



25 November 2024

## **Submarine Rotational Force – West, Priority Infrastructure Works Application Number 02643**

Tellus restricts its comments to the proposal to store, on an indefinite temporary basis, low-level radioactive waste from nuclear submarines at a controlled industrial facility at HMAS Stirling.

### **The Defence proposal**

Tellus notes:

- the proposal by the Department of Defence in relation to the Priority Infrastructure Works (the “Works”),
- that the proposal includes the establishment of a controlled industrial facility (CIF) for maintenance of nuclear submarines, and
- that Defence proposes to store low level radioactive waste in the CIF on a temporary basis for an indefinite period.

### **About Tellus**

Tellus owns and operates Australia’s first (and only) nationwide facility for the permanent disposal of low-level radioactive waste. Located 240km northwest of Kalgoorlie, Sandy Ridge is a near-surface geological repository, a type of facility well-known internationally and acknowledged by the International Atomic Energy Agency as extremely safe for the permanent disposal of low-level radioactive waste.

The Sandy Ridge facility is licensed and equipped to dispose safely of almost all forms of hazardous waste from the energy sector, whether it be heavy metals from end-of-life solar panels, mercury and naturally occurring radioactive material (NORM) from the decommissioned oil and gas infrastructure, air pollution control residue (APCr) from Waste to Energy generation plants, to low-level radioactive waste from maintenance of nuclear reactors in submarines. We can accept this waste from anywhere in Australia or its Exclusive Economic Zone.

Australia’s geology is ideal for safe hazardous waste management, including the permanent disposal of radioactive waste. Sandy Ridge is located on the Archean Yilgarn craton where extensive granitic rocks are overlain by surficial kaolin and saprolite formed by in-situ weathering. The environment is arid, with low annual rainfall and high rates of evapotranspiration. The Yilgarn craton has been stable for around 2.7 billion years and dry for at least 100 million years, with no underground aquifers present. These geological

characteristics mean Sandy Ridge is one of the safest places on earth to permanently dispose of hazardous waste, whether chemical or radioactive.

Since receiving a licence to dispose of radioactive waste in early 2023 Tellus has, without incident, safely transported for permanent disposal more than 6,000 cubic metres of low-level radioactive waste contaminated material, approximately 1,100 sealed sources and ASNO safeguards material from every mainland state and territory in Australia.

Sandy Ridge operates with approval from the Western Australia Government and is licensed by the WA Radiological Health Council to permanently dispose of low-level radioactive waste (LLW). Tellus' radioactive waste licence application was reviewed by ARPANSA, who was engaged by WA Radiological Health Council for evaluation purposes. Tellus also holds an ASNO safeguards permit and has accepted LLW from nearly every State and Territory in Australia.

### **Defence comment about alternatives to storage of radioactive waste at the CIF**

Section 4.3.1 of the Application notes that Defence has no possible alternatives for their proposed action.

At 4.3.8, in relation to an alternative to locating the CIF remotely from a naval base, Defence states:

*“Direct transport, handling and disposal of radioactive material to an end-of-life waste disposal facility was considered and disregarded on the basis that the radioactive material would be transported over a much greater distance (more than 550 km), increasing the risk of transport vehicle incidents and potential release of radioactive material. Locating the CIF remotely from HMAS Stirling places additional security risks on the proposed action given the longer transport route and the need for dedicated security at the remote site.”*

### **Tellus response**

#### *a) Sandy Ridge as alternative option*

As the operator of the only operational disposal facility in Australia approximately 550km from Perth, Tellus assumes Defence is referring to its Sandy Ridge facility as an alternative to on-site radioactive waste disposal at Stirling. The only other possible facility in the area is a non-operational state government site lacking permanent infrastructure, which was used as an intractable waste disposal facility of last resort, on a project/campaign basis, provided no other sites provide this service. Since Tellus now offers intractable waste disposal services, this other facility is arguably now redundant.

#### *b) No contact from Defence*

Tellus was not contacted by Defence for the purpose of assessing whether Sandy Ridge could be used to permanently dispose of AUKUS low-level radioactive waste, as an alternative to temporary, ongoing storage at HMAS Stirling. This includes assessing safe transport and security arrangements and the practical difficulties of accessing material which has been buried underground at a secure, remote location.

c) *Safety risks of transport*

The remoteness of the location 550km from HMAS Stirling is noted as contributing to an increased risk to the safe management of AUKUS radioactive waste. This view contrasts with the general approach in Australia and internationally of siting permanent disposal facilities in geologically safe locations away from built-up areas. For example, a key feature of Australian Governments' recent attempts to site a permanent national radioactive waste disposal facility was the remoteness of the proposed location, whether at Muckaty Station in the Northern Territory, or Kimba in South Australia, both locations far from major population centres. Does Defence propose to site its permanent disposal facility/ies in built up areas close to its naval bases, on the basis that this is safer and more secure because it doesn't need to transport the waste far from its origin?

This appears to be a material shift in policy and contrary to international best practice (see below). Additionally, it ignores the fact that this waste must one day be disposed, and the location will certainly be far away from the Perth metropolitan area. Accordingly, it must eventually be transported far from HMAS Stirling – the transport issue raised by Defence is not solved by delay. Thankfully, there are safe methods and a safe endpoint to do this today.

d) *International Atomic Energy Agency best practice – safety and security*

Australia is a member of the International Atomic Energy Agency (IAEA), which sets out international best practice for radioactive waste management. According to the IAEA's 2009 guidance *Policies and Strategies for Radioactive Waste Management*, immediate disposal (2009, p31) in an appropriate facility designed to provide isolation from the biosphere (2009, p22) is usually the preferred option in considering timing and disposal strategy. Near-surface disposal facilities are considered an appropriate facility (2009, p27.).

IAEA's 2003 publication, *The Long-Term Storage of Radioactive Waste: A Position Paper of International Experts*, makes a key point: safety in the long-term is better ensured by disposing of radioactive waste material as soon as practicable. A strong argument for immediate/timely disposal, as opposed to indefinite, temporary storage, is the risk of degradation of waste contents and packaging over time. Australia, through agencies like ANSTO, has demonstrated that this risk can be successfully managed, but there are other examples where this has not been the case, such as the thousands of drums of low-level radioactive waste material exposed to corrosion stored on the Woomera Defence lands. Importantly, the IAEA notes: "The longer the waste is stored before transfer to another facility, the greater are the probabilities that such degradation will occur, with a resultant potential of radiation exposure for the workers who will eventually have to carry out the transfer and handling operations. In this regard, long term safety is not well served by very long periods of storage." (2003, p5.)

Immediate/timely disposal eradicates the risk of degradation and will significantly reduce, if not eliminate, risks to workers (including Defence personnel) managing the CIF who would otherwise be responsible for the ongoing maintenance and management of temporarily stored radioactive waste at HMAS Stirling. Over time, managing these safety risks will be more likely to be a higher-cost approach, through double handling of storage and later disposal, than the one-off costs of timely disposal.

Further, immediate disposal is a more secure approach than what has been proposed by Defence; the IAEA makes clear that disposal underground of low-level radioactive waste

increases security, and disposal as early as is reasonable is “strongly and unequivocally” more secure (2003, p12.) Waste deposited in an underground repository cannot be accessed and guarantees no further exposure to humans once disposed of.

In summary, permanent disposal is preferable to temporary storage, a position also outlined by the Australian Government through the Australian Radioactive Waste Agency’s own Australian Radioactive Waste Management Framework, released in 2018. Current Australian government policy is for the establishment of a permanent disposal facility for the government’s radioactive waste.

*e) No guarantee of timely permanent disposal by Defence*

Defence proposes to store radioactive waste on a temporary basis in the CIF at HMAS Stirling until a permanent disposal facility can be established, notwithstanding the fact that a licensed and operational permanent waste disposal facility exists nearby, in a geologically suitable location far from population centres that has already been utilized by Tier 1 companies and State governments for low level radioactive waste disposal and the Commonwealth government and Defence for hazardous chemical waste disposal.

There is currently no timeline for when Defence will have its own permanent disposal facility in operation. Siting a national waste management facility for the permanent disposal of low-level and intermediate-level waste has been a near fifty-year challenge for successive Australian Governments. While the government continues to adopt the same government-led approach to siting and establishing a facility, it is likely to be many more years before it can achieve this task.

The Australian Radioactive Waste Agency noted on 24 October 2024 that: “Going from where we are now to ultimately having a disposal facility accepting waste is likely to take decades” (ARWA Evidence to Select Committee on Nuclear Energy). This is consistent with international experience for the establishment of radioactive waste disposal facilities, in similar jurisdictions like the United States, Canada and the United Kingdom. Approval of Defence’s proposal is likely to lead to the long-term storage of radioactive waste in a location where a safe alternative is close by.

This difficulty in governments siting and gaining social license for geological repositories is also why the Federal government and Defense in the United States uses privately owned geological repositories (e.g. Energy Solutions in the US) to store low-level radioactive waste. Defence taking the same measures would be in-line with AUKUS practice.

*f) EPBC evaluation of plan for permanent waste disposal?*

Defence is not proposing to permanently dispose of low-level radioactive waste at HMAS Stirling (presumably on safety grounds). If Defence’s EPBC application does not set out with sufficient detail a solution for the permanent disposal of AUKUS radioactive waste, will Defence be required to obtain further regulatory approval to address how it plans to dispose of material volumes of low-level radioactive waste at a future date?

Further information about Tellus and our comment can be obtained by contacting Ryan Bloxsom, Head of External Affairs, at [ryan.bloxsom@tellusholdings.com](mailto:ryan.bloxsom@tellusholdings.com).

Yours sincerely

A handwritten signature in black ink, appearing to read 'Nate Smith', with a long horizontal flourish extending to the right.

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