

2016/22: Should South Australia become the site of an international nuclear waste storage facility?

What they said

'I know that some people are worried about safety and the environment whilst others see the economic opportunities. This is why, before the Government decides, we want South Australians to understand the choices and to be able to put their perspective on this issue'

Jay Weatherill, premier of South Australia

'Spending by Premier Jay Weatherill on his nuclear frolic is already out of control with the cost of the community consultation process almost doubling in the space of just four months'

Steven Marshall, leader of the Liberal Opposition in South Australia

The issue at a glance

On November 14, 2016, the South Australian premier, Jay Weatherill, issued a media release announcing that there would be a referendum to determine whether the state would proceed with a nuclear waste storage facility.

On May 6, 2016, the Nuclear Fuel Cycle Royal Commission recommended that South Australia establish such a facility. The South Australian government then established a public education and consultation process involving two citizens' juries and informal meetings at more than 100 sites across the state which received feedback on key issues identified by the first citizens' jury.

After the second citizens' jury rejected the proposed facility, the Premier announced that there would be a referendum on the issue.

Critics have argued that the community's view of the proposed nuclear waste storage facility is already clear and that the government should simply abandon the project. Others have claimed that there is still no obvious consensus and that the referendum is needed to further the education process and to determine what the whole state actually wants.

Background

(The information contained below has been drawn primarily from two sources.

That relating to an overview of South Australia's nuclear industry has been abbreviated from the Wikipedia entry titled 'Nuclear industry in South Australia'. The full text of this entry can be accessed at https://en.wikipedia.org/wiki/Nuclear_industry_in_South_Australia

The information contained in the description of the type of nuclear waste storage facilities proposed for South Australia and the explanation of how they would operate has been drawn from the Jacobs MCM consultants' report cited in the Nuclear Fuel Cycle Royal Commission report and used as the model for its discussion and proposal.

A summary of this consultants' report can be accessed at <http://nuclearrc.sa.gov.au/app/uploads/2016/02/NFCRC-Summary-Radioactive-waste-storage-and-disposal-facilities-in-South-Australia.pdf>)

Referendum

A referendum is a vote by the electorate on measures proposed or passed by a Parliament.

The South Australian referendum, if it is conducted, would be on the recommendation put by the Nuclear Fuel Cycle Royal Commission that South Australia pursues the establishment of a nuclear waste storage facility.

The term is generally applied to a vote about an issue raised by the federal Parliament, usually impacting on the Australian Constitution.

South Australian premier, Jay Weatherill, has indicated that the verdict indicated by the referendum will be acted on by his government.

Overview of South Australia's nuclear industry

The established nuclear industry in South Australia is focused on uranium mining, milling and the export of uranium oxide concentrate for use in the production of nuclear fuel for nuclear power plants. The state is home to the world's largest known single deposit of uranium, which is worked by BHP Billiton at the Olympic Dam mine. Contaminated legacy sites exist at Maralinga and Emu Field, where nuclear weapons tests were conducted in the 1950s and 1960s and at former uranium mines and milling sites. Nuclear waste is stored by CSIRO at Woomera and prospective future waste storage sites were earmarked during the deliberations of the Nuclear Fuel Cycle Royal Commission in 2016. The Commission has recommended that South Australia considers opportunities in nuclear waste storage (including developing a repository for spent nuclear fuel), the establishment of a nuclear fuel leasing scheme and the repeal of prohibitions which currently prevent future nuclear industrial development nationally.

The type of nuclear waste storage facilities proposed for South Australia

1. Initially South Australia would establish an interim storage facility for used nuclear reactor fuel and intermediate level waste in above-ground dry casks and containers.
2. South Australia would then establish a combined deep geological repository for used fuel, located together with an intermediate depth repository for intermediate-level waste.

3. There would also be a near-surface low-level waste repository for the low-level waste produced as part of the operations of the deep and intermediate depth repositories.

The operation of the proposed facilities

1. The interim storage facility would take some 11 years to build.
2. Used nuclear fuel would not be brought to the site until year 11 and would be stored above ground in dry casks and containers in the interim storage facility.
3. The transfer of the intermediate level waste to the intermediate depth repository is expected to begin 26 years into the project.
4. The transfer of used nuclear reactor fuel to the deep geological repository is not expected to begin until year 28 of the project, as it is estimated that it usually takes 40 years for fuel to have cooled sufficiently for permanent disposal. (Author's note: It would appear that these projections assume that some of the fuel received would have been significantly cooled before arriving in South Australia. It should also be noted that some other estimates of the time needed for cooling suggest 50 years. Economic considerations would also delay the building of the underground facilities. Some of the money earned from the above-ground storage would be used to pay for the building of the below-ground facilities.)
5. It is anticipated that nuclear fuel would be brought into the interim storage facility for a period of 85 years after the start of the project.
6. Nuclear material would be kept in above-ground interim storage facilities for a total of 109 years.
7. Nuclear material would cease to be placed in the intermediate depth and deep geological repositories after 120 years.
8. What would then be required is 'long-term monitoring' of the nuclear material stored in the below-ground repositories. (Author's note: Some estimates place this at 100,000 years.)

Internet information

On November 18, 2016, The Adelaide Advertiser published a comment by South Australian premier, Jay Weatherill, in which he put his position on the nuclear waste storage facility being considered for his state.

The full text of this article can be accessed at <http://www.adelaidenow.com.au/news/opinion/jay-weatherill-south-australia-could-reap-financial-and-economic-gains-from-a-nuclear-waste-dump/news-story/fe9c7bf9001d1d8cac32c0da4c951424>

On November 17, 2016, the Liberal leader of the South Australian Opposition, Steven Marshall, issued a media release in which he criticised the premier, Jay Weatherill, for his decision to hold a referendum on whether the state should establish a nuclear waste storage facility. The release is titled 'Weatherill's nuclear money pit'.

The full text of the media release can be accessed at http://www.stevenmarshall.com.au/weatherill_s_nuclear_money_pit

On November 16, 2016, In Daily published a news report titled 'Politics will destroy SA: Former Lib senator nukes Marshall's dump rejection'

The report details the objections of former South Australian liberal senator, Sean Richards, to South Australian Opposition leader, Steven Marshall's rejection of the nuclear waste storage proposal.

The full text can be accessed at <http://indaily.com.au/news/politics/2016/11/16/politics-will-destroy-sa-former-lib-senator-nukes-marshalls-dump-rejection/>

On November 15, 2016, The Adelaide Advertiser published a comment and analysis titled 'Premier Jay Weatherill effectively buries nuclear waste dump proposal with vague promise of statewide referendum'

The piece gives a range of negative opinions on the proposed referendum and speculates about the premier's possible motives.

The full text can be accessed at <http://www.adelaidenow.com.au/news/south-australia/premier-jay-weatherill-will-hold-referendum-on-potential-nuclear-waste-industry-in-south-australia/news-story/c5ee0bcf003c0a5000867674c5b03236>

On November 14, 2016, the South Australian premier, Jay Weatherill, issued a media release announcing that there would be a referendum to determine whether the state would proceed with a nuclear waste storage facility.

The full text of this media release can be accessed at <http://www.premier.sa.gov.au/index.php/jay-weatherill-news-releases/1411-premier-outlines-path-forward-for-nuclear-discussion>

On November 14, 2016, the ABC published a timeline detailing the history of South Australia's involvement on the nuclear waste storage debate. Proposals go back to February, 1998.

The full text can be accessed at <http://www.abc.net.au/news/2015-09-22/a-timeline-of-south-australias-nuclear-dump-debate/6794606?pfmredir=sm>

In November, 2016, the South Australian Government released its response to the Nuclear Fuel Cycle Royal Commission. One element of the response was the announcement that it would conduct a referendum on the question of whether South Australia should establish a nuclear waste storage facility.

The full text can be accessed at <http://assets.yoursay.sa.gov.au/production/2016/11/15/04/14/54/d66e8e3d-fadf-4c6e-a5c4-e793f60abe1e/Government%20Response%20-%20NFCRC.pdf>

On November 11, 2016, In Daily published a news report titled 'DUMPED: Nuclear repository "dead" as Marshall draws election battleline'

The article details the response of the South Australian leader of the Opposition, Steven Marshall, to the second citizens' jury's rejection of the nuclear waste facility proposal.

The full text can be accessed at <http://indaily.com.au/news/local/2016/11/11/dumped-nuclear-repository-dead-as-marshall-draws-election-battleline/>

In November, 2016, the results of the state-wide consultative process conducted via meetings across South Australia were published. The Government has interpreted the feedback from this consultation process as not giving it sufficiently clear direction to enable it to make a decision.

The full text of this report can be accessed at <http://assets.yoursay.sa.gov.au/production/2016/11/11/09/37/34/0c1d5954-9f04-4e50-9d95-ca3bfb7d1227/NFCRC%20CARA%20Community%20Views%20Report.pdf>

On November 10, 2016, the report of the second Nuclear Citizens' Jury to the South Australian government was released to the public.

The jury decided two to one against pursuing a nuclear waste storage facility in South Australia 'under any circumstances'.

The full text of the report can be accessed at <http://assets.yoursay.sa.gov.au/production/2016/11/06/07/20/56/26b5d85c-5e33-48a9-8eea-4c860386024f/final%20jury%20report.pdf>

On November 8, 2016, ABC News published a detailed analysis of the proposed operation of the nuclear waste storage facilities being debated in South Australia and of the economic modelling on which the financial estimates were based. This analysis, which includes significant comment, is titled 'SA nuclear waste dump plans based on questionable assumptions and lacks public support'

It was written by Stephen Long. It can be accessed at <http://www.abc.net.au/news/2016-11-08/should-south-australia-be-storing-nuclear-waste-above-ground/8003156>

In October, 2016, a range of Indigenous spokespeople and representative groups forwarded a submission to the Second Nuclear Citizens' Jury. The submissions included copies of earlier submissions which had been sent to the Nuclear Fuel Cycle Royal Commission and which the senders considered had been disregarded.

All submissions are opposed to the establishment of a nuclear waste storage facility in South Australia.

The full text can be accessed at <http://www.anfa.org.au/wp-content/uploads/2016/10/Traditional-Owner-statements-SA-dump-Oct2016.pdf>

On July 28, 2016, The Adelaide Advertiser published two comments, one for and one against the establishment of a nuclear waste storage facility in South Australia.

David Valente wrote a piece titled 'Play it safe to protect the world' in which he argues that building a nuclear waste storage facility in South Australia is globally environmentally responsible.

Michael McGuire wrote a comment titled 'It's a sure sign that we've given up' arguing that being prepared to build a nuclear waste storage facility was an indication that South Australia lacked political or economic imagination.

The full text of these points of view can be accessed at <http://www.adelaidenow.com.au/news/south-australia/should-south-australia-be-home-to-the-worlds-largest-nuclear-waste-dump/news-story/ccec2d6e730d74744590f78acfa77d4f>

On July 10, 2016, the report of the first Nuclear Citizens' Jury to the South Australian government was released to the public.

The report highlighted a range of questions raised by the Nuclear Fuel Cycle Royal Commission that require further investigation.

A slightly abbreviated version of its findings can be accessed at <http://assets.yoursay.sa.gov.au/production/2016/07/12/10/28/13/df622a91-cdbb-486d-bbed-20796a4109d5/Nuclear%20Citizens%20Jury%20FINAL%20Book.pdf>

On May 16, 2016, the Beyond Nuclear Initiative issued a media release titled 'SA groups launch No Dump Alliance in response to nuclear Royal Commission findings'

The media release announces the formation of a pressure group, the 'No Dump Alliance', composed of Traditional Owners and representatives from health, union, faith, and conservation groups, and other prominent South Australians. The group aims to prevent the establishment of the nuclear waste storage facility proposed by the Nuclear Fuel Cycle Royal Commission.

The Beyond Nuclear Initiative (BNI) is a lobby group which aims to highlight the adverse impact of the uranium and wider nuclear industry in Australia and promote a nuclear-free future. BNI is a joint project of Arid Lands Environment Centre, Australian Conservation Foundation and Friends of the Earth Australia.

Together with the media release are a range of comments from experts opposed to the nuclear waste storage facility.

The full text of these documents can be accessed at <http://beyondnuclearinitiative.com/sa-royal-commission/>

After the Nuclear fuel Cycle Royal Commission's report was released the government established the Nuclear Fuel

Cycle Royal Commission Consultation and Response Agency (CARA).

The purpose of this agency is to facilitate community consultation, education and decision-making around the issue of establishing a nuclear waste storage facility in South Australia.

Information about CARA can be accessed at <http://nuclear.yoursay.sa.gov.au/consultation-and-response-agency>

On May 10, 2016, the South Australian premier, Jay Weatherill, issued a media release explaining the community consultation process that would put in place around whether a nuclear waste storage facility would be established in South Australia.

The full text of this release can be accessed at <http://www.premier.sa.gov.au/index.php/jay-weatherill-news-releases/503-community-views-critical-to-our-state-s-nuclear-future>

On May 9, 2016, the Nuclear Fuel Cycle Royal Commission released its report. The report makes 12 recommendations, the eleventh of which is 'pursue the opportunity to establish used nuclear fuel and intermediate level waste storage and disposal facilities in South Australia'

The full text of the report can be accessed at http://yoursay.sa.gov.au/system/NFCRC_Final_Report_Web.pdf

On April 14, 2016, Green Left Weekly published an opinion piece by Renfrey Clarke titled 'Nuclear waste dump in South Australia: what could possibly go wrong?'

The comment supplies details of a number of accidents that have occurred at nuclear waste storage facilities overseas.

The full text can be accessed at <https://www.greenleft.org.au/content/nuclear-waste-dump-south-australia-what-could-possibly-go-wrong>

On February 24, 2016, The Eyre Peninsula Tribune published a news report titled 'Nuclear waste debate draws community to speak up'

The report details community opposition to a federal government plan to locate a low-level nuclear waste storage facility on the Eyre Peninsula.

The full text can be accessed at <http://www.eyretribune.com.au/story/3749348/community-voices-in-nuclear-waste-debate/>

On February 19, 2016, the ABC's current affairs program, The Drum, published a comment by Mike Steketee titled, 'Nuclear winner: The case for South Australia storing nuclear waste'.

Steketee argues that South Australia has a moral and environmental obligation to create a nuclear waste storage facility.

The full text of this argument can be accessed at <http://www.abc.net.au/news/2016-02-19/steketee-nuclear-winner:-the-case-for-storing-nuclear-waste/7184650>

Updated in February, 2016, the World Nuclear Association's information and persuasion piece titled 'Radioactive Wastes - Myths and Realities'.

The World Nuclear Association is a group which supplies information supporting nuclear power in order to promote its acceptance and use.

The text referred to above can be accessed at <http://www.world-nuclear.org/information-library/nuclear-fuel-cycle/nuclear-wastes/radioactive-wastes-myths-and-realities.aspx>

The World Nuclear Association's home page can be accessed at <http://www.world-nuclear.org/>

On November 5, 2014, the South Australian government issued a media release titled 'Land returned to Maralinga Tjarutja people after 60 years'

The report details the return to the traditional owners of some of the land contaminated by the Maralinga nuclear testing in the 1950s and '60s.

The full text can be accessed at <http://www.statedevelopment.sa.gov.au/news-releases/all-news-updates/land-returned-to-maralinga-tjarutja-people-after-60-years>

On January 20, 2013, Indymedia published a report titled '200 Aboriginal Maralinga victims denied compensation'. The report details the failure of a compensation claim but by some of those who claim to have been adversely affected by the nuclear testing that occurred in the 1950s and '60s.

The full text of the report can be accessed at <http://indymedia.org.au/2013/01/20/200-aboriginal-maralinga-victims-denied-compensation.html>

On April 19, 1999, the ABC's current affairs program Four Corners televised a exposé titled 'Critical Mass' detailing attempts to establish a storage facility for high level nuclear waste in Australia.

A full video version of this program can be accessed at <https://www.youtube.com/watch?v=ykRb0libckk>

A full transcript of this program can be accessed at <http://www.abc.net.au/4corners/stories/s23893.htm>

Arguments in favour of siting a nuclear waste storage facility in South Australia

1. There would be major economic benefits from siting a nuclear waste storage facility in Those who support the

construction of a nuclear waste storage facility in South Australia argue that it would bring great economic advantages to the state.

After a lengthy discussion of influencing factors, the Nuclear Fuel Cycle Royal Commission suggested that over the life of the facility it would generate a total revenue of more than \$257 billion, with total costs of \$145 billion.

The Nuclear Fuel Cycle Royal Commission estimated that the facility would generate a total annual revenue of \$5.6 billion a year over the first 30 years of operation and about \$2.1 billion a year until waste receipts were notionally planned to conclude 43 years later.

The facility is also expected to generate significant employment. Throughout the establishment phase of the project, between 1500 and 4500 full-time jobs are estimated to be created, peaking during construction of the underground facilities in years 21 to 25 of the project. About 600 jobs, in operations at both sites, and at a head office, are expected to be created once facility operations begin.

There are also expected to flow-on effects, with the facility promoting the development and/or expansion of servicing and other related industries. The Nuclear Fuel Cycle Royal Commission has stated, 'The presence of such a large specialist industry in the state would be likely to support the development of associated industries serving both local and international markets, including: specialist transport and logistics equipment (shipping, rail and road), and possibly including used fuel storage cask design and manufacture for transport and interim storage; and used fuel encapsulation containers for final disposal.'

The Nuclear Fuel Cycle Royal Commission estimated the impact that the facility and associated development would have on the state's economy. Modelling estimated that an integrated waste storage and disposal facility would grow gross state product by an additional 4.7 per cent (A\$6.7 billion) by 202930

The facility is expected to grow total employment by 1.9 per cent or 9600 full time jobs by 202930 add \$3000 per person to gross state income in 202930 in current dollars.

Though he has not declared himself in favour of the establishment of a nuclear waste storage facility in South Australia, the premier, Jay Weatherill, is clearly aware of the economic advantages such a facility could offer. Weatherill has stated, 'The Nuclear Fuel Cycle Royal Commission found that, if South Australia was to accept high-level spent nuclear waste from overseas, our State could benefit from projected revenue of \$257 billion.

If we were to invest this into a State Wealth Fund, this could accumulate to \$445 billion for South Australia. This is the equivalent of \$260,000 for every single person in our State.

As Premier, it is my duty to explore such an opportunity.'

The Premier continued by stressing the potential importance of new industries to the south Australian economy. He stated, 'As our traditional manufacturing industries decline, we need to modernise our economy to develop new industries and support the jobs of the future.

My Government believes we must pursue bold ideas and new ways of thinking challenging the assumptions of the past and being prepared to embrace the possibilities of the future.'

Former Liberal Senator for South Australia, Sean Edwards, has argued that those who deny the economic benefits to the state are either prejudiced or ill-informed. He has claimed, 'No higher authority than a royal commission has found it's demonstrably of economic benefit to South Australia, and you get these fringe-dwellers saying it's not.'

Edwards also argued that those in the Opposition who have challenged the project were playing politics and were putting the state's financial future at risk in the process. He stated, 'I say to any political party: outline your future for an economic policy which is more dramatically beneficial in the short term than this option.

The science is in it's safe; it's only the politics that will destroy what could be a very prosperous future for South Australia and I think it's a grave risk for anybody to continue to detract from any kind of positive future for South Australia.'

2. The safety issues involved with nuclear waste storage can be addressed

It has been claimed that the risks associated with developing and maintaining a high-level nuclear waste storage facility in South Australia can be effectively managed.

Those who support the establishment of a nuclear waste storage facility in South Australia note that the state has a number of geological and socio-political features which make it a safe and suitable location for such a repository.

South Australia's geology makes it a suitable location for underground storage of high-level nuclear waste. The Nuclear Fuel Cycle Royal Commission noted that the state has a number of subterranean features, each suited to a different type of underground storage and thus it offers a number of options for matching locations and storage modes.

The Commission stated, 'The underlying geology of South Australia is old and stable. It encompasses different geological environments that are suitable for the disposal of used fuel, namely, hard crystalline rock and appropriate sedimentary formations, including clay. This means that there are various disposal concepts that could be employed, depending on the site.'

It has also been noted that South Australia is, by international standards, seismically stable. The Nuclear Fuel Cycle Royal Commission noted, 'The state has recorded about 40 earthquakes over a magnitude of 4.5 since 1872. By way of comparison, Japan routinely records more than ten of these magnitude earthquakes in a month.' This seismic stability means that Australia is not prone to the sort of earthquakes that pose a significant risk to nuclear waste storage facilities. It is also noted that the secure, democratic government of the state makes it a suitable socio-political location for the placement of a facility which will have to be responsibly managed for a very long period of time. The Nuclear Fuel Cycle Royal Commission stated, 'South Australia has a stable representative democratic political system that has not significantly changed since Federation in 1901.'

Though the Nuclear Fuel Cycle Royal Commission noted that a small number of the nuclear waste storage facilities

overseas had had leakages or accidents, it noted further that there were circumstances particular to each of these events which either did not apply in Australia or could be avoided. The Nuclear Fuel Cycle Royal Commission further noted that there were cutting-edge facilities in Finland and Sweden from which any facility established in Australia would be able to learn. The Commission stated, 'Any future proposal could draw on the concepts, methods and technology developed in Finland, Sweden and other countries with underground research laboratories.'

Regarding the safety of 'interim storage' (the type of above-ground storage which is used for low- and medium-level waste and for high-level waste while it cools for the 50 years required before it can be stored underground), the World Nuclear Association has stated, 'The use of interim storage facilities currently provides an appropriate environment in which to contain and manage this amount of waste.'

The World Nuclear Association has claimed that the risks associated with the transportation of nuclear waste are of a very low order. It has stated, 'Nuclear materials have been transported safely (virtually without incident and without harmful effect on anyone) since before the advent of nuclear power over 50 years ago. Transportations of nuclear materials cannot therefore be referred to as mobile Chernobyls.'

The Association has further stated, 'The primary assurance of safety in the transport of nuclear materials is the way in which they are packaged. Packages that store waste during transportation are designed to ensure shielding from radiation and containment of waste, even under the most extreme accident conditions.'

3. The nuclear waste storage facility will not go ahead without the permission of the traditional owners

Those who defend the project have also noted that the South Australian Premier, Jay Weatherill, has indicated that the traditional owners will have the right to veto any project which is planned.

The South Australian government's response to the Nuclear Fuel Cycle Royal Commission included the assurance, 'If broad social consent were to be achieved through a referendum, a local Aboriginal community would be given a final right of veto on any future facility on their lands.'

Before arriving at this position the government was careful to ensure that the views of Indigenous South Australians were heard. A two-day Aboriginal Human Services forum brought together 20 community leaders representing 11 organisations from the human services sector in South Australia. The result of their discussions was presented to the second citizens' jury to help inform its deliberations.

In a comment published in *The Adelaide Advertiser* on November 18, 2016, the premier, Jay Weatherill stated, 'A key finding of the citizens' jury was the importance of listening to local Aboriginal communities. Their evidence to the jury was compelling.'

This final right of veto would exist if a proposed facility would affect their lands and would not be overridden by the broader community. Their voice must be heard and their consent is essential.'

The South Australian premier appears to be arguing that discussion on this issue is not yet over. His government is proposing a referendum to extend the debate on the advisability of establishing a nuclear waste storage facility in South Australia. The referendum is then meant to result in a final decision being reached by the electorate after it has had an opportunity to be further informed via the discussion before the referendum.

Obviously all Indigenous South Australians will have the opportunity to vote in the referendum and will have their views considered in that way. Further, the premier has assured South Australians that if the referendum decides in favour of a nuclear waste storage facility then once a site has been selected then the particular Aboriginal communities affected would be consulted. They would have the power to simply reject the building of such a facility on their lands.

Prior to the South Australian premier's assurance that affected Aboriginal communities would be able to veto any proposed siting, the Nuclear Fuel Cycle Royal Commission had recognised the legislative procedures that already exist for gaining Indigenous approval of any development that affects traditional owners. The Nuclear Fuel Royal Commission stated, 'There are frameworks for securing long-term agreements with rights holders in South Australia, including Aboriginal communities. These include Indigenous Land Use Agreements, Cultural Heritage Management Plans, mining agreements, land access agreements and exploration permits. These frameworks provide a sophisticated foundation for securing agreements with rights holders and host communities regarding the siting and establishment of facilities for the management of used fuel.'

4. The nuclear waste storage facility will not go ahead without community agreement and bipartisan political support

Supporters of the nuclear waste storage facility in South Australia argue that it will not go ahead without the support of both the community and other political parties.

It is recognised that such a significant commitment involving large-scale government expenditure and a social and environmental management responsibility that extends over hundreds of thousands of years can only be undertaken if there is full and informed support for it.

After the publication of the Nuclear Fuel Cycle Royal Commission report on May 6, 2016, the government began a wide-ranging campaign of community education and consultation.

Following the release of the Royal Commission Report, Premier Jay Weatherill announced the establishment of the Nuclear Fuel Cycle Royal Commission Consultation and Response Agency (CARA) to increase awareness of the Royal Commission's report and facilitate the community consultation process.

Among the principles guiding CARA's actions are: seeking to understand the South Australian community's perspectives on further involvement in the nuclear fuel cycle; having the community, not the government, identify the issues they want to discuss and ensuring the community is informed about the issues upon which it will ultimately make up its mind.

There have been four elements in this community consultation and decision-making process - two citizens' juries and a

series of more than 100 informal consultative meetings around the state at which citizens were invited to receive information and give feedback. Among these community forums were a youth forum at which The Youth Affairs Council of South

Australia (YACSA) and CARA hosted a 'Know nuclear pizza and politics' night; a Greek community forum at which representatives of CARA attended an event with members of the Greek community at Olympic Hall, Adelaide CBD and a South Australia TAFE Colleges forum at which CARA participated in a video conference that was open to TAFE SA students across all campuses. A special briefing was also provided to the TAFE Regency Campus science and geology students.

People were also encouraged to contribute through unstructured channels, via emails, website comments, a short Twitter post, telephone calls and letters. These channels often attracted people who feel strongly for or against a particular issue, and they also allowed individuals to contribute numerous times.

The first citizens' jury, comprising a representative group of fifty citizens, helped to identify the questions that needed further clarification. The second jury of 350 people was convened to examine the feedback and present a final report to the government.

After the report of the consultative groups and the second citizens' jury, the Premier announced that the only way to establish the community's view beyond doubt was to hold a referendum. Supporters of this process argue that it displays a great respect for community opinion and ensures that no decision will be made by government that does not reflect the wishes of the people.

On the question of receiving bipartisan support from the major parties, the referendum has been proposed as a way of gaining this. The Premier has stated, 'Opposition Leader Steven Marshall withdrew the Liberal Party's support before the process had been completed, removing the bipartisanship the Nuclear Fuel Cycle Royal Commission said was critical to the process.'

The Premier appears to believe that a shift in public attitude, indicated in a referendum, might see the Opposition come in behind the project. Mr Weatherill has stated, 'If the mood in the community shifts and bipartisanship is re-established we will remain open to this question.'

5. If South Australia were to establish a nuclear waste storage facility it would be acting as a responsible international citizen

Some of those who support the establishment of a nuclear waste storage facility in South Australia do so because they believe it is the best solution to a global problem. They argue that a safe means of storing the world's growing stockpile of spent fuel from nuclear reactors has to be found and that South Australia is uniquely well placed to help solve this problem.

Environmentalist, David Valente, has argued that South Australia would be assisting the world address a pressing environmental issue if it were to establish such a facility.

Valente stresses the geological features of South Australia which make it an ideal location to place a storage facility. He states, 'The scientists scientists mind you, not politicians or profit-driven corporate bully boys have already told us more than once that the South Australian Outback is the best, the safest, the most geologically and environmentally stable place on the planet to store the nuclear waste that already exists in stockpiles around the globe.'

Valente concludes, 'The environment is worldwide and in situations like this so should be the concerns of environmentalists& If we as environmentalists keep shouting The Earth is sick, something must be done! but at the same time steadfastly refuse to make the hard call to do something in our back yard, how and when will anything change?'

In addition to stressing the geological and socio-political features of South Australia that make it highly suitable for a nuclear waste storage facility, the Nuclear Fuel Cycle Royal Commission also stressed that Australia's strong position on non-proliferation of nuclear weapons would make a south Australian site one that most of the world would trust as a repository for their nuclear waste. The Royal Commission's report states, 'Australia offers a unique political arrangement given its economic and political structures and international confidence in its non-proliferation credentials.'

There are those who argue that South Australia has a strong moral responsibility to build this facility. Freelance journalist, Mike Steketee, has argued, 'We have the world's largest known uranium resources and are the world's third largest producer (after Kazakhstan and Canada) of uranium for nuclear reactors& The waste from nuclear fuel from our uranium, together with that from other producers, is piling up around the world in temporary storages& Australia has some of the most stable geological formations in the world in outback South Australia, Western Australia and the Northern Territory. That is, the earth has not moved in these regions for millions of years. They are arid and flat, meaning there also has been no groundwater movement. And they are very sparsely populated.'

Steketee argues that by supplying the uranium Australia (including South Australia) has helped to cause this worldwide problem and as we are well placed to be able to address it, we are morally obliged to do so.

Arguments against siting a nuclear waste storage facility in South Australia

1. The economic benefits of a nuclear storage dump are uncertain

There have been significant doubts expressed regarding the economic benefits which would come to South Australia from a nuclear waste storage facility.

The leader of the South Australian Opposition, Steven Marshall has stressed the initial outlay that the state will have to make to investigate the project before a decision could even be taken. He has also stressed the lengthy lead-in period before South Australia could expect any financial returns were the state to go on with the project. Mr Marshall has stated, 'What we know from the investigation here in South Australia is that taxpayers were going to have to foot a bill of \$600 to

\$800 million before a decision on this project was made.'

Marshall then added that on what he had observed when visiting the nuclear waste storage facility in Norway, South Australia could expect no return on its investment for between 20 to 40 years.

Doubts have also been expressed about the economic projections upon which the estimates of future profits to come to South Australia have been based. These were voiced in the reservations expressed by both the first and second citizens' jury. The first jury stated, 'This facility has the potential to provide a significant income for our state. There are risks and uncertainties with this endeavour that require more research&Given the intergenerational nature of this project it is important to ensure any economic benefits are ongoing&There were varying views between expert witnesses on the economic viability of this project and therefore questions remain relating to the economic modelling in the Commission's Report before we can feel comfortable progressing to further involvement.' Despite its reservations, the first jury believed the Government should spend the money necessary to determine how financially viable a nuclear waste storage facility might be.

The second citizens' jury was far more sceptical. It was concerned that the market composed of those seeking to store nuclear waste products may not be as large as anticipate. They were also concerned that those seeking to store these products may not be prepared to pay what had been anticipated, perhaps because other, potentially cheaper, storage sites were developed and also because other technological 'solutions' to the problem of waste storage were developed. They were additionally concerned that the Royal Commission may have under-estimated the cost of developing and maintain the facility.

Regarding the economic advantages envisaged by the Nuclear Fuel Cycle Royal Commission Report, the second citizens' jury stated, 'The economic modelling has a number of flaws& and relies on a very optimistic interest rate.' The jury's report further stated, 'Many of the jury consider that the economic and business model is based on untested assumptions and that more economic information is required. Key assumptions are price of product, size of market, durability of the market, cost of the project, lack of competition and future technologies.' The jury was also concerned that the Commission had not considered the cost of any clean-up should a significant accident occur. The second jury stated, 'Costing for safety contingencies have not been adequately addressed.'

Ultimately the second jury judged that the proposal required large immediate expenditure for uncertain future financial rewards. The jury concluded, 'The economic success of this project hinges on the requirement of upfront payments and long term contracts. This presents huge economic risks and uncertainties in an ever-changing global environment.'

Similar concerns about economic viability and questionable assumptions have been raised by other critics of the proposal. Professor Mark Diesendorf, Associate Professor in Interdisciplinary Environmental Studies at the University of New South Wales has stated, '[the Royal Commission] fails to address the points raised by the Australia Institute, questioning, for example, why nuclear countries would pay to export their wastes when it may be cheaper to manage them at home. The economic analysis justifying this scheme is a single 2016 study, most of whose assumptions are not stated in the Commission's report.

The Commission discusses the alleged benefits of this scheme, while failing to acknowledge the economic risks of Australia managing high-level wastes for hundreds of thousands of years by means of unproven technologies and social institutions.'

The unreliability of the Nuclear Fuel Cycle Commission's economic predictions has also been stressed by Jim Green, anti-nuclear campaigner, Friends of the Earth. Green has stated, 'The revenue estimates have no basis in reality. There is no comparable overseas model of commercial trade of nuclear waste for disposal. No real idea how many countries might avail themselves of the opportunity to send nuclear waste to Australia for disposal, or how much they might send, or how much they might pay. So there's no way of knowing whether revenue would exceed costs.

2. Safety issues have not been adequately resolved

There have been many concerns expressed about the potential environmental and human safety hazards associated with the proposed nuclear waste storage facility.

On April 14, 2016, Green Left Weekly published a report detailing some of the hazards associated with storing nuclear waste. It stated, 'Storing nuclear waste is not just a matter of isolating it and forgetting it. Spent reactor fuel generates significant heat for decades, and is dangerously radioactive for hundreds of thousands of years beyond that.

Dealing with such materials is a complex engineering problem, and the sites need continuous guarding and monitoring effectively, forever.'

The report continued, 'Throughout the first 120 years of the South Australian dump, large amounts of high-level waste would not even be underground. Instead, these materials would be in concrete and steel casks on the surface. Between years 40 and 65, as much as 70,000 tonnes would be in such temporary above-ground storage.'

The report also details the accidents and leakages at a number of storage sites overseas. 'In 2005 it was found that repeated leaks from the French facility at La Hague in Normandy had left groundwater with radioactivity levels up to 90 times the prescribed limit.'

Among the examples of accidents at storage facilities was one from the United States, 'In February 2014, an above-ground monitoring station 800 metres from the Waste Isolation Pilot Plant (WIPP) facility in the US state of New Mexico suddenly began recording airborne particles of plutonium and americium. Far below the surface, a chemical explosion had ruptured a drum of intermediate-level waste.

A total of 21 workers were exposed, and WIPP continued to vent radioactive particles for almost three weeks. Years later, the US\$19 billion facility remains closed, and estimates of the clean-up bill run to at least US\$500 million.'

Other critics are concerned that the technology which would be employed in South Australia is not yet in successful

operation anywhere else in the world. Professor Mark Diesendorf, Associate Professor in Interdisciplinary Environmental Studies at the University of New South Wales has stated, 'The [Nuclear Fuel Cycle Royal Commission] report is not troubled by the fact that no country, not even the USA, has so far succeeded in building and operating an underground waste dump.'

The second citizens' jury report also outlines a wide range of safety concerns. The human and environmental hazards involved in shipping the material to Australia and then transporting it overland were raised. The jury stated, 'The greater the distance the higher the risk.'

There was also particular anxiety voiced about the fact that the radioactive material would be initially stored above ground and that the site for the underground storage was intended to be selected after the first fuel shipments had arrived. (It is necessary to store the depleted uranium above ground for 50 years before it has cooled sufficiently to be safely stored beneath ground.) There were those who further expressed concern that there was the 'possibility to sit above ground forever.'

With regard to above ground storage, the second citizen jury stated, 'The model proposed requires interim storage of nuclear waste above ground. This increases the likelihood of leakages which would have profoundly negative environmental impacts, in particular if the leak occurred while the material was still very radioactive. The International Panel on Fissile Materials has said there is general agreement that placing spent nuclear fuel in repositories hundreds of metres below the surface would be safer than indefinite storage of spent fuel on the surface.'

There was concern expressed about the occupational health and safety of workers involved in construction of the facility, through waste product transfer to depositing and site maintenance.

The second citizens' jury also felt the environmental impacts considered by the Royal Commission were too narrowly based. It stated, 'The jury felt it was important for environmental impact studies to include impacts beyond radiation.' The jury noted 'The infrastructure required for the project has not been defined; however, it is likely to be large scale and result in environmental impacts.'

The second citizens' jury included the following as negative environmental impacts (beyond the impact of radioactivity) that would result from the project: 'The clearing of native vegetation surrounding and covering the proposed storage sites and transport corridors [and] the dredging of marine environments and seabeds around port(s).'

3. The traditional owners of the land do not accept its use as a uranium dump

Those who oppose the building of a nuclear storage facility include the traditional owners of the areas under consideration as nuclear waste storage facilities.

A number of submissions opposing the establishment of a nuclear waste storage facility were put to the Nuclear Fuel Cycle Royal Commission. One, typical in tenor to the others, stated, 'We've got to say no to this high level nuclear waste. We got to think about people, we got to think about animals and bush tucker. We've got to think about the country. We need the animals - they are our diet - kangaroos, lizards, wombats, rabbits, bullocks and sheep. We have talked over and over about these things and they are still pina wiya - no ears! They, the government people still don't listen. We say No! Wanti! Leave it! This is our land.'

Similar opposition was voiced to the second citizens' jury. Two groups of traditional owners put a submission to the jury detailing their opposition to the proposed nuclear waste storage facility. The submission reveals the deep distrust that has developed among traditional owners as a result of previous abuse, especially the use of their land as nuclear weapons test sites between 1955 and 1963, without acknowledgement or permission.

A partial rehabilitation of the land affected was not undertaken till 2000 and part of the land was not restored to its traditional owners till November, 2014. In 2013, Maralinga's and Emu Field's Indigenous victims of the British atomic tests were told that a class action for compensation would fail and that the fight in the courts was over because their illnesses and premature deaths could not conclusively be proved to be the result of radiation.

The traditional owners' submission to the second citizens' jury opened 'South Australian Anangu and Yura (Aboriginal Traditional Owners) call on the Citizens Jury to reject the plan to turn our homelands into stores and dumps for international high-level nuclear waste.'

It continued, 'The nuclear industry has a track record of Aboriginal dispossession and environmental pollution ? from the atomic bomb tests to uranium mining to nuclear waste dump proposals.

The government says the nuclear waste dump proposal is different to the atomic bomb tests, but Inaadi vasingyi? radiation is radiation, poison is poison. Governments stripped Aboriginal people of land, land rights and heritage protections for atomic bomb tests and uranium mining, and exactly the same thing will happen with the high-level nuclear waste dump.

Aboriginal Traditional Owners have first-hand experience. Poisoned water, poisoned plants, poisoned animals, poisoned people.'

The second citizens' jury responded sympathetically to the traditional owners' submission. The jury concluded, 'There is a lack of aboriginal consent. We believe that the government should accept that the elders have said no and stop ignoring their opinions.' The jury further commented, 'We need to consider the traditional owners and current residents of the land; not only of the final location of the nuclear waste facility, but also the lands that the waste is transported through. Many Aboriginal people have no or little trust in government based on lack of transparency and lack of attempts to fix previous issues.'

4. Building a nuclear waste storage facility will harm South Australia's national and international reputation

There is concern that locating a nuclear waste storage facility in South Australia will damage the state's reputation

internationally and within Australia, harming its image as a tourist destination and as a producer of clean, uncontaminated fruit, vegetables, wine and livestock.

The same concern has already been voiced about the federal Government's proposal to locate a repository in South Australia for Australian low-level nuclear waste. Concerns about a radioactive waste facility being located at one of two sites in the Kimba district has led to the formation of a local protest committee. It has stated, 'We can have no guarantee that our reputation, our livelihood or perception of our clean and green image will be impacted if the dump is here.' Anti-nuclear campaigner, Dave Sweeney, has stated, 'It's not just about the science, it is about the reputation, the suitability of sites, the unknown and uncertain outcomes over the next 300 years and about a community's right to decide.'

Concern about reputational damage was clear in the response of the second citizen jury. The jury stated, 'South Australia enjoys a positive international reputation for being a clean, safe and sustainable environment, which provides a competitive advantage for local exporters and an appealing destination for inbound tourism.'

The jury considered that a nuclear waste storage facility was at odds with the image the state has created through its use of clean, renewable energy such as wind power. The jury stated, 'South Australia prides itself on its renewable energy sources, and the reputation it inspires. To accept nuclear waste into the environment contradicts the state's current focus on renewable energy sources.'

The jury noted the high international standing South Australia currently enjoys as an attractive, unspoilt tourist destination. It observed, 'South Australia was recently ranked the 5th Best Regional Centre in the World by Lonely Planet for 2017.'

The jury concluded, 'Under no circumstances do we pursue the disposal of nuclear waste because the potential brand damage is too great a risk to the state. The profit from this venture does not outweigh the risk and potential damage to a flourishing industry.'

The jury concluded, 'The flow-on effect of damage to the brand of South Australia will have a huge impact on the many industries of our state. It is a threat to a \$17.5 billion/year income to the state generated from tourism, international students, agriculture, food, wine, seafood, livestock, and this is just the beginning. This is a risk we are not willing to take.'

5. There appears to be limited community support for a nuclear waste storage facility and it is opposed by the Liberal Opposition

The establishment and management of a nuclear waste storage facility is not an inexpensive undertaking with only short-term consequences. The establishment of such a facility will take a huge capital investment and the length of time for which South Australia will be responsible for this dangerous material far exceeds a human lifetime. Those concerned about the proposal have noted that this is a major obligation which would be placed upon South Australian citizens for many generations to come.

It is for these reasons that it has been argued that there must be very substantial, if not absolute, community support for this project before it can go ahead as the consequences are too significant for there to be less than full and decisive agreement.

Critics argue that this level of community support does not exist. The citizens' juries which the government established were one means of engaging the community, clarifying issues and gauging support. The job of the first citizen jury was to identify those aspects of the Nuclear Fuel Cycle Royal Commission's report which require further consideration. The second citizen jury made a series of judgements on the Royal Commission's recommendations. It did not support proceeding with the nuclear waste storage facility. It summarised its position as 'Two thirds of the jury do not wish to pursue the opportunity under any circumstances.' The remaining third only supported proceeding subject to a range of concerns being addressed.

The South Australian Liberal Opposition has taken the rejection of the proposal by the second citizen jury as an indication that the project does not have community support. The leader of the Opposition, Steven Marshall, has stated, 'I've been out talking to the people of South Australia, and my parliamentary colleagues have been out talking to people of South Australia & the people of South Australia do not support this proposal, there's too much economic risk.'

Mr Marshall said the decision that two-thirds of the citizens' jury did not want the proposal pursued under any circumstance was 'a complete failure to get the public onside'. Mr Marshall continued, 'It was Jay Weatherill [the South Australian premier] who placed a lot of store in the citizens' jury process, and has been absolutely smacked in the face. The citizens' jury overwhelmingly said they didn't support this project for South Australia.'

This position was supported by another member of the South Australian Opposition, frontbencher Duncan McFetridge, who stated, 'You've got to listen to the people, and they're not in favour of it.'

This lack of support from the Opposition, based on a perceived lack of popular support for the proposal, is significant. The Premier, Jay Weatherill, has repeatedly pledged that the project would not go ahead without bipartisan support, that is, support from both the government and the principal opposition parties. Part of the reason for this is that the long-term nature of the commitment demands full political consensus as the management of the facility will involve successive governments of different political persuasions. The Royal Commission recognised this need for firm political consensus when it stated, 'Long-term political decision-making, with bipartisan support at both state and federal government levels, would be a prerequisite.'

Further implications

A referendum may not occur. It would need the support of the Opposition which it is unlikely to receive.

The Opposition wants to go to the 2018 state election on the question of whether South Australia should build a nuclear waste storage facility. The Liberal Opposition clearly believes the proposal is unpopular and that the Weatherill Labor government can be removed from power for having appeared to promote it.

Shifting public opinion on this question was always going to be difficult. Nuclear power and the management of nuclear waste products are deeply divisive issues. This may be particularly the case in South Australia which has a relatively recent history of having been the site of British nuclear weapons testing at Maralinga and Emu Field. South Australia has also fought a long battle with the federal government to prevent becoming the site of a storage facility for low-level nuclear waste produced within Australia. The federal government is currently making another attempt to establish such a repository in the state.

Opinion polls do suggest that opposition to a nuclear waste storage facility has softened; however, such a proposal still does not have majority support and were a referendum to be held the storage facility is unlikely to be approved.

The public education strategy which has been adopted has been a significant exercise in information dissemination; however, the issue is so sensitive that distrust remains. Critics of the proposal have disputed the objectivity of the Nuclear Fuel Cycle Royal Commission. The sources of its expert advice have been challenged as biased and many of the assumptions it has made in its economic modelling have been disputed.

Much about the issue remains irresolvable. There is currently not a deep geological nuclear waste storage facility in full operation anywhere in the world. Statements about their safety and profitability have to be predictions. When such high stakes hang on the issue, both in terms of financial outlay and public safety issues that extend beyond many lifetimes it is unlikely that electorates will readily embrace the risk.

The South Australian premier appears to have believed that 'information' and 'public education' would lead to an acceptance of the project. The difficulty seems to have been that such information as there is has not been sufficient to allay popular concerns.

There also seems to be the belief that some of the premier's assurances were tokenistic. The Indigenous community, for example, does not appear to have been convinced that an Aboriginal community would have been able to veto the decision to place a nuclear waste storage facility on its lands. Yankunytjatjara Native Title Aboriginal Corporation chairwoman, Karina Lester, has said the veto power was simply to 'cover the Premier's butt' and Aboriginal communities would feel 'pressured and intimidated' by a vote.

Faced with the opposition of the government and public opinion Karina Lester clearly doubts that an Indigenous community would have been able to assert its supposed rights. However, given the direction the public debate has taken, it seems unlikely that any site for a storage facility will ever be nominated.

Newspaper items used in the compilation of this issue outline

AGE, October 30, 2016, page 18, background (photos of site and construction of ITER nuclear fusion reactor) by Nick Miller, 'The massive hole that may save the world'. [↗](#)

The Age, November 14, 2016, news item by P Martin, *South Australian referendum to be a plebiscite on nuclear waste* [↗](#) - see also OLDER background item by Michael Koziol, *Australia's first nuclear waste dump to be located on former Liberal senator's land* [↗](#)

The Conversation, December 6, 2016, comment (ref to Japan's earthquake and tsunami) by Tony Irwin, *Is Fukushima still safe after the latest earthquake?* [↗](#) - see also OLDER comment by George Dracoulis, *Nuclear will survive, because it has to* [↗](#)

The Conversation, December 6, 2016, comment (ref to Japan's earthquake and tsunami) by Tony Irwin, *Is Fukushima still safe after the latest earthquake?* [↗](#) - see also OLDER comment by George Dracoulis, *Nuclear will survive, because it has to* [↗](#)