

# MANAGEMENT, STORAGE AND DISPOSAL OF WASTE

## STABILITY

The storage and disposal of used nuclear fuel in South Australia is likely to deliver substantial economic benefits to the South Australian community. An integrated storage and disposal facility would be commercially viable and the storage facility could be operational in the late 2020s.

The late 2020s How come Australia could have this nuclear waste facility operational so soon, when other countries have still not satisfactorily completed such a facility over many decades?

The Royal Commission must know that this requires – first of all, overcoming Federal environmental law, and overturning South Australia's State law against importing nuclear wastes. And that's only the beginning in overcoming public rejection (1A)

**78. For the management of used fuel and intermediate level wastes, South Australia has a unique combination of attributes which offer a safe, long-term capability for the disposal of used fuel.**

They include:

- a. the underlying Archaean geological structure, the Gawler Craton, at an appropriate depth for disposal

Earthquake hazard: For either temporary or permanent storage of radioactive wastes, South Australia poses great risks. While the whole State has a small earthquake hazard zone, there are large sections which have an increased earthquake hazard. Particularly in the South of the State (1)

Risk to precious artesian water. While the South of the State has earthquake risks, almost the entire of the rest of the State covers the Great Artesian Basin. (2)

Effectively, this means there is almost no part of South Australia that could safely store radioactive trash for decades, let alone for thousands of years.

I am grateful to Paul Langley, who has set out the problems in relation to the Gawler Craton - *“The Royal Commission does not provide a map that defines the area covered by the Gawler Craton. ....There are many maps showing the Gawler Craton and most of them vary radically from one another.”*

Langley also drew attention to instability within the Ceduna Sub Basin – *“The proposed HLNW geologic repository may be (or may not be) flooded with ground water after completion – as part of the design criteria. I have to ask how such a repository might impact occupants of the Peninsular.”*

*“Agriculture, aquaculture, tourism and mining industries, all reliant on sustainable natural resources, contribute over \$2.5 billion to the economy in an average year. Despite low rainfall and low soil fertility, around 45% of SA's wheat and 20% of SA's barley harvest come from the Eyre Peninsula. In addition, the region contributes 45% of the state's seafood harvest. Some 95% of farms are broad acre, of which 85% depend on grain growing alone, or a mix of grain and livestock farming. Given all this, the Eyre Peninsula is extremely vulnerable to a hotter, dryer future.”*  
Source: *“Effective Adaptation Policy Making: A case study from the Eyre Peninsula”* National Climate Change Adaption Research Facility, at <https://www.nccarf.edu.au/content/case-study-eyre-peninsula>  
<https://nuclearexhaust.wordpress.com/2016/03/15/response-to-the-tentative-findings-of-the-sa-nuclear-fuel-cycle-royal-commission/>

## FINANCIAL ASPECTS – REALLY UNKNOWN

84. Given the quantities held by countries that are yet to find a solution for the disposal of used fuel, it is reasonable to conclude that there would be an accessible market of sufficient size to make it viable to establish and operate a South Australian repository.

85. There is no existing market to ascertain the price a customer may be willing to pay for the permanent disposal of used fuel.

### **What would the (overseas) holders of radioactive wastes be willing to pay for disposal and storage of radioactive wastes in South Australia?**

This question really has no answer. The Commission's conclusion of total revenue of more than \$257 billion, despite all the high-sounding financial statements, sounds like a nice figure just plucked out of the air. At present every country with nuclear facilities is struggling with the unanswered question of what to do with their radioactive trash. Even Finland, which has built a 500 metre deep burial place, will not have enough space for their accumulating radioactive trash. So far, there is no room for Fennovoima's waste in the Onkalo repository in Olkiluoto. (2)

At this stage there are no proposals for exporting nuclear waste. Royal Commissioner Kevin Scarce, in his recent report on the Commission's overseas visit, said "We haven't done the financial study". When anyone does do the financial study, they will need to factor in the financial costs of insurance, of security for hundreds, thousands, of years, as well as of environmental degradation.

Another factor would be the comparison of the commercial value of renewable energy not pursued, tourist and agricultural opportunities lost as government money went into fostering nuclear schemes rather than South Australia's more positive activities.

There would be no revenue for at least 30 years – probably longer – until the waste disposal facility were to be up and running. Who pays up for it all in the meantime? Does South Australia have to borrow heavily - and then - what if it all does not eventuate, anyway?

## TRANSPORT OF RADIOACTIVE WASTES

I am astonished at the minimalist approach Tentative Findings report towards the transport of radioactive wastes. It's as if the subject does not matter!

135. During the past 30 years, approximately 11 000 containers of uranium oxide concentrate (UOC) have been exported from Australia. There have been a number of incidents during the transport of UOC where containers have been knocked or dented. However, given that UOC has low radioactivity and is transported in sealed drums inside shipping containers, there has never been an accident in Australia resulting in the release of UOC to an extent that has adversely affected workers, the public or the environment. (They don't count the Ranger spill in 2014 <http://antinuclear.net/2014/10/23/toxic-spill-report-critical-for-ranger-uranium-mine/>)

Really ! That transport of uranium oxide has been in the past relatively safe – hardly means that we can be complacent about the transport of High Level Nuclear Waste!

137. The transport of nuclear materials is undertaken in accordance with a mature international regulatory regime, which establishes minimum standards for transport packages....

It's as if the Royal Commission had never heard of the modern facts about climate change – extreme weather events increasing in frequency and severity. (3)

It's as if the Royal Commission had never heard of the increasing dangers, and increasing sophistication of terrorist attacks.

It's as if the Royal Commission had never heard of the growing objections of many communities, to having nuclear waste ships pass near them or through their ports. (4)

155. There is no compelling evidence from any international experience that the development of nuclear facilities in South Australia would adversely affect other economic sectors, provided those facilities are operated safely and securely. There is a perception there would be an impact, which would need to be addressed in the process of obtaining community consent for any proposal. In the event of a major nuclear accident, adverse impacts on the tourism, agriculture and property sectors could potentially be profound.

Of course – there's no evidence at all – as it has never been done before – to set up a nuclear waste importing business to a non nuclear country – particularly in a State such as South Australia, with its renowned wine industry, tourism, fisheries, agriculture, including innovative schemes such as Sundrop Farms

In the past, countries like France accepted the risks of nuclear power, and their other industries thrived. Now, even in France, there is concern about polluting industries. For some time after the Chernobyl nuclear catastrophe, the French wine industry was severely depressed., because the wine growing regions were squarely in the path of the ionising radiation fallout. (5) There is concern in Washington State about the impact of Hanford nuclear waste facility on the wine industry. (6)

## **SECRECY ISSUE: LAWS AND FINANCIAL ARRANGEMENTS RELATING TO OTHER COUNTRIES**

146. There is significant appetite in the private sector investment community to support new Australian infrastructure projects.

The Tentative Findings assume a great financial bonanza to South Australia, but is very vague on how the costs and (assumed) profits would be carved up between South Australia and the countries sending the wastes.

And, I still wonder, if it's going to be such a bonanza, why is no other country offering to host the global radioactive trash?

Once again, Paul Langley has expressed this question most eloquently:

*Nuclear nations all have their own laws regarding nuclear matters. For instance the United States has many laws, including the Atomic Energy Act, as currently amended, associated laws and regulations. It has long been an issue that the US Act prevents full disclosure regarding "special nuclear material" – that is plutonium and uranium as used and produced in a reactor. This matter has long been a concern in the US democratic setting. For instance, see CARDOZO LAW REVIEW, VOL 26, NO 4, MARCH 2005, PP. 1401-8.*

*The HLNW repository is promoted by the Royal Commission as being South Australian, owned by the government and benefitting the people of SA. To what extent then, in the course of contract negotiations, will the government and people of SA become beholden to the provisions of foreign laws regarding disclosure and other matters in regard a client nation's HLNW? Will the contracts be commercial in confidence? Will provisions alien to SA law be invoked in order to comply with contracted obligations? Will such provisions restrict our right to know and our freedom to speak? Will the full nature of the stockpile resident in the HLNW repository be secret in any way? Will the people be able to study each contract? What is an unclassified restricted document, and what happens if an ordinary person figures out it's contents? (7)*

(1A) <http://www.adelaidenow.com.au/news/south-australia/voters-reject-premier-jay-weatherills-agenda-to-transform-the-state/news-story/58ea2b45c2d6ba321b5038c86eacd0e1>

(1) [https://www.sa.gov.au/\\_data/assets/pdf\\_file/0005/17168/Earthquake\\_hazard\\_zones\\_SA.pdf](https://www.sa.gov.au/_data/assets/pdf_file/0005/17168/Earthquake_hazard_zones_SA.pdf)

(2) [http://yle.fi/uutiset/battle\\_for\\_nuclear\\_waste\\_disposal\\_site/5097360](http://yle.fi/uutiset/battle_for_nuclear_waste_disposal_site/5097360)

(3) <http://www.greenpeace.org/international/en/campaigns/nuclear/waste/transport/>

<http://www.japantimes.co.jp/news/2015/11/20/national/science-health/evacuation-rules-revised-for-nuclear-vessel-accidents/#.Vk-NWdIrLG>

<https://www.climatecommunication.org/new/features/extreme-weather/overview/>

(4) <http://www.voanews.com/content/opposition-mounts-as-taiwan-plans-to-ship-nuclear-waste-offshore/2759529.html>

<http://www.couriermail.com.au/news/breaking-news/indon-to-block-aust-bound-nuclear-waste/story-fnihsg6t-1227617732008>

(5) <http://wineconomist.com/2008/01/26/the-science-of-unintended-consequences/>

(6) <http://www.thedailybeast.com/articles/2015/03/28/hanford-nuclear-site-could-be-threatening-washington-state-s-best-vineyards.html>

(7) <https://nuclearexhaust.wordpress.com/2016/03/15/response-to-the-tentative-findings-of-the-sa-nuclear-fuel-cycle-royal-commission/>