's UK experience in nuclear submarines and critical infrastructure support. BMT's in-depth knowledge of existing regulatory and assurance frameworks within the region ensures the retention of in-country skills and knowledge for an enduring sovereign capability.

With expertise in naval platforms, maritime infrastructure, and the environment, BMT is well-positioned to assist in the development, upgrade, and expansion of port and shoreside infrastructure required to support the unique needs of nuclear-powered submarines. The infrastructure development for these submarines will need to adhere to specific

international requirements and regulatory frameworks which will need to be localised. Additionally, considerations for nuclear safety and environmental compliance will demand a distinct approach, particularly as climate change impacts the region. Building climate resilience becomes a crucial factor in immediate-term projects, given rising sea levels and the prevalence of extreme weather events. The intersection of defence and environmental issues necessitates a cooperative and mutually beneficial management approach, wherein our environmental science and engineering capabilities contribute to advising on safe, reliable, cost-effective, environmentally responsible, and sustainable solutions.

Safety and regulatory assurance form paramount considerations in operating nuclear-powered submarines, requiring a shift in safety perspectives and regulations surrounding platforms, support systems, infrastructure, and operations. Given the criticality of nuclear systems and operations, stringent assurance regimes and safeguards must be in place, with adjustments made to existing systems to accommodate the unique requirements of nuclear-powered submarines.

The development of a nuclear-powered submarine capability represents a national endeavour that alters workforce requirements, necessitating an appropriately skilled workforce capable of meeting the challenges ahead. Specialised training for engineers, scientists,

dockworkers, maintenance crews, and security personnel will be essential to handle the specific demands and safety considerations associated with nuclear-powered vessels. We recognise the need for workforce development and offers its expertise from submarine programs worldwide to help build an enduring sovereign capability in engineering, science, and regulation. Collaboration among industry, government, and academia will ensure the availability of skilled individuals with practical experience, complementing their qualifications.

Our consultancy and advisory services position the organisation well to support AUKUS, given our extensive domain expertise in submarine programs across continents, decades, and submarine types. While the direct contracting for AUKUS submarine engineering work may still be years away, we can assist tier-one primes and government organisations in exploring design options for the infrastructure that will support these vessels. By shaping and preparing the infrastructure to withstand a changing climate, long-term support for the submarines can be ensured, acting as a fundamental input to their overall capability.

Industry plays a substantial role in the AUKUS partnership, although its involvement may not always be visible. To provide the necessary support, consistent engagement with industry is essential, treating it as part of the solution to ensure the readiness and success of the nuclear-powered submarine enterprise.

*Astute class nuclear powered submarine HMS Anson*

# Boeing



The 2020 Defence Strategic Update highlighted the way our world is changing. This has been strongly reinforced by Australia's recent Defence Strategic Review. Both of these seminal documents show the world finds itself in an increasingly congested and uncertain environment. This becomes particularly important as nations, including Australia, navigate demand – be it for materials, talent, capabilities or available budget – outstripping supply.

It is here where collaboration can be extremely powerful when used effectively. In Australia's case, it is our alliance with the United States, as well as our international partnerships such as the QUAD and AUKUS that are particularly beneficial.

The myriad of challenges, which are readily apparent, offers the Australian Defence Industry and the Australian Defence Force an

**“We’re taking real steps towards greater air and ground vehicle autonomy to transform mission-tailored decision-making, and we see this capability as a game changer in reducing the cognitive load on human operators”**

opportunity to reshape how we collectively work together to not only protect Australia's future, but also to highlight our value globally, more than ever.

Some of the key outcomes from AUKUS collaborations are the opportunities nations can gain from technology sharing. Many of us have been thinking and navigating in this space long before AUKUS had a name.

The establishment of AUKUS was a reaffirmation of the importance of maintaining a technological edge and self-confidence in Australia's Defence Industry. At Boeing we are always looking for new partnerships and markets to showcase Australian know-how and expertise.

We understand that collaboration across



*The AUKUS inaugural flight trials included our Australian autonomy technologies whereby UAS inspect a contestable area and the software automatically derives the optimal path to plan a safe route for ground force crews.*

AUKUS partners can, and must, be multi-faceted. Achieving the greatest value from the AUKUS agreement will require a broadening of pathways for collaboration, including finding opportunities for Australia to have a

role in contributing participating technology to enable greater collaboration of data sets in a technology lane.

Like all collaborative relationships, AUKUS will evolve, as will the regulatory environment, government-to-government engagement and industry relationships. What is certain is that more collaboration and greater sharing, particularly across industry, within the right framework to benefit all parties.

A most recent example of this AUKUS collaboration we were proud to be part of was a first-of-its-kind artificial intelligence exercise held in the United Kingdom showcasing Australia's autonomous capabilities. This UK demonstration builds on a successful activity for the Australian Army's Robotic &

Autonomous Systems Implementation & Coordination Office trialed last year.

Australian-based Phantom Works Global and Insitu Pacific flew uncrewed aircraft systems (UAS) in the United Kingdom to demonstrate Australian-designed autonomous technology – the only Australian industry participants in the trial.

Government and military representatives from Australia, the UK, and the United States gathered on Salisbury Plain for the inaugural AUKUS artificial intelligence (AI) and autonomy trial designed to guide the rapid and responsible adoption of these technologies into military use.

The exercise provided an effective testing ground to showcase our innovative Australian capabilities to inform rapid battlespace decisions using geospatial data, AI and machine learning.

Emily Hughes, director of Phantom Works Global describes our participation in the AUKUS trial as an invaluable opportunity to test technology in a real-time environment, as we evolve machine learning and AI capabilities to support complex military use.

“We’re taking real steps towards greater air and ground vehicle autonomy to transform mission-tailored decision-making, and we see this capability as a game changer in reducing the cognitive load on human operators,” she said.

Andrew Duggan, managing director of Insitu Pacific agrees, saying the AUKUS collaboration and integration between Phantom Works Global's machine-learning algorithms and Insitu Pacific's onboard rapid mapping capability provided operational advantage.

As the technology progresses, it will enable operators to control more autonomous systems in increasingly complex environments. And as the AUKUS partnership progresses, so too will the opportunities for greater tech sharing and collaboration among Australia, its allies and international partners.

CAE

CAE

**G**lobal defence forces are facing challenges in the timely development of mission-ready personnel caused by a growing recruitment and retention crisis, budgetary constraints, and increasing pressure on existing resources to meet maximum-rate operational throughput. These challenges are exacerbated by the ongoing strategic shift from the counterinsurgency-focused conflicts of the previous 20 years towards preparing for near-peer or peer conflicts of increasing complexity and scale.

Prioritising training as the most critical enabler in force capability ensures our vision for a highly skilled and resilient sovereign workforce is realised.

As presented in the Defence Strategic Review, “Defence faces significant workforce challenges that demands an innovative and bold approach to recruitment and retention.” These factors are expected to influence force design for the coming decade and demand a rapid transformation in the management and implementation of the force capabilities we know today.

However, the central catalyst to future success is often overlooked; the availability and training of our national workforce - the heart of force preparedness.

Mitigating the industry skills shortage in Australia is not only a matter of national security, it is now also an economic imperative. The Australian Defence Force (ADF) has committed to increase the size of the Defence workforce by 30 per cent. However, in every corner of the nation we are experiencing the greatest skills and labour shortage in two decades.

With the ADF workforce comprising of 2.8 per cent of the Australian population aged 15 years and over, a call for rapid recruitment and upskilling is occurring at a time of historically low unemployment (4 per cent) and high participation rates (66.8 per cent). We now experience a greater challenge when we realise the growth required to operate and sustain next-generation technology and respond to a

demand for new skills.

Globally, the approach to nurture, train and upskill defence personnel has largely remained unchanged since the 1980s, including instructional methodologies, technologies, and courseware. Australia’s ability to scale force capability essential to meet program and operational requirements is constrained, and attracting young recruits without an element of modernisation is a well-known challenge for many industries. So, how are we going to train and sustain a defence workforce ready for tomorrow?



Fortunately, CAE offers opportunities to nurture the next-generation student, transforming the learning journey of the workforce today to help our nation mitigate this skills shortage and accelerate force preparedness.

Digital technologies such as immersive synthetic environments, the use of data analytics, machine learning, and artificial intelligence are delivering improved efficiencies and effectiveness in training programs like never before. For the operator, this digital transformation promises accelerated graduate throughput, program efficiencies, and higher-quality training using less resources and expenditure.

Modern coaching tools such as Adaptive Learning Environments (ALE) are introduced to transform training frameworks by monitoring student performance, involving assessment technology that provides instructors and students with real-time feedback. This digital solution personalises a student’s learning

journey through detailed content development, powerful user interfaces, gamification, and curriculum mapping. ALE acts as a force-multiplier; freeing up instructors to focus on critical tasks, providing immediate automated coaching for students and empowering self-paced learning.

This technology does not offer a standalone solution, but forms a larger ecosystem designed to accelerate readiness, availability, and agility of our training force; the Integrated Learning Environment (ILE). Easily customised to match training to the needs of the operator, methodologies are introduced to drive learning retention, upgrade management, collaboration, and continuation to support the development of different skills required to operate highly advanced platforms and systems in complex individual and team environments.

Leveraging science of learning practices, these training methodologies can provide operators with a gauge of student stress, engagement, and cognitive workload allowing instructors to adapt teaching methods accordingly. Integrating digital technologies throughout this learning pipeline, from ab-initio to advanced training, can enable the ADF to proactively manage the production and sustainment of mission-ready personnel in response to the ever-changing environments and future learning needs of its workforce.

For Australia to build a highly skilled defence workforce amidst a national skills shortage, a shift in mindset is required. The processes, resources, and tools to design, implement, and sustain training systems will require close collaboration with industry and academia.

Prioritising training as the most critical enabler in force capability ensures our vision for a highly skilled and resilient sovereign workforce, capable of operating sophisticated next-generation platforms and systems in an increasingly complex world. Together, we can develop a mission-ready workforce, maximising our efficiency, affordability, and resourcefulness during critical times.

EOS



**A**UKUS and the Defence Strategic Review (DSR) should have impacts on EOS, with favourable implications for our business. The emphasis on directed energy (DE) technology in the AUKUS investment agenda aligns well with our expertise in high-energy laser capabilities. This positions us advantageously to capitalise on the opportunities arising from AUKUS and the DSR, particularly in countering Unmanned Aerial Systems (UAS). We are actively investing in the development of high-energy laser capabilities and plan to advance our current 36 kW fielded capability to a 50 plus kW DE system within the next six months.

The integration of innovation and capability development through the Advanced Strategic Capabilities Accelerator (ASA) is seen as a positive shift. This program holds the potential to fund technology development and acquisition into major



*EOS' directed energy system in the field.*

## **The goal is to strengthen technology collaboration, production, and industrial capabilities among AUKUS partners, while still remaining open to collaboration with other companies and capabilities.**

defence programs, providing a pathway from innovation to full capability acquisition. Such initiatives are crucial for sustaining a business ecosystem that supports capable Australian companies contributing to the defence industry in the long term.

While the Australian defence budget is expected to remain relatively unchanged for the next few years, it is important to consider the contrasting accelerated pace observed in global defence programs. Other countries are making significant investments and rapidly advancing their capabilities. Maintaining Australia's competitiveness and sovereign

capabilities requires careful reassessment of the defence budget in line with strategic needs. Sufficient funding is necessary for Australian research, development, acquisition of advanced technologies, and collaboration with international partners. Neglecting significant investment in Australian defence capability raises concerns about adequately addressing future security challenges. Proactive action is needed to align defence investment with security concerns and ensure effective

Australia has shown limited changes or acceleration in its approach to acquisitions compared to the global market, which raises concerns about the speed with which AUKUS and the DSR recommendations can be implemented. Lessons observed from Europe and the US response to shortages and consumption of military equipment highlight the need for ample ammunition and equipment in conflict situations. Efforts are underway in these regions to procure

replacement equipment and increase capacity. Australia seems to lag behind in these initiatives, and there might be a need to address this disparity to ensure effective implementation.

To maximise Australian sovereignty, AUKUS should be approached as a partnership that allows Australia to play an active role alongside the UK and US industrial base. Collaboration and contribution from the Australian defence industry are essential for the success of AUKUS. Working

alongside the US and UK defence industries to complement their capabilities in technology, production capacity, delivery, and support is crucial. AUKUS should not be seen as solely bringing US or UK technology into Australia but rather as an opportunity for Australia to leverage its science and industrial capacity to be a contributor to the broader defence industry capability.

Companies not from the US and UK should view AUKUS as an opportunity rather than a reason for concern. It presents a chance for the Australian industry to grow and gain access to US and UK markets. The goal is to strengthen technology collaboration, production, and industrial capabilities among AUKUS partners, while still remaining open to collaboration with other companies and capabilities.

GA



**A**t General Atomics Aeronautical Systems, Inc. (GA-ASI), we believe the DSR and AUKUS opens the potential for the company in a range of areas: space; artificial intelligence and machine learning; directed energy systems; countermeasures for uncrewed aerial systems; future autonomous systems and more. Whilst there are dedicated priorities listed for AUKUS Pillar 2, it seems logical that AUKUS and the DSR should serve as the catalyst for a much broader program of innovation in Australia and cooperation with close allies; and not be refined to a relatively small number of areas.

The Defence budget remaining roughly the same for a number of years does not appear to account for the lead time in investment in new systems in what the DSR has concluded is a much more challenging security environment. We believe there has been a DSR focus on big-ticket items such as naval platforms and weapons but, largely, the enablers have not received the attention they deserve.

The acquisition of long-range strike weapons is a good example: Australia is, correctly, buying them in much increased numbers and sophistication, but many of these weapons will require significantly improved targeting assets and processes to make them effective. Such targeting enablers on their own have acquisition lead times. Without them, the effectiveness and in-service date for new long-range weapons may be compromised.

We believe there is a shortfall in skills and a high-quality workforce more broadly and because recruiting efforts will likely undershoot on targets, the workforce and skills available to Defence will remain challenging.

Our company believes a good way to tackle this challenge is with acquisition system streamlining which could free-up workforce for higher priorities. And while it has always remained an easy target for cuts, a measured and cost-effective increase in contracted support to Defence appears to be one solution

in the demanding workforce environment.

We also consider the increased use of automation to overcome workforce challenges presents a real opportunity. As an example, five years ago, it took around 20 people for the launch and recovery of a MQ-9 Remotely Piloted Aircraft (RPA) at a remote location. This can now be achieved with as little as three personnel due to improvements in automation and communications.

Defence should consider the increased use of lease arrangements to acquire capability quickly or while they evaluate the true need or requirements. GA-ASI is leasing RPAS to a number of customers to provide them with rapid capability in the declining strategic environment in advance of formal deliveries. The USMC, India, Japan, and Poland are benefitting from such cost-effective arrangements.

The DSR was silent on at least one critical area: Armed Remotely Piloted Aerial Systems. The company believes that Australia needs an armed RPAS and, moreover, it needs one that's proven and ready now. Getting started with an untested new platform presents time, cost, and technical risk. Further, with a risk that a major ally/allies might not adopt the same system, Australia could be left with an unaffordable orphan unsuited for future combined interoperability. Hence, an in-service and highly cost-effective RPAS remains the sensible course.

The requirements are clear: Australia's armed forces need cost-effective, precise dynamic targeting for long-range fires; force networking, and an adjunct to other platforms such as P-8 Poseidon and the soon-to-be acquired Apache. The MQ-9B SeaGuardian is optimal to extend the capabilities, range and endurance of the Navy in doing anti-submarine warfare and other missions. SeaGuardian is currently the only MALE UAS operating in the Pacific.

Likewise for over-land teaming with Apache, which will remain vulnerable without

robust support in intelligence, surveillance, reconnaissance, and electronic warfare, the MQ-9B or MQ-1C Gray Eagle Extended Range RPAS remain the exemplar solutions amongst our key allies. These systems are suited for austere forward airfields with short runways and low fuel stocks; the systems can deploy rapidly, dynamically, and remain on-station for extended durations. To minimize up-front costs and both acquisition and operational workforce requirements, lease arrangements should be considered.

We believe a number of acquisition reforms (as alluded to in the DSR and subsequent dialogue) including with financial regulations, the Australian Standard for Defence Contracting requirements, airworthiness frameworks and testing and validation requirements are necessary to increase the timeframe to acquire new systems.

Clearly, the acquisition risk appetite must be increased when the priority to field new systems is so pressing.

Further, we believe the Services must have the ability to manage current new capability introductions while contemplating other new ones that are required to fill-out the required future force. They cannot be constrained in future capability development because existing entry to service capabilities exhaust workforce capabilities.

Finally, Defence's approach to airworthiness for uncrewed systems has failed to discriminate from manned platforms, thereby negating many of the advantages presented by uncrewed systems. To maximize the potential benefits under AUKUS and the DSR, sensible airworthiness changes (as adopted by allied nations) appear necessary for uncrewed systems.

From a leasing perspective, consideration should be given to how the government can bring a new capability on-line quickly through a lease; for example, via a contractor-owned, contractor-operated (COCO) arrangement.

# Hanwha



The Defence Strategic Review (DSR) provides us with opportunities and challenges. Not just for Australia, but for the wider Indo Pacific region, including South Korea alongside our AUKUS and Five Eyes partners.

As the DSR laid out "Australia's region, the Indo-Pacific, faces increasing competition that operates on multiple levels – economic, military, strategic and diplomatic – all interwoven and all framed by an intense contest of values and narratives."

Australian industry has been asked to step up and respond to what the DSR has outlined in its own words: "It requires strong defence capabilities of our own and working with partners investing in their own capabilities. We aim to change the calculus so no potential aggressor can ever conclude that the benefits of conflict outweigh the risks."

This is the cornerstone of impactful projection that Deputy Prime Minister and Defence Minister Richard Marles has spoken of. The ability to project force beyond our nation and into the Indo Pacific and beyond if needed. And that force is not only kinetic but diplomatic in nature.

The DSR recognises this and seeks to focus not just on capability, although it is important, but highlights the need for a Whole of Government approach. The funding envelope for the DSR rightly focuses on its identified priorities but timing will be crucial. International forums such as the Quad, ASEAN and the Pacific Island Summit that the South Korean government attended last month are important avenues for alignment.

At this summit, Minister Marles confirmed that Australia and South Korea are similar in how they see the world. South Korean forces now participate in military exercises organised by Australia. The relationship was upgraded to a strategic partnership in 2021 when the Land 8116 Phase 1 contracts was signed by our respective leaders.

HDA's investment in Australia is clear to see with the construction of our Hanwha Armoured vehicle Centre of Excellence or H-ACE in Geelong which will open next year. This facility is a concrete investment in Australia and Australian industry because HDA is here to stay.

Potential areas for ramping up co-operation include joint exercises and training, access to each other's facilities and defence science. This strategic agreement builds on the strong trade agreement that was signed in 2014. South Korea is now Australia's third largest trading partner by exports.

Hanwha, thanks to its work in South Korea and internationally, has expertise across a range of technologies and platforms that the DSR has identified as priorities. The expansion of the global business with the recent purchase of the old DSME shipbuilding business now known as Hanwha Ocean, is one of the largest shipbuilders in the world.

The DSR calls for an immediate focus on maritime capabilities and guided weapons and explosive ordnance or GWEO. AUKUS partners in Lockheed Martin and Raytheon will lead this push on GWEO. But there are other players in Australia that can support Defence and their lead partners in delivering capability, with sovereignty, as the push forward towards minimum viable capability is strengthened.

After all, in the exact words of the DSR – "This necessitates a managed, but nevertheless focused, sense of urgency. 'It is clear that a business-as-usual approach is not appropriate."

I think we're all supportive of updating the business-as-usual approach but we have different ideas on what that could look like in the detail and practice. I'm looking forward to the results of a range of reviews announced in the wake of the DSR and the path forward they will provide along with the release of the updated Defence Industrial Development Strategy later this year.

The DSR will take time to filter through various systems in the government and the wider economy. The speed and scale of the implementation will be key for the new approach to be a success.

South Korean industry is known for its speed and scale with quality. For a nation that was in ruins after the Korean War in the 1950s, the rebuilding of the country is impressive by any measure. From energy and transport to high technology manufacturing in vehicles and computer chips, South Korea is positioning numerous industries to export more widely.

Australia is part of this plan. Since HDA is here to stay, we plan on using our presence here to support taking Australian companies to the world and bringing the best of South Korea here.

Australia is not the only nation benefitting from this growth. South Korea's defence sales jumped to more than \$US17 billion in 2022 up from over \$US7.25 billion the year before, according to its Defence Ministry, as Western countries scrambled to arm Ukraine, resupply themselves and tensions rose in other hot spots.

The US \$21 billion deal with Poland, a key NATO member, last year included hundreds of Chunmoo rocket systems (similar to the US HIMARS system), K2 tanks, K9 self-propelled howitzers, and FA-50 fighter aircraft.

Poland is also preparing its Defence forces to receive US platforms alongside their Korean counterparts, including tanks and HIMARS. The systems can be deployed in partnership, with high levels of commonality between the platforms, training and their supply chains. Like South Korea, their geography places challenges upon them that we simply do not have to face in Australia.

AUKUS and the DSR are opportunities but there are challenges in implementing them in a timely way to support government, warfighters and Defence Industry as a Fundamental Input to Capability.

# KBR



When reflecting on AUKUS and DSR, it is important to consider also the significant broader effort focused on the Indo Pacific and the Indian Ocean. We're seeing an enormous investment in capability development and defence modernisation through many long-standing strategic partnerships and alliances.

Many countries, including the US and UK, are committed to strengthening capacity and relationships through security operations, humanitarian assistance, disaster relief and peacekeeping.

These activities being delivered today lay the foundation for many longer-term strategic regional elements of AUKUS and the DSR. Some of the key areas of focus for our business include building on our strength in infrastructure design, engineering and management, acquisition and sustainment of capability and workforce development in both Pillar 1 and Pillar 2. We're also well positioned to draw on the expertise within our global business, particularly in the UK and the US.

DSR and AUKUS really are 'once in a generation' activities that have the potential to create transformational change that will provide economic benefits right across the nation and establish a new level of collaboration between the three AUKUS partners.

Australia's sovereign security and operational defence capabilities will need to continually evolve to meet current and future threats. Developing these capabilities, while balancing the in-country skills and industrial footprint, alongside the cross-country and Government partnerships means that it is how the budget is apportioned rather than its total value.

A workforce with the right skills at the right times is fundamental to a successful Defence capability and to maintaining and extending national sovereignty. Without intervention Australia simply does not have enough people.

We must address how our nation can ensure its workforce availability and preparedness

aligns with industry requirements to create a pool of talent with the right skills at the right time in the right locations – now and into the future.

To achieve this, we must take a national approach to skilling and workforce planning and management in the defence industrial sector.

Through an enterprise approach that involves engaging partners uniquely skilled in workforce planning and skilling – such as KBR, we can mitigate the risk of workforces not being available to support and deliver to the operational requirements of our Defence Force.

This approach will help industry avoid competing against each other and will facilitate a workforce sharing model that enables people with relevant skills and experience to transition across projects as demand requires.

Further, under this model we can reduce the risk and costs of acquiring the skills required to sustain and deliver Defence capability, along with supporting other key Australian industries drawing from similar talent pools, including mining and infrastructure.

It's not an overnight solution but by taking the right steps now we can ensure the nation's future defence and security requirements are underpinned by a highly skilled and capable workforce well into the future.

Such strategic documents are enormously complex and they are never short of critics.

Due possibly to the long lead times that we're familiar with in Defence, we're very used to having plans and processes that are released and endure for several years. In the rapidly changing geo-political environment we are in now, I would like to see a more agile and collaborative approach so that strategic initiatives are an evolution rather than a revolution. This then would lay the groundwork for what I believe is key to achieving speed to capability, deeper and more transparent collaboration.

When conversations are open and transparent and we can honestly discuss shared outcomes, the environment immediately becomes more

collaborative. We get more done. We're more innovative. And we're more open to consider what's possible, rather than what's written in the contract.

Collaboration also serves to provide a much greater awareness of the deep and broad capability of the industrial ecosystem and ensures that industry and key partners have a sound knowledge of future defence and security requirements as well as the strategies that underpin them.

In addition, as reflected in the DSR, we need to tackle perfection versus a minimal viable capability. In many situations where risk can be managed, minimum viable capability can help deliver a faster outcome, providing a capability to meet a purpose that can continue to be modified during its service life.

The Commonwealth's ambition for some time now has been to increase Australian sovereign capability. The policy and regulatory environment needs to be balanced with the strategic reviews and create an environment that delivers for our defence force and national industrial sovereignty.

An increase in speed to capability does not necessarily mean the only answer is increasing Foreign Military Sales. Acquiring the minimum viable capability provides opportunity to update, integrate and evolve the capability overtime, in line with scheduled maintenance periods.

This can be further enhanced, as I mentioned previously, with greater collaboration and more transparent discussions about outcomes. How can industry and defence work more efficiently, leveraging each other's strengths, to deliver optimal outcomes for our Defence Force, at the right time, for the best value.

Innovation is also critical for future success. Defence innovation, in identified and targeted areas, through the new Advanced Strategic Capabilities Accelerator – replacing the Defence Innovation Hub and the Next Generation Technologies Fund is a vital component to enhancing our own Defence sovereignty.

# Kongsberg



KONGSBERG

**K**ONGSBERG is a company of Norwegian Heritage so AUKUS does not have an immediate impact on our business, despite Norway having strong bilateral relationships and common platforms and systems with all three of the AUKUS nations. The DSR, however, will impact our business in the near term. The 'in-principle' agreement for the recommended acquisition of the Joint Strike Missile (JSM) for the RAAF's F-35A platforms was a welcome outcome, following on from our recent contract for the Naval Strike Missile (NSM). KONGSBERG is becoming a key partner for the ADF in Long Range Strike.

KONGSBERG is hoping to contribute in other near and medium term Long Range Strike and Integrated Air and Missile Defence (IAMD) opportunities. The DSR recommendations to



*StrikeMaster*

twin-pack configuration, similar to that being employed by the USMC. An NSM CDS solution also provides weapon interchangeability with Navy.

## **KONGSBERG has no concern with AUKUS. AUKUS is clearly focussed on closer collaboration on a number of critical and emerging technologies, but it is also not at the exclusion of others.**

accelerate the acquisition of a Medium Range Air Defence (MRAD) and Land Based Maritime Strike (LBMS) capabilities are of interest, although the timeframes and approach remain unclear.

KONGSBERG has already established an Australian production capability and supply chain for key NASAMS sub-systems. NASAMS is a battle proven medium range GBAD capability that can utilise a mix of three complementary effectors, including the new AMRAAM-ER missile. NASAMS with AMRAAM-ER is a rapidly implementable MRAD solution, providing a common and integrated GBAD system across Army and RAAF.

Similarly, the NSM Coastal Defence System (CDS) is a fielded LBMS capability, currently deployed in NATO and under delivery to the US Marine Corps. NSM CDS provides a readily implementable LBMS system with different launcher options, including the 'StrikeMaster'

Every Defence company would like to see greater investment, but we recognise that Government has many competing priorities. The immediate challenge is to ensure that the appropriate funding is available in the correct years to allow Defence to deliver the DSR recommendations.

The international shortage of skills is both a risk and an opportunity for Defence Industry. KONGSBERG is growing quickly in Norway, and is increasingly looking internationally to grow capability and capacity. Our ability to transfer technology and know-how provides an opportunity for local production and sustainment of KONGSBERG products, as well as genuine access for Australian companies into our global supply chain.

In general, the capability outcomes of the DSR make sense - a deterrence strategy provides an emphasis on Strike and IAMD, and the rapid acquisition of these capabilities is consistent

elsewhere with other nations. Although the number of Infantry Fighting Vehicles and Self Propelled Howitzers are less than Army hoped, they will receive a level of capability, and will have established contracts to acquire additional platforms if needed.

For the DSR implementations to be delivered in the required timeframe, Defence and Government need to make capability decisions quicker. There are opportunities to deliver capability faster by acquiring 'off-the-shelf' products as opposed to developmental systems. In addition to getting into contract faster, it provides an opportunity to reduce delivery time by tailoring the lengthy ASDEFCON delivery process that assumes significant design activity. We are demonstrating that rapid delivery is achievable under Project SEA 1300.

For AUKUS, we must ensure that our Defence Industry has a meaningful role to play and that Australia does not just become a funding source for offshore activities. As a minimum, Australia must be able to maintain, sustain, update and potentially upgrade its capabilities from a landed industrial base. This also applies to the DSR recommendations.

For the DSR recommendations, schedule has rightly become the focus, and Defence must pick some 'off the shelf' solutions to deliver in the required timeframe. But there is nothing preventing the creation of sovereign capability for 'off the shelf' products - this is achievable with willing partners - and we are doing exactly that for NASAMS and NSM.

KONGSBERG has no concern with AUKUS. AUKUS is clearly focussed on closer collaboration on a number of critical and emerging technologies, but it is also not at the exclusion of others. AUKUS does not preclude or limit nations continuing to work with other partners. Norway has close bilateral relationships and established industrial partnerships with the AUKUS nations, and this is only strengthening with the global focus on IAMD and Strike.



# Leidos



**A**UKUS and the DSR create a number of medium-term opportunities for Leidos, and we look forward to seeing these develop in the near future. In particular, Pillar 2 of AUKUS features a range of capabilities aligned to Leidos, and we see opportunities for integrating a range of advanced proficiencies into Australian requirements.

## The investment in Defence remains a concern.

These impacts will likely vector into the second and third windows as advocated by the DSR. While they may not be immediate priorities, they will nevertheless be opportunities which require significant investment to support the achievement of the 'Focused Force' as outlined in the DSR. We would describe these opportunities as exciting, but requiring further detail on what exactly is required to support the ADF.

The investment in Defence remains a concern. However, we are encouraged by the planned further investment over the medium term and note concerns from the commentariat that Defence is struggling to spend its budget now. While Defence awaits these funding uplifts, we look forward to the delivery of reforms to CASG and the procurement systems of Defence which are currently underway, to ensure that processes can be sped up and that industry can better support Government.

The skills shortage will be addressed in part by clear procurement and industry plans that show the workforce the benefits of working longer term in defence industry. For more than a decade, we have brought graduates into Defence programs, and the DSR and AUKUS provide the workforce with a clear message of investment in the sector. We have great talent locally and the whole-of-nation approach motivates more talent to join.

This does not mean it will be easy and we must recognise that our AUKUS partners

have similar motivations and we will need to integrate our supply chains with theirs to ensure ongoing work. There are practical steps needed such as working with tertiary and vocational education models to significantly address known skills shortages. We must also look at education at younger levels, and particularly at getting more high school and

even primary school students interested in STEM so that they may provide the future workforce that will deliver AUKUS and the DSR into the 2030s and beyond.

The changes advised by the public version of the DSR only provide some of the picture of what is required and it will be interesting to see how they integrate. While we are encouraged

## The key to delivering these quickly is to ensure they have the right personnel with the right experience to support implementation of the changes required, but with both national skills shortages and the publicly-noted reduced capability of the civilians in Defence.

by many of the changes, we will be interested to see the outcome of the Surface Combatant Review and how that further impacts the future of the Royal Australian Navy. The key, however, is ensuring that with the vision outlined and the changes that the DSR recommends are delivered by Defence and the Government. It is clear we do not have the time to wait and the longer we delay, the more we put Australian security at risk.

Speed of delivery remains a challenge for Defence, particularly since significant reforms need to be implemented while also trying to rapidly deliver a range of capabilities. The key to delivering these quickly is to ensure they have the right personnel with the right experience to support implementation of the changes required, but with both national skills shortages and the publicly-noted reduced

capability of the civilians in Defence. This will provide a significant challenge. To support implementation, the Government should look to how they can increase the capability of Defence, both in uniform and in the civilian ranks.

The maximisation of Australian sovereignty through AUKUS and DSR implementation should focus on how major US and UK companies stand up significant support to deliver these capabilities in Australia. While Australia cannot, and should not, attempt to build every aspect of ADF capability, where possible there should be provisions to seek to develop sustainment and supply lines to support the most rapidly shifting and rapidly depleting areas of capability, particularly C4ISR integration, weapons and sustainment of critical high use rate items.

The DSR and AUKUS also provide the opportunity for new considerations of the force structure. To deliver the kind of surveillance and deterrence Australia needs across our region, we will need every soldier, sailor and airperson we have in the positions where uniforms are essential.

There is real opportunity for industry to provide additional support to the ADF including autonomous systems coupled with artificial intelligence and data fusion to aid decision making to the ADF that will free up uniformed personnel. Support across surveillance and reconnaissance provided by industry via as-a-service models offer additional capabilities to enhance the defence of Australia, and consideration should be given to how this could be delivered in ways not previously considered for the ADF.

LMA


 LOCKHEED MARTIN  
 AUSTRALIA

**W**ith the announcement of AUKUS came both impact and opportunity. The cancellation of the Future Submarine Program (FSP) had workforce and financial implications for Lockheed Martin Australia and New Zealand as we had invested in a dedicated combat system integration (CSI) team. Our commitment to both people and the future needs of our customer saw us make the step to retain our CSI workforce.

We redeployed 92 per cent of the 242-person team across Integrated Air and Missile Defence programs, maritime and weapon systems engineering, radar systems and training. A further 3 per cent of the workforce was assisted in transitioning to the Sovereign Shipbuilding Talent Pool. Taking a medium-term view of three to five years, we focused on what was important and where we should be best placed to support the ADF on future opportunities. In doing so we preserved a skilled workforce with the capacity to quickly mobilise to meet emerging opportunities.

In my view, the Defence Strategic Review (DSR) is accurate in articulating what capabilities Australia needs and how to sharpen our focus and be deliberate in our planning. The emphasis on long-range strike and nuclear-powered submarines is critical to maintaining Australia's force posture in the region and we're fully engaged to deliver wherever our capabilities intersect.

A networked 5th generation defence force integrating across domains is critical to achieving the effect sought by the DSR. Capabilities and platforms including Integrated Air and Missile Defence, F-35, Long Range Anti-Ship Missile and Aegis Combat System-equipped major surface combatants are integral to the ADF delivering this combat edge. As a company that firmly believes in capability, partnership and performance, we are well-positioned to support Defence to deliver its mission priorities.

When it comes to the commentary about

the Defence budget and whether it is sufficient for Australia to achieve its national security imperatives, my understanding is that the Government intends to increase the budget in the medium term. This should bring confidence that the security requirements of Australia will be met and hedges us against a potential deterioration in the global security outlook.

A growing shortage of skills has been raised as a universal area of concern that may affect the way forward for delivering capabilities. In a tight labour market, you need to have a compelling mission to attract talent. If you do, you will find the right people. An example would be the highly specialised military space sector. Lockheed Martin Australia and New Zealand recently called for expressions of interest to join our JP9102 Satellite Communication's delivery team - the response was outstanding with over 120 qualified Australians applying within the first week.

From undersea to space, we are committed to attracting and retaining the best talent to deliver key programs. Lockheed Martin Australia and New Zealand has several early career programs, including internships, apprenticeships, traineeships, and a graduate program. We are also focused on the continuous development of our employees with dedicated training programs for both technical and non-technical careers.

These programs align with our critical skills requirements and support our employees' career path aspirations. Certain key skill sets will always be in demand, and we have felt the pinch; however, I'm confident that with a compelling mission, we will continue to attract talented Australians.

The DSR made a number of acquisition and force structure changes to improve the long range strike capabilities of the ADF. To put it frankly, giving Defence a 'longer arm' is exactly what was needed. The Australian Army's current artillery reach is just 30km, however, through the efforts of successive Chiefs, this

force has a modern and flexible warfighting culture that will dovetail well into long-range strike capabilities. Australia needs a longer arm and the steps being taken towards achieving such a capability are highly appropriate.

In terms of the speed that new capability recommendations can be implemented, it's not as straightforward as some may think. In my experience, everyone has a view on how things could be sped up until they're actually in charge of it. They soon realise it's a complex challenge requiring a considered solution to get it right. I am not saying that things cannot be done more quickly; they can and Defence has shown the capacity to do so. The frameworks Government and Defence are putting in place are right and appropriate, and I'm very encouraged by how quickly this has happened.

Putting a 'three star' in charge of the GWEO Enterprise gives reassurance and provides a strong indication Defence is very focused on making sure this strategically important and vital national undertaking comes together in the timeframes required. While there is an emphasis on the timely delivery of those capabilities, there is a sense that key decisions are being prioritised appropriately and not rushed. I think that bodes well for where we're going.

When it comes to maximising Australian industry capabilities identified in AUKUS and the DSR, I think it is important to note that sovereignty is a term that has several interpretations, and none are really wrong. The Nuclear-Powered Submarine Pathway will bring sovereignty in the form of maximising our strategic might in our nation's interests, while also developing domestic industries to support this important capability.

Another example will be in the domestic manufacture of guided weapons in Australia. This will bring sovereign outcomes in the form of industrial base uplift, closer integration of the Australian and US defence industrial bases, and surety of supply.

NGA

NORTHROP  
GRUMMAN

**A**UKUS and the DSR are turning points in Australia's Defence policy and acquisition processes. AUKUS represents a new level of capability for Australia with nuclear-propulsion for Pillar 1 whilst setting the country up as a leader to develop new technologies under Pillar 2. The DSR however represents a turning point in Defence acquisition with its emphasis on precision, focus and urgency.

As part of a global business developing world-leading, often cutting-edge, technologies the impact on NGA is likely to be significant and we are assessing where we can offer capabilities that best match Australia's needs in a new and very different strategic environment.

In terms of timeframes, there is clearly a real drive in Government to address the most urgent priorities - for example the development of a new Integrated Investment Program by Q2, 2024.

We're proud of our reputation as a trusted industry partner and understand the scale of the task facing Defence. We're working closely with Government and with Defence to make sure we're able to effectively respond to the opportunities as Government's priorities become clear.

We believe Government's spend of at least 2% GDP represents a solid start for getting what Australia needs. As a Prime, we welcome Government's commitment to continuing the increase in GDP% of Defence investment as part of keeping Australia safe in an increasingly complex region. The funding envelope is an indication of the importance of Defence as a part of our national livelihood. Australia will be one of only a few countries committing 2% or more of their GDP on Defence. So, as a sector, we must make sure Defence gets what it needs within the parameters Government provides.

In particular, we welcome the \$19 billion funding commitment over the Forward Estimates to implementing the DSR alongside its \$368 billion commitment to AUKUS. These



*Northrop Grumman data fusion display (NG)*

are critical investments in Australia's secure future.

The skills shortage challenge is well known across the Australian economy. It severely affects us in Defence in industry as we have urgent priorities we're seeking to fulfil in sometimes very specialist areas. We're aware that Government is working hard to meet this challenge across the economy. In Defence industry, we're open to different solutions to

## **We do feel that closer alignment between the Australian AU immigration policy and the clearance requirements of Defence industry is required to move forwards.**

the challenges and looking to work closely with Government and Defence – including with allies and partners – to help address what is a national skills shortage in critical areas. We firmly believe that together, we in industry can solve problems once we focus on them.

We do feel that closer alignment between the Australian AU immigration policy and the clearance requirements of Defence industry is required to move forwards. More clarity is needed on how the repositioned Government immigration strategy will attract and/or prioritise capability to Australia from nations which will enable this capability to qualify for clearances post citizenship.

Regarding the acquisition and force structure changes made by the DSR, we welcome the

emphasis on a 'focused' force. This helps Defence focus with real clarity what it needs, and enables us to effectively respond. We also think Government has taken the necessary steps to get after the challenges it assesses, and we in industry seek to step in to meet that direction.

We are aware of the speed with which Government has directed Defence to act based on the DSR recommendations. It's central to the new strategic landscape. Speed calls for focus and prioritisation and we welcome the creativity this affords and urgency it directs. However, we also see the need to deliver with real assurance. We will work closely with Government and Defence to make sure we focus very keenly on Government's strategic and capability needs, on time and on target.

One area we would like to assist government to fine tune DSR is the sequencing and resourcing of key priorities to quickly reach Minimum Viable Capability. And to help them

plan and execute their Force integration ambitions, including possible Prime support to the Supply Chain in education and co-ordination for a better, more agile industrial base response to the drivers of DSR timeline and criticality.

AUKUS and DSR herald a much needed step-up on posture and preparation for the threats of our times. All allied nations are key to the peace and prosperity of the APAC region and all will need to work in partnership with Australia to maintain and protect that economic and geographic zone. There is no reason for concern. In a Democracy, competition and transparent legal processes under are the governance construct that functions for the national security and protection of the many.

# Nioa



**A**fter more than three decades of service with the Australian Army, I joined the team at NIOA in March 2020 as General Manager of the company's weapons and munitions business.

My Army career included command at various levels including operational service in Afghanistan, South Lebanon, Syria and East Timor. It's been a professionally rewarding and energising experience to step into the private sector with an industry-leading, privately owned Defence Prime like NIOA.

Earlier this year, I became CEO of NIOA Australia and New Zealand under a corporate restructure of the NIOA Group which also includes the Australian Missile Corporation, Barrett (USA) and joint venture company, Rheinmetall NIOA Munitions. My remit broadly includes Defence, Law Enforcement and Sporting sales in the Australian and New Zealand markets.

The AUKUS agreement and the more recent Defence Strategic Review are a call to arms for our country, following similar messaging in the 2020 Strategic Update and the 2021 formation of the GWEO enterprise.

These reviews bring immediate implications for a company like NIOA. If we are to improve supply chain surety and self-reliance, if we are to deliver greater independence for the ADF's operations and if we are to provide greater "strategic depth" through a viable, robust and vibrant defence industrial base, we will need to move quickly.

The DSR concludes that our strategic circumstances demand action now – not in the longer term.

NIOA has been positioning itself over the past three years to meet these challenges with specific investments in 155mm artillery forging, medium and large calibre ammunition manufacture and collaborative workspaces in key locations to ensure effective cooperation and engagement with our Defence and industry partners.

The acquisition of globally recognised US weapons manufacturer Barrett was also a key strategic move aligned to the LAND159 Lethality Systems Program.

Looking ahead, I feel the defence budget will remain about the same in the short term, although reallocation of funding from a number of programs will support the immediate growth of long-range strike capabilities and the GWEO enterprise, including the manufacture of 155mm artillery and other munitions.

My sense is there will need to be greater investment or a re-think of the operating model for facilities such as the GOCO munitions facilities at Benalla and Mulwala. The ANAO has delivered some scathing reports and assessments of how these strategic pieces of infrastructure were managed and maintained prior to 2020. New methods and models of funding these facilities could well be a part of "Accelerated Preparedness" moves.

Growing the skilled workforce necessary to support ADF growth and AUKUS objectives is absolutely the long pole in the tent for success.

That said, NIOA has had enormous success in growing skilled workforces at the Benalla munitions facility, and in the joint venture Rheinmetall NIOA Munitions (RNM) forge in Maryborough where we manufacture 155mm artillery projectiles.

Much of our workforce has come from adjacent industries such as mining and heavy manufacturing.

I note the DSR has recommended a number of acquisition and force structure changes. The remit for prescribing capability priorities, force structure and acquisition changes quite rightly sits with capability managers such as the service chiefs and the new Chief of GWEO, Air Marshal Leon Phillips.

The key for a company like NIOA is anticipating these changes and taking positive steps to ensure we can best support such capability and force structure changes when they arrive. For example, we have made

private investments of over \$12m in munitions manufacturing lines and facilities at Benalla.

This has allowed us to export medium calibre ammunition and refurbish the ADF's tank ammunition but more importantly, the lines can be rapidly expanded for the manufacture of other ammunition natures.

The DSR was quite critical of CASG capacity and resources to support timely and strategically relevant capability acquisition. I would point to the example of Tranche 1 of the LAND159 Lethality Systems Program as an example of where Defence and CASG effectively harnessed the capacity and agility of an industry partner like NIOA to deliver key capability outcomes in the face of significant challenges including a global pandemic, constrained supply chains and significant restrictions on travel and face to face engagement.

Giving Australian industry partners longer-term surety through the placement of multi-year orders for key munitions is crucial to both secure immediacy in munitions supply and investment in our sovereign munitions industrial base. US Army Secretary Christine Wormuth has recently adopted this approach, seeking Congressional approval for multi-year orders for key munitions to secure cost savings and promote industrial base stability.

Nothing will kill the rapid transition to Australian sovereign manufacture of munitions faster than the ongoing acquisition of munitions and other capabilities through Foreign Military Sales (FMS). FMS acquisitions stifle investment in Australian industry, have questionable quality and lead time dimensions and preclude investment in national infrastructure and sovereign capabilities. Moreover, given the well-publicised challenges the US is seeking to overcome in its own industrial base, FMS acquisitions risk being seen as a burden on Australia's key ally rather than contributing to a longer-term munitions supply solution.

# Nova



The historic combination of the AUKUS and Defence Strategic Review 2023 (DSR) gives rise to significant opportunities for Australian industry across a broad spectrum of capability needs over a multi-decade timeline. The clear challenge that Defence and industry now have is the “how” and “when” of integrating that broad spectrum into a coherent, long term, roadmap.

This process is not just about the creation of a new Integrated Investment Plan, or the enhancement of the long-term Defence Policy for Industry framework via the new Defence Industry Development Strategy (DIDS) planned for release at years end. Rather, what awaits addressing is the challenge of how to link, leverage and operationalise the full combination of AUKUS and DSR requirements, and the national science, research and industrial base, and the needs of the industrial bases of our trilateral partners in a meaningful roadmap that addresses complicated needs over a complicated series of timelines.

This scale of integrated planning has not been attempted by Australia, the United Kingdom, nor the United States since World War Two. It will also require fundamental change to how Government procurements works in all three nations.

The establishment of the AUKUS framework created the foundation for this new future, bringing into being a rolling series of activities, opportunities and deliverables involving not just nuclear submarines, but also the Pillar 2 Advanced Technology programs. Addressing undersea capabilities, Quantum, Advanced Cyber, Artificial Intelligence and Autonomy, Hypersonic and Counter Hypersonics, and Electronic Warfare, Pillar 2 comprises a mix of new trilateral activities, and the expansion of many existing bilateral activities which were already live prior to AUKUS establishment.

AUKUS has already created opportunities for Nova Systems, drawing upon our professional services capabilities in direct support of

Government programs. We have longstanding credentials and expertise in supporting the legacy Australian submarine fleet and this now contributes to the planning for the next generation of boats.

Our professional services line of business represents a source of stability for Defence in this period of complex change; we are a proven, independent, trusted partner to Defence. The recent extension of the MSP framework for another three years will help amplify that

**This scale of integrated planning has not been attempted by Australia, the United Kingdom, nor the United States since World War Two.**

structural effect through the first epoch of post DSR reforms.

We have invested across our 20+ year history to develop skills, expertise, proprietary tools and approaches that directly support this critical moment in history for Australia and its strategic partners. We are in parallel, actively exploring and engaging in industry-to-industry activities across the full spectrum of both AUKUS pillars. We have the bonus of being an independent agent with international reach back, having expanded into the UK in 2011 to provide flight test and capability assurance services for aerospace, defence and government.

We see the combination of AUKUS and DSR as being well-aligned with the strategic posture adopted by Nova Systems in both Australia and New Zealand over the past two years and amplifying the importance of a sovereign tier two industrial partner as a source of assurance for Defence.

In terms of new capability opportunities for industry that are presented by DSR, the combination of accelerated acquisitions of critical systems, plus the strong emphasis on new technologies and innovation, has already opened up new possibilities and we are actively progressing these in multiple areas.

Nova Systems is implementing and advancing a truly digital transformation of

our world-leading Test and Evaluation (T&E) expertise as part of ensuring our critical sovereign role as an independent assurance partner for industry and Government evolves in lockstep with technological possibility. We see Digital Engineering and the use of synthetic environments as facilitating a new level of agility and pace in how Government and industry will achieve and deliver new warfighter capabilities. As stated in the DSR and reiterated by the Defence Minister Richard Marles: Defence no

longer has the luxury of taking the time to get a capability perfect. We need to adopt a minimum viable capability model to have new capabilities put into service quicker, and Digital Engineering is fundamental to this.

We are underpinning our digital drive through establishment of the new Nova Systems T&E Centre of Excellence, the foundational focus of which is helping train and develop Australia's urgently needed, expanded defence sector workforce. We recently launched a Test and Evaluation Advanced Practitioners Course focused on teaching critical skills, including scientific test and analysis techniques to test systems-of-systems and integrated force assurance.

Our broader investment in the complimentary fields of Digital Mission Engineering and Model-Based Systems Engineering is not only introducing greater technical rigour into T&E activities, but also empowering our future T&E workforce by providing them with innovative tools, resources, and opportunities to explore and apply their skills.

Harnessing the power of a data-centric and collaborative approaches to engineering will directly assist in the meeting of the complex web of AUKUS and post DSR needs by helping speed-up the introduction into service of disruptive capabilities.

# QinetiQ

# QINETIQ

The Defence Strategic Review (DSR) represents significant changes to Australia's Defence structure, posture and operations. Within the complex strategic circumstances that Australia currently faces, this shift in our approach to national defence will require strong partnership and collaboration across Australia's defence ecosystem.

As an integrated global defence and security company, QinetiQ combines a breadth of technology and engineering expertise with a deep understanding of international defence and security requirements, and decades of experience creating, testing and using innovation to support our customers' mission.

The impact, or more precisely, the opportunity of the DSR for QinetiQ is connected with our ability to support Defence in accelerating the acquisition of critical capability, while ensuring that capability is fit for purpose and operationally ready. Unlike traditionally vertically integrated defence primes, QinetiQ operates across platforms, systems and lifecycles. We are capability focused, rather than platform orientated, and with more than 8,000 technical experts across the globe, we are readily able to apply innovation to turn individual platforms and systems into integrated capabilities and then assure that they work.

In Australia, we share a longstanding, deep partnership with Defence and are a trusted provider of technical advice, engineering, design, test and training solutions. Whether it be delivering Australia's mine warfare capability at HMAS Waterhen, providing critical special mission training and threat representation at QinetiQ Air Affairs, or supporting Defence Science and Technology Group (DSTG) with engineering services from simple mechanical designs through to complex electro mechanical systems. We have the breadth of sovereign capability in Australia coupled with the strength of our global workforce to support the delivery of the DSR

and strengthen Australia's national security.

The implementation of the DSR, along with the defence capability decisions made in the context of the AUKUS partnership, will require a prioritising of investment choices to best respond to an ever-changing threat landscape. Bringing Australia's defence industry along on this journey will be vital to ensure we can respond with agility and pace.

The AUKUS Nuclear-Powered Submarine Pathway is transformational for Australia – in size, complexity and capability. Delivering an enduring capability of this magnitude is undoubtedly a complex endeavour. One that will require strong partnerships with our AUKUS counterparts across government and industry to leverage the required expertise and support. From analysing manoeuvrability to evaluating the stealth performance of submarines, we are recognised around the world for our strong underwater engineering, technical services and test and evaluation expertise.

As a global company with three home markets in Australia, the UK and the US, we recognise the power of partnerships and collaboration with allies that share common values. Our company's strategy similarly focuses on this partnership model. Collaborating with our customers and across our global company to optimise our capabilities internally, leverage our technology and engineering solutions globally, to deliver greater value to our customers.

As warfare continues to evolve with a widening threat spectrum, so too must our own approaches to defence innovation adapt. We welcome the Government's recent announcement to invest in the establishment of the Advanced Strategic Capabilities Accelerator (ASCA) and focus on AUKUS Pillar 2 advanced capability areas such as hypersonics, directed energy and autonomy.

Australia is an innovative nation with a deep history of problem solving and invention. As the Government looks to reshape the

nation's defence innovation ecosystem with the establishment of ASCA, success will be realised through the forging of strong and enduring partnerships with industry and academia as well as striking the right balance of international collaboration, knowledge transfer and investment in building Australia's defence industrial base.

We are incredibly proud of the long-standing and deep partnership between QinetiQ and DSTG in solving some of Defence's most challenging problems. The most recent example of this being a collaborative program to co-develop and manufacture a high-energy defensive laser system prototype in South Australia. By leveraging QinetiQ's high-power laser technology and test and evaluation expertise in collaboration with DSTG's scientific innovation, this is just one early example of AUKUS partnership delivering enhanced sovereign capability to the ADF, and contributing more broadly to this field.

QinetiQ sees, as many others in Government and industry have noted, that one of the biggest challenges to successfully implementing the DSR is ensuring we invest adequately in developing and maintaining critical skills for Australia.

This is not a challenge that can be solved by Government alone and requires an innovative and bold whole-of-defence ecosystem solution. One where Defence, industry and the education sector work together to ensure we have a strong pipeline of suitably qualified and experienced people.

Looking ahead, we see a requirement for a strong technical workforce to support transformational programs such as the Guided Weapons and Explosive Ordnance enterprise and the AUKUS Nuclear-Powered Submarine Pathway.

We are investing in the critical skills of tomorrow, today. Leveraging our expertise gained from our 25-year Long-Term Partnering Agreement with the UK Ministry of Defence.

# Saab



It is clear that the Defence Strategic Review (DSR) and AUKUS will impact all Australian defence industry business.

Some impacts are immediate as companies seek to pivot or rapidly advance certain projects. Others will be medium to long term and relate to the identified changes to capability procurement, evolved risk profiles, and the availability of highly skilled workers needed to deliver new capabilities.

Understandably, much of the early media focus regarding the AUKUS partnership and DSR has been on the acquisition of nuclear-powered submarines. But these announcements are much broader than that. They frame how the Commonwealth plans to provide stability and security in the Indo-Pacific region by making major changes to defence policy, force structure, and capability requirements. This will include lifting the capacity to rapidly introduce new technologies in close partnership with industry.

Implementation of the DSR and AUKUS will require collaboration across the defence industry and careful planning by government to ensure Australia takes full advantage of existing capabilities and grows the skilled workforce required to successfully introduce new technology. There will also need to be an investment and long-term commitment in strengthening critical sovereign capability to ensure Australia has the expertise, experience and capacity to play the regional role set out in the DSR.

Saab Australia has been working collaboratively with the Commonwealth and industry partners to design, develop and deliver complex systems integration solutions in Australia since the 1980s. Our delivery of sovereign capability underpins our enduring partnership with the Commonwealth and has seen the creation and continued enhancement of the Australian Combat Management System (AusCMS), the design, development and ongoing sustainment of the Collins Class platform management system (ISCMMS) and

most recently the design and delivery of world-leading deployable health capabilities.

Through this long-term partnership, Saab has developed sovereign Australian capability to design, integrate and deliver end-to-end Combat Management System solutions. The AusCMS is a sovereign-designed and proven combat management system developed in collaboration with the Royal Australian Navy (RAN) and integrated with Australian ship designs, radars and sensors. The sophisticated system ensures commonality and interoperability; crucial factors when introducing new technology and platforms which will be required to fulfil the objectives set out by the DSR and AUKUS.

As a Combat System Integrator (CSI), Saab has delivered the AusCMS as a key product within the combat system onto the Anzac class frigates, Canberra class amphibious ships, Supply class replenishment ships and Arafura class vessels. Based on the AusCMS, Saab is also developing and supplying the Australian Interface (AI) to the Aegis combat system for the Hunter and Hobart class programs, further delivering high-end warfighting capabilities to the RAN. Success on these platforms comes from our expertise in systems integration and the customisable AusCMS, readily integrated onto many different platforms, including Military-off-the-Shelf (MOTS) platforms, linking multiple sensors and weapons with low risk.

To support ongoing combat systems innovation and collaboration, Saab is establishing the Sovereign Combat System Collaboration Centre in Adelaide, as part of its headquarters expansion. This Centre will include production, prototyping, system integration and test facilities, to enable collaboration between the Commonwealth, defence industry and small and medium-sized enterprises.

With global experience across maritime, deployable solutions, land, air, space and cyber, Saab is positioned to support the

Commonwealth working towards the fully integrated ADF identified in the DSR, working seamlessly together to deliver enhanced combat power.

Saab is already investing to transfer existing skills and technology to the space domain to leverage decades of experience in command and control. Innovation in this area will deliver high value for money solutions and further develop Australian sovereign capability in this emerging sector.

However, technology isn't the sole enabler of advanced military capability and must be complemented by growing a highly skilled workforce. Defence businesses will need to work together to achieve this.

Industry leaders have a responsibility to develop a pipeline of skilled people to ensure our programs are successfully delivered but also to deliver continuous innovation and strengthened sovereign capability. This is not a matter of self-interest – it's critical to businesses being able to scale up and deliver defence programs in the timeframes set out by the DSR.

Saab is rapidly growing our national footprint and workforce. We recently broke ground on the expansion of our headquarters in Adelaide to accommodate workforce growth, which is approaching 900 employees, and operate facilities in Brisbane, Canberra, Melbourne and Perth – all working towards delivering the Commonwealth's capability priorities.

Recruiting and supporting veterans and graduates is a priority for Saab. The skills and values that veterans can bring to the defence industry are invaluable, particularly their unique understanding of the Australian Defence Force's user requirements. Saab's graduate program has grown significantly in recent years and we are targeting an intake of 50 people in 2024.

We also continue to establish and foster collaborative relationships with other industry leaders to grow the defence industry workforce and strengthen sovereign capability.

# European space industry about to enter a new era with Ariane-6

Kym Bergmann ♦ Canberra

As we have previously detailed, placing a 5-tonne satellite into geostationary orbit 35,786 km above the earth's surface is not an easy task with less than half a dozen launch providers able to achieve this goal. For sensitive military payloads that excludes Russian and Chinese options, reducing the realistic choice to one European and probably two US suppliers.

Of these, the European company Arianespace has by far the closest links with Australia and something of a shared history being responsible for the launch of every Optus satellite (for over 35 years) – including C-1 with a military payload and the 2 satellites of the NBN Project as well. Having said that, the ultimate decision about launching the JP 9102 satellites will be one made by prime contractor Lockheed Martin – and presumably with the agreement of the customer, the Department of Defence.

Arianespace is undergoing something of a technology transition, having moved to the Vega-C for smaller payloads and – more relevantly for Australia – about to introduce the Ariane-6 for heavy launches. It replaces the venerable Ariane-5, which has been in use since 1996. The new lifter is designed to carry a slightly larger payload with even greater reliability at a reduced cost.

**For military satellites, the ability to shift position is critically important as a defensive measure against both physical and electronic threats.**

Speaking to APDR, the CEO of Arianespace, Mr Stephane Israel, explained the situation:

“We have made an offer to Lockheed Martin – and we know them very well, having to date launched 47 of their satellites, the first one being in 1984. I cannot go into commercial details of our current offer, but we would be delighted to work with them.

“Ariane-6 is based on technologies that we have already mastered. It's a new launcher with 2 or 4 solid boosters and the main and upper stages with liquid engines – all of which are well proven. My point is that Ariane-6 is an overall improvement of Ariane-5 – which has had a total of 116 launches, the last one being scheduled for July 4th - and we all benefit from this unique heritage.”

The first fully assembled Ariane-6 has been at the launch site in French Guiana for some time undergoing various tests, including a firing of the Vulcain 2.1 main engine expected mid-July 2023. The cryogenic upper stage is being fully tested in Germany. The avionics and flight software are developed and tested close to Paris on a fully representative iron bird. All of the metrics of the program are positive, and Mr Israel says that they are now in “the last mile” leading up to



*Ariane-5 launch (Arianespace image)*

the maiden launch.

The maximum capacity of an Ariane-6 for geostationary transfer orbit is 10.5 tonnes and even before its initial launch scheduled for just a





*Ariane-6 graphic (Arianespace image)*

few weeks from now the company is developing the Block 2 version that will increase that to 11.7 tonnes. This is likely to be the variant for the Australian launch since it will take Lockheed Martin several years to build and test the satellites.

As well as having sufficient power to reach geostationary altitude an equally important factor is the precision with which a satellite can reach its final position. This is a complex undertaking, because the payload is released at a much lower altitude and needs to have sufficient velocity and direction to get to its final point. All satellites carry fuel to manoeuvre and, if used up too much during this phase, it shortens the mission life of the platform.

Because satellites cannot yet be refuelled in orbit – especially not in distant geostationary orbit – they have to survive with what they carry when launched. They also have large solar arrays, but that is to provide electrical power for the equipment. The fuel is used in bursts to counteract the effects of the lunar and solar gravitation that perturbs the orbit pole, to control the accurate position of the satellite, to turn the satellite in the event of sun storms or oncoming debris, to shift positions and to de-orbit the satellite at the end of its life.

For military satellites, the ability to shift position is critically important as a defensive measure against both physical and electronic threats. As many nations – some of them not friendly towards Australia – invest in anti-satellite technologies it will be vital for both ADF and whole of government communications for the JP9102 constellation to be as robust as possible. Agencies such as DFAT and the AFP will also be partially dependent on the capability for their international communications.

If the satellite reaches its final position with a lot of fuel preserved it can make a major improvement on its longevity and manoeuvrability. For example, Arianespace was able to place the 6.2 tonne James Webb telescope so precisely on its path to its final location at the L2 Lagrange point 1.5 millions km from earth that its life has now been increased from 10 years to 20 years. This is a remarkable technical achievement for which the world's astronomers will be eternally grateful.

In other words, it would look like a false economy to attempt to save

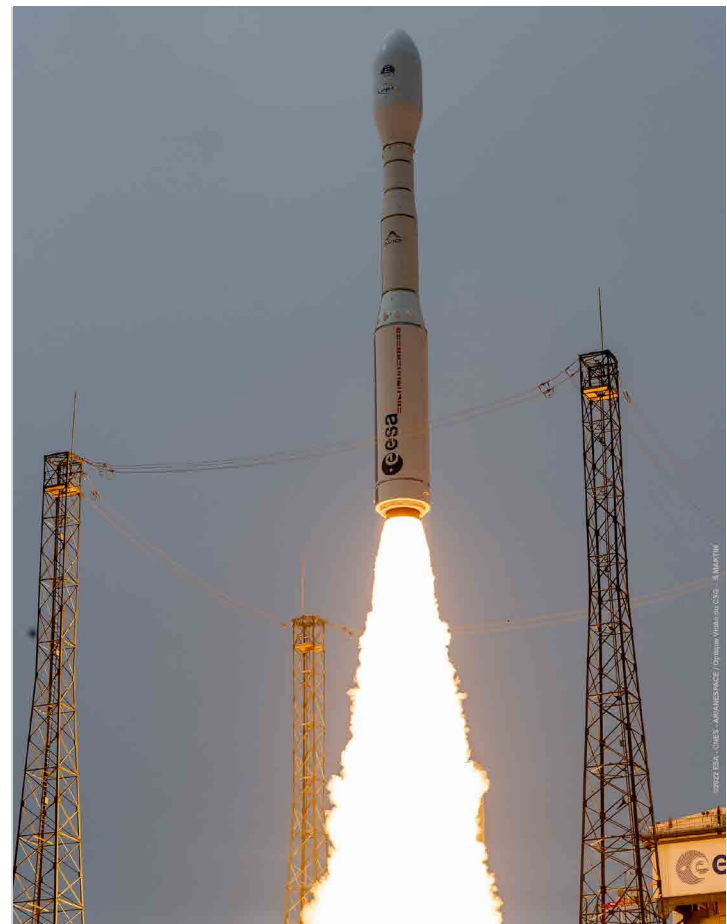
money by selecting a cheaper but far less precise launch option – and even more so for critical national security payloads.

There is already one Australian customer for Ariane-6 and that is for the launch of the future Optus-11 satellite to replace the D-1, which went into orbit in 2006. This is a next generation software-defined communications satellite built by Airbus Defence & Space, who

**“A vital element to the successful deployment of a new satellite are the partners that we work with. We are delighted to be partnering again with Arianespace, who’s demonstrated over many years the ability to consistently deliver a precise deployment and speed to orbit”.**

surprisingly were eliminated from JP 9102 despite a technically excellent offer. Arianespace won an open competition and at that time Ben White, Managing Director, Wholesale, Satellite and Strategy at Optus said:

“A vital element to the successful deployment of a new satellite are the partners that we work with. We are delighted to be partnering again with Arianespace, who’s demonstrated over many years the ability to consistently deliver a precise deployment and speed to orbit”.



*Vega C launch (Arianespace image)*

# Fixing Defence acquisition – a greater role for industry?

Kym Bergmann ♦ Canberra

The Defence Strategic Review was scathing of the current Australian acquisition process, describing it on page 20 as not fit for purpose. Just as bluntly, it calls for the system to be scrapped and replaced with something that delivers capability faster and does not let the search for the perfect become the enemy of the good. Basically, it concludes that we need to be more focussed and to move faster.



*The SIG Sauer MCX, in .300 Blackout calibre, has been selected as the platform for the Personal Defence Weapon System, which will provide dismounted combatants with a light, modular, and compact weapon system that can be rapidly optimised for specialised roles.*

*Credit: CoA / Tristan Kennedy*

The report also calls for more off-the-shelf purchases – though it is difficult to see how this is compatible with a greater role for Australian industry. The sad truth is that local industry is tiny compared with the large amounts being spent on Defence, precisely because for decades the system has been oriented to purchasing stuff from existing production lines, especially those in the US, rather than spend on developing our own capabilities. We are now reaping what Defence and successive governments have sown.

The question is how these seemingly incompatible directives of the DSR can be implemented. The Review itself does not deal explicitly with the future of CASG - the Capability Acquisition and Sustainment Group (the successor to the Defence Materiel Organisation) – saying instead that various options need to be developed as soon as possible. For example, on page 90 one of these options should examine how to: “... streamline and accelerate the capability acquisition process for projects designated as strategically urgent or of low complexity.”

Worryingly for Australian industry, the preceding point is that the need for local content and manufacturing has to be balanced against the need for speed.

One possible way around this dilemma is to involve Australian industry at a far earlier point in the whole capability development cycle to make quicker and smarter decisions about what can and can't be done locally. As a brief digression, this is what the US tech disruptor Palmer Luckey – who has regularly featured in these pages – advocates via his company Anduril Industries, currently co-developing the Ghost Shark XL-AUV with the RAN.

Another example of a successful industry-led acquisition process is LAND 159 where a local company has been tasked with testing, acquiring and delivering various weapons to the Army. The Head Land Systems, Major General Andrew Bottrell announced on September 20, 2022, the awarding of the Lethality System Project (LAND 159) Tranche 1 contract to Queensland-based company NIOA.

He explained that between now and the mid-2020s, NIOA will use a range of sub-contractors to supply new sniper rifles, pistols, shotguns, personal defence weapons, fighting knives, and an assault breaching system to the ADF, with many of the new weapons to be on display at Land Forces.

Major General Bottrell said the contract would include munitions and ancillary equipment including optical and laser systems, torches and suppressors for the new generation of small arms.

“Under the contract, NIOA will be the prime contractor, working with local and international suppliers and weapon manufacturers on the acquisition, integration, delivery and ongoing support of the new weapon systems from 2023.”

“This is a bold step into modern weaponry to quickly improve Australia's defence preparedness.”

“NIOA has demonstrated a long term commitment, private investment, and a focus on growing sovereign industrial capability to support Australia's war fighters.”

“The collaboration between Defence and industry means we will acquire the best available weapon systems for our troops.”

The role of NIOA has been to approach the market on behalf of the Commonwealth to identify and evaluate Tranche 1 weapon systems and provide acquisition and support recommendations to Defence, along with all cost data. Defence reserved the right not to accept recommendations, but the reality seems to be that the system has worked smoothly.

To guard against things such as potential conflicts of interest, Defence



*Australian manufacturer ZU Bladeworx's Double-Edged Fighting Knife has been selected as the basis of the ADF's new Hand-to-Hand Fighting System. The black, double-edged fighting knife has a 100mm blade, is machined from a solid billet of A2 steel and features a non-slip handle and retention ring. Credit: CoA / Tristan Kennedy*

has specified that the contract will be conducted in an open, impartial and transparent manner. It includes performance-based measures which are supported by a governance framework.

For their part, NIOA believes that the contract has gone extremely well, though preferred not to contribute directly to this article. Evidence from various suppliers supports the view that the process has been rapid – much more so than if this had been a traditional Defence tender.

An example is ZU Bladeworx Australia – a small company with a very funky name – which is contracted to NIOA to manufacture the new close quarters combat fighting system for Defence. The company says this system includes a double-edged combat knife, designated the H2HFW, along with a trainer blade and a machined hard case sheath.

Managing Director Matthew Lucarnus told APDR:

“NIOA continues to demonstrate their commitment to Australian Sovereign Capability by supporting a local small business, ZU Bladeworx Australia, to produce this weapon system 100% in Australia. We have found Nioa’s support instrumental in helping us compete at the high level required of a major government contract.

“From the very start, NIOA has provided us with crucial support to help us complete the contract milestones. This has included numerous members of their staff being dedicated to helping us with everything from understanding complex government contracts, understanding our workplace health and safety requirements, adherence to engineering standards, and locking down quality assurance procedures.

“We feel like we are part of a much bigger team as NIOA has taken a mentoring role with us, which we are very grateful for. As we continue to roll the product out successfully, the assistance that the team has provided so far is evident in the successful production results we are achieving.

“It is amazing that a Prime Defence contractor like NIOA can help a small Australian business like Zu Bladeworx provide a world class product, locally produced, that can compete on the international stage.”

The contract with NIOA to provide a multitude of services has relieved Defence of a large amount of work, with the prime contractor issuing and evaluating various responses from the more than 200 companies who have registered interest in the project. This has led to 29 RFT suites to 35 Australian and 17 international producers of weapons, munitions and various sundry items.

To give a further indication of scale, NIOA has received around 1,300 items of hardware as part of its evaluation process, with everything needing to be tested, stored and catalogued. This involved 800 weapon firings using 31,000 rounds and was conducted during a remarkably short three month trial period – which might sound like a lot of fun but is actually hard work.

The consequence is that Tranche 1 will deliver a significant capability enhancement to Sniper and Close Combat Capabilities, with the following mission systems approved by Government for acquisition:

- Anti-Materiel Sniper Capability
- Long Range Sniper Capability
- Sniper Surveillance Capability
- Sidearm Weapon System
- Hand-To-Hand Fighting Weapon System
- Personal Defence Weapon System
- Combat Shotgun System
- Assault Breaching System

As well as testing all the various weapons and products, NIOA – which is 100% Australian owned – will also be responsible for their introduction into service but also their through-life support, including modifications and upgrades.

Given this success story, it would seem logical in the light of the DSR for this Australian industry acquisition model to be used more frequently. We asked Defence to contribute their views via a series of questions. For reasons known only to themselves, they have declined to provide even a single sentence to this article.

# Impact on Australia if China invades Taiwan

Geoff Slocombe • Victoria

Most readers of APDR living well away from Taiwan are unlikely to be losing sleep over the future prospect that China may invade the island to fulfil the President of the People's Republic of China, Xi Jinping's quest to have the Chinese Dream - a set of personal and national ideals for the advancement of society.



*Dr. Malcolm Davis, Senior Analyst in Defence Strategy and Capability.  
Credit: ASPI*

Taiwan is a long way away, with a serious ocean gap to the north of Australia, then Indonesia's Islands at the foot of the South China Sea offer a further defensive barrier. Besides, hasn't the United States committed to defend Taiwan in the event of an attempted invasion by Chinese forces?

There are four scenarios that have to be considered when thinking about a possible Chinese invasion of Taiwan and the impact that could have on Australia.

Firstly, no invasion occurs, because the Chinese leadership consider the risks are too high for the potential reward, even though they keep threatening to invade Taiwan, and have been conducting what they call 'Invasion rehearsal' exercises within Taiwan's defence zone.

This is the current situation, but military planners and their strategist advisers consider that this situation could well change in the next three to five years.

Secondly, China does invade Taiwan but is driven back again by the US and its allies, including Australia.

This would involve massive losses to the US and its allies, but would ultimately prevail, requiring Australia to commit its forces, such as are left of them, for the long term. This scenario will not be discussed further in this article, Elements of the consequences are contained in the third scenario below.

Thirdly, that the United States and its allies mount a defence of Taiwan but are defeated by China's overwhelming naval and air forces.

Fourthly, the Chinese invade Taiwan, but the United States, under new leadership, decides not to defend Taiwan.

APDR has been fortunate to be able to interview Dr. Malcolm Davis, a Senior Analyst in Defence Strategy and Capability, at the Australian Strategic Policy Institute (ASPI), to discuss the third and fourth of these scenarios.

## **APDR: "How likely do you consider Australia could become involved militarily against China?"**

**Dr. Davis:** "The prospect of a Chinese 'invasion of Australia' is extremely low, given China's focus on taking Taiwan and controlling the South China Sea. The PLA is likely to focus on these two strategic directions, rather than trying to project sufficient forces further south in a manner that would allow an invasion of Australia's north.

"Indeed, the modernisation of the PLA is likely to lead to it having the means to invade and occupy Taiwan by 2027, but it seems unlikely to have the ability to invade Australia, which is a vast territory, and much more distant from China's shores than Taiwan.

"Having said that, if China were to emerge as a victor, from a protracted war in the Taiwan Strait with the US and its allies (including Australia), with the US pulling back to Hawaii and Guam, it's likely that China could then deploy forces closer to Australia to coerce a future Australian government into accommodating a Chinese sphere of influence across the Indo-Pacific, including in the Southwest Pacific.

"If such a move by Beijing remained uncontested by a defeated United States, and PLA forces were forward deployed to nearby locations, such as in the Southwest Pacific, then China would be better positioned over the longer term to directly threaten Australian territory with a broader range of forces."

## **APDR: "Do you worry about a military clash in the Taiwan Straits?"**

**Dr. Davis:** "When Australia considers the growing military challenge posed by China, the focus is very much on the growing risk of a crisis across the Taiwan Straits that leads to a major war between China and the United States and its allies, including Australia.

"The potential scenario of a miscalculation or deliberate clash in the South China Sea, that escalates into a wider war, is also a real possibility. Both scenarios would see the locus of conflict away from Australia's air and maritime approaches, but with a high risk of Chinese missile attacks on Australian soil, to threaten military bases in the north that could be used by the United States, as well as Australia's other regional allies to support military operations".

"Furthermore, such a war would likely see Chinese cyber and counter-space attacks against Australian and allied interests, or Chinese threats to the security of sea lanes of communication upon which Australian energy and economy interests depend. Such a war could easily become protracted given that neither the US or China would likely be able to inflict a decisive blow quickly."



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*Amphibious armoured infantry fighting vehicles (IFV) attached to a brigade under the PLA 73rd Group Army maneuver in ferrying and assault wave formation on June 15, 2023. (eng.chinamil.com.cn/Photo by Lai Kun)*

**APDR: “What messages have you been giving Australian defence planners about the current and potentially the near future situation”.**

**Dr. Davis:** “I think Australian defence planners thus need to be very focused on the prospect for a protracted (lasting months or longer) major power war emerging from a Taiwan Straits crisis or an incident in the South China, potentially as early as the second half of this decade, that would be almost certain to involve the ADF both in an on-going direct conflict role, and a supporting role in terms of hosting US and other allied forces, and ‘gap filling’ US forces in the rear to allow them to be re-tasked for forward combat operations against the PLA.

“In such a scenario, it is highly likely Australia would be directly attacked, most likely by air and missile threats, as well as counterspace and cyber threats, but an ‘invasion’ in the traditional sense seems a lot less likely.

“The Defence Strategic Review, which has a ten-year timeframe in its considerations, will need to consider not just new types of long-range strike and surveillance capabilities for ‘impactful projection’, but also, investments in autonomous systems for greater mass, investments in combat sustainability and force resilience, including a greater prioritisation for integrated air and missile defence (long-range – not short range), and plan for a protracted war, rather than a short conflict. I don’t think ‘invasion’ is a credible scenario, at least in the immediate sense, but the risk would rise of Chinese military coercion if China emerged the victor in any US-China conflict over Taiwan”.

**APDR: “There is a United States Presidential Election coming up at the end of next year which has the potential to select a new President who might not want to get into a war with China. What could happen?”**

**Dr. Davis:** “A US that chooses not to intervene in a Taiwan crisis – is also a concern, particularly if there is a change of administration after

November 6th 2024. Such a scenario would see China move quickly to occupy and pacify Taiwan, subdue its population, and then use Taiwan as a key location from which to coerce other Indo-Pacific states.

“Beijing’s goal would be the creation of a Chinese-led sphere of influence and regional security order, as part of a broader revision of the existing western-led rules-based international order.

“In this scenario, absent the US support for key allies in the Indo-pacific, it’s likely that South Korea and Japan could move to acquire nuclear weapons.

“Australia would be much more exposed to Chinese coercion to align with Beijing and accommodate Beijing’s interests.

“For defence planners, US strategic retrenchment creates huge challenges in terms of sustaining the ADF’s ability to operate and defend our air and maritime approaches – AUKUS would collapse – and much of our military capability that depends on access to the US military technology base would erode in effectiveness.

“It is at this point that Beijing would be most threatening to Australia, particularly if they had secured forward basing rights near Australian territory. The scenario of ‘invasion’ then becomes more credible”. If there were a Taiwan Strait battle between Chinese Forces and the United States and its allies, expert analysis and opinion read by APDR is that both sides would suffer heavy losses very quickly. APDR has seen reports that each side could lose two aircraft carriers and up to 18-20 other major combatants in the first few hours. Lots of aircraft would be lost quickly.

Neither side would admit to losing the battle and so there would continue to be skirmishes while lost naval vessels and aircraft were replaced as quickly as possible.

It would only be if one side or the other secured an overwhelming victory over their opposition by inflicting losses so great that opposition



*A submarine attached to a naval submarine flotilla under the PLA Northern Theater Command steams in the sea during a training exercise recently in waters of the Yellow Sea. (eng.chinamil.com.cn/Photo by Wu Haodong)*



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*A towed howitzer system attached to an artillery element with a regiment under the PLA Xinjiang Military Command fires at mock targets during a field live-fire training exercise in mid-April, 2023. (eng.chinamil.com.cn/Photo by Zhou Yubin)*

could not continue to fight, that there would be an uneasy peace in these straits.

It goes without saying that Australian forces engaged on the US side would run out of ammunition, bombs and missiles very quickly, while also sustaining losses of warships, aircraft and personnel which would have a huge impact on the Australian Defence Force's capabilities for operations over the next several years.

Another point not yet discussed, but which has serious ramifications for western countries including Australia, is that Taiwan manufactures the largest share of computer chips in the world. If China invaded, the Taiwanese government would be highly likely to destroy these factories immediately, creating a world-wide shortage of these chips, crippling the information systems that depend on them.

Although other countries have started building their own chip factories, in three to five years time Taiwan will still be the largest chip supplier.

If Australia lost access to Taiwanese computer chips, as might other countries, where would Australia get its supplies? Chip shortages would cause great difficulties in maintaining national security systems, military platforms and weapons, which could make us much more vulnerable.

Should we be building specialist chip factories ourselves as a matter of urgency?

Finally, we need to prepare for the worst case materially and psychologically. Key actions include deepening our relationships with the US, India, South Korea and Japan.

Everyone knows that the best way to defend a country is to raise the stakes so high for the potential attacker that they will not attempt an invasion.

Australian Foreign Minister Penny Wong, speaking at the National Press Club in mid-April, said 'We must ensure that no state will ever conclude that the benefits of conflict outweigh the risks. This is fundamental to assuring the safety and security of our nation and our people. Our foreign and defence policies are two essential and interdependent parts of how we make Australia stronger and more influential in the world.'

But this comes at a huge cost to a country like Australia. To deter China, along with our allies, we must significantly boost our annual defence expenditure. Not by a few million, but ending somewhere in the range 3% to 4% of GDP, compared with the current just over 2% of GDP.

Imagine the funding problems that this would cause to Australia's annual Federal Budget.

**APDR: "Thanks very much Dr. Davis for the opportunity to discuss the potential impact on Australia if China invades Taiwan".**



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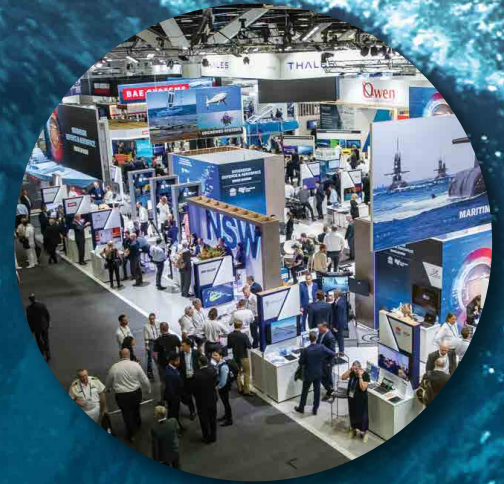
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# News from across the Tasman

Geoff Slocombe ♦ New Zealand

## The reinvigoration of the RNZN boarding capability

Bespoke, short-notice Deployable Boarding Teams are being developed by the RNZN as a specialist capability out of HMNZS Matataua by creating small, deployable, mission-based detachments utilising a wide range of equipment, platforms and tools to achieve their objectives.

The RNZN's Matataua provides deployable maritime capabilities to conduct operations that safeguard access to the harbours, inshore waters and littoral zones of New Zealand and wherever NZDF deployed forces are required to operate.

Matataua, which means 'Eyes of the Warrior' in English, is capable of being rapidly deployed by air, sea and land into operational areas. Specialist teams within the groups can be quickly assembled into a composite force. The groups are:

- The Military Hydrographic Group (MHG)
- The Clearance Diving Group (CDG)
- The Logistics Support Group (LSG)

Matataua is also able to operate off the RNZN's dive and hydrographic vessel, HMNZS Manawanui and from two Rapid Environmental Assessment (REA) boats Takapu and Tarapunga..

In May 2023 Lieutenant Jack Walters (Matataua Boarding Officer) and a team of 11 Matataua personnel demonstrated their skillset while travelling from Auckland to Wellington aboard Royal Navy patrol vessel HMS Spey.

LT Walters says from a cost perspective, why not simply send in a well-trained and ready team that can transition into any ship, or even operate from a coast with small boats?

"Between different ships boarding teams there were often different standards of execution meaning there wasn't a centre of excellence for best practice. You'd do it, and then you'd post off the ship.

"But having this sustainable unit at Matataua means we can record lessons learned as we continue to develop the capability. With this, we have already had quick success with upgrading our kit and it means we can provide a world-class boarding operation, ready to move at a moment's notice."

The time in Spey demonstrated the idea of deploying with a partner nation that didn't have full boarding capability. The Deployable Boarding Team conducted different phases of the boarding from kitting up and receiving the brief all the way to launching in Spey's RHIB, which returned to conduct a 'self-boarding'.

Personnel across the Royal New Zealand Navy can undertake a five-week boarding team course, learning critical incident management, tactical communications, firearm training, advanced first aid, room clearing, search techniques and ladder skills.

Typically, these persons arrive from different ships and

units and disperse back to them, which means that RNZN boarding parties can become platform-centric, associated with a particular ship for a particular period.

In order to prepare that ship for patrols that involve boarding other vessels, the entire ship has had to be 'worked-up' for an operation – a costly endeavour in personnel, training and overheads.

Under this new concept, Matataua is providing a scalable, fully-equipped and qualified boarding capability, available at short notice for "fly-in, fly out" deployments to support an RNZN ship on operations, or the vessels of partner nations.

Currently Matataua is able to deploy two teams, with plans to continue to grow it to three teams.

## RNZAF's 3rd P-8A POSEIDON ARRIVES

RNZAF Base Ohakea welcomed the arrival of a third P-8A Poseidon on 19 May, following a long flight from the Boeing Company's workshops in Seattle.

The RNZAF's No. 5 Squadron will operate four Poseidons, which replace their predecessors, the P-3K2 Orions. The squadron's six Orions were retired in January 2023 after 55 years of service.

The Poseidon is a long-range anti-submarine warfare, anti-surface warfare, intelligence, surveillance and reconnaissance aircraft capable of broad-area, maritime and littoral operations, including humanitarian aid and disaster relief missions.

The fourth and final Boeing delivery will arrive by mid-2023. The first Boeing P-8A arrived in New Zealand on 12 December 2022 and the second on 20 March 2023.



*RNZN Boarding team approach their target vessel.  
Credit: NZDF Media Centre, with APDR editing*

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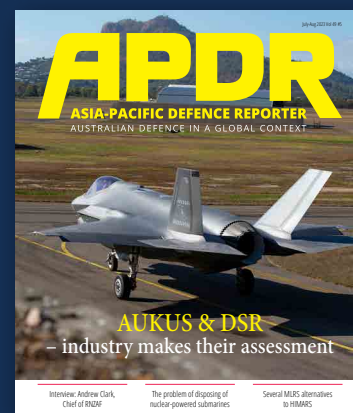
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## Events

### SIA Conference

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18-20 SEPT 2023

+61 2 6290 1505

### Seoul ADEX 23

17-22 OCT 2023

[promotion@seouladwx.com](mailto:promotion@seouladwx.com)

### Defense & Security 23

THAILAND

6-9 NOV 23

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[yaowalak@asiandefense.com](mailto:yaowalak@asiandefense.com)

### Indo-Pacific

SYDNEY

7-9 NOV 2023

Tel: +61 (0)3 5282 0500

[expo@amda.com.au](mailto:expo@amda.com.au)

### MilCis

CANBERRA

14-16 NOV 2023

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