

I acknowledge the extremely time consuming task needed to investigate the multitude of responses from the public, and thank the Royal Commission in advance for their time in reading the following response.

This is referenced response as per guidelines specified by the commission, to whether I agree or disagree with a Tentative Finding, why, and the evidence in support of that position. The tentative findings document has the headings grouped differently, so here the responses will concentrate on the following (with relevant page numbers in the tentative findings):

Management, storage and disposal of waste pp15 - T.Findings 71, 72, 73,75, 76, 78, 79, 84, 90

Social and community consent pp 21 - T.Findings 108 (c.)-(h.), 109, 110,111

Land, heritage and respecting rights pp 22 - T.Findings 112, 113, 114, 115

Risks and challenges pp 23- T.Findings 119, 121,124 (b.), 133, 134, 138 (b. & c.)

EcoEthics are also responding to Topics referred to in PUBLIC SESSIONS ARCHIVE and are including them due to their ongoing importance despite the omissions in tentative findings. References are provided as a direct guide, responsibility for accessing and purchasing some of the resources cited, are for the Royal Commission to undertake.

TOPIC 3: GEOLOGY AND HYDROGEOLOGY OF SOUTH AUSTRALIA

I **disagree** with the omission of the Geology and Hydrogeology of SA, in the tentative findings. Especially bearing in mind the 3 pre-selected SA sites undertaken by National Radioactive Waste Management Project - Part 2. Despite the viable activity statements in Tentative findings (herein abbreviated to TF) 71 & 72.

- <https://cooberpedyregionaltimes.wordpress.com/2010/04/18/earthquake-warnings-south-australians-waiting-for-the-big-one/>

In The last sentence of the “Seismicity” section of the EIS is, “The repository and buildings would be designed in accordance with AS 1170.4-1993.” However, the abstract of the AS 1170.4-1993 states (Standards Australia, 2003):

Sets out data and procedures for determining minimum earthquake loads on structures and their components, and also minimum detailing requirements for structures. It does not consider related phenomena such as settlement, slides, subsidence, liquefaction or faulting in the immediate vicinity of a structure. It does not include nuclear reactors, dams, transmission towers, bridges, piers and wharves, which may require special consideration. The Standard is in limit states format. New earthquake maps are defined in terms of an acceleration coefficient instead of the zoning system used in the previous Standard AS 2121. Domestic structures are now included.

- <https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/plans/sarig1/image/DDD/204562-001>

South Australia-SOLID GEOLOGY OF THE GAWLER CRATON- a SA researched representation

- <https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DDD/ISM13.pdf>

Earthquakes from 1980 to 2013. Epicentres are widely spread and do not follow any narrow zones. Large earthquakes can occur anywhere. This is in conflict with the overall transcript by Prof Heinson, apart from the wording below.

- <http://minquest.com.au/wp-content/uploads/2015/03/Genesis-of-the-Gawler2.pdf>
Gawler craton fault lines please refer extensively for domains and shear zones esp the Gawler Craton has been subdivided into several domains based on varying magnetic, gravity, structural, geochronological, isotopic and geochemical character (Teasdale, 1997; Ferris et al., 2002)

- https://d28rz98at9flks.cloudfront.net/70435/13SA_SeismicRegionalEnergyImplicationsByNeumannEtAl.pdf

- <http://nuclearrc.sa.gov.au/app/uploads/2016/02/HEINSON-Graham-219-238.pdf>

“So within South Australia we do have zones of tectonic weakness in the sense that they are the told crustal blocks but the edges of those blocks are zones of a little bit more weakness than in the middle of the those rocks. So taking one step backwards again, we have the Gawler Craton, for example. It's an Archean core. It's basically an old continent which is two or more billion years old. So much of Eyre Peninsula, a little bit of Yorke Peninsula, right up to sort of Coober Pedy, that's an old chunk of continent sort of floating around on the earth's surface. Bits of it are joined around the edge and gradually accumulated as it is today.

Where we've got the edges there are zones of weakness and we have a prevalent stress field through the continent. Now, as you can imagine a continent and a plate is a tectonic element. It's a bit chunk of something. As it collides into other things, that stress moves through the plate. Currently, much of our stress that we find comes from the collision of India, which is on the same plate as Australia, with Eurasia, forming the Himalayas. That's the sort of buffer zone, it's a crumple zone and it's a sort of push-back from the continent.”

My response to this is to APPLY THE PRECAUTIONARY PRINCIPLE AND USE MORE THAN ONE scope/approach to identifying exactly what site characteristics are in terms of seismic potential and geological profiling.

Additionally, there is no further record/transcript available to find concluding remarks by BARNICOAT Andy & WEHNER Martin of *“Topics to be addressed at this public session: Geoscience Australia's role in gathering seismic data; Levels of seismic activity which present risks to infrastructure and facilities; and Strategies to mitigate risks presented by seismic activity”*, as it was MATTER ADJOURNED AT 3.47 PM UNTIL WEDNESDAY, 23 SEPTEMBER 2015, where there is no publicly accessible record in my extensive research. <http://nuclearrc.sa.gov.au/app/uploads/2016/02/BARNICOAT-Andy-WEHNER-Martin-262-278.pdf>

Again, it would unfortunately seem that these very crucial understandings have been left out of the tentative findings. This exclusion, I disagree with.

TOPIC 6: ENVIRONMENTAL IMPACT: LESSONS LEARNT FROM PAST SA PRACTICES

- <http://www.papertracker.com.au/archived/maralinga-tjarutja-lands-handback-of-section-400/>

In the 1980s, the past government of South Australia returned ownership of the Maralinga Lands as summarised below:

“In 1984, the South Australian Government returned the freehold title for the Maralinga Tjarutja Lands to its Traditional Owners. **Concerns over radiological hazards** prevented the handback of Section 400.” Source: “Maralinga Tjarutja Lands: handback of Section 400” , The Anangu Lands Paper Tracker,

TOPIC 10: NUCLEAR ACCIDENT - FUKUSHIMA DAIICHI

Although this was briefly covered in the public sessions, there was nothing mentioned in tentative findings. For very important realisations, I refer the commission to again look at the large volume of citizen science and academic observations contributing to Japans' CITIZENS' NUCLEAR INFORMATION CENTER esp CATEGORY: ACCIDENT at <http://www.cnrc.jp/english/?cat=17> as well as <http://www.cnrc.jp/english/?cat=33> as the various contributors do so out of public concern and safety and have been doing so since 1975. This is a body of work, that ignored constitutes negligence albeit burying heads in the sand.

I disagree with the omission of the example of the Fukushima accident in the tentative findings. I have spent time on a Fukushima phyto-remediation project which including other work assignments/study in Japan compile into 10 years of residing in Japan since 1987, as well as a very eye-opening visit to the Nuclear Power Plant in Saga in the early 2000's.

TOPIC 13: COMMUNITY ENGAGEMENT & NUCLEAR FACILITIES

(or 111- and as outlined by Golders submission report number OP15026281

“Social licence – having a willing host community is best international practice and is critical to all phases of the project, including obtaining licenses. The effort required to build Indigenous and local support for waste management projects is substantial and in our experience can only be obtained if long and trusted relationships are created.”

This I agree with however, due to the concurrent site selection process of 3 sites here in SA, the Royal Commission is already in a difficult, disadvantageous, or uncomfortable situation (referring again to the incredibly 'serendipitous' timing of the National Radioactive Waste Management Facility Phase 2- or TF 71 & 72)

It could be argued then that the Commission is already contravening TF 108 (c) early and deep engagement with local communities to build their knowledge and

understanding using a partnership model between the proponent and the community.

+ (d). an ability for local communities to engage in a learning process about hosting a facility without being required to commit to the facility

+(e)resourcing of a community organisation to:

i. deliberate and meet in relation to the proposal

ii. engage independent scientific advisors to assist it in relation to issues of importance and to review scientific information

+(f). the presence of a trusted, experienced regulator to license the proposal

+(g). a regulator that is accessible to the community and willing to provide information on both the regulatory process and its decision-making, the proposal and its views on that proposal

+(h). the availability of scientific evidence and, where necessary, multiple, corroborating bodies of evidence to demonstrate the effectiveness of steps taken to address risks.

ALL OF THE ABOVE, I DISAGREE WITH AND REFER THE COMMISSION TO A MULTITUDE OF NEWSPAPER ARTICLES AND REPORTS NOT LIMITED TO.

<http://www.stockjournal.com.au/story/3765184/members-remain-unconvinced-by-positive-push/>

<http://www.portlincolntimes.com.au/story/3290460/concern-over-radioactive-storage/>

<http://www.theaustralian.com.au/news/nation/nuclear-waste-dump-in-kimba-goes-against-the-grain/news-story/5f1931dc52ffe2b46e8e7a3d7fd4cecf>

<http://www.abc.net.au/news/2016-02-24/flinders-ranges-communities-divided-over-nuclear-waste-dump/7194592>

However, I STRONGLY AGREE WITH TF 103,105, 107, 109, 110 and all of 111.

When you have an elder, who won 2015 Premier's NRM Awards. Aboriginal Leadership (Female) –Yappala's Regina McKenzie, Viliwarinha Yura Aboriginal Corporation, openly discussing her sense of being blind sighted and her protection work on her communities heritage 500km Songline being under threat, and gaining support within other communities feeling the same, the commission needs to get on board with F 103,105, 107, 109, 110 and all of 111 immediately.

Further on TF 105, <https://www.nccarf.edu.au/content/case-study-eyre-peninsula>.

TOPIC 14: TRANSPORTATION OF NUCLEAR MATERIALS>>

Firstly it must be recognised that Environmental groups raised concerns over the safety of the BBC Shanghai, pointing out it has been blacklisted by the US due to its record. However, this was the Australian Governments' choice in ship to offload reprocessed fuel at Pt Kembla in early December, 2015.

<http://www.theguardian.com/environment/2015/oct/16/ship-laden-with-nuclear-waste-heading-to-australia-despite-safety-concerns>

This contravenes <http://world-nuclear.org/information-library/nuclear-fuel-cycle/transport-of-nuclear-materials/transport-of-radioactive-materials.aspx>

65. Low level waste mostly contains radionuclides (an atomic nucleus that emits radiation) with short half-lives. This means it requires containment and isolation from the environment for up to a few hundred years to reach background (natural) levels. Low level waste does not generate heat. Intermediate level waste needs a greater degree of containment and isolation than low level waste due to its higher radioactivity and possible higher proportion of long-lived radioactive materials. It requires shielding during storage and transport. It does not generate significant quantities of heat. Both types of wastes are solids at the point of disposal.⁶¹

TF 130. Nuclear fuel cycle activities give rise to security risks. Those risks are, however, manageable and well-managed. Australia has national arrangements for managing the protection of nuclear materials and facilities, supported by a mature international system that provides peer review and guidance. Under that regime, security is an integral part of the design, planning, management and operation of nuclear facilities. This extends to requirements for the design of casks for transporting nuclear materials to ensure their ,Dose (mSv) physical protection and the reinforcement of reactor buildings to withstand the force of an aircraft impact. **Disagree: it needs to be more substantial or not at all.** Please refer again to <http://www.cnrc.jp/english/?cat=17>

TF 132. The development of a proposal to receive used fuel would require the construction of a new secured port and railway. However, the risk of intentional interference or misuse of used fuel is greatly limited by the characteristics of the fuel and the casks in which it is stored and transported. As the casks weigh more than 100 tonnes, they require cranes and heavy vehicles to move. Further, used fuel is highly radioactive and can only be handled with appropriate barriers and controls in place. Agreed, but how is this being portrayed to the community if you have discrepancies outlined as such Greenpeace report 'inaccurate, waste safe and medium-level'

"There's a real discrepancy there between what the Australian Government are telling us and what the French authorities are telling us about what's on board this ship," said Emma Gibson from Greenpeace Australia-Pacific.

"It says all the plutonium will be removed from this nuclear waste before it's returned to Australia, yet our documents show that French authorities say there's still plutonium in this nuclear waste", she added.

ANSTO said the Greenpeace report was inaccurate, maintaining the waste is safe and medium level and that high-level waste stems from weapons and energy production.

The organisation outlined that this had been explained to Greenpeace."

<http://www.abc.net.au/news/2015-12-02/dispute-over-nuclear-waste-headed-back-to-australia/6993390>

TF 138. Shipments of used fuel are routine and undertaken in accordance with international requirements which address the risks associated with the heat and

radiation that the fuel produces. The requirements include that used fuel must be transported:

- a. in specially designed and tested packages or casks with a required ability to withstand the combined effects of external impacts, immersion and fire
- b. on vessels which have specific additional features that protect the cask from impact. In many cases shipments are conveyed on purpose-built vessels which incorporate double hulls and additional reinforcement, and are dedicated to the carriage of used fuel

I disagree that the above findings are in fact enacted based on the response to TF 132.

The following should be given as a reassurance to an already sceptical social mass.

UN Recommendations on the transport of Dangerous goods (United Nations Model Regulations)_ Chapters 2 to 8 - ship design, construction and equipment.(International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on board Ships)

The IMDG code contains detailed technical specifications to enable dangerous goods to be transported safely by sea. chapter 3.5 (Transport schedule for Class 7 radioactive material only) Incidentally, the code has been amended multiple times, whats to ensure there wont be further amendments made to accommodate unworthy vessels due the limited amount of vessels currently registered.

Purpose-built ships

In 1993, the International Maritime Organisation (IMO) introduced the voluntary Code for the Safe Carriage of Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes in Flasks on Board Ships (INF Code), complementing the IAEA Regulations. These complementary provisions mainly cover ship design, construction and equipment. The INF Code ***came into force in January 2001*** and introduced advanced safety features for ships carrying used fuel, MOX or vitrified high-level waste.

There are at least five small purpose-built ships ranging from 1250 to 2200 tonnes (DWT), and four purpose-built ships almost of 3800 to 4900 tonnes (DWT), and able to carry class B casks and other materials. They conform to all relevant international safety standards, notably INF-3 (Irradiated Nuclear Fuel class 3) set by the IMO. This allows them to carry highly radioactive materials such as high-level wastes and used nuclear fuel, as well as mixed-oxide (MOX) fuel and plutonium (<http://world-nuclear.org/information-library/nuclear-fuel-cycle/transport-of-nuclear-materials/transport-of-radioactive-materials.aspx>)

NB - SHANGHAI it NOT listed as a suitable vessel. Would more vessels similar to Shanghai be used to transport used fuel, MOX or vitrified high-level waste along our Volatile Southern and Indian ocean coastlines, through the Great Australian Bight, and up into Spencer Gulf for offloading either at Pt Lincoln or Whyalla or Pt Augusta? If so, I disagree with this supposition ,not being included in the TF's.

TOPIC 16: HIGH LEVEL WASTE STORAGE AND DISPOSAL

Tentative finding 71. *The federal government is currently managing a process to identify a site for the centralised, long-term disposal of its low level and intermediate level waste.*

The Commission is not considering the proposed storage and disposal of that waste while that process is underway.

The reference number for this is '67', which when accessed, contains nothing in the Submissions: Australian Government pp. 19-20 (access point refined to http://nuclearrc.sa.gov.au/submissions/?query=australian+govern+ment&cat=Issues+Paper+4&search=Submissions&max_page_items=50&sort_by=)

So in principle, I disagree with the premise outlined in finding 71 and suggest that indeed , through the lack of transparency, there is already bipartisan support regardless of commission considerations.

The wording then follows in TF 72, In the event that the process currently underway is unsuccessful, there is no reason that a community in South Australia, on the principles outlined in these findings in relation to social and community consent, ought not consider and be informed about the hosting of such a facility. This would denote that TF 71, is in actual fact applicable.

TF 75-In these facilities, the risk of the radionuclides migrating into the environment is managed by the geology in which the facility is situated as well as its engineered barriers (see Figure 5). Figure 5, last diagram, shows a 400-500 metres of bedrock, analysis in The KBS-3 type multi-barrier system by Posiva Oy, which is in FINLAND. As per a virtual minefield of coherent regolith mapping, where in the SA region is this again? Which is not completely proven as per TF 78 (a), thus I disagree.

TOPIC 17: SECURITY AND NON-PROLIFERATION RISKS

“ many industrialised countries are reducing their reliance on nuclear energy, recognising its inherent, long-term environmental dangers. Wealthy countries such as the heavily industrialised Germany, are now decommissioning their nuclear industry over the next thirty years.”

https://www.adelaide.edu.au/apsa/docs_papers/Others/TDoyle_APSA_2004.pdf

Yet, here we are in 2016, spending valuable funding on investigating whether we should backtrack and I disagree.

TOPIC 21: REGULATORY OVERSIGHT

Regarding Shifting geopolitical alliances: What Australia concludes is Highest practice, may not be what is sent. How is this enforced? TF 82, reference 76 needs to be completely inline with International Maritime Dangerous Goods (IMDG) Code, 2014 edition ,in particular Chapters 2 to 8 - ship design, construction and equipment.(International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on board Ships). How is payment secured? From forwarding countries? How are defaults settled? What procedures are to take place if one of the above outlined oversights actualises.?