A Maritime Strategy for Australia

AMS 2035

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UNSW Naval Studies Group

Edited by Peter Jones and Jennifer Parker

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Front cover. HMA ships *Arunta* (front), *Hobart* (right) and *Canberra* depart the Port of Darwin to commence the Regional Presence Deployment 2020 in Southeast Asia and off the coast of Hawaii (https://www.navy.gov.au/about-navy/force-commands/surface-force).

Cover page (Page 1). The Australian Amphibious Force on the flight deck of HMAS *Adelaide* during Indo-Pacific Endeavour 2024. Source: ADF (http://images.defence.gov.au/S20242015).

Back Cover. Able Seaman Boatswains Mate Christopher Diviak heaves in a line as HMAS *Ballarat* comes alongside in Kuatan, Malaysia, for Exercise BERSAMA LIMA 2025 (http://images.defence.gov.au/S20252733).

About the Naval Studies Group

The Naval Studies Group (NSG) at the University of New South Wales (UNSW) Canberra was founded in 2016. It is part of the School of Humanities & Social Sciences and contributes to the work of the Maritime Security Research Group.

It is the only research area dedicated to the study of naval affairs at an Australian university. NSG members combine over 150 years of cumulative naval experience with an extensive academic output in the form of books, monographs and articles. The NSG's focus is maritime and naval policy, strategy and history.

The editors for the monograph were Peter Jones and Jennifer Parker.

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Foreword

This study is both timely and important. As this nation's decision-makers are coming to realise, the 'holiday from history' is over - our generation's understanding of the great power politics, competition and – heaven forfend – potential for large-scale of war, has been skewed. We have grown to adulthood in the shade of a post-Cold War, unipolar world. The AUKUS nations and to some extent the wider West has benefited enormously in terms of security, economics and possibly more arguably even in cultural terms from this 'blip' on the long span of modern history. But it is a blip. The challenges we see in front of us today – particularly in the Indo-Pacific – are a return to more established patterns of life. It is a return to friction and struggles between great powers emerging and those seeking to maintain the status quo. It does – and will inevitably – involve competition, what has been labelled 'grey-zone' operations, and though by no means inevitable, it involves to real possibility of war. The Indo-Pacific region has no choice but to adapt to this re-emerging reality, for this is that the critical sandpit – potentially the battlefield – where the heart of the competition will unfold. There is no more public expression of this security dilemma than AUKUS.

Complicating matters further, is an exponential growth of military technology. This includes but is of course not limited to – such issues as hypersonics, artificial intelligence, remote systems, quantum technologies, swarm heuristics…the list goes on. It is not technological development in and of itself which is significant here for this has always been the case in military affairs. The tools always change, but the art and inherent characteristics of war stay the same. Perhaps what is different is not the fact of technological change, but its exponential rate of development. It is not enough now to think about how the next war will be fought in abstract from thinking about what technologies will frame the context of that future conflict. At the same time, the conflict in the Ukraine has acted as a timely reminder that at least some of the ingrained patterns of war laid down in the Cold War period are still relevant. Terms like attrition, mobilisation, conscription, casualty rates are not yet consigned to the dustbin of history.

Against this backdrop, it is well to remember that Australia's prosperity, sovereignty, and security have always been bound to the sea. The continent sits at the junction of the Indian and Pacific Oceans, with its trade, resources, and connections to the wider world carried across vast maritime spaces. This reality endures even as our strategic environment grows more complex, and as the technological and geopolitical tides of the 21st century reshape the foundations of defence and statecraft.

Taken together, these analyses outline a comprehensive understanding of Australia's maritime future—one that places the control of our northern and surrounding approaches, the protection of vital sea lines of communication, and the ability to project influence and support within our region at the heart of national defence policy. They emphasise that our maritime security is not defined solely by the defence of territory, but by the stability of the region that surrounds us, and by the capacity to deter and respond to threats before they reach our shores.

The body of work sits squarely within the evolution of Australian strategic thinking that has taken shape over decades—from the "Defence of Australia" doctrine of the late twentieth century, through to the "National Defence" approach articulated in the 2024 *National Defence Strategy*. It reflects the growing recognition that deterrence, denial, and regional engagement are interdependent tasks. Australia's capacity to act as a credible and trusted partner in the Indo-Pacific is inseparable from our ability to secure our maritime approaches, support our near region, and contribute meaningfully to collective stability.

Equally, this research underscores that effective maritime strategy is not simply a matter of platforms or procurement. It requires a deeper intellectual and institutional grasp of the maritime domain—its dynamics, its technologies, and its political dimensions. The maritime environment is now being

transformed by artificial intelligence, autonomous systems, hypersonic strike capabilities, and the fusion of cyber, space, and undersea networks. This convergence demands new ways of thinking about command, control, and deterrence. It also demands investment not only in ships and submarines, but in people, education, and the strategic imagination required to integrate emerging technologies within coherent operational concepts.

In this context, Australia's geography remains both a shield and a challenge. The "stopping power of water" continues to afford the nation time and space, yet the same expanse of ocean demands sustained surveillance, persistent presence, and credible strike capability. Australia's alliances—above all with the United States—and its partnerships through frameworks such as AUKUS, the Quad, and the Five Power Defence Arrangements, are essential components of this effort. But these relationships cannot substitute for sovereign capability. The authors thus call for a maritime posture that is technologically advanced, regionally engaged, and strategically self-reliant.

All the while we must resist the temptation to see maritime security solely through the prism of military operations. The seas that surround us are also the conduits of our economy, our diplomacy, and our engagement with the region. A maritime strategy for Australia must therefore integrate the instruments of national power—defence, diplomacy, development, and industry—into a single, sustainable framework.

The research that follows represents a mature and clear-eyed contribution to that national conversation. It blends strategic history with contemporary analysis, theory with application, and national interest with regional responsibility. It reminds us that maritime strategy is not a luxury or a niche domain of naval thought—it is the organising logic of Australia's security.

The School of Humanities and Social Sciences at UNSW Canberra is proud to support this work. It reflects our ongoing commitment to rigorous, policy-relevant research that bridges the gap between academic scholarship and strategic practice. In a period of accelerating uncertainty, such collaboration between the university sector, the Australian Defence Force, and government is not only valuable—it is indispensable.

If there is a single conclusion to be drawn from this collection, it is that Australia's maritime strategy must be proactive, integrated, and enduring. It must be informed by a clear understanding of our geography, our history, and our alliances, yet also confident in our own capacity to shape events in our favour. In that respect, this body of work is not merely analytical—it is aspirational. It charts a course for a maritime nation determined to understand itself, its region, and its future.

Professor Craig Stockings
School of Humanities and Social Sciences, UNSW Canberra

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Abbreviations and Acronyms

ABF: Australian Border Force
ADB: Asian Development Bank
ADF: Australian Defence Force
ADV: Australian Defence Vessel
AEWC: Airborne Early Warning and Control
AFMA: Australian Fisheries Management Agency
AI: Artificial Intelligence
AIP: Air-independent propulsion
AMP: Australian Maritime Power
AMS: Australian Maritime Strategy
ANZAC: Australian and New Zealand Army Corps
ANZAM: Australia, New Zealand & Malaysia Agreement
ANZUS: Australia, New Zealand, United States Security Treaty
AODN: Australian Ocean Data Network
ASMD: Anti-Ship Missile Defence
ASPI: Australian Strategic Policy Institute
ASW: Anti-Submarine Warfare
AUKUS: Australia, UK & US security arrangement
AWC: Advisory War Council
BMDS: Ballistic Missile Defence System
C2: Command and Control
CEC: Cooperative Engagement Capability
CNS: Chinese Naval Ship
CSIS: Centre for Strategic & International Studies
DNV: Det Norske Veritas
DOA: Defence of Australia
DP: Dubai Ports
DSR: Defence Strategic Review
EEZ: Exclusive Economic Zone
ESSM: Evolved Sea Sparrow Missile
EW: Electronic Warfare
FA-18F: F/A-18F Super Hornet
FPDA: Five Power Defence Arrangements
FSR: Force Structure Review
GAMSA: Guide to Australian Maritime Security Arrangements
GDP: Gross Domestic Product
GPS: Global Positioning System
HADR: Humanitarian Aid and Disaster Relief
HIMARS: High Mobility Artillery Rocket System
HMAS: His Majesty's Australian Ship
HQJOC: Headquarters Joint Operations Command
ICT: Information & Communication Technology
IIP: Integrated Investment Plan
IMOS: Integrated Marine Observing System
ISR: Intelligence, Surveillance & Reconnaissance
JMSDF: Japan Maritime Self-Defence Force
KC-30A: Aerial Refuelling Aircraft (RAAF)
LHD: Landing Helicopter Dock amphibious ship
LNG: Liquefied Natural Gas
LOSC: Law of the Sea Convention
LOSV: Large Optionally Crewed Surface Vessel
LPG: Liquefied Petroleum Gas
LSD: Landing Ship Dock amphibious ship
LUSV: Large Uncrewed Surface Vehicle
MBC: Maritime Border Command
MCM: Mine Countermeasures
MDA: Maritime Domain Awareness
NATO: North Atlantic Treaty Organization
NCAPS: Naval Control & Protection of Shipping
NDS: National Defence Strategy
NGS: Naval Gunfire Support
PCG: Philippines' Coast Guard
PLA: People's Liberation Army
PLA-AF: People's Liberation Army Air Force
PLA-N: People's Liberation Army Navy
PNT: Positioning, Navigation & Timing
RAAF: Royal Australian Air Force
RAN: Royal Australian Navy
RFA: Royal Fleet Auxiliary
RFSG: Regional Force Surveillance Group
RN: Royal Navy
RNZN: Royal New Zealand Navy
ROKN: Republic of Korea Navy
RSN: Republic of Singapore Navy
SAM: Surface-to-air missile
SLOC: Sea lines of communication
SM-1: Standard Missile-1
SM-2: Standard Missile-2
SM-6: Standard Missile-6
SRF-W: Submarine Rotational Force - West
SS: Submarine (Conventional powered)
SSBN: Nuclear powered ballistic missile submarine
SSN: Nuclear powered attack submarine
SSP: Submarine Support Program
TEU: 20-foot Equivalent Unit
TTL&R: Torpedo Tube Launch & Recovery
UAS: Uncrewed Aerial System
UAV: Uncrewed Aerial Vehicle
UCV: Uncrewed Vehicle
UK: United Kingdom
UN: United Nations
UNSW: University of New South Wales
US: United States
USCG: United States Coast Guard
USN: United States Navy
USV: Uncrewed Surface Vehicle
VMS: Vessel Monitoring System
WTO: World Trade Organisation
XLUUV: Extra-Large Uncrewed Underwater Vehi

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Executive Summary

Summary of Part I

Australia's security and prosperity are fundamentally maritime, yet no integrated national maritime strategy currently exists. Part I of the monograph sets the foundation for such a strategy by analysing Australia's strategic environment, vulnerabilities, and emerging challenges out to 2035. It underscores Australia's geographic realities as a vast, resource-rich island nation with the world's third-largest Exclusive Economic Zone (EEZ) and near-total reliance on sea trade and undersea communications. These advantages of distance and size are simultaneously vulnerabilities, exposing Australia to disruption of critical trade and supply chains. The return of great-power competition in the Indo-Pacific, particularly China's coercive behaviour and the increasing uncertainty of US policy, has created the most contested maritime environment since the Cold War. Added to this are disruptive technological trends, such as artificial intelligence (AI), hypersonic weapons, drones, and uncrewed systems that are reshaping the character of maritime conflict.

Part I also highlights shifts in Australia's defence policy and force posture, particularly the AUKUS agreement, and the 2023 *Defence Strategic Review* (DSR) which emphasised a 'focused' force. While these decisions are consequential, the analysis warns against abandoning a balanced fleet, given the Royal Australian Navy's (RAN) small size and multi-functional roles spanning warfighting, diplomacy, and constabulary tasks. The section reviews the military balance in the Indo-Pacific, noting rapid growth in regional naval forces and US posture changes such as Submarine Rotational Force–West (SRF-W). It also situates defence planning within broader economic constraints, recognising modest growth in Australia's economy, heavy reliance on globalised trade, and the disproportionate importance of partners such as Singapore. Part I concludes that Australia faces a volatile and dangerous maritime environment that demands a coherent, durable maritime strategy able to integrate government, defence, and industry to safeguard its lifelines and help shape regional stability.

Summary of Part II

Part II sets out the proposed *Australian Maritime Strategy 2035 (AMS 2035)*, designed to align Australia's strategic goals, defence policy, and force structure to the challenges of an increasingly contested Indo-Pacific. The strategy is built around three enduring objectives: **Deterrence, Sea Control, and Presence.** Deterrence will be underpinned by the development of a nuclear-powered submarine capability, supported by balanced surface combatant task groups, mine warfare and uncrewed systems, and enhanced replenishment and strategic lift. Sea control is identified as essential not only to secure freedom of manoeuvre for the Australian Defence Force (ADF) but also to protect Australia's lifeline maritime trade and critical undersea infrastructure, including cables and pipelines. Presence underscores the need for regular and sustained deployments to Southeast Asia and the Pacific to reassure partners, shape the regional environment, and demonstrate commitment to the rules-based order.

The proposed *AMS 2035* is whole of nation in scope, integrating Defence, diplomacy, industry, and civil maritime agencies. It emphasises layered defence, alliance cooperation, and targeted interoperability to offset capability gaps. Recognising that Australia is a medium power with limited resources, the strategy stresses prioritisation of capabilities that deliver both independent national options and credible contributions to coalitions. It also underlines the need for close coordination with regional partners, especially in protecting maritime trade routes vital not only to Australia but also to allies such as Japan and South Korea. By aligning ends, ways, and means, *AMS 2035* provides an enduring framework for protecting Australia's sovereignty, ensuring economic resilience, and projecting power to enhance stability in the Indo-Pacific.

Summary of Part III

Part III focuses on the means required to realise the *AMS 2035*, setting out proposals to ensure Defence, government, and industry can deliver the capabilities and resilience needed for deterrence, sea control, and presence. It identifies funding as the fundamental constraint, noting that current projections of 2.4% GDP for defence will be insufficient to sustain both the Integrated Investment Plan (IIP) and AUKUS Pillar I. A priority recommendation is an independent, comprehensive costing of the nuclear submarine program to provide a realistic financial baseline. Beyond resourcing, the section highlights the urgent need for platform standardisation, industrial capacity building, and supply chain resilience to mitigate the inefficiencies of the RAN's heterogeneous fleet. Mine countermeasures and hydrographic capability, long neglected, are identified as a critical gap that must be regenerated to guarantee maritime access to ports and littoral waters.

Personnel and structural shortfalls are recognised as persistent challenges, particularly with the growth of the submarine force from 800 to 3,000 personnel under AUKUS. Proposals include creating high/medium/low readiness task groups, establishing an Australian Sealift Command to free naval personnel for warfighting roles, and exploring the creation of an Australian Coast Guard to rationalise constabulary functions. The strategy also calls for investment in uncrewed systems, a scoping study on undersea cable protection, and adoption of the 2022 *Protecting Australian Maritime Trade* recommendations. Finally, Part III stresses the importance of whole of government administration, akin to the wartime Advisory War Council of 1940-45, to ensure coordination across Defence, industry, and civil agencies. Together, these reforms will provide the practical foundation to translate *AMS 2035* from a strategic vision into an operational reality.

Figure 1 (HIMARS) during a live-fire training activity at Shoalwater Bay training area during Exercise Talisman Sabre 2025. Defence Images (http://images.defence.gov.au/TS250039)

Recommendations

Australia's maritime security challenges are pressing, complex, and interconnected. The *AMS 2035* sets out a vision built around deterrence, sea control, and presence, but translating this into reality requires coherent, practical, and resourced actions.

The following recommendations bring together the key proposals from across the monograph, offering a blueprint for Defence, government, and industry to implement *AMS 2035* in a way that is sustainable, effective, and nationally integrated.

1. Conduct a comprehensive and independently verified costing of AUKUS Pillar I as a matter of urgency to allow for re-baselining of Defence financial requirements and recalculation of required overall Defence funding.
2. Initiate a long-term program to standardise ship designs, systems, and sub-systems, and expand local supply chains, including deeper collaboration with partners such as Japan.
3. Regenerate robust mine countermeasures and hydrographic capabilities to guarantee maritime access to Australian ports, forward operating bases, and remote littoral areas.
4. Examine converting, modifying, Arafura or Cape class vessels for hydrographic duties or building a small number of bespoke vessels.
5. Establish and fund a project within IIP 2026 to procure uncrewed surface vessels (USVs) and uncrewed underwater vehicles (UUVs) that enhance and sustain RAN deployable hydrographic capability.
6. Investigate sea-based fixed-wing aviation to achieve tactical air control by acquiring a light carrier capable of operating a mixed crewed–uncrewed air wing.
7. Establish high, medium, and low readiness surface task groups to improve operational cohesion, predictability, and resource allocation.
8. Secure a third replenishment ship, either through acquisition or collaboration with allies such as New Zealand, to sustain task group operations.
9. Explore expansion of Australian Defence Vessels (ADV) arrangements into a formal Australian Sealift Command to relieve workforce pressures and concentrate RAN personnel on combatants.
10. Consider the transfer of offshore patrol vessels and patrol boats to Australian Border Force (ABF) or a newly constituted Australian Coast Guard to rationalise constabulary tasks and expand the mariner pool.
11. Adopt the recommendations of the *2019 Protecting Australian Maritime Trade: The Findings of the 2019 Goldrick Seminar* and the *2022 Protecting Australian Maritime Trade* reports, including enhanced maritime domain awareness, routing plans, and coalition cooperation.
12. Initiate a scoping study on the protection of undersea cables and related maritime infrastructure, combining inter-agency, international, and industry inputs.
13. Rationalise Navy workforce structures to prioritise seagoing operations by reallocating non-seagoing roles, streamlining categories, and focusing training and career pathways on sustaining an operational fleet.
14. Develop an ADF roadmap for uncrewed systems across the air, surface, and undersea domains, prioritising local development and production to ensure rapid adoption and sustainment.
15. Undertake a study on the operational and logistic value of a submarine support ship for east coast and deployment operations.

Part I -A Maritime Strategy for Australia

'We owe it to ourselves to be able to mount a national defence effort that would maximise the risks and costs of any aggression towards Australia'.[1]

1976 Defence White Paper

Introduction

Australia is a maritime nation whose security and prosperity rest on the sea. Vice Admiral Mark Hammond, Chief of Navy, summed this up when he stated, 'from a sovereign perspective for a nation dependent on access to the sea, we have to be strong at sea'.[2]

Australia does not have an integrated national maritime strategy. This monograph proposes such a strategy out to 2035. This date is chosen to align with key defence and force structure planning timelines, such as AUKUS submarine delivery and infrastructure reforms.

The proposed strategy is based on the fundamentals of existing government policy settings and capability decisions, but with some significant adjustments and inclusions to realise a more robust maritime capability.

It is important to distinguish between strategy and concepts. For the purpose of this monograph strategy defines ends, ways, and means to achieve national objectives. Concepts describe how (in this case maritime) capabilities might be employed within a strategic framework. Tasks are what must be accomplished by those capabilities.

All strategies must be directive, actionable, and integrative across all levels of government. As such this monograph approaches its purpose in the classic 'Ends - Ways – Means' methodology. Specifically:

- Part 1 discusses the 'Ends': Australia's unfolding national security circumstance in the Indo-Pacific and what strategic goals Australia should endeavour to achieve. Integral to this is an assessment of the rapidly changing battlespace technologies and what that means for the ADF.
- Part 2 focusses on the 'Ways': Australia's strategic options and proposes a maritime strategy tailored to achieve the desired strategic goals. This is called *AMS 2035.*
- Finally, Part 3 outlines the 'Means': a series of proposals to realise this strategy. If implemented, the strategy would contribute to one of the foundational pillars for the nation's future prosperity, namely through strengthening its national security.

In addition, three 'primers' are included as enclosures to provide additional intellectual underpinning of the monograph's case for the proposed *AMS 2035* without obscuring the thrust of the argument within this document.

How best to provide for Australia's defence and that of its maritime trade, as well as providing sufficient military power to protect its other interests has long been the subject of political discourse, policy work and the expenditure of much national treasure. Indeed, these issues occupied the attention of the pre-Federation colonies and were a major driver to Federation itself.

Australia as a continent unconnected to another land mass, with only a modest sized population, has a unique set of strategic characteristics and challenges. One great strength remains Australia's size and distance from centres of conflict and friction. The nation is the sixth largest by land mass

1 Australian Government, 'Whitepaper: Australian Defence', 1976, <https://www.defence.gov.au/about/strategic-planning/defence-white-paper>.

2 J Parker & M Hammond, 'A Maritime Awakening: The Future of the Royal Australian Navy with Vice Admiral Mark Hammond', Saltwater Strategists, <https://podcasts.apple.com/au/podcast/4-6-a-maritime-awakening-the-future-of/id1637341108?i=1000725006893>.

with the third largest EEZ and is richly endowed with a resource-orientated export economy critically reliant on sea trade for its prosperity. Indeed, Australia is the fifth largest user of shipping services in the world. Its maritime trade accounts for over 99% Australia's imports and exports by volume and over 79% of both by value.[3] This mostly comprises bulk items (minerals and LPG) for exports and bulk (petroleum) and container ships for imports. Significant future developments include the expansion of the Port Melbourne container terminal, and average container ship size increasing from 7,500 to 14,000 Twenty-foot Equivalent Unit (TEU) capacity [4]

This dependence on sea trade creates critical vulnerabilities regarding the supply of most of the manufactured goods necessary for a modern society, as well as critical commodities, such as petroleum and fertilisers. Furthermore over 90% of its communications data is carried by undersea cables.[5]

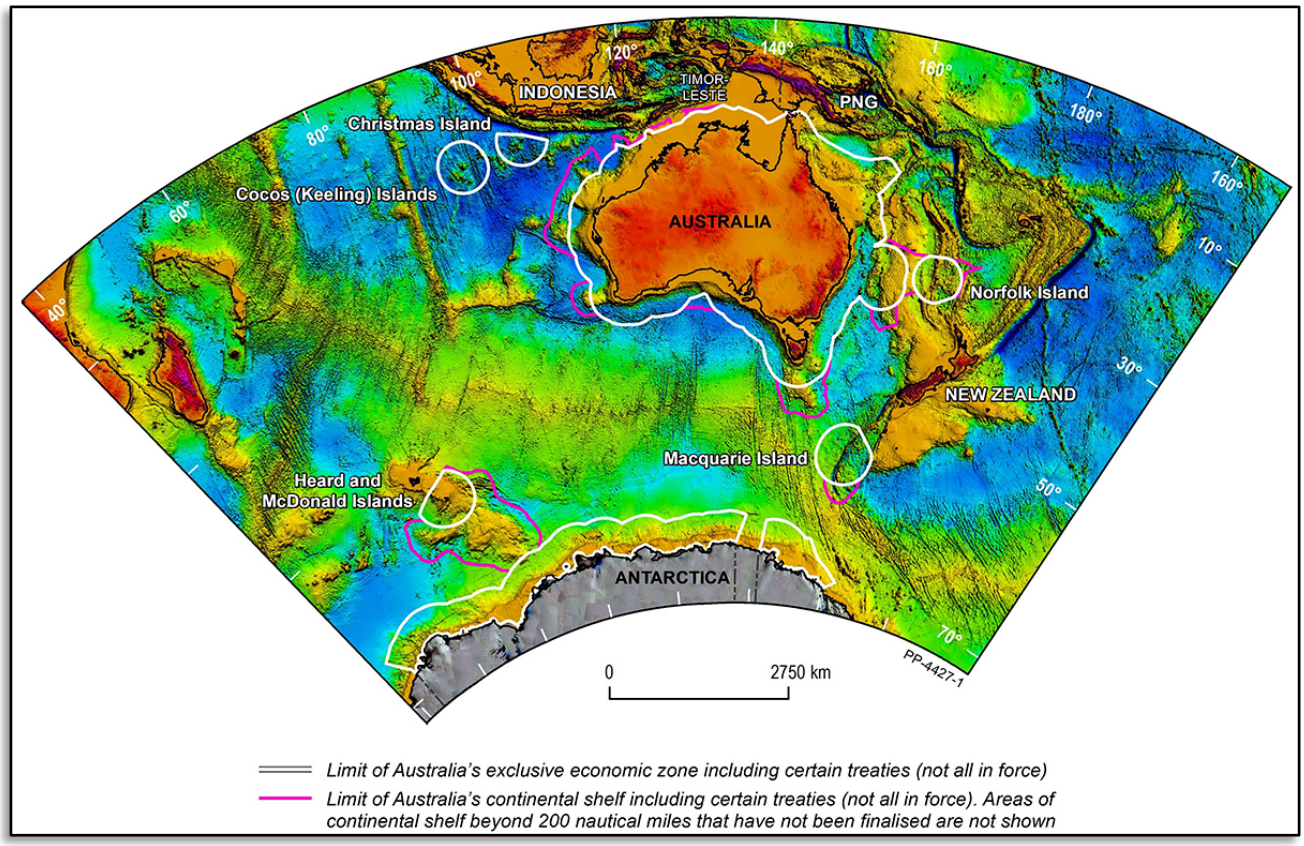

Figure 2- Australia's Exclusive Economic Zone (source: Geoscience Australia).

3 Australian Naval Institute, *Protecting Maritime Trade*, 19 August 2022, <https://navalinstitute.com.au/publications/reports/>.

4 Port of Melbourne, '2050 Port of Melbourne Development Strategy', 2020, <https://www.portofmelbourne.com/facilities-development/port-development-strategy/>.

5 BD Jones, *To Rule the Waves: How Control of the World's Oceans Shapes the Fate of the Superpowers.*, Scribner, 2021, p. 4-5.

These considerations mean Australia is a natural maritime power within a predominantly maritime region. It has ready access to three oceans and pivotal sea lanes, and a defensive position at vast distance over blue water. In addition, it has a complex archipelagic network to its north. Although these attributes are strengths, they also pose important vulnerabilities.

For multiple reasons there is at present a sense of uncertainty in the realm of international security. Perhaps the most significant aspect is the return of friction between Indo-Pacific great powers, which has not been seen since the end of the Cold War. This is taking place at a time when the US has a less predictable foreign and trade policy than in recent decades, while China is conducting a more aggressive, militaristic approach to the region. The strategic balance has been further complicated by the growing military and economic power of smaller regional nations. Furthermore, the rise of new technologies such as artificial intelligence (AI), hypersonic missile technology and the proliferation of uncrewed capabilities commonly referred to as 'drones' in the air, land and sea domains is creating additional uncertainty.

In response to some of these developments, in 2020 Australia began embarking on some of the most consequential national security decisions since Federation. The most notable of these has been the AUKUS security partnership and the planned acquisition of nuclear-powered submarines.[6] Other important, decisions include the 2023 *Defence Strategic Review* (DSR),[7] which inspired a shift from a balanced to a focussed force pivoting Army towards a maritime focus,[8] and the subsequent 2024 announcement of the growth of the surface combatant fleet.[9]

For the RAN, any move away from a 'balanced' fleet structure could inhibit its ability to deliver upon the maritime and naval tasks that underpin the defence of Australia's interests. A balanced fleet is essential because of both the RAN's size and its multifunctional nature (spanning military, diplomatic and, at times, constabulary tasks).[10]

Beyond the specific issue of the RAN's size and technological complexity, there are also wider challenges associated with the ADF moving towards a 'focused' force that need to be acknowledged. While the *DSR* is clear on its intent for the ADF to transition to a focused force to address the 'nation's most significant military risks',[11] that makes a clear assumption that those risks are known and understood. The distinguished military historian and World War II veteran Sir Michael Howard once aptly remarked that he was: '… tempted to declare that whatever doctrine the Armed Forces are working on now, they have got it wrong … it does not matter that they have got it wrong. What matters is their capacity to get it right quickly when the moment arrives'.[12] The *DSR* states that, with respect to a 'focused' force, 'the capabilities required to address identified threats will also provide latent capability to deal with lower-level contingencies and crises'.[13] This is often not the case for naval or air forces where an unbalanced force/fleet creates gaps that an

6 Defence Minister, 'Joint media statement: Australia to pursue nuclear-powered submarines through new trilateral enhanced security partnership', 2021, <https://www.minister.defence.gov.au/statements/2021-09-16/joint-media-statement-australia-pursue-nuclear-powered-submarines-through-new-trilateral-enhanced-security-partnership> [accessed 23 August 2023].

7 Australian Government, *Defence Strategic Review*, 24 April 2023, <https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review>.

8 Australian Army, 'The Australian Army Contribution to the National Defence Strategy', 2024, <https://www.army.gov.au/our-work/strategy/australian-army-contribution-national-defence-strategy-2024>.

9 Department of Defence, *Independent Analysis into Navy's Surface Combatant Fleet*, February 2024, <https://www.defence.gov.au/about/reviews-inquiries/independent-analysis-navy-surface-combatant-fleet>.

10 For further discussion of a balanced fleet see Jennifer Parker, *An Australian maritime strategy: resourcing the Royal Australian Navy*, Australian Strategic Policy Institute, 30 October 2023, <https://www.aspi.org.au/report/australian-maritime-strategy>.

11 Australian Government, *Defence Strategic Review*, 24 April 2023, p. 54 <https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review>.

12 M Howard, 'Military science in the age of peace', RUSI Journal, vol. 119, 1974, p. 4.

13 Australian Government, *Defence Strategic Review*, 24 April 2023, 54 <https://www.defence.gov.au/about/reviews-inquiries/defence-strategic-review>.

adversary can exploit, and depending on the degree to which weakness has been created, such gaps could be very serious indeed.

Figure 3 - China has employed aggressive tactics in the South China Sea against its neighbours, as evidenced in collision between the Chinese destroyer CNS Guilin and the Chinese coast guard vessel Nanyu when both were harassing the Philippines Coast Guard (PCG)

The Geo-Political Environment

Australian policymakers across the political spectrum increasingly portray today's strategic environment as the most consequential since World War II. Three intertwined trends are consistently adduced to underpin this assessment:

- First, the rapid technological changes that, besides transforming daily life, are amplifying national vulnerabilities and reshaping the character of warfare.
- Second, the post-1945 world order is fraying, as bodies such as the United Nations (UN) have struggled to manage crises and tensions, such as in the Ukraine and the Middle East, while the World Trade Organisation (WTO) has been challenged in the face of upheavals in world trade.
- Third, the increasing use of force and 'grey zone' tactics[14] to achieve political ends. This was thought to have declined after the Cold War but has resurged, as evidenced by Russia's military actions in Ukraine and covert activities in Europe, China's coercive operations in the South China Sea and closer to home, and Iran's recent activities in Australia.[15]

The deteriorating geopolitical climate is manifesting at sea. Recent naval engagements in the Black Sea, where missiles, uncrewed aerial vehicles (UAVs) and uncrewed surface vessels (USVs) have proved decisive, underline how rapidly the maritime battlespace is evolving. In the Red Sea, Houthi forces have repeatedly struck commercial shipping, while in European waters suspected Russian sabotage of undersea cables and pipelines has highlighted the vulnerability of critical maritime infrastructure.

[14] Grey zone tactics are activities designed to coerce or achieve political objectives below the threshold of armed conflict.

[15] Senator Penny Wong, 'Response to Iranian attacks', 2025, <https://www.foreignminister.gov.au/minister/penny-wong/media-release/response-iranian-attacks>.

Nearer to Australia, China has intensified military activities around Taiwan since 2022, conducting large-scale exercises and normalising operations beyond the notional Taiwan Strait median line. Undersea cables have also been cut in suspicious circumstances. In the South China Sea, Beijing continues to press its illegitimate nine-dash-line claim, deploying its coast guard and maritime militia to ram and water-cannon Philippine vessels operating lawfully within the Philippines' EEZ despite the 2016 arbitral ruling against China by the Permanent Court of Arbitration in The Hague.[16] In response to these actions Australia, Canada, the US and several European nations have had their warships exercise the freedom of navigation through these international waters. This has invariably drawn the ire of the Chinese government. ADF assets have not been immune. The People's Liberation Army Navy (PLA-N) and Air Force (PLA-AF) have executed a series of unsafe manoeuvres against ADF ships and aircraft, endangering Australian personnel.[17]

Compounding these pressures, the PLA-N is now demonstrating a true blue-water reach with regular deployments to the Arabian Sea and even as far afield as the Atlantic. In early 2025, a PLA-N task group comprising a cruiser, a destroyer and a replenishment ship completed the PLA-N's first circumnavigation of Australia by a surface formation.[18] Australia's Defence Secretary said in Parliamentary Senate Defence Estimates he expected more frequent visits by Chinese warships to the region in future years.[19]

China's actions in the region have led the US Secretary of War to remark at the May 2026 Shangri-La Dialogue in Singapore that "The threat China poses is real. And it could be imminent. We hope not. But it certainly could be."[20] While the statement itself is debated, his sentiment is clear. Collectively, these developments point to an increasingly contested, volatile and dangerous maritime domain.

For a nation whose prosperity and security hinge on the world's oceans, as part of its overall defence policy, Australia must craft, and properly resource, a coherent maritime strategy to safeguard its vital interests. Access to the sea, or rather denial of that access is the the only potential existential threat to Australia short of nuclear attack. One of the most challenging aspects of devising a maritime strategy is the need to ensure that the associated policy settings produce sufficient robustness and durability in these unpredictable times. This monograph makes some judgements while allowing for a range of strategic outcomes.

While Australia's most consequential security relationship is with the US, its strategy must accommodate the still yet to be fully settled approach to national security issues of the current US Administration while maintaining the ability to adjust to recalibrations by the US in the future. The strategy should also be relevant and useful in the context of a more assertive China and the dynamic north and south Asia regions.

While these developments can inform Australia's approach to formulating its Defence policy, it must also be tempered by its history. Perhaps the most important consideration in this respect is that most of its wars and lesser operations were unexpected, both in terms of adversaries and circumstances.

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16 Permanent Court of Arbitration, 'The South China Sea Arbitration (The Republic of Philippines v. The People's Republic of China)', <https://pca-cpa.org/en/cases/7/> [accessed 30 September 2025].

17 In 2023, HMAS *Toowoomba* divers suffered minor injuries when a Chinese destroyer closed at short range and actively pinged sonar while *Toowoomba* was stationary inside Japan's EEZ clearing fishing gear fouling her propellers. Department of Defence, 'Unsafe and unprofessional interaction with PLA-N', 2023, <https://www.minister.defence.gov.au/media-releases/2023-11-18/unsafe-unprofessional-interaction-pla-n>.

18 Department of Defence, 'People's Liberation Army–Navy vessels operating near Australia', , 2025, <https://www.defence.gov.au/news-events/news/2025-03-09/peoples-liberation-army-navy-vessels-operating-near-australia> [accessed 30 September 2025].

19 '2024-25 Additional estimates', p. 24, 2025, <https://www.aph.gov.au/Parliamentary_Business/Senate_estimates/fadt/2024-25_Additional_estimates>.

20 Department of Defence, 'People's Liberation Army–Navy Vessels Operating near Australia'.

The Military Balance

Since 1945 the US has provided a security umbrella in the Indo-Pacific that has enabled unprecedented economic growth. In more recent times regional nations have greatly increased their naval capabilities. In the Indo-Pacific, like in Europe, there is a recognition that spending on national defence needs to increase as a proportion of Gross Domestic Product (GDP) (see Table 1).[21]

Notably countries have sought to increase expenditure in the areas of maritime, air and cyber capabilities. Table 1 provides the average defence spending as a percentage of GDP for NATO countries which has often been seen as an international benchmark. In June 2025 NATO agreed following US pressure to increase spending to 3.5% of GDP by 2025 with another 1.5% on other security-related investments.[22]

Similar US pressure on its allies and coalition partners in the Indo-Pacific is already starting to be seen.[23] The implications of increased defence spending and the greater than expected expenditure of munitions in the Ukraine war mean that demand exceeds the existing sources of supply of defence materiel. Although Australia has already begun to address the munitions issue, the imperative to maximise self-reliance through greater development of local produced systems and associated supply chains will become increasingly important.

Continued US engagement in the Indo-Pacific will likely see continued development of security arrangements such as AUKUS, Five-Eyes, ANZUS and the Quad.[24] It is important to appreciate that these arrangements are not static. This is particularly the case with AUKUS. Even before the delivery of the first RAN nuclear powered attack submarines (SSNs), from 2027 there will be the first of up to four US SSNs operating from HMAS *Stirling* in Western Australia and under current plans one RN SSN, collectively known as SRF-W.[25] Each of these SSNs will operate from *Stirling* for about six years,[26] and thereby in all but name be home-ported in Australia. This development, and force posture initiatives including the frequent visits of B-2 bombers to Australia,[27] as well as the intended bomber force rotations represent an important strategic force posture change for the US in the Indo-Pacific.[28]

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21 Table 1 is based on data from The World Bank: 'Military Expenditure', in *The World Bank*, <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS>.
The figure for Russia is from D Korsunskaya & G Bryanski, 'Russia hikes 2025 defence spending by 25% to a new post-Soviet high', in *Reuters*, , 1 October 2024, <https://www.reuters.com/world/europe/russia-hikes-national-defence-spending-by-23-2025-2024-09-30/>.
Taiwan figures from 'The World Factbook: Taiwan', in *CIA*, 2025, <https://www.cia.gov/the-world-factbook/countries/taiwan/>.

22 'Defence expenditures and NATO's 5% commitment', in *NATO*, 2025, <https://www.nato.int/cps/en/natohq/topics_49198.htm>.

23 P Hegseth, 'Remarks by Secretary of Defense Pete Hegseth at the 2025 Shangri-La Dialogue in Singapore (As Delivered)', 2025, <https://www.war.gov/News/Speeches/Speech/Article/4202494/remarks-by-secretary-of-defense-pete-hegseth-at-the-2025-shangri-la-dialogue-in/>.

24 The Quad (Quadrilateral Security Dialogue) is a strategic partnership between Australia, India, Japan, and the United States that promotes a free, open, and secure Indo-Pacific. AUKUS is a trilateral security partnership between Australia, the United Kingdom, and the United States focused on defence technology sharing, including nuclear-powered submarines. Five Eyes is an intelligence-sharing alliance comprising Australia, Canada, New Zealand, the United Kingdom, and the United States.

25 'Submarine Rotational Force - West', in *Australian Submarine Agency*, 2025, <https://www.asa.gov.au/aukus/submarine-rotational-force-west>.

26 This is the author's estimate based on the AUKUS Pillar I Optimal Pathway, it may be longer.

27 Department of Defence, 'Spirit of cooperation', 2024, <https://www.defence.gov.au/news-events/news/2024-09-18/spirit-cooperation>.

28 Defence Ministers, 'Joint Statement on Australia-U.S. Ministerial Consultations (AUSMIN) 2024', 2024, <https://www.minister.defence.gov.au/statements/2024-08-07/joint-statement-australia-us-ministerial-consultations-ausmin-2024>.

Yet to be fully understood for Indo-Pacific security, however, is the evolving relationship between Russia, China and North Korea. While Russia is a littoral power with a demonstrably acquisitive foreign policy, it is not clear what its real power or intentions are in the Pacific and whether it would act in concert with the other countries. Having said that, the recent Russian overtures to Indonesia for forward basing of long-range bombers,[29] and enhanced naval cooperation,[30] suggest Australia needs to be alert to evolving circumstances.

Country[31]	Defence Spend GDP%	Country	Defence Spend GDP %
Australia	1.9% (2023) ↑ to 2.4% (2033-34)	Russia	6.3% (2025)
Brunei Darussalam	3.0% (2023)	Singapore	2.7% (2023)
Canada	1.3% (2023) ↑ to 3% (2032-33)	Sri Lanka	1.6% (2023)
China	1.7% (2023)	Thailand	1.2% (2023)
India	2.4% (2023)	United States	3.4% (2023)
Indonesia	0.7% (2023)	North Korea	26% (2019)
Japan	1.2% (2023) ↑ to 2% (2027)	South Korea	2.8% (2023)
Malaysia	0.9% (2023)	Taiwan	2.5% (2023)
New Zealand	1.2% (2023)	Vietnam	1.8% (2023)
Pakistan	2.8% (2023)	East Asia Average	1.6% (2023)
The Philippines	1.3% (2023)	NATO	1.25% (2023)[32]

Table 1 - Indo-Pacific Defence Expenditure as a Percentage of Gross Domestic Product (GDP)

Economic Outlook

Any strategy that is not aligned to likely fiscal allocations becomes a redundant document on a shelf. In assessing Australia's strategic outlook, it is therefore important to consider the underlying regional economic prospects.

Despite the political uncertainties, the broader economic outlook for the Indo-Pacific had been generally positive until the volatility instigated by the current US Administration's new tariff regime.[33] The weakness in global stock markets may suppress global economic activity in the short term and lead to a 're-wiring' of global trade thereafter. Investment and growth are therefore likely to be tentative or at the very least uneven while this 'rewiring' takes place.

Australia is the 13th largest global economy and is largely export driven. As such it is particularly sensitive to global economic shifts. The medium-term economic forecast is for modest Australian growth in the realm of 2%.[34] This is likely to continue out to the end of the decade in the absence of major changes to the taxation system, but with some prospective modest productivity reforms.[35] It

29 M Sussex, 'Russia's Indon move concerning', in *The Conversation*, 2025, <https://navalinstitute.com.au/russias-indon-move-concerning/>.

30 'Russian submarine visits Indonesia', in *Australian Naval Institute*, , 2024, <https://navalinstitute.com.au/russian-submarine-visits-indonesia/>.

31 The World Bank: 'Military Expenditure'.
The figure for Russia is from Korsunskaya and Bryanski.
Taiwan figures from 'The World Factbook: Taiwan'.

32 'Philippines Military Spending/Defense Budget | Historical Data | Chart | 1960-2023', in *Macrotrends*, <https://www.macrotrends.net/datasets/global-metrics/countries/phl/philippines/military-spending-defense-budget>.

33 'Latest on US tariffs', in *Department of Foreign Affairs and Trade*, <https://www.dfat.gov.au/trade/trade-and-investment/latest-us-tariffs>.

34 'Statement on Monetary Policy – February 2024', 2024, <https://www.rba.gov.au/publications/smp/2024/feb/outlook.html>.

35 In Depth – Drivers and Implications of Lower Productivity Growth', 'Statement on Monetary Policy – August 2025: Outlook', in *Reserve Bank of Australia*.

will be in this context that successive Commonwealth Governments will plan future Defence spending. Australia, having an export driven economy, is a significant user of merchant shipping. They are predominantly bulk trade (minerals and LPG) ships for export and bulk (petroleum) and container ships for imports.

Looking at the Asian economies, the Asian Development Bank (ADB) projects growth in the region at 5.0% in 2024 and 4.9% in 2025.[36] The key drivers of growth include domestic demand and strong export growth, particularly in manufactured goods such as electronics. In the longer term the shrinking and ageing populations of the economic powerhouses of China, Japan and South Korea will have potentially significant, but yet to be defined outcomes. While China's growth rate is 5% the World Bank expects in the medium term a 'structural slowdown' requiring reforms to reinvigorate the economy.[37]

Singapore is ranked 30th among world economies. As both a financial and trading hub, it is particularly sensitive to regional and global economic fluctuations. Prior to the US imposition of tariffs, there was an expectation Singapore's economy would grow at a modest 2.6% in 2025.[38] A feature often glossed over by Australian national security analysts and indeed in government policy documents is the disproportionate importance of Singapore to Australia as a hub for Australian maritime trade. Over $11b worth of petroleum products are imported through Singapore from which an equally significant proportion of containerised cargo comes to Australia.[39]

Indonesia like other growing Asian economies is growing at about 5%. In 2025 ranked 16th by GDP, it has an aspiration to be a high-income economy by 2045, however the OECD suggests further reforms will be needed to realise that goal. Even with that caution, however, it is likely that that Indonesian Australian trade and economic linkages will significantly develop in scale and sophistication. Australian and Indonesian governments have publicly stated their intention to increase trade between the two nations.

For its part India, in 2025 the 5th largest economy in the world, will continue to play a growing economic role in the Indo-Pacific. The Organisation for Economic Co-operation and Development (OECD) expect India to remain the fastest-growing major economy over the next two years with the country's GDP growth rate projected at 6.4% for 2025 and at 6.6% in 2026. This contrasts with China's expected growth rate at 4.8% in 2025 and at 4.4% in 2026.[40] Importantly for India one of the drivers for growth is increasing domestic demand and an increase in manufacturing exports, such as electronics, semiconductors, and pharmaceuticals.[41]

For the island nations of the Southwest Pacific there is a subdued economic outlook. The key challenges are high debt levels, climate change impacts, and the need for sustainable development to keep pace with population growth.[42]

<https://www.rba.gov.au/publications/smp/2025/aug/outlook.html#:~:text=GDP%20growth%20in%20Australia%20has,the%20next%20couple%20of%20years>.

36 Asian Development Bank, 'Asian Economic Outlook July 2024', <https://www.adb.org/outlook/editions/july-2024>.

37 'The World Bank in China: Overview', in *The World Bank Group*, <https://www.worldbank.org/en/country/china/overview>.

38 D Al Anthony, 'Economists maintain Singapore's 2025 growth forecast at 2.6%: MAS survey', in *Channel News Asia*, , 19 March 2025, <https://www.channelnewsasia.com/singapore/singapore-economy-gdp-growth-forecast-mas-5009951#:~:text=SINGAPORE%3A%20Private%20sector%20economists%20have,3%20per%20cent%20this%20year.>.

39 Department of Foreign Affairs and Trade, 'Singapore Economic Fact Sheet', 2024, <https://www.dfat.gov.au/geo/singapore>.

40 'India to remain fastest growing economy in next 2 years at 6.4 to 6.6 pc growth: OECD', in *Sarkartil.com*, , 2025, <https://www.sarkaritel.com/india-to-remain-fastest-growing-economy-in-next-2-years-at-6-4-to-6-6-pc-growth-oecd/>.

41 R Majumdar & D Ghatak, 'India economic outlook, August 2025', in *Deloitte*, 2025, <https://www.deloitte.com/us/en/insights/topics/economy/asia-pacific/india-economic-outlook.html>.

42 'Pacific Economic Update March 2024', in *The World Bank Group*, 2024, <https://www.worldbank.org/en/country/pacificislands/brief/pacific-economic-update-march-2024>.

Figure 4 2024 Ghost Shark 'Alpha' the first prototype co-developed by Defence Science and Technology Group, the Royal Australian Navy and Anduril Australia was unveiled. Defence Images (http://images.defence.gov.au/S20240968).

Technological Developments

Since the arrival of the RAN's fleet in 1913, there has been a broad policy approach to acquire ships, aircraft and weapon systems that were the same as, or compatible with, those of Australia's pre-eminent maritime ally, initially the UK and then over a transition period the US, largely continued. Today this is evidenced by acquisitions of Aegis destroyers, fitted with Tomahawk land attack missiles, and in the early 2030s SSNs. Related to this has been an emphasis on high-end systems, in part to compensate for the limited size of Australia's armed forces. The Navy has just under 16,000 permanent members,[43] which is planned to grow to 20,000 by 2040.[44]

During the timeframe discussed in this monograph the dominant technologies in the maritime and associated environments will largely be those that are in-service today. Some technologies, such as AI enabled systems and uncrewed platforms, are experiencing rapid change as is the way they influence the conduct of operations. It is therefore useful to examine these technologies in different domains and then discuss their employment in a 'system of systems' approach.

While technology has always shaped naval warfare, the pace and scope of change in the late 20th and early 21st centuries has been particularly marked. In 2025 there has been considerable debate about whether naval warfare faces a true revolution or merely an evolution. Evidence for a step-change is mounting. Ukraine's USVs have achieved a highly effective Black Sea denial campaign,

43 'Capabilities', in *Royal Australian Navy*, <https://www.navy.gov.au/capabilities#:~:text=The%20Royal%20Australian%20Navy%20consists,forces%20in%20the%20Pacific%20region.>.

44 'It's time to talk Navy workforce', in *The Strategist*, , 2024, <https://www.aspistrategist.org.au/its-time-to-talk-navy-workforce/#:~:text=The%202020%20defence%20strategic%20update,surface%20combatant%20force%20crewing%20numbers.>.

when coupled with the use of missiles and UAVs.[45] Houthi forces have used missiles, UAVs and USVs to strike shipping in the Red Sea; and ballistic and hypersonic missiles have entered combat in Europe and the Middle East. Overlaying these advances is the rapid diffusion of AI across sensing, command and weapon systems. Collectively, these trends are reshaping capability acquisition, tactics, operations and, ultimately, maritime strategy.

The *NSG Primer No.1 – Naval Developments* at Enclosure 1 assesses these technological trends in more detail. Key takeaways of these technological trends are:

- **Maritime Operations Overview**
  - The effective conduct of maritime operations requires a high level of integration of forces across domains. There is a high reliance on satellite-based communications and global positioning systems (GPS), but these systems may be subject to attempts to deny access, depending on the foe. Greater attention therefore will be needed in the maritime, space and cyber domains to make these systems more robust while maximising unfettered access.
  - To be effective surface combatants and submarines must have a range of uncrewed systems as integral elements of their weapon and sensor fit. These systems will be able to extend Intelligence Surveillance and Reconnaissance (ISR), defensive and offensive capabilities. They may also allow their crewed parent platforms to remain more distant from higher threat areas.
- **Air Warfare**
  - Since the early days of World War II, the RAN has found that one of the most challenging aspects of naval operations is operating where there is an absence of air superiority or where air superiority is contested.
  - The predominant air threat centres on air, surface and sub-surface launched sub-sonic and supersonic missiles.
  - Hypersonic air-to-surface and surface-to-surface missiles are entering service in greater numbers. They demand anti-ship missile defence (ASMD) systems within naval task groups possessing much quicker reaction times and for defensive surface-to-air missiles (SAMs) with much greater manoeuvrability to counter high G terminal weaves of incoming missiles.
  - The greater use of AI to maximise the effect of attack missions, including with EW systems.
  - It is anticipated that land and sea-launched UAVs will proliferate in large numbers which will threaten to overwhelm maritime forces by sheer numbers rather than sophistication.
  - The foundation of the ADF maritime air defence is a layered system, consisting of:
    - Land-based protective umbrella consisting of F-35A Lightning II and FA-18F Super Hornet fighters, supported by E-7A Wedgetail airborne early warning and control (AEW&C) and EA-18G Growler electronic warfare aircraft. Noting that the ranges and endurance of fighter aircraft from mainland Australia provide a natural limit of this umbrella for naval operations. A continuous presence cannot be assumed.
    - A real-time electronic sensor and weapon networking capability providing for remote engagement of tracks from weapons carried in platforms, but which are not held on their own sensors – Cooperative Engagement Capability (CEC). These are fitted to the Hobart class, intended for the Hunter class, and will be needed for the intended large optionally crewed vessels (LOSVs) used for carrying additional missiles into the area of operations. RAAF AEW&C and F-35A can be in this network if so fitted.

[45] J Parker, 'An Evolution or a Revolution in Naval Warfare: USVs in the Black Sea', in *Australian Naval Review*, 2024, <https://www.jennifer-parker.com.au/publications>.

- The Hobart class destroyers with the Aegis Ballistic Missile Defence System (BMDS) and the approximately 250nm range SM-6 extended range missile.
- The Hunter class frigate is expected to enter service with the RAN in the early 2030s will also be equipped with the Australian CEA CEAFAR phased array radar, providing good situational awareness in the air domain. Equipped with 32 vertical launch system cells,16 less than the Hobart class, it will be equipped with Standard Missile 2 (SM2), a medium range surface to air missile, and Evolved Sea Sparrow (ESSM) point defence missiles.[46]
- The RAN's Anzac class frigates with the highly capable CEA digital phased array radar suite and ESSM point defence missiles will progressively be replaced with the Upgraded Mogami frigates from 2030. The RAN's upgraded Mogami frigates will have more modern, but comparable systems.
- The RAN's major surface combatants have active and passive electronic warfare (EW) systems. A notable system is the Australian-US Nulka off-board active decoy that has proved its worth operationally with the USN off the Yemeni coast during recent Red Sea battles with the Houthis.[47] Nulka is in the course of further development.
- In the future, UAVs operating from an RAN Task Group may be able to provide airborne early warning to significantly enhance the air warfare capabilities of the force.

- **Surface Warfare**
  - The conduct of surface warfare is evolving with the increased range and capabilities of sea-based missile systems and developments in uncrewed and autonomous vessels.
  - A key development is the range at which surface warfare can now be conceivably conducted with the development of sea-based missiles of ranges of more than 500nm becoming more common.
  - The littoral battlespace is also expanding with the advent of longer-range land-based missiles, USVs, and UAVs, making operations in these areas increasingly challenging.[48]
  - In addition, more land and sea-based fixed wing aircraft and helicopters are equipped with anti-ship missiles.
  - Following the successful deployment of both USVs and UAVs in the Black Sea, Indo-Pacific navies are experimenting with or introducing such systems.
  - In 2024 the Australian Government announced that it intended to expand its surface combatant fleet to 26 vessels, with six of these vessels being fielded as LOSVs'.[49] While the LOSVs are not expected until the mid-2030s and the design remains unclear, this announcement is significant—it would mark the RAN's first move into armed or offensive USVs, likely following the US lead.
  - The RAN is also exploring the use of smaller USVs to aid in ISR operations, notably trialling the Ocius Bluebottle.[50]
  - Support to forces ashore will remain an important element of surface warfare and will be conducted with a mix of air and ship-based systems. While missiles and UAVs are becoming

46 'Hunter Class frigate', in *Royal Australian Navy*, <https://www.navy.gov.au/capabilities/ships-boats-and-submarines/hunter-class-frigate#:~:text=Builder:%20BAE%20Systems%20Maritime%20Australia,electronic%20warfare%20systems>.

47 R Shanahan, 'Australia's military equipment in Yemen', in *The Interpreter*, 2016, <https://www.lowyinstitute.org/the-interpreter/australia-s-military-equipment-yemen#:~:text=In%20response%20to%20the%20attack,produced%20jointly%20with%20the%20US.>.

48 See 20/10/2025 9:20:00 pm

49 Department of Defence, *Independent Analysis into Navy's Surface Combatant Fleet*.

50 'Navy gains fifth Ocius Bluebottle', 2023, <https://www.minister.defence.gov.au/media-releases/2023-06-09/navy-gains-fifth-ocius-bluebottle>.

increasingly critical in support to forces ashore, naval gunfire support (NGS) will remain a critical skillset particularly when it comes to the need to manage missile magazine capacity. Notably the upgraded Mogami frigate will have a longer ranged 5-inch gun for NGS.

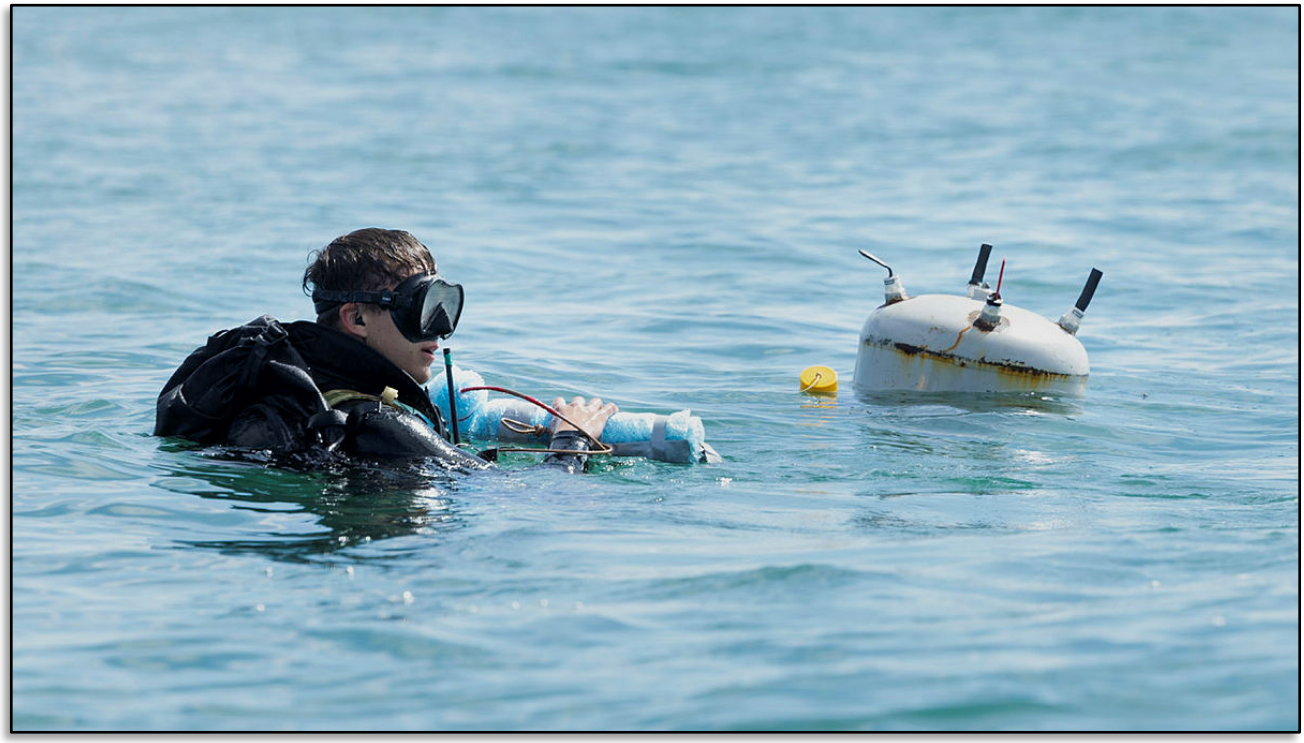

Figure 5 A sailor from the Mine Warfare and Clearance Diving Task Group prepares a mine for disposal as part of Exercise Cuttlefish 25, held at HMAS Stirling, Western Australia. Defence Images (http://images.defence.gov.au/S20252723).

- **Undersea Warfare**
  - Undersea warfare is evolving with advances in submarines and UUVs, their growing accessibility at lower cost, and the increasing dependence of coastal states on subsea cables and pipelines.
  - Seabed warfare is emerging as a key aspect of undersea operations, driven by the vulnerability of coastal states' dependence on subsea cables and improved technological access to the ocean floor for monitoring, disruption, and defence.
  - There has been a growing number of both conventional and nuclear-powered submarines among an increasing number of navies in the Indo-Pacific region. The number of submarines in the region (not including midget submarines) is expected to grow from approximately 250 submarines operated by fourteen navies in 2025 to around 330 submarines by operated by twenty navies in 2035 (for details see Table 1 in *NSG Primer No.1*).
  - Only China, India, Russia and the US have nuclear propelled submarines in the Indo-Pacific, with Australia and possibly South Korea to follow suit.[51]

[51] 'South Korea's path to nuclear subs', in *Australian Naval Institute*, 2023, <https://navalinstitute.com.au/south-koreas-path-to-nuclear-subs/>.

- An increasing number of conventionally powered submarines have either 'air-independent' propulsion (AIP) systems or lithium-ion batteries to significantly lengthen their intervals between snorting.
- The Indo-Pacific waters will become a more contested undersea environment with the increase in submarine numbers.
- A few navies are experimenting with UUVs for surveillance, mining and strike roles. Another potentially important UUV role will be both interference with, and protection of vital undersea cables.
- Australia is among these countries, recently announcing a $1.7 billion investment in a fleet of extra-large autonomous undersea vehicles (XLUUV) known as Ghost Shark.[52] While its full range and capabilities remain classified, it is understood to carry payloads for both strike and intelligence collection. The RAN is also reportedly considering investment in the Speartooth large UUV (LUUV).[53]
- Submarines are increasingly being equipped with small UUVs to extend their reach and capabilities. Several nations, including the US and UK, have publicly confirmed testing UUV deployment from submarines.[54]
- Ship-based towed array systems are becoming increasingly prevalent, enhancing long-range detection and tracking of submarines. Australia is investing in this capability through the acquisition of low-frequency active and passive towed arrays on both the Hunter class frigates and upgraded Mogami frigates.
- Seabed arrays, including China's developing 'Underwater Great Wall';[55] comprising passive seabed sensors, active sonars, UUVs, USVs, and space-based systems are also transforming undersea warfare.

Part I - Drawing the Threads

Part I has made the case that Australia's security and prosperity are fundamentally maritime, yet no integrated national maritime strategy currently exists. Australia's geographic realities as a vast, resource-rich island nation with the world's third-largest EEZ mean near-total reliance on sea trade and undersea communications. These advantages of distance and size are simultaneously vulnerabilities, exposing Australia to disruption of critical trade and supply chains. The increased use of military force by countries, including China, underpinned by great power competition, have created the most contested maritime environment since the Cold War. Added to this are disruptive technological trends, such as AI, hypersonic weapons and uncrewed systems, that are reshaping the character of maritime conflict.

Part I has set out the foundation for a maritime strategy by analysing Australia's strategic environment, vulnerabilities, and emerging challenges out to 2035.

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52 Department of Defence, 'Equipping the Royal Australian Navy with next generation autonomous undersea vehicles', , 2025, <https://www.minister.defence.gov.au/media-releases/2025-09-10/equipping-royal-australian-navy-next-generation-autonomous-undersea-vehicles>.

53 M Blenkin, 'C2 Robotics reports Speartooth maturity', in *Australian Defence Magazine*, , 2024.

54 L Willett, 'UK Royal Navy Completes 2nd Trial of SSN UUV Launch-and-Recovery Capability Development', in *Naval News*, , 2025, <https://www.navalnews.com/naval-news/2025/07/royal-navy-completes-2nd-trial-of-ssn-uuv-launch-and-recovery-capability-development/>.

55 BJ Weichert, 'China Wants to Rule the Seas—It Claims to Have the Most Advanced Technology to Spy on American Subs.', in *Popular Mechanics*, 2025, <https://www.popularmechanics.com/military/weapons/a63602193/china-submarine-detection/>.

Part II - The Way
Australian Maritime Strategy 2035
Deterrence, Sea Control and Presence

The Concept of a Maritime Strategy

Maritime strategy is defined in Australian doctrine as 'the comprehensive direction of all aspects of national power to achieve strategic goals by exercising some degree of control at sea'.[56] For the nation state these goals are essentially the protection of territory, rights in maritime zones, population, resources, prosperity and interests.

A maritime strategy provides the intellectual framework as to how a nation, either unilaterally or in an alliance or coalition, can assemble and employ its assets in a maritime environment to achieve a desired end-state. This requires consideration of political enablers, finance, geography, force structure, industrial capacity, workforce (both military and civil) and external constraints including the potential adversary. This strategy applies across the spectrum of operations from peace to conflict. Perhaps more importantly, such a strategy needs to be a practical and overt expression of intent.

Historically the effective alignment of naval (as opposed to maritime) strategy, force structure and resourcing was best exhibited with Australia's acquisition of a fleet unit in 1913 centred on the battle cruiser HMAS *Australia*. Its service in World War I vindicated this strategic alignment. *NSG Primer No.2 – Maritime Strategy* at Enclosure 2 provides the intellectual underpinnings of maritime strategy and explains how it has been applied by Australia and approached in this monograph.

Recent shifts in US politics have resulted in renewed discussion on the need for Australia's greater self-reliance.[57] Indeed there are three tasks the *National Defence Strategy* (NDS 2024) states that the ADF should unilaterally be able to:

- defend Australian territory,
- deter the projection of power through Australia's northern approaches, and
- protect the country's economic connections to the world.[58]

All three are primarily maritime tasks.

The Proposed Maritime Strategy

Part II outlines a new maritime strategy for Australia to meet Australia's expected strategic circumstances out to 2035. It seeks to harness all components of the ADF and national power. The proposed *Australian Maritime Strategy* 2035 (*AMS 2035*) seeks to achieve Deterrence, Sea Control and Presence.

Although *AMS 2035's* structure is designed to be enduring, it must evolve to meet changing circumstances. The implementation of the strategy and the employment of our military capabilities to deal with emerging circumstances may change rapidly, sometimes very substantially, while the underlying principles remain valid.

As articulated in Part I, Australia is a maritime nation whose security and prosperity rest on the sea. Despite this, as yet, no integrated national maritime strategy exists.[59] This gap has been recognised

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56 *Australian maritime doctrine: RAN doctrine 1-2010*, 2nd ed, Canberra, A.C.T., Sea Power Centre, Royal Australian Navy, 2010, p. 199.

57 See Jennifer Parker, 'If there's a war in the Pacific, who defends Australia?', in *Sydney Morning Herald*, , 29 August 2025, <https://www.smh.com.au/national/if-there-s-a-war-in-the-pacific-who-defends-australia-20250829-p5mqvb.html>.

58 Australian Government, '2024 National Defence Strategy', p. 25, 2024.

59 See e.g. Jennifer Parker, *An Australian Maritime Strategy: Resourcing the Royal Australian Navy*.

for some time and, notably in 2004, the Parliamentary Joint Standing Committee on Foreign Affairs Defence and Trade report on Australia's Maritime Strategy recognised that Australia did not have a fully developed maritime strategy.[60] It concluded that Australia should develop and implement "a maritime strategy which includes the elements of sea denial, sea control and power projection ashore."[61] Importantly, the report examined the issue of sea denial versus sea control and concluded that the ADF had to be able to achieve both when required.

Like all effective strategies *AMS 2035* must involve the coordination of all instruments of national power that interact with the maritime domain. It encompasses naval operations, maritime trade, infrastructure, law enforcement, environmental management, and legal regimes. To this end, it proposes an enduring, layered, whole-of-nation approach to protect Australia's maritime interests, focused on the decade to 2035. It recommends coordination across Defence, Home Affairs, industry, and diplomacy, with reforms to governance, capability development and force structure. It emphasises preparing for high-end conflict, sustaining seaborne supply and maintaining a rules-based maritime order. For Australia, as a medium-sized power, it may have to seek assistance of allies to offset capability gaps in such a conflict to achieve these objectives.

Figure 6 - The centrepiece of the ADF's deterrence capability will be the RAN's nuclear powered submarine force. Pictured here is USS Hawaii berthing at Fleet Base West (source RAN).

60 'Australia's Maritime Strategy', Joint Standing Committee on Foreign Affairs Defence and Trade, 2004, Chapter 4, p. 53, <https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Completed_Inquiries/jfadt/maritime/report>.

61 'Australia's Maritime Strategy', Joint Standing Committee on Foreign Affairs Defence and Trade, 2004, Chapter 4, p. 71, <https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Completed_Inquiries/jfadt/maritime/report>.

AMS 2035 – Strategic Context

AMS 2035 is broadly consistent with Defence White Papers back to *Defence of Australia 1987*, the Government's *2023 DSR* and NDS 2024, and recent developments since. Its aim is to address Australia's geo-strategic circumstances (with an emphasis on the Indo-Pacific region) and define the priority tasks. The latter will then be considered in some detail to provide a basis for an analysis and broad specification of capabilities required to meet these tasks.

AMS 2035 - Strategic Objectives

The strategic objectives of *AMS 2035* are to:

- be able to sustainably project credible power in the Indo-Pacific,
- protect Australian originated and destined seaborne trade, including critical seaborne supply to support partners and allies,
- defend Australia's EEZ and coastline,
- protect ports, offshore installations and subsea cables,
- contribute to Australia's diplomatic relations through having demonstrably capable forces, and
- support Indo-Pacific rules-based maritime order and regional capacity building.

AMS 2035 recognises that most of these objectives involve operations beyond Australia and therefore the ADF must have the ability to sustainably project power effectively across the full spectrum of possible responses. The ADF must also be able to hold an adversary at risk further from our shores. *AMS 2035* is therefore consistent with *NDS 2024* which stated that:

- Australia must have a fully integrated and more capable ADF operating across five domains which work seamlessly together on joint operations to deliver enhanced and joined-up combat power;
- The RAN must have enhanced lethality – including through its surface fleet and conventionally-armed, nuclear-powered submarines – underpinned by a continuous naval shipbuilding program;
- The Australian Army must be optimised for littoral operations in our northern land and maritime spaces and provide a long-range strike capability;
- The Royal Australian Air Force (RAAF) must provide the air support for joint operations in our north by conducting surveillance, air defence, strike and air transport; and
- Defence must also continue to develop its cyber and space capabilities.

The Government's post-*NDS 2024* priority activities are:

- acquiring conventionally armed, nuclear-powered submarines;
- enhancing the ADF's longe range strike capability;
- increased local weapons production, including selected guided weapons;
- improving Australia's northern bases;
- rapidly adopting disruptive new technologies into the ADF;
- improve ADF recruitment and retention; and
- deepening diplomatic and defence partnerships with key partners in the Indo-Pacific.

While *NDS 2024*, the *DSR* and *2025 Australian Maritime Power (AMP 2025)* provide official guidance and doctrine on and for the future ADF, they do not represent a comprehensive integrated strategy. Rather they provide guidance on capability development in selected areas with an emphasis on platforms and weapons. The case for such changes is often asserted rather than providing an explanation of the logic and contribution of those capabilities. There is little discussion supporting the acquisition of nuclear-powered submarines and their potential importance and contribution to ADF operations in various circumstances. *AMS 2035* seeks to clarify the contributions of various force elements, their importance and strategic relevance, both in relation to their individual contribution in their domain and to overall ADF operations.

AMS 2035 – Deterrence

Ideally, Australia would be able to deter any potential aggressors from attacking Australia or interfering with Australia's vital sea trade and undersea telecommunications cables. Deterrence would be achieved by a combination of military strength, diplomatic finesse, industrial and logistical strength. These would all be supported by alliances and other security partnerships.

The primary maritime capability for deterrence in *AMS 2035* would be:

- a surface task group consisting of up to four surface combatants, a support ship and possibly an amphibious component. This task group, commanded by a task group commander supported by a properly constituted staff, should be able to readily deploy to the region and able to undertake a wide range of missions including high-end war fighting.
- A surge capability to field a second task group, constituted as above and backed by the RNZN, allowing Australia to conduct concurrent operations in the Indian Ocean, Pacific Ocean or the South China Sea.
- Later in the time period, the presence of the first couple of the SSNs entering the RAN fleet. In the meantime, the Collins class possesses a more limited deterrent effect.

To achieve this the ADF needs to:

- Re-generate its blue-water fleet from its current low force levels and availability.
- Successfully introduce the first of its SSNs.
- Generate the growing numbers of seagoing personnel required for the future fleet (see Tables 2 and 3). This may have to be achieved through more innovative crewing approaches. This will be further discussed in Part III.
- Revitalise the RAN's mine-laying and mine countermeasures (MCM) capability. While often viewed as a classic sea denial capability, the MCM capability underwrites the 'deterrence' force. This is because the MCM units must be able to guarantee exit and entry for the Fleet from its naval and forward operating ports. In addition, a deployable capability will be required to enable access to littoral waters.
- Revitalise hydrographic capability required to identify natural shipping hazards for combat operations in typically non- or poorly charted areas within the northern archipelago.
- Widely introduce uncrewed systems into the Fleet as integral elements. This should include greater organic air capability in task groups.
- Rapidly introduce shipboard counter-UAS systems.
- Bolster strategic lift and underway replenishment capacity. This may require commercial augmentation which will be discussed in Part III.
- Leverage allied cooperation to mitigate current and emerging capability shortfalls.

AMS 2035 – Sea Control

AMP 2025 defines 'sea control' as "the condition that exists when a country has the freedom of action to use an area of sea for its own purposes for a sustained period, and, if necessary, deny its use to an adversary. Sea control applies to the airspace above and the water mass and seabed below the sea surface as well as to the electromagnetic spectrum".[62]

The requirement for sea control is fundamentally driven by the need to protect maritime trade and to provide the freedom of manoeuvre of ADF forces when required. In terms of trade protection, the recommendations contained in NSG Group/ANI report *Protecting Australian Maritime Trade 2022* remain germane and are detailed in Annex A.[63]

While distance is Australia's great strength when it comes to the protection of territory, it becomes its Achilles' heel when it comes to the other core task of the ADF, the protection of Australia's economic lifelines to the world, including undersea communications cables. Australia has a comparatively small and very open economy. As a result of this it has become highly specialised in certain key areas, particularly primary produce and the extraction of natural resources for export. Australia is exceptionally good at producing a small variety of goods which it exports globally on a vast scale. The openness of the Australian economy and its small domestic market means that there is little manufacturing, and most of the goods Australians need and use every day are imported. For this reason, in 2023 Australia ranked just 99th out of 145 countries in the Harvard Economic Complexity Index, situated just below Morocco and just above Laos.[64]

The national security challenge of being a highly globalised, open and specialised economy is that Australia is reliant upon imports not merely for the things that it wants, but also for the products that it needs. A frequently discussed vulnerability is fuel. There are now only two operating oil refineries in Australia, and at the end of 2023 the country was importing 89% of its refined fuels.[65] However, the vulnerabilities go well beyond this. Australia imports virtually all its microprocessors, vehicles and medical personal protective equipment, over 90% of its medicines, and even 50% of its fertiliser.[66] If the country cannot import significant quantities of key products across a broad range of applications, Australian society will rapidly break down.

The report on *Protecting Australian Maritime Trade 2022* also made the point that some of the shipping emanating from Australia has strategic significance to some of our key trading and security partners. It cites Japan and South Korea relying on Australian LPG for base-load power generation. This highlights broader strategic considerations, as well as the need for close co-operation with other nations to protect trade.[67]

The ADF must also be able to exert sea control for a range of its own military purposes. *NDS 2024* envisages, for example the deployment of Army units embarked in RAN and Army amphibious ships. To achieve this task requires sea control. Furthermore, an examination of the seven wars Australia has been involved in from the Boer War to the War on Terror shows that the RAN has had to conduct

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62 Naval Headquarters, *ADF Maritime Power, ADF-I-3 Edition 1*, Canberra, ACT, 2025, p. 62.

63 *Protecting Australian Maritime Trade 2022,* Australian Naval Institute, *Protecting Maritime Trade*.

64 JVP Goldrick, 'Australia's essential need: not seaborne trade but seaborne supply', in *The Interpreter*, 2021, <https://www.lowyinstitute.org/the-interpreter/australia-s-essential-need-not-seaborne-trade-seaborne-supply>.

65 J Blackburn, 'Maritime Trade Dependencies and Risks -', Canberra, ACT, 2019, <https://www.youtube.com/watch?v=F-eOSoyklnY>.

66 R Dunley, 'The end of the "lucky country"? Understanding the failure of the AUKUS policy debate', in *Australian Journal of International Affairs*, vol. 77, 2023, p. 317-324. R Dunley, 'Plan B?: Reconsidering Australian Security in the event of a post US alliance era. 78', in *Australian Journal of International Affairs*, vol. 78, 2024, p. 479 - 497. 'Inquiry Into the Implications of the Covid 19 Pandemic for Australia's Foreign Affairs, Defence and Trade', Canberra: Parliament House, 2020, <https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Foreign_Affairs_Defence_and_Trade/FADTandglobalpandemic>. A Henderson & J Coyne, *National Food Security Preparedness Green Paper*, ASPI, 2025, Appendix 1.

67 A *Protecting Australian Maritime Trade 2022,* Australian Naval Institute, p. 73.

sea control operations in every one except the first conflict. It will inevitably have to do so in any future conflict.

AMS 2035 - EEZ and Infrastructure Protection – Sea Denial

AMP 2025 states that "Sea denial can take many forms, from the maintenance of a blockade, through to the operation of exclusion zones to campaign against an adversary's trade and logistics distribution networks. Like sea control, sea denial is usually limited in place and time. Moreover, maritime forces may conduct sea denial operations in one area, while undertaking sea control in another."[68]

There is a broad spectrum of tasks required under the term sea denial, but they are largely geographically confined to Australia's EEZ and its coastline. The DSR did envisage HIMARs equipped land forces being deployed beyond the EEZ on islands in a sea denial function. This this could only be attempted when permitted by the sovereign nation in question. In addition the re-supply demands of the deployed force would also have to be considered.

For Australia to have a robust sea denial capability it will be vital to harness all government agencies to the various required tasks. This more integrated approach, would require the following measures to be considered:

- The consolidation of all EEZ-focussed agencies. This could be in the form of a coast guard and will be discussed further in Part III.
- Specific capabilities to monitor and protect undersea cables.
- Key sea denial capabilities such as mine countermeasures and defensive mining capabilities need to receive higher priority. This will be discussed further below.

To realise these enhancements a more effective alignment of Australian industrial capacity will be required. This includes efforts to have greater standardisation and commonality within Australian maritime forces. This will be further discussed below.

A key sea denial task is the protection of undersea cables. These carry 99% of Australia's international data flows, which are integral to the functioning of a modern society. This is not just telecommunications, but also banking and payment data, health care data, and virtually anything that relies upon information stored in 'the cloud'. The economic and human impacts of disruption to this network would be incalculable. Modelling from as far back as 2012 suggested that disruption to the submarine cables could cost up to 4% of Australian GDP per day, a figure one would expect to now be significantly larger, given the changes in technology since then.[69]

Beyond undersea cables there is a wider ecosystem of maritime infrastructure. This includes the pipelines that support the offshore hydrocarbons industry, the energy cables connecting offshore wind and other renewables to the wider grid, and even things like fish farms. Marine infrastructure is also vulnerable to several potential hazards, including natural disasters and accidental human damage.

The risk of attacks by state or non-state actors is also very real, with numerous examples of damage to maritime infrastructure in European waters over the past couple of years, most of which have been attributed to Russian actions.[70] Closer to home in May 2025 China was accused of cutting

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68 Naval Headquarters, *ADF Maritime Power, ADF-I-3 Edition 1*, Canberra, ACT, 2025, p. 63.

69 APEC, *Economic Impact of Submarine Cable Disruptions*, February 2013, <https://www.apec.org/publications/2013/02/economic-impact-of-submarine-cable-disruptions>.

70 K Diss & E Lawrence, 'Inside the mission to stop Putin's "ghost ships" wreaking havoc on the seas', in *ABC News*, 1 June 2025, <https://www.abc.net.au/news/2025-06-01/inside-mission-to-stop-russian-ghost-ships-cutting-sea-cables/105355746>.

undersea cables connecting to Taiwan.[71] Protecting Australia's economic, supply, and communications lifelines to the rest of the world is the most challenging task facing the ADF. As we have seen the same geographic distance that acts as a shield for Australian territory, making it difficult for adversaries to project power against the country, also acts as a vulnerability. Australia's lifelines travel vast distances across the oceans and could be cut far from the country's shores. Historically Australia has relied heavily on its allies to guarantee this aspect of its security. Looking forward, the outlook appears more challenging.

AMS 2035 – Presence

The Australian continent is relatively remote from any major power, with the possible future exception of Indonesia. In this respect distance has acted as the country's great shield.

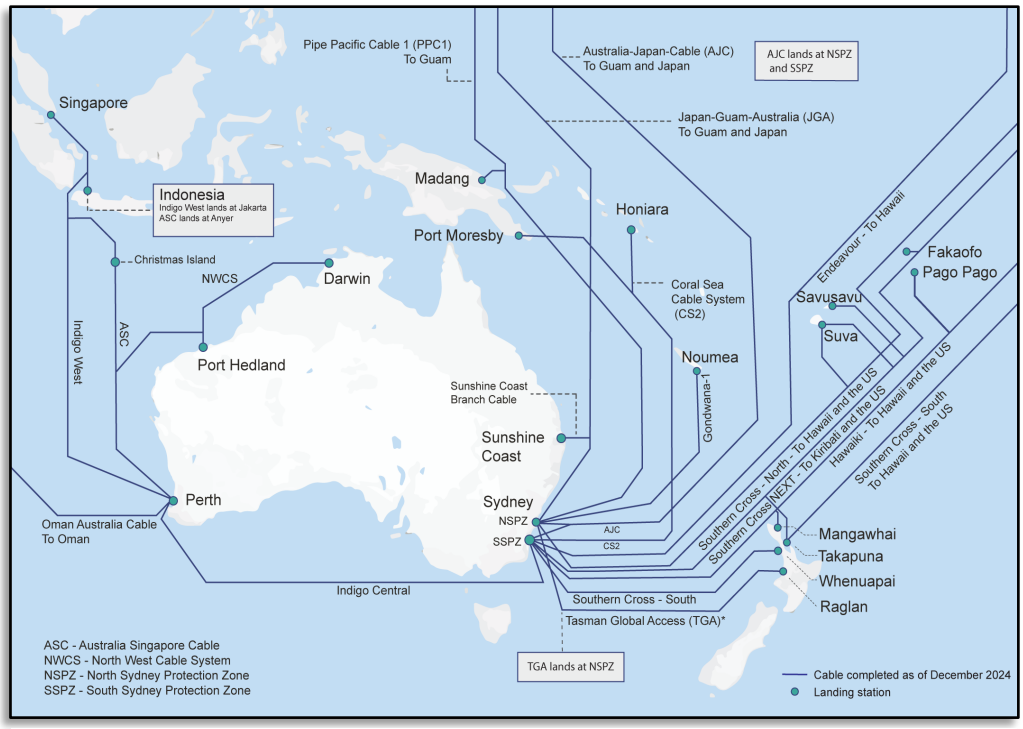


Figure 7 - Australia's network of undersea cables (source AFMA).

Maritime strategists have long acknowledged "the stopping power of water", and the combination of the distances involved, and necessary scale of any endeavour, still make an assault on Australian territory exceptionally difficult.[72] Policy makers and the ADF can continue to exploit the extraordinary natural advantages awarded by geography to deter any such effort. Australian national interests, be they strategic, economic, diplomatic, cultural or political, go beyond the beach.

Virtually all Australian governments have, for differing reasons, seen engagement with, and security of, the near region as essential. The language of being 'the partner of choice' for the Pacific may be new, but the sentiments are as old as Australia. The ADF is a critical part of the country's peacetime engagement with the region, helping to support it in the challenges it faces. From the Pacific Maritime Security Program,[73] to humanitarian aid and disaster relief (HADR) in response to the growing threat

71 K Calderwood et al., 'As China targets Taiwan's undersea cables, some locals fear "grey zone" warfare', in *ABC News*, 17 May 2025, <https://www.abc.net.au/news/2025-05-17/is-china-cutting-taiwan-internet-cables-as-psychological-warfare/105281582>.

72 J Corbett, *Some Principles of Maritime Strategy,* London, Longman, 1988 (E Grove Edition), p. 79-80. J Mearsheimer, *The Tragedy of the Great Power Politics*, New York, Newtown, 2001.

73 Department of Defence, 'Pacific Maritime Security Program', <https://www.defence.gov.au/defence-activities/programs-initiatives/pacific-engagement/maritime-capability>.

of natural disasters, Australia's defence capabilities are leveraged in this fundamentally maritime region. The ADF must be able to contribute with our partners to the maintenance of the global rules-based order through a persistent presence in the Indo-Pacific waters. Among other things, such presence builds relationships with our partners, provides training opportunities, develops regional knowledge and facilitates regional confidence.

Regional operations have been a regular part of the RAN's operating pattern since the 1950s. The high-water marks were the aircraft carrier HMAS *Melbourne*'s annual task group deployment and more recently the LHD-led *Indo-Pacific Endeavour* deployments. The challenge has been generating sufficient ships for these deployments. From an *AMS 2035* perspective these deployments are critically important, not only for the reasons above but also as part of the overall 'deterrence' messaging. It will therefore be essential to develop initiatives that can lead to task group sized Indo-Pacific operations on a sustained regular basis. These will be discussed in Part III.

Australia's regional engagements are, in part, driven by the natural desire to be a good actor and a good neighbour. However, as the tasks set out in the *2024 NDS* indicate, there is also a security component to these relationships. The framing of the security of the region as an ADF task in line with the defence of Australian territory and the protection of trade is misleading and understates its importance. It is, in reality, a precondition, important because it is essential to complete the other two tasks.

Australia's ability to support regional security and prevent malign actors from establishing themselves in the broad sweep of island chains running from Singapore to the Solomon Islands matters in and of itself to Australian security. But as the experience of 1942-43 clearly demonstrates, the basing of adversary forces in maritime southeast Asia and Melanesia dramatically complicates the defence of Australian territory and the protection of its seaborne trade. To use the language of recent defence documents, Australia needs the ability to help 'shape' the region in peacetime, 'deter' any action that would compromise Australian security and ultimately respond in the event of conflict.

The range of the ADF's maritime security tasks and the web of alliance and bi-lateral relationships within which *AMS 2035* must operate are outlined in *NSG Primer No.3 – Australia's Maritime Security Tasks* at Enclosure 3.

AMS 2035 - Available Maritime Forces

The available ADF and ABF maritime forces in service or authorised to progressively commission out to 2040 are shown in Table 2. The associated approximate sea billets for RAN, Army, and ABF personnel as well as merchant mariners for this growing fleet is are Table 3.

From the earlier survey of technological developments in the maritime battlespace, it is clear that drones, in all their various forms, are here to stay. They are growing in capability, cost effective and have very short development cycles. All this is potentially attractive to a personnel and fiscally constrained RAN. As such drones must be integrated into the force mix and the way or warfighting. They can be embarked from dedicated mother ships such as ADV *Guidance* or fleet units or converted merchant ships.

In trying to envisage fleet availability, the general rule of thumb is it takes three ships to enable one to be continuously deployed. The other two are either returning, preparing to deploy or in some level of maintenance. Equally, its takes three multi-ship task groups to be able to have one continuously on station.

In regard to the submarine force, as can be seen in Table 2, there will be a gradual introduction into service of the first RAN SSNs in 2032, 2035 and 2038.[74] Until the late 2040s the RAN will therefore likely be operating a mixed conventional and nuclear-powered submarine force with vastly different

[74] *Navy Virginia-Class Submarine Program and AUKUS Submarine (Pillar 1) Project: Background and Issues for Congress*, Congressional Research Service, 28 March 2025, <https://www.congress.gov/crs-product/RL32418?q=%7B%22search%22%3A%22SSN%22%7D&s=1&r=25>.

capabilities and operating concepts. Out to 2035 the shrinking Collins fleet should be able to sustain one patrol area or two for short periods, whilst the growing SSN force will slowly be able to mount sustained operations.[75] Another complication is that the SSN fleet will within itself be mixed with three Virgina and five AUKUS class submarines with their own supply chains and support requirements. Consideration may be given to homeporting the different classes of SSNs on either coast.

Related to the issue of submarine home basing is the possible inclusion of a submarine support ship which could support both the Collins class and SSNs on the east coast as well as on deployment. The USN effectively demonstrates the utility of such ships with the stationing of USS *Emory S. Land* in Guam, onboard which the RAN has gained some experience. Indeed, such a vessel maybe a more cost-effective, if not a comprehensive support to a small east coast SSN force in lieu of a second base.

In the mature state when up to eight SSNs are commissioned by the late 2040s, it would be possible for two to three boats to be continuously on station. How they would be employed would have to be carefully thought through. For example, one option, which harks back to the deployment of RAN cruisers in the early years of World War II, is for one boat to be deployed for operations emanating from each of the east and west coasts. The third could be deployed on a long-range deployment while the other operates in local waters.

The SSNs are less suited to operations in littoral waters near focal points and this reduction of capability may best be filled by the Ghost Shark XLUUVs. They would be used for both offensive and surveillance tasks. Much will depend on the numbers that are able to be produced. Another tier of UUVs, such as those produced by Blue Ocean Marine Tech Systems,[76] could be employed to protect undersea cables and monitor the approaches to key focal points and ports.

In regard to the surface fleet, the unit of force is the task group. By 2035 the RAN would be able to continuously deploy up to two task groups for either national or coalition tasking. Each would consist of a destroyer, two to three frigates and a replenishment ship. Such a task group would have complementary offensive and defensive capabilities. Usefully, the Hunter and Upgraded Mogami classes with their multi-mission bays will be able to deploy USVs and UUVs. All surface combatants should be able to deploy some UAVs to varying degrees. The future development of an airborne early warning capable UAV would to some degree mitigate the absence of an organic fixed wing aviation capability.

Task group operations would have to be mindful of any air threat, and if warranted the formation may have to operate supported by RAAF or Allied shore-based fighter aircraft or within the protective umbrella of coalition aircraft carriers. A clear task group limitation is only having a pair of replenishment ships. This shortfall can either be addressed by acquiring another ship, or accessing the services of an Allied tanker, such as the RNZN's replenishment ship.

75 This is based on the authors assessment of the publicly assessable data on the current state of fleet.
76 'Blue Ocean Marine Tech Systems', <https://www.blueoceanmts.com/>.

Table 2 - Australian Maritime Forces

Capability	2025	2030	2035	2040
<u>*Submarines*</u> Collins SS Virginia SSN Ghost Shark XLUUV SSN AUKUS	 6 1	 6 >12[77]	 4 2 unk	 3 3 unk
<u>*Major Surface Combatants*</u> Hobart *(and then their replacements)* Anzac Hunter Upgraded Mogami	 3 7	 3 6 - 1	 3 5 2 3-4	 3 - 5[78] 8-9[79]
<u>*Amphibious*</u> LHDs LPD (*Choules* and then her replacement)[80] Army Landing Craft LST-100 Army Landing Craft Medium	 2 1	 2 1 3-4 12	 2 1 8 18[81]	 2 1 8
OPV	2	6	6	6
RAN Patrol boats	10	12	12	12
ABF Patrol boats	8	10	11	11[82]
MCM Vessels	2	-	-	-
Hydrographic vessels	1	-	-	-
Naval helicopters	23	36	36	36[83]
RAAF MPA	12	14	14	14[84]
MQ-4 Triton	1	4	4	4[85]

77 B Doherty, 'Australia is spending $1.7bn on a fleet of Ghost Shark submarines. What are they?', in *The Guardian*, 10 September 2025, <https://www.abc.net.au/news/2025-09-10/naus_subsharknr_1009/105759144>.

78 Note: This is an estimate. Planned delivery timeframe for the Hunter frigates to the RAN has not been released.

79 Note: This is an estimate. Planned delivery timeframe for the upgraded Mogami frigates to the RAN has not been released.

80 Note: *Choules* is expected to be replaced, although funding for her replacement called the Joint Support Ship was cancelled in the 2024 IIP. Jennifer Parker, 'Defence strategy fills gaps but misses holes', in *Australian Financial Review*, 17 August 2024, <https://www.afr.com/policy/foreign-affairs/defence-strategy-fills-gaps-but-misses-holes-20240416-p5fk44>.

81 Based on a rate of 3 per year noting advice of first delivered in 2026, 18 delivered by 2032. APDR, 'Australia approves Austal strategic shipbuilding agreement', 2025, <https://asiapacificdefencereporter.com/australia-approves-austal-strategic-shipbuilding-agreement/#:~:text=The%20design%20and%20construction%20of,of%20the%202025%20calendar%20year>.

82 This is an estimate based on a current order for two additional, and an expectation by AUSTAL of one more. 'Border Force to get two Evolved Class vessels', 2024, <https://navalinstitute.com.au/border-force-to-get-two-evolved-class-vessels/)>.

83 Defence Ministers, 'Albanese Government secures future of Seahawk helicopter fleet and hundreds of local jobs', 2025, <https://www.minister.defence.gov.au/media-releases/2025-02-28/albanese-government-secures-future-seahawk-helicopter-fleet-hundreds-local-jobs#:~:text=MH%2D60R%20Seahawk%20helicopters%20perform,in%20supporting%20our%20national%20security.%E2%80%9D>.

84 Defence Ministers, 'Two more P-8A Poseidon aircraft boosts maritime patrol capability', 2020, <https://www.minister.defence.gov.au/media-releases/2020-12-30/two-more-p-8a-poseidon-aircraft-boosts-maritime-patrol-capability>.

85 Defence Ministers, 'Australia's first MQ-4C Triton', 2024, <https://www.minister.defence.gov.au/media-releases/2024-07-31/australias-first-mq-4c-triton>.

Capability	2025	2030	2035	2040
Support ships				
Replenishment ships (RAN)	2	2	2	2
Undersea support ship (ADV)[86]	1	1	1	1
Sub support ship (MV)[87]	2	2	2	2
Aviation Training ship (MV)	1	1	1	1
Navigation training ship (ADV)	1	2	2	2
Youth Sailing Training Ship (RAN)	1	1	1	1

Table 3 - Seagoing Billets in Australian Maritime Forces

Sea-going Billets[88]	2025	2030	2035	2040
RAN	3,657	3,638	3,583	4,217
Army (not including ship army detachments)	124	478	788	788
ABF	144	180	198	198
Civil	99	115	115	115
Total	4,024	4,411	4,684	5,318

AMS 2035 envisages that depending on the strategic situation, the two LHDs may be used for a 'sea control' mission when not required for amphibious/sea lift operations. Although notably, they will be difficult to employ in a contested environment as they have extremely limited self-defence capability, unlike similar capabilities in the US. In this role they could embark ASW capable helicopters and/or UAVs, USV and UUVs. The projected Army amphibious vessels will bring a significant sea transport capability and will enable HIMARs equipped land forces to be deployed in a permissible environment.

Another area worthy of note is that of the MCM capability. For a variety of reasons, the RAN's MCM capability has withered in recent years to just a nominal capability. Within the government's denial strategy this is a yawning gap and one open to exploitation relatively easily.

AMS 2035 envisages that in periods of tension or conflict that eight ports could need MCM protection. They are Sydney, Melbourne, Fremantle, HMAS *Stirling*, Adelaide, Darwin and Cairns. In addition, there would be in later years the east coast SSN homeport. For economic reasons the various iron ore, gas and coal ports may also need to be secured. This is a substantial undertaking and a major deficiency in Defence's extant IIP and will need to be addressed with a suite of capabilities.

Similar considerations apply to the RAN's impaired hydrographic surveying capability that has reduced from six vessels to one since 2020. Wartime operations such as the invasion of Tarawa in 1943 and the invasion of the Philippines in 1944 confirm the essential role of hydrography for battlespace preparation in the often non-charted or inadequately charted areas to Australia's north, perhaps while under fire as well as in peacetime.

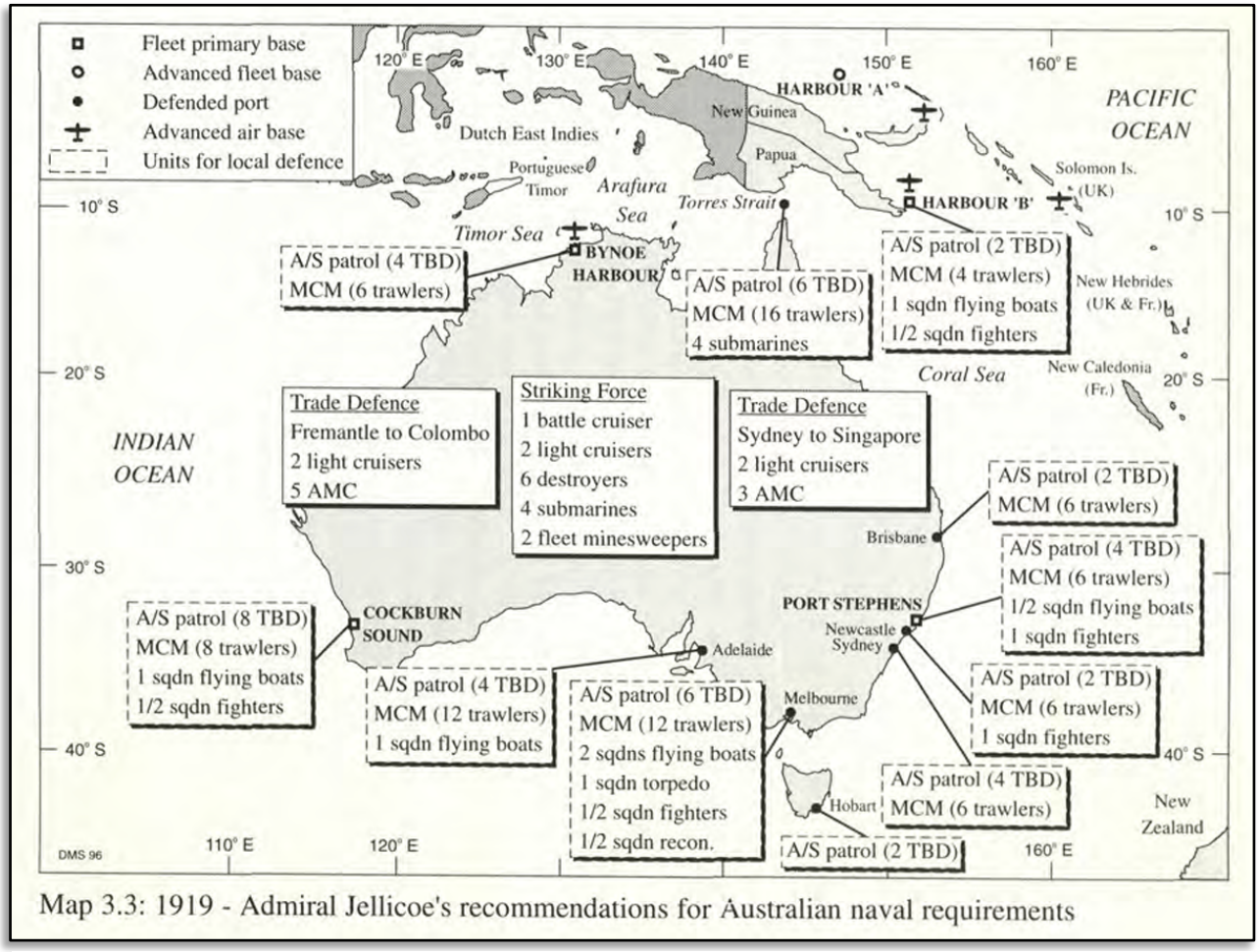
While the Australian Army retains some riverine hydrographic capability through its reserve Littoral and Riverine Survey Squadron, the demand for RAN hydrographic capabilities is only expected to grow with an increased ADF focus on amphibious operations with the planned uplift in capability of 18 Landing Craft Medium an eight-Landing Craft Heavy. Not only a is hydrographic capability a key enabler in amphibious operations, but it is also an essential enabler in the operation of an SSN capability. Hydrographic capability is required to undertake access and assurance operations, to

[86] Australian Defence Vessels (ADV) are government-owned but crewed by contracted merchant mariners.

[87] Merchant Vessels (MV) are leased merchant ships crewed by merchant mariners with some ADF additional crewing depending on the voyage tasking.

[88] This is the author's assessment based on publicly available complement data and single crew vessels.

ensure nothing has changed on the seabed of SSN ports, like HMAS *Stirling*. Despite the expected increased demand for RAN hydrographic capability, there are no plans for future hydrographic capabilities in the publicly available IIP, not only is this an issue for vessel numbers it is also an issue in retaining and growing a capability skillset that is a critical enabler for a range of maritime operations.



Map 3.3: 1919 - Admiral Jellicoe's recommendations for Australian naval requirements

Figure 8 This map provides an interesting historical note on Australian maritime force posture ideas in 1919. Note the extensive MCM requirement, a capability which remains as relevant as it was in 1919. Image derived from RAN Maritime Studies Program 1997 'In Search of Maritime Strategy'.[89]

The RAN Jellicoe Report: Naval Mission to the Commonwealth of Australia was a comprehensive 1919 report by Admiral Lord Jellicoe that detailed a scheme for the future development of the Royal Australian Navy. It proposed a significant expansion of the navy, including the establishment of a Far Eastern Fleet, and covered administrative reorganisation, personnel, training, and reserves.

Ultimately, sea control cannot be achieved without at least local air control. Outside the operational radius of RAAF land-based F-35A fighters, approximately 1,000 kilometres from northern bases, RAN task groups operating independently of coalition carrier support will face severe constraints. This raises the enduring requirement for sea-based aviation to provide tactical air control. Australia once operated aircraft carriers, and while the capability was allowed to lapse, contemporary trends,

89 *In Search of a Maritime Strategy: The Maritime Element in Defence Planning since 1901*, Stevens, David (ed), Canberra Papers on Defence and Strategy, 119, RAN Maritime Studies Program, 1997.

such as Japan's conversion of Izumo-class ships, and European and Asian navies experimenting with drone carriers, demonstrate a renewed focus on afloat aviation. The RAN may need to reconsider how it projects aviation from the sea, whether through shipborne UAVs, uncrewed carrier concepts, or more traditional sea-based platforms, to ensure task groups can achieve air and sea control in contested environments.

AMS 2035 – Army's Littoral and Maritime Role

The *NDS 2024* directed that the Army is to "optimise for littoral manoeuvre with a long-range land and maritime strike capability".[90] This marks a significant shift in Army's role, positioning it as a key enabler of the ADF integrated strategy of denial. Operating in the littoral, the area where land influences the sea and the sea influences the land;[91] Army provides the means to secure strategic terrain, protect infrastructure, and enable the projection of joint force power into contested environments. The introduction of long-range strike systems, such as HIMARS and Precision Strike Missiles, means that Army can credibly hold adversaries at risk at a greater range from the coast.

Army's role extends beyond the Australian mainland. Offshore islands and territories such as Christmas Island and the Cocos (Keeling) Islands are vital forward positions from which Army can project maritime strike: long-range fires that complicate an adversary's calculus in the archipelagic approaches to Australia. From these positions, the Army can both secure the bases themselves and provide strike options to support maritime and air forces operating across the Indo-Pacific. This integration of land-based fires with naval and air capabilities underscores the Army's transformation into a littoral force, one that enables deterrence, sustains presence, and provides resilience to the ADF's broader maritime strategy. In short, the Army's evolution ensures that land power contributes to the maritime domain, protecting Australia's sea lines of communication and reinforcing the credibility of the nation's integrated defence posture.

As shown in Tables 2 and 3, Army's littoral manoeuvre capability rests on its planned fleet of 18 Landing Craft Medium and eight Landing Craft Heavy. While this represents a much-needed enhancement of Australia's sealift capacity, it raises several questions about how these vessels will be protected and crewed. Although there has been some commentary suggesting the Army will operate them, this is probably impractical for the larger Landing Craft Heavy, which are comparable in size to the former HMAS *Tobruk*. Their operation would place additional strain on a Navy workforce required to support introductions of two new classes of frigates and a new class of submarine. Introducing vessels of this scale and ambiguity in service responsibility will present significant integration challenges, particularly as the Navy simultaneously manages the introduction of upgraded Mogami frigates, Hunter class frigates, and Virginia class submarines.

Not to be forgotten is the Regional Force Surveillance Group, (RFSG) within the Australian Army Reserve, responsible for patrolling and reconnaissance in remote areas of northern Australia.[92] It comprises three surveillance units - the Pilbara Regiment, the Northwest Mobile Force (NORFORCE), and the 51st Battalion Far North Queensland Regiment. The RFSG conducts coastal and inland reconnaissance and surveillance patrols. Peacetime operations concentrate on vessels potentially engaged in illegal fishing, drug importation or illegal immigration. In wartime the Group would focus on enemy force movements.[93]

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90 Australian Army, 'The Australian Army Contribution to the National Defence Strategy', 2024, <https://www.army.gov.au/our-work/strategy/australian-army-contribution-national-defence-strategy-2024>.

91 J Parker & P Jones, 'Australian Naval Capabilities in the Littoral: Past, Present and into the Future', Australian Naval Institute, 2023, <https://navalinstitute.com.au/australian-naval-capabilities-in-the-littoral-past-present-and-into-the-future/>.

92 Pastor-Elsegood, J., 'The Two-Way Benefits of the Regional Force Surveillance Group: Building from the ground up', *National Institute for Strategic Resilience*, 17 August 2021, (accessed at Naval Headquarters, *ADF Maritime Power, ADF-I-3 Edition 1*, Canberra, ACT, 2025. on 13 April 2025).

93 M Garrick, 'Force of the North', in *ABC News*, 2 December 2023, <https://www.abc.net.au/news/2023-12-02/nt-norforce-army-squadrons-defend-australias-north/103160534>.

AMS 2035 – Alliances

Australia relies heavily on its alliance with the US as a central pillar of its defence strategy. The alliance has enabled Australia to project greater influence than its size might suggest, through force posture initiatives, joint exercises, and interoperability of forces. Yet as the prospect of conflict in the Indo-Pacific becomes more acute, questions arise about how the Alliance would operate in practice. The issue is not simply integration of Australian forces under US command, but rather how best to delineate complementary responsibilities that allow Australia to retain sovereign control while contributing meaningfully to coalition operations.[94]

The 1951 Radford–Collins Agreement provides a useful precedent.[95] That arrangement divided responsibilities between the US Pacific Fleet, and the RAN on behalf of the Australia New Zealand Malaysia (ANZAM) countries, with the US Navy focusing on the wider Pacific while the RAN took responsibility for defending Australia's own sea lines of communication and approaches within the ANZAM region.[96] Re-articulating a similar division today, by geography and by role, would clarify expectations within the Alliance, ensuring the US concentrates on high-end deterrence and power projection while Australia secures its northern approaches, trade routes, and regional commitments. Such delineation would preserve strategic autonomy, sharpen force design priorities, and reduce the risk of building a force structured solely for integration under another's command. [97]

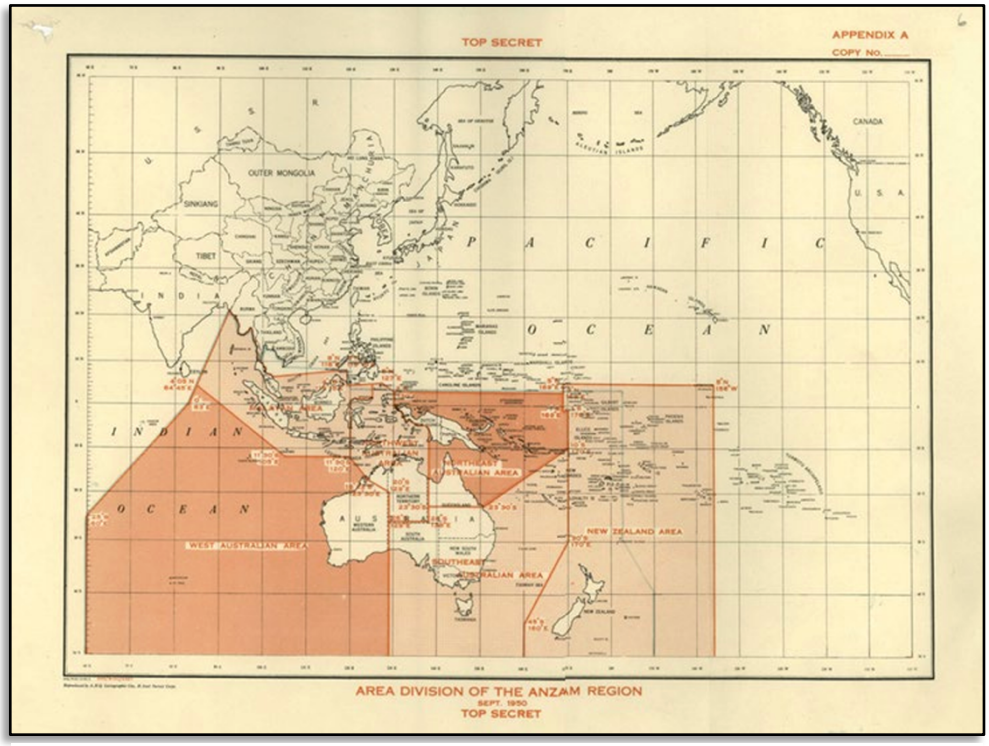

Figure 9 Area Division of the ANZAM Region, September 1950, Courtesy National Archives of Australia, A5954, 1419/13. Replicated in 'ANZAM and Australia's Increasing Defence Responsibilities in the Post-war Asia-Pacific' Dr Honae Cuffe.[97]

94 Jennifer Parker, 'If There's a War in the Pacific, Who Defends Australia?'

95 A Brown, 'The History of the Radford-Collins Agreement', in *Naval Historical Society of Australia*, 2008, <https://navyhistory.au/the-history-of-the-radford-collins-agreement/>.

96 A Brown, 'The History of the Radford-Collins Agreement', in *Naval Historical Society of Australia*, 2008, <https://navyhistory.au/the-history-of-the-radford-collins-agreement/>.

97 H Cuffe, *ANZAM and Australia's Increasing Defence Responsibilities in the Post-war Asia-Pacific*, Seapower Centre, 2021.

At its core, Australia must remain responsible for the defence of Australia. This requires a clear policy statement that the ADF's primary role is the protection of the continent and its maritime lifelines, backed by investment in capabilities tailored to that task, such as long-range strike, expanded undersea warfare capacity, sea-based aviation, and the means to protect bases and ports. The government should direct Defence to update Alliance planning arrangements to reaffirm how responsibility lies with Australia for defending its own territory and approaches, while the US carries the burden of wider regional deterrence. Without such clarity and resourcing, Australia risks designing a force optimised for coalition integration rather than national defence, leaving its sovereignty and freedom of action dangerously constrained.

The 2025 Australia-Papua New Guinea Mutual Defence Treaty,[98] otherwise known as the Pukpuk (crocodile) Treaty, will strengthen the security of both nations. From a maritime strategy perspective, it will enhance the ability of Australia to maintain a presence in the near waters and beyond and exert sea control using assets operating in the five domains. For Papua New Guinea it

provides greater maritime domain awareness and greater surety of maritime protection beyond inshore waters.

AMS 2035 - Other Government Capabilities

Australia has a range of other capabilities and organisations which contribute to maritime security. Some are purely or partly military, but most are civilian organisations focused on the para-military and civilian aspects of national maritime security. Recent Australian governments have drawn clear distinctions between the hard and soft elements of maritime security. The *Guide to Australian Maritime Security Arrangements* (GAMSA),[99] and the *Civil Maritime Security Strategy* set out the arrangements for,[100] and approach to, a range of threats including unauthorised maritime arrivals, maritime terrorism, illegal exploitation of marine resources, and pollution. These arrangements are complex, with GAMSA listing 20 key Commonwealth Government agency stakeholders, with numerous others at a state level.

The agency on the front line of this work is Maritime Border Command (MBC), which is policy led by Home Affairs and is commanded and tasked by the Commissioner of the ABF, but enabled and supported with capabilities from both Defence and ABF to undertake the assigned role as convening authority for maritime security.

The physical assets used by MBC are a combination of RAN and ABF vessels. The ABF has one large offshore patrol vessel, 10 patrol boats, of a mixture of Bay and Cape classes, and two fast response boats.[101] In addition to this the ABF leases ten Dash-8 aircraft and two helicopters to assist with maritime domain awareness and operational response and logistics.[102]

The Australian Fisheries Management Authority (AFMA) carries out a purely maritime regulatory activity in managing Australian fisheries sustainably in accordance with the requirements of the LOSC and domestic fisheries legislation.[103] The measures used by AFMA include:

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98 Department of Foreign Affairs and Trade, 'Papua New Guinea – Australia Mutual Defence Treaty', 2025, <https://www.dfat.gov.au/countries/papua-new-guinea/papua-new-guinea-australia-mutual-defence-treaty#:~:text=The%20purpose%20of%20this%20Treaty,cooperation%20through%20enhanced%20capability%2C%20interoperability>.

99 Australian Government, 'Guide to Australian Maritime Security', 2020.

100 Department of Home Affairs, 'Australian Government Civil Maritime Security Strategy', in *Department of Home Affairs*, 2023, <https://www.homeaffairs.gov.au/about-us/our-portfolios/national-security/civil-maritime-security> [accessed 27 July 2023].

101 Maritime Border Command: Our Vessels, (accessed at https://www.abf.gov.au/about-us/what-we-do/border-protection/maritime/patrol-vessels, 11 April 2025).

102 Maritime Border Command: Our Aircraft, (accessed at https://www.abf.gov.au/about-us/what-we-do/border-protection/maritime/our-aircraft, 11 April 2025).

103 Australian Government – Australian Fisheries Management Authority, 'Objectives and Functions', (accessed at: https://www.afma.gov.au/who-we-are/objectives-and-functions 14 April 2025).

- An observer program which places trained officers onboard domestic and foreign fishing vessels operating in the Australian Fisheries Zone,
- A Vessel Monitoring System (VMS) by which fishing vessels display their position at all times when at sea, and
- Electronic monitoring equipment fitted in fishing vessels operating in specific fisheries.[104]

Knowledge of the maritime environment is key to successful maritime operations and gaining it provides a major challenge in Australia's extensive maritime zones and adjacent high seas. Our efforts are managed by the Integrated Marine Observing System (IMOS) and the Australian Ocean Data Network (AODN) which manages the IMOS data collection program.[105] This in turn is augmented with data from other partners and data contributors such as universities, government agencies, industry and other organisations.

As well as having access to three ships dedicated to oceanographic research, the AODN uses commercial fishing vessels and other vessels of opportunity to gather oceanographic data. The extent to which this research relates to Defence needs is unknown and one might question whether the current research capability is adequate given the extent of Australia's maritime zones.

Figure 10 A Blue Bottle maritime unmanned surveillance vessel patrolling on Operation Resolute in remote Western Australian waters near Maret Islands. Defence Images (http://images.defence.gov.au/S20223485).

[104] Australian Government – Australian fisheries Management Authority, 'How we manage fisheries, 1 December 2023, (accessed at: https://www.afma.gov.au/who-we-are/how-we-manage-fisheries 14 April 2025).
[105] Integrated Marine Observing System, 'About the Australian Ocean Data Network', (accessed at: https://imos.org.au/data/about-the-australian-ocean-data-network 14 April 2025).

AMS 2035 - Civil Maritime Industrial Sector

Australia has a small but important civil maritime industrial sector. In December 2022 there were 11 Australian flagged and operated merchant vessels over 2,000 tonnes.[106] These comprise a limited number of coastal traders, none of which trade internationally. The Australian civilian maritime workforce is small and is continuing to shrink in key areas, such as a 12% reduction in qualified deck hands over the past five years.[107] Much of this workforce is concentrated in a few industries such as tourism and offshore resources, and there is very little Australian participation in the international shipping sector.[108]

In response, the Australian Government created a Strategic Fleet Taskforce, which recommended establishing a fleet of 12 Australian flagged and crewed vessels.[109] A tender for the first three vessels was put out in 2024.[110] Although they are to be subsidised to make them economically viable, the Taskforce recommended that this be simply seen as a 'seed' for a larger rebuilding of the Australian merchant marine.[111] Even if successful, it is apparent that this fleet will remain extremely small, such that the overwhelming majority of Australian cargoes, both on international and coastal routes, will continue to move in foreign flagged, owned, and crewed vessels.

It remains far from clear whether the Government's Strategic Fleet initiative and other measures will be sufficient to materially alter the flag composition of shipping plying Australian trade routes.[110] Australia's current merchant shipping demands are extensive, the below provides a snapshot.

- In 2021, 26,400 visits occurred in Australian ports from some 6,170 unique foreign flagged ships. Of these 1,100 were crude or product tankers, 69% bulk carriers and 5% each container ships and tankers.
- Australia's main maritime main imports by value are motor vehicles and parts; electrical, optical and other specialised equipment; fuel; pharmaceuticals; and chemicals.
- Australian container trade is only approximately 1% of the global traffic and is on a hub and spoke model (the key hub for Australia is Singapore).
- Over 70 Australian ports are engaged in foreign trade of which thirty are responsible for 90% of vessel trade and traffic. 10 Australian ports accounted for 88% of seaborne export cargo.
- In terms of individual port activity, this fluctuates for seasonal and other reasons. But Australia's biggest (non-iron ore and coal) port is Melbourne. Melbourne can have up to 600 ship movements a month. Most of those are long haul, approximately 300 different ships. In a typical mid-tier port, such as Brisbane there are around 200 different ship visits a month.

The chief take away is that the strategic fleet initiative while it may be useful for some niche imports, overall will be inconsequential. While a combination of taxation changes and other financial incentives with a willingness to have foreign nationals crew Australian flagged ships may increase the size of the Australian shipping register, a more fundamental pre-condition is required. That is the

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106 Strategic Fleet Taskforce: Final Report, November 2023, p.7, (accessed at https://www.infrastructure.gov.au/infrastructure-transport-vehicles/maritime/maritime-strategic-fleet-taskforce 14 April 2025.

107 INPEX Maritime Workforce Position Paper, July 2024, (accessed at https://www.amma.org.au/wp-content/uploads/2024/07/2024-07 15 April 2025).-23_INPEX_Maritime_Workforce_Position_Paper.pdf, (accessed 15 April 2025).

108 O'Connor, B., Maritime Workforce Position Paper Launch, (accessed at: https://ministers.dewr.gov.au/oconnor/maritime-workforce-position-paper-launch, 15 April 2025)

109 https://www.infrastructure.gov.au/infrastructure-transport-vehicles/maritime/maritime-strategic-fleet

110 King, C., Strategic Fleet Pilot Tender Closes, (accessed at: https://minister.infrastructure.gov.au/c-king/media-release/strategic-fleet-pilot-tender-closes, 15 April 2025).

111 Strategic Fleet Taskforce: Final Report, November 2023, (accessed at: https://www.infrastructure.gov.au/sites/default/files/documents/strategic-fleet-taskforce-final-report.pdf, 15 April 2025).

demonstrated capability of the ADF, in combination with its Allies and coalition partners, to protect critical shipping bound to or from Australian waters.

AMS 2035 envisages that the Strategic Fleet would, however, have a particular utility in the maintenance of supply lines to the northern Australian cities, towns and bases. This is in the context of road and rail links in the north which are vulnerable to disruption from weather events or malign actors.

AMS 2035 - Workforce

Throughout its history the RAN has been challenged more by personnel shortages than funding shortfalls.[112] At different times, such as in the 1950-60s, the key issue has been one of retention, when pay and conditions in Defence have lagged behind those of a buoyant economy. In recent years it has been made worse by inefficient recruitment procedures. The incredibly protracted, near one year long, recruitment process to join the ADF has tested the patience of prospective recruits.

Defence has in recent times attempted to repair its cumbersome and not fit for purpose recruiting system. The Navy has suffered most and it is not entirely clear that the new recruitment contractor and the associated efforts to streamline the model will be sufficient to turn matters around. It will be essential that it does, and otherwise an in-house recruiting model, as in the US, may need to be considered. As it is, the legacy of poor recruitment achievement and shortfalls in different ranks and specialisations will take years to work their way through the system.

Critically, the Navy has had long term personnel deficits for decades and this has created shortages of skills in many categories and various ranks. Going forward, as the fleet size increases, so will the personnel numbers issue become more acute. It is assessed that other measures are required to address the personnel shortfall.

Having sufficient numbers of appropriately skilled people is critical to all aspects of an Australian maritime strategy. As outlined in Table 3 the number of seafarers involved in national security tasks will grow by around 1,300 from 2025 to 2040. *NDS 2024* talks of a Defence workforce ‘crisis’, and despite concerted efforts to address this issue since at least 2020, while progress is being made, such as in Defence recruitment,[113] much more needs to be done. These requirements are particularly pressing in certain key areas.

In order to support the AUKUS Pillar I project, the Australian submarine service needs to grow from roughly 800 personnel to approximately 3,000 (this is beyond 2040), something that poses major challenges across a range of areas from recruitment to training, retention, and career progression.[114]

Workforce challenges are not restricted to those in uniform. Australia is embarking on a naval shipbuilding program of unprecedented scale and there are real questions over how the skilled workforce will be developed and recruited to meet these requirements. The government, through the National Shipbuilding and Sustainment Plan and elsewhere, have highlighted the thousands of jobs that will be created by the work, but the challenge will be providing enough skilled people to fill them. This is particularly true given the potential issues of competition for workforce, not only between different elements of the naval shipbuilding enterprise, but also with the RAN, wider ADF and other equally critical parts of defence industry.

There will also be a need to recruit mariners for the Strategic Fleet. Even more significant will be the growth of the industrial workforce which will, among other things, undertake nuclear powered submarine construction and two frigate programs. The Australian maritime sector is small and faces real challenges if it is to grow in the way that the government envisions.

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112 This is a repeated theme in Stevens, D.M. edited, *The Royal Australian Navy, the Australian Centenary History of Defence Volume III*, Oxford University Press, Melbourne, 2001.

113 ‘Biggest ADF recruitment in 15 years’, 2025, <https://navalinstitute.com.au/biggest-adf-recruitment-in-15-years/>.

114 Nicholson, B., ‘Submarine agency chief: Australia’s SSNs will be bigger, better, faster’, *ASPI The Strategist*, 28 May 2024.

The challenge of recruiting, training and retaining sufficient personnel is not new. Indeed, an analysis of the RAN's history in the 20th century indicates that personnel constraints, as much as fiscal ones, inhibited naval and Defence ambitions.[115] It is therefore an issue that must be tackled in a concerted and systematic way if policy aspirations are to be realised. Part III discusses potential remedies to some of the personnel shortfalls.

AMS 2035 - Maritime Governance and Oversight

Finally, the last time Australia implemented a whole of government approach of its maritime strategy on this scale was during World War II. The implementing governance body was the Advisory War Council (AWC).[116] In the modern context it is suggested that the National Security Committee of Cabinet undertake this with the Department of Prime Minister and Cabinet as the co-ordinating agency. Following the success of involving the Opposition Leader in the AWC it is considered he or she should be invited when appropriate and also that National Cabinet be engaged on certain matters involving the states.

AMS 2035 – Strategic Resilience

The first step in any effective maritime strategy is building strategic resilience. For Australia, this requires a clearer understanding of national dependencies, identifying which capabilities and commodities should be stockpiled, and determining where the industrial base must be bolstered to mitigate vulnerabilities. While the nature of Australia's open, export-driven economy means it will never be fully self-reliant, and the RAN will still need to safeguard seaborne supply, minimising the range and volume of what must be protected is critical. Strategic resilience, therefore, is not a substitute for maritime defence but an essential complement to it, ensuring that national vulnerabilities are reduced and finite defence resources can be applied where they are most needed.

Part II – Drawing the Threads

Part II has set out the proposed *AMS 2035* which is designed to align Australia's strategic goals, defence policy, and force structure to the challenges of an increasingly contested Indo-Pacific. AMS 2035 is whole of nation in scope, integrating Defence, diplomacy, industry, and civil maritime agencies. It emphasises layered defence, alliance cooperation, and targeted interoperability to offset capability gaps.

The strategy is built around three enduring objectives: **Deterrence, Sea Control, and Presence.** Deterrence will be underpinned by the development of a nuclear-powered submarine capability, supported by balanced surface combatant task groups, mine warfare and uncrewed systems, and enhanced replenishment and strategic lift. Sea control is identified as essential not only to secure freedom of manoeuvre for the ADF but also to protect Australia's lifeline maritime trade and implicitly sea denial in coastal waters and critical undersea infrastructure, including cables and pipelines. Presence underscores the need for regular and sustained deployments to Southeast Asia and the Pacific to reassure partners, shape the regional environment, and demonstrate commitment to the rules-based order.

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115 See *The Royal Australian Navy: A history*, D Stevens (ed), South Melbourne, Oxford Univ. Press, 2006.

116 The Advisory War Council was formed in 1940. It was chaired by the Prime Minister and included members of the War Cabinet, the Leader and three members of the Opposition. It and the War Cabinet considered military strategy, armaments and munitions, aircraft production, transport, and railways.

Part III - The Means
Australian Maritime Strategy 2035

To realise *AMS 2035* the nation would have to implement a range of measures across government, defence and industry. This section of the monograph discusses some of the most important of these measures, as well as offering solutions to some of the more vexing challenges.

Integrated Investment Plan Funding Reform

A fundamental constraint to achieving this strategy is a lack of funding. In 2024-25 Australia spent 2.01% of GDP on Defence, the current government predicts that this will rise to 2.4% by 2033-34.[117] This will likely be inadequate for sustaining the current force, acquiring the currently approved IIP and the AUKUS Pillar I (AUKUS SSN) program. This is already evidenced by cuts to lower priority projects and sustainment. Notably, there has likely been significant transfer of funds from these programs to fund Pillar I, which, by the nature of nuclear programs, will always receive the highest priority for funding. What seems apparent in the public domain is that Pillar I was not comprehensively costed at the outset and its full demand on the Defence budget is still yet to be fully quantified. Therefore, to fund the approved program and desired enhancements, a significant increase will probably be required. The actual size of the increase cannot be known until Pillar I is more thoroughly costed which should be undertaken as a matter of urgency. With that foundation, execution of the IIP can proceed with confidence and AMS 2035 could be refined.

Proposal 1: Conduct a comprehensive and independently verified costing of AUKUS Pillar I as a matter of urgency to allow for re-baselining of the Defence financial requirements and recalculation of the required overall Defence funding.

Sustainment Reforms

While future governments may provide more funding to Defence, there are other measures that can be put in place to put the naval force on a more sustainable footing. Chief among them is a drive for greater platform and system commonality. Although there has been bi-partisan support for a continuous shipbuilding program, successive governments have had to grapple with its unsatisfactory implementation, which damages confidence in Australia's capacity to deliver it. In part, this is because some of the key features of the concept, as first proposed by the Navy in the year 2000, were not borne in mind. These included:

- standardising on design origins which had inbuilt growth margins for subsequent evolution through constructing future batches, and
- standardising where possible on system and sub systems to both foster local supply chains and better control through life support costs – which is where, by far, the largest cost of owner ships is incurred

There needs to be a recognition, that among the advanced navies of the world, the RAN is an outlier in having the most diverse fleet in the world. This fleet has surface combatants having Australian, British, German and Spanish designed warships and Japanese frigates in the near future. Each have their own build, supply chain and system requirements. Exacerbating the complexity and cost has been incorporation of largely USN weapons and other systems deemed necessary for interoperability and required operational performance. Elsewhere in the fleet (including ADVs) there

[117] J Parker, 'Defence spending – A question of capability', 2025, <https://www.jennifer-parker.com.au/post/defence-spending-a-question-of-capability>.

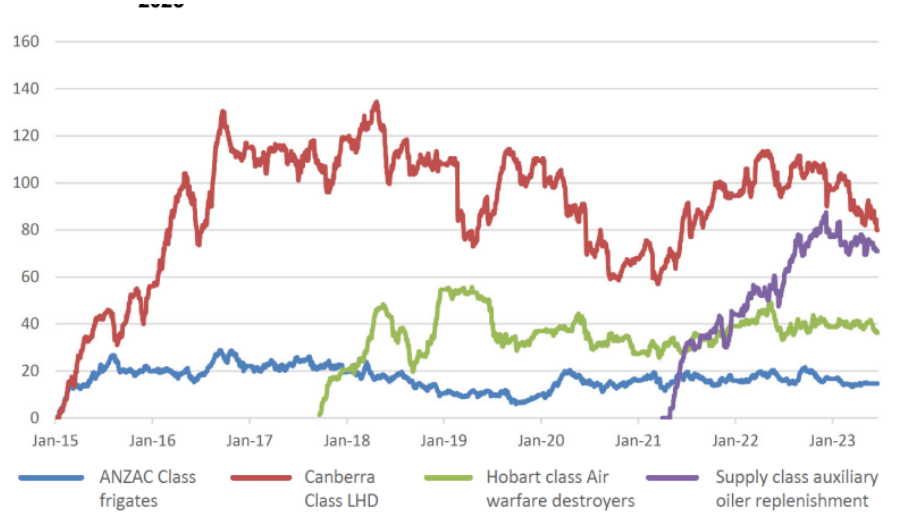
are ships built or designed in Australia, Germany, Italy, Norway, Romania, Sweden and Vietnam. The challenge for the RAN's modest submarine force in operating and sustaining successively, and at times together, submarines from Sweden, the US and the UK cannot be underestimated as well as the opportunity costs they consume.

The overall impact of this disparate approach is substantially increased costs and risks in ship production, as local shipyards adjust to the national differences. This has flow-on effects to a sustainment premium due to an unnecessarily complex supply chain owing to lack of commonality. This in turn flows on to a fragmented workforce that has either to be siloed to specific systems or has to be cross trained at added expense.

The impact of the current approach can be seen indirectly in a graph (Figure 5) produced in the 2025 ANAO Report, *Department of Defence's Sustainment of Canberra Class Amphibious Assault Ships (Landing Helicopter Dock).*[118] Figure 5 shows the number of urgent defects, normalised by number of ships per class, 2015 to 2023 for the Canberra class LHDs, the Hobart class destroyers and the Anzac class frigates. The more numerous frigates allowed for more local content and in country efforts to resolve systemic system and sub-system issues.

The goal of standardisation in the long term would be five benefits. They are to encourage cost effective construction and sustainment, reduce schedule risk, improve operational efficiency and build-in cross class employability for the uniformed workforce.

An initiative to progress the long-term goal would be to recognise the value of and encourage the development of Australian owned defence prime or Tier 1 companies. The RSL Paper "Building a sustainable sovereign industrial Defence capability," discusses this issue in greater detail.[119]



Note a: As at July 2023, the number of ships per class were as follows: eight ANZAC class frigates; two Canberra class LHDs; three Hobart class Air warfare destroyers; and two Supply class auxiliary replenishment oilers.

Source: ANAO extract from Defence records: *Report into the Materiel Seaworthiness of the Fleet*, July 2023.

Figure 11 - Urgent defects, normalised by number of ships per class, 2015 to 2023

[118] Australian National Audit Office, *Department of Defence's Sustainment of Canberra Class Amphibious Assault Ships (Landing Helicopter Dock)*, 27 June 2025, <https://www.anao.gov.au/work/performance-audit/department-of-defence-sustainment-of-canberra-class-amphibious-assault-ships-landing-helicopter-dock>.

[119] RSL Defence and National Security Committee, *Building a Sustainable Sovereign Industrial Defence Capability*, 27 November 2024, <https://www.rslaustralia.org/latest-news/australia-must-encourage-development-of-local-major-defence-industry>.

To summarise, the RAN has the most heterogeneous fleet of any advanced navy. Because of this there have been higher coasts, greater schedule and cost risks and then higher operating costs with impacts on availability. The RAN will hold that 'heterogeneous' mantle for decades to come as remedial action, if taken, takes both time and long-term commitment to address. To that end Australia should consider working with the Japanese in the early 2030s for the replacements to RAN Hobart and the JMSDF *Murasame* classes of destroyers.

Proposal 2: Initiate a long-term program to standardise on ship designs, systems and sub-systems and encourage the development of local supply chains. This should include developing a longer-term relationship in shipbuilding with Japan.

Mine Warfare

As discussed in Part II, the RAN's ability to conduct 'deterrence' and 'presence' must be underwritten by a viable MCM capability. It is imperative that a robust capability is regenerated as a matter of some priority. The defensive MCM capability should have an initial focus of providing coverage for Fleet Base West submarines.

Proposal 3: Develop and fund an RAN Mine Countermeasures Remediation Program

Hydrography

The divestment of the RAN's small hydrographic fleet and a transition to chartering mainly foreign flagged ships to conduct the nation's HydroScheme program introduces vulnerabilities in times of conflict.[120] Although the RAN retains a capability for small hydrographic detachments for inshore work this is unlikely to be sufficient. The ADF's still relevant operational experiences in East Timor and Iraq demonstrated the vital need for naval hydrographic ships to provide hydrographic survey as a precursor to littoral operations. Furthermore, the RAN's experience in Banda Ache, Nias and most recently in Tonga demonstrate a viable military hydrographic capability is critical to HADR operations.

While the use of HydroScheme's civilian framework to undertake national charting has benefit, the risk is that military surveyors do not get the valuable in depth experience they used to, which may undermine overall RAN capability needed to respond in a crisis or conflict.

Deployable teams to undertake rapid environmental assessments for amphibious operations or forward basing of naval assets will require adequate capability to undertake these tasks.

Timely and cost-effective options to fill this gap may include converting or modifying a small number of Arafura or Cape class vessels. However, it should be noted that survey operations are conducted at slow speeds that may not be conducive to the design of these vessels, and a purpose-bult hydrographic capabilities may be required.

Technological advancements in UUVs and USVs provide the RAN significant opportunity to enhance the quality of deployable teams to support the requirements of *2024 NDS*, however, the publicly available IIP presently has no established project to obtain this capability.

[120] Australian Hydrographic Office, 'HydroScheme Industry Partnership Program', in *Department of Defence*, <https://www.hydro.gov.au/NHP/hipp.htm>.

Proposal 4: Examine the converting in-commission or modifying in build a small number of Arafura or Cape class vessels for hydrographic duties, or a new build potentially from an overseas yard.

Proposal 5: Establish and find a project in IIP 2026 to provide USVs and UUVs to support RAN hydrographic capability.

Fixed-wing aviation at sea

The RAN should formally investigate options to project fixed-wing aviation to sea to provide the tactical air control necessary for independent task-group operations. This capability family could include ship-borne Airborne EW (AEW) and Command and control (C2) UAVs, uncrewed combat air vehicles (UCAVs), embarked Ghost Bat-type systems or analogous large UAVs, mothership concepts (merchant/auxiliary conversions), and crewed Short Take Off-Vertical Landing (STOVL) options for LHDs or a light-carrier.

The study should assess operational effect (local air superiority/tactical air control, AEW, EW, maritime strike), platform and deck compatibility (LHD, Hunter, Upgraded Mogami, auxiliaries), logistics and sustainment impacts and interoperability with RAAF. Trials should begin with low-cost UAV/AEW packages embarked on LHDs and then progress through mothership experiments and STOVL feasibility studies.

Proposal 6: Investigate sea based fixed wing aviation to achieve tactical air control through the acquisition of a light-carrier embarked with a mix of crewed / uncrewed capabilities.

Personnel

The centrality of having sufficient personnel was canvassed in Part II. This section offers a range of measures that could be considered to address the issue.

As outlined in Table 2 the numbers of seagoing personnel will grow over time. It is suggested that four approaches be considered to meet the challenge. They are:

- The creation of High, Medium and Low Readiness surface task groups; and
- Growing the potential pool of mariners by:
    - re-designating some commissioned RAN ships to a Sealift Command along the lines as employed by the RFA.
    - Transferring OPVs and patrol boats to the Border Force or a new coastguard.
- Consideration of Navy restructure through category rationalisation.

High and Low Readiness Task Group Tasking

The proposal for high and low readiness task groups was a construct first canvassed in Australia's Maritime Headquarters in the mid-1990s. A similar concept had been in operation with the Canadian Forces' Maritime Operations Groups for some years and envisaged ships being assigned to one of three task groups for about a two-year period. Their assignment would be built around their maintenance cycle, so providing schedule stability. Each task group would have a mix of surface combatant ship classes plus a replenishment ship to provide a rounded capability. Ships could expect to move from:

- Low Readiness - post-deployment reconstitution, maintenance and leave; to
- Medium Readiness - assigned for unit and task group level training, then to
- High Readiness - pre-operation/deployment collective training and then operations or extended deployments.

One capability gap in this arrangement for Australia is the absence of a third replenishment ship. This could be addressed by collaboration with the RNZN for synchronization with their replenishment ship HMNZS *Aotearoa.* Indeed, it may be bi-laterally advantageous to incorporate the pair of RNZN frigates into the Low-Medium-High Readiness task group concept. Alternately a third replenishment ship would be required.

Because of the predictable nature of the above scheme, priorities for personnel and sustainment resources could be managed. For example, low and medium readiness ships may sail with smaller complements or with more trainees. A similar manning proposal was proposed in the 1990 Wrigley Report.[121]

Figure 12 - The Upgraded Mogami class frigate will become the backbone of RAN surface task groups in the 2030s (source RAN)

[121] AK Wrigley, *The Defence Force and the Community: A Partnership in Australia's Defence*, Canberra, Australian Government Publishing Service, 1990.

Operationally, each task group would be commanded by an officer of captain rank with a small staff, who would be responsible for the task group's training progression and conduct of operations. The clear benefit of this would be greater task group cohesion and operational effectiveness. This concept proved its worth during the RAN's contribution to and command of the coalition Maritime Interception Force in the Arabian Gulf in 2001-2003.

Proposal 7: Evaluate the merits of creating low, medium and high readiness surface combatant task groups.

Proposal 8: Examine options to source a third replenishment ship capability.

Growing the Mariner Pool

The underpinning rationale of these two proposals is that they would be drawing from an expanded pool of potential recruits. This expanded pool would include people attracted to a maritime career but not interested in naval service or not meeting the more exacting ADF recruitment standards. The pool could also include some personnel who want a maritime related career after their naval one. There is also the possibility of drawing personnel from non-Australian citizens.

Growing the Pool – An Australian Sealift Command

The RAN's experience with civil crewed support ships goes back to the foundation of the navy when a small number of colliers and oilers were crewed by the Royal Australian Fleet Auxiliary (RAFA). This effective arrangement continued until 1946.[122] In more recent decades the RAN has operated with government owned, by Teekay Shipping crewed, ADV support ships. The experience of commercially contracting these smaller support vessels has been a largely positive one.

The RAN has also received support for many decades from ships of the merchant mariner crewed UK Royal Fleet Auxiliary (RFA) and the US Military Sealift Command (USMSC). In 2025 RFA operates 11 afloat support and amphibious ships in support of the Navy, while the similarly configured but much larger US Military Sealift Command has 125 ships.

There is potential to extend the ADV model further by establishing a more substantive command arrangement and contracting model. In the RAN today there is potential to crew the two Supply class replenishment ships, the landing ship dock HMAS *Choules* (formerly RFA) and even the planned Army amphibious ships, which will largely carry out sea transport roles.

Typically, the RFA and USMSC crew their ships with fewer comparative numbers of more experienced mariners. This is often aided by design. To illustrate the point the RNZN's *Aotearoa*, built to commercial standards, has a crew of 64 compared with the similarly sized Supply class of 170. Similarly, *Choules* has a complement of 158, whilst her RFA sister ships are crewed by about 70.[123]

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122 V Fazio, 'Oilers in the Royal Australian Navy', in *Naval Historical Society of Australia*, , 1985, <https://navyhistory.au/oilers-in-the-royal-australian-navy/>.

123 Jennifer Parker, 'Time to re-establish the Royal Australian Fleet Auxiliary?', in *The Strategist*, , 2023, <https://www.aspistrategist.org.au/time-to-re-establish-the-royal-australian-fleet-auxiliary/> [accessed 2 October 2023].

There would be potential to reduce the requirement of around 500 naval personnel. For an Australian Sealift Command to be successful it will be essential for it not to draw from the same 'recruitment well' as the RAN. It could, for example, in addition to those in or looking to join the merchant service, look to recruit not only Australian nationals but mariners or potential mariners from the Pacific Forum. Such an initiative would have benefits for those countries in terms of remittances and social stability.

The other attractions of a Sealift Command would be to assist in addressing the RAN personnel shortfall and to concentrate the naval workforce on combatants.

Proposal 9: Initiate a study on the possible expansion of ADV arrangements to establish an Australian Sealift Command.

Growing the Pool – Transfer of Patrol Forces and possible Australian Coastguard

The ABF has demonstrated that it is possible to fulfil the patrol functions by personnel without the stricter capability and training requirements of the RAN. On that basis it would be possible to expand the recruitment pool to crew RAN OPVs and patrol boats if they were operated by the ABF or a newly constituted coast guard.

The creation of an Australian coast guard has been mooted periodically for at least the last forty years.[124] Generally proponents are for placing the assets currently conducting coast guard-like functions into one organisation which has those as its prime function. The counter argument is that it will be another organisation with attendant costs, and the current system of inter-agency co-operation works. In addition, the formative experience of operating in patrol boats is beneficial for officer and sailor development.

These two concepts of either a coast guard or an inter-agency model are employed around the world. Most countries of Australia's maritime size including those in the region have a coast guard.

The attraction of a coast guard, currently and going forward, is three-fold. The first is bringing coast guard functions together into one agency and generating greater expertise. In recent years, while the resources involved in border protection have grown, expertise has declined. This can be seen in mariner expertise in both the ABF and the AMSA. A coast guard could bring some of these safety and regulatory functions into one agency as is the case with the US Coast Guard. A coast guard could also perform hydrographic functions using a combination of organic and contracted assets (the latter perhaps via the proposed Australian Sealift Command).

The second benefit, from the Navy perspective is to relieve it of a non-core function. While it is often cited as providing the benefits of having small ship experience, most sister navies do not have patrol craft in their fleet and seem to be no less efficient in their core warfighting capabilities. Once again, the key is to try as much as possible to draw from a different pool of mariners. This has been the experience of the US Navy and the Coast Guard. It should also be noted that coast guards can still be employed in support of a navy in wartime. For example, the US Coast Guard assigned some of its patrol craft to the US Navy for littoral operations in the Iraq War. There would be potential to reduce the requirement of around another 500 naval personnel. Jennifer Parker's recent Australian Naval Institute paper 'Time for an Australian Coastguard' discusses this issue and possible options in further depth.[125]

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124 'Coastguard proposal is first Australian election spat', in *Australian Defence Magazine*, 2008, <https://www.australiandefence.com.au/CB113E20-F806-11DD-8DFE0050568C22C9>.

125 Jennifer Parker, *Time for an Australian Coast Guard*, Australian Naval Institute, 22 November 2024, <https://navalinstitute.com.au/time-for-an-australian-coast-guard/>.

Proposal 10: Evaluate the utility of transferring OPVs and patrol boats to the Border Force and initiate a study on the establishment of an Australian Coast Guard.

Consider Navy restructure through category rationalisation

The Navy currently comprises around 16,000 personnel and is planned to grow to 20,000 by 2040. However, it will face significant pressure to crew an expanded fleet—including additional surface combatants, nuclear-powered submarines, and Army amphibious craft[126] — while also supporting emerging technologies such as XLUUVs and LUUVs.

To meet these demands, the Navy's structure must prioritise seagoing operations. This will require not only workforce growth but also a rationalisation of roles and structures within the service, including consideration of whether categories with limited seagoing liability remain necessary or could be performed by other services within the integrated force. Such rationalisation may require category transfers and retraining to align with future operational needs.

Proposal 11: Rationalise Navy Workforce Structure to Prioritise Seagoing Operations.

Figure 13 Royal Australian Navy Recruit School General Entry 441 Rogers Divisional Group Photos. Defence Images. (http://images.defence.gov.au/S20253061).

[126] Note it is the author's assessment that the Army will not be able to grow sustain the workforce to crew all of its upcoming amphibious capability.

Sea Control - Protecting Australia's Maritime Trade

As described in Parts I and II, the maintenance of maritime trade, and its subset critical seaborne supply to and from Australia is vital. The analysis and recommendations of the NSG Group and Australian Naval Institute's 2019 *Protecting Australian Maritime Trade: The Findings of the 2019 Goldrick Seminar,*[127] and 2022 *Protecting Australian Maritime Trade* reports remain relevant to today's environment.[128] They are detailed at Annex A. However, the six key aspects to protecting Australian maritime trade were:

- Being able to have good levels of knowledge and awareness of maritime trade. This then leads to detailed analysis to determine what is the essential shipping that needs protection as it relates to a specific strategic situation. This allows optimal tasking of the Strategic Fleet as well as international shipping companies and related parties;
- Develop Maritime Trade Routing plans and instructions;
- Depending on the operational situation, there may be a requirement to provide defences to the home and destination ports and their approaches;
- Assigning ADF elements for a combination of route and ship protection. Once again depending on the operational situation this would include intelligence as well as air, surface and subsurface assets;
- By the transglobal nature of maritime trade all these aspects will invariably require Australia to work with different Allies and partners to provide effective protection; and
- Finally, there is a need for Strategy and Policy alignment with protection of maritime shipping. This includes any necessary adjustments to the Force Structure and the Defence Integrated Investment Plan.

Proposal 12: Adopt the recommendations from the 2019 and *2022 Protecting Australian Maritime Trade* reports.

Protecting Undersea Cables

The protection of Australia's vital undersea cables requires both inter-agency and international co-operation. It also requires the research and development and the adoption of the resultant technologies. In the first instance a scoping report would be beneficial to understand the issues and which defensive approaches are being attempted overseas as well as which Australian industry capabilities can be brought to bear.

Proposal 13: Initiate a scoping study on the protection of Australia's undersea cables.

[127] Australian Naval Institute, *Protecting Australian Maritime Trade: The Findings of the 2019 Goldrick Seminar*, 2019, <https://navalinstitute.com.au/publications/reports/>.
[128] Australian Naval Institute, *Protecting Maritime Trade*, 19 August 2022, <https://navalinstitute.com.au/publications/reports/>.

Uncrewed Systems

As described in Parts I and II the incorporation of uncrewed systems operating in the air, surface and undersea domains has become both mainstream and integral to maritime operations. One of the features of uncrewed systems is their deployment in large numbers, with short technology lifecycles. As such they need to be produced in Australia and ideally employing Australian intellectual property. An ADF uncrewed system roadmap and program is required that includes vehicles for maritime employment.

Proposal 14: An ADF uncrewed system roadmap and program is required that includes vehicles for maritime employment.

Submarine Support Ship

As described in Parts II, the provision of a submarine support ship in the RAN may offer both operational flexibility and east coast homeporting options. For its part, the US Navy has two submarine tenders, the USS *Emory S.* Land and USS *Frank Cable* to provide 'forward-based tending, resupply, and intermediate level repair operations'.[129] Both are nearing the end of their service lives and they will be replaced by new ships under the AS(X) program.

Because it is likely that just a small number of the RAN SSNs would be based on the east coast of Australia, a submarine support ship may be a viable alternative to having a fully developed SSN capable shore facility. In any case the feasibility of such a capability would be worthy of examination.

Proposal 15: Undertake a study on the operational and logistic value of a submarine support ship for east coast and deployment operations.

Conclusion

Australia has charted an ambitious capital investment program of ADF force elements for operation in the maritime and associated domains. This monograph proposes *AMS 2035* with an emphasis on **Deterrence, Sea Control** and **Presence**. *AMS 2035* seeks to fully realise the potential of Australia's maritime assets and to more fully protect its national interests. An integral part of *AMS 2035* is fifteen proposals to assist in the realisation of the strategic outcomes. These range from organisational, crewing, and readiness to funding aspects.

It hoped that this monograph can serve as a blueprint for the further development of Australia's maritime forces.

Annex:

A. Australian Naval Institute and Naval Studies Group. 2022. Protecting Australian Maritime Trade. University of New South Wales (Canberra) recommendation summary

Enclosures:

1. NSG Primer No.1 – Naval Developments
2. NSG Primer No.2 – Maritime Strategy
3. NSG Primer No.3 – Australia's National Security Tasks

[129] P Ong, 'US Navy Comments on New AS(X) Submarine Tenders', in *Naval News*, 2022, <https://www.navalnews.com/naval-news/2022/12/us-navy-comments-on-new-asx-submarine-tenders/>.

Annex A to *AMS 2035*

Recommendations from the Australian Naval Institute's Protection of Australian Maritime Trade Reports

2019 *Protecting Australian Maritime Trade: The Findings of the 2019 Goldrick Seminar* [130]

The following courses of action were recommended:

- Develop an engagement strategy within Defence and Whole-of-Government to raise awareness of Australian Maritime Trade issues with a view to developing a requisite strategy and action plan.
- Initiate work to further quantify the quantum and nature (including routing) of maritime trade to and from Australia as well as the responses needed for its protection.
- Propose a Strategy-Led Approach to deal with the challenge under the leadership of the National Security Committee of Cabinet.
- Initiate bi-lateral/multi-lateral discussion of protection of critical sea supply shipping, for example the protection of the Japanese LPG trade and the Australia-New Zealand trade

2022 *Protecting Australian Maritime Trade Report* [131]

The six key aspects of protecting Australian maritime trade requiring action are:

- Being able to have good levels of knowledge and awareness of maritime trade. This leads to detailed analysis to determine what is the essential shipping that needs protection as it relates to a specific strategic situation. This may require the tasking of some of Australia's 'Strategic Fleet' as well as international shipping companies and related parties.
- Develop Maritime Trade Routing plans and instructions.
- Provide defences to the home and destination ports and their approaches.
- Assign ADF elements for a combination of route and ship protection. This will require intelligence as well as air, surface and subsurface assets.
- By the nature of maritime trade all these aspects will invariably require Australia to work with different Allies and partners to provide effective protection.

[130] Australian Naval Institute, *Protecting Australian Maritime Trade: The Findings of the 2019 Goldrick Seminar*, 2019, <https://navalinstitute.com.au/publications/reports/>.
[131] Australian Naval Institute, *Protecting Maritime Trade*.

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Enclosure 1 to *AMS 2035*

Naval Studies Group Primer No. 1
Maritime Warfare Technological Developments

By Peter Jones and Jennifer Parker

This primer describes maritime warfare technological developments as they may affect the Australian Defence Force (ADF).

Introduction

Technology has always shaped naval warfare, but the pace and scope of change in the late 20th and early 21st centuries are unprecedented. In 2025 the central debate is whether naval warfare faces a true revolution or merely an evolution. Evidence for a step-change is mounting: Ukraine's uncrewed surface vessels (USVs) have mounted a highly effective Black Sea denial campaign, when coupled with the use of missiles and uncrewed aerial vehicles (UAVs).[132] Houthi forces have used missiles, UAVs and USVs to strike shipping in the Red Sea; and ballistic and hypersonic missiles have entered combat in Europe and the Middle East. Overlaying these advances is the rapid diffusion of artificial intelligence (AI) across sensing, command and weapon systems. Collectively, these trends are reshaping capability acquisition, tactics, operations and, ultimately, maritime strategy.

Since the arrival of the Royal Australian Navy's (RAN) fleet in 1913, there has been a considered approach to acquire ships, aircraft and weapon systems that were the same as, or compatible with, those of Australia's pre-eminent maritime ally, initially the UK and then over a transition period the US. Related to this was an emphasis on high-end systems, in part to compensate for Australia's limited personnel resources, with just under 16,000 permanent RAN members in 2025, which is planned to grow to 20,000 by 2040. In modern times, this approach has largely continued, and this is evidenced by acquisitions of Aegis destroyers, fitted with Tomahawk land attack missiles, and later, in the next decade, of nuclear attack submarines (SSNs).

During the timeframe discussed in this monograph, the dominant technologies in the maritime and associated environments will largely be those that are in-service today. Some technologies, such as AI enabled systems and uncrewed platforms, are experiencing rapid change and the manner in which they influence the conduct of operations continues to evolve quickly. It is useful to examine these technologies in different domains and then discuss their employment in a system of systems approach.

Moving forward, Australia, like other medium powers, will need to consider how to leverage new technologies that allow navies to achieve greater effects at lower cost and with fewer personnel. Interoperability remains an ongoing challenge in this space, as does connectivity, especially as global positioning system (GPS) and related systems could be the first to be compromised in a kinetic scenario. What constitutes genuine 'autonomy' of autonomous systems, and whether such autonomy is desirable, is a question that applies at multiple levels. Is the system self-powered? Self-directed, i.e., non-reliant on external inputs? What of the command element once autonomous systems are in play? These questions will need to be addressed both theoretically and practically, as such systems are further integrated with current naval capability.

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132 Parker, 'An Evolution or a Revolution in Naval Warfare: USVs in the Black Sea', in *Australian Naval Review*, 2024, <https://www.jennifer-parker.com.au/publications>.

Air Warfare

Since the early days of World War II one of the most challenging aspects of naval operations for the RAN is operating in the absence of air superiority or where it is contested. In its history nearly half of all RAN ship losses to the enemy have been to air attack.[133] This experience was a major driver for the post-war acquisition of aircraft carriers, which provided both air defence for the RAN task group, and also the offensive ability to carry out long range strikes on enemy sea and land forces.[134] The loss of aircraft carriers saw the organic fleet air defence centre on the Standard SM-1, then SM-2 surface-to-air missiles (SAMs) in the destroyers and larger frigates with the Sea Sparrow, then Evolved Sea Sparrow Missile (ESSM) in the Anzac class. Ideally, these ships would operate in higher threat areas with the support of sea or land-based fighters, as was the case in the 2003 Iraq War. A significant development in this domain was the introduction of the suite of indigenous CEA Technologies digital phased array radars, not only into the Anzac class but also into the land forces. These radars, linked to a Swedish Australian 9LV combat system, significantly increased the lethality of existing missiles, but also the survivability of the Anzacs.

The contemporary fleet has evolved from this foundation. The Hobart class destroyers have, or are being retrofitted with, the Aegis Ballistic Missile Defence System (BMDS) and the ~250nm range SM-6 extended range missile. The first of the six Hunter class frigates is expected to enter service in 2032 and will bring to sea a CEA radar, Aegis/9LV, SM-2/ESSM suite of capabilities. Prior to that, in 2029 the first of up to eleven smaller Upgraded Mogami class general purpose frigates should enter service.

The RAN's major surface combatants have active and passive electronic warfare (EW) systems. A notable system is the Australian-US Nulka off-board active decoy that has proved its worth operationally with the United States Navy (USN) off the Yemeni coast, during recent Red Sea battles with the Houthis. This system is undergoing further development.

Considerable efforts have been made over recent decades to harmonise operations with the RAAF's growing air defence capabilities. Its mix of 72 F-35A Lightning II, 24 FA-18F Super Hornet and a dozen EA-18G Growler electronic attack aircraft supported by six E-7A Wedgetail Intelligence Surveillance and Reconnaissance (ISR) and seven KC-30A tanker aircraft has few peers in the Indo-Pacific.

Collectively, the sea and land-based systems of the Australian Defence Force (ADF) can intercept aircraft, supersonic missiles and ballistic missiles (near launch and in the terminal phases). They also can destroy the slow-moving UAV or drones. Nevertheless, ballistic missile defence within the ADF is presently quite limited. The ADF presently has no ground-based ballistic missile defence capability, and its broader ground-based missile defence capability is limited to a small number of medium range National Advanced Surface-to-Air Missile System (NASAMS) batteries and shorter-range RBS-70 system, which is in the process of being upgraded.

Air warfare is one of the most challenging of domains, if for no other reason than its short reaction times and the smallest margins of error. The significant challenges in this space are:

- the increased speed and manoeuvrability of anti-ship missiles, including at hypersonic speeds,
- Predicted UAV swarms and current saturation drone attacks observed in Ukraine and elsewhere, and
- the utilisation of AI to maximise the effect of attack missions, including with electronic warfare (EW) systems.

One of the over-riding features of the Russo-Ukrainian War has been the rapid development of UAV capabilities and tactics. The Ukrainians have developed reconnaissance UAVs of up to 28 hours endurance

133 'List of Royal Australian Navy losses', in *Wikipedia*, <https://en.wikipedia.org/wiki/List_of_Royal_Australian_Navy_losses>.

134 Jones, P., 'Vice Admiral Sir John Augustine Collins KBE, CB, RAN', Cooper, A. & Goldrick, J., *The Navy Chiefs: Australia's Naval Leaders 1911-1997*, Allen & Unwin, Crows Nest, 2024, 199.

and 2,500 km range[135] and one-way attack (OWA) drones out to about 1,300km range.[136] The 1 June 2025 Ukrainian attack on the Russian strategic bomber force also highlighted the lethality of small drones, if they are covertly forward deployed. There have also been important associated developments in the control and assessment of collected data. For example, the Ukrainians are developing small-data set AI software to enable more autonomous guidance, improved target recognition and post-mission analysis. To paraphrase an old dictum, 'numbers have a quality all of their own'. This is very much the case with UAVs. To give a sense of possible inventories that can be developed, Ukraine acquired from local and overseas sources 1,400 drones in just one three month 'dronation' drive.[137] Even these numbers are being exceeded and the Russian attacks on cities with around a 1,000 drones a day illustrate this point.[138] The takeaway is that large numbers of drones could be in any raid against naval forces and land targets, particularly in littoral waters.

The USN and the Royal Navy (RN) have recognised the need for cost-effective and technology appropriate counter-UAV systems, for operations against Houthi rebels off the Yemeni coast.[139] Such systems are expected to become standard armament in all warships and even merchant ships. The potential to deploy UAVs in larger numbers has been appreciated by several navies.[140] Examples are:

- **Brazil.** It is trialling UAVs onboard the helicopter carrier NAM *Atlântico* (ex HMS *Ocean*) The navy has previously operated the Insitu Scan Eagle RQ-1 system launched from a portable catapult in *Atlântico*.[141]
- **China.** The People's Liberation Army-Navy (PLA-N's) Type 76 amphibious ship will be UAV capable, while separately the 200 metre experimental aviation ship *Zhong Chuan Zi Hao* is trialling drone operations.[142]
- **Indonesia.** The Tentara Nasional Indonesia Angkatan Laut (TNI-AL), is exploring acquiring and converting the decommissioned aircraft carrier *Giuseppe Garibaldi* into an UAV carrier.[143]
- **Iran.** Its navy has commissioned the 41,000 tonne IRIS *Shahid Bagheri* with a capacity to embark both helicopters and Jas-313 multi-role drones.[144]

135 *Skeyton*, <https://skyeton.com/>.

136 H Sutton, 'Guide To Ukraine's Long Range Attack Drones', in *HI Sutton*, 2025, <http://www.hisutton.com/Ukraine-OWA-UAVs.html>.

137 'United 24', in *Ukranian Government*, <https://u24.gov.ua/dronation>.

138 T Zadorozhnyy, 'Zelensky sets 1,000-daily interceptor drones goal amid surging Russian attacks', in *The Kyiv Independent*, 25 July 2025, <https://kyivindependent.com/zelensky-sets-goal-of-1-000-interceptors-per-day-amid-surging-russian-drone-attacks/>.

139 R Ceder, 'US Navy hits drone with HELIOS laser in successful test', in *Navy Times*, 5 February 2025, <https://www.navytimes.com/news/your-navy/2025/02/04/us-navy-hits-drone-with-helios-laser-in-successful-test/>.

140 'Rise of flat-top drone carriers', in *Australian Naval Institute*, 5 April 2025, <https://navalinstitute.com.au/30790-2/>.

141 'Rise of flat-top drone carriers', in *Australian Naval Institute*, 5 April 2025, <https://navalinstitute.com.au/30790-2/>.

142 P Lyons & S Cheung, 'China's Type 076 Amphibious Carrier: What It Does and Why It Matters', in *The Diplomat*, 8 April 2025, <https://thediplomat.com/2025/04/chinas-type-076-amphibious-carrier-what-it-does-and-why-it-matters/>.

143 'Indonesia explores acquiring Italy's decommissioned aircraft carrier Giuseppe Garibaldi for naval drone operations', in *Army Recognition*, 2025, <https://armyrecognition.com/news/navy-news/2025/indonesia-explores-acquiring-italys-decommissioned-aircraft-carrier-giuseppe-garibaldi-for-naval-drone-operations>.

144 T Ozberk, 'Ukraine attacks Sevastopol Naval Base and Kerch Bridge with drones - Naval News', in *Naval News*, , 2023, <https://www.navalnews.com/naval-news/2023/07/ukraine-attacks-sevastopol-naval-base-and-kerch-bridge-with-drones/> [accessed 26 March 2024].

- **Türkiye.** In 2024 the Landing Helicopter Dock (LHD) TCG *Anadolu* (of the same class as the Adelaide class LHDs) conducted a trial with Baykar Bayraktar TB3 UAV, with the aircraft launching via the ski-jump.[145]
- **Portugal.** In 2022 Portugal ordered a 7,000 tonne multi-functional naval platform to be named NRP *D. João II*. The amphibious ship is designed to embark UAVs as well as helicopters and should commission in 2026.[146]

While questions remain about the utility of drone carriers and the performance of short-range drones in harsh maritime environments, growing international interest signals a clear trend. As maritime UAVs advance, drone carriers could offer a far cheaper way to achieve localised air control—a capability navies like the RAN currently lack.

Surface Warfare

Turning to surface warfare, in some respects this is the offensive side of the coin. From the latter half of the Cold War, the mainstay of the ADF's surface warfare capability was the Harpoon missile which could be launched from submarines, major surface combatants and three different RAAF aircraft types.

By the early 21st century, however, the range-limited sub-sonic missile had reduced lethality in the face of modern anti-ship missile defence (ASMD) systems. The RAN is now transitioning to a maritime strike capability with the medium-range Tomahawk, short-range range Naval Strike Missile and the shorter range Hellfire missiles embarked in the MH-60R helicopter. Whilst the Tomahawk and naval strike missile do not represent long-range capabilities, they do provide a step change in the RAN's lethality. In addition, the RAAF can deliver the Joint Strike Missile and other shorter-range ordnance. These significant improvements in capability now give either parity with or superiority over other Indo-Pacific navies.

As in the air domain, drones have also made their presence felt. Once again the Ukrainians, by dint of necessity and enterprise, have rapidly become leaders in the development of USVs in the course of the Russo-Ukraine war. The Ukrainian Navy has multiple types of USVs, that they have rapidly evolved. Two examples include the Sea Baby (48 knots, 1000km range, 850kg explosive) and the Magura class (42 knots, 800 km range, 1,000kg explosive) for a unit cost of about $USD250,000.[147] In the war so far, Sea Babies have damaged the Kerch bridge, a corvette and other smaller ships.[148] Magura V USVs, for their part, have sunk one corvette, one patrol ship and a landing ship. Notably, in a first for USVs, larger SAM fitted Magura VIIs have shot down a helicopter and two SU-30SM fighters.[149] Some navies are trialling medium and larger-sized USVs. They range in capabilities and missions, for example:

- **China.** The 58 metres, 500 tonnes, 40 knot *Orca* has a reported range of more than 4,000 nautical miles. It is designed to undertake anti-surface, anti-air and anti-submarine warfare (ASW) missions.

145 T Ozberk, 'BAYRAKTAR TB3 UCAV Completes Four Successful Autonomous Sorties Aboard TCG Anadolu', in *Naval News*, 25 April 2025, <https://www.navalnews.com/naval-news/2025/04/bayraktar-tb3-ucav-completes-four-successful-autonomous-sorties-aboard-tcg-anadolu/>.

146 J Binnie, 'DIMDEX 2024: Portugal orders Damen's new 'drone carrier'', in *Janes*, 7 March 2024, <https://www.janes.com/osint-insights/defence-news/sea/dimdex-2024-portugal-orders-damens-new-drone-carrier>.

147 'Naval Drones', in *United 24*, <https://u24.gov.ua/navaldrones>.

148 'Sea Baby', in *Wikipedia*, <https://en.wikipedia.org/wiki/Sea_Baby>.

149 T Zadorozhnyy, 'Ukrainian sea drones down 2 Russian Su-30 jets near Novorossiysk, military intelligence chief says', in *Kyiv Independent*, 4 May 2025, <https://kyivindependent.com/ukraine-sea-drone-downs-2-russian-su-30-jets-near-novorossiysk-budanov-says/>.

The USV is equipped with phased array radars and a vertical launching system (VLS) missile system. It can carry rockets, anti-ship missiles, air defence missiles and remote-control weapon stations.[150]

- **South Korea.** In 2025, the Republic of Korea Navy (ROKN) contracted Hyundai Heavy Industries to develop a concept design for a next-generation combat USV. The ROKN have suggested that it may establish a dedicated unmanned maritime command by the 2040s.[151]
- **Singapore.** The Republic of Singapore Navy (RSN) has in operational service a small number of 17 metre 'MARSEC' USVs, each armed with a machine gun for patrolling in Singapore's congested waterways.[152]
- **US.** The USN's programs for USVs are divided between the Large Unmanned Surface Vehicle (LUSV) and Medium Unmanned Surface Vehicle (MUSV). The USN wants to develop and acquire LUSVs and MUSVs as part of an effort to shift the Navy to a more distributed fleet architecture. This involves spreading the USN's capabilities over more hulls and avoids concentrating much of the fleet's overall capability into a relatively small number of high-value ships (i.e., a mix that avoids putting too many eggs into one basket). The larger USVs will have the ability to act as missile arsenal ships with warships able to expend the USV's missiles in an engagement.[153] The focus is still very much in experimentation with USV Squadron 1 a hub for this activity.
- **Australia.** While Australia is exploring small ISR USVs like the OCIUS Bluebottle,[154] it also plans to acquire a large optionally crewed surface vessel (LOSV) as part of its future combatant fleet in the 2030s. Details remain limited, but it is likely to be based on the US. LUSV program, equipped with 32 VLS cells and designed to operate alongside Hobart and Hunter-class ships.[155]

Undersea Warfare

In the Indo-Pacific region there has been a growing number of both conventional and nuclear-powered submarines among an increasing number of navies (see Table 1).

In terms of conventional submarine technologies there have been two notable propulsion developments. Chronologically, the first was the introduction of 'air-independent' propulsion (AIP) systems such as the Stirling engine. This technology is best employed in a patrol area and enables a submarine to remain submerged for extended periods without having to 'snort' to recharge her batteries. In the region some Indian, Japanese, Chinese, Pakistani and Singaporean boats incorporate AIP technology.

The second development is the transition from lead batteries to variants of lithium-ion batteries. The two most significant improvements are weight reduction and power density. A lithium-ion battery is approximately 55% lighter than a lead battery. In terms of power density, a lead battery develops 30-70

150 R Rahmat, 'Airshow China 2024: China debuts 500 tonne unmanned surface vessel', in *Janes*, 12 November 2024, <https://www.janes.com/osint-insights/defence-news/security/airshow-china-2024-china-debuts-500-tonne-unmanned-surface-vessel>.

151 'HD HHI wins landmark contract from Korean Navy for unmanned vessel', in *Korea Joongang Daily*, , 22 April 2025, <https://koreajoongangdaily.joins.com/news/2025-04-22/business/economy/HD-HHI-wins-landmark-contract-from-Korean-Navy-for-unmanned-vessel/2291192>.

152 G Arthur, 'Singapore USVs begin uncrewed patrols in busy waterways', Naval News, 7 February 2025, <https://www.navalnews.com/naval-news/2025/02/singapore-usvs-begin-uncrewed-patrols-in-busy-waterways/>.

153 R O'Rourke, *Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress*, Congressional Research Service, 25 March 2025, <https://crsreports.congress.gov/product/pdf/R/R45757>.

154 'Bluebottle Unmanned Surface Vessels (USV), Australia', in *Naval Technology*, , 2023, <https://www.naval-technology.com/projects/bluebottle-unmanned-surface-vessels-usv-australia/>.

155 Department of Defence, *Independent Analysis into Navy's Surface Combatant Fleet*.

watts/hour/kg,[156] whilst a lithium ion battery is ~300 watts/hour/kg.[157] Solid-state lithium ion phosphate batteries will be approximately 400 watts/hour/kg.[158] There had been some hesitancy to adopt lithium ion batteries in submarines because of concerns over their thermal stability, and indeed the now cancelled RAN Attack-class were to have had lead batteries, in part for this reason. In 2020, however, the Japanese submarine JS *Ōryū,* the eleventh boat of Sōryū-class, incorporated lithium-ion batteries which also replaced its AIP system. While the benefits of the newer batteries will be longer submerged endurance and higher speeds, specific performance benefits are not publicly available. Media reports on the forthcoming Korean Hanwha Ocean-class boats indicate their covert endurance will be three times that of a general diesel-operated submarine boat.[159]

In the Indo-Pacific region more countries have decided to acquire submarines, whilst those that have submarine arms are looking to modernise or expand them. Examples of the former are the Philippines and Thailand. Within the Indo-Pacific region only China, India, Russia and the US have nuclear propelled submarines, with Australia and possibly South Korea to follow suit. Beyond the Indo-Pacific region, Brazil is also actively pursuing nuclear-powered submarines, expecting to develop its first indigenously built nuclear-powered submarine in the early 2030s.[160] SSNs by virtue of their speed and endurance are well suited for offensive anti-surface and land attack operations. It is often forgotten, however, that one of their main roles during the Cold War was ASW. The former US Chief of Naval Operations, Admiral Arleigh Burke, in a chapter in *Problems of Australian Defence*, pointed out the importance of SSNs in the 'counter-submarine' role and wrote,

> The key element of anti-submarine warfare, then, is the conduct of offensive operations, attacking enemy units as close as possible to their points of origin, continuing to hunt down those which may reach the open sea or which were on station before hostilities began, destroying them as far from the defenders' lines of communication as possible.[161]

This approach arguably will remain valid in the 2030s, as it did sixty years earlier. The operating environment will, however, be much more challenging for SSNs with the advent of improved space-based, air and undersea surveillance systems, conventional submarines with much shorter indiscretion rates, and the growing presence of USVs. As in the other warfare domains there is a range of uncrewed underwater vehicles (UUV) that are either entering service or being trialled. The following gives a flavour of the initiatives:

- **Australia.** In 2022 Australia contracted Anduril Industries to provide three 'Ghost Shark' extra large UUVs by 2025.[162] The concept is for these to be deployed from the support ship ADV *Guidance* as well

156 'Acid Battery', in *Wikipedia*, <https://en.wikipedia.org/wiki/Lead%E2%80%93acid_battery>.

157 'Thunder and Energy', <https://thundersaidenergy.com/downloads/lithium-ion-batteries-energy-density/#:~:text=(in%20mols).-,Today's%20lithium%20ion%20batteries%20have%20an%20energy%20density%20of%20200,per%20kWh%20of%20energy%20storage>.

158 'Solid State Battery', in *Wikipedia*, <https://en.wikipedia.org/wiki/Solid-state_battery>.

159 J Choi, 'Hanwha Ocean Attempts Korea's First Submarine Lithium-ion Battery Installation', in *Business Korea*, , 2024, <https://www.businesskorea.co.kr/news/articleView.html?idxno=208807>.

160 'Brazil's Nuclear-Powered Submarine Project Reaches New Milestone', in *Naval News*, , 10 October 2023, <https://www.navalnews.com/naval-news/2023/10/brazils-nuclear-powered-submarine-project-reaches-new-milestone/>.

161 Burke, A.A., "Anti-Submarine Warfare - A Comment", Gelber, H.G., *Problems of Australian Defence*, Oxford University Press, Melbourne, 1970 ,128-129.

162 'Ghost Shark', <https://en.wikipedia.org/wiki/Ghost_Shark_(submarine)>.

as being air transportable via C-17 aircraft. The Ghost Shark has a ten-day endurance with an operating floor of 6,000 metres. Its missions will include persistent ISR and strike.[163]

- **China.** For employment in the South China Sea, China is developing a suite of anti-submarine systems, which collectively are referred to as the "Underwater Great Wall."[164] The program has five main elements: they are passive seabed arrays, active sonars, UUVs, USVs and space based systems Passive arrays include Superconducting Quantum Interference Devices (SQUIDs) to detect the extremely weak magnetic fields of submarines out to a range of about 20kms.[165] There are also trials with laser-equipped satellites to detect submerged submarines, reportedly to a depth of 160 metres.[166]
- **UK.** The RN has introduced a range of autonomous mine countermeasures (MCM) systems into service. It has also commissioned the 4,600 tonne HMS *Stirling Castle* to act as a 'mother ship' for these systems.[167]
- **US.** The US is developing a suite of UUVs. The largest UUVs, classed as XLUUVs, are those of the Orca program. The first batch of six Orcas has started to enter service. These battery/diesel hybrid powered boats will be able to remain at sea for some months. They displace eight tonnes, have a length of 26 metres and maximum speed of eight knots. Their initial payload would be mines. In contrast, the 16 metre Echo Voyager UUV has a surveillance mission. It also has battery/diesel hybrid propulsion enabling it to remain at sea for six months.[168] The US also has a range of smaller torpedo tube launch and recovery (TTL&R) UUVs. In 2024 USS *Delaware* was the first US submarine to deploy with UUVs. They included the Remus UUV, which is capable of surveillance and MCM missions.

163 'VESSEL REVIEW | Ghost Shark – Royal Australian Navy's newest multi-mission autonomous vehicle', in *Baird Maritime*, 2025, <https://www.bairdmaritime.com/security/naval/unmanned-naval-systems/vessel-review-ghost-shark-royal-australian-navys-newest-multi-mission-autonomous-vehicle>.

164 Weichert, B, 'China Wants to Rule the Seas—It Claims to Have the Most Advanced Technology to Spy on American Subs'.in Popular Mechanics, 2025, <https://www.popularmechanics.com/military/weapons/a63602193/china-submarine-detection/>.

165 S Sinha, 'China unveils submarine detection tech with 12-mile underwater range', in *Interesting Engineering*, 20 September 2024, <https://interestingengineering.com/military/china-submarine-underwater-surveillance>.

166 S Sinha, 'China unveils submarine detection tech with 12-mile underwater range', in *Interesting Engineering*, 20 September 2024, <https://interestingengineering.com/military/china-submarine-underwater-surveillance>.

167 'RN's new autonomous anti-mine system', in *Australian Naval Institute*, 21 March 2025, <https://navalinstitute.com.au/rns-new-autonomous-anti-mine-system/>.

168 R O'Rourke, *Navy Large Unmanned Surface and Undersea Vehicles: Background and Issues for Congress*, US Congrssional Research Service, 19 December 2024, <https://sgp.fas.org/crs/weapons/R45757.pdf>.

Table 1: Indo-Pacific Submarine Forces [169]

Country	2005	2025	2030	2035
Australia	6 SSG	6 SSG	5-6 SSG	2 SSN 4 SSG
Bangladesh	0	2 SS	2 SS	2 SS
Canada	4 SS	4 SS	4 SS	1+12 SSP 2-3 SS
China	1 SSBN,1 SSB, 4 SSN, 8 SSG, 45 SS	6 SSBN, 6 SSN 48 SS	unknown	unknown
India	16 SS	3 SSBN,1 SSN 16 SS	4 SSBN 24 SS	4 SSBN, 1-2 SSN 24 SS
Indonesia	2 SS	4 SS	4	4
Japan[170][171]	16 SS	24 SS[#]	24 SS	24 SS
Korea, North	51 SS 260 Midget	2 SSB, 20 SS 40 SS Coastal 21 Mini SS	unknown	unknown
Korea, South	9 SS 11 Midget	3 SSB 19 SS[¤]	3 SSB 19 SS	3 SSB 19 SS
Malaysia	0	2 SS	2 SS	4 SS
Myanmar	0	2 SS 1 midget	unknown	unknown
Pakistan	8 SS, 3 Midget	8		
Philippines	0	0	1 SS	2 SS
Russia[172]	5 SSBN, 7 SSN 3 SS	5 SSBN, 7 SSN 3 SS	unknown	unknown

169 Table 1 is based on data from The World Bank: 'Military Expenditure'.
The figure for Russia is from Korsunskaya and Bryanski.
Taiwan figures from 'The World Factbook: Taiwan', in *CIA*, 2025, <https://www.cia.gov/the-world-factbook/countries/taiwan/>.

170 'Japan Submarine Capabilities', in *Nuclear Threat Initiative*, 2024, <https://www.nti.org/analysis/articles/japan-submarine-capabilities/>.

171 JMSF maintains 22 operational subs & 2 training boats. 12 boats are AIP fitted.

172 Russian Pacific Fleet 12 SS are AIP fitted.

Country	2005	2025	2030	2035
Singapore	4 SS	4 SS	6 SS	6 SS
Taiwan	4 SS	4 SS	6 SS	~ 7 SS
Thailand	0	0	Poss. 3 SS	Poss. 3 SS
United States[173]	14 SSBN 54 SSN	14 SSBN 54 SSN	13 SSBN 57 SSN	12 SSBN ~60 SSN
Vietnam	2 Midget	6 SS	6 SS	6 SS

In addition, smaller UUVs are entering service that can be deployed from submarines through either torpedo tubes, or as in the case of the Swedish A-26 Blekinge Class submarines through a larger flexible payload lock. Some of these USVs are controlled via fibre-optic links and some are for surveillance and mining tasks. Importantly they allow the parent submarines to remain covertly at distance from a focal point.

A potentially important UUV role will be both the cutting of, or the protection of, vital undersea cables. These submarine cables account for over 99% of intercontinental data traffic.[174] Actions allegedly by Russia's shadow fleet in the Baltic and Chinese vessels off Taiwan highlight the vulnerability of these systems and the potentially asset-intensive measures needed to protect them. There has been a range of responses in the face of a growing number of submarines and USVs/UUVs in the Indo-Pacific region. Notably in Australia, Blue Ocean Marine Tech Systems are developing an AI enabled autonomous UUV for persistent surveillance of undersea cables.[175]

Impact of the Cyber Domain

Early naval theorists were often criticised for treating the sea in isolation, overlooking how other domains shape maritime warfare. Sir Julian Corbett, who coined the term 'maritime strategy' - was an exception, stressing the relationship between land power and maritime power. In 2025, the interdependence is even starker: land-based missiles and uncrewed aerial vehicles have defined recent campaigns in the Black and Red Seas, while cyber and space capabilities are now integral to maritime command, sensing and targeting. Any effective contemporary maritime strategy must therefore account for the full spectrum of multi-domain effects.

From the early 2000s, however, with the demise of the Soviet threat and the even greater reliance on satellites, not only for communications, but also for geo-location (through GPS) and command and control, there was a doctrinal change to operate overtly as a standard operating practice. This approach, together with a much higher-level reliance on information and communications technology (ICT) at the tactical, operational and strategic level has greatly increased the importance of the cyberspace. They increased the importance of cyber security to allow for the unfettered use of the electronic spectrum and they also offered opportunities to offensively target an enemy's command systems, sensors and weapons that rely on electronic emissions.

173 USN total sub force.

174 A Mauldin, 'Do Submarine Cables Account For Over 99% of Intercontinental Data Traffic?', 2023, <https://blog.telegeography.com/2023-mythbusting-part-3>.

175 'Blue Ocean Marine Tech Systems Announces Maritime Partnership to Combat Subsurface Threats', in *Blue Ocean Marine Tech Systems*, 2025, <https://www.blueoceanmts.com/news/maritime-partnership>.

In Australia, these developments are reflected in making the Australian Signals Directorate a statutory Government agency in 2013 and the creation of Cyber Command within the Department of Defence in 2024.[176] In the maritime domain, cyber vulnerabilities of civilian and naval shipping and maritime infrastructure are increasingly exploited. In 2023, Australia launched its 2023-2024 Australian Cyber Security Strategy, which highlights the need to strengthen Australia's maritime cyber security settings, and a focus on a reform agenda tailored to this.

Significantly, in the week before Australia released the 2023 national cyber security strategy, its largest port operator, DP World, was hit by a cyber attack. DP World moves about 40 per cent of Australia's freight. As a result of the cyber attack, which capitalised on a known vulnerability, DP World was forced to shut down operations for about 24 hours, causing 30,000 containers to be stacked up across ports in Sydney, Melbourne, Brisbane and Perth. Although operations resumed after 24 hours, this could have had a dramatic impact on Australia's trade, about 98% of which travels through ports.

Incidents on Ships

The impacts of cyber attacks in the maritime domain are not restricted only to landward facilities, they impact almost all aspects of the maritime industry. The DNV 2023 Maritime Cyber security report stated that according to their research:

> more than six in ten industry professionals expect cyber-attacks to cause ship collisions (60%) and groundings (68%) within the next few years. More than 76 per cent believe a cyber incident is likely to force the closure of a strategic waterway.[177]

Marine cyber risk consultancy CyberOwl's chief executive was quoted in 2021 as saying: 'At the moment we are identifying one new incident a day on average, to give some sense of the scale of this'. Things have likely deteriorated from this point. Reported examples of Cyber attacks include:

- An incident in which bunker surveyors were given access to the computers in an engine control room so they could print documents from a USB stick, which introduced a virus to that system.
- In another incident, a vessel transiting the Strait of Singapore lost two electronic chart display and information systems (ECDIS) navigation networks at the same time on account of a virus and had to fall back on paper charts.

The increasing digitisation of shipping and the rapid expansion of once air gapped networks , being connected to the internet through digitisation of systems and processes is rapidly increasing the risk of cyber attacks from both state and non-state actors.

As ICT and operational technologies (OT) have become critical to safe shipping operations through automation or digital processes, all aspects of the maritime industry have become increasingly vulnerable to cyber attacks.

This threat is further compounded by the tendency of ships and offshore and onshore infrastructure in the maritime industry to operate on legacy software – making them even more vulnerable. A 2022 report by the Australian Strategic Policy Institute found that:

> Various maritime-specific cybersecurity incidents have occurred that have resulted in the malfunctioning of critical control systems, in ships and onshore facilities; the exfiltration of sensitive data that's monetised by criminals, including pirates; the manipulation of systems to allow for trafficking and smuggling activities

176 'Joint Capabilities Group', in *Department of Defence*, <https://www.defence.gov.au/about/who-we-are/organisation-structure/joint-capabilities-group>.

177 Christian Parker, 'Maritime professionals warn of insufficient investment in cyber security as risks escalate in the era of connectivity', in *DNV*, 6 June 2023, <https://www.dnv.com/news/2023/maritime-professionals-warn-of-insufficient-investment-in-cyber-security-as-risks-escalate-in-the-era-of-connectivity-244153/>.

> to occur unnoticed; commercial and military espionage, for instance of ship designs, lading and trading routes; spoofing of navigation systems; and manipulation of identification transmissions.[178]

The maritime sector is thought to lag behind other comparable industries in its level of cyber security maturity. Although this isn't unique to the maritime industry, and is reportedly common practice across many industries, the impacts on the maritime industry are significant, with potential for safety and security threats to manifest.

GPS Interference

The maritime cyber security risk is not just contained to impacting digitised systems onboard ships, or in offshore or onshore facilities. Significant maritime cyber security risks exist through GPS interference, or GPS spoofing. This can take many forms, including interference with GPS in a specific area to interrupt shipping. In 2021 the US issued a maritime advisory about GPS interference stating that,

> Multiple instances of significant GPS interference have been reported worldwide in the maritime domain. This interference is resulting in lost or inaccurate GPS signals affecting bridge navigation, GPS-based timing, and communications equipment. Satellite communications equipment may also be impacted. Over the last six months, areas from which multiple instances have been reported include the eastern and central Mediterranean Sea, the Persian Gulf, and in the vicinity of the Suez Canal.[179]

In addition, there have been cases of onboard manipulation of system by shippers to conceal their illicit activities. It was reported that in 2018 an oil tanker spoofed its GPS data to conceal from authorities a mid-sea transfer of petroleum to a North Korean ship, thereby circumventing UN sanctions. The same thing reportedly occurred with an Iranian ship in 2013 off the coast of Malaysia. These tactics are being employed to support a large spectrum of blue crimes, including illegal, unreported and unregulated fishing.

Impact of the Space Domain

The space domain now permeates every layer of maritime operations, turning what was once a relatively self-contained naval battlespace into a vertically integrated, multi-domain contest for information advantage. Persistent, near-real-time satellite ISR shrinks oceanic distances, allowing even medium powers to cue long-range fires with precision and to hold warships at risk far beyond the horizon. Positioning, navigation and timing (PNT) services delivered via global navigation satellite systems have become indispensable for precision strike, uncrewed systems, and routine navigation alike; yet their vulnerability to jamming or spoofing exposes a critical Achilles heel. Consequently, modern maritime strategy must treat assured access to space-enabled ISR and PNT as a prerequisite for sea control and sea denial, while simultaneously investing in passive deception, alternative PNT solutions and electronic-warfare resilience to blunt an adversary's space-based sensing and targeting advantage.

The race for advantage in space is reshaping how navies and air forces share tasks. Weapons that can knock out satellites now come in many forms, so fleet commanders can no longer assume they will always have satellite maps, communications and timing data during a fight. Gigantic commercial networks such as Starlink now carry much of the ADF's traffic, which means Defence must work closely with industry and update the rules that protect these shared systems. Building space tools through Australia, UK and US (AUKUS) Pillar II can help Australia make its own decisions and avoid relying on a single fragile link, but only if government also hardens ground stations, finds more launch options and bakes space thinking into every naval plan. In short, from orbit to ocean, control of space is both the backbone of sea power and a battleground.

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178 H Le Thu & B Hogeveen, *UK, Australia and ASEAN cooperation for safer seas*, ASPI, 31 March 2022, p. 15, <https://www.aspi.org.au/report/uk-australia-and-asean-cooperation-safer-seas/,>.

179 'Maritime Advisory Issued Concerning GPS Interference', in *Seafarers International Union*, , 22 March 2021, <https://www.seafarers.org/maritime-advisory-issued-concerning-gps-interference/>.

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Enclosure 2 to *AMS 2035*

Naval Studies Group Primer No. 2

Maritime Strategy

By Dr John Reeve

This primer describes the nature of maritime strategies, including the broader components such as the civil maritime sector, industry and workforce.

The nature of a maritime strategy

Strategy as a word is often employed loosely, invoking military theory, planning or command: issues which of course can overlap. Strategy is about the making of choices involving the calculation of risks conditioned by contexts. Maritime strategy can be defined as 'The comprehensive direction of all aspects of national power to achieve strategic goals by exercising some degree of control at sea.'[180] For the nation state these goals are essentially the protection of territory (terrestrial and maritime), population, resources, prosperity and interests. Today maritime strategy is pursued within the dominant international geostrategic environment. The oceans are the key zone of geopolitical competition. 85 per cent of global commerce depends on sea-based trade and 90 per cent of global data is carried by undersea cables.[181] These shaping forces are centred in the Indo-Pacific region.

True maritime powers are born as much as made. Their geography is complemented by creative integration of commercial, industrial, financial, administrative, human and naval resources, all facilitated by liberal societies and consensual governments.[182] Australia is a natural maritime power. With an insular geography in a predominantly maritime region, it has deep water ports, ready access to three oceans and pivotal sea lanes, and a defensive position at vast distance over blue water. Its maritime territory, one of the world's largest with extensive natural resources, is greater than its landward. It is territorially satisfied with no land frontier to defend. Its economy is highly dependent upon seaborne trade.[183]

According to Rear Admiral Richard Hill, in his 1986 treatise *Maritime Strategy for Medium Powers*, a medium maritime power falls between the insufficiency of a small power and the strategic self-sufficiency of a superpower. Australia can be placed in this category. As such, it needs sovereign control and prioritises territorial integrity, political independence, and vital interests such as trade and access. The strategic toolbox of a medium maritime power includes balance of power diplomacy, strategic deterrence, and alliance with a superpower to prevent domination by another – the Australia, New Zealand, United States Treaty (ANZUS), for example, in Australia's case.[184] With limited military force, and having to calculate risk and security with care, a medium power should assiduously study geopolitics, history, strategy, and the military capabilities of others.

The components of a maritime strategy are diverse. The American naval historian and geo-strategist, Rear Admiral Alfred Thayer Mahan, famously propagated an analysis of sea power as dependent upon a variety of geographical, demographic, cultural and political factors.[185] Professor Geoffrey Till, in our own day, has elucidated a modern navy's requirements and its relationship to the society it serves.[186] A naval policy must be adopted at the political level and the public persuaded to resource it. It involves shipbuilding capacity,

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180 *Australian Maritime Doctrine. RAN Doctrine 1*, second edition, 2010, 199.
181 Jones, B D, *To Rule the Waves*, 4-5.
182 Till, *Seapower. A Guide for the Twenty-First Century*, 110ff.
183 Australian Naval Institute and UNSW Naval Studies Group, *Protecting Australian Maritime Trade.*
184 Hill, *Maritime Strategy for Medium Powers*, 10-14, 20-4, 67-9, 157-8.
185 Mahan, *The Influence of Sea Power Upon History 1660-1783*.
186 Till, *How to Grow a Navy. The Development of Maritime Power.*

access to technology, a wider defence industrial base to produce systems, sensors and weapons, merchant shipping and seamen for logistical support and strategic lift, an infrastructure of ports, dockyards and bases, and civilian and naval personnel to design, produce, and equip the fleet and to maintain, supply, and man it, as well as run an entire military organisation. The navy, which serves with other joint forces as the sharp end of a maritime strategy, is the outcome of a partnership between government, industry, science, the military, and the civil maritime community. A navy contributes to an economy not simply in protecting seaborne trade, but in promoting industrial growth and technological development. Australians have never really appreciated the material and human requirements of a capable and independent navy.[187]

Naval force design should be strategically driven. This includes hedging against the unforeseen, for it is rare to get (as the United States Navy (USN) did during World War II) the war one expects. Hence navies traditionally lean towards having a balanced fleet. The alternative, a 'focused' fleet, is necessarily limited in capabilities and therefore in the situations it can address.[188] A balanced fleet maximises options within the available resources. This is particularly necessary for a highly maritime power such as Australia, especially given strategic volatility and uncertainty. The needs of a medium power place an extra premium on balance and flexibility. Great powers, more able to absorb strategic shocks, can afford specialisations such as multiple aircraft carriers and massed submarine forces. A medium power needs a range of capabilities, aimed at force multiplication, employing technological leverage, and adaptable to different levels of conflict. A medium power also needs two navies in one: a force tailored to national needs while able to co-operate with a major ally.[189] Interoperable systems and complementary capabilities are valuable commodities in an alliance context.

History, theory and the elements of a maritime strategy

Strategic theory can be valuable in strategic analysis and discussion. The best strategic theory distils the hard-won lessons of historical experience, gives them order, and provides a general guide to strategic thought and action. As the great military theorist Carl von Clausewitz perceived, theory provides no detailed manual for particular situations. It ensures that one need not start afresh and repeat past errors. It enables the identification of key issues in the present.[190] In the early 2000s, for example, the tactics employed in sanction enforcement by the Maritime Interception Force in the North Arabian Gulf under Royal Australian Navy (RAN) commanders were heavily influenced by the British blockade tactics against France two centuries earlier.[191] Theory provides a shared language amongst military professionals. It can also be invaluable in discussing strategic issues with politicians and explaining them to civilians. Maritime strategic theory is particularly useful given the very different operational environment of the sea and its interaction with changing technology. Modern naval warfare arrived at the beginning of the sixteenth century with the advent of the modern warship: a strike platform with trans-oceanic reach, which it remains today. It created the world of global geopolitics in which we still live. The sea remains the element covering most of the earth's surface, still providing unrivalled strategic mobility and commercial communication as the most efficient means of heavy transport. Such fundamentals give historical experience and strategic theory enduring relevance.

The classical maritime strategic theorists, Mahan and the British historian Sir Julian Corbett, who wrote in the late nineteenth and early twentieth centuries, have renewed relevance today with the acceleration of geopolitical rivalries and the build-up of conventional blue water naval forces. Technological change can alter the context of maritime strategy, as when mines, torpedoes and submarines complicated littoral operations for navies prior to 1914. But strategic continuity interacts with change.

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187 Goldrick, 'A Fleet not a Navy: Some Thoughts on the Themes'; Stevens, D (ed.), *The Royal Australian Navy. A History*, 295-6.
188 Till, *How to Grow a Navy. The Development of Maritime Power*, 233.
189 Hill, *Maritime Strategy for Medium Powers*, 199-200.
190 Clausewitz, *On War*, 141, 578.
191 Information from the late RADM James Goldrick, RAN.

Mahan, in a series of books from 1890 onwards, created a discourse about sea power, its nature, social context, and historical influence. As an advocate for a blue water US Navy, he emphasised battle fleet strategy leading to command of the sea. A man of the high imperial era, he espoused the accumulation of state power based upon triangular interaction of naval, commercial and colonial activity. He recognised that the sea is a great global highway. One of his key insights was that a state without a land frontier is better placed to pursue sea power.[192] In such ways his ideas remain relevant today despite changes such as decolonisation and the development of international legal regimes at sea. Mahan's writings appear to have been influential in China as it has developed its maritime power.[193]

Corbett, in 1911, published *Some Principles of Maritime Strategy* and it remains the classic exposition of the subject.[194] Mahan's and Corbett's ideas are more consistent with each other than often thought.[195] Corbett's key insight was that maritime strategy revolves around lines of communication and not, as in land warfare, control of territory.[196] Command of the sea is about control, use and denial of these lines of communication. Such command, often local or temporary, is usually in dispute. The role of the fleet is to support diplomacy, protect commerce, and support land operations, and to act against the enemy's capacity in all these areas. He saw economic warfare as the primary instrument of maritime strategy against continental states.[197] Corbett appreciated the role of the defensive, as well as the offensive, in naval warfare. He perceived how maritime strategy could be a tool of discretionary statecraft, allowing participation in limited conflict or limited participation in unlimited war. The classic form of limited warfare was blockade, something consistent with Australian doctrine.[198] He advocated the British way of war – maritime, limited, joint and in coalition, and believed in peace through deterrence. Corbett's maritime strategy, based on the long sweep of British naval history, is for that reason applicable to greater and lesser powers alike. It is particularly applicable to a maritime power such as Australia. Like Britain, Australia is dependent on seaborne trade, and engaged in alliance and balance of power diplomacy. Its priorities are deterrence of conflict, home defence and the safety of the sea lanes. Its preferred way of war is to fight offshore, in coalition, with joint forces and limited power projection. Despite technical developments, contemporary maritime strategy is still largely built upon classical theory.

Navies have long been well suited to the employment of graduated force. Today it is possible to conceive of a trinity of naval roles: diplomatic, constabulary and military, unified by the use of the sea.[199] Naval diplomacy, through presence, can involve coalition building and coercion.[200] Constabulary roles can include policing of illegal fishing and migration, counter-piracy operations, and dealing with grey zone warfare such as sabotage. Constabulary capability is particularly useful for medium powers with a vested interest in a rules-based order.[201]

At the war-fighting level, with the possible exception of the US Navy, complete command of the sea is no longer feasible. Navies today see sea control as the key, definable as 'the condition that exists when a country has the freedom of action to use an area of sea for its own purposes for a sustained period of time, and, if necessary, deny its use to an adversary'.[202] Sea control can be achieved by decisive battle, blockade of an enemy fleet, or the more defensive approach of a fleet-in-being.[203] Wider sea control might be achieved by a major power and

[192] Reeve, 'Mahan, Corbett and Modern Maritime Strategy'.
[193] Holmes and Yoshihara, *Chinese Naval Strategy in the 21st Century: The Turn to Mahan.*
[194] Corbett's *Some Principles of Maritime Strategy* was republished in 1988 in an edition edited by Eric Grove.
[195] Hattendorf, *Naval History and Maritime Strategy: Collected Essays*, 86-7; McCranie, *Mahan, Corbett and the Foundations of Naval Strategic Thought*, 247-55.
[196] For a convenient summary of Corbett's ideas see Reeve, 'Sir Julian Corbett (1854-1922): His Place Among Maritime Strategists'.
[197] Lambert, A, *The British Way of War. Julian Corbett and the Battle for a National Strategy*, 205.
[198] *ADF Maritime Power*, 2025, pp.71, 87.
[199] Booth, *Navies and Foreign Policy,* Chapter 1.
[200] Till*, Seapower. A Guide for the Twenty-First Century*, 366.
[201] Hill, *Medium Power Strategy Revisited*, 5.
[202] *ADF Maritime Power*, 2025, p.62.
[203] Till, *Seapower. A Guide for the Twenty-First Century*, Chapter 7.

exercised by its allies. Local sea control might be achieved and exercised by a medium power such as Australia.[204] The key application of sea control is the use and denial of sea lines of communication (SLOC). Protection of sea transport is best executed in coalition with allies and partners, as during the two world wars, given the mutual interests and long distances usually involved. Sea denial, using maritime interdiction operations to prevent an enemy using the sea for his own purposes, might be conducted, for example, in defence of national territory or deployed forces. Sea denial is, like sea control, relative in time and place.[205] History shows that sea denial, when not a function of dominant sea control, will fail, as did Japanese strategy in the southwest Pacific during World War II.[206] Sea control also enables power projection ashore, in the form of joint operations or strike warfare.

A number of Australians have interpreted the canon of strategic thought through a national lens. These include Commodore Alan 'Rocker' Robertson and Rear Admiral James Goldrick, who wrote in the 1990s and early 2000s, from their practitioner's perspectives, *Centre of the Ocean World: Australia and Maritime Strategy* and the first iteration of *Australian Maritime Doctrine* respectively.[207] Commodore Sam Bateman, often in collaboration with Professor Anthony Bergin, advanced Australian maritime strategic thought in a broader regional context.[208] Through this accumulated scholarship, there is a more widespread appreciation of concepts such as sea supremacy, sea control and denial, deterrence and blockade, and of how they can be applied in a coherent maritime strategy.

The benefits of a guiding strategy

Since Federation in 1901, Australia's maritime strategy has been the product of competing demands and tensions. Some of these factors, such as the influence of imperial defence policy or superpower competition, have had grand strategic implications.'[209] There has also been the abiding issue of developing a fit-for-purpose maritime strategy, executed by Australia's maritime forces, in the face of inevitable fiscal and personnel constraints. In the different iterations of Australia's maritime strategy, sometimes the strategy and its underpinning force structure have fallen short due to insufficient resources as well as inappropriate policy.

The acquisition of a fleet unit, centred on the battlecruiser HMAS *Australia* (pictured above), by the RAN in 1913 and its service in World War I saw an alignment of strategy and force structure which has not been bettered in the national story. A maritime strategy for an island nation, dependent on maritime trade, was fused with a conception of trans-oceanic warfare which was the brainchild of Sir John Fisher, the professional head of the Royal Navy, assisted by Corbett according to his own ideas.[210] Australia gained the independent navy it sought as part of collective naval defence of the British Empire. Powerful within the region, the force could be deployed in local, regional or distant waters.[211] When tested in conflict, it served as intended, deterring the German East Asiatic Cruiser Squadron from approaching Australian waters in 1914.[212] Its other roles included power projection against German bases in the Pacific, escorting the First AIF troop convoy across the Indian Ocean, and serving as part of the imperial battle force in the North Sea. This was the holistic assertion of blue water maritime strategy by a tailored force. The RAN's wartime role vindicated the 1909 imperial strategy and the fleet unit concept. This strategy-driven approach to capability development was highly effective in terms of both utilisation of resources and successful outcomes.

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204 Commonwealth of Australia, *National Defence Strategy 2024*, 39.
205 Till, *Seapower. A Guide for the Twenty-First Century*, 196.
206 Reeve, *Maritime Strategy and Defence of the Archipelagic Inner Arc*.
207 Robertson, *Centre of the Ocean World: Australia and Maritime Strategy*; *Australian Maritime Doctrine. RAN Doctrine 1*, first edition, 2000.
208 See for example Bateman and Bergin, *Sea Change: Advancing Australia's Ocean Interests*.
209 There is a school of thought that only great powers need grand strategy. But it is commonly held that the concept is relevant to any state or nation. Balzacq and Krebs (eds), *The Oxford Handbook of Grand Strategy*, 9-10
210 Lambert, A, *The British Way of War. Julian Corbett and the Battle for a National Strategy*, 197-201, 223.
211 Lambert, N, 'Sir John Fisher, the Fleet Unit Concept, and the Creation of the Royal Australian Navy'.
212 Stevens, '1914-1918: World War I', 33.

World War I also demonstrated how, by their nature, maritime campaigns are always potentially global. The RAN had to be able to contribute to this effort, often some distance from Australia, as well as provide for coastal maritime defence. Dr David Stevens wrote of the subsequent interwar period: 'The nation's greatest vulnerability continued to be its seaborne trade and by protecting shipping and supporting imperial forces the RAN was making the most effective contribution to Australian security.'[213]

Australia between the wars lacked a coherent maritime strategy for, and adequate investment in, its national defence. Sheltering beneath the assurances of an overstretched imperial power, its minimal cruiser force was insufficient to protect national territory and trade when war broke out in the Pacific. The failure of the Singapore strategy, in terms of non-arrival of sufficient British naval power, with the loss of Malaya, the fall of Singapore, and Allied defeat in the Java Sea, left Australia exposed to attack. It was saved by distance and Japanese strategic over-extension, as well as the presence of United States (US) forces.[214] Australian governments, since the 1920s, had promoted industrial and technological development to the point where self-reliant mobilisation could occur.[215] A national wartime shipbuilding effort, co-operation with the Royal Australian Air Force (RAAF), and RAN roles in protection of shipping, fleet actions and amphibious warfare within an alliance context all brought force structure and strategy into effective alignment.[216]

During the Cold War, when it acquired carrier aviation, the RAN's primary task was trade protection and anti-submarine warfare in the event of general conflict with the Soviet Union. The Australia, New Zealand and Malaya Agreement, (ANZAM) ANZUS Treaty and the Radford-Collins Agreement involved a focus on Southeast Asia and the Indian Ocean. This blue water orientation was combined with expeditionary wars in Korea, during the Malayan Emergency and Indonesian Confrontation, and in Vietnam. The RAN successfully bridged these missions, aided by a broad and flexible force structure, operating in conjunction with Commonwealth and US allies.[217] Following Vietnam and British withdrawal from Southeast Asia in the early 1970s, Australia moved towards self-reliance within an alliance context. The Defence of Australia (DOA) strategy of the 1980s, emphasising denial in the northern approaches, provided a policy bridging home defence and wider engagement. It allowed for Southeast Asian commitments under the Five Power agreement, naval deployments to the Northwest Indian Ocean following the Soviet invasion of Afghanistan, and participation in the Gulf and Iraq wars. It was however an essentially continental strategy for a maritime nation and therefore reactive, rather than proactive, in wider context. The surface navy was tied to land-based air cover after the loss of its carriers. Power projection into the Pacific and defence of seaborne trade were problematic.[218] The DOA strategy had its internal logic, but rested on an overstretched force structure and was a mismatch with the maritime environment.

After winning the Cold War, the US and its allies enjoyed general control of the sea and freedom to project power ashore, adopting a global expeditionary strategy. Australian forces participated in the Gulf sanctions blockade against Iraq, the long wars in Iraq and Afghanistan, peacekeeping operations inter alia in East Timor and the South Pacific, and counter-piracy and counter-terrorism activities in the Western Indian Ocean, as well as maritime constabulary operations closer to home.[219] The RAN's force structure was adequate, given its alliances, in these essentially permissive strategic environments. The last decade has however seen the acceleration of great power competition, particularly in the Indo-Pacific region, with the growth of force

[213] Stevens, 'The Royal Australian Navy and the Strategy for Australia's Defence, 1921-42', 77.
[214] Sears, '1929-1939: Depression and Rearmament', 92-4, 97-8; Stevens, 'The Royal Australian Navy and the Strategy for Australia's Defence, 1921-42'.
[215] Ross, *Armed and Ready*, xiii-xvi, 432-3. There is evidence that Australian war-making capacity by 1942 encouraged the Imperial Japanese Army to reject the Navy's proposal for invasion of the continent. Ross, *Armed and Ready*, 408-18.
[216] Goldrick, '1939-1941: The War Against Germany and Italy' and '1941-1945: The War Against Japan'.
[217] Cooper, '1945-1954: The Korean War Era', 162-4, 178-9; Grey, 'The Royal Australian Navy in the Era of Forward Defence, 1955-75'.
[218] Jones, P.D., '1972-1983: Towards Self Reliance' and '1983-1991: A Period of Change and Uncertainty', 212-14, 240-2; Woodman, 'Defending the Moat: Maritime Strategy and Self-Reliance'.
[219] Goldrick, 'Maritime Sanctions Enforcement Against Iraq, 1990-2003'; Spurling, '1991-2001: The Era of Defence Reform', 290-3.

structures designed for conventional maritime warfare. The need for Australia to participate in maritime coalitions and to protect sea lines of communication (SLOC) has coincided with the block obsolescence of its limited surface and submarine forces. Plans for replacement and expansion have been adopted in the context of a national defence strategy emphasising local and regional concerns.[220]

Australia has best aligned maritime strategy and force structure when combining considered planning, adequate investment, and full engagement with its maritime environment. It came closest to disaster, after neglecting all three, in 1942 – the only moment in national history, and since European settlement, when Australia and its allies lost control of the sea in the northern approaches to the continent. Favourable strategic outcomes have often depended on the flexibility of naval capabilities, the commitment and calibre of naval people, the leveraging of technology, and the role of allies. Alliances have, in turn, been sustained by a residual naval-maritime strategic culture and appreciation of a global maritime strategic framework.[221]

Understanding capabilities and limitations

A maritime strategy must be informed by the limits of policy and force structure. Such limits are of various kinds: geo-strategic, diplomatic, international legal, domestic political, human, economic, technological, but above all fiscal and material. The level of resources which a government can devote to maritime forces will ultimately determine a maritime nation's strategic shape and weight. A medium maritime power must build and maintain its forces within such constraints. While it may seek both quality and quantity, this is unwise. Its priorities, imposed by the discipline of strategic thought, choice, and risk management, are versatility and adequacy. It should not design its forces narrowly for one conflict scenario.[222] Allies are indispensable in easing the tension for a medium power between resources and possible strategic aspirations. The price of alliances may be paid in various currencies: strategic position, basing, communications, intelligence facilities, raw materials and supply, human resources, and diplomatic support, as well as in military commitments.[223]

A medium power such as Australia is well placed to capitalise on such offerings while maximising self-reliance and levering geographical advantage and technology. Given the nature of its seaborne trade, with long oceanic passages, Australia's maritime strategy has inevitably involved allies, and typically the pre-eminent maritime power of the age, be it Britain or the US. Australia's forces have had to be able to 'plug into' that great power's strategy, to be interoperable with its navy, and to contribute to underwriting the global maritime system. This was true in 1913 and it arguably remains true over a century later, despite the vicissitudes of great power policies and geopolitical change.

[220] Commonwealth of Australia, *National Defence Strategy 2024*, 25.
[221] Reeve, 'Naval Politicians or Gentlemanly Technocrats?', 10-12.
[222] Hill, *Maritime Strategy for Medium Powers*, 207-8.
[223] Hill, *Maritime Strategy for Medium Powers,* 198-9, 209, 219.

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Enclosure 3 to *AMS 2035*

Naval Studies Group Primer No. 3
Australia's Maritime Defence Security Tasks

By John Mortimer

This primer describes maritime security tasks that must be undertaken by the Australian Defence Force (ADF). These tasks should inform policy, force structure and funding.

Introduction

The 2024 *National Defence Strategy* states that the ADF should be able to complete three tasks on its own; [224] to defend Australian territory, deter the projection of power through Australia's northern approaches, and protect the country's economic connections to the world.[225] All three are primarily maritime tasks.

The Australian continent is comparatively remote from any major power, with the possible future exception of Indonesia. In this respect, distance has acted as the country's great shield. Maritime strategists have long acknowledged the stopping power of water, and the combination of the distances involved, and necessary scale of any endeavour, still make an assault on Australian territory exceptionally challenging.[226]

Policy makers and the ADF can continue to exploit the extraordinary natural advantages conferred by geography to deter any such effort. Australian national interests, be they strategic, economic, diplomatic, cultural or political, do not, however, stop at the beach. Virtually all Australian governments have, for differing reasons, seen engagement with, and security of, the near region as essential. The language of being 'the partner of choice' for the Pacific may be new, but the sentiments are as old as Australia. The ADF is a critical part of the country's peacetime engagement with the region, helping to support it with the challenges it faces. From the Australian Pacific Maritime Security Program (PMSP) to humanitarian aid and disaster relief (HADR) in response to the growing threat of natural disasters, Australia's defence capabilities are leveraged in this fundamentally maritime region.

These actions, and Australia's engagement in the near region are, in part, driven by the natural desires to be a good actor and a good neighbour. However, as the tasks set out in the 2024 *National Defence Strategy* indicate, there is also a security component to these relationships. The framing of the security of the region as an ADF task in line with the defence of Australian territory and the protection of trade is misleading. It is, in reality, a precondition, important because it is essential to complete the other two tasks.

Australia's ability to support regional security and prevent malign actors from establishing themselves in the broad sweep of island chains running from Singapore to the Solomon Islands matters in and of itself to Australian security. However, it is the potential impact of such a development on the other two core missions of the ADF that makes it dangerous to Australian security. As the experience of 1942-43 clearly demonstrates, the basing of adversary forces in maritime Southeast Asia and Melanesia dramatically complicates the defence of Australian territory and the protection of sea lines of communication (SLOCs). Therefore, to use the language of recent defence documents, Australia needs to be able to 'shape' the region in peacetime and potentially

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224 Australian Government, '2024 National Defence Strategy'.
225 Department of Defence, *National Defence Strategy*, (Canberra, 2024), 25.
226 Corbett, J *Some Principles of Maritime Strategy*, (London: Longman, 1911), p. 79; Mearsheimer, J. *The Tragedy of the Great Powers*, (New York: Newton, 2001).

respond in the region in the event of war, to prevent and "deter" any action that would compromise Australian security.

Key Strategic Drivers

National security policy must be influenced by Australia's strategic environment, key alliance relationships and the ADF's approach to military operations. Australia has a large landmass, a substantial natural resource base and vast ocean surrounds. Its people, industries and infrastructure are concentrated on the coast, in our eastern, south-eastern and south-western fringes. Australia's direct approaches are dominated by the archipelago to our north, a maritime-littoral environment.

Australia's Geo-Strategic Environment

- Australia's sovereign rights are substantial, including a 200nm exclusive economic zone (EEZ), and a continental shelf, which can extend out to some 350nm from the coast.
- Our island territories and their EEZs extend from the Cocos and Christmas Islands in the Indian Ocean to Lord Howe and Norfolk Islands in the Pacific Ocean, through to Heard, Macdonald and Macquarie Islands and the Australian Antarctic Territory in the Southern Ocean.
- Australia is highly dependent on international trade, the vast majority of which is carried by sea.
- Most of Australia's international trade passes through our northern maritime approaches, most passing through the strategic choke points of Southeast Asia (e.g. Malacca, Singapore, Sunda, Lombok and Sumba Straits).
- The most important trade routes for Australia are those with the countries of the Indo-Pacific region, where the overwhelming bulk of our international trade occurs.
- Much of northern Australia, Tasmania and the offshore territories are heavily reliant on coastal shipping for their sustainment.
- Most of Australia's interstate bulk trade is carried by coastal shipping.
- Australia's offshore reserves of oil and gas are concentrated in the Gippsland, Carnarvon and Bonaparte basins and the Timor Gap.

Australia's Alliances and other Key Relationships

Australia is party to defence related agreements with several countries, some of which aim to provide security for Australia and some of which see Australia as the security provider. Virtually all of these agreements are maritime in nature or have strong maritime elements. The most important of them, in respect of Australia's security, have been those involving the United States (US).

The Australia, New Zealand, United States (ANZUS) Treaty, dating from 1951, has been the foundational security agreement for Australia since then. Originally a trilateral treaty with New Zealand, since 1985 it has become two bilateral agreements; Australia and the US and Australia and New Zealand. Australian reliance on ANZUS lacks the more formal commitment of Article 5 of the North Atlantic Treaty Organisation (NATO) Treaty and is limited to the agreement to consult in the face of a threat to territorial integrity, political independence or security, as laid out in Article 3 of the ANZUS Treaty.[227] Further, Article 4 specifies that in the event of an armed attack in the Pacific area on any of the parties, each would act against the common danger in accordance with its constitutional processes.[228]

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227 McIntyre, W.D., *Background to the ANZUS Pact: Policy-making, Strategy and Diplomacy, 1945-55,* Macmillan, Basingstoke, UK, 1995, 407.

228 Ibid.

At the other end of the spectrum, but in place also since 1951 is the Radford-Collins Agreement, originally involving the United States Navy (USN) and the Australia, New Zealand and Malaya (ANZAM) Agreement navies - the Royal Navy (RN), Royal Australian Navy (RAN) and Royal New Zealand Navy (RNZN).[229] This informal arrangement specifies how the respective navies would cooperate in the Indian and Pacific Oceans in time of conflict, with a particular focus on ensuring the free flow of maritime trade. It remains in place and supports the ongoing efforts to coordinate merchant shipping in time of conflict, primarily through regular exercises and the associated Shipping Working Groups.[230]

More recently, Australia has become a member of the newly energised Quad, the quadrilateral diplomatic partnership of the US, Japan, India and Australia. This evolving group focuses on issues beyond traditional security, but has as its primary focus maintenance of an open, stable and prosperous Indo-Pacific region.[231] With China's growing assertiveness in the region the Quad is becoming more security-focused, something which may present non-aligned India with some challenges.[232] The most recent of Australia's multilateral security arrangements involving the US is the Australia, United States and United Kingdom AUKUS partnership. This agreement, dating from 2021, provides for the transfer of nuclear-power technology and materials to Australia to enable the purchase and later build of nuclear powered and conventionally armed submarines.[233] Many challenges, financial, technical and political, await this audacious program on which the future of Australia's submarine force depends.

In December 2023, Australia signed, the Australia-PNG Security Agreement as part of a Framework for Closer Relations.[234] Then in 2025 both countries signed the Pukpuk Defence Treaty with a purpose of protecting their sovereignty, securing their mutual defence and security interests and contributing to regional stability and security, by strengthening and expanding defence cooperation through enhanced capability, interoperability and integration.[235]

Among the other significant regional security agreements is the Five Power Defence Arrangements (FPDA) which emerged in 1967 and were formalised in 1971, in response to the anticipated British withdrawal from East of Suez and the recent experience with Indonesian Confrontation against Malaysia.[236] While Australia was initially reluctant to join, it remains committed to the FPDA, provides the Integrated Area Defence Commander, and participates in the regular air and maritime defence exercises. Australia is also a party to the South Pacific Nuclear Free Zone Treaty (SPNFZ) and was a motivating force for its establishment in the early 1980s. One of its main broad aims is to prevent the South Pacific from becoming an arena for superpower rivalry. Signatories are expected, *inter alia*, to forego possession of or control over any nuclear explosive device and prevent the stationing of any nuclear explosive device in their territory.[237] Recent Australian decisions to allow rotation of US bombers and de facto home porting of nuclear attack submarines may well complicate adherence

229 Brown, A., 'The History of the Radford-Collins Agreement', *Naval Historical Association of Australia*, (accessed at https://navyhistory.au/the-history-of-the-radford-collins-agreement/ on 5 April 2025).

230 Ibid.

231 Department of Foreign Affairs and trade, 'The Quad', undated, (accessed at: https://www.dfat.gov.au/international-relations/regional-architecture/quad 8 April 2025).

232 Deb, U., 'India in the Quad: insider or outlier?' 2 April 2024, *ASPI, The Strategist*, (accessed at: https://www.aspistrategist.org.au/india-in-the-quad-insider-or-outlier/ 11 April 2025).

233 Australian Submarine Agency, 'AUKUS agreement for cooperation on naval nuclear propulsion', dated 1 October 2024, (accessed at: https://www.asa.gov.au/aukus/aukus-agreement-cooperation-related-naval-nuclear-propulsion11 April 2025).

234 Australian Government – Department of Foreign Affairs & Trade, 'Australia-Papua New Guinea Bilateral Security Agreement', undated, (accessed at https://www.dfat.gov.au/countries/papua-new-guinea/australia-papua-new-guinea-bilateral-security-agreement 11 April 2025).

235 https://www.dfat.gov.au/sites/default/files/png-australia-mutual-defence-treaty.pdf

236 Edwards, P., *A Nation at War: Australian Politics, Society and Diplomacy during the Vietnam War 1965-1975,* Allen and Unwin, St. Leonards, NSW., 1997, 199-200.

237 Nuclear Threat Initiative, 'South Pacific Nuclear-Free Zone (SPNFZ) Treaty of Rarotonga', undated, (accessed at: https://www.nti.org/education-center/treaties-and-regimes/south-pacific-nuclear-free-zone-spnfz-treaty-rarotonga/ 8 April 2025).

to the Treaty and could at least allow questioning of our commitment to it. In a similar vein, the Law of the Sea Convention (LOSC) to which Australia is a party can generate security demands. These can emerge from the need to defend maritime zone boundaries or to contest claims which may not be in accordance with the LOSC. Australian military activity in the South China Sea can be seen to fit this need.

There is also a range of multilateral and bilateral agreements with southeast and east Asian countries with significant security implications. They include the Australia-Japan Reciprocal Access Agreement to enable greater defence co-operation,[238] and the Comprehensive Strategic Partnerships with Singapore,[239] and Malaysia which have defence elements. [240] Among the important bilateral agreements is that recently negotiated with Indonesia for defence cooperation. This is enabling cooperative military activities by the respective armed forces.[241]

In the South West Pacific, the PMSP provides twenty-four patrol craft to sixteen participating nations, in-country RAN advisors and contracted aerial surveillance, continuing a commitment begun some thirty years ago under the Pacific Patrol Boat Program, using memoranda of understanding with each of the then twelve participating countries.[242] The PMSP remains Australia's most extensive defence cooperation program and is a foundation of security arrangements in the South West Pacific.

Separately, Defence agreements have been established with several countries in the Southwest Pacific, including Tuvalu and Papua New Guinea (PNG). The Falepili Union Treaty between Australia and Tuvalu commits Australia to aid in a range of circumstances, including military threat.[243] Bilateral security agreements are also in place with Fiji (Vuvale Partnership) the Solomon Islands and Nauru.[244]

In summary, Australia's alliances, involvement in the FPDA, the Quad arrangement and its commitment to the United Nations (UN) are significant in Australia's ability to influence and to promote both regional and global interests. In recent decades Australia has supported broader interests, dealing with terrorism and weapons of mass destruction proliferation. Australia must continue to work closely with its major ally and principal strategic partner, the US, through the Alliance. Australia will also strengthen engagement with Indo-Pacific partners, particularly in the Pacific and Southeast Asia, to maintain peace, security and prosperity in the region. This includes working with key regional institutions, including the Pacific Islands Forum and the Association of Southeast Asian Nations (ASEAN).

238 Australian Government-Defence, 'Australia-Japan Reciprocal Access Agreement', undated, (accessed at: https://www.defence.gov.au/defence-activities/programs-initiatives/australia-japan-reciprocal-access-agreement on 8 April 2025).

239 Australian Government – Department of Foreign Affairs and Trade, 'Joint declaration by the Prime Ministers of Australia and Singapore on a Comprehensive Strategic Partnership', undated, (accessed at: https://www.dfat.gov.au/geo/singapore/Pages/joint-declaration-on-a-csp 8 April 2025).

240 Australian Department of Foreign Affairs & Trade, 'Joint declaration by the Prime Ministers of Australia & Malaysia on a Comprehensive Strategic Partnership', 27 January 2021, (accessed at: https://www.dfat.gov.au/geo/malaysia/joint-statement-comprehensive-strategic-partnership-between-australia-and-malaysia11 April 2025).

241 Australian Government – Defence, 'Australia-Indonesia Defence Cooperation Agreement', 29 August 2024, (accessed at: https://www.minister.defence.gov.au/media-releases/2024-08-29/australia-indonesia-defence-cooperation-agreement-signed 8 April 2025).

242 Australian Government – Defence, 'Pacific Maritime Security Program', undated, (accessed at: https://www.defence.gov.au/defence-activities/programs-initiatives/pacific-engagement/maritime-capability 11 April 2015).

243 Australian Government – Department of Foreign Affairs & Trade, 'Australia-Tuvalu Falepili Union treaty', undated, (accessed at: https://www.dfat.gov.au/geo/tuvalu/australia-tuvalu-falepili-union-treaty 11 April 2025).

244 Wallis, J. & Tagivakatini, S., 'Why Australia Should be Watching New Zealand and Cook Islands Closely', Australian Outlook, 16 February 2025, (accessed at: https://www.internationalaffairs.org.au/australianoutlook/ 11 April 2025).

Defence's Approach to Operations

Warfighting must continue to be the central focus of ADF planning. However, the increasing complexity and diverse range of operations pose additional challenges. Major interstate conflict cannot be discounted. It can also arise with little or no warning. The Russia-Ukraine conflict is a recent example. Whether a force-on-force engagement of superpowers in the case of confrontation over Taiwan would eventuate is unclear. Regardless, ADF planning should include considerations relevant to major interstate conflict, including both coalition operations, and the self-reliant defence of Australia. While generally a force prepared for warfighting can step down to respond to lower-level operations, the reverse is not the case. Lower-level operations also have the potential to escalate without notice. ADF elements deployed for low level operations should have sufficient capability and capacity to meet unforeseen escalation, should it occur.

The ADF will continue to place an emphasis on selective high technology systems, knowledge superiority and superior training to provide a capability edge. Australia's small population and resource base means it cannot afford to become engaged in a protracted campaign of attrition.

In recent years conflicts have evolved from the form it took for much of the twentieth century. Contemporary armed struggles are not always between states with clear political or military objectives. Often there are intra-state conflicts comprising uprisings, rebellion and terrorism underpinned by historical grievances, religious differences, factional and territorial disputes, resource competition and economic friction. Conflict may also involve paramilitary forces, militias, or terrorists, rather than professional defence forces.

Intra-state disputes have reinforced demands on armed forces for border protection, humanitarian relief, evacuations, peacekeeping and peace enforcement operations.

Global warming will likely result in increasing sea levels forcing occupied lands to be evacuated and forcing major migrations, particularly on the Indian sub-continent, other low-lying areas of Southeast Asia and many of the Pacific Island countries. Lower lying Australian coastal areas, and flood prone areas could also see localised population movements. Both could involve higher rates of ADF support for disaster relief and border protection operations.

In extending the flexibility of all three Services, to ensure they can contribute more decisively to an overall campaign, Australia's strategy will provide a more flexible force structure. Naval capability should not be seen as only being relevant to the naval component of a campaign. All five Defence domains should be seen as contributing to the overall ADF campaign. By providing greater flexibility, versatility and adaptability within specific areas of capability, preparedness and logistic support Australia can develop a force which is better able to respond effectively to a range of tasks.

The evolution of ongoing instability in the global environment means it is important for Australia to adopt a much more self-reliant posture, than in the past. This should include expanding Australia's capacity to manufacture, modify, sustain and repair selected capabilities. Transport infrastructure should be improved, including weather proofing vulnerable lines of communication, especially those that support and sustain operations from ADF bases in northern Australia. The nation should also improve its local capacity and holdings of strategically important materials, fuels, armaments and weapons, as well as products of an industrial, medical and food security nature.

Defending Australia

The core function of the ADF is the defence of Australia and the protection of its interests. The threat of direct conventional military threat to Australia remains remote. Global instability has increased, and the prospect of warning time has diminished, such that a threat to Australia and its national interests could arise with little or no warning. Further, the strategic advantage of Australia's geographic remoteness has reduced with the growth of regional defence capabilities, as our neighbours' economic development progresses. The risks of rogue states with weapons of mass destruction, or long-range weapons, and terrorism remain.

Defence planning needs to be based on a range of potential tasks and threats, including:

- **Peacetime national tasks.** These include protection of Australia's sovereignty, enforcing borders, disaster relief and counter terrorism when beyond the capacity of local law enforcement officials.
- **Minor attacks.** These are assessed as the most credible threat and could take the form of raids, harassment of trade, terrorist action, or attacks on Australia's information systems. With a terrorism campaign within Australia much of the burden of responding would fall on state and federal law enforcement agencies. The ADF would play a relatively less central, though nonetheless vital role.
- **Major attack.** A major attack could take the form of the use of weapons of mass destruction by a nation or terrorist group; attacks on Australia's population centres, infrastructure, SLOCs or seizure of parts of Australia's territory. In a major attack on Australia, the ADF would play a central role in projecting force to exercise strategic control of approaches and to defeat adversary initiatives.
- **Full scale invasion.** Australia's remoteness from centres of major power rivalry provides a measure of security from full scale invasion. However, participation in coalition operations in the Indo-Pacific region and basing of foreign forces on our shores might increase our vulnerability to attack, or in extreme circumstances, invasion.

Making distinctions about the level and nature of threat against Australia and its interests enables force structure planning to:

- evaluate various force options and to assess how they might perform in a range of circumstances;
- determine the effectiveness and versatility of individual capabilities;
- determine whether certain capabilities are fundamental to our overall campaign or not; and
- assess the importance and priority of individual capabilities.

ADF operations against a conventional military threat to Australia will generally be similar across the types of situations envisaged. The same type of general operations would be undertaken, such as intelligence gathering, surveillance, forward patrol and response. However, variation in terms of force composition will occur in terms of:

- geographic location,
- intensity of conflict,
- concurrency of operations,
- duration, and
- nature of threat.

Strategic Control of Australia's Maritime Approaches

The concept of strategic control involves:

- A pro-active strategy to maximise Australia's freedom of manoeuvre in the air and sea approaches while denying freedom of action to a potential adversary.
- The ability to assert Australia's will over an adversary in time and space, and deny an adversary's ability to position for, or conduct offensive operations against Australia and its interests.
- The projection of power into the region to support Australia's national interests.

The ADF would obtain knowledge of an adversary through Australia's intelligence and surveillance activities. This data, complemented by military geospatial information, would provide the nation with the knowledge to attack hostile forces, including their forward operating bases and, if necessary, the adversary's national support base.

The ADF would aim to seize the initiative and dictate the pace, location and intensity of all operations. The ADF would conduct joint maritime operations to assert control over Australia's approaches beyond our sovereign territory.

Intelligence

The provision of accurate and timely intelligence and Military Geospatial Information (MGI) are vital enablers of ADF combat planning and operations. When provided in a timely and comprehensive form, they result in enhanced environmental awareness and battlespace knowledge. These data are critical to ADF operations and our ability to respond quickly and effectively to a broad range of operational tasks, as well as being able to adapt quickly to changing circumstances and emerging threats. Intelligence and MGI support for ADF operations would provide timely data on:

- assessments of adversary military capability;
- assessments of adversary intentions;
- assessments of adversary activities and operations;
- environmental assessments of ADF and potential adversary areas of operation; and
- actual and forecast weather and oceanographic information.

The Defence Intelligence Organisation (DIO), Australian Signals Directorate (ASD) and other intelligence organisations, including those at Joint Operations Command (JOC), and single Service MGI organisations are fundamental to the collection, analysis, compilation and timely dissemination of this data.

Command and Control

The ADF manages its contribution to national security through three levels of command – strategic, operational and tactical.

- The strategic level is responsible for the military aspects of planning and direction of conflict.
- The operational level is concerned with planning and conducting campaigns to attain military strategic objectives within a theatre of operations.
- The tactical level has commanders plan and conduct battles and engagements to support operational level campaign objectives. Tactical activities focus on integrating and applying combat power to defeat the adversary at a particular time and place, and to exploit their success.

Effective command, control, communications and computer systems are fundamental to the timely provision of intelligence, surveillance and other products to the various levels of command. The overall system facilitates the direction and management of our operations to achieve strategic control. It also extends to communications and liaison links with allies and other Commonwealth and State authorities. Operational performance is highly dependent on information management, a clear picture of what is occurring and a continual awareness of the commander's intent.

Surveillance and Reconnaissance

Surveillance and reconnaissance of Australia's approaches underpin timely and resource efficient operations. They would be undertaken at two broad levels:

- Continual broad area surveillance to complement intelligence, discern activity patterns and provide early warning of hostile activities; and
- Surveillance or reconnaissance of particular areas to permit rapid identification and interception of adversary force projection initiatives.

Australia's broad area operations could extend from the northern approaches of the archipelago, out into the Indian and Pacific Oceans and down into the Southern Ocean. Other surveillance activity would be more focussed. Broad area surveillance would be undertaken by strategic surveillance assets, such as Over the Horizon Radar (OTHR), satellites, and long-range sonar arrays. Surveillance and reconnaissance of specific areas would be undertaken by surveillance aircraft, submarines and helicopter equipped surface combatants in archipelagic choke points and straits. These assets could also respond to any incursions.

Strike

Deterrence and the ability to erode an adversary's motivation and to attack their capacity to mount and sustain operations are fundamental to the ADF's ability to defeat attacks against Australia and its approaches. Australia's strike operations would be employed to:

- force a cessation of conflict;
- allow Australia to seize the initiative;
- increase the cost of conflict to an adversary;
- complicate an adversary's conflict management and planning;
- reduce an adversary's will to persist in conflict; and
- reduce an adversary's means of sustaining conflict.

The ADF's primary strike assets are strike, fighter and maritime patrol aircraft, submarines, surface combatants and other helicopter equipped warships, the Army's special and commando forces, and land-based elements equipped with long range maritime and land strike weapons.

Forward Patrol and Response

Forward patrol and response are essential for intercepting hostile forces in the sea and air approaches and provides the ADF with the ability to:

- protect offshore territory, resource extraction activities and other interests;
- influence the type, level and location of hostilities; and
- keep hostile forces away from the Australian mainland.

Denying an adversary operational freedom near Australian territory will be a major restraint on hostilities and will make the defence of Australia more manageable. The objectives of forward patrol and response would be to:

- counter adversary information gathering activities in Australia's maritime environment;
- intercept and inspect shipping in defined areas within the maritime approaches and if necessary, escort the shipping to another location;

- prevent an adversary's land, sea and air forces from entering defined areas within our maritime approaches, and if necessary, defeat that adversary;
- prevent, and if necessary, defeat adversary harassment in Australia's maritime environment;
- prevent, and if necessary, defeat adversary interdiction and strike operations in our maritime approaches; and
- prevent the insertion, extraction and resupply of adversary forces through the maritime approaches to Australian territory.

In the majority of situations, the focus of ADF patrol and response operations would be in the north and would be commensurate with the assessed level of threat. In the event of a full-scale invasion or major attack, we could employ submarines to patrol the more distant areas, such as the major archipelagic straits and their northern approaches. More proximate approach routes would be patrolled by surveillance aircraft and major surface combatants, with strike, fighter and maritime patrol aircraft and major surface combatants forming the response elements. Operations would be supported by Tanker and Airborne Early Warning and Control (AEW&C) aircraft.

Air defence of ADF forces operating on the Australian mainland, offshore territories or those in the maritime environment, would be provided by an integrated system comprising air surveillance and control aircraft, air defence aircraft, major surface combatants and land-based air defence systems. Air defence aircraft would be employed in conjunction with in-flight refuelling and AEW&C aircraft.

ADF operations to counter adversary submarine activities, aside from striking at their operating bases, would be focussed on the approaches to submarine bases and major passages likely to be used by hostile forces to approach Australia. Forward anti-submarine warfare (ASW) operations would be undertaken by submarines in adversary choke points and the approaches to their operating bases. To counter submarines in transit or that reach their patrol area, the RAN would employ capable towed arrays to cue maritime patrol aircraft, and major surface combatants equipped with ASW helicopters. These operations would focus attention on major choke points and port approaches.

In countering an adversary's initiatives, the ADF would likely seek to engage their shipping as far from Australia as possible. The preferred means of achieving this would be by utilising the ADF's maritime strike assets, especially strike, air defence and maritime patrol aircraft, submarines, major surface combatants and land based long range strike weapons. As with ASW, the ADF approach would be layered; that is, forces would be employed well forward and to cover the approaches to choke points and port infrastructure.

Mine countermeasures (MCM) forces would be employed in route surveillance operations to determine whether mining had occurred and to ensure the safe passage, through port approaches and choke points, of ships employed in exerting strategic control.

Offensive Manoeuvre

Offensive manoeuvre comprises a range of operations aimed at defeating an adversary's land, sea and air forces in the theatre of operations. This requires the ability to detect, isolate and defeat the adversary force. Operations may need to be sustained over an extended period and could include land and maritime strike as well as amphibious and airborne operations.

Amphibious and possibly airborne operations would seek to lodge ADF forces in areas where little or no opposition would be encountered. The protection of ADF forces would extend beyond direct escort during the transport phase, to include the protection of forces from adversary attack during the landing and consolidation phases, when the transport force and the units being landed are at their most vulnerable. Protection for the operation must be continuous and be able to counter any threat from the air, surface, land or sub-surface, at immediate notice. Assigned maritime forces will also contribute to air defence and offensive fire support for the land force ashore.

The maritime nature of Australia's approaches means that ADF operations in defending Australia are likely to place a heavy reliance on amphibious and strategic air and sea transport capabilities to deploy and sustain forces. If required, ADF assets could be supplemented by chartered commercial sealift and airlift assets.

Ship to shore movement, if not through an established port, would be achieved typically by Army and Navy helicopters embarked in the RAN's amphibious ships HMA Ships *Adelaide, Canberra* and *Choules* and in the future the Army's planned amphibious watercraft. Direct escort of the amphibious force would be provided by major surface combatants and the Royal Australian Air Force's (RAAF's) maritime patrol, strike and air defence aircraft, supported by in-flight refuelling and AEW&C aircraft.

MCM forces, including clearance divers, could play an important role in ensuring the landing area and its approaches were clear of mines and other underwater obstacles. Special forces could also be employed to undertake surveillance, reconnaissance or diversionary operations to assess the suitability of the proposed landing area and the potential level of adversary threat.

Maritime Geospatial Intelligence (MGI) forces could undertake rapid environmental assessment using aircraft and ship-based acoustic systems to provide environmental information to assist in planning approach routes and landing areas and evaluating environmental and other risks.

Protective and Security Operations

Securing strategic control has both offensive and defensive elements. To enable a range of operations to be mounted, defensive operations to protect ADF operating bases and strategically important infrastructure, assets and activities are necessary. Land forces are envisaged to take the lead in the following protective and security operations tasks:

- surveillance of the landward component of the littoral where ADF forces are deployed;
- contributing to the defeat of military incursions onto Australian territory;
- protection of ADF operating bases; and
- protection of population centres, industry and key infrastructure.

Maritime forces would likely take the lead in protecting maritime interests, including offshore territories, marine resources, shipping and seaward approaches to ports.

Offshore Resources

Australia's offshore oil and gas industry is important to the national defence effort and economic wellbeing. In a period of tension or minor attack, a protective presence may be necessary in the vicinity of our oil and gas extraction facilities, depending upon their relevance and proximity to the dispute. As circumstances deteriorated, Australia may need to consider direct protective measures by appropriate maritime and land force elements.

While Australian fisheries are increasing in value, both in domestic and export terms, it is unlikely, other than in peacetime, periods of tension, or minor attack, that ADF resources would be specifically dedicated to their protection.

Shipping

Shipping is vital to Australia's economy. ADF operations in the northern Australian littoral will depend greatly upon support provided by both defence and commercial shipping resources. The employment of ADF maritime assets in the protection of shipping would be quite selective. The ADF's effort would likely be devoted to the protection of strategically important cargoes, both locally and internationally. The primary ADF elements employed in the direct escort of shipping would be major surface combatants. Other ADF elements would complement these ships, including aircraft for integrated air defence operations, for mid and deep field support against submarine and surface threats, and for strike against surface ships. Other elements involved in the protection of shipping would include:

- MCM forces would be employed to ensure safe passage of shipping through or around potentially mined areas;
- clearance divers could also be employed in protection of shipping from underwater attack whilst in port;
- activation of the Naval Control and Protection of Shipping (NCAPS) organisation to provide a degree of active or passive protection and control of shipping;
- MGI forces could be employed to gather data to assist in evaluating risk on certain shipping routes and in defining areas where ships' sensor performance is enhanced or degraded; and
- land forces would be employed in the protection of wharves, cargo handling and storage facilities and associated shore-based port infrastructure, and as patrol and response forces in choke points.

Communications

Defence utilises a range of communication facilities, including satellites, international underwater cables, HF transmit and receiving networks, the National Broadband network (NBN) and secure facilities for transmission of sensitive communications and information. Recently, there has been a focus on the security of the international underwater cable system against accidental or deliberate damage. The ADF has established cyber security and space authorities to address issues of threats to communications infrastructure and to undertake offensive and security activities to handle and respond to such threats.

Contributing to the Security of the Immediate Neighbourhood

Australia's immediate neighbourhood includes the countries of Indonesia, East Timor, Papua New Guinea, New Zealand, New Caledonia and the island states of the Southwest Pacific. By contributing to the security of the immediate neighbourhood we reduce the risk of a direct military threat emerging to Australia, or if it were to emerge, we would be better positioned to meet it well forward in the approaches to the archipelago.

In the event of unprovoked armed aggression against any of Australia's immediate neighbours, Australia would want to be in a position, if asked, to help its neighbours defend themselves. Australia might also be invited to help its neighbours in situations where their stability was challenged. These situations could arise at short notice, and our response would include a strong maritime element. ADF elements likely to be employed in such situations would need to be held at high states of readiness and sustainability.

Resisting or Defeating Aggression

Were a significant threat to emerge to one of Australia's neighbours, the Government would view such a circumstance with concern. Government might consider the commitment of ADF elements if asked. The nature and contribution of the ADF could vary significantly and be influenced by whether the contingency involved a nation in the eastern or western reaches of the archipelago. In the east, except for French Polynesia and New Caledonia, the ADF would likely be the major military force in any coalition and hence would play a very significant role in deterring or defeating an adversary's initiatives. In the west, where there are large military forces, the ADF's role might be less dominant.

Expansion of Chinese influence in the region coupled with recent US withdrawal of aid could result in a more complex environment for Australian involvement. Chinese influence in the region is already widespread and only likely to grow with the reducing interest of the US.

The ADF's contribution could take several forms, ranging from non-warfighting options to direct combat assistance including strike and offensive manoeuvre operations. Some situations could arise with little warning, so selected forces would need to be at high states of readiness. The higher inherent mobility of air, naval and special forces and certain land force assets means that they may

be selected for timelines, appropriateness and ease of response. Military airlift and sealift would be needed to deploy and sustain forces, as well as to evacuate civilian personnel, if required.

If Australia had warning of offensive operations by an adversary, it might seek to demonstrate commitment and to contribute directly to coalition efforts to deter, and if necessary to defeat an adversary. Maritime forces, especially major surface combatants, could be deployed, with maritime patrol, air defence and strike aircraft, to establish a presence and to support precautionary deployments of other ADF elements. These forces would be supported by ADF strategic surveillance assets.

In situations where an adversary has already militarily engaged the threatened nation, on the Australia government may direct the ADF to contribute to the successful defeat of the adversary. The aim would likely to be to make a decisive contribution to ensure that strategic interests were sustained and protected.

These situations could arise with little or no warning, but in each case, there would be a strong maritime element to our response. Consequently, the ADF should place emphasis on the readiness and sustainability of elements likely to be employed.

The complex terrain and environment of the archipelago to Australia's north mean that its force development process needs to consider:

- the littoral nature of the neighbourhood environment;
- the complex terrain and land clutter;[245]
- the high shipping and aircraft density in the western archipelago;
- the confined shallow tropical waters;
- the complex land and SLOCs;
- the limited infrastructure to support military operations; and
- incomplete geospatial information.

Australia's contribution might be focussed on strengthening coalition defensive capability, although, selective offensive operations could be contemplated.

Australia cooperates with Southeast Asian nations and major external powers, such as the US, Japan and India, to preserve stability and cooperation in Southeast Asia. Some European countries, such as the UK, France, Germany and Italy are showing increasing interest in the region and have regular deployments of naval and air assets to participate in regional activities. However, they are unlikely to seek seek involvement in any regional conflict, unless important national interests were impacted.

The composition and nature of ADF contributions to future coalition operations in the region would vary according to the nature of the operation. The range of operations ADF elements could be involved in is extensive, from the protection of Australian nationals and designated foreigners, through the provision of non-combat assets, such as logistic and technical support, to participation in high intensity combat operations.

Forces employed in higher intensity operations would typically be drawn from elements of the strike, special forces, tactical fighter, maritime patrol and response, AEW&C, air-to-air refuellers, submarine, surface combatant, mine warfare, afloat support, and strategic airlift and sealift forces. Australia could, depending upon composition of the coalition, seek to provide intelligence and command and control elements of a combined headquarters.

[245] For the purpose of this paper land clutter refers to unwanted radar echoes from the Earth's surface and man-made objects, which interfere with the detection of desired targets like aircraft.

Land forces could be employed in coalition operations. Key functions of land forces would be:

- contributing to the defeat of adversary military incursions;
- protection of forward operating bases;
- contributing to strike and offensive operations and offensive manoeuvre operations; and
- gathering of intelligence.

In all coalition operations, major considerations of compatibility and interoperability will exist. Australia's regular exercise program across all three services means that these issues are likely to be less of an issue than in the past. For example, Exercises *Talisman Sabre*, *Kakadu* and *Pitch* Black see a broad range of participants from the region, as well as from NATO on occasion.

Low Level Operations

In the event of instability or a natural disaster within a neighbouring country, Australia may be invited by the host Government to assist in re-establishing law and order, evacuation of personnel, or disaster relief.

Australia has practical limits to its ability to influence and help in a crisis. Such situations can require very high levels of resources to manage and control. The ADF's involvement in East Timor, to restore peace and security, could not have been undertaken without assistance from a large number of coalition partners, and cooperation of the Indonesian Government.

This type of operation is likely to involve primarily land force presence, with its associated mobility, deployment, protection and support requirements. The extent of support will be influenced by the location of the operation. Operations in Pacific Island countries could involve more extended lines of communication, into areas with limited infrastructure, than would be the case for operations in the northern and western areas of the archipelago.

The police and military forces in Indonesia have significantly better capacity to deal with crises than those forces in the Pacific Island countries. Disturbances in the western and northern areas of the archipelago could be on a significantly larger scale and be more complex to manage.

Success in pacifying an unstable situation often depends on a demonstrated ability and willingness to use preponderant force swiftly in response to any violence, so forces need to have ample firepower to remain safe and credible.

Such operations typically involve lightly armed adversaries, but there is the potential for escalation by intervention of well-armed conventional forces. Capabilities to deter or respond to such escalation would provide insurance against unplanned escalation – this would often involve both land force capabilities as well as air and naval forces to protect force elements during deployment, lodgement and operations.

ADF air and naval forces employed in support of restoring stability and order in a neighbouring country would comprise mainly airlift and sealift assets, to deploy and sustain land force elements. Major surface combatants could be employed to provide a proactive presence or direct escort to sealift operations where a threat existed. In addition, major surface combatants, patrol boats, offshore patrol vessels and maritime patrol aircraft could be employed in patrol and response operations to counter infiltration by adversary forces.

Supporting Wider Interests

The strategic reach and effect of terrorism and the threat of proliferation of weapons of mass destruction, for example, are global issues with profound direct implications for Australia's security and that of our region. Supporting wider interests is not an alternative to defending Australia or contributing to regional security, but is fundamental to our ability to meet those other strategic tasks.

Australia's alliance with the US and our involvement in FPDA, as well as our commitment to the UN, are significant in our ability to influence and shape our wider interests.

The ADF needs to be structured with sufficient flexibility to make selected niche capabilities available to international coalitions of forces to meet crises beyond Australia's immediate neighbourhood, where the nation's wider interests are engaged. Such coalitions might involve peacekeeping, disaster relief, countering piracy and drug smuggling, through to relatively high intensity conflict. This calls for an increased emphasis on readiness, mobility and interoperability.

Australia contributes to maintaining strategic stability in the wider Asia-Pacific region. Australia has significant strategic interests in North Asia, including extensive trade relations with China, Japan and South Korea. The potential for state- on-state conflict in this area is higher than in our immediate neighbourhood or Southeast Asia.

Australia supports the central role the US plays in maintaining stability in the Asia-Pacific region. We also seek to preserve a security environment in which the region's economic development can proceed unhindered by threats to trade and which preserves our access to our major trading partners.

Defeating Military Aggression Globally

Australia contributes to the efforts of the international community, especially the UN, to uphold global security. It also generally supports the US in the major role it plays in maintaining and strengthening the global world order.

Australia's contribution to military operations globally would be strongly influenced by the diverse geo-strategic environments in which the ADF might be called upon to operate. Operations would not be confined to conventional military options. Australia's wider interests include ADF operations aimed at countering international terrorism and proliferation of weapons of mass destruction.

The ADF needs to retain capabilities that will enable it to operate effectively with the US and other coalition partners. The scale and composition of an ADF contribution to operations, outside of our immediate neighbourhood, would be shaped by Australia's national interests and would usually be limited to the provision of specialised high value niche capabilities.

The range of operating environments likely to be encountered in supporting global security means that Australia will not be able to foresee, or independently be able to provide for, every circumstance specifically from within the existing force structure. Nor could such diverse capabilities be justified within Australia's finite Defence resource base.

The ADF might need to be provided with supplementary equipment, or capabilities, if they are to operate in environments that differ significantly from those found in Australia and its immediate neighbourhood. These considerations apply to both operations in time of conflict and peacekeeping operations. Since the Gulf War, Defence has demonstrated an ability to modify ADF platforms rapidly to allow them to more effectively perform in specific operations. Recent operations in support of wider interests have made interoperability and compatibility more complex for the ADF. This flows from the wider range of forces we are operating with, as well as the more diverse range of environments being encountered.

Peacetime National Tasks

The ADF contributes to several regular or occasional tasks in support of national interests and contributes within a 'whole of Government approach' towards the efforts of other Government departments and agencies to accomplish these tasks. This broad range of tasks includes regular surveillance, patrol and response of Australia's coastal and offshore zones; hydrographic survey, search and rescue (SAR), disaster relief, humanitarian assistance operations and providing Defence aid to the civil authority and community.

The ADF conducts surveillance, patrol and response operations in support of Australia's border and sovereignty protection. These patrols are conducted to support Border Force and its client agencies. The main ADF elements comprise patrol boats and maritime patrol aircraft, or when tasks are beyond the capacity of patrol boats, larger warships are employed because of their better seakeeping, range, endurance or capacity.

The Navy contributes to the development of Australia's National Marine Data Base, through the activities of the Hydrographic Service and the Australian Oceanographic Data Centre. The Hydrographer of Australia has both defence and national responsibilities for the provision of maritime charts for Australia's area of charting responsibility.

Defence assistance to the civil community involves the provision of assistance to the states and territories to protect the lives and property of their citizens in an emergency. The ADF may be called upon to assist with relief operations and support to events of major national significance.

When natural disasters occur, either in Australia or overseas, consideration may be given to involving the ADF in relief operations. In Australia the ADF is most likely to respond to Emergency Management Australia's support to state government authorities.

Australia is a signatory to the UN Safety of Life at Sea Convention and the ADF has specific responsibilities in relation to SAR for military vehicles in the Australian SAR region. The ADF is also called upon in circumstances where SAR operations are beyond the resources of civil authorities. Distance from mainland Australia and the extent of the emergency are often dominant factors in seeking ADF assistance. The ability of naval and air force assets to cover extended distances and remain on task, in possibly extreme environmental conditions, is often fundamental to successful SAR operations. The main ADF assets employed in these circumstances are naval units, such as major surface combatants, amphibious ships and afloat support tankers. RAAF assets would usually comprise maritime patrol aircraft or long-range air transport aircraft.

Shaping the Strategic Environment

The ADF is employed extensively to serve Australia's national policies in shaping and stabilising the strategic environment. The traditional focus has been on Defence engaging the US and supporting its commitment to providing a stabilising influence in the Asia-Pacific region. Other initiatives are directed at engaging New Zealand, our FPDA partners, Southeast Asian countries, Papua New Guinea, and the Pacific Island countries. We are also progressively expanding our contacts with China, Japan, South Korea and India.

Much of the ADF's diplomatic activity is focussed on developing bilateral relationships and creating a sense of strategic community and dialogue between partners. Several multi-lateral initiatives have been progressed, including the Kakadu series of maritime exercises, the Western Pacific Naval Symposium and the Pitch-Black series of Air Force exercises. The latter includes several European participants as well as regional players.

The ADF's shaping initiatives include:

- patrol boat programs for Pacific Island Forum nations and Timor Leste,
- senior officer visits,
- official talks,
- exercises,
- ship visits and passage exercises,
- aircraft visits,
- personnel exchanges,
- provision of training,

- cooperative research and development projects,
- information exchanges, and
- cooperative patrols or other cooperative ventures.

Conclusion

The primary functions of the ADF are the defence of Australia and the protection of its interests. The threat of direct conventional military attack on Australia remains remote. Global instability has increased and the prospect of warning time has greatly diminished, such that a threat to Australia and its national interests could arise with little or no warning. Australia's strategic advantage of geographic remoteness has reduced with the growth of regional defence capabilities as our neighbours' economic development progresses. The risks of rogue states with weapons of mass destruction, or long-range weapons, and terrorism remains.

Australia's military strategy seeks to achieve and maintain the initiative and to engage an adversary as far away from its territory as possible. Being able to exert strategic control over the maritime approaches is fundamental to Australia's defence and that of its immediate neighbourhood. The proposed strategy for defending Australia and Contributing to the Security of the Immediate Neighbourhood envisages the employment of ADF maritime forces, mostly air and naval as well as strike elements of the land forces, to achieve strategic control of the maritime approaches. Other land forces would secure Australia's power projection bases and respond to and defeat any incursions.

Australian contributions to operations further afield will also have a strong maritime dimension. The nation will need to project, protect and sustain ADF forces through the maritime environment to participate in any overseas campaign. The outcome of Indo-Pacific regional military operations is also likely to be determined by forces able to achieve strategic control of the maritime environment, as evidenced by the Allied campaign in the Indo-Pacific region in World War II.

The ADF's peacetime national tasks also have a strong maritime focus, especially border protection, fisheries surveillance and enforcement, or humanitarian assistance operations.

An increase in commitments in the immediate neighbourhood and supporting of wider regional and global interests have broadened the range of circumstances for deployment of ADF elements. However, Australia would not acquire specialist capabilities to meet these situations: rather they would be met from the capabilities acquired for the direct Defence of Australia.

The evolution of ongoing instability in the global environment means it is important for Australia to adopt a much more self-reliant posture, than in the past. This should include expanding Australia's capacity to manufacture, modify, sustain and repair selected capabilities. Transport infrastructure should be improved, including weather proofing vulnerable lines of communication, especially those that support and sustain operations from ADF bases in northern Australia. The nation should also improve its local capacity to produce and store strategically important materials, fuels, armaments and weapons, as well as products of an industrial, medical and food security nature.

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