



# THE AUKUS NUCLEAR-POWERED SUBMARINE PATHWAY

A PARTNERSHIP FOR THE FUTURE

## NUCLEAR STEWARDSHIP AND WASTE

For over 60 years, the United Kingdom and United States have operated more than 500 naval nuclear reactors that have collectively travelled more than 240 million kilometres without a single radiological incident. UK and US SSNs have never experienced a reactor accident or release of radioactive material that has had an adverse effect on human health or the quality of the environment. A sophisticated security and safety architecture will surround Australia's nuclear-powered submarine (NPS) program, building on our 70-year unblemished track record of operating nuclear facilities and conducting nuclear science activities.

### What is stewardship?

Australia uses the phrase 'nuclear stewardship' to describe the responsible planning, operation, application and management of nuclear material, technology, and facilities. As Australia will be a non-nuclear-weapon state with a naval nuclear propulsion capability, stewardship will also include the implementation of appropriate safeguard arrangements as agreed between Australia and the International Atomic Energy Agency.

Australia is unwavering in its commitment to safely and securely steward its nuclear-powered submarines, through their entire life cycles. It will also draw on the UK and US' decades of experience and world-leading expertise in delivering, operating and maintaining nuclear powered submarines.

### What is the 'sovereign ready' milestone?

'Sovereign ready' is an important milestone on the pathway that will allow Australia to systematically and carefully develop its capacity and capability to steward submarines over time. It refers to the point at which Australia has the ability to safely own, operate, maintain and regulate a sovereign conventionally-armed, nuclear-powered submarine capability.

The UK and the US are committed to supporting Australia to achieve this milestone before it

receives conventionally-armed, nuclear-powered submarines. Australia's target date for achieving the 'sovereign ready' milestone is the early 2030s, enabling it to acquire its first Virginia class SSN from the US in the early 2030s.

### How will Australia safely operate its nuclear-powered submarine capability?

Informed by UK and US expertise, Australia will develop a comprehensive safety management system to support the safe operation of Australia's nuclear-powered submarine enterprise. This will be underpinned by a system of regulation calibrated to the unique needs of Australia's SSN capability. Regulatory oversight will occur across the nuclear aspects of the submarine platform and supporting facilities and infrastructure, and will leverage the work of existing nuclear regulators.

### How will Australia manage radioactive waste?

As a responsible nuclear steward, Australia will manage all radioactive waste from its nuclear powered submarines domestically. This includes radioactive waste with lower levels of radioactivity generated by day-to-day submarine operations and maintenance. And radioactive waste with higher levels of radioactivity, including spent fuel, which is produced when submarines are decommissioned at the end of their service life. Australia has safely and securely managed radioactive waste for decades, including 70 years of experience managing waste from facilities like its multi-purpose nuclear reactors at Lucas Heights. Australia will continue to ensure the highest standards of safety, security and non-proliferation safeguards are applied to this material, in accordance with Australia's domestic and international obligations, including the Treaty of Rarotonga. All radioactive waste will be managed within the framework of Australia's Comprehensive Safeguards Agreement and Additional Protocol.

## Where will Australia store and dispose of radioactive waste?

No decision has been made on a location within Australia for the disposal of radioactive waste from nuclear-powered submarines. Further technical work and consultation is required to determine preferred disposal pathways. Operational radioactive waste will be stored on Defence sites in Australia.

Defueling Australia's nuclear-powered submarines is not expected to occur for decades. However, the complexity of the task means that early planning will be important.

As an initial step, Defence - working with relevant agencies including the Australian Radioactive Waste Agency - will undertake a review in 2023 to identify locations in the current or future Defence estate that could be suitable to store and dispose of intermediate-level waste and high level waste, including spent fuel. The outcomes of the review will inform a more detailed process which will include consultation and engagement with community and Indigenous groups, and consideration of wider social license and economic implications.

## What facilities will be required for managing radioactive waste?

The storage and disposal of radioactive waste from Australia's nuclear-powered submarines will require:

- Facilities and highly-trained people to remove radioactive waste and spent fuel.
- Transport in sealed and secure containers to storage or disposal facilities.
- Purpose-built facilities for interim storage and permanent disposal of radioactive waste, including spent fuel.
- Social license earned and sustained with local and regional communities.

