

No Profit in Nuclear waste

Brief (July 2016) by David Noonan, Independent Environment Campaigner

South Australians are being misled by inflated revenue claims, untenable assumptions and under-reported nuclear waste costs. Reality check analysis shows there is no profit in nuclear waste.

Nuclear waste costs are fast rising and unrelenting for decades after the last recite of waste imports regardless of whether or not claimed revenues and fixed prices over time prove to be realistic or illusory.

The Nuclear Royal Commission Final Report Ch.5 "[Management, storage and disposal of nuclear waste](#)" and the [Nuclear Commission Tentative Findings Report](#) (p.16-20) present a nuclear waste baseline business case that is near solely reliant on a consultancy "[Radioactive waste storage and disposal facilities in SA](#)" (Feb 2016) by Jacobs MCM, summarised in [Final Report Appendix J](#).

There is no market based evidence for the Final Report revenue assumptions and claimed income.

Claimed revenues are a tonnage based multiplier: inflated tonnage equals misleading revenues.

Claimed revenues are doubled by an assumption SA can take twice the waste the US failed to achieve.

Finding 88 proposes a globally unprecedented and inflated scale of nuclear waste disposal at 138 000 tonnes of high level nuclear waste: set at twice the scale of the world's largest ever proposed nuclear waste facility - Yucca Mountain in the US (licensed for 70 000 tonnes) that was abandoned in 2009.

A minimal safety margin requires that high level waste not be imported *before* an agreed licensed geological disposal site: This safety step results in a 40% reduction in project Net Present Value (NPV).

The Final Report assumes waste imports start in Project Year 11, four years before any potential geological disposal site could be agreed and licensed. Jacobs' business case and NPV (see Appendix J) are dependent on and highly sensitive to taking on waste imports ahead of key safety margins.

Jacobs assume waste imports 17 years before any disposal capacity, 4 years before an agreed and licensed disposal site and 2 years before a required Initial Safety Case for disposal siting and design.

Initial Cost Outlays are under reported by approx. \$1 billion for required inland waste storage costs:

Claimed Initial Cost Outlays of \$2.4 billion over 10 years (Final Report p.103-104) are premised on a baseline business case for a coastal location for above ground nuclear waste storage, some 5-10 km from a Nuclear port (Final Report p.290 & Table J.1; Jacobs Exec Summary p.5, p.136 and 167, p.196-198).

An inland location with a required lengthy rail line increases storage capital and operating costs by approx. \$1 billion (Jacobs, Scenarios modelled p.196-198, and Table 3.3 Capital costs of configuration scenarios).

An assumed "*combined*" geological disposal site, risks a \$9.6 billion cost blow-out if "*stand-alone*" separate sites are required for high level waste disposal and for intermediate level waste disposal:

The Final Report (p.290) is based on "*combined*" siting at one location for high level waste disposal at 500 m depth AND for intermediate level waste disposal at 200 m depth (Jacobs p.5 and p.196-198).

Prudent planning requires a budget for “stand-alone” geological disposal facility costs, a \$9.6 billion increase on reported capital costs (Jacobs p.198 Configuration Scenario 1 verses Configuration Scenario 4).

To minimise reported costs, Jacobs (p.170-171) assumes “combined” disposal siting that could fail in practice, not realise consent or regulatory approval and can’t be shown until at least Project Year 15.

High level nuclear waste disposal costs can double in a decade: As shown in French nuclear waste agency cost estimates over 2005 to 2015 ([Reuters](#), Jan 2016, “nuclear waste cost estimate soars”). However, Jacobs only built in a 25% cost margin to cover 3 decades to a first disposal option in Year 28.

Dubious claim that disposal of nuclear waste in SA costs one quarter less than in experienced countries:

Jacobs (Exec Summary p.4) acknowledges that high level nuclear waste disposal costs in experienced nuclear countries with a national siting program are reported at \$1.4 (US \$1.0) million per tonne.

The Final Report and Finding 91 assumes a cost estimate of circa \$1.05 million per tonne for storage and disposal of high level nuclear waste in SA (total cited project costs of \$145 billion divided by 138 000 tonnes of high level waste). *First of a Kind* projects carry higher, not lower costs.

In perspective: If disposal costs across countries with nuclear experience AND access to national siting was applied to this project, then reported total costs of \$145 billion would increase by circa 25 per cent - around \$36 billion. How much extra cost can SA afford to risk and have to pay out?

SA could also have to pay \$10 billion in capital costs for 7 000 required storage casks (Jacobs p.76 & p.175).

Jacobs claim client countries will pay 50 per cent above reported geological disposal cost estimates:

Finding 84 states a baseline fixed price for client countries to pay \$1.75 million per tonne to transfer liability costs and perpetual responsibility for high level nuclear waste on to South Australia.

Jacobs further assume that client countries will pay additional costs for waste preparation, transport and shipping (Exec Summary p.3-4), and storage casks costs (p.63 & p.75), totalling approx. \$0.35 million per tonne. **The actual cost to client countries is approx. \$2.1 million per tonne of high level waste.**

Client countries are assumed to be willing to pay some 50 per cent higher than direct geological disposal costs of \$1.4 million per tonne in experienced nuclear countries with ongoing disposal programs. In effect, client countries are also assumed to be willing to pay up to double the claimed cost estimate for high level nuclear waste storage and disposal in SA at \$1.05 million per tonne.

SA faces a \$60 billion debt in costs across 37 years of ongoing nuclear waste storage operations and nuclear facility decommissioning after the last receipt of overseas revenues for waste imports:

Costs after last waste imports total \$28 billion in operating costs (Final Report p.101) and \$32 billion in required nuclear decommissioning, closure and site remediation of waste facilities (Finding 93 b).

Nuclear contingency costs are unfunded: Including “the need to abandon a site and move to an alternative site” (Jacobs p.32), response costs to “adverse outcomes” and major nuclear accidents (Final Report p.104) or acts of terrorism that “may cost billions” ([Jacobs evidence to Inquiry](#) 22nd June p.44-45).

For further info: see www.foe.org.au/import-waste and <http://www.nodumpalliance.org.au/>