HMAS Stirling and Submarine Rotational Force – West

Recommended Citation

Richard Tanter, "HMAS Stirling and Submarine Rotational Force – West", Australian Defence Facilities, August 22, 2025, https://nautilus.org/briefing-books/australian-defence-facilities/has-stirling-and-submarine-rotational-force-west/

Under construction. Last updated: 30 October 2025

See also:

- US and UK submarine visits to HMAS Stirling, Western Australia [updated 31 October 2025: USS Vermont (SSN 792) entered port for a Submarine Maintenance Period commencing on 29 October.]

Contents

Contents

- Defence Department project outline
- US Congressional Research Service project outline
- Base planning for HMAS Stirling and SRF-West
- Nuclear radiation and waste hazards
- Corporate involvement
- U.S. planning for expansion of the *Virginia*-class attack submarine fleet
- 'Australian *Virginia*-class submarines'
- Conventional and nuclear-armament

Introduction

Update 31 October 2025

This web page deals with activities by the Australian, United States and United Kingdom governments under AUKUS Pillar 1 plans for acquisition of nuclear-powered fast attack submarines and rotational deployment of U.S. and U.K. nuclear-powered submarines in the interim.

The Australian government has commenced development of an expanded submarine facility at HMAS Stirling on Garden Island near Perth, Western Australia to accomodate the rotational presence of U.S. and U.K. submarines from 2027.

That rotational presence will be known as the Submarine Rotational Force - West. The WA facility will be complemented in the future by a companion facility on the east coast of Australia in a location to be determined. As of late 2024, the Defence Department's estimated budget for construction of SRF-West was $738.1 million. Some 500-700 US personnel will be located at Stirling for the SRF-West facilities development.

According to the Australian Navy,

> 'HMAS Stirling's primary purpose is to provide operational and logistics support to the Royal Australian Navy (RAN) ships, submarines and aircraft based in WA. The base is home to the RAN Submarine Training and Systems Centre, the Training Centre West complex, Defence Communications Station Perth, and a trials, research and support facility.'

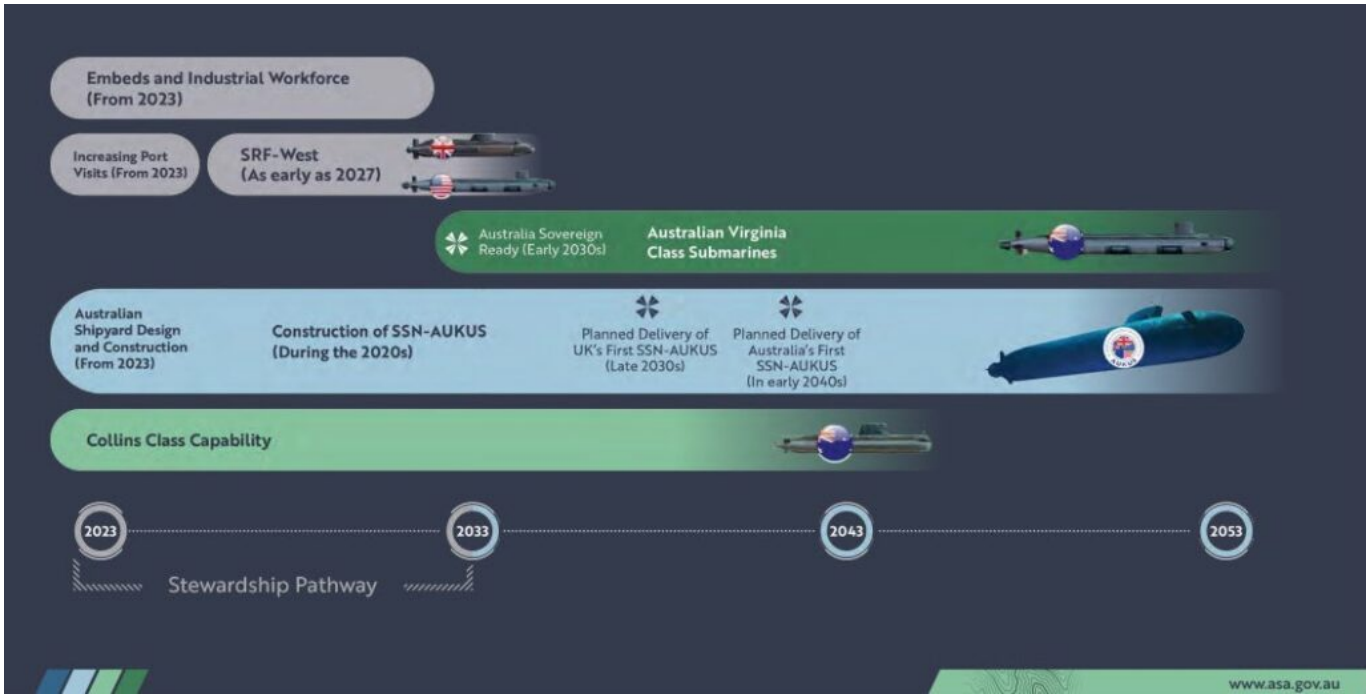
All of Australia's current submarine force of Collins-class vessels are based at Stirling.

Defence Department project outline

According to a Defence Department statement (14 March 2023):

- Beginning this year, Western Australia will receive more frequent port visits by United States nuclear-powered submarines, with the United Kingdom to follow from 2026. This will further strengthen Australia’s experience with SSNs in Western Australia.
- As early as 2027, HMAS Stirling will host the rotational presence of UK and US nuclear-powered submarines. This initiative, known as ‘Submarine Rotational Force-West’ (SRF-West), will develop Australia’s ability to operate, maintain and safely steward our future SSNs by deploying our Navy personnel on visiting UK and US boats where they will gain at-sea experience with naval nuclear propulsion.
- From the early 2030s HMAS Stirling will house Australia’s first sovereign SSN capability – the US Virginia class submarines.
- Upgrades to HMAS *Stirling* over the next 10 years will include wharf upgrades, operational maintenance, logistics and training facilities, as well as opportunities for supporting infrastructure outside HMAS *Stirling*.

[caption id="attachment_100247" align="aligncenter" width="1024"]



AUKUS Pillar 1 planned timeline
Source:'Optimal Pathway', Australian Submarine Agency, updated: 20 June 2025[/caption]

US Congressional Research Service project outline

As is often the case with Australia-U.S. alliance matters, much more information is provided by U.S. sources, and to the U.S. Congress in particular, through official testimony to Congressional committees and through the publications of the Congressional Research Service (CRS).

In March 2025, CRS published a comprehensive study of the U.S. fleet and building program of Virginia-class submarines and the implications of Pillar 1 of the AUKUS project:

> Ronald O'Rourke, Navy Virginia-Class Submarine Program and AUKUS Submarine (Pillar 1) Project: Background and Issues for Congress, Congressional Research Service, RL32418, 28 March 2025.
>
> The report discussed the key elements as follows:

- **Embedding of Australian personnel.**In 2023, Australian military and civilian personnel began to embed with the U.S. and UK navies, and in the U.S. and UK submarine industrial bases, to accelerate the training of Australian personnel. Also in 2023, the U.S. Navy began to increase SSN port visits to Australia, with Australian sailors joining U.S. crews for training and development.[44] The UK is to increase SSN port visits to Australia beginning in 2026.
- **Rotational deployments of U.S. and UK SSNs from Australia.**As early as 2027, the United States and UK are to begin forward rotations of SSNs out of HMAS Stirling, an Australian naval base near Perth, in Western Australia, to accelerate the development of Australian naval personnel, workforce, infrastructure, and regulatory system. Eventually, one UK SSN and up to four Virginia-class SSNs are to be rotationally deployed out of HMAS Stirling under the arrangement, which is referred to as Submarine Rotational Force-West (SRF-West).
- **Sale of three to five Virginia-class boats to Australia.**The United States is to sell Australia three Virginia-class submarines, with the potential to sell up to two more if needed. The first two boats, which are to be sold in FY2032 and FY2035, would be existing boats with 18 to 27 years each of remaining expected service life. The third boat, which is to be sold in FY2038, would be a

new boat taken directly from the U.S. production line, and thus have a full 33-year expected service life. In combination, the sale of these three boats would transfer more than 70 boat-years of SSN capability from the U.S. Navy to Australia's navy.

- **Replacement SSNs to be built for U.S. Navy.**The U.S. Navy anticipates eventually building three to five additional SSNs in the 2030s as replacements for the three to five Virginia-class boats that are to be sold to Australia. Until the replacement boats are built, selling three to five Virginia-class boats to Australia would reduce the size of the U.S. Navy's SSN force. The reduction in the U.S. SSN force would begin in FY2032 (when the first Virginia-class boat would be sold) and (as estimated by CRS and the Congressional Budget Office [CBO]) would last until sometime between 2040 and 2049. For additional discussion of this reduction, see **Appendix E**.
- **UK and Australiaconstruction of SSN AUKUS boats incorporating U.S. technology.** The UK and Australia, with U.S. assistance, are to design and build a new class of SSN AUKUS (sometimes pronounced *SNAW-kus*) boats incorporating U.S. submarine and naval nuclear propulsion technology. The UK is to build SSN AUKUS boats for use in the UK's navy, and Australia is to build SSN AUKUS boats for use in Australia's navy. The first UK-built SSN AUKUS boat is to be delivered to the UK's navy in the late 2030s, and the first Australian-built SSN AUKUS boat is to be delivered to Australia's navy in the early 2040s. If the Australian SSN AUKUS construction effort encounters delays, a fourth and perhaps fifth Virginia-class boat would be sold to Australia to permit Australia to continue the buildup of its SSN force. Australia by the mid-2050s is to operate a force of eight SSNs, including three to five Virginia-class boats and five to three SSN AUKUS boats.
- **Australian investments in U.S. and UK submarine industrial bases.** Australia is to invest at least $3 billion in its own industrial base to establish an Australian capacity for building and maintaining SSNs. In addition to that $3 billion, and for the purpose of supporting implementation of Pillar 1, Australia is to make a $3 billion contribution to the U.S. submarine industrial base,[45] and a $3 billion contribution to the UK submarine industrial base.[46] Of the $3 billion contribution to the United States, $2 billion reportedly is to be provided during 2025, and the remaining $1 billion is to be made in installments of $100 million per year for the next 10 years after that.[47] Australia reportedly made an initial payment of $500 million on February 7, 2025.[48]

Base planning for HMAS Stirling and SRF-West

1. Submarine Rotational Force – West Infrastructure Project, Department of Defence, [n.d., accessed 22 August 2025]
    1. 'In preparation for SRF-West, infrastructure at HMAS Stirling will be upgraded and enhanced to meet the requirements for conventionally-armed, nuclear-powered submarines – both for visiting and rotational submarines and for Australia’s own the nuclear-powered submarines in the future.'

2.

The Defence Department submission to Parliamentary Standing Committee on Public Works, Department of Defence — Submarine Rotational Force—West, Priority, Submission 1, outlined the main project as follows:

> 8. The aim of the Project is to provide critical facilities and infrastructure required at HMAS Stirling to support the initial establishment of the Submarine Rotational Force - West in 2027....
>
> 14. The 2024 National Defence Strategy confirmed ‘the Optimal Pathway for Australia to

acquire conventionally-armed, nuclear-powered submarines will be implemented as a conditions-based three-phase program, with the Submarine Rotational Force - West beginning operations as early as 2027. 15. HMAS Stirling is currently the home port to five Anzac Class Frigates, six Collin Class Submarines, an Auxiliary Oiler Replenishment ship and other support vessels. The Navy Capability Infrastructure Sub-program, scheduled for completion in 2027, is currently delivering a significant investment in new and upgraded facilities and infrastructure at HMAS Stirling to support Arafura Class Offshore Patrol Vessels and Hunter Class Frigates...

16. HMAS Stirling will also be at the forefront of the Optimal Pathway for Australia's acquisition of a conventionally-armed, nuclear-powered submarine capability, and will see:

a. more frequent port visits from UK and US nuclear-powered submarines;

b. a rotational presence for UK and US nuclear-powered submarines, known as the Submarine Rotational Force – West, from as early as 2027; and

c. Australia's first nuclear-powered submarines from the early 2030s.

17. Notwithstanding the significant investment in facilities and infrastructure at HMAS Stirling through the Navy Capability Infrastructure Sub-program, the submarine squadron's working accommodation has remained unchanged since the mid 1990's, and the existing facilities are aged, disconnected and need additional works to meet the stringent requirements for operation of nuclear-powered submarines. This Project is the first step in progressively developing HMAS Stirling over the next decade to becoming an operating base for at least half of the future nuclear-powered submarines by the early 2040s...

24. The Project involves three Project elements:

a. Project Element 1 - Maritime Infrastructure:

(1) upgrade berthing infrastructure and services and complete required dredging for nuclear-powered submarines;

(2) upgrade existing berthing infrastructure and services and construct a new pontoon for small boats; and

(3) complete required dredging at the Explosive Ordnance Loading Wharf.1

b. Project Element 2 - Operational Facilities:

(1) construct a Radiological Controls Technical Field Office.

c. Project Element 3 - Maintenance and Sustainment Facilities:

(1) construct a Controlled Industrial Facility;

(2) construct a Power Station and associated services;

(3) construct a pure water processing plant; and

(4) upgrade existing precinct engineering services infrastructure.

See also: Parliamentary Standing Committee on Public Works, Report on Department of Defence — Submarine Rotational Force—West, Priority Works, HMAS Stirling, Western Australia and other works, 06/2024, pp. 3-15.

Nuclear radiation and waste hazards

There have been numerous well-informed expressions of concern about radiation hazards to health in relation to several different aspects of the AUKUS submarine proposals and plans in relation to HMAS Stirling and SRF-West. According to Defence Department testimony to the 2024 parliamentary inquiry:

> 'At the public hearing, there was uncertainty from community groups about the level of nuclear waste that will be stored at HMAS Stirling. Representatives from Defence were able to provide further information:
>
> 'What will be coming from the submarines is, as Admiral Buckley just mentioned, things such as gloves, personal protective equipment and other items that are used in maintenance while the submarines are underway. When it comes into port, they're packaged up and moved from the submarine to the controlled industrial facility to be sorted, reduced in size, packaged and temporarily stored ahead of, in our case, further storage and disposal in the longer term.
>
> 'The other low-level waste that will be produced is as parts et cetera are worked on within the controlled industrial facility …There will be low-level waste, very low-level waste and what's called exempted waste. They will all be packaged separately and dealt with in accordance with the regulations that we're subject to by ARPANSA.
>
> 'The concept behind the temporary storage, the nature of the controlled industrial facility, is to take those couple of waste streams to then package them down, reduce them in size and, where possible, reduce the levels of radioactivity to then temporarily store them. Once we have an economical amount to move, we'll move those to sites on the Defence estate for temporary storage ahead of decisions to be made in concert with the Australian Radioactive Waste Agency on final disposal for low-level waste here in Australia.
>
> 2.24 When asked about the volumes of nuclear waste that would be generated Defence explained:
>
> > 'From 2027, we'll have the first of the United States Virginia class submarines that will start to have a presence in Western Australia. Then, you might imagine, through 2028 we'll start to develop some low-level radioactive waste. What we understand is packaged from each submarine per year is about two cubic metres. That's a drum and a bit. Over time, as we get further submarines, further workshop activities occurring, we will continue to build up that temporary storage.'

One response to these plans and the associated community consultation process was offered to the parliamentary committee by Dr Sue Wareham, speaking for the Medical Association for the Prevention of War:

> 'The public has been denied access to the AUKUS agreement, to the licence application from ASA to ARPANSA, to all the submissions ARPANSA received and to any modelling of accident scenarios at HMAS *Stirling*. Have studies been done, and, if so, what did they show? We don't know. How would any nuclear accidents at the site be managed? Who would manage them? Would US or UK military personnel have significant input? We don't know the answers to

> these questions, and there are other examples.'

The principal Defence submission to the parliamentary inquiry is here.

Other important submissions included:

- West Australian Regional Meeting (Quakers Australia)
- Medical Association for Prevention of War
- Nuclear Free WA and Stop AUKUS WA (PDF 90 KB)
- Lois Van Geloven (PDF 1465 KB)
- Friends of the Earth Australia (PDF 182 KB) Attachment 1 (PDF 4318 KB)

Ben Doherty, 'The lethal legacy of Aukus nuclear submarines will remain for millennia – and there's no plan to deal with it', *The Guardian*, 10 August 2025:

> The government has consistently said it will engage extensively with industry, nuclear experts and affected communities to build a social licence for a permanent storage site.
>
> But Dave Sweeney of the Australian Conservation Foundation says he has seen little evidence of genuine effort to build social licence. The leaders who signed the Aukus deal – and those who continue to support it – have failed to comprehend the consequences beyond their political careers, he says.
>
> "None of the leaders who announced Aukus are in power any more," he tells the Guardian. "One hundred thousand years from now, who knows what the world looks like, but Australia, whatever is here then, will still be dealing with the consequences of that high-level waste."
>
> Sweeney says the "opacity" of the decision-making around the Aukus agreement itself is compounded by fears that the deal could be only the beginning of a nuclear industry expansion in Australia.
>
> "We see this as a Trojan horse to expanding, facilitating, empowering the nuclear industry, emboldening the nuclear industry everywhere," he says. "It is creepy, controversial, costly, contaminating, and leading to vastly decreased security and options for regional and global peace."
>
> Beyond the astronomical cost of the submarine deal, its the true burden would be borne by innumerable future generations.
>
> "We are talking thousands and thousands of years: it is an invisible pervasive pollutant and contaminant and the only thing that gets rid of it is time. And with the whole Aukus deal, that's what we're running out of."

Corporate involvement [under construction]

The companies that will lead the construction of U.S. *Virginia*-class submarines for Australia and for U.K.-Australian designed and built *Aukus*-class submarines are amongst the top-ranking arms-producing and military services companies in the world, according to the Stockholm Peace Research Institute.

The prime contractors for design and construction of U.S. *Virginia*-class submarines, including the

Block VII submarine to be built for the Australian government, are General Dynamics Electric Boat (GDEB) and Huntington Ingalls Industries (HIH). GDEB is a subsidiary of General Dynamics Corporation, the third largest U.S. defence contractor, and was the fifth largest arms and military services corporation in the world in 2023. HIH, formed in 2011 as a spin-off from Northrop Grumman, is the largest U.S. military ship-building company.

In November 2024, the Australian and U.K. governments announced that the prime contractors for the design and construction of the *AUKUS*-class of nuclear-powered fast attack submarines for the Australian and British navies will be BAE Submarine Systems and ASC Pty Ltd, (formerly known as the Australian Submarine Corporation), an Australian government-owned company. BAE Submarine Systems is a subsidiary of BAE Systems, which ranked sixth in the world's top 100 arms-producing and military services companies in the world according to SIPRI.

Documents released from the Australian Submarine Agency (ASA) under freedom of information laws contain extensive ASA material on contracting issues.

U.S. planning for expansion of the *Virginia*-class attack submarine fleet

The USS *Virginia* (SSN 774), launched in 2003) was the first of a new class of U.S. nuclear-powered fast attack submarines, following on from the *Los Angeles*-class SSN program. As of mid-2025, the U.S. Navy has commissioned 23 Virginia-class boats, which in four versions or "Blocks". The U.S. Navy lists the "general characteristics' of the *Virginia*-class as:

> Builder: General Dynamics Electric Boat and HII- Newport News Shipbuilding
>
> Date Deployed: USS Virginia commissioned Oct. 3, 2004
>
> Propulsion: One nuclear reactor, one shaft
>
> Length: 377 feet (114.8 meters); 461 feet (140.5 meters) with Virginia Payload Module
>
> Beam: 34 feet (10.36 meters)
>
> Displacement: Approximately 7,800 tons (7,925 metric tons) submerged; 10,200 tons (10,363.7 metric tons) with VPM
>
> Speed: 25+ knots (28+ miles per hour, 46.3+ kph)
>
> Crew: 145: 17 officers; 128 enlisted
>
> Armament: Tomahawk missiles, 12 Vertical Launch System tubes (SSNs 774-783) or two Virginia Payload Tubes (SSNs 784 and beyond, and four additional payload tubes (SSNs 803 and beyond); Mk 48 Advanced Capability torpedoes, four torpedo tubes.

As of mid-2025, Virginia-class SSNs visiting HMAS Stirling in Western Australia in recent years have been Block I (Hawaii, North Carolina) and Block II (Minnesota, Mississippi) types. The Block IV program is almost complete, and boats in Blocks V are either under construction or authorized to begin construction.

[caption id="attachment_100248" align="aligncenter" width="1024"] Virginia Class Submarine Design Evolution by Block.
Source: 'Virginia-class SSN', Submarine Industrial Base Council[/caption]

'Australian *Virginia*-class submarines'

According to current plans, Virginia-class SSNs to be built for the Australian Navy are classified as Block VII, though with few details of variation in design, or as of mid-2025, considerable doubt about construction numbers or timing.

In late 2024, the U.S. Navy announced plans for Virginia-class Block VIII SSNs, with commissioning possible for the first in class in the early 2040s, following on from a new *Columbia*-class fast attack submarine.

Conventional and nuclear-armament

At present, U.S. fast attack submarines are equipped only with conventional, non-nuclear armament. This follows a Presidential Directive by President George H.W. Bush in 1991 to remove all tactical nuclear weapons from U.S. Navy surface vessels, naval aviation, and attack submarines, although U.S. ballistic missile submarines have remained nuclear-armed. This directive could be reversed at presidential will at any time. However, U.S. Navy planning supported by the first Trump administration for a new nuclear-armed sea-lunched cruise missile (SLCM-N) to replace former nuclear-armed sea-launched Tomahawk missiles removed from service more than three decades ago has been a stop-start matter, with little chance of production in under a decade.

From about 2019 *Virginia*-class submarines and later have been equipped with the Virginia Payload Module - a 25 m.-long extension of the mid-section of the submarine's hull with four large-diameter, vertical launch tubes for storing and launching additional Tomahawk missiles or other payloads:

> 'The four additional launch tubes in the VPM can carry a total of 28 additional Tomahawk cruise missiles (seven per tube),35 which would increase the total number of torpedo-sized weapons (such as Tomahawks) carried by the Virginia-class design from about 37 to about 65—an increase of about 76%.'

It may be theoretically possible for submarines equipped with the Virginia Payload Module to carry the new nuclear-armed sea-lunched cruise missile (SLCM-N), but there is not likelihood of the U.S. Navy's arsenal of the nuclear-armed version of the submarine-launched Tomahawks retired three decades ago being reconstituted, and as of 2025, there is no official discussion of such a plan to equip SSNs with SLCM-N or even design details of the missile.

View this online at: https://nautilus.org/briefing-books/australian-defence-facilities/hmas-stirlin-
-and-submarine-rotational-force-west/

Nautilus Institute
608 San Miguel Ave., Berkeley, CA 94707-1535 | Phone: (510) 423-0372 | Email:
nautilus@nautilus.org