



EXPLAINER

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Undersea power—rethinking Australia’s approach to AUKUS

The test is what AUKUS builds, not when it arrives

Summary

- Undersea power is the capacity to understand, protect and, where necessary, contest the undersea environment.
- Geography, technology and history drive Australia’s need for undersea power, which depends on multiple systems working together.
- Australia should judge AUKUS not only by submarine delivery dates and cost, but by whether the partnership builds the wider undersea capability required before delivery. That means developing the people, industry, technology and infrastructure to understand and protect the seabed, and to operate across Australia’s vast maritime geography.
- Conventionally armed, nuclear-powered submarines remain the operational centrepiece.
- The test is whether Australia will be more capable of shaping its own strategic environment than it would have been without AUKUS. A published capability report would let Parliament judge that long before the first boat arrives.

Introduction

Debate around AUKUS has focused on the submarines as a platform: when they’ll arrive, what they’ll cost and whether they’ll be delivered. Those questions matter, but they aren’t the strategic test. AUKUS should be judged by the national undersea capability Australia builds around and beyond the

submarines: the ability to understand, operate in, protect and sustain its undersea domain.¹ The submarines are indispensable, but their strategic value depends on the wider system of people, infrastructure, technology, industry and knowledge that enables Australia to use them effectively.

AUKUS is not just a submarine acquisition program; it is a long-term strategy for strengthening Australia’s strategic agency in an increasingly contested Indo-Pacific. The relevant test is comparative: will Australia have greater capacity to shape its strategic environment, sustain advanced capability and exercise sovereign choice with AUKUS than it would have had without it? That changes what’s measured, what’s resourced and what counts as success. It’s also a test to apply before the first boat arrives.

Australia’s strategic requirement

Defence capability should follow from strategic problems Australia must solve, not a preference for any platform or technology. Australia must be able to operate across vast distances, sustain forces far from home and protect maritime approaches and critical infrastructure, all in an environment that’s contested.

Australia’s geography reinforces the requirement. Unlike many European countries, Australia cannot rely on short internal lines of communication or closely clustered allied bases. It occupies an island continent separated from principal allies

by expanses of ocean, with ports spread far apart and sea lines of communication extending thousands of nautical miles.² Geography therefore imposes constant operational demands. Future crises likely will involve long distances, contested maritime environments and enhanced technological sophistication.

Despite its distance from major centres of global power, Australia has repeatedly found itself engaged in conflicts close to home and far from its shores. Along the way it has acquired the apex predator for the navy of the time, be it a battle cruiser (HMAS *Australia*) before World War I; aircraft carriers (HMAS *Sydney* and HMAS *Melbourne*) in the Cold War; or the Oberon, Collins and AUKUS-class submarines since then. Successive generations have adapted Australia's defence posture to changing circumstances. This included reliance on Britain in the first years after Federation, the wartime partnership with the United States, and the US alliance forged in the Cold War. In the post-Cold War years, this shifted to emphasis on regional engagement and self-reliance, plus coalition operations alongside US, British and other forces.³ AUKUS is better understood as the latest stage in that long strategic evolution than as an isolated policy innovation from 2021.

AUKUS is the latest phase in a longer evolution of how Australia seeks to generate and exercise military power commensurate with its geography and available technology. The present challenge is another such adjustment. Australia remains a maritime nation with vast approaches, long lines of communication and growing dependence on undersea infrastructure. What has changed is the strategic environment in which those interests must be protected.⁴

In this sense, AUKUS represents a transition from interoperability to interdependence in selected areas of advanced defence capability where Australia would struggle to go it alone. The Submarine Rotation Force – West (SRF-West), based near Perth and operating US Virginia-class submarines, is the

clearest manifestation of that today. SRF-West is key to the plan developed to overcome decades of Australian indecision, budget constraints and flip-flopping. Properly managed, though, this interdependence strengthens rather than diminishes Australia's strategic position as it increases access to technologies, industrial opportunities and scientific collaboration that would otherwise be out of reach.

Australia is committing a large sum over 30 years to the AUKUS program.⁵ But let's keep it in perspective: A\$368 billion divided over 30 years would be A\$12.3 billion per year, or one fifth of the estimated A\$60 billion to be spent by Defence in 2026–27. Even A\$12.3 billion should be a manageable fraction of the A\$770 billion estimated federal expenditure this year – or about 1.597 percent of its budget as an insurance premium.

Discussion around AUKUS should extend beyond costs for acquiring nuclear-powered submarines (SSNs). The more useful starting point is to ask what Australia must be able to understand, protect and, where necessary, contest in the undersea domain.

Subsurface opacity

Under the surface, our oceans remain opaque. Some claim the end of the era of 'stealthy' submarines is approaching due to convergence of technologies that may make the seas transparent. These include autonomous underwater vehicles, persistent sensor networks, quantum sensing, satellite imagery and high-performance computing. That is reinforced by data fusion, drawing together disparate acoustic, magnetic, thermal, and visual data to track targets that potentially renders current stealth-based nuclear deterrence obsolete.⁶ This, however, is an incomplete argument.

The disappearance of Malaysian Airlines flight MH370 in the southern Indian Ocean illustrates the difficulty of the tyranny of the ocean. Unlike such a non-stealthy aircraft, a submarine's

Figure 1: Five phases in the evolution of Australia's strategic posture, from imperial dependence to AUKUS and Undersea Power.



Source: Kate Rosengreen

design is focused on minimising physical, acoustic and electromagnetic signatures.

Naval experts acknowledge that submarine warfare is a perpetual game of cat and mouse. As detection technology improves, so does stealth technology. Quieting technologies, advanced hull coatings and new operational tactics (like deep lurking or operating in high-noise environments) have kept up with or outpaced sensor development. The ocean is vast, deep and acoustically chaotic. Even with advanced sensors, the ocean's noise floor – biological, geological and climatic – creates natural camouflage that's difficult to pierce consistently, especially against a target trying to hide.

A sensor-saturated ocean requires infrastructure, including underwater cables, buoys and satellites. In high-intensity conflict, however, such sensors would be prime targets, mitigating the risks of undersea transparency. Indeed, transparency concerns haven't slowed the manufacture of SSNs, notably by China.

Surface transparency

Surface transparency is different. Today, three factors make Australia's conventional submarines detectable: (1) decades of pattern analysis of submarine paths and surfacing; (2) AI use in anomaly detection; and (3) proliferation of drones and low earth orbit Chinese satellites able to draw on the first two factors to detect the bow wave of a submarine's breathing pipe. This makes it difficult to hide on the Indian Ocean. Transiting from Perth to Darwin (or any other Australian port), takes a dozen or more 'snorts' – with the mast exposed to allow diesels to run and charge batteries. That surface loiter time is detectable to a degree threatening survival in conflict. The way to circumvent this is to stay underwater. For long transits that requires nuclear propulsion.

Undersea power as a framework

Undersea power is the national capacity to understand, monitor, exploit, protect and contest the undersea environment.⁷ The distinction between undersea capability and undersea power matters.

The idea has a long lineage. Mahan's conception of sea power was never simply about ships.⁸ It rested on geography, commerce, industry, institutions and naval power. The ships were the visible part. What was true on the surface is now true beneath it.

Australia has capitalised on such power before. In the Pacific War, Cockburn Sound, the natural basin near Perth with HMAS Stirling, housed about 50 submarines in World War II. Up to 170 operated in and through there during the war, disrupting Imperial Japanese supply routes and making the Malacca Strait impassable, forcing them onto alternative overland routes, including the Thai–Burma railway.⁹ The geography hasn't changed.

What should AUKUS build before the submarines arrive?

If AUKUS is to be judged by the capability it builds rather than by submarine delivery alone, then by the mid-2030s, it should have enabled Australia to develop the core elements of undersea power.¹⁰ In practical terms, that includes the ability to:

- **Understand Australia's undersea environment** in the maritime approaches through sensing, intelligence, seabed awareness, data fusion and oceanography.
- **Operate across the undersea domain** with range, persistence, endurance, command and control (complemented by autonomous systems and allied integration).
- **Protect critical undersea infrastructure** exposed to sabotage, espionage and coercion such as cables, energy infrastructure, ports, sensors and seabed systems.
- **Sustain undersea capability** to repair, upgrade and support related systems, with resilient supply chains, infrastructure and industrial capacity.
- **Develop the people, science and knowledge base** through strong links between Defence, industry, universities and allied research organisations.

These capabilities need to work as one system. Submarines, autonomous systems, sensing, intelligence, cyber, maritime patrol aircraft and supporting infrastructure should reinforce one another.

Pillar I and Pillar II must converge

AUKUS provides different parts of that capability through its two pillars and the trilateral relationship itself. The challenge is to ensure these combine into an enduring coherent capability.

Public attention focuses on Pillar I because its SSNs are AUKUS's most visible product. Yet operating those submarines requires an extensive Australian ecosystem. This includes a qualified engineering workforce, regulatory authorities, nuclear stewardship arrangements, advanced shipbuilding and sustainment infrastructure, sophisticated systems integrations and a cadre of naval personnel experienced in operating and maintaining complex military platforms. This has implications far beyond naval capability. It strengthens Australia's broader industrial base, expands advanced engineering skills and creates opportunities for Australian firms to participate in allied defence supply chains.

If Pillar I provides the operational core of Australia's future undersea capability, Pillar II provides some of its technological foundations. AI, autonomous systems, quantum technologies, cyber capabilities, advanced sensing, electronic warfare and undersea robotics are fundamental to the submarine enterprise. Pillar II creates opportunities for Australian universities, research

institutions, Defence laboratories and industry to contribute directly to the development of next-generation capabilities.

The trilateral relationship provides access, knowledge transfer, interoperability, industrial integration and operational experience. Interoperability means Australian, US and UK forces, systems and personnel can operate together effectively through compatible communications, procedures, training and data-sharing. Technology cooperation matters particularly as Australia looks to do more than access advanced systems. It must understand them, sustain them and adapt them for what comes next.

Resilience, not Autarky by the mid-2030s

By the mid-2030s, the test will be whether Australia has developed the national systems, people, infrastructure and industrial capacity required to exercise undersea power.

None of this requires self-sufficiency. No advanced military power is entirely self-sufficient. Every sophisticated defence capability depends on international research collaboration, specialised supply chains and trusted partners. Even the United States relies on allied industrial capacity across multiple sectors. The objective is resilient sovereignty within an interdependent alliance network, not autarky. The relevant test is whether Australia's practical capacity to make and implement its own decisions grows alongside its integration with partners.

Measure progress, not just promises

Measuring progress requires published results. A regular AUKUS Strategic Capability Report assessing progress against national indicators would give Parliament and the public a basis for judging the enterprise on what it builds rather than when it arrives.

Some of the most pressing constraints on AUKUS are industrial rather than conceptual. The US submarine industrial base has struggled for over a decade to lift Virginia-class production to two boats a year while beginning serial production of the Columbia class. Australia has its own version of the problem, which includes vulnerabilities in industrial sovereignty, scientific and technological capability, and human capital following decades of industrial atrophy. Skilled workers, public funds and industrial capacity are finite. AUKUS must compete with other defence priorities and with demands across the economy. Those priority choices will shape what Australia can do before its own submarines arrive.

Conclusion

AUKUS will be judged on cost, schedule and submarine delivery. But those aren't sufficient measures of success. By the time the first Australian SSN arrives, Australia should already possess stronger undersea awareness, mature autonomous systems, better protection of critical infrastructure, a suitably qualified workforce, sovereign sustainment, deeper scientific capability and a more resilient industrial base. SRF-West arrangements will help Australia work towards this. The submarines still have to arrive. They are the operational centrepiece of the AUKUS enterprise. Following decades of Australian indecision, SRF-West (predominantly operating US vessels) is a necessary stop-gap measure that will endure at least until Australian sovereign submarine capability emerges.

The deeper test is strategic agency: whether Australia accrues greater capacity to make sovereign decisions and the capability to implement them, and whether it is better placed to shape its strategic environment than it would have been without AUKUS. If the trilateral cooperation produces those outcomes, AUKUS will have built not just submarines, but Australian undersea power.

Notes

- 1 This Explainer draws on a submission to the AUKUS Public Inquiry, Undersea Power: A Framework for Evaluating AUKUS (28 August 2026) [online](#).
- 2 Andrew Carr, 'What is Australia's Strategic Metageography? Island, continent or archipelago?', *Australian Journal of International Affairs*, vol. 80, no. 2, 2026, [online](#).
- 3 Paul Dibb, *Review of Australia's Defence Capabilities*, Australian Government Publishing Service, 1986, [online](#).
- 4 Tim Barrett, *The Navy and the Nation*, Sea Power Centre-Australia, 2017, [online](#).
- 5 The Australian Commonwealth government's estimated annual expenditure for 2026-27 is \$770 billion, covering health, welfare, education, disability insurance, governance, foreign aid, infrastructure investments and more (noting health and education remain principally state responsibilities and only the federal government is responsible for defence).
- 6 Roger Bradbury et al., *opaque Oceans? The Coming SSBN Counter-Detection Task May Be Insurmountable*, National Security College, Australian National University, May 2020, [online](#).
- 7 David Brewster, Samuel Bashfield, Jocelinn Kang, Mike Constable and Anthony Bergin, *Connected and protected: Building Australia's submarine cable resilience*, National Security College, Australian National University, August 2026, [online](#); Christian Bueger and Tobias Liebetrau, 'Protecting hidden infrastructure: the security politics of the global submarine data cable network', *Contemporary Security Policy*, vol. 42, no. 3, March 2021, pp. 391-413, [online](#).
- 8 Alfred Thayer Mahan, *The Influence of Sea Power Upon History, 1660-1783*, Little, Brown and Company, 1890, [online](#).
- 9 Lynne Cairns, *Secret Fleets: Fremantle's World War II Submarine Base*, Western Australian Museum, 2nd ed., 2011; David Creed, *Operations of the Fremantle Submarine Base 1942-45*, Naval Historical Society of Australia, 2000.
- 10 Justin Bassi, Maeve Ryan and Lisa Curtis, 'AUKUS is more than submarines: its advanced capabilities pillar will also require fundamental shifts', *Center for New American Security*, 10 July 2023, [online](#); and Andrew Dowse, et al., *AUKUS Collaboration Throughout the Capability Life Cycle*, RAND Corporation, June 27, 2024, [online](#).

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