

Friday 18th March 2016

Response to the tentative findings of the Nuclear Fuel Cycle Royal Commission

To whom it may concern,

I wish to provide feedback regarding the tentative findings of the Nuclear Fuel Cycle (NFC) Royal Commission, particularly in relation to the proposition of management, storage and disposal of international used fuel (high level waste) and intermediate level waste, in South Australia. I focus upon this proposition as the tentative findings of the NFC Royal Commission ('the Commission') identifies this as the key opportunity for South Australia to participate in the nuclear fuel cycle, within its terms of reference.

Firstly in relation to the current process for public engagement and social consent, a more comprehensive response may have been possible had the consultation time frame been longer than 5 weeks, which seems a very short time frame for public submissions to be prepared on such an important issue and with such extensive findings to be addressed, toward a finalised Royal Commission report. This is arguably inconsistent with the Commission's tentative findings, which repeatedly emphasise the importance of social consent through public engagement in order for nuclear activity to commence (Findings 103-115). The Royal Commission may become a prelude to further steps toward this end and as such, meaningful and transparent public consultation should be in effect now, not at some time in the future once the Royal Commission has delivered its final report.

In my opinion the tentative findings report lacks balance in terms of the three principles of sustainable development, with economic considerations overemphasised and social and environmental considerations minimised. Not only is environmental protection prescribed as "an integral part of the development process" under the *Rio Declaration on Environment and Development 1992* (Intl) to which Australia is a signatory, but is also integral to the Commission's task to identify relevant facts regarding risks and opportunities of nuclear activity for the community, economy and environment.

The tentative findings report overemphasises the economic impacts of the proposed management, storage and disposal of international used fuel (high level waste) and intermediate level waste, and acknowledges that more significant risks are associated with uncontrolled release of nuclear or radioactive material (Finding 122). Environmental risk presented by migration of radionuclides and necessarily long isolation time frames of hundreds of thousands of years is acknowledged but is discussed only in terms of management through a combination of geology and engineering, and the national regulatory regime (Findings 116-121). Furthermore on matters of environmental risk:

- The report lacks any specific assessment of the environmental impacts which may occur in the event of an uncontrolled nuclear or radiation release, their likelihood, severity or level of impact upon the environment, Australians, and the Australian economy, or secondary impacts.
- The report acknowledges that it's not possible to know the future geological and climatic conditions pertinent to future migration pathways (Finding 76) yet dismisses these risks on the basis of reasonable predictions and safety analysis of barrier performance. Natural history provides ample evidence of the unpredictability of climate and geologic events outside of long

term trends, and status quo cannot be assumed, especially where containment is required for public safety over hundreds of thousands of years. Stochastic events may originate from within or without the Earth system and although rare, storage on geologic time scale warrants expert advice on all contingencies, however unlikely.

- The only existing functional deep underground repository for nuclear waste, located in New Mexico, has experienced an unexpected chemical explosion within its first 15 years of operation exposing a number of workers to radiation. Accidents are by nature unexpected, but even the most unlikely of scenarios have a 'first time'.
- The precautionary principle is not emphasised adequately within the Commission's tentative findings, which I believe must clearly reference this principle of international law in its assessment of environmental risk.

It is my opinion that the tentative findings overemphasise economic opportunities, discussing these at length (Findings 91-95) whilst neglecting to provide a balanced account of possible economic risks; observations pertaining to this include:

- Finding 83 alludes to a "reputational and financial benefit" for South Australia; this statement seems to be based upon the need for nations participating with high or intermediate level used nuclear waste to responsibly dispose of this waste. Under the *Rio Declaration on Environment and Development* 1992 (Intl), nations have the sovereign right to exploit their own resources but without causing damaged beyond their own borders.
- The aforementioned statement also assumes a feasible economic case which has no actual precedent. The report acknowledges there is no existing model for international trade of nuclear waste (Finding 82). Estimations of costs and revenues (Findings 91-94) are therefore entirely conceptual and not based upon a real world precedent, instead based upon assumptions of how much waste might be traded and at what price.
- Issues associated with the future global economic climate or future demand for nuclear energy (and therefore volume of nuclear waste) are not canvassed but are subject to considerable discussion and this issue is .not canvassed within the Commission's tentative findings.
- The reputational and financial costs of nuclear activity, such as effects upon other industry sectors including tourism, ought to also be discussed on balance. Potential impacts upon other sectors of the South Australian economy are inadequately canvassed in Finding 155, not only for the event of an uncontrolled nuclear or radiation release which might be expected to seriously impact property values, agriculture, horticulture, forestry, fisheries, water and health, but also through perceptions of nuclear waste and erosion of "clean and green" branding of our state and perceptions from outside the state which may impact property values and tourism. At the very least, some effort should be made to analyse the relative value of these industries to the South Australian economy, toward an economic risk assessment.
- The costs of long term monitoring (over hundreds of thousands of years – well beyond the life span of the facility's active acceptance of incoming international waste) are not estimated. Whilst it may not be possible to do so, this shortcoming ought to be acknowledged.

Intergenerational equity is another principle of sustainable development which although referenced in the tentative findings report, is not adequately canvassed by the Royal Commission:

- The intergenerational burden of the proposed nuclear waste storage facility due to storage timeframes of up to hundreds of thousands of years, is acknowledged but discussed only in terms of a financial mechanism for intergenerational sharing of economic benefits, and arrangements for facility closure, remediation and long term monitoring of sites. The assumption seems to be that intergenerational burdens (social, economic and environmental) can be fully managed without imposition of undue risk to future generations. Any assumption that these risks can be completely negated through management is flawed. Finding 122 acknowledges that the most significant radiation risks are associated with uncontrolled release of nuclear or radioactive material; such a release would have serious social and environmental repercussions, and associated risks ought to be identified by the Royal Commission according to its terms of reference.
- Findings 123-124 outline the risks of radiation exposure observed from nuclear incidents at Chernobyl and Fukushima Daichi including increased risk of some cancers for current and future generations. Finding 117 acknowledges that even at very low levels, increased exposure to radiation may increase cancer risk. Yet again, the Commission's findings seem to rely upon an acceptance that these risks can be managed through regulation which the historic record shows is a flawed assumption.
- Very long time frames are detailed for the development of similar geologic storage facilities in Finland and Sweden, and the tentative findings report suggests that transfers from the interim store to geological disposal facility might commence 28 years after the project decision, with imports of used fuel closing 83 years after the project decision and with indefinite long-term post-closure monitoring. Such generational time frames are fraught with uncertainties including financial costs, domestic and international economic context, world energy sources and consumption patterns. The ethics of a contemporary public to make a decision, fraught with unknowns, and incumbent upon the next generation, are not addressed by the Commission.

Security risk associated with nuclear fuel cycle activities are acknowledged but the report dismisses these on the basis of a mature and well-managed regulatory regime in Australia (Finding 130-131). However, contemporary terrorism is a real and present issue which cannot be so easily dismissed with 'trust me' assurances from governments or other authorities.

Social equity is another concern. The Royal Commission does address social consent from indigenous communities at some length. Within the context of past atomic testing at Maralinga, finding 110 describes the distrust of Aboriginal communities in government, to ensure that nuclear activities will be undertaken safely. I too am doubtful that a potentially affected indigenous community would receive equitable consideration in the decision making process, due to the complex combination of language, educational, cultural, political, personal, and other barriers. Also if the 'broad public consent' of South Australians is the benchmark, then indigenous communities may bear the brunt of what amounts to a desperate grab for economic security by South Australians more widely. Indigenous connection with country requires special priority and it should be noted that for many, no financial compensation could ever account for loss of connection with ancestral land; surely this demands mention in the Royal Commission's final report.

I fear for potentially affected indigenous communities and for future generations of South Australians who may inherit unexpected and complex impacts from nuclear activity in South Australia. As demonstrated by the media response to the release of the Royal Commission's tentative findings, and within the current economic gloom prevailing in South Australia, there is a real possibility that the wider public may find prospect of wealth generation from participation in the nuclear fuel cycle an

alluring prospect, without a broader understanding of the possible costs and impacts. For this reason it is most important that the NFC Royal Commission ensures its' final report canvasses the potential environmental and social impacts of nuclear activity in South Australia more fully and explicitly, and a more balanced account of the economic risks.

Yours Sincerely,

Anne Fowler