

# THE NAVY

THE MAGAZINE OF THE NAVY LEAGUE OF AUSTRALIA



**THE ROYAL AUSTRALIAN NAVY'S  
CURRENT STATUS AND FUTURE**



**RECRUITMENT & RETENTION:  
THE WARRIOR FACTOR**

**COST SAVINGS WITH  
THERMOPHOTOVOLTAIC**

**WHY WE NEED A NAVY**

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**Front cover:** HMAS BALLARAT (FFH 155) conducts an Evolved Sea Sparrow Missile firing at sea, 2022 (image LSIS Leo Baumgartner)

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## Deterred by the Defence Strategic Review?

This delayed issue of *The NAVY* has at its core the Defence Strategic Review, examined alongside the defence of Australia by NLA Defence Analysts in *Flash Traffic* (pages 16-24). As underwritten by the Navy League of Australia, Statement of Policy (SOP), page 4. The four papers in this issue reflect, in part or full, the maritime perspective advocated by the NLA in *The NAVY* over many decades, in accordance with the SOP – as updated regularly, and verified annually at the League's General Meeting.

*The NAVY* begins with an essay by long standing maritime commentator, Kelvin Curnow (2nd place professional entry) entitled *The Royal Australian Navy – its current status and future prospects within the strategic context*. Kelvin presciently concludes:

*Only reform of the selection processes and setting a continuous build programme in place will ensure the RAN has sufficient assets and the right ships to meet asymmetric security threats into the future. Moreover, only high-end assets will allow the RAN to deter those threats on an level, or even superior, footing.*

The second paper is by a recent NLA member, contributor, and retired Army colleague, Geoff Hawkins (2nd Place, non-professional entry) examining *Recruitment and Retention*: [in terms of] *The Warrior Culture*. Geoff makes several valid points about the need for a *thinking, fighting, winning* Navy (and ADF). He notes that... ex and current members [of the RAN] all have some things in common:

- *salt water in their veins;*  
– a love of the sea;
- *patriotism;*  
– a sense of service;
- *all are honourable and ethical;*  
– with a reliable moral compass.

Geoff suggests they also have a reliable moral warrior ethos, that he maintains is fundamental to understanding the discipline of war – essential for leadership (as opposed to management), and the successful application of retention and recruitment policies. Which he sees as being two sides of the same coin.

Continuing the theme, long standing Queensland members and contributors, John Rigby & Paul Sawtell, set out the case for *Why we Need a Navy – the Navy's Role in Protecting Democracy*. John and Paul conclude:

*It is only in the quality of our people that we have never lacked. Let us hope our politicians however are not found wanting. If so, more sailors will pay the price of such failure.*

The first three papers refer or draw upon research by the late General, Senator Jim Molan – supported by NLA Vice President Mark Schweikert – advocating support for an enhanced, fighting ADF capability. Able to think and demonstrably deter. The President delivers (in this issue) a vale for Jim Molan. He will be missed hugely by the NLA, *The NAVY*, and all those who knew and worked with / for him. Thank you for your Service, Sir.

The final paper is by a new author, Dr Dario Delgado on the *Potential Cost Savings with the Implementation of Thermophotovoltaic Cells in Major RAN Warships*. This continues a tradition of engineering and scientific pieces in *The NAVY* (including on gearing, radar, weapons, propulsion and cyber), going back over many years. Dario concludes, *inter alia*:

*The global rules-based order is being challenged. The RAN needs to be more proactive, for the Government to approve a higher than two percent of the GDP for funding. The Defence Strategic Review (DSR) is an opportunity for reassessing costs. A potential threat could jeopardise supply lines; placing Australia in a vulnerable*

*space in terms of energy independence. Improving fuel efficiency is an indirect method for [reducing vulnerabilities]. If the RAN leads innovation, the Australian industrial sector could take advantage of the selection of these new technologies – resulting in a positive public perception for the ADF.*

### Vale Admiral James Goldrick

Many NLA members will recall and / or worked with Rear Admiral James Vincent Purcell Goldrick AO CSC RAN, who sadly died in Canberra, 17 March 2023. A moving eulogy for James was delivered by Vice Admiral Peter Jones AO DSC RAN with Dr David Stevens AM, at St Christopher's Cathedral, Canberra on 5 Apr – attended by family, shipmates, and senior Navy leadership. Admiral Goldrick made a significant contribution “to Navy understanding itself,” not simply as a widely published Naval Historian. But also, in his intellectual leadership and engagement, including with the Royal Navy and the *Naval Review*, and the US Navy and the USNI. James was an operational leader and strategist. Very much a *thinking, fighting, winning*, leader and warrior, deeply imbued in the Discipline of War, referred to by Geoff Hawkins in paper 2. God's speed Sir, as you report sunrise to our Father, on the eternal morning watch. You leave your Navy in a better place – ready, aye ready.

### A Job Placement Agency

*The NAVY* and the Royal Institution of Naval Architects (RINA) in July 2020 (see *Flash Traffic*, Vol 82, Issue 3, pp. 18-19) were amongst only a few organisations to raise questions about the previous Government's Naval Shipbuilding College (NSC) and National Shipbuilding Institute (NSI). Amongst other things, *The NAVY* raised concerns about:

- the “college” being run by a communications specialist not a dean, without any qualifications as an academic;
- the lack of apparent formal engagement between RINA, and the publicly funded NSI, and its college – noting the rundown of funding for universities in NSW and Tasmania that had previously kept the flame of world-renowned Australian naval architecture alive.

Recognising a college “is an educational institution or establishment into which certain universities are separated, in particular providing higher education or specialised or vocational training with identifiable aims, duties and privileges, representing an organised group of professional people, and having its own teaching staff, students, and buildings,” *The NAVY* asked:

*If the NSC is simply a shell advocacy group for maritime political-financial-industry-complex [or Canberra Industrial Complex, see *Flash Traffic*] activism? Another policy-wonk think tank?*

Separately, concerns were raised with the Australian Naval Institute (ANI), regarding the soft NSC/NSI article and associated advertisement that appeared in the *Australian Naval Review* (ANR). The ANI (unlike, for example the ABC) is allowed to accept paid advertising, from defence companies and government quangos. Such as the (then) NSC and NSI.

In February 2023, announcing a detailed re-engagement of maritime education and training for 2000 workers in the next five years, as part of the AUKUS submarine program, the Hon Pat Conroy MP, the Defence Industry Minister, stated:

*Any Australian training program would be to train people with new skills, and not replicate the previous Naval Shipbuilding College which didn't train any workers, but rather was an overly expensive job placement agency. The last government's naval shipbuilding college failed – it became a job placement*



Navy (and Air Force) cannot deter, defend, and project force ashore without an Army to project – to protect the moat (image LCPL Tanner D Lambert).

*agency and it did gap analysis of where skills were and they tried to place people. They spent \$100million to place 200 workers. That's half a million dollars for one placement: they didn't train, just place workers, so we are working through our workforce strategy now!*

This raises three critical questions about "Government / Defence funded media":

1. whether they are, in reality "self-supporting organisations...,"
2. their independence;
3. the ethics and morality (*conscious bias*) of in-house sponsored publications accepting paid advertising.

Mr Conroy may have asked about "what \$100 Million could have done if invested" in, say, the Australian Naval Cadets – from whom most recruits come? Or a mere portion of which to maintain loyal, independent analysis and reporting by reinstating Navy's NLA subscription. Notwithstanding, the NLA continues to provide *The NAVY* free to all RAN ships and establishments.



NLA Motto: Keep Watch.

### Deterred?

Concomitantly, the analysis of the Defence Strategic Review (DSR) by NLA Defence experts (pp. 16-22) is more detailed, honest, and searching than most that is likely to be produced in the mainstream media, Defence funded publications. Or by Canberra Think Tanks – many sponsored by Government.

*The NAVY* has been consistently critical of all Governments – whatever their colour – often proving correct. See *Statement of Policy*. The failure of the last Government to lead, by standing-up for all Australians and take on the excesses of State and Territory (S&T) Governments – after the first COVID wave – did damage to democracy, the economy, human rights, health, and the trust and confidence with which Commonwealth is held. Worthy, at the very least, of a Royal Commission.

*Deterrence is to trust, as trust is to competence.*

Released before ANZAC Day, the Defence Strategic Review (DSR) appears *unfocussed* and conflicted. Its undeclared aim of delivering "Schumpeterian creative destruction," unlikely – "exactly because, there is minimal creation, and maximal optimisation." Disguising real-dollar cuts and budget sleights-of-hand, it may be incoherent with the Foreign Minister's highly respected "managing the equilibrium," deterrence-based, foreign policy – requiring phased-defence, in depth. At the same time, apparently being *unconstitutionally, secretly, and divisively* bypassed (with Trade, and Defence) by the premiers of Victoria, WA, and Queensland (etc.), during their seemingly free-banquet-junkets to China. See *Letters* (p. 6). Exactly at a time of *peak threat*, when Commonwealth and S&T unity-of-command, preparedness, and readiness to respond – is fundamental to "managing Deterrence."

Navy (and Air Force) cannot deter, defend, and project force ashore (the key role of all navies and air forces) without an Army to project. To protect the moat (*behind, on, under, above, within, and beyond*). While welcoming the increased emphasis on Army Littoral Manoeuvre forces, the effective immobilising of Army and ADF by the DSR (and yet another Navy review), will leave Australia less able to deter in the critical timeframe. To build a credible joint force, requiring the tangible doubling of the ADF and its Defence budget to 180,000 personnel and 4%GDP – by 2035. Which neither the DSR, nor 5-6% annual increases in the Defence Budget will deliver. ■



# STATEMENT OF POLICY

## For the maintenance of the Maritime wellbeing of the nation.

The Navy League is intent upon keeping before the Australian people the fact that we are a maritime nation and that a strong Navy and capable maritime industry are elements of our national wellbeing and vital to the freedom of Australia. The League seeks to promote Defence self-reliance by actively supporting defence manufacturing, research, cyberspace, shipping, transport and other relevant industries.

Through geographical necessity Australia's prosperity, strength, and safety depend to a great extent upon the security of the surrounding seas and island areas, and on unrestricted seaborne trade.

The strategic background to Australia's security is changing and in many respects has become much less certain following increasing tensions, particularly in East Asia involving major powers, and in Europe and the Middle East. The League believes that Australia should rapidly increase the capability to defend itself, paying particular attention to maritime defence.

### The Navy League:

- Believes Australia can be defended against attack by other than a major maritime power and that the prime requirement of our defence is an evident ability to control the sea and air space around us and to contribute to defending essential lines of sea and air communication with our allies.
  - Supports a continuing strong alliance with the US.
  - Supports close relationships with all nations in our general area particularly New Zealand, PNG and the South Pacific island States.
  - Advocates the acquisition of the most capable modern armaments, surveillance systems and sensors to ensure technological advantage over forces in our general area.
  - Advocates a strong deterrent element in the ADF enabling powerful retaliation at significant distances from our shores.
  - Believes the ADF must be capable of protecting commercial shipping both within Australian waters and beyond, in conjunction with allies.
  - Endorses the development of the capability for the patrol and surveillance of all of Australia's ocean areas, its island territories and the Southern Ocean.
  - Advocates Government initiatives for rebuilding an Australian commercial fleet capable of supporting the ADF and the carriage of essential cargoes to and from Australia in times of conflict.
  - Notes the Government intention to increase maritime preparedness and gradually increase defence expenditure to 2% of GDP, while recommending that this target should be increased to 3%.
  - Urges the strength and capabilities of the Army (including particularly the Army Reserve) and Air Force be enhanced, and the weaponry, intelligence, surveillance, reconnaissance, cyberspace and electronic capabilities of the ADF be increased, including an expansion in its UAV capability.
  - Considers that the level of both the offensive and defensive capabilities of the RAN should be strengthened, in particular with a further increase in the number of new proposed replacement frigates and offshore patrol vessels, noting the need to ensure essential fuel and other supplies, and the many other essential maritime tasks.
  - Recommends bringing forward the start date of the replacement frigate program to both strengthen the RAN and mitigate the local industry capability gap.
  - Recommends the timely replacement and increase in numbers of the current mine-countermeasure force.
  - Strongly supports the early acquisition of large, long range and endurance, fast submarines and notes the deterrent value, reliability and huge operational advantages of nuclear powered submarines and their value in training anti-submarine forces.
  - The League is concerned at the very long time before the projected 12 new conventional submarines can enter operational service, noting very serious tensions in the NW Pacific involving major maritime powers.
  - Recommends very early action to provide a submarine base on the Eastern seaboard.
  - Notes the potential combat effectiveness and flexibility of the STOVL version of the Joint Strike Fighter (F35 *Lightning II*) and supports further examination of its application within the ADF.
  - Supports the development of Australia's defence industry, including strong research and design organisations capable of the construction and maintenance of all warships, submarines and support vessels in the Navy's order of battle, and welcomes the Government decision to provide a stable and continuous shipbuilding program.
  - Advocates the retention in maintained reserve of operationally capable ships that are required to be paid off for resource or other economic reasons.
  - Supports a strong and identifiable Naval Reserve and Australian Navy Cadets organisation.
  - Advocates urgent Government research and action to remedy the reported serious naval recruiting and retention problem.
- The League:**
- Calls for a bipartisan political approach to national defence with a commitment to a steady long-term build-up in Australia's defence capability including the required industrial infrastructure.
  - Believes that, given leadership by successive governments, Australia can defend itself in the longer term, within acceptable financial, economic and manpower parameters.

**As to the RAN, the League,** while noting vital national peacetime tasks conducted by Navy, including border protection, flag showing/diplomacy, disaster relief, maritime rescue, hydrography and aid to the civil power:

- Supports the maintenance of a Navy capable of effective action in hostilities and advocates a build-up of the fleet and its afloat support elements to ensure that, in conjunction with the RAAF, this can be sustained against any force which could be deployed in our area of strategic interest.

Welcome to another great edition of *The NAVY* magazine. We have held this edition back to allow some commentary on the recent release of the Defence Strategic Review and there will be more commentary in future editions. As you consider the DSR please let us know your thoughts – we look forward to hearing from you.



Federal President Matt Rowe and Chief of Navy Vice Admiral Mark Hammond AM RAN present the NLA Efficiency Trophy to TS CANBERRA.

## CONGRATULATIONS TS CANBERRA – THE MOST EFFICIENT ANC UNIT 2022

In February this year the Navy League's Australian Naval Cadets Award for the most efficient Training Ship was presented in Canberra. I was proud to represent the Navy League at the presentation and to continue a tradition of support for Australian Navy Cadets that has been ongoing since the formation of the Navy League Sea Cadets in 1920.

The award, a trophy in the form of a shield, was first presented to TS BARWON in 1959. Earlier that year, at its meeting in 1959, the Federal Council of the League first displayed the shield and determined that it would be awarded annually to the cadet unit judged to be the most efficient in Australia. These events are documented by our late great member Malcolm Longstaff OAM in his wonderful history of the League: *Keeping Watch* (2016). At that meeting the shield was handed to the officer with responsibility for the (then) Sea Cadets, Captain GD Tancred DSC RAN and has been awarded annually since to the unit deemed most efficient.

Captain Tancred's contemporary equivalent with responsibility for Australian Navy Cadets (ANC), Commodore David Greaves RAN (the Director General of the ANC), was present at this year's award. Commodore Greaves was also present at our Federal Council meeting and AGM in October 2022, presenting on issues affecting the ANC, and previous years, and has been a long-standing supporter of the Navy League.

The presentation of the award this year was conducted at the purpose-built HMAS HARMAN cadet precinct, the home of the deserving recipients TS CANBERRA. The events of the afternoon included a parade of the TS CANBERRA crew and review by the Chief of Navy, cadet unit activities and demonstrations and refreshments, and was a credit to all involved. Of particular note for congratulation were the Commanding Officer of TS CANBERRA, Lieutenant Cherrie Climas ANC and the parade commander, Cadet Chief Petty Officer Hudson and her crew. The events of the presentation afternoon

were a great credit to all involved, a fine spectacle and a clear demonstration of why TS CANBERRA was chosen as the year's most efficient ANC unit.

The presence of the Chief of Navy, Vice Admiral Mark Hammond AM RAN, added even further to the importance of this significant award. It is an award that the Navy League continues to support over sixty years since its first inception. In addressing the cadets, their families and community leaders present, Admiral Hammond described himself as being a proud Chief of Navy, navy father and navy cadet father. His presence, in all of these guises, was a great reminder of the importance of the support the Navy League has provided, and continues to provide, to the navy cadet movement.

*Well done TS CANBERRA and thank you CN.*

## SOME SAD NEWS – VALE SENATOR MAJOR GENERAL ANDREW JAMES MOLAN AO DSC

Those of you who have read recent editions of *The NAVY* will know of our contributor and great supporter of the Navy League, former Senator and retired Major General Jim Molan AO DSC, who sadly died in January this year after a battle with prostate cancer.

All with an interest in Australia's strategic circumstances will know of Jim's commitment to our national security arising from a long and successful military career and culminating in his contribution to our government through the Senate. He was always one to speak openly about our security and threats to Australia, with informed and independent views. Senator Molan's passing came as a surprise, he was present and in fine fettle at our Federal Council meeting and AGM in October last year and while noting he was unwell as a result of his cancer treatment, made a valuable contribution to our meeting, warning in his presentation of the risks to Australia's security, of regional security threats and encouraging serious thinking about our preparedness.

I extend my condolences, and that of the Navy League of Australia, to Senator Molan's family and friends.

## NAVY LEAGUE OF AUSTRALIA MARITIME AFFAIRS ESSAY COMPETITION

Contributions are now open for the Navy League of Australia Annual Maritime Affairs essay competition, so for those of you yet to submit an article for the essay competition it's time to get to work.

Details regarding the competition are inside the back cover of this magazine and I encourage you all to consider contributing. The annual essay competition calls for contributions on the topics of 21st Century Naval Warfare, Australian Naval History, Australian Industrial and Merchant Navy Maritime Strategy and Australian Strategic Alliances. There are prizes in professional and non-professional categories and the opportunity to have your paper published in a future edition of this, *The NAVY*. If that is not motivation enough to get researching and writing, there are substantial prizes on offer also for the winning entrants.

## IN THIS EDITION

Once again, there is much very interesting reading in this edition of our Navy League magazine and I commend it to you. As you read this edition, I also encourage you to make a note or two and let us know your thoughts, in a letter to the editor or by drafting a future paper





Senator General Jim Molan  
with Erin Molan and HMAS  
CANBERRA (L02) - A Staunch  
Supporter of Navy and the NLA  
(Image Erin Molan).

or essay competition contribution. Your input will form an important part of future strategic planning and contribute to the thinking that leads to the future security and prosperity of this great nation of ours.

Our first article arises from the Navy League Annual Maritime Affairs Essay Competition. Kelvin Curnow's paper, *The Royal Australian Navy in its current status and future prospects within the Strategic Context* is a great read and received a well-deserved prize in the professional section of the essay competition. Many readers will have come across previous contributions from Mr Curnow, whose valuable articles have appeared previously in *The NAVY* magazine.

Our second paper is by Geoff Hawkins, writing on *Recruitment and Retention: The Warrior Factor*. I expect this article will generate significant discussion. In the current climate recruitment and retention remain issues of great concern. Our expanding Navy will need an increased workforce, which, in the face of a skills shortage and significant competition from other industries, means that retention of highly trained and valuable warriors will be crucial to our sovereign capabilities.

John Rigby and Paul Sawtell combine to produce another fine contribution to *The NAVY*, with their paper *Why we need a Navy – the Navy's role in protecting our Democracy*. This is a must read for anyone seeking to address the important, and fundamental, strategic considerations confronting Australian military development. Asking what appears to be the obvious, like why we need a Navy, often generates many more questions than initially arise and this article makes a substantial contribution to the discussion of Navy's important role in protecting our most fundamental of security.

We also have a most compelling paper from a new contributor, a currently serving navy engineering officer Dr Dario Delgado. Dario's paper *Potential Cost Savings with the implementation of Thermophotovoltaic Cells in Major RAN Warships* combines contemporary operational naval service, practical commercial considerations and emerging technological knowledge with a view to advantage the delivery of operational activities of the RAN. It is a great credit to have contemporary serving members contributing to the debate about our nation's future and we welcome such future contributions.

I trust you will enjoy this edition of *The NAVY*. It's a great credit to our editor and the editorial team, who are willing and enthusiastic professional volunteers making an excellent contribution to the important discussion of issues that affect our maritime nation. ■

Happy reading.

## LETTERS

Dear Editor,

I have been examining the question of *Australian Defence Vessel's* (ADV) right and precedent to wear the 1967 Australian White Ensign (AWE). As far as I can tell, there is no right. In practice, colours (the AWE) are bestowed on *His Majesty's Royal Australian Navy* (and HM Australian Ships) by the Sovereign. Now King Charles, as represented through and by the Governor General. Note: New colours were presented to UK Armed Forces by King Charles, 28 Apr 2023.

Further examination, suggests ADVs may constitute an auxiliary fleet – similar, to the UK Royal Fleet Auxiliary (RFA). For which an ensign appropriate to Australian Defence Vessels was suggested by both *The NAVY* and *Headmark*, in 2014. Such a blue-ensign could represent auxiliary roles (e.g. combat logistics, oil, ordnance etc.), and Border Force functions. Including *Operation Sovereign Borders* – for which the *Cape class* are being procured. Supported by RAN crews – working alongside, with, or for, Merchant / Border Force mariners.



A separate matter may be backdoor republicanism? Removing King Charles from the five-dollar bill, for example, or replacing HMAS with ADV? Perhaps indicative, of the decision to elevate the (Commonwealth copyrighted (2022, 1971 designed) *Australian Aboriginal flag* (AAF), and the (1992 designed, 1995 adopted) *Torres Strait Islander flag* (TSIF), to co-equal status with the 1901 Flag of Australia (FOA)? These identity-based flags – representing 3.3% of the population – now have co-prominence in Government offices (and landmarks, e.g., Sydney Harbour Bridge), alongside the FOA. On this basis, should the 1978 *Rainbow flag* – representing 3.2% of Australian's *identifying* as LGBTQ+, be similarly co-elevated? Noting that some Ministers place the AAF as centremost in their "baronial" displays – is this correct? Is this what is intended? Preparing for removal-by-displacement of the FOA (and AWE); HMAS with ADV? Do the AAF and TSIF thereby confer de facto sovereign status? As demanded by some supporters of the *Indigenous Voice to Parliament* (IVP). Who apparently see sovereignty as the *de jure* extension of the High Court's 1992 Marbo decision?

The Governor General is the Commander in Chief. The Commonwealth is represented by its 1912 Coat of Arms, the (1901) Flag of Australia, State flags, and the Australian White Ensign. The 1876 state flag of NSW (representing 32.67% of Australia's population) no longer flies on Sydney Harbour Bridge. The AAF and TSIF are not [yet] sovereign (or "state") flags, or the national Flag of the Commonwealth of Australia. Together, they represent less than 95% of all Australians. *Prima facie*, are such "red-flags" preparing for a diminution of Commonwealth, of the role of the Governor General, the AWM, and the ADF?

Is this what our young people are being asked to defend? It seems politically divisive, concocted identitism – probably not in accordance with Commonwealth (common to all); or, potentially, the laws of armed conflict?

Yours Sincerely

Name Provided





# THE ROYAL AUSTRALIAN NAVY

## ITS CURRENT STATUS AND FUTURE PROSPECTS WITHIN THE STRATEGIC CONTEXT

By Kelvin Curnow

At the announcement of the Defence Strategic Review [1] in a press conference on 3 August 2022, the Prime Minister Anthony Albanese noted that the review would prepare Australia to effectively respond to the changing regional and global strategic environment. The intent of the Review is to “ensure Defence's capability and force structure is fit for purpose, affordable and delivers the greatest return on investment”. [2] A copy of the the Review was provided to the Prime Minister by Sir Angus Houston on 14 February. The DSR was publicly released on 24 April.



### INTRODUCTION

In announcing the DSR, the new Labor Government stated that it remained committed to the AUKUS (Australia-United Kingdom-United States) trilateral security pact designed to provide Australia with nuclear-powered submarine technology. The defence minister (and DPM) Richard Marles noted that:

the “AUKUS work will look at how we can get that as soon as we can...(and)...if there's a capability gap arises, how do we plug it”. [3]

Appraised of the urgency caused by the strategic situation, the review is to be completed by March 2023. The review was undertaken by Professor Stephen Smith (previous defence minister and Australian High Commissioner to the UK) and Sir Angus Houston the former CDF and CAF. Ominously, the latter described the rapidly developing strategic environment as the worst he had ever seen in his career.

### THE RUSSIAN CONNECTION

Although not entirely synonymous, parallels have been drawn between Russia's invasion of Ukraine and a prospective conflict between China and Taiwan. There is no formal defence pact between the US and Taiwan, but the former's commitment to defending the island nation (and thereby deterring China) could not have been expressed more clearly than by the visit to Taipei on 3 August 2022 by former Speaker of the US House of Representatives, Nancy Pelosi. The visit produced not only a flurry of condemnations from China, but also prompted large-scale military exercises around the island nation by the various arms of the People's Liberation Army (PLA).

Subsequently, in an address to the National Press Club in Canberra on 11 August 2022, China's ambassador to Australia Xiao Qian stated that China would:

use “all necessary means” to bring Taiwan back to the fold, ominously adding that “you can use your imagination” as to what that might involve. [4]

Adding further context to these remarks, if President Xi Jinping is appointed to a third five year term in October 2022, only a determined effort to unite Taiwan with the mainland, by force if necessary, would cement his place in Chinese history and also allow him to claim the presidency for life.

### BELT AND ROAD INITIATIVE (BRI)

The increasing influence of China in the Pacific largely through the Belt and Road Initiative (BRI) has raised significant alarm in Australia, the US and New Zealand.

The growing economic relationship between China and the Solomon Islands has caused particular concern in Australia which had previously been island nation's primary development partner. A security pact with China signed by Solomon Islands Prime Minister Manasseh Sogavare on 30 March 2022 is of an even greater immediate worry. This has corresponded with a diminution of both press and democratic freedoms.

Further disquiet has been raised by the possibility that China's navy (the PLAN) may establish a base on the island of Kolombangara. This features a protected harbour, deep-water port and an airstrip. Chinese influence could also be behind the refusal by the Solomons to allow a US Coast Guard cutter, the USCG OLIVER HENRY (WPC-1140), to refuel at the port of Honiara. Although the RN has refused to comment, it is possible that patrol ship HMS SPEY (P234) was also denied permission.

### UNCERTAIN TIMES

In addition to the uncertainties raised by these developments, China has acquired substantial capabilities which could directly threaten Australia. In particular, the launch of the 85,000-ton Catapult Assisted Take Off But Arrested landing (CATOBAR) aircraft carrier FUJIAN (CV-18) on 17 June 2022.

This marked a step change in the Chinese navy's capabilities. The air wing will comprise J-Shenyang 35 stealth fighter jets, J-15D electronic warfare jets and the Xian KJ-600 airborne early warning and control (AEW&C) aircraft. This considerable capability is synonymous with that of USN supercarriers. Additionally, the newly developed probe-equipped *Xian H-6K* strategic bomber can reach Australia via aerial refuelling from the *Xian YY-20* heavy transport/tanker aircraft.



PLAN FUJIAN (CVG 003) Commenced Sea Trials mid-2022.

While all eyes are currently on a potential conflict between China and Taiwan, ongoing clashes in the South China Sea (SCS) with China challenging Vietnam and the Philippines for territorial and fishing rights continue. Low-level harassment of RAN warships and RAAF maritime patrol aircraft by Chinese ships, submarines and fighter jets have also served to indicate that China wants to assert its claimed ownership of the SCS.

In any potential conflict China would attempt to cut Australia's supply lines passing through the SCS, particularly restricting the flow of oil. The importance of the SCS to Australia's security cannot therefore be underestimated.

Facing these asymmetric threats, this paper will consider how and if the RAN can address them with the resources it currently possesses, and the projected future capabilities.

## THE RAN – ITS CURRENT STATUS

Possessing major surface combatants comprising three *Hobart-class* Air-Warfare Destroyers (AWDs), eight *Anzac-class* frigates, and three amphibious warfare vessels, the RAN is comprised of a well-equipped surface fleet with a low median age. The same descriptors cannot be applied to the six *Collins-class* diesel-electric submarine fleet.

While both the *Collins-class* submarines and *Anzac-class* frigates entered service in 1996, years of indecision has provided no clear plan for the replacement of the sub-surface fleet. In comparison the decision-making process to replace the *Anzac-class*, beginning in 2009 and concluding in 2018, has been relatively trouble-free resulting in an order for nine BAE *Hunter-class* frigates based on the company's *Type 26* design.

### The Hobart-class Air-Warfare Destroyers

The three *Hobart* AWDs are based on the Navantia F-100 design, the first of which was commissioned on 23 September 2017. The destroyers are equipped with the Lockheed Martin Aegis combat system. The AWDs have forty-eight Lockheed Martin Mk41 Vertical Launch Systems (VLSs) from which Raytheon RIM-66 Standard 2 and quad-packed Raytheon RIM-162 Evolved Sea Sparrow Missile (ESSM) surface-to-air missiles (SAMs) are fired. The *Hobart-class* also ship eight cannister launched Boeing RGM-84 Harpoon Block II anti-ship missiles (ASHMs) and a General Dynamics Phalanx Close-In Weapons System (CIWS).

The AWDs have hanger space for one Sikorsky MH-60R Seahawk helicopter. Importantly the ships are equipped with Cooperative Engagement Capability (CEC) that allows combat systems to share sensor data with other ships and aircraft enabling them to operate as one. CEC gives the AWDs the ability to integrate seamlessly into USN battle groups also possessing this capability. CEC data

will in the future be shared with RAAF Lockheed Martin F-35A Lightning IIs, Boeing F/A-18F and EA-18G Super Hornets, Boeing E-7A Wedgetail AEW&C aircraft and the ground-based air-defence (GBAD) network.

Beyond this already substantial capacity the AWDs are to be upgraded at the cost of AU\$5.1 billion. This includes updating the Aegis system from the current Baseline 7.1 Refresh 2 version to the Baseline 9 or 10 version, and replacement of the current AN/SPY-1D(V) radar with either the Raytheon SPY-6(V)1 or (V)4 radar. The new radar will require twice the electrical power as the previous generation while generating over 35 times as much radar power.

Currently there is no indication as to how the *Hobarts* will generate the additional electrical power. The upgrade will also see the integration of new missiles: the Standard SM-6 SAM; the Raytheon Tomahawk land attack cruise missile (TLAM); and, the Kongsberg Naval Strike Missile (NSM). The upgraded AWS, new SPY radar and Standard SM-6 missiles coupled with CEC will provide a comprehensive ballistic missile defence (BMD) capability. Under the AUKUS agreement the TLAMs and NSMs could be replaced by hypersonic missiles to developed by the partners. Realistically the three *Hobart-class* destroyers are the only RAN combatants currently capable of operating in a high-end conflict until they are supplemented by the *Hunter-class*.

At the time the AWDs were ordered on 4 October 2007 an option was taken out on a fourth ship due to expire in October 2008. Despite urgings from both the NLA and industry the option was not taken up, one which would have provided an exponential increase in the RAN's operational capabilities and prevented industry from spiralling into the infamous 'valley of death'. The cost-benefit analysis of adding one additional ship to the programme cannot be overestimated.

A final observation with regard to the purchase of the destroyers is that the favoured design during the tender process was Gibbs & Cox's Evolved Flight II *Arleigh Burke-class* destroyer. This design is larger with a displacement 2,200 tons greater than the F-100 design, has a 700 nmi (1,300 km) longer range, a second CIWS, a 96 cell Mk41 VLS (doubling the number available on the *Hobarts*) and, embarks two helicopters. The AWD purchase provides a salutary lesson in ensuring the acquisition of the right ship and a continuous build programme.

### The Anzac-class Frigates

The 3,600 tonne *Anzac-class* provide the RAN with a good capability given the strictures of their size and weight. Modified under the anti-ship missile defence (ASMD) upgrade the principal sensor suite on these frigates comprises the Australian designed CEA Technologies' CEAFAR1-S S-band Active Phased Array Radar (APAR) complemented by the CEAFAR2-L L band APAR, and the CEAMOUNT X-band Fire Control Illuminators.

By 2024 the eight Harpoons on each ship will be replaced with the NSM. Beginning with HMAS WARRAMUNGA (FFH 152) ESSMs were fitted as a replacement for the Sea Sparrow missile found on

The Xi'an Y-20 *Kunpeng* large military transport aircraft.



the first two ships. These are quad-packed into 8 cell Mk41 VLS for a total loadout of 32 missiles.

Elements missing in the armament equation include a CIWS, TLAMs and Standard SAMs, the missiles being too large to fit the *Anzac's* Mod.5 VLS cells. The lack of long-range land attack and air defence missiles mean that the frigate force will be peripheral players until the *Hunters* arrive.

### The Canberra-class Landing Helicopter Docks

I have previously written on the importance of providing organic airpower to the RAN by equipping the LHDs with Lockheed Martin F-35B Lightning IIs, particularly with respect to expeditionary operations where land-based airpower is not available. [5] Another possibility I proposed was for a third *Canberra-class* to be built specifically to operate in the role of a Short Take-Off-Vertical-Landing (STOVL) carrier.

Since the essay was published there have been two significant developments in the area of light aircraft carrier construction. The Italian navy will commission the 38,000-ton ITS TRIESTE (L9890) in 2023. It has a capacity for up to thirty fixed-wing aircraft and helicopters with the potential to carry more in overload conditions. The second development is the decision by the Republic of Korea to build a 45,000-ton aircraft carrier, currently designated CVX. Either design would provide the RAN with a considerable growth in capability over the *Canberra-class* operating in the role of a light carrier.

### The Collins-class Submarines

The selection process surrounding the *Kockums 471* design to replace the *Oberon-class* submarines is well documented as are the subsequent difficulties in their construction and deficiencies in performance of the boats.

The submarines were expected to be retired in 2025, however the 2016 *Defence White Paper* prolonged this into the 2030s. The white paper optimistically predicted that the acquisition of twelve future submarines would commence in 2016 with the first of class likely to enter service in the early 2030s. It further noted that construction of the submarines would extend into the late 2040s to early 2050s. [6]

None of these expectations have been met due to government indecision and back-tracking on decisions made, particularly with respect to the 2016 selection of the Naval Group Shortfin Barracuda *Attack-class* as the successor to the *Collins-class*. Hence, at this point (August 2022) we can only await a decision on the future submarine fleet post the publication of the *Defence Strategic Review*.

In the interim, beginning in 2026, each *Collins-class* will be put through the Life Of Type Extension (LOTE) programme which will see a single submarine complete modernisation every two years. The programme will see the boat's power and propulsion systems overhauled and their sensors upgraded. [7]



HMAS ARUNTA (FFH 151) departs Fleet Base West and sails into Cockburn Sound (image LSIS Richard Cordell).

Over the next 25-30 years the submarines will require further upgrading to remain relevant. However, the LOTE is technically risky, expensive and will potentially add only 10 more operational years to each submarine. [8] Hence, when the last submarine emerges from the LOTE in 2036 the first boat through the programme will be decommissioned. Mindful that the submarines are already twenty-six years old, the prospect of them remaining in service for another twenty-eight years when the first nuclear boats are due to enter service, even with updates, would appear minimal.

## FUTURE PROSPECTS

### Future Submarines

To maintain a meaningful submarine force may inevitably entail seeking an interim solution prior to the first nuclear boat entering service. Various solutions have been considered including purchasing either nuclear or conventionally powered off-the-shelf designs built overseas, building a 'son of *Collins*' locally, or operating recently retired RN or USN submarines. None of these are particularly apposite.

In addition, there is no prospect of either the UK or US ramping up their submarine production, at least for the foreseeable future. [9] This leaves the RAN facing an enormous dilemma. Its options are to spend money on a diminishing asset, divert fiscal resources to an interim submarine or wait for nuclear submarines with the undesirable prospect that an undersea capability may lapse.

One possible solution could lie in the purchase of Autonomous Undersea Vehicles (AUVs). In March 2022 Anduril Australia was contracted on a three-year, \$140 million deal by the Australian Defence Force's Next Generation Technologies Fund to deliver three operational prototype underwater drones. These will be capable of carrying sensors and weapons over long distances, remain on station for considerable periods of time and dive to depths of up to 6km. These 30-metre-long UAVs will be constructed in Sydney using 3D printing.

Purchasing UAVs offers considerable advantages, principally negating the need to update the *Collins-class*. The *Collins-class* could have their lives prolonged by operating only one or two boats simultaneously which would act as mother ships to a larger number of UAVs. [10] The other submarines could be potentially dry docked. In the future the UAVs could be operated in concert with the nuclear submarines and be deployed from the mission bay of the *Hunters*.



HMAS HOBART (DDG 39) Fires an Evolved Sea Sparrow Missile (ESSM) 2022 (Image LSIS Daniel Goodman).



HMAS WALLER (SSG 75) prepares to come alongside Fleet Base West (image LSIS Bradley Darvill).

### The Hunter-class Frigates

The *Hunter-class* frigate programme has come under criticism in the popular press, a good deal of which appears to be based on articles published by the Australian Strategic Policy Institute (ASPI). Much has been made of the claim that rather than build the frigates a simpler and cheaper solution would be to construct additional Hobart-class destroyers. [11] The ASPI directs its criticisms at the weight of the *Hunter-class*, yet in arguing that the *Hobarts* could be modified to carry an additional SH-60R helicopter and have the CEFAR radar integrated into the design, there is no mention of any commensurate increase in weight to include these changes.

The often-quoted figure that at 10,000 tons the *Hunter-class* is 3,000 tons heavier than the AWDs, leading to a consequent degradation in speed, is disputable. [12] The *Hunters* have a longer range than the *Hobarts* at 7,000 nmi (12,964 km) compared to 4,500 nmi (8,334 km). This is important given that the RAN has limited replenishment at sea resources and the frigates will be required for long-range blue water operations. Yet another criticism is that the frigates are slow, but at 27+ knots they have a speed which matches their competitors as well as the *Hobart-class*. Further critiques include the lack of power to operate the CEFAR radars and simultaneously propel the ship. This is a spurious argument, the *Hunters'* single MT30 alone conservatively produces 36MW which exceeds the power of the *Hobarts'* twin General Electric gas turbines which combined produce 35MW. The MT30 has an inbuilt 10% growth potential.

ASPI's primary focus in criticising the *Hunters* is that they have twelve fewer VLSs than the *Hobarts*. However, despite this critique the Institute acknowledges that in comparison to the AWDs the former possesses superior ASW capabilities, a superior radar and with CEC and carrying the same missile types their roles will be largely interchangeable. [13] Moreover, the VLS deficit could be addressed by adopting the BAE Adaptable Deck Launcher (ADL). This is a bolt on launcher which provides four cells positioned at an angle that can accommodate the same missile canisters used by the standard Mk41 VLS.

The *Hunter-class* design also features a mission bay which is a flexible space that can be used among other purposes for launching UAVs or maritime interception boats, carry disaster relief stores or provide additional accommodation. Given that it is the newest design with the greatest potential for further growth and considerable adaptability it will provide the RAN with the most capable frigates existent. [14]

## SUMMARY AND CONCLUSION

Returning to designs of the past such as the AWD or son of *Collins* is not a way to move forward. The process of purchasing new warships for the RAN has proven positively Byzantine. The often promised, but never fulfilled, continuous construction of new ships and submarines for the RAN has placed the service in a precarious position given that high or low-level conflict could break out at any time.

Only reform of the selection processes and setting a continuous build programme in place will ensure the RAN has sufficient assets and the right ships to meet asymmetric security threats into the future. Moreover, only high-end assets will allow the RAN to deter those threats on an level, or even superior, footing. ■

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# RECRUITMENT & RETENTION: THE WARRIOR FACTOR

By Geoff Hawkins

There is ongoing concern about the problem of low recruitment and retention rates within the ADF. Low retention and recruitment are two sides of the same coin. If a warrior culture was nurtured and encouraged, this could help with both recruitment and retention.

## AN OPEN LETTER (APR 2022)

Dear Admiral Noonan,

[Vice Admiral Michael Noonan AO RAN, previous Chief of Navy]

I refer to your letter on the *Nuclear-Powered Task Force*, noting the comment:

*Right now, I seek your patience and support...*

How much more patient do we have to be?

The Navy League of Australia and others have been pushing for Nuclear Powered Submarines for thirty-five years. And now we have to be patient while there is an 18-month talk-fest about it. [The report was published in March 2023, before the *Defence Strategic Review*]

Any of us that have served and / or worked for the public service or Department of Defence, know what is involved here.

- There will be lots of long lunches and early marks Friday afternoons, followed by late starts Monday morning.
- There will be a written report produced in triplicate;
  - at least as thick as the Bible (Old and New Testaments combined);
  - you will need a PhD in English / new speak to read it, and;
  - it will go into the minutest details, particularly with stuff of no importance.

Sir, I will save you the trouble, and save the country a lot of money at the same time.

The choice will be between the *Virginia-class*, or the *Astute-class*. The *Virginia* carries 26 torpedoes (tubes) and 12 Tomahawk missiles (VLS). The *Astute* carries 36 torpedoes/Tomahawk missiles all launched from the torpedo tubes. Virginia wins by two.

We don't require floral wall paper in the heads. Build it to standard, off the shelf, on a fixed price contract. If you do this tomorrow, we will get the first one in about seven to ten years.

If you need a written report, go through the back issues of *The NAVY*. [1-6] Get a couple of level-three clerks to correlate it. Start with the appraisals by the late Rear Admiral Andrew Robertson AO DSC RAN [7-9] and conclude with the paper by Dr Neil Baird, Volume 83 Number 4 2021. [5] Cancel the *Collins-class* LOTE. Order eight Japanese *Taigei-class* off the shelf for immediate delivery with options for more (this will also help with the loss of face the Japanese suffered from our French debacle) Order eight *Virginia-class*, with options for more. Start an immediate crew exchange/education program with the USN.

I know that this will interfere with the "measured pace" that Defence likes to use, but we don't have time for that any-more! Noting that we are now facing a "pacing threat". Let's just get into it and get it done!

The RAN's battle honours are second to none. When you look at the current situation, what does your *fingerspitzengefühl* or *coup d'oeil* tell you, what does your leaders instinct say?

Time is running out.

Thank you, Sir.

Geoff

## INTRODUCTION

Dr Neil Baird puts it very well when he says,

*Navy will need to expand current recruitment by up to 20% by the mid-2020s, for the submarine force alone. [4]*

I am assuming that this is, if the current retention rate remains unchanged. What if we could simultaneously increase retention rates while increasing recruitment?

Neil also stated that the RAN will need to increase to 30,000+ personnel by the mid-2030s. [3]

This is realistic if you consider the current Australian population – it is not realistic if you consider the current "woke" attitudes directed at the ADF. Therefore, we must set out to win hearts and minds and intellectually destroy (or re-educate) those that deliberately seek the downfall of the ADF at large.

The late Senator Jim Molan, and Mr Mark Schweikert when referring to the current military threat, ask the question,

*Is our nations resilience and self-reliance enough for this, or our*

*defence force lethal enough, able to fight for long enough, and big enough to defend against Chinese coercion or subsequent aggression.....? [10]*

I believe, by and large that most Australians are resilient enough at least in the short to medium term, and even probably long term if they are given some hope of final victory. Self-reliance is a deficit. We had it once – we can get it back with effort and innovation but it won't be easy.

Right now we seem to be in the process of supporting and aiding our potential foe, while we send our own industrial capabilities overseas or go broke.

*Lethality* is a work in progress – it certainly won't progress quickly enough as long as we keep having talk-fests about it. That's the trouble with the computer generation:

*I Googled it so that's done.*

Information is only useful if you do something with it!

If we refine our own fuel and aluminium and smelt our own steel, and manufacture/import and stockpile our own armaments and



Sixth Astute-class submarine HMS AGAMMEMNON (S124) completing build.



Virginia-class USS NEW JERSEY (SSN 796) Launched by Huntington Ingalls Apr 2022.

munitions and if we embrace the tenets of total defence and the tenets of a warrior we'll be able to fight "long enough".

## THE WAY OF THE WARRIOR

The Way of the Warrior includes:

- Discipline;
- Concentration;
- Wisdom

That leaves the final question, Are we big enough?

To be perfectly frank, I don't think so – but this can be remedied, if we educate the public and put our minds to it.

*All things are possible if our minds tell us so.*

## SITUATION

I believe that my situation analysis was pretty close in my last paper, [11] but I would like to add Dylan Collaery's legal appraisal to it,

*The disregard for international law and the continued militarisation of the South China Sea will leave major consequences for the global rule-based order as the risk of conflict increases each year due to the Chinese unwillingness to arbitrate. [12]*

It would seem to me that we are already at war (*ambiguous or Grey*) and that escalation is inevitable – it is just a matter of when. You only need to read the list of 14 CCP conditions / grievances to see that. (And by the way, this is another thing that did not get enough publicity).

You cannot negotiate with a bully. There are two kinds of bully:

1. the one that listens patiently to your speech, laughs, then punches you in the mouth and steals your lunch money and;
2. the type that just punches you in the mouth and steals your lunch money!

Either way you are not going to have lunch!

## MISSION

My intent is to put forward useable suggestions:

- so the rate of service recruitment will increase;
- and changes to ADF culture, so the rate of service retention will increase.

The end goal is to increase the useable regular and reserve force of the ADF and the RAN.

It should be noted that there is no point in increasing personnel, if the number of platforms does not increase commensurately (useable fleet). No more talk-fests please – just get into it and get it done!

## EXECUTION – THINK, FIGHT, WIN

*Are we recruiting the right kind of people?*

Surely, we are looking for a particular type of person – someone with a sense of honour, duty, loyalty and that often-forgotten concept in this country, Patriotism. In short someone, with a *moral* warrior ethos.

There seems to be a lot of energy spent advertising the adventure but not the discipline (of war); about the social benefits but not the mission. So let us be perfectly clear, as the Chief of Navy also recognises, the mission is:

*To Think, Fight and Win*

Many years ago, when I was an Army recruit (in 1976) they showed us a film documentary titled, "The Case for Discipline", narrated by the late Mr Mike Willesee. It was the ABC Four Corners show at its best – how times change? Our ABC would never do something like that now.

I cannot speak from experience about the RAN (I served in the Regular Army), but I do know some ex and current members and they all have some things in common:

- *salt water in their veins;*
  - a love of the sea;
- *patriotism;*
  - a sense of service;
- *all are honourable and ethical;*
  - with a reliable moral compass.

They all have a moral warrior ethos. They are professional and love their chosen profession. However, the ex-members tell me it is becoming harder and harder to do the job because of "woke" cultural pressures. The current members remain tight lipped – as they should, but their thoughts on this matter are obvious.

Most *fair dinkum* service people are not interested in the ethics of gender fluidity or white male supremacy or the re-writing of colonial history. They are all focussed on fighting a war and winning. The obsession with "wokeness" by some quarters has done huge damage to morale.

Napoleon said, "*Morale is to the physical as three is to one.*" That is, esprit de corps gives you triple advantage.

I have yet to be shown how the use of "correct pronouns" has ever won a war.

*...most reports are false, and the timidity of men acts as a multiplier of lies and untruths.* Clausewitz

The *Brereton Report* has done enormous damage to the morale of the entire ADF. There is a huge difference between an allegation and being charged with an offence. The presumption of innocence is one of the most important and hard fought for rights that we have.





Japan Maritime Self-Defence Force commissioned JS TAGEI (S513) March 2022.

I join with Ed in asking that the CDF and Chief of Army resign. Your continuance in those positions, gentlemen, is untenable and in fact it is doing enormous damage to the creditability and morale of the entire ADF. If you have any respect for your commands, your personnel, or for the ADF at large, you will go.

[Note 1. The CDF remains in post. Chief of Army was replaced in 2022]

Further, I humbly request that:

- the previous PM (Scott Morrison) should immediately apologise for the use of the comment “Brutal Truths” (Nov, 2020). They are not truths Mr. Morrison; they are allegations and a lowly ex-army VM should not have to tell you that!
- ABC reporters that were *allegedly* offering rewards (or bribes) to Afghan witnesses should be immediately investigated. [Note 2. This is the subject of ongoing court cases. In Feb 2023, Major (CDO Ret) Heston Russell won the first round in his court case against the ABC for defamation over Afghanistan articles].

This may be the only way that morale will be re-installed.

## WARRIOR CULTURE

I digress. Most service-people (I was about to say servicemen – boy, that would be a big error!) do not care if you’re black, white, brown or purple with pink spots. They do not care if you’re chromosome XX or chromosome XY and they certainly couldn’t care less what you do in the privacy of your own home or bedroom. Just do not bring it to work – it will take up valuable time that you need to spend training.

*The ADF is not multi-cultural, it is in fact a mono-culture, a single culture, a warrior culture.*

There are too many managers but not enough leaders. Too many that think it is a club, when it is a profession or calling.. Too many that want to turn it into woke-heaven when it is about the *discipline of war*, thinking, fighting and winning. If you want to recruit more personnel, you don’t design your recruitment programme to suit the minority – you reach out to the majority.

No more rainbow morning teas please, or impassioned speeches about inclusivity:

*The reason we wear a uniform is so we all look the same. The reason we have one flag is because our allegiance is to Australia and all our people. See Letters, page 6..*

*That is inclusivity, because we defend everyone.*

(Our allegiance is to the Governor General as Commander in Chief and through him to the King, but since Magna Carter and the British Civil Wars, the King has no will but the will of the people.)

Paraphrasing General Patton:

*...you see, the ADF is a team, it sleeps, eats, fights as a team, this individuality BS that you read in the newspapers written by some bilious bas...”*

My grandchildren often ask, what is the difference between a manager and a leader?

A manager is someone who runs an institution, they are administrative. A leader leads through and by their strength of character. Can you learn to be a leader? Yes, you can, if you have the right personality. But the person with the natural talent will always shine.

I once had a platoon commander that gave me fifty push-ups to do as a punishment for a minor military infringement. He did them with me, and congratulated me when we finished. He was the only platoon commander we had that we all called “skipper”.

Do not mistake leadership for popularity:

- To be successful you must be good at what you do;
- To be popular you need only to be fashionable.

You can often see the leader of the group, just walk up and ask a question, the leader will be the one that answers the question. The leader will be the one that the others naturally defer to.

In karate there is three distinct areas of expertise, there is *Kata* [form - let’s call it thinking and theory], there is *Kumite* [fighting – practical application of form], and there is *Oshiemasu* [teaching – probably got my tense wrong there!]. Very few are good at all three. Good leaders are good at all three: thinking (theory), practice, and teaching.



Australian Navy Cadets Training Ship Kookaburra Recruiting Drive 2019.

## PERCEPTIONS

As the Editor has commented, “perception has become so important”. The ADF’s professionalism, its training, and even its recruitment must have the right perceptions. If you want to see the stark difference in what I am talking about, pull out your computer and view the 2022 recruitment advertisements for the US Army. Who would you fight for?

So we need to attract the right people using the right advertising. This will require experts in their field. For advertising I would approach Mr Rowan Dean – a man that has had a very successful advertising career.

I would also be informing “our ABC” that they will be doing a Defence show once a week – perhaps Friday night from 1815 to 1900. They can take that out of their budget until the various defamation cases against them (and their staff), which we, the tax payer, have paid for, is paid off. If they don’t do it, then get a private company to do it and deduct the cost from the ABC budget.

The show should consist of five segments: Army, Navy, Air Force, and DSTO/Defence industry. The fifth segment should be an interview with a member. It might be a senior officer or NCO, or a new recruit – spread it out. Someone like John Anderson, or Dr Neil Baird, or our own Aeneas, would be good at this. It has to be someone that knows Defence, defence industries / equipment and, personnel. The interviewer might change each week depending on whom and from which service the interviewee is from.

## RECRUITMENT

Recruitment programmes should include:

- increasing the mobile defence recruiting budget. These are the teams that visit high schools, country shows, etc. Friendly, informative, and face to face, it works every time. It doesn’t hurt if there is an APC parked there with them, or if you’re near the water, perhaps a mine sweeper or patrol boat, or an escorted visit to an LHD, or a close upfront and personal look at a C-17, or C-130, or C-27, at an air show.
- telling some magnificent true stories – bush fire relief or flood rescues or boot camps for troubled youths or how a troubled kid from the school of hard-knocks ended up being awarded the Victoria Cross.
- Getting the government behind the various cadet corps throughout Australia (Army school cadets, Navy Sea Cadets, and Air training corps). These should be encouraged, have realistic military training and be supported by a mixture of reservists and regulars.



RAN: A Sense of Service and Belonging - always has been, always will be.

Reserve units are part of the ADF and should be viewed as a pathway to full time service. Navy reservists must have access to blue water vessels to keep up to date with sea training. Sixth battalion used to be an ANZAC battalion. When we were on exercise, C-company was manned by Kiwi’s. When we were back on base C-company was used as a training-course company. Perhaps this could be done with some vessels. There would be a number of berths for reservists. These personnel would rotate or roster through. It’s probably not a suitable idea for a frigate but it might work for a patrol vessel or minesweeper.

Something else to consider is education standards for recruits. I am absolutely against strict school certificate standards. They are not a good way of deciding if a recruit is up to scratch, especially when you consider the rubbish that is taught in schools these days!

We need to ascertain intelligence and military potential. That is all we need. Are they fast learners? Examples:

- The recruit has passed in English and maths to fourth form and has excellent referrals – you’re in mate.
- Example: The recruits’ academic record is awful but he is keen. The recruitment officer is unsure. Get them into the reserve and re-assess in 12 months.
- I once had a bloke come to me seeking help to join the Army reserve. He had been knocked back three times because of his academic standard (grade nine QLD). Here is the rub – he was a qualified plumber & drainer, and was running his own business. I explained to the recruitment officer that technically this man had a tertiary education and that they should give him a go. They did, and he is still serving, without incident.

## RETENTION

Once we have the right person how do we keep them there? Well, that is the million-dollar question!

By its very nature, we are recruiting young adults and most of those young adults will settle down, get married or become involved with someone, have a family, or buy a house, etc. The nature of service means new postings, new areas of responsibility, deployments, exchanges, and training and do not forget training, exercises, and training and (yet) more training. I am sure I forgot something. How do we ensure reasonable life stability whilst getting maximum service possible?

One idea I had was to have a series of federally funded high schools built near military base / married quarter areas. The schools would teach classic subjects on a strict time table. This means that if a family moves from one base to another then the kids are only going to miss school for the time of travel (of course if the new posting





A Thinking, Fighting, Winning Warrior Culture - RAN Clearance Divers the tip of the spear.

was made during school holidays, they would miss nothing). This is a two-fold idea:

- First, it means that children of Defence personnel are going to have a first-rate stable education.
- Second, it means the commonwealth can keep an eye on the standards of the state system and have some control over the quality of future university and technology students, as well as keeping an eye on the quality of teachers!

Depending on location, there would be a cadet group at the school or just down the road. Someone that could be approached about a curriculum is Dr Kevin Donnelly AM. A classic subjects curriculum would include English (that's the language not new-speak which is a political subject), Maths (that's to do with adding and subtracting and working with equations to find solutions – no, it is not racist because there is either a right or wrong answer!), History (don't change it – just teach it as it is!), Geography (yes, we are surrounded by water – no, we are not going to drown!), and citizenship education [civics] (it's a democracy – no it's not white male supremacy in action!).

There should also be night courses at these schools by ADF “chalkies & schoolies” (teachers) for those that want to reach matriculation standard education. Of course, we would have to see what the demand is.

All ADF trade qualifications should have national civilian recognition. The high schools could also be involved with trade training. I became an Army vehicle mechanic after attending RAEME Training Centre for 12 months (48 weeks actually). There is no reason that a similar course couldn't be taught over a two-year period and incorporate English, Maths, Engineer Drawing (computer drafting) and a mix of trade subjects.

Both academic and trade streams should include non-classic subjects, such as computer programming/design, robotics/AI, and perhaps the very beginning basics of nuclear physics.

## ADMINISTRATION

We probably need a small administrative team with a good leader that can co-ordinate recruitment advertising with recruit training capability. I don't really know what goes on there, but it seems to me that co-ordination is the key.

I sometimes think that if the government owned a bank, and if the majority of the people used that bank, then the profits could be used to help pay for such things as defence innovation, ship building, and education.

Oh, that's right we used to have one of those! I wonder why we sold that? We don't seem to learn from history – the formation of the Bank of England for instance!

## COMMUNICATION

I've said it before and I'll say it again, every unit needs a suggestion box. Never under-rate the intelligence of the average digger, or sailor, or airman (sorry, I mean *aviator*).

If you are prepared to listen – they will tell you what they need and sometimes it is just to be listened to.

## CONCLUSION

*Industry and proficiency pave the way to success*

Pliny the younger.

The more suitable people we can recruit, and the more we can retain the more likely we are to dissuade and deter an enemy from attacking us.

We must always remember that:

- the purpose of the military is to defend the country, deter our enemies, and not to be involved in feel good politics;
- that the RAN will always be the backbone and front line of that defence;
- that there is no correlation between right education and right military recruit – but good training makes the difference.

If you want to retain more trained people, concentrate on the job at hand. If you want to be an activist, get out and be an activist. You can't be both!

For a little bit of light reading, I recommend the following by Dr Kevin Donnelly AM:

*How Political Correctness is Destroying Education*

*How Political Correctness is Destroying Australia* ■



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## ANALYSIS OF DEFENCE STRATEGIC REVIEW (DSR)

### DIPLOMATIC CONTEXT

*The most fundamental welfare is the security of our people. (Attr. Hobbes)*

Combined with the Foreign Minister's elegant "Managing Equilibrium" brief to the National Press Club (17 Apr), the compartmentalising of AUKUS, the redacting of its innovation report, the reduction of financial and materiel aid to Ukraine, equivocation about the PM attending the July, Lithuanian NATO Indo-Pac conference, the release of the Defence Strategic Review during ANZAC week, the *ad hominem* colonial-era admonishment of a key ally (by the Foreign Minister, when visiting London), combined with Premier Andrews secretive visit to China – followed by the dropping of WTO claims against China (by DFAT) and an apparent invitation to the PM (also in July?) – all suggest the Government is pursuing a placation policy. Seeking to remove trade tariffs; maybe reengage the Belt & Road Initiative (BRI)? perhaps by aligning China's 14 (plus four) demands on Australia. Aspects of which may be incompatible with commitments to:

- deter a China-Taiwan conflict;
- prevent future pandemics;
- protect sovereign interests (including with the Pacific Island Forum);
- contribute to: ASEAN as a *dialogue partner*; as a member of the TPP, and other trading bodies and treaties;
- Key trading partners, such as Japan, the UK, and the EU;
- Five Eyes;
- AUKUS;
- QUAD;
- Five Powers Defence Agreement;
- ANZUS;
- Defence Training partners (U.S., Japan, Singapore, and South Korea);
- NATO (as a *key partner nation*).

### STRATEGIC CONTEXT

For decades, *The NAVY*, [1-47], has been considering the effective defence of Australia. When many politicians, commentators, industrialists, consultants, and academics were pursuing other narratives. Including in Government, the APS, DFAT and, Defence. Quoted by Rear Admiral Andrew Robertson AO DSC RAN [37]:

*What shall we do to be saved in this world? – There is no answer but this, look to your moat! The Marquess of Halifax (1694)*

*Your aim should no doubt be, if it were*

*possible, to prevent anyone else having a navy at all: the next best thing is to have on your side the strongest navy that there is. Thucydides' (433BC)*

### Target Australia

Between December 1941 and early 1942, Japan launched simultaneous attacks against Hawaii (Pearl Harbour), the Philippines, Guam, Wake Island, Malaya, Singapore, and Hong Kong. Subsequently occupying American, British, Dutch, and Australian Indo-Pacific territories; raiding naval bases in Ceylon, and bombing Darwin.

A consensus has emerged – identified by General, Senator Jim Molan and Mark Schweikert [31, 46, 47] – that the moment of *Peak Danger* may be between now and 2027. When, if not previously suborned, China (as stated by President Xi as part of *his Chinese Dream* (中国梦)), is most likely to inveigle Taiwan. At a time, after the U.S., UK (2024) and Australian (2025) elections, when they may all be at their weakest. Before recovery, rearmament, new designs (and re-industrialisation) kicks in.

### Cut, Hit, Seize

The Russian 2022 war on Ukraine has changed the calculus. Heroic Ukrainian resistance may indirectly make things more dangerous for Australia. If a quick defeat had occurred, China might have entertained a less robust Taiwan strategy. The protracted defence of Ukraine – moving into an attritional phase – seemingly changed China's doctrine of "hit hard and first" to:

*Cut off, hit hard, seize the initiative*

隔断,用力打,抓住机遇 – or:

*Cut, Hit, Seize (Pre-empt)*

切,打,抢占

The doctrine has parallels with the Mahanian, Japanese WW2 Decisive Battle Doctrine (艦隊決戦, Kantai Kessen), [28] whereby Japan would seize key objectives and then establish a defensive perimeter to defeat Allied counterattacks – as a basis for negotiation.

### Great Steel Wall (钢铁长城)

The "hit hard platform" / *speerpunkt*, is represented by China's *Dragon's Spear* (鯨矛); launched from its *String of Pearls* (珍珠链) – China's First and Second Island Chains. [24] Its motte, keep, bailey, mote (islands), and moat (SCS) – that make up its Great Steel Wall (GSW). [11]

Following the *cut-off first doctrine*, if China is to successfully invade Taiwan, it will need first to lock down its defensive perimeter (the GSW). In such a scenario, it is almost inconceivable that Australia would not find

itself simultaneously on the front line – as a negotiation precursor.

### No Limits Axis (NOLA)

Examining the *No Limits Axis* between China, Russia, (and Iran), the countries connect contiguously (through Pakistan) the Bering Sea, the Philippine Sea, the South China Sea, the Bay of Bengal (through Myanmar) the Gulf, the Arabian Sea, the Red Sea (through Yemen, via Djibouti and Port Sudan), with the Mediterranean (through the Hezbollah / Islamic Republican Guard Corps controlled Syria and Lebanon), to the Black Sea, the Baltic, and the Barents Sea. The recent Chinese led rapprochement between Iran and the Kingdom of Saudi Arabia (and with Hamas), is a strategic coup – with Saudi Arabia looking to join the *Shanghai Cooperation Organisation*.

A revanchist, No Limits Axis poses an existential challenge to the Global rules-based order. Not simply regarding Ukraine, the Straits of Hormuz and Taiwan – but also to energy costs and security. Putting significant pressure on the US Dollar remaining the prime currency.



The No Limits Axis (NOLA) 120th Easterly Meridian, from south-north.

### The Asymmetric Axis

Traditionally, the threat (e.g., during the Cold War) was seen in terms of an east-west axis. Whereas, NOLA asymmetry lies north-south (along the *120°E Meridian*, GMT + 8hrs) – connecting China's Antarctic Belt, through Australia, the South China Sea, China, and Russia-Siberia (upon which China is making increasing claims), with the Arctic. As Professor Michael Wesley recognised, in 2016:

*"to find a Mackinderian formula, the Three Peninsulas hold the key to the Bays; the Three Bays hold the keys to the Peninsulas. So, for example, the further expansion of Chinese influence down the Indo-Pacific Peninsula will further split ASEAN [and QUAD] solidarity, allowing the continuing advance of Beijing's claims in the South China Sea. Creeping Chinese*



control over the South China Sea brings it closer to its goals in the West Pacific Peninsula – what Chinese strategists call the First Island Chain – including by ramping up the pressure on territorial disputes with Japan in the East China Sea”. [45]

By removing Australia as the *stopper* (at the top of the *Three Bays and Three Peninsulas*), East is divided from West (the U.S. and Japan, from India), along the *NOLA (120°E), Meridian*; connecting both poles and, thematically, Mahan (1840-1914), with Mackinder (1861-1947).

### The Cyber Axis

In “looking to its moat”, Australia will need to secure its Cyber-maritime. Where a Grey War may well have begun.

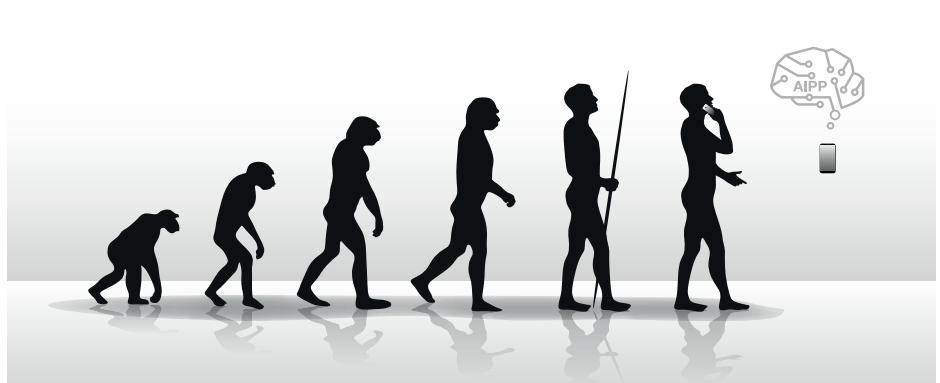
- 95% of all international cyber-internet traffic come across high speed submarine cables (HS2C).
- There is no global Southern-Hemisphere, HS2C. All southern-hemisphere cables connect east-west through northern risers.

Australia's Cyber Axis currently runs north-south, parallel to the *NOLA Meridian* – through contested / captured islands, seized by Japan between Dec 1941 and Feb 1942. Its three main risers connect between:

1. Perth, Christmas Island, Jakarta (through the Malacca Straits) and Singapore;
2. Sydney, Guam (via the Coral Sea, close to the Solomon Islands), and Japan (Minami-Boso);
3. Sydney, Hawaii (Makaha), and Auckland, Hawaii, with Japan, Guam, and Los Angeles.

Australia is vulnerable to any constraints placed in the Malacca Strait, or the South China, and Coral Seas. There is also no highspeed maritime cable connecting Australia's capital cities. As of 2018, a HS2C connects Sydney to Perth via the Bass Strait and Great Southern Ocean (*Indigo Central*), and Perth to Jakarta (*Indigo West*).

An interrogative from Adelaide to Canberra and back currently travels 13656 km (7374nm) along the railway lines, from Adelaide, via Port Augusta, to Perth, to Sydney, to Canberra, return; switching about 20 times. Equivalent to travelling 34% of the world's circumference, or Adelaide to Hong Kong, return. The result is time critical packages – e.g., for financial transactions – become un-synched due to time latency. An Adelaide-Canberra HS2C would reduce the distance by two thirds (4454km / 2405nm) and switching, by 50%, or more. The situation has not advanced much since the days of steam and telegraphy!



From Ape to AIPP? (AI Application) - Image and Caption NLA (SRAKCAM), 2023.

### New Scientific Axis

The world is entering a new scientific age, 2020-2064, at the end of the *Information Age* (1975-2019) – typified at its start by instability and uncertainty. The new scientific age, described as the *Synthetical Age*, will be defined by the synthesis of quantum, AI, and nano-technology (QAIN). All of which will challenge the employment of people and the transfer of culture and knowledge.

ChatGPT (+) has profound moral and ethical implications. Sending young people up against / potentially to die fighting an AI App (from Ape to AIPP?) raises questions about war, the laws of armed conflict, and the contest of ideas and humanity. Previously one and the same.

### A Global Minority

According to the Economist's Intelligence Unit (EIU), [52] the democratic Global West, comprises 72 (37%) of the UN's one hundred and ninety-five nation states. About 43 countries (22%) imposed sanctions against Russia. Representing sixteen percent of the world's population – although, 61 percent of global GDP. [53]

While almost all sanctions on Russia are by democracies – the majority from the EU, NATO, AUKUS and, regionally, by Japan, New Zealand, Singapore, South Korea, and Taiwan – it is a minority of the UN. In the event of an attack against Taiwan (a democracy), it is unlikely that this will improve. Regionally, Australia and Japan are likely to be on their own.

Being the minority of nation states and by population, should enable asymmetric agility, in terms of industrial and financial effectiveness. For this to occur, the Global West (for all its imposition of non-Millsian ethical virtues) may need to recognise it is increasingly unpopular, distrusted, nor in the majority. In the UN and elsewhere.

### A STRATEGIC FORCE

A critical weakness of reviews is their focus on optimising what exists. Which only works, if what exists is right and in balance.

Mention review and ADF/APS personnel fear the answer: “more for less.” Where less equals people. For example, the 2015 *First Principles Review* that led to the disastrous conflation of Capability Development with Defence Materiel. By failing to set out what the ADF should look like, the DSR plays into this perception.

The “take it or leave it” recipe given to Defence – as warned by CDF – means that programs will be cut, in order to pay for nuclear submarines and other select programs. Leaving the Services and APS to protect their own. This is not the basis for cooperation – quite the reverse. For Army supporting Navy, or Army and Navy supporting the Air Force – to get the best deal for Australia.

### Force: from Defence to Armed?

Jointness is both a strength and weakness. Lack of political representation creates a managerialist, divide and rule mentality – to the detriment of cooperation. Particularly when under existential threat of cuts. Recognising the move from defence to the projection of cooperative, focussed joint force, affirms the need to restore Navy, Army, and Air political secretaries / ministers.

Given his handling of the Brereton Report, extension in post (for the DSR); its handling and cost cutting (of Army in real terms), CDF may consider resigning. To safeguard what remains, and allow a new thinking-fighting leadership to emerge.

### Rebuilding

Rensis Likert, in galvanising U.S. shipbuilding after Pearl Harbour, removed the top layer of management (bringing some back as advisers) and bootstrapped middle management and blue-collar foremen into senior leadership positions. Similar brevet promotions occurred in the military.

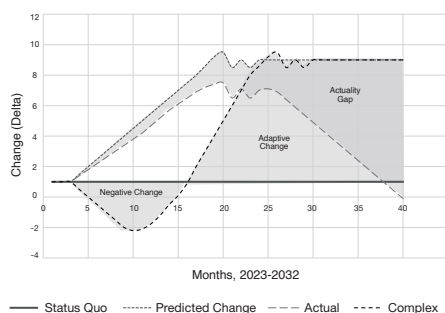
The DSR fabricates a \$42bn ‘black hole’ in the defence budget which is forcing the Government to cancel, reshape or defer current capability projects in order to fill. By these actions, do the authors not also admit that the Government is unwilling to fund the so-called black hole? If there was a black



hole, and Government was serious about Deterrence, they would stump up the funds to fill it. Not by robbing Army to pay Navy.

The DSR essentially applies the *von Neumann turnpike*, based on misplaced concepts of *Schumpeterian creative destruction*. Exactly because, there is minimal creation, and maximal optimisation. [48] It is predicated on cutting some programs (substantively hollowing out Army), to rapidly capitalise others (Submarines, Air, Space, Cyber, Guided Weapons, UA/S/U/Vs) through *predictive change*. All orchestrated by the *accountant consultancies*, who run Defence.

Without investing in change-leadership, there will be paralysis, as the shock works through the system, caused by the removal of programs and management teams. As for collectivisation (*Holodomor*) and the Great Leap Forward (both leading to famine), people will become fearful.



### Predictive Change

The consultancy-model assumes a control system response. A stimulus is injected, Key Performance Indicators (KPI) set, and a linear, predictable, managed response, with a few perturbations, follows. In 20-months you are there. Change is led; not managed. It is costly and requires investment and trust. The actual response lags the predicted. Made worse by fixed indicators encouraging deceptions. People know the result of not reporting the “expected KPI.”

### Ten Year Rule

After ten years, the actuality gap is so wide, that everyone notices – but there is no one to hold accountable. So “new-same-revised” consultancy models are applied, and it starts all over again. Except worse than before.

### Adaptive Change

Defence is a complex system. If it is to change, it requires investment to change (leadership, time, and dollars) – during which there will be negative change. Got right, and the system will get there, even by 2025. Got wrong and it never will.

### Capitalisation

According to the DSR, the defence budget will increase at a slightly higher rate than was previously earmarked in the forward estimates by the former Government. But with a target well under 2.4% of GDP, this is

a training and exercise capability budget. Other nations who have accepted the threat of war with China are already closer to or well above 3% of GDP.

The DSR “recommitted to funding at a growth rate of 5-6 per cent per annum” [after 2027] but does not measure against tangible outcomes. Such as size of Force, percentage of GDP, by when. Setting aside the false savings generated by optimisation, current inflation rates suggest that increases of 8-9 per cent per annum, will be required to realise 4% GDP by 2035. Particularly if the focus is to be on designing and building a new ADF.

New capital (\$2B a year) will need to be found. The 10% savings (over 10 years) articulated by the DSR (also to fund nuclear-powered submarines), will not be enough. Transferring deck-chairs from one place to another, will not enable change – rather feed fear and *stasism*.

The DSR attempts to select winners – always dangerous; noting the emergent qualities of strategy, economies, industry, and navies. By cutting some capabilities and deferring others, the government is inadvertently sending a strategic signal to Beijing that these are the areas Australia is vulnerable in.

For this reason, ANSON [1] developed a capitalisation model, using the innovation and discipline of the market, to fund the building of a versatile surface fleet, based upon modularised merchant hulls. From PBs, MCMs, Frigates and Destroyers to Heavy Lift ships (LSDs) and Air Capable Transports ships (fleet carriers). The model remains urgently pressing today, for capitalising Defence as a whole. It has been taken up – without capitalisation – by the Royal Navy.

### Research and Development

Studies of UK and U.S. Defence budgets indicate that, for an adaptive / agile force, about 15% of the budget should be spent on *Research, Development*, and *Experimentation*, and up to 5% on Cyber. The current annual DSTG spending is about 1% of the Defence budget whereas *Cyber* is around 3% (increasing to 5% under the DSR). Since 2013, DSTO has become DSTG and, like CSIRO, has become less scientific laboratory; more management consultancy. The DSR does nothing to address this thematic weakness, or indicate how R&D will be funded at appropriate levels. The complete redacting of David Peever's (2022) “comprehensive review of Defence innovation, science and technology” gives little confidence.

### AUKUS

After decades of effort, and at times hyperbolic criticism, the Navy League's

proposition and advocacy on nuclear powered submarines has finally come to fruition. What started in 2021 with a surprise announcement by the former Government about the acquisition of nuclear-powered submarines has survived an election with a plan now agreed by the three leaders of Australia, UK, and US, in a pact known as AUKUS, for Australia to join the exclusive SSN (Submarine Attack Nuclear) club.

It should be noted that AUKUS is much more than just an SSN acquisition program. It is a response across all facets of military and national security strategy to the massive military build-up of China and its stated intention to forcibly reclaim Taiwan through military means, if needed, and impose its will around the world. Free democratic countries are naturally concerned at the prospect of a Communist regime destroying a thriving democracy of approx. 24 million people and the potential post-consequences for an emboldened Chinese foreign policy.

The three-stage plan to acquire a fleet of new build SSNs involves exposure, interim acquisition, eventual build, and commissioning of eight new SSNs as a full operational capability.

**Stage one** of the plan, exposure, involves embedding RAN personnel with USN and RN submarines, increased port visits by USN and RN SSNs and an SSN Rotational Force-West, known as SRF-W, of up to four USN SSNs and one RN SSN, beginning this year, based out of HMAS STIRLING in WA. This stage will also generate the requirements for Australia to start investing in SSN maintenance and facilities to base its SSNs in country.

**Stage two**, interim acquisition, involves purchasing three existing USN Virginia Class SSNs (Block variant unknown at this stage) to expand Australia's stewardship capacity and provide an SSN capability as soon as possible. There is also the potential to sell up to two more if strategic circumstances require it. The first Virginia class SSN is planned to be delivered to the RAN in the early 2030s. Acquiring Virginia class SSNs as an interim capability to an eventual full capability will ensure there is no submarine capability gap during the retirement of Australia's existing diesel-electric powered *Collins-class* submarine fleet, which at this stage will still undergo its full Life Of Type Extension (LOTE). The 3 reduced LOTE + 3 *Virginias*, recommended by Dr Baird, [5] as announced by the DPM, Richard Marles, may also be pursued.

**Stage three**, full operational capability, involves partnering with the UK and US under the AUKUS agreement to deliver a trilaterally-developed SSN based on the UK's next-generation design, the SSN(R), incorporating cutting edge technology from all three nations. This submarine will be the apex predator of the sea.



## SSN-AUKUS

Known at this stage as *SSN-AUKUS*, it will be the future attack submarine for both Australia and the UK, with both countries to start building in their domestic shipyards before the end of this decade.

Australia plans to deliver its SSN-AUKUS in the early 2040s, while the UK will deliver its first SSN-AUKUS to the RN in the late 2030s, which should help Australia with some de-risking in the build process.

The new SSN is expected to have its reactors plants built by Rolls Royce with the combat system and weapons by the US. The reactor plants will be closed for the life of the submarine and thus not require the complex and expensive refuelling of older generation reactors. Australia will be responsible for disposal/storage of the reactor plants once decommissioned.

## DSR STRATEGIC?

*Everyone knows that Air Forces are the coolest part of any military, and since we last met of course, Top Gun Maverick has graced cinemas around the world.*

Deputy PM (DPM) Richard Marles, 2023 Avalon Air Force Conference

As the DPM knows, Captain Pete “Maverick” Mitchell BSc is a US Navy aviator. Like the Fleet Air Arm, the best of the best. Its pilots should, by now, be flying the F-35B, along with all major allies.

Forty-two years ago, the UK Government’s ‘Nott Review’ into defence capability and posture was released which, by its cuts, strategic assumptions, and policies, prefaced the 1982 Falklands. The Argentines saw the review’s implementation as an opportunity to embark on military operations. Such is the power of defence reviews.

Fast forward to 2023 Australia; the Albanese Government’s much awaited and hyped Defence Strategic Review was published the day before Anzac Day. If, by its opening statement on page 5 “*There is no more important and consequential task for Government than protecting the security, interests and livelihoods of its people*” then the review has already failed. Historians in the future will record this Government policy paper as a missed opportunity for deterring war in the 2020s. Much like the Nott Review.

There are no real substantive changes from the previous Government’s announced decisions on defence capability. Some of the highlights of the DSR, and the Government’s acceptance of its recommendations include;

- a move to a “National Defence Strategy” using a Denial tactic;
- abandonment of the balanced force concept in favour of a “focused” (or unbalanced) force;

- more ammunition stock holdings;
- greater involvement and frequency of exercises;
- another review into surface combatant type and numbers for Navy;
- a new level of bureaucracy to examine capability decisions chaired by the Chief of Defence Force and Department Secretary with another layer of external oversight of the department’s implementation of the DSR, and,
- potentially a little more funding, but through cutting and cannibalising other projects.

Service	Permanent	Reserve	Total ADF (2035)
Navy	24,200	5,800	30,000
Army	72,000	48,000	120,000
Air Force	21,600	8,400	30,000
Total	117,800	62,200	180,000

Conservative estimates suggest a war would require spending of 20-30% of GDP. An investment of 4% GDP would assist greatly in preventing further excessive war spending later. This argues for doubling the size (and budget) of the ADF by 2035, to 180,000 (30,000 Navy), including:

- A *Joint Littoral Manoeuvre Force* (JLMF) – including ships and LHDs (as per the WW2 *First Corp*) comprising also 12,000 (10%) of Army as the remobilised Third Division; [34]
- A Fleet Air Arm and RAAF *Joint Lightning II Force* (JLF) using F-35B modified LHDs and a new carrier.

The Defence Strategic Review did not answer “what the ADF should look like in 2035?” Instead, it called for yet another Review (of Navy). It is not strategic, exactly because it was done in a hurry, to address peak 2025-2030 Defence shortfalls. Necessary to buy operational, not *strategic* time. This is both its strength – providing urgency and killing off zombie programs – and its weakness. It does not set out what Defence should look like in 2035, and beyond – against tangible numbers and a percentage of GDP. Against which planners might plan – and some pain might be offset, or at least be explained by what is coming.

### Holding the Moat

*To protect the moat, one must operate behind, on, under, above, within, and beyond the moat.*

Paragraph 4.1 in the DSR says “we recommend the Government directs Defence to adopt a strategy of denial.” Paragraph 4.3 goes on to say “Deterrence exists in an adversary only as a ‘state of mind.’ This makes credibility in deterrence especially important, while also making the success of

deterrence posture and effects very difficult to assess.” The very real danger here is if the enemy does not believe it or wants to take the risk, then our new strategy is already defeated. If the Government does not make the appropriate investment in all defence capabilities, then an enemy will certainly not believe the strategy.

The big loser in the DSR is Army. More specifically, its armoured capability. While Army is to have its existing regional/littoral manoeuvre watercraft project accelerated (how, by what means and when is open to interpretation), it loses over 321 new Armoured Infantry Fighting Vehicles or AIFVs (to replace the existing Vietnam war era M-113 APCs) and a regiment of approx. 45 self-propelled Howitzers. This will reduce Army to a shoot and scoot one shot/strike capability.

If Army is to project power, defend, hold, and secure land, it needs armour and artillery. The lesson of Ukraine is not that armour and artillery are unneeded – as the provision of *Challengers, Leopards, and Abrams*, is showing. It is how they are designed, applied, and deployed. The same applies at sea, where surface vessels are necessary for sea control and force projection.

Contrastingly, does Australia need 50 (and more) HIMARS, at \$5.1M a piece – useful only if landings have occurred? Which makes them beside the point – unless they are deployed forward. Requiring land, maritime, and air projection to do so. Or, is their value in export, at \$250M to the Australian taxpayer? The HIMARS decision illustrates two points:

- First, that foremost Australia needs to be able to deter attack by defending the home base. If forces are already landing, it is too late;
- Secondly, defence of the home base requires the capability to hold, secure, control, and hold the moat – by projecting Force.

Airforce experiences little change with its AGM-158C LRASM anti-ship missile acquisition and integration with Super Hornet and JSF re-announced, and an acceleration of its Integrated Air and Missile Defence (IAMD) project, which had already fallen behind schedule. The JSM, an air launched version of Navy’s NSM anti-ship missile, was also re-announced for F-35.

Navy, hot on the heels of this review, will get another review but this time on its surface combatant fleet with the view to justifying the introduction of a corvette sized vessel and a return to the old 1986 ‘Dibb review’ concept of Tier 1 and Tier 2 combatants. Navy will also get an East coast submarine base for the new AUKUS nuclear powered submarine, in addition to already announced facilities upgrades in the West.

Whereas announcements of an enhanced



sea-mine capacity, guided weapons manufacturing, basing, Ballistic Missile Defence, cyber, and drones, are significant, they are essentially defensive. As currently envisioned, are long-range strike, Tomahawks, and submarines. All of which will require supporting forces, if they are to deliver a deterrence capability. Fundamental to surviving a first *Cut, Hit, Seize* (切, 打, 抢占) strategy. Hence the importance of Domestic and Maritime Operations to Deterrence. And the lead being taken by Army's re-constituted Second Division, supported by Navy MAROPS.

## REVIEW LEADS

On three grounds, the choice of DSR leads could be questioned:

1. Bipartisanship;
2. Bias / conflicts of interest;
3. Competence (in Command).

The Defence Strategic Review led by Sir Angus Houston and Stephen Smith (now Australian High Commissioner to the UK), advised by Professor Peter Dean, would have stretched any leads.

Sir Angus was Chief of Air Force between 2001 and 2005, and CDF between 2005 and 2011 – when Prime Minister Gillard had “something of a crush on him”. He presided over the introduction of the *Joint Strike Fighter* – which ruthlessly suppressed alternative suggestions for the F-35B, carrier variant. Flown by all key allies. It was the then Chief of Army support for the LHDs (CANBERRA and ADELAIDE) that allowed Navy to procure these vital ships. Sir Angus was CDF when the decision was taken on the LHD design. Essentially *strategic vandalism*, meaning they could not carry the F-35B without modification. Before becoming CDF and following his departure in 2011, Sir Angus was involved with asylum seeker policy. The successful *Operation Sovereign Borders* policy was designed by General, Senator Jim Molan and introduced by Prime Minister Abbott, under Scott Morrison, General Angus Campbell and, then, Rear Admiral Michael Noonan. Sir Angus then headed the Joint Agency Coordination Centre in its unsuccessful search for MA 370.

The Honourable Stephen Smith was a solicitor, lecturer, and tutor, before entering politics as an adviser to Paul Keating and winning a seat as an MP, in 1993. Between 2007 and 2010, he was Minister for Foreign Affairs, under Prime Minister Rudd (now Australian Ambassador to the U.S.), briefly Minister of Trade, before becoming Minister of Defence (2010-2013) under Prime Ministers Gillard and Rudd. While Minister for Foreign Affairs, Smith was party to Rudd's China rapprochement. Although Quad members were similarly pursuing warmer

China policies, it was Smith's comment to the Chinese Foreign Minister that “the May 2007 meeting was a one off” and that “our priority emphasis has been on this trilateral dialogue [US, JP, AS] among the three allies” – that broke QUAD 1.0. During his time as Minister of Defence, Smith presided over the running down of the Defence Budget (to its lowest ever post-war level), to build a war chest for the 2013 election. As boat people came in their 1000s, hundreds of sailors were deployed recovering bodies and policing an unstoppable and unworkable policy. Smith was found to have incorrectly removed a naval Commodore from ADFA, as a result of the (2012) Skype scandal.

In 2015, Peter Dean, as a junior academic (now with the University of Sydney, Governments funded US Study Centre), wrote for *The NAVY* [20] on amphibious strategy.

## Yes, Prime Minister

The handing over of the Defence Strategic Review on 14 Feb was assiduously emblematic [54]:

**Sir Angus:** *this is a product of six-months of work and I think it addresses all the Terms of Reference and we're very pleased with that.*

**PM** Thank you.

**Sir Angus:** *Only sad that Stephen is not here.*

**PM** Yes but he is serving in a different way.

**Sir Angus:** *I hope it does everything you need it [the DSR] to do and it is on the money. We are very happy with it.*

**PM.** Thank you. We are on top of the direction you are heading... This is the most significant piece of work [on Defence and Security] in 35 years. It is another entry on your contribution to the nation, really appreciated...

**Sir Angus:** *I think it was really good doing it in just over 6 months. When you compare to similar processes all done in twelve to eighteen months, and here we are in 6 months...*

**PM:** Part of the Government's Productivity Agenda...

**Sir Angus:** *...and also, I think it reflects a great example of the urgency required.*

**PM.** And having a former CDF and Defence Minister, and Foreign Minister, I think has really helped as well, not like you were coming in from without...

**Sir Angus:** *...well Stephen was right across it.*

**PM:** This is the most significant piece of work in 35 years, adopting to the new strategic environment that we face.

**DPM:** We have been talking with Stephen prior and I think both of you felt this was the single most important [thing you have been] involved in, in Defence – which is a big call

for both of you...

**Sir Angus:** *Six years as CDF and 4 as Chief of Air Force before that, but this is the most important piece of work...*

**PM:** Well, you've earned a cup of tea in my office for all that.

It is unclear which consultancy supported the DSR. If it is the same as for the UK 2010 SDSR, then there should be grave concerns. It should not be a triumph that something so fundamental took only 6 months. The holes were evident, in pre-emptive talk of Army tanks (defending Queensland (PM)); judicious partisan leaks to the Canberra literati; promoting Air Force strike; HIMAR, and, the procurement of nuclear-powered submarines. Few of which are likely to allow for a Joint response by the Chiefs, and which may break ADF along Service lines. As they seek to protect the furniture.

Sir Angus was in Defence long enough to know the old Army adage, that “hope is not [a really good] plan! (or DSR)” nor “on the money”.

## THE CANBERRA INDUSTRIAL COMPLEX (CIC)

Eisenhower (1961) warned of the Military Industrial Complex (MIC) – and its potential excess. An Australian equivalent may be the CIC?

Atop the CIC sits the Prime Minister and Cabinet Office (PM&C). A “sofa” begun under John Howard; now comprising over 1300 unelected staff – including 100s of unanswerable, contracted special advisers, unaccountably “on loan” from the consultancies. Its tentacled franchises replicating all ministries. Its gatekeepers telling ministers and PMs what to do. As Jim Molan recognised, unlike in the U.S., there is no National Security Agency (NSA) in Australia, to support the National Security Committee (NSC). So, the PM&C also superintends the NSC, in addition to the Office of National Intelligence (ONI).

## Unconscious Bias?

Social Identity Theory holds that “Unconscious Biases are social stereotypes about certain groups of people that individuals form outside their own conscious awareness”.

Based on AEC voting data, up to 48% of the primary vote may be for parties of the left – with 28% of Australians voting for politicians representing inner-city (mostly Labor, and Greens) seats. A “class,” from which many contemporary politicians are drawn. In 2022, the Canberra electorate voted over 40% in favour of left wing and green politicians; 66% overall for left leaning parties – cf., 20% for centre right parties (Liberals) and 14% for Nationals.

Canberra's electorate comprises employees



of head offices, industry, Defence, lobbyists, academe, the High Court, banks, public institutions (APS, ABC, RBA); utility companies, consultancies, and commissions.

### A Counterfactual

Ex Prime Minister Abbott acknowledges that QUAD 2.0 was the product of two fathers: Shinzo Abe and Narendra Modi. In fact, it has three: the third being Tony Abbott.

If Abbott had not been ejected by [the CIC and] his own Party, Australia, today might have the fourth of a dozen evolved *Tagei-class* submarines in build, and HMAS ATTACK (S79), completing first of class trials, in the U.S. Following a 6-month delay due to COVID. Australia would have a successful Sovereign Borders policy; having embarked on sensible net zero carbon policies; not Snowy 2.0 – almost 10 years ahead of where it is, today. Preparing to meet the challenges of the mid-2020s – not the mid-2030s.

Prime Minister Morrison's AUKUS – as significant as QUAD 2.0, in causing a Chinese strategic pause – may have occurred earlier. Resulting in a risk-based decommissioning of the *Collins-class* and transition to nuclear, HMAS AUKUS (SSN 235). As advocated by the NLA and numerous articles in *The NAVY*. [4-6, 21, 25, 27, 22, 39-41, 43, 46, 47]

### Fitness to Manage

Referring to Dr Baird [1-6], Hugh Bagehot (*The NAVY*, Vol. 84, No. 2, Apr-Jun 2022, pp. 8-12) posited that CASG needs “an ethical clean-out”. Recognising Australia's ability to equip and sustain the ADF is at stake, he argued for:

- Hiring the right people to establish a class of career-based professionals with the aim of generating a highly skilled workforce;
- A “corporatized” CASG enterprise – as an entirely separate entity from Defence;
- “Root & branch” reform of ASDEFCON to ensure a more practical, and less onerous relationship, based on FIDIC and Australian Standards (AS).

### Selection of the Fittest?

The position Australia finds itself in could be due more to the fitness of the CIC and its polity, than any other factor. Raising several questions:

- Is Canberra Group Think more conscious, than unconscious?
- Is the CIC representative of Australia, as a whole?
- Can CIC thinking be represented impartially?
- Was the ejection of Abbott, as much about his own party, as a reaction by the CIC?
- Can promotions and selection of leaders (including in Defence, CSIRO, DSTG, and the APS) be based reliably on merit, in such an admixture?

For every APS in Defence, there are two consultants (16,000: 32,000); there are more APS / Consultants than the RAN and RAAF combined; and for a Dollar spent on APS-Contractors, about 75 cents is spent on ADF personnel. Noting creatures use tails foremost for balancing, not wagging:

- does the CIC provide value for money?
- Could an outsider, an Essington Lewis (SA), John Monash (VIC), or Thomas Blamey (NSW), be anointed today by the CIC?

Few change leaders may be found in the CIC. Which raises questions about its fitness to lead, select, and create the impetus for *adaptive change* and brevet selection.

### POLITICAL CONTEXT

The Government may struggle to marry expensive policies, including domestically on Aged Care, NDIS (\$35.8B a year) and *Renewable* (Carbon net-zero by 2035, Snowy 2.0, etc.), with:

- economic and fiscal requirements to tackle inflation;
- Industrial Relations;
- Energy Security (domestic and international);
- base-load reliability and affordability;
- Human Rights vis *Operation Sovereign Borders*.

[Navy deployed north in early 2023, following the “granting of permanent residency to 19,000 people who arrived by boat”.]

- The referendum on an *Indigenous Voice to Parliament*.
- The failure of inter-generational Indigenous policies to address the breakdown of and law and order in remote Australian communities (attributed, in part, to the removal of cashless credit cards / alcohol ban). Contributing to:
  - “A death rate due to external causes of injury for Indigenous children, more than 3 times the rate for non-Indigenous children.
  - Sexual assaults among Indigenous children aged up to nine, 4 times higher than rates among non-Indigenous children.
  - Indigenous young people aged ten to seventeen, 17 times as likely to be under youth justice supervision, as non-Indigenous young people.
  - Indigenous females and males nearly 10 and 9 times more likely to die due to assault as non-Indigenous females and males, respectively”. [50]
  - Indigenous Australian adults 32 and females 52 times more likely to be hospitalised from family violence, than non-Indigenous Australians. [51]

### ECONOMIC CONTEXT

The world is recovering from the 2019-2022 COVID pandemic, inflation, bank runs, and rising energy costs, exacerbated by:

- Putin's war on Ukraine;
- the rapid expansion of imported *Renewable* technology (including new poles and cables), necessary to achieve net-Zero by 2035;
- closure of multiple *Reliable* coal, oil, gas, [nuclear] (COGN) base-load energy power stations;
- resource taxes / capping of energy prices / local gas exploration;
- changes to IR regulations;

Projections suggest that inflation may peak around 8.4% but could remain above 6.0% for some time. Interest rates are lagging, as the RBA tempers monetary responsibilities against international rates, the dollar, unemployment, bank runs, and political appetite. On this basis:

- Interest may peak at or above 6.0% – but could go higher, if inflation remains above 5%;
- A *high-employment* (inflationary) **Technical Recession**. may occur toward the end of 2023.
- The AUD may go below \$0.62 to the USD and settle around \$0.67 – as U.S. Interest rates increase more aggressively.
- Recovery is unlikely to be fully underway until 2026. When inflation and interest rates may be at or above 3.5%, and 5.5%, respectively.

The next Federal Election (possibly late 2024) is likely to be held before recovery, when Inflation and Interest rates could be above 5% and productivity remains stagnant. A recipe for a Zombie economy, where failed organisations are kept alive through Government largesse and selecting winners.

### INDUSTRIAL CONTEXT

Traditionally, Australian Industry relied upon cheap, reliable energy and distribution to provide for comparative advantage against other industrialised economies. [49] Despite changes to IR regulations by the Hawke-Keating government, labour costs are uncompetitive. They are likely to become less so as IR changes impact productivity and collective negotiation in an inflationary, recessive economy, as AI gains traction. Warned of by the RBA.

### Scientifically, economically, and environmentally

At some stage, the Government will need to address the apparent industrial, environmental, economic, and scientific contradiction of John Howard's *Commonwealth, Environment, Protection*,



and Biodiversity Conservation Act, 1999 (prohibiting nuclear power generation in s.140A), with respect to AUKUS, nuclear-powered submarines, enriching, reprocessing, and producing nuclear fuel. Excluded under AUKUS.

Environmentally, industrially, and domestically, Australia is better placed than almost any other nation to make use of *small modular reactors* (SMR). To substantially reduce carbon footprint / poles and cables / wind farms, in remote locations, and provide for reliable base load. Restoring comparative advantage, [49] in terms of energy costs; enabling technological innovation; security of supply – and improved productivity. Through assured reliability.

By mining and refining iron and bauxite in Australia, at competitive, locally produced, reliable COG[N] energy prices – and exporting in Australian registered ships – Australia would substantially reduce China's (dirty) steel / aluminium Carbon and transportation footprint. By between 5-to-10 fold, per tonne of ore. A much more significant, less costly global Carbon reduction, than Australia's economy and industry damaging 2035 net-zero policies. At the same time, supporting traditional energy-heavy industries, such as shipbuilding, aviation, and weapons manufacturing. All essential to Deterrence, supporting our allies, and re-armament.

### Cyber, Energy and Space

Australia could become the cyber, energy, [food], and space hub of the southern hemisphere, by privately capitalising:

1. An orbital maritime HS2C connecting all Australian capitals – the *Flinders Cable*;

2. Supporting the construction of a southern-hemisphere maritime cables, comprising:

- A. **The South Pacific HS2C**, Chile, South America, French Polynesia, New Zealand, Fiji and Australia;
- B. **The Indian Ocean HS2C** Perth, Cocos Island, Diego Garcia, Mumbai, India, Mauritius, Kenya, Seychelles, Madagascar; Reunion and South Africa;
- C. **The South Atlantic HS2C** Falkland Islands, Latin America, via Punta Arenas, to the South Pacific SH2C; Las Toninas; St Helena; Cape Town; Ascension Island; Cape Verde; Azores, UK;
- D. **The Antarctic HS2C** connecting Tasmania, to the Antarctic Bases via East and West about links to the Falklands and Latin America.

Cyber, Energy and Space are all interlinked. Darwin lends itself as the the cyber-energy (and food) hub of southern, South East Asia and Oceania. Providing a regional energy, and cyber hub. Including secure terrestrial support for space exploration.

### Universities

Australia no longer has public but commodified universities. Nowhere is this more the case than in STEM. Where up to 80% of academics, and 90% of PhD candidates come from abroad. At least half of them from countries unlikely to gain security clearances.

The fallacy that, as constituted, universities could currently undertake sensitive research represents a risk. Or that DSTG could become a DARPA, with 99% of its scientists contracted out to labs and universities.

### Australian Shipping

The Prime Minister, as Minister for Infrastructure and Transport in 2011, stated:

It makes no sense, no sense at all for Australian trading to take place almost entirely in the hulls of foreign ships.

- We need to become participants, not just customers.
- We need to upgrade the fleet.
- We need to get the regulatory framework right.
- We need a “best in class” tax system for shipping.
- And we need a pool of skilled seafarers to operate the ships of the future.

These reforms will confirm Australia's long term economic, environmental and security objectives. [42]

In 12 years, despite the fine words by politicians of both parties – reported in *The NAVY, Red Duster* – the Australia's Strategic Merchant Fleet has gone backwards. There is no indication that the *Strategic Maritime Fleet Task Force* with its CIC leadership, will achieve more. Other than to cost Australia valuable time and the Tax Payer millions of dollars. That would have been better spent building ships, on Australian Navy Cadets, naval architects, and proper maritime colleges. ■



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# WHY WE NEED A NAVY

## THE NAVY'S ROLE IN PROTECTING OUR DEMOCRACY

By John Rigby & Paul Sawtell

There is currently much discussion concerning Australia's regional situation in a geo-political sense and how that determines our nation's defence posture. Some comment focuses on the primacy of diplomacy. Some other comment focuses on the role and capacity of our defence forces, their structure and posture. Others pose the question of whether we must fight and prevail alone or in concert with allies. There is also evidence of a strong under-current of belief that we should avoid being embroiled in conflict that does not immediately threaten the homeland. This paper sets out the need for Navy.



NATO Ships HMNMS THOR HEYERDAHL (F314), HMS NORTHUMBERLAND (F238) and RFA *Tiderace* (A137) patrol the Barents Sea, October 2022.

### INTRODUCTION

Recent events in Europe and heightening tensions in the South China Sea demonstrate that global and regional conditions are altering dramatically.

It is evident that democracies are facing challenges- perhaps even a threat to their existence. Evidencing this concern is the action by nations, hitherto determinedly neutral, to enter coalition with those forming NATO.

Concern, reflected in the common meme attributed to Lenin: 'you may not be interested in War, but War is interested in you' is driving this anxiousness to coalesce with other democracies.

This paper seeks to explore the interplay of global and national issues and examine the implications for the role our defence force plays in Australia's defence and perhaps more importantly how the whole of Australia organises to defend its integrity.

### FIRST DUTY OF THE STATE

The responsibility to ensure the preservation and continuation of our way of life extends beyond the defence forces and must be the concern and focus of the whole nation.

First, we consider the issue of democracies versus autocracies and possible structures to strengthen democratic resilience globally.

Secondly, we review Australia's preparedness for conflict, the role the defence forces has in that, especially the navy as 'the tip of the spear', both in active hard and soft diplomacy and in active defence of our homeland and perhaps of others as well.

Lastly, we conceptualise some additional naval asset acquisition that may contribute to naval effectiveness by markedly increasing the quantity of ships available in the very short term.



HMAS CANBERRA (L02) with LLC (L4409) delivering water tanks to 2nd Battalion RAR (image ABIS Susan Mossop).

## THE DEBATE

Responding to this some eminent commentators have questioned our alliances asserting the need for Australia to be more self-reliant in defence posture.

Hugh White in ‘How to Defend Australia’ raises the question as to whether our traditional ‘balanced defence force structure’ is in fact an appropriate defence posture for Australia.

He asks the question broadly of just what purpose our armed forces fulfil and one instructive point that emerged is just how alone we are in the region.

Others, equally eminent regard Australia’s alliances, especially within the Anglosphere, to be sacrosanct and offering Australia the ability to influence world events way beyond what might expectedly be achieved by a country of our size.[1-6]

If we are witnessing a re-balancing of the strategic weight the United States has enjoyed in the past 30-70 years or perhaps the end of *Pax Americana*, what does that mean for us?

While Australia is relatively well off in GDP terms (and per capita) and our population has trebled since World War 2, in comparison with our regional neighbours, we are a population minnow.

India and China have enormous populations and substantial economic power.

This enables them to flex diplomatic and military muscle to assert and perhaps impose, their view of the world. Of course, India is a vibrant democracy though evincing neutrality in world affairs.

## REALPOLITIK

China, Russia and a slew of smaller countries across the world remain autocratic dictatorships.

Realpolitik dictates that democracies must deal with these autocracies. It behoves all democratic nations to concentrate on

preserving a rules-based order even though it is evident the benign afterglow of the end of the Cold War has recently chilled.

Australia, in the 80 years since our effective independence as facilitated by the Statute of Westminster 1931, has played an influential role in developing and maintaining the institutions whose purpose is to preserve the ideals of a rules-based order and human rights.

The current conflict in Ukraine and potential conflict in the South China Sea demonstrates the fragile nature of world affairs, reminding us that such ideals must be defended by both words and action and if necessary, by blood and treasure.

There are larger forces with a greater responsive capacity than Australia’s who thankfully seek to resist such negative developments, as evidenced in the South China Sea by British, French and United States forces.

Australia has participated in a small way in this as well as contributing assets to Ukraine in its conflict with Russia.

This article defers to the greater expertise of those whose assessments of force structure, asset acquisition and type, is their dedicated task, although it does explore ideas on rapid naval asset acquisition and crewing in the last part of this paper.

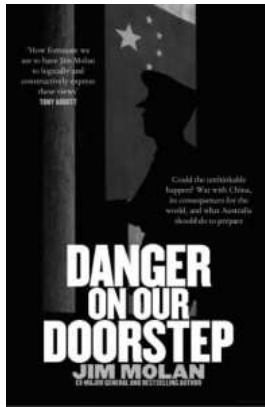
It explores in broad terms the fostering, development and support for a *Community of Democracies* that would focus on preserving and developing democratic policy and strategy in global affairs.

The idea of a *National Security Framework* is presented, and this extends beyond any ‘war plan’ that may exist or even a focus on a (kinetic) defence of borders.

## A COMMUNITY OF DEMOCRACIES

In the recent past, we have witnessed the actions of an autocratic dictator illegally asserting a ‘right to interfere’ with the right-to-life of a democracy (Ukraine) and its people.





Danger on our Doorstep by the late Senator General Jim Molan 1.



HMAS SUPPLY (A195) entering its ceremonial homeport, Eden, NSW (image LSIS Daniel Goodman).

In the latest episode of this interference, a full-scale military incursion has occurred threatening the integrity and perhaps existence of another state.

Heartening has been a massive response by neighbouring democracies, as well major powers, to assist to some and varying degree, the provision of support to Ukraine.

A broad coalition of the 'West' has delivered an array of support in military equipment, food, financial and other support that has enabled a much smaller country resist one much larger in population and military capacity.

We are yet to see the outcome of this, but one outstanding result is the resolve among democratic nations in the region, evidenced by greater commitment to NATO and an increase in NATO nations.

Is it possible, perhaps prudent to create an even broader relationship of like-minded democratic countries that can provide a counterweight to those that desire to impose their will on others by economic, diplomatic and ultimately military force?

Formalisation of this relationship may provide an ongoing benefit in security, trade and diplomacy; models for such exist e.g., NATO, the Commonwealth of Nations, the QUAD, the European Union, World Trade Organisation, Organisation of American States- the list goes on.

The difference would be that the concept of democracy, rather than specific regional, military or economic reasons, would be its *raison d'être*.

With a working title of 'a *Community of Democracies*'- this cooperative would provide an array of supportive functions for any democracy wishing to align with the cooperative, irrespective of region, size, political orientation, economy, military status or size, with the only proviso that it is recognisably a well-functioning democracy. Australia is well placed to advocate for this, building on its foundational role in the United Nations organisation and in the (British) Commonwealth of Nations.

## GLOBAL DEMOCRACIES

A review of history shows that Australia has sought to play a role in developing and preserving the rights of countries to exist, free from such coercive practices, especially after World War 2 and since. This paper suggests an expansion of this role beyond our regional environment to encompass democracies globally.

This concept was foreshadowed by Mme Annette Lu, former Vice President, Taiwan, in an episode of 60 Minutes (Channel Nine Australia- September 2021) although the concept proposed here goes much further than the triangulated regional Pacific centred architecture she proposed. Other examples of this concept are extant and worthy of resurrection.

This "Community" might be seen as a competitor for the United Nations but that is not the intention. There are many who see that the UN has failed the test of preserving a rules-based order based on humanitarian values. Its founding principles invoke the need to include all nations irrespective of political orientation in the hope of preserving global stability. By allowing membership to include any nation whether its government is chosen by its people or not and failing to exclude execrable dictatorships or rogue one-party states, it has effectively undermined its own legitimacy.

Worse, the all-powerful Security Council includes nations inimical to the concept of democratic values that allows each member of the Security Council to veto any move to address or stop an attempt to coerce another. Any effective action by the UN is thus stymied, eroding any benefit to smaller nations.

A Community of Democracies would embrace the same principles advocated by the UN and support those elements of the UN that are clearly beneficial to the world but offer a democracy-centric perspective and support for any democratic nation threatened by autocratic adventurism involving conflict or blackmail.

## THE NATIONAL SECURITY FRAME STRUCTURE

Within that global context but home-focused, Australia should pursue development of a *National Strategic Frame*, encompassing all the elements of preserving the Homeland and integrating all necessary components needed to conduct a defence of Australia.

This concept poses the need for an in-depth review of how we all contribute to the defence of every aspect of our national life and independence, whether from events of nature or from human adversaries.

Critically, it has an intense focus on ensuring that Australia, as a holistic political entity, focuses on "defending Australia" and does not merely outsource that responsibility to our armed forces or to our international friends.[7, 8]

This recommends that every element of Australian governmental, social, industrial, financial, scientific and defence infrastructure has a role to play in defending Australia and each element should understand its role in relationship with all other elements. Support for the defence of the *Community of Democracies* members, if requested would form an essential element of our forward defence.

This should also include all relevant aspects of industry and industrial capacity, research and development, civil defence (fire, flood and other natural or man-made events), coastal security, airspace, space and extra-continental shelf defence.

As an example of its coverage and reach, the following list provides a starting point for this structure:

- War
- Terrorist actions
- Cyber attacks
- Espionage
- Electric Power disruption
- Drug importation
- Civil Unrest
- Climate issues
- Weather events (Fire; Flood; Cyclones; Tsunami)
- Illegal migration
- Public Health issues involving Human or Animal Disease
- Economic disruption and other financial matters
- Water utility disruption

This policy involves all elements and levels of government and relevant private sector entities, engaged on the spectrum from active participation to an ‘aware but watching’ brief.

Research, development, and local manufacture of critical support elements (e.g., assets and infrastructure) are essential elements of the above plan, which must ensure all Commonwealth, State and Local agencies individually and collectively, co-operate to preserve the security, stability, and life of the Homeland.

Agreed in advance at a political level, it must be able to communicate/interact directly with each other in an emerging crisis, without immediate political direction. Of course, these arrangements must be, at inception, approved and legislated by all heads of government and the CEOs of private sector elements involved.

At a national focus level, coordination of the varying elements in an event response is critical. Inter-agency communication processes need to be finessed, practised and ingrained into the processes of every agency involved so each knows its place and role and critically knows that of each other element, in dealing with common or different situations. In this way all agencies contribute to the coordinated defence and disaster response of Australia.

An example of current practice that failed is provided by the response to COVID in the *Ruby Princess* Cruise ship incident where neither NSW Health nor Australian Border Force didn’t fully appreciate the role of the other in coping with a predictable event like the coronavirus pandemic.

The faulty protocols/interface of these two entities led to failure, accusations and recriminations.

Once such a National Security Framework is in place this may provide a model for adoption or adaptation within the member states of the *Community of Democracies*.

## THE DEFENCE COMPONENT

The National Security Framework should assure our defence forces are fit for purpose and that their fighting capacity is matched in measure with the scientific, industrial and transport capacity to provide the logistics to support their ability to fight for an extended period.

Over recent years, the integration of Army, Air Force and Navy exemplifies the need for cohesion and coherence in vital areas of our defence and while not perfect, provides a pointer to a desirable future.

The formation, posture and funding of our defence forces is now under review by Steven Smith and Angus Houston. The outcome of this will have far-reaching results for our defence forces and indeed, our national ability to defend our shores, our lifestyle, our



Royal Australian Naval Reserves (For Country - Not Self).

values- but if the critical issues noted above are ignored, it risks an inadequate outcome.

Hugh White and others have targeted current planned expenditure on re-equipping the army. This reflects a view that Australia’s defence no longer relies on our ability to despatch forces to foreign conflicts, reflected in our traditional ‘forward defence’ strategy. This monochromatic analysis of our needs should be carefully and critically evaluated.

The situation facing Australia and the inherent debate from that has given both politicians and influential commentators cause for concern about our defence capacity (Smith and Houston) and what we hope or plan to be achieved.

It is clear our ability to interdict and destroy or degrade any invasion force or sea lanes threat remains a primary focus of our defensive posture. This underscores the primacy of the Navy and Air Force.

It would be a courageous planner who ignored the possibility that ‘boots on the ground’ may never be needed in any future conflict. Therefore, the requirements for the Army cannot be ignored. In fact, substantial naval assets are devoted to delivery of land forces within our hemisphere.

We need to ensure our land force remains equipped and capable of actions in either peacetime emergency or conflict within our region.

Nevertheless, our ability to deter and, or, destroy any invading force or threat to do so, remains paramount.

## THE RAN

*The role of the RAN is absolutely central to this ability and cannot be over-emphasised.*

The RAN is the tip of the spear in both conflict and in the diplomatic effort to project power and influence on a consistent frequency throughout the region and more broadly.

Clearly this role requires a Navy substantially larger than at present- perhaps even on par with the Japanese maritime self-defence force- around 100 vessels.

Of course, this doesn’t mean we need 50 destroyers. In fact, we don’t have the time to build those, especially if the late Senator Jim





A tender process for Base Porting *Arafura-class* OPVs in Cairns has commenced.

Molan's near-term projections of potential military conflict within our region prove prescient.

The remainder of this paper addresses that very issue. Some suggestions may seem aspirational but are in fact essential to our survival as a nation and perhaps more easily achieved than some would imagine.

## THE MOLAN PROPHECY AND THE RAN

The late Major General Senator Jim Molan's book entitled 'Danger on our Doorstep', released August 2022 and avidly read in some circles, dreaded reading in others, is scorned and ignored by some, Molan's work provides an insightful, accessible, intelligent read, free of elitist jargon. [9]

It presents us with a reality that we ignore at our peril and the book ends with the possibility of Chinese hegemonic power sweeping the Western Pacific, emphasising Australia's vulnerability.

Molan focuses on Australia's lack of 'critical mass', the 'one shot' nature of the ADF, the serious lack of strategic national preparedness and our predilection for building according to budget, while sheltering under the shade of the American umbrella, when we should be spending according to strategic need.

His book reveals the spectre of the glacial pace of defence procurement and considers how effectively we can exorcise this spectre and quickly build mass in the RAN.

There is an urgent need to ensure the Navy is fit for service both in quality and in number if the vast area of Australia's location and shoreline is to be patrolled and protected and if we are to project power throughout our region and beyond.

If the issue of mass is to be considered, the following spring to mind:

- personnel
- hulls
- fuel
- parts
- munitions
- stores
- slip-ways and other dock facilities

– to name a few.

## PERSONNEL

With respect to personnel, one starting point is the Navy Reserve and the Navy Volunteer Reserve. These people offer a reservoir of skills, knowledge and competency to be nurtured and conserved- they are our first call in a national emergency. They offer the immediacy of

operational skills and they also offer resource training capacity to provide for any surge in numbers.

Jim Molan identifies the vulnerability of Australian ports to mine laying and the meagre resources available to deal with the matter and this danger is further magnified by swimming mines and other intelligent under-water devices.

This concern was addressed very well in *The NAVY* April-June 2021 by Captain George Galdorosi USN (Ret) in an article titled *Addressing Australia's Strategic Vulnerabilities at home and abroad*. Capt. Galdorosi's paper draws particular attention to Australia's vulnerability to mine warfare and our unpreparedness for this challenge with only two ships dedicated to the task, when every port is at risk.

Providing every important port with an RANR or RANVR capability, equipped and trained to specialise

in mine detection (and perhaps clearance), presents an affordable and relatively rapid response to this deficiency, especially if utilising local knowledge of littoral waters.

The closing of Australia's ports by a systematic programme of laying submarine mines would have a calamitous effect on Australian shipping and the life blood of the economy. Worse, it may prevent or limit the Navy's ability to deploy.

In both world wars German merchant raiders disrupted Australian coastal traffic through the laying of minefields.

## HULLS

The need for many more ships is evident:

- In World War 2, Australia requisitioned numbers of privately owned ships to fill many auxiliary roles.
- Few ships are owned in private hands today, apart from pleasure cruisers, fishing boats and ferries, so attempting the same today may prove impossible.
- Australia apparently has no reserve fleet – despite being called for by the NLA, since the 1970s. See NLA Statement of Policy, p. 5.

The *ANZAC-class* frigates (to be replaced by the new *Hunter-class*) offer one solution to this challenge.

While the *ANZACs* may have aged by the time the *Hunters* have all entered service, they currently remain capable warships and properly maintained, should capably fulfil a role in convoy escort and other defensive work for an extended period.

In World War 2, Australia produced some 60 *Bathurst-class* corvettes (80 years ago). These little ships covered themselves in glory in that war, with some serving for years afterward and perhaps that provides food-for-thought with respect to the new *Arafura-class*.

An excellent and timely article by John Jeremy AM (*The NAVY* Jan-Mar 2020), evaluated the *Arafura-class* OPVs, their armament potential and their potential in a naval support role. [10, 11]

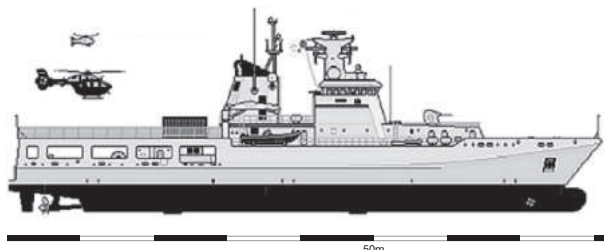
As a renowned naval architect his views should be taken seriously and he views the *Arafuras* as a modern near equivalent to the *Bathursts* and like the *Bathursts* a welcome potential for both escort and minesweeping roles.

With production underway, this offers a tempting and attractive opportunity providing economy of scale from a continuing build in far greater numbers, and one that could be implemented rapidly avoiding the design delays that so plague naval production.

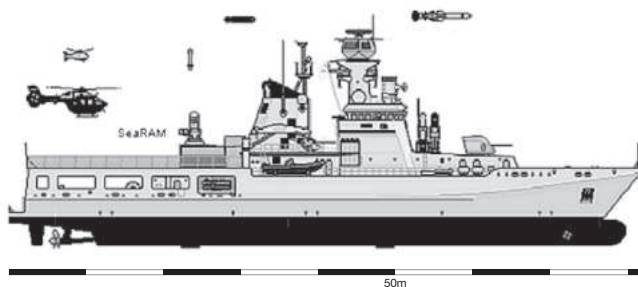
These vessels appear to have the room for enhancement, though some modifications might be desirable. Others, such as Mr. Jeremy, would be better qualified to judge the feasibility of such modifications.

The figures below suggest some possible modifications- diagrams sourced from Shipbucket:

**Original Arafura:** 1640 Tns, 20kts, 3xRHIBs, 4000 Nt Mls, 40 Crew  
1x40mm, 2x12.7mm, 1xHelo on deck.  
Source Shipbucket.



**Envisaged Arafura Corvette:** 1730 Tns, 20kts, 2xRHIBs, 4000 Nt Mls, 55 Crew  
1x57mm, 2x30mm, 2x12.7mm, 1xSea RAM, 2x2 Harpoon, 2x3ASTT, Nulka.  
Towed & Bow Sonar, 1Lt Helo.



If you want to know more go to Google and hit ‘Shipbucket’.

Commissioning of the *Arafuras* will mean the retirement of the *Armadales*. These successful vessels have been worked very hard and while the state of their hulls might require further consideration, improvement in armament and sensors may extend their usefulness for an extended period. Encroachment by Chinese interests in PNG, Torres Strait and other northern waters will increase the need for more surveillance.

The Border Force *Cape-class* and *Enhanced Cape-class* vessels are presently under construction, offering a further opportunity to complement fleet operations in an emergency, without having to develop a whole new class.

Recently in view of delays with the *Hunter-class* there has been mention of constructing three or four Air Warfare Destroyers to enhance fleet capability. These vessels are not without sound anti-submarine ability and could be commissioned more quickly.

Other pressing concerns remain to be addressed:

- the lack of organic air cover for the fleet cements our reliance on others;
- LHDs with inadequate defensive weapons provide tempting targets for aircraft, drones, cruise (anti-ship) missiles and hypersonic missiles as well as submarines;
- limited missile fit out on surface warships;
- the deficiency of submarine availability;
- critical issues of fuel, spare parts, munitions, stores, slipways etc.
- All must be addressed under the National Strategic Framework

## CONCLUSION

This paper explores some options to give our people a fighting chance but more, much more is needed and urgently.

Above we mentioned the need for a National Security Strategy and Jim Molan referred to the existence of *The War Book* in his book. *The War Book*, DoD (1956), was intended to underpin our deterrence capability and inform government with what it needed to know and needed to do in time of war, and transition to war.

One author first heard about the *War Book* in the early seventies, but it was probably initiated [after] World War 2. If Jim Molan is correct (by Ed, he is), it hasn’t been updated since [1956!].

This emphasises the need to expand it into a more comprehensive, global process with the capacity for rapid updating and dissemination, to assist our strategic preparedness.

*It is only in the quality of our people that we have never lacked. Let us hope our politicians however are not found wanting. If so, more sailors will pay the price of such failure.* ■



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# POTENTIAL COST SAVINGS WITH THE IMPLEMENTATION OF THERMOPHOTOVOLTAIC CELLS IN MAJOR RAN WARSHIPS

By Dr Dario Delgado

The Defence Strategic Review (DSR) is an opportunity for improvement. The Australian Government has a responsibility to taxpayers to make sure that every dollar is well spent. Defence planning consideration of a decade-long warning period for any conventional attack is no longer valid. We live in an era of strategic competition and increased tension in our region. These are facts that require Defence to be more proactive, and to base decisions on accurate information – including overlooked areas with strategic impact, such as Waste Heat Harvesting applying Thermophotovoltaic cells. The Government is maintaining the policy of at least two percent of GDP for the military. Funding of the military needs to be well justified. There is always a new gadget, or a new policy. Getting it wrong, comes also with the costs of public and international perceptions of defence – critical to Deterrence. There are, however, situations that can justify the rapid adoption of new technologies.

## INTRODUCTION

Australia imports most of its domestic fuel and is, concomitantly, vulnerable to international fuel prices. Australia has about 60 to 70 days of fuel stored (not all in Australia), when it is commonly agreed that 90 days of fuel stored is the minimum. This is a strategic “national security problem”. Current fuel price increase should cause the Government to reconsider the development of refineries so as to improve Australian sovereign capability. For example, the energy crisis of 1973 induced by the Organization of the Petroleum Exporting Countries (OPEC) to control oil production, also known as the oil embargo. This led to some countries anticipating lower cost oil (and higher prices) and stocked oil in large quantities. To act also as a shock-absorber. The USA developed *Project Independence* to become more energy autonomous, which was an initial step in stabilising oil prices.

Amongst the measures taken to counteract OPEC [1], the USA introduced fuel and energy limiting standards – for example, the speed limit on national highways at 55 mph (just under 90kmh). These examples support why it is important to develop policies that directly or indirectly address connected issues of strategic energy security and fuel efficiency. A relevant example for the RAN is Replenishment at Sea (RAS). When undertaken by allied ships, it is rather expensive. Enhancing the fuel economy of RAN ships would indirectly address our fuel dependency.

## GEOPOLITICS

The global rules-based order is being challenged with the war in Ukraine and incidents over Taiwan. In this respect, AUKUS – known more as a nuclear submarine deal – also includes information sharing. Allowing technical cooperation to tap into this pool of information and do things better. The general public perception of Defence is going to be under close scrutiny. A new narrative is needed proving fact-based news and stories showing that the Navy is constantly seeking improvement and cost saving.

This objective of this paper is to explain how *waste heat harvesting* (WFH) can contribute in terms of cost saving, efficiencies, and perceptions of Navy.



HMAS SYDNEY (DDG 42) takes centre stage in Sydney Cove Australia Day 2023.

The *Canberra*, *Hobart* and *Anzac* classes employ gas turbines as method of propulsion, in addition to diesel engines and electric motors. Engines when combusting fuel (such as diesel) generate exhaust gas that is considered to be waste heat. Harvesting it, will bring benefits such as:

- better fuel autonomy,
- cost savings, and;
- a positive image of the institution on the eyes of the general public.

New classes such as the *Hunter* could incorporate *thermophotovoltaic* (TPV) cells and other RAN ships might apply it.

Current methods of waste heat recovery are described in this paper, in addition to economic analysis of the potential cost savings of TPV technology for RAN warships. Limitations of this technology depend on the compatibility with platform designs. Recent improvements of TPV technology suggest that the RAN should begin to consider the potential of TPV implementation.

This article is not intended to provide evidence for decision makers. Its purpose is to highlight the importance of further assessing this technology for RAN ships.

## FUNDAMENTALS: HEAT ENGINE AND TPV

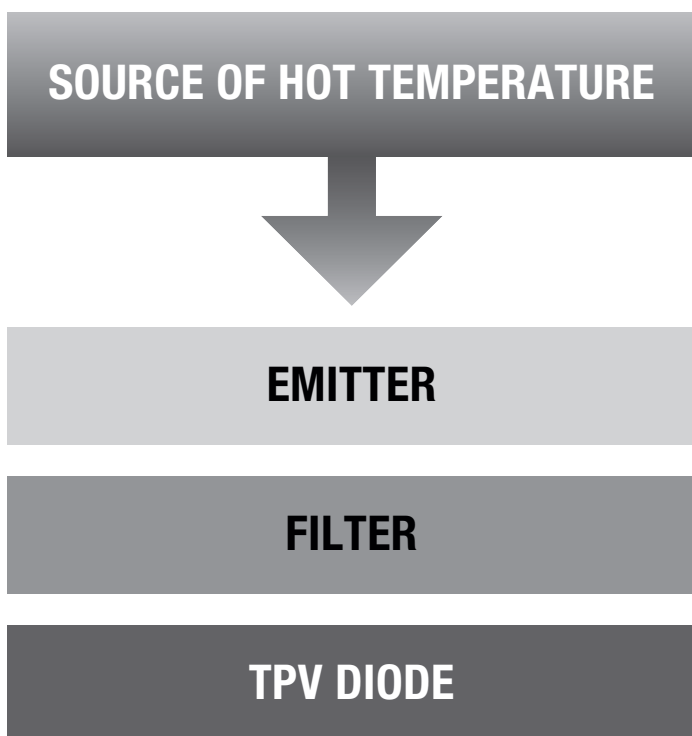
When an energy device is developed, it is necessary to evaluate how efficient it is. There are different metrics to assess this:

- energy efficiency;
- cost-benefit analysis;
- is it implementable (and practicable).

A heat engine is used to evaluate how efficient the conversion of waste heat into useful energy, e.g., electrical energy. Considering an ideal engine such as one with no friction losses, a reversible process and the thermal capacity of the heat source and heat sink is infinite, then such an engine is described in terms of the Carnot cycle.

With perfect conditions, a TPV would have the efficiency of that of the Carnot cycle as its maximum. Theoretically, TPVs are thought to have a maximum efficiency in the vicinity of 50% [1]. Recent research has reached the 40% milestone [1]. Hence, it is timely now to consider the potential of this technology in the RAN. It should be noted that TPV ranges from 20 to 40% of efficiency [2].

To understand a TPV, it is useful to begin by looking at a solar panel. There is not much difference between TPV and solar panel (i.e., photovoltaic cells (PV)). Figure 1 shows the components of a TPV [2].



**Figure 1. Elements for the waste heat recovery using TPVs**

The source of heat energy would be the exhaust of gas turbines in RAN ships. This energy is in the infrared region of the electromagnetic spectrum. The energy interacts with the emitter and filter before it reaches the TPV. The purpose of these components is to adjust the incoming energy to the TPV to be of the right characteristics.

In other words, infrared wavelengths that the TPV can convert into electrical energy, efficiently. The emitter has a black-body, and the filter cuts out unusable energy. The added advantage is that removal of heat, reduces the IR signature – used by heat seeking weapons.

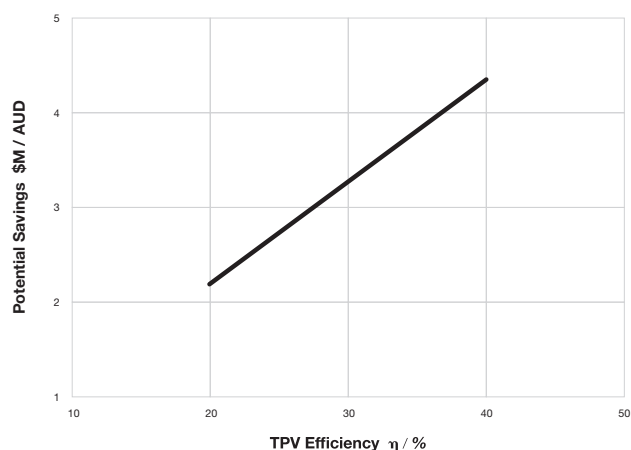
## METHODS OF WASTE HEAT RECOVERY

The conventional method of Waste Heat recovery is using a heat exchanger, to heat up a fluid. For example, water for Hotel Services or fuel for better efficiency of an engine. A heat exchanger requires physical space, line connections, required temperatures of the fluids to exchange heat, compatibility of the fluids involved (e.g., leaking of a fluid into the other is not dangerous). All adding to top-weight, and reducing vital metacentric height considerations.

In this respect, TPV critical aspect would be the temperature of the heat source, this is, the temperature of the exhaust gas from an engine. TPV current technology operates efficiency in the range of 1000 K to 2000 K. [2] Contemporary research [3] is developing the TPV technology for lower temperatures including, for example exhaust gas temperature of diesel engines, at a few hundred Kelvins. Currently, TPV is better suited for gas turbines that have exhaust gas temperatures close to the current lower range of operation of TPVs [5].

Other consideration is the size of the heat exchanger that is related to how much energy one wants to recover, the more energy the larger the exchanger. In this respect, limitations such as available space in the exhaust pipeline, weight, and the pressure drop of the exhaust gas need to be kept under consideration.

## COST SAVING ANALYSIS



**Figure 2. Potential Savings with different efficiencies of the TPVs.**

One example of room for improvement are *Anzac-class* frigates. FFH do not have waste heat recovery of the exhaust gas. The RAN currently has eight of these ships, the base case analysis has been done for *Anzac-class*, operating on its gas turbine continuously for a year. An extrapolation of these results is done for other ship classes (*Canberra* and *Hobart* classes). Three scenarios have been evaluated and are shown in Figures 2 to 4. Figure 2 shows the potential amount of money savings in millions under different TPV efficiencies. This analysis indicates that at higher TPV efficiencies, about four million dollars is saved per *Anzac-class* ship every year. Totalling \$32M dollars a year for the entire *Anzac* class fleet. If all are running continuously. Or about \$24M for the six running ships.





HMAS WARRAMUNGA (FFH 152) sails into Sydney Harbour to berth at her new Base Port (image POIS Christopher Szumlanski).

## CONCLUSION

The Defence Strategic Review (DSR) is an opportunity for reassessing costs. The ADF, through the Government, has a responsibility to taxpayers. Every opportunity to save costs should be taken into consideration - noting every new technology entering the market has risks, costs, and benefits. A potential threat could jeopardise supply lines; placing Australia in a vulnerable space in terms of energy independence. Direct or indirect methods to address this weakness need further analysis. Improving fuel efficiency is an indirect method for doing so. If the RAN leads innovation, the Australian industrial sector could take advantage of the selection of these new technologies – resulting in a positive public perception for the ADF.

The global rules-based order is being challenged. The RAN needs to be more proactive, for the Government to approve a higher than two percent of the GDP for funding, The RAN needs also to show results that are domestically oriented. Including technologies that can improve warfighting and benefit the everyday Australian, will enable increases in and better use of funding. Tax payers need to see dollars being effectively and efficiently spent by the RAN/ADF through the acquisition of the right technologies. For example, drones are low-cost, with considerable war capability at lower risk to ADF personnel.

Thermophotovoltaic cells is a technology that is gaining momentum. Consideration and estimation for Waste Heat Harvesting in RAN ships should be undertaken. Potential WFH savings in the vicinity of \$60M dollars a year – if installed in every major RAN warship – suggest that this technology should be included in designs for all future warships. This article is only an estimate. Further analysis will be required to refine cost-benefit analysis; including on reduced fuel dependency (and costs), increased range, minimising IR signatures, and international and public perceptions. All underpinning RAN effectiveness and, therefore, Deterrence. ■

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Figure 3 shows that if heat exchangers of higher capacity could be installed then the opportunity of further savings improves. There are physical limitation in terms of space in the flue gas line (and weight). Higher recovery of energy means higher  $DT$ , and higher pressure drops of the exhaust gas. In that case fans might need to be installed to force the flue gas out. At 30 K (or C) of  $DT$ , the potential saving is about six million dollars, totalling \$48M (\$36M) dollars a year for the *Anzac-class*.

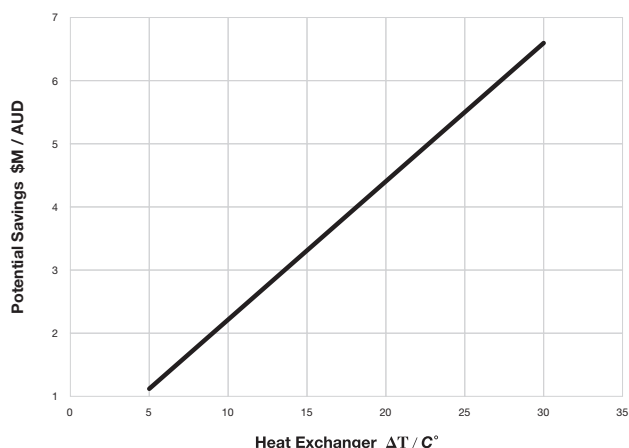


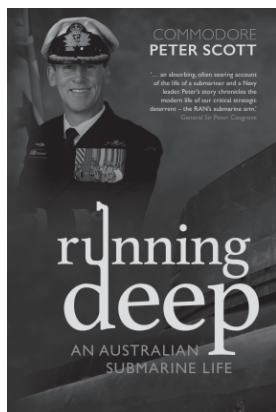
Figure 3. Potential Savings based on waste heat energy recovered.

There are currently concerns regarding CPI (driven by fuel inflation) [4]. A scenario analysis has been considered for different values of CPI (Figure 4). Under the base case scenario, after 10 years 6% inflation might result in annual savings in the vicinity of eight million dollars per ship. Totalling \$64M (\$48M) dollars a year for the *Anzac-class*, see Figure 4.



Figure 4. Potential Savings based on the Consumer Price Index within 10 years.

The proposal appears promising for *Anzac-class* ships. For the case of *Hobart-class* destroyers (DDG), they have nearly two times the gas turbine power output of *Anzac-class* thus the savings would be twice as much as that per FFH. *Canberra-class* ships would be relatively similar in terms of savings, when compared to the *Anzac-class*. In brief, any RAN warship would benefit by considering TPV to save costs and fuel, while reducing IR signature.



## RUNNING DEEP

**An Australian Submarine Life**

By Commodore Peter Scott CSC RAN

Fremantle Press (4 April 2023)

ISBN: 9781760992002

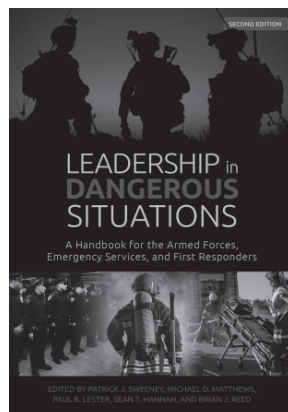
Paperback: \$30.00

This exceptional and surprising book should be the top of the list for sitting beside the fire, during the winter months. And richly imbibing. Many of us will have worked alongside, or with Peter, during his three decades and more in the service of our country, and that of the most silent of services: the Royal Australian Navy's Submarine Service. Those of us who have worked with the author, know a humble, enquiring, dedicated man. Calm in a crisis, thoughtful and searching – providing leadership and action, this day – as circumstances demand. For all that, many of us will be surprised by the nautical miles covered by Peter, both while at sea, and ashore – in the service of his country. Each year and month taking their toll, on loved ones – without whom, we could not serve. There is no compensation for separation.

The surprising aspect is that the book was allowed to be published. Good on Navy and Defence. For it touches upon the life and experience of our submarine service, across the world. In times of hot peace and cold war – when our submarines have always been the tip of the spear. And will continue to be so. With a forward by the Governor General (with whom the author served, as his MA) and recommendations by General, Sir Peter Cosgrove and Kim Beazley – the book could hardly ask for a better pedigree.

On the one hand, a series of “war stories”, in the best tradition of humble observer and participator; leader and servant. On the other, a love story, for the Submarine Service, Australia, the RAN and above all family. As a submariner, more perhaps than a pilot, one is dealing daily with the existential. Where one small mistake by any member of the crew, defines the line between buoyancy and survival. The team becomes very close – as those who have fought will recall. The leadership demanded of a submariner, is therefore second to none. For the stories – buy the book!

Scotty's last chapter deals with transition to civilian life, and home. Dealing with past memories, and the crocodiles living beneath murky waters of the mind. A haunting allegory, that touches all servicemen and women. Thank you, Peter. You have done your Country and Service, great Service.



## LEADERSHIP IN DANGEROUS SITUATIONS, SECOND EDITION

**A Handbook for the Armed Forces, Emergency Services and First Responders**

Edited by Patrick D. Sweeney, Michael D. Matthews, Paul B. Lester, Sean T. Hannah, and Brian J. Reed

USNI (15 December 15, 2022)

ISBN-10: 1682478203

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Patrick J. Sweeney, PhD, Colonel (retired), U.S. Army, is a professor of practice and executive director of the Allegacy Center for Leadership and Character, School of Business. Michael D. Matthews, PhD, is professor of engineering psychology at West Point. Paul B. Lester, PhD, is an associate professor of ethical leadership at the Naval Postgraduate School. Sean T. Hannah, PhD, is the Wilson Chair at Wake Forest University School of Business, and a retired U.S. Army colonel and infantry officer. Brian J. Reed, PhD, Colonel, U.S. Army, is a Professor, U.S. Military Academy and the Chief of Staff. He was Director of the Commander's Action Group for the USCENTCOM CDR.

The US Armed Forces often do things exceptionally – particularly when it comes to addressing and delivering scenario-based leadership education. This book stands – providing a guide “which, for years, has prepared military, emergency, and first responders to face psychological, social, and physical challenges of leading in dangerous contexts.” Its final chapter identifies that:

leading in dangerous contexts is a demanding and ever-evolving process because we operate in volatile, uncertain, complex, and ambiguous environments. Every operation is different, and we sometimes find ourselves in situations we have not trained for (e.g., airplanes used as bombs in a terrorist attack, standing up a country after its army is defeated, leading a response to a pandemic). Leaders who operate in dangerous contexts need to be open to adaptation and creative in solving unexpected challenges. Cultivating a learning mindset and empowering followers to share their ideas and exercise disciplined initiative enhances the ability of an organisation to adapt.

As leaders, we have a responsibility to learn and to adapt, and to prepare the next generation to serve. As the author's observe “people attracted to dangerous-context organisations tend to have personal values that align with the organisation's values, so service tends to be part of their individual purpose.” Thus, we have “the privilege of leading and working with good people”, and being their servants. A good guide and read, for building future leaders of the ADF.





# THE NAVY LEAGUE OF AUSTRALIA ANNUAL MARITIME AFFAIRS ESSAY COMPETITION



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*The Navy* reserves the right to reprint all essays in the magazine, together with the right to edit them as considered appropriate for publication.

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**HATCH:** ROKS-CHUNG-NAM (FFG828) South Korea's first Batch III *Chungnamham*-class Frigate, launched April 2023.



**MATCH:** USS SANTA BARBARA (LCS32) Commissioned at Naval Station Ventura County April 2023.



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