About the Jury

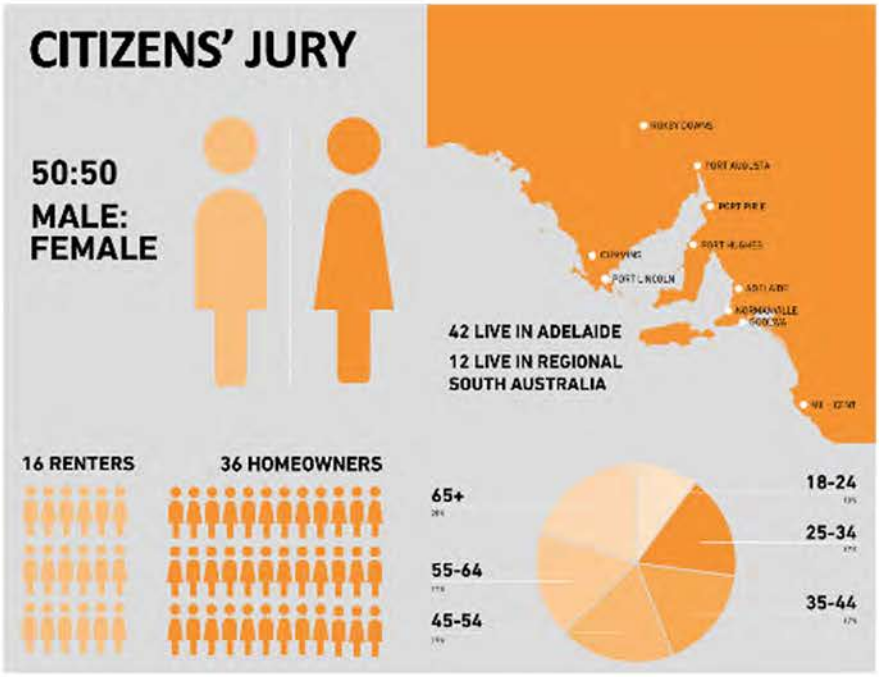
Purpose and role

We, the Nuclear Fuel Cycle Citizens' Jury (the Jury) was engaged to review the Nuclear Fuel Cycle Royal Commission's (the Commission) report and summarise into an independent guide. Our goal; to help every South Australian understand the opportunities and risks of increasing South Australia's involvement in the nuclear fuel cycle as identified by the Commission.

Who we are

The process to select the members of our Jury was random. 25,000 invitations were sent to randomly selected addresses across the state using an Australia Post database. A total of 1121 respondents indicated that were willing to participate in the Jury. Of these 1121 people, a jury of 54 was randomly selected to align with census data for age, gender and geographical location.

Figure 1 below details the diversity of our Jury.



Remove homeowner/renter data from table.

Change 50:50 to actual number of men/women.

Our jurors range in age from 20 through to ?? Confirm and were from a diverse range of social, education and cultural backgrounds.

We (the Jury) were provided with a copy of the Royal Commission report and access to information and a diverse range of experts of our choosing enabling an informed discussion.

Details about the individual experts we spoke to can be found at http://yoursay.sa.gov.au/nuclear/citizens-juries/citizens-jury-one

Nuclear Fuel Cycle

What is it?

The nuclear fuel cycle can be summarised into four areas.

1. Mining and milling
2. Enrichment and fuel fabrication
3. Electricity generation
4. Used fuel (high level waste) management and storage

The Nuclear Fuel Cycle Royal Commission focused on the storage of international used fuel (high level waste) as opposed to the storage of Australian produced low and intermediate level nuclear wastes.

(Include small insert box: What is nuclear waste?: "Radioactive or nuclear waste is a by product from nuclear reactors, fuel processing plants, hospitals and research facilities. Radioactive waste is also generated while decommissioning and dismantling nuclear reactors and other nuclear facilities. There are two broad classifications – high level or low level waste. High level waste is primarily spent fuel removed from reactors after producing electricity. Low level waste comes from reactor operations and from medical, academic, industrial and other commercial uses of radio active materials. Insert : refer picture??

Insert table/diag outlining each area of the fuel cycle and the royal commission recommendation. Fuel cycle cartoon fig S1 from page xiii. Modify the management, storage and disposal section to be explicit on surface and underground storages including time frames.

Details for table:

(Make sure table colour coding aligns with fuel cycle cartoon. Be explicit that it is royal commission recommendation, not jury recommendation).

Mining – Continue involvement. Investigate reduction of 'red tape' and undertake further geophysical surveys encouraging further private investment.

Further processing and fuel fabrication – There is currently no international market for additional services in these areas. Remove legislative prohibitions to enable further processing

activities and fuel leasing should a market appear. Promote and support increased use of the existing cyclotron at SAMHRI.

Electricity generation – Nuclear power generation is not commercially viable in SA under current market rules, but could be considered as a future low carbon energy source to contribute to national emissions reduction targets. Remove existing prohibitions for nuclear power generation.

Used fuel management and disposal – There is potential for economic benefit in providing a storage and disposal facility for internationally generated high level used fuel waste. Remove existing prohibitions and complete thorough analysis and discussion on the opportunity to establish a high level used fuel facility in South Australia.

The Facility: A facility to store, manage and disposal of used nuclear fuel (high level waste) and intermediate level waste.

Table footnote: Refer to royal commission report section 10 pp 169 and yoursay website link for full details on recommendations.

Focus for Citizens' Jury

Over four days of deliberation, we (the Jury) discussed all stages of the nuclear fuel cycle.

Following the initial education and awareness sessions, we spent the majority of our time focused on the main recommendation; to pursue the opportunity to establish an international used fuel (high level waste) storage facility.

We recognise there are potential **economic benefits**, but there are also **substantial risks** to consider. There is a degree of uncertainty around both the benefits and risks associated with establishing such a facility.

Significant additional research, economic analysis and public engagement is still required before South Australians will be in a position to make an informed decision if this is in the best interest of the state.

Stages

The decision making process to determine whether to go ahead and consider the establishment of a used fuel (high level waste) storage facility involves many stages. The first stage was the Nuclear Fuel Cycle Royal Commission. Following the two Citizen Juries and community engagement process, which is currently underway, the government will make a decision on whether to proceed to the next stage. The South Australian community will be involved at every stage.

Call to Action – be proactive not reactive

We, the Jury, **call on YOU**, our fellow South Australians, to join us and be part of the process in shaping our State's future.

This is a unique opportunity to be involved in a decision making process to shape the future of South Australia. Any future decision about the nuclear industry in our state will involve a long term commitment and have long term consequences. The decision will affect not just us, but future generations.

We encourage you to get involved and participate with an open and enquiring mind. To make sure that we are all as informed as possible.

Your voice will shape the future of our State and our descendants – have #yourSAynuclear

"Everyone's choice…everyone matters"

Get involved at: [insert web address, phone & email]

Principles

We, the Jury, were asked to consider the principles we believe are important for all people to consider when discussing South Australia's involvement in the Nuclear Fuel Cycle. In our view these are:

- Legitimacy – a legitimate decision must include all people
- Inclusivity – there must be continual community consultation
- Transparency - all sources of information must be freely available
- Consequences – due consideration must be given to people, our economy and our environment
- Accountability – decision makers are accountable to the community
- Consider the future – further considerations and more debate of other options. We must also consider future generations of South Australians through all stages
- Distribution - Potential economic benefits must be shared and accessible to everyone
- Ethical – all decisions should be ethically and morally sound - what's good, what's right, what matters.

Seismic and geological (Finding 72)

The report recognises that many parts of South Australia are remarkable with regards to geological and seismic stability which are well suited for a geological disposal of used fuel (high level waste)

Nuclear storage

The report recommends pursuing the opportunity to establish a used fuel (high level waste) storage facility (refer to recommendation 11) facility 500 metres underground somewhere in South Australia , however site selection was not part of the scope of the Commission. No facility is operational like this yet anywhere in the world, but sites are being developed in Finland, Sweden and France.

Part of the process of establishing a used fuel (high level waste) storage facility is to store the used fuel above ground for 20-30 years in specialised containers. The Commission's report concluded that the storage containers created for this purpose have been rigorously designed. If you're interested in more information on the storage of nuclear waste refer to Appendix I.

The public needs to be confident in an independent, transparent regulator, particularly in light of regulatory failures both internationally and locally. This is emphasised in the report in Chapter 9. There are International Standards, research data and experiences that can be used to support introducing an Australian regulator to ensure lessons learned abroad would be included in our safety regime. The exact nature of a regulator would be determined at a later stage.

The Commission's report looks at many different activities at different stages of the nuclear fuel cycle. Each stage comes with its own set of risks and opportunities. The report looks in detail at risks associated with mining (pg 9-13), refinement (pg23-24), power generation (pg 34-36) and waste management (pg 57 – 58, 66-71). It is important to note that the most well known incidents are associated with power generation, and the report does not recommend power generation in South Australia at this time.

The report finds that there is minimal impact on the public and workers as a result of the recommended activities. The expected doses are far below natural levels of background radiation that we are all exposed to daily.(pg 133 include diagram?)

Transport

Transport of spent fuel is already done internationally using specialised casks which are designed to withstand extreme impacts including deliberate attacks and accidental damage. The report finds that nuclear material is transported routinely and safely. Accidents during transport have occurred, but there has been no breach of packages or release of harmful radiation (pg153). See chapter 9 or Appendix L (pg 309) (include diagram L.1?)

Key issues to consider

The following sections outline the key issues that we believe South Australians need to contemplate in considering the establishment of a used fuel (high level waste) storage facility for South Australia.

We draw these issues to your attention to assist you in formulating your own view and provide feedback as part of the community engagement process being undertaken by the government.

Safety

What the report recommends

Safety is an important consideration because of the potential impact from radiation on people, the environment and the long term hazardous nature of the material.

We have read the Commission's report and quizzed many expert witnesses. Many safety and security considerations have been presented and discussed. The considerations include but are not limited to geology, seismic activity, acts of terrorism, health, and transport.

The Commission's report suggests that the management of waste can be done safely. See XXX

We unanimously agree that all South Australians need to feel confident in all of the regulatory processes for the safety of themselves, the environment and for future generations. It is important to discuss safety and security because of the time scale of the proposal to develop a used fuel (high level waste) storage facility and the longevity of the high level waste.

Health

The Commission's report examines the effect of radiation exposure on humans throughout all stages of the nuclear fuel cycle. (Chapter 7)

We heard testimony from expert scientific and technical witnesses on topics surrounding the various stages of the nuclear fuel cycle: transport, health, security and safety. The Commission's report addresses the effect of radiation exposure on humans and most of the expert witnesses were agreed on the relative safety of the storage containers.

There is some uncertainty around the impacts on flora and fauna of radiation, which warrant further study as is done in Finland.

High level waste are fuel rods that have been pulled out from a nuclear reactor and have already cooled down (ref XXX) for half a century or so. Nuclear waste requires permanent storage as its radioactivity can be harmful for hundreds of thousands of years.

Informed Community Consent is Valued

The Commission's report highlights that there needs to be both broad social informed consent, and specific community consent obtained for any new nuclear activity to start in South Australia.

The report states that social consent is ongoing public support that is necessary for an activity to be undertaken in a society. Social consent is not given once but is ongoing for the life of the activity (pg 121).

Your opinion valued.

Your challenge is to be educated so that you can make an informed decision.

You have the opportunity to invite expert witnesses, to view facilities, and to be provided with a translator if required to enable your community to make an informed decision. (pg 122 -126) pg 127)

We the Jury, also believe in the importance of Aboriginal and local community engagement and consent. (pg 128)

It is important that the community is aware that the law needs to change for any new nuclear activity to be developed in South Australia. We need to ensure that government is accountable and transparent in this process. (pg 121 Section 96 para 3)

Lack of community consent inevitably leads to failure of these projects. (Clause 99, pg 122, Case Study 6 pg 237)

Questions for consideration include:

How is the community's consent measured and made?

How can each and every South Australian be involved?

We recommend you read...

- Reports Summary,
- Basic information about radiation risks page 133 and Disposal of Nuclear Waste page 73

clause 55 -58, and
- the recommendations Chapter 10, page 169.

Trust, Accountability and Transparency are vital.

The Commission's report states that we have a choice as South Australians, as to whether or not we want to further engage in the Nuclear Fuel Cycle. (Clause 55, pg 73).

Factors that promote trust and transparency need to be built into the design of any regulatory systems.

The decision we make to go ahead (or not) with the storage of used waste will affect both future generations of South Australians and options for other nations for the management of their used fuel (high level) waste.

In coming to your own view on whether we should pursue a used waste storage facility for high level waste you need to consider that moral and ethical responsibilities are central to the ownership and integrity of our decision. Do we think these actions are good? Do we think they are the right decisions?

It is an international principle of radioactive waste management (pg 79) that the society that generates the waste is responsible for managing it. Those nations that are unable to manage their own waste within their borders are permitted[1] to contract the radioactive waste management to another country. Ought we do this?

Our challenge is to build and maintain trust by avoiding repeating past mistakes such as the lack of engagement and communication about the atomic weapons testing at Maralinga. (Pg 125)

The Commission's report recommends that clauses from South Australia's legislation[2] be removed which currently prohibit public money being used to encourage or finance

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1 The Joint Convention on the safety of Spent Fuel Management and on the Safety of Radio Active Waste Management.

2 Specifically Section 13 of the Nuclear Waste Storage Facility (Prohibition) Act (2000) SA – the objects of this Act being: The objects of this Act are to protect the health, safety and welfare of the people of

South Australia and to protect the environment in which they live by prohibiting the establishment of certain nuclear waste storage facilities in this State.

construction or operation of a nuclear waste storage facility. Further investigation cannot proceed without changing this legislation. (Recommendation 12 page 169)

The Commission recommends removal at the State Level and/or federal level of existing prohibitions in law on the licensing of Uranium processing activities to enable commercial developments such as nuclear fuel leasing, and existing prohibitions on nuclear power generation.

Questions for consideration include...

We as a community need to ensure that any measures put in place are what we want? (pg128 - 134 and pg 156 – 159)

Will the public have the opportunity to review any proposed changes to legislation?

Economics and the benefits/risks for our State

Recommendations 1,2,3,4,5, and 11 should be referenced for the economic benefits in the nuclear fuel cycle.

The Commission report recommends that we pursue the opportunity to establish used nuclear fuel and intermediate level waste storage and disposal facilities in South Australia (Recommendation 11). This facility has the potential to provide a significant income for our state. There are risks and uncertainties with this endeavor that require more research. This research requires further financial commitment by South Australia, in order to make an informed decision about whether this project is to go ahead to pre-commitment negotiation with client nations.

There is the possibility that further research may determine that this project is not viable. However, the Commission's report suggests that there is a strong possibility that this project will be viable in the future and provide a significant income for South Australia.

Should this project go ahead, the Commission's report recommends the project to be funded by a client nation with a pre-commitment payment that will cover all expenditure costs. This is to ensure that there is no possibility of client nations withdrawing from the project. "Through pre-commitment from client countries the state would not need to assume significant commercial risks in incurring capital costs to develop the project." (pg 102).

Given the intergenerational nature of this project it is important to ensure any economic benefits are ongoing. (Chapter 5, finding 90 (discusses the necessity of establishing a state wealth fund to benefit the state in future)).

There were varying views between expert witnesses on the economic viability of this project and therefore questions remain relating to the economic modelling in theCommission's Report before we can feel comfortable progressing to further involvement. (pg102, table 5.9 (projected net present value of a real, pre-tax basis)). Whilst this is a first step, there are many more questions that must be answered before we will be comfortable progressing to the next phase.*

Questions for consideration include:

There are many things that South Australians still need to discuss. These include:

- What benefits can be made available to South Australia now and in future generations?
- How can we be sure that the economic analysis completed by the Commission is robust?
- How will the South Australian 'brand' or external reputation be affected and how will this have an effect on tourism and trade? (pg163 finding 145, pg232)
- What reliance is there on other countries to 'pre-commit' to storing high level nuclear waste at a fixed price?
- How will the benefits be realised and how will the wealth be distributed?
- How do we incorporate rapid change in future technologies such as nuclear fuel recycling in the next generation of Nuclear fuel reactors? (pg291)
- What are the workforce opportunities, skills, training and research?

We recommend you read... There is real opportunity for South Australians to increase their knowledge of and participation in the nuclear fuel cycle, including South Australia's current participation and to better understand the potential benefits and risks. Refer to pp 292, Table J.2 (current and forecast stockpiles of used fuel and intermediate level waste from other countries)*.

We, the Jury, suggest that South Australians read Appendix J pg290 – Analysis of viability and economic impacts. If there is further interest, read chapters 5 pp73 (Management, storage and disposal of nuclear and radioactive waste).