Australian Government
Australian Submarine Agency

ASA

HMAS *Stirling* Controlled Industrial Facility

ARPANSA licence submission overview

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Controlled Industrial Facility Licence Application for HMAS *Stirling*

As part of the support to Australia's conventionally armed, nuclear-powered submarine capability, the Australian Submarine Agency (ASA) is seeking a licence from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) to authorise the construction of a prescribed radiation facility (referred to as a Controlled Industrial Facility), to be located at HMAS *Stirling* on Garden Island, Western Australia. This licence application follows the site preparation licence, which was issued to the ASA by ARPANSA in July 2024.

In designing and delivering this support facility for Australia's conventionally armed, nuclear-powered submarines, the ASA is prioritising the highest standards of safety and security for our people, the public and the environment.

Australia's Nuclear-Powered Submarine Program

On the 14th March 2023, the respective leaders of Australia, the United Kingdom (UK), and the United States (US) jointly announced the Optimal Pathway for Australia to acquire conventionally armed, nuclear-powered submarines. With the support of our AUKUS partners, the Optimal Pathway will be executed over several decades to ensure that Australia can effectively and efficiently grow the capability and capacity to undertake this endeavour safely and securely, in a way that sets the highest nuclear non-proliferation standard. Australia's acquisition of nuclear-powered submarines is fully consistent with our non-proliferation obligations.

From as early as 2027, the US and the UK will have a rotational presence at HMAS *Stirling* of one UK, and up to four US, conventionally armed, nuclear-powered submarines.

The rotational presence of UK and US nuclear-powered submarines at HMAS *Stirling* will be known as Submarine Rotational Force - West (SRF-West). Following on from this, Australia will purchase three Virginia class submarines from the US, and begin building SSN-AUKUS submarines in Adelaide, South Australia. Australia plans to deliver the first Australian built SSN-AUKUS to the Royal Australian Navy in the early 2040s.

AUKUS activities at HMAS *Stirling* from 2027

Australia will need to develop the necessary skills and experience to manage our own nuclear-powered submarines. To do this, we need to support in-water maintenance activities of UK and US conventionally armed, nuclear-powered submarines from as early as 2027.

Our planned in-water maintenance activities will provide the Australian workforce (ADF, APS and industry) with a vitally important opportunity to learn how these vessels operate. Particularly regarding the safe and secure management of naval nuclear propulsion technology, our workforce will become competent in performing these activities on our own sovereign nuclear-powered submarines from the early 2030s. We will ensure these activities are undertaken safely, securely and effectively.

To support this, Australia will need to build a Controlled Industrial Facility. This facility will be a technical and engineering industrial workshop for servicing and repair of naval nuclear propulsion components and tools. It will also receive, manage, treat, decontaminate and temporarily store solid and liquid, low-level radioactive material generated from the submarines during their operations. The low-level radioactive waste management activities are similar to those that occur in over 100 locations nationwide, including hospitals, science facilities and universities.

The facility will be designed to provide the highest level of protection and lowest level of exposure to our people, and the environment. Conservative hazard assessment has demonstrated that there will be no off-site radiological consequences to the public as a result of the activities at this facility. The Controlled Industrial Facility is not a nuclear installation as defined by the *Australian Radiation Protection and Nuclear Safety Act 1998*.

Benefits to Australia

Australia's acquisition of sovereign, conventionally armed, nuclear-powered submarines is to bolster Australia's military capability and capacity to defend Australia and Australia's national interests. As the National Defence Strategy underlines, Australia's acquisition of conventionally armed, nuclear-powered submarines is a prudent response to the unprecedented military build-up in our region.

The acquisition of Australian nuclear-powered submarines is dependent on the establishment of the Controlled Industrial Facility. The development and operation of a specialised Controlled Industrial Facility is central to supporting the Submarine Rotational Forces from the UK and US. The activities conducted in the Controlled Industrial Facility will increase our workforce's education and skills to build and enhance not only Australia's industrial and technical capability, but also our capacity. These effects will benefit our education sector, our industrial base and our economy.

Construction of the Controlled Industrial Facility

Until the new Australian Naval Nuclear Power Safety Regulator is established, the Chief Executive Officer of the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) will assess licence applications for any prescribed radiation facilities required for the maintenance and support of nuclear-powered submarines.

HMAS *Stirling* has been an operational Navy base since 1978. It is the Royal Australian Navy's fleet base in Western Australia, and is home to the current Collins class submarine fleet. Site characterisation studies have been conducted at HMAS *Stirling* and determined a suitable location on which a Controlled Industrial Facility may be constructed.

The Australian Submarine Agency (ASA) has adopted a conservative approach to hazard identification and safety analysis, and decided that an application for a prescribed radiation facility should be made. This further demonstrates the ASA's commitment to complying with the highest standards of safety and security for our people, the public and the environment.

ARPANSA adopts a staged approach to licencing in line with international best practice. A separate licence application is required for stages, including, preparing a site for, constructing, operating, and decommissioning a facility.

The ASA is therefore seeking this second licence from ARPANSA to construct the Controlled Industrial Facility at HMAS *Stirling*. The ASA submitted its construction licence application for a prescribed radiation facility to the CEO of ARPANSA on 06 December 2024.

What has been provided to ARPANSA in the Licence Application

Like all applications for any licence to ARPANSA, the ASA has been required to demonstrate **how** it will:

- protect our people, the public and the environment from the harmful effects of radiation
- implement proper operating conditions for activities that are regulated by necessary authorities
- secure the Controlled Industrial Facility and surrounds and demonstrate secure operations
- prevent incidents and accidents
- mitigate the consequences of accidents (should they occur).

In explaining how it will deliver these outcomes, the ASA has adopted the practices and procedures contained in guidance published by the International Atomic Energy Agency (IAEA) and ARPANSA.

The ASA has provided information to ARPANSA that fully explains the function of the Controlled Industrial Facility, the activities that will be

conducted within the facility, and the radioactive components, tools and materials that will be managed and treated within the facility.

In accordance with the *Australian Radiation Protection and Nuclear Safety Regulations 2018*, the ASA has also provided information on safety management, radiation protection, low-level radioactive waste management, security management, emergency management and environment protection management, amongst other requirements. Included in this body of information is how the ASA is adopting international best practice published by the IAEA and ARPANSA, and building it into its policies and procedures to ensure the ASA upholds the highest standards of nuclear safety, security and safeguards.

Building a safety culture

Australia is building on its seventy-year record of safely and securely operating nuclear facilities and conducting nuclear science activities.

As part of the commitment to protecting our people, the public and the environment, the ASA acknowledges the importance of establishing an effective safety culture.

A workforce committed to exceptionally high standards, an absolute focus on safety to avoid accidents, and strong security to avoid its misuse is critical.

In recognition of the importance of security, safety and safeguards culture, the ASA has developed ten Nuclear Mindset Principles. The Nuclear Mindset is a set of shared qualities and attitudes that shape the way that we think, act and learn. It reflects our dedication to excellence and unwavering commitment to safety, security and safeguards of nuclear propulsion technology. The ASA Nuclear Mindset Principles are as follows:

- *Nuclear safety is paramount.* When it comes to nuclear safety there can be no compromise. The consequences of a nuclear accident have the potential to cross borders and generations. Therefore, control of nuclear activities and compliance with nuclear safety processes and practices are paramount for safe ownership, custody and operation.
- *Unyielding commitment to security and nuclear safeguards.* Like safety, there can be no compromise in meeting the requirements for nuclear security and safeguards for Australia's Nuclear-Powered Submarine Program. Ensuring that nuclear materials and assets, both physical and intellectual, do not come into the hands of those with ill intent is critical.
- *The best people dedicated to excellence.* A workforce comprised of professionals who are the best in their respective fields, and who strive for excellence, ensures that the objectives of the program can be met safely and securely.
- *Maximise reliability, availability and readiness.* First and foremost, Australia's Nuclear-Powered Submarine Program is in place to deliver cutting edge military capability. To ensure this intent is met, the capability must be a reliable and available military deterrent.
- *Accountability.* With the introduction of a highly consequential capability, importance of individual responsibility for all actions and behaviours is required.
- *Strive for improvement.* Continuous improvement, learning and self-assessment need to be encouraged at all levels of the organisation in order to avoid 'blind spots' and develop an environment of excellence.
- *Compliance with approved standards and procedures.* The primary way in which assurances can be given that the capability is being operated safely and securely is through the rigorous compliance with all standards and procedures that have been developed, tested and approved to be used.
- *Not living with deficiencies.* Effective use of naval nuclear propulsion technology is dependent on strict operational focus and oversight at all times.
- *Decisions are considered, well-informed and underpinned by strong technical evidence.* Nuclear technology is founded in precision science therefore all decisions affecting the technology must be held to the same rigour. The importance of strong technical evidence cannot be diminished.

- *Clear and effective communication.* To enable an environment of excellence, in which concerns are able to be voiced, and open and honest dialogue is supported, emphasis needs to be placed on clear and effective communication. Additionally, good communication builds trust and confidence both within and outside the organisation, including with the wider Australian public.

Importantly, the ASA recognises that there is an interdependency between the Nuclear Mindset and safety management systems, security management system and quality management systems—a strong mindset will reinforce a management system. Informed by UK and US expertise, the ASA is developing a comprehensive safety management system that supports the safe operation of Australia's nuclear-powered submarine enterprise. Therefore, the nuclear mindset will be considered as part of management systems and will be embedded within policies, processes and procedures.

Protecting our people, the public and the environment

The ASA is committed to the protection of our people working in the Controlled Industrial Facility, the Australian public, and the surrounding environment during the handling of radioactive materials generated from the maintenance activities. Implementing Australian, UK and US best practice through the application of these high standards will be underpinned by the ASA's strong technical base and internal assurance systems and the Australian regulatory system, all of which will be critical to the success of Australia's Nuclear-Powered Submarine Program.

The ASA is working with the Australian Nuclear Science and Technology Organisation (ANSTO) and the nuclear agencies in the UK and US to design the facility and develop its policies and practices that ensure the highest level of protection and lowest level of exposure.

The ASA's guiding radiological controls principles are:

- Control and monitor the doses of our people
- Keep doses as low as reasonably achievable
- Prevent contamination of our people and the work environment
- Prevent internal exposure of our workers
- Control radioactive material from cradle to grave
- Protect the public
- Prevent adverse impacts to the environment
- Ensuring our people have the training, supervision and resources necessary to execute their work to achieve the mission

A conservative hazard assessment has demonstrated that there will not be radiological consequences off-site from the future operation of the Controlled Industrial Facility, and that any on site doses will be well below statutory limits.

Baseline and ongoing monitoring

To provide the highest level of confidence to the Australian public, the Department of Defence and the ASA will monitor and publish radiological and environmental data for HMAS *Stirling* and its surrounds, including the site of the Controlled Industrial Facility.

Defence and the ASA have commenced baseline radioactivity measurements to determine the pre-existing naturally occurring and otherwise inherent radioactivity of the site. Establishing the baseline of radioactivity of the site and undertaking ongoing monitoring will enable Defence and the ASA to positively demonstrate that the activities within the Controlled Industrial Facility do not impact the environment during its operation. The ASA will publish the results of this ongoing environmental monitoring on a periodic basis.

Information on Radioactive waste

Activities that will be conducted in the Controlled Industrial Facility

The ASA is planning to undertake the following activities within the Controlled Industrial Facility:

- ✓ Maintenance, servicing and repair of naval nuclear propulsion components and tools
- ✓ Reception, management, treatment and decontamination of low-level, solid and liquid radioactive material generated from submarines during their operations in accordance with all applicable regulations and approved processes
- ✓ Temporary storage of low-level radioactive material before transport to an approved licenced disposal facility within Australia.

Activities that will **not** be conducted in the Controlled Industrial Facility

Activities conducted within the Controlled Industrial Facility will **not involve** the handling, storage or disposal of:

- ✕ *any* nuclear material related to the nuclear-powered submarine nuclear fuel cycle, including spent nuclear fuel, nor
- ✕ *any* other intermediate-level or high-level radioactive material.

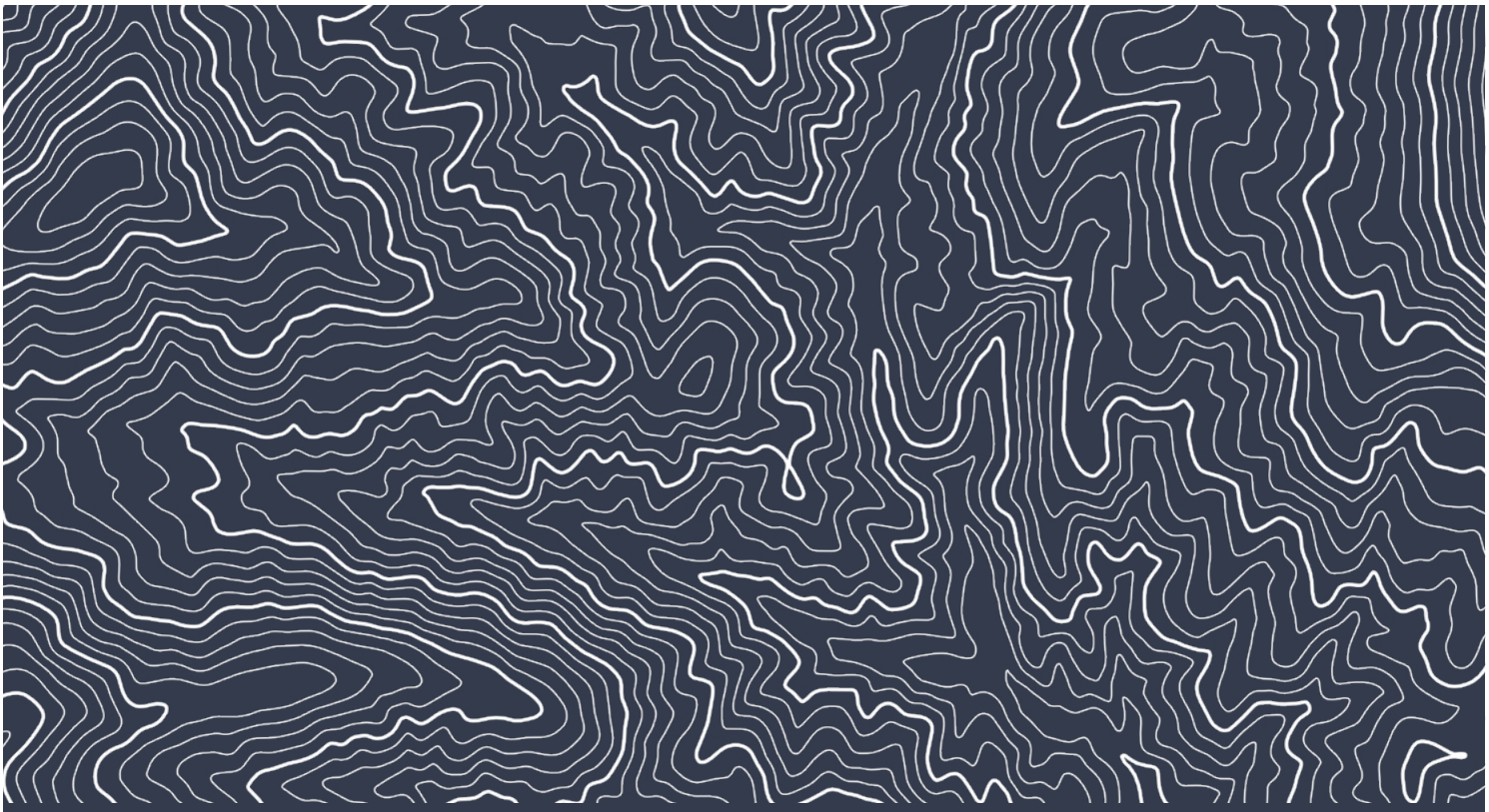
Where will that radioactive waste go?

The Government is considering the process to identify locations in the current or future Defence estate that are suitable for the storage and disposal of low-, intermediate- and high-level radioactive waste, including spent fuel, generated by Australia's submarines. The ASA is working through next steps to inform advice to the Government.

As the Deputy Prime Minister has said, "there will be appropriate public consultation ..." [22 March 2023, Ministerial statement to the House of Representatives, Canberra]. The disposal location for the radioactive waste from nuclear-powered submarines has not yet been decided.

What is low-level radioactive waste?

Australia's Radioactive Waste Management Framework sets out principles and long term goals for radioactive waste management in Australia. The Framework describes 'low-level radioactive waste' as material containing higher levels of short lived radioactivity and low levels of long lived radioactivity and can be safely stored and disposed of in a purpose-built, engineered, above-surface or near-surface Facility.



Further information on the Construction Licence Application

The ASA plans and arrangements for managing the safety of the CIF are available in the following licence submission technical overviews:

a. ARPANSA Construction Licence Technical Overview
b. Safety Analysis Report Technical Overview
c. Effective Control Arrangements Technical Overview
d. Safety Management Technical Overview
e. Radiation Protection Technical Overview
f. Radioactive Waste Management Technical Overview
g. Emergency Management Technical Overview
h. Environment Protection Technical Overview
i. Decommissioning Technical Overview

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