



THE NEED TO ASSESS A FEASIBLE ALTERNATIVE: NO-URANIUM SALES FROM OLYMPIC DAM

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For more information on BHP's proposed expansion of the Olympic Dam mine visit nuclear.foe.org.au/olympic-dam

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Mining giant BHP has made a formal application to expand the Olympic Dam mine in northern South Australia. In 1982 the Roxby Downs (Indenture Ratification) Act created a legal framework for the development and the copper-uranium – silver-gold mine was opened in 1988. BHP's current expansion plan follows an earlier decision to defer the transition to a massive open cut operation and is focussed on expanding the current underground operations. The planned mine expansion has significant environmental and public health implications, particularly in relation to water consumption and radioactive risk. This briefing explores the need for federal and state assessment of BHP's expansion plans to actively consider a project configuration that would see no uranium included in the mine's future mineral sales or exports.

Both state and federal laws recognise the need to properly assess feasible alternatives to a proponent's preferred project configuration.

This is a required part of due process in the public interest to facilitate informed public participation and decision making in any Environmental Impact Statement (EIS) process.

The Australian Conservation Foundation (ACF) and other ENGO's have long maintained there is no net benefit to our environment or community from the nuclear power industry and recommended that existing Olympic Dam operations and any proposed mine expansion should not sell uranium.

The "[Olympic Dam Major Project Declaration](#)" (SA Government Gazette, 14 Feb 2019, p.461-462) instigates a level of process which typically requires a full EIS Assessment process.

The EIS Guidelines set by the SA State government should direct the proponent BHP to fully assess key feasible alternatives, especially an alternative mining configuration to not process uranium oxide. Such an approach would see all uranium retained on the mine site in tailings waste.

ACF has made recommendations to BHP and to the federal and SA State governments to assess this feasible alternative regarding BHP Olympic Dam mining operations and previous proposed mining expansions over 2005-2011, including in a Critical Review Report (July 2009) by Dr. Gavin Mudd.

[A peer reviewed report by Dr. Gavin Mudd \(Dec 2010\)](#) investigated the viable key project alternative to not process uranium oxide at Olympic Dam and concluded that it is technically possible to:

"process Olympic Dam ore without uranium recovery by removing the acid leach step for tailings and not purifying the uranium during the hydrometallurgical processing of Cu concentrate liquors (ie. only recovering Cu from this step). Developing the next Olympic Dam expansion in this manner, by not recovering uranium, would require all infrastructure and processing to occur on-site.

This leaves all uranium and its associated radioactive decay products to deport to the tailings. In reality, this will only mean a very minor change to the radioactivity of the tailings – which must be managed as low level radioactive waste in any case.

Overall, not recovering the uranium is not only technically feasible but could also help reduce energy and water inputs as well as pollution outputs for the next expansion, as well as helping to address the various environmental, public health, environmental and security hazards associated with uranium and the nuclear chain in general.”

The feasible alternative to not process uranium oxide at Olympic Dam would facilitate a range of potentially significant environmental benefits in water and energy savings and mean lower ionizing radiation exposures to workers.

BHP has a primary duty of care to demonstrably assess the benefits in lower ionizing radiation exposures to workers.

In the interests of transparency and accountability, the EIS Guidelines should implement key Inquiry Recommendation No.5 by the “Senate Uranium Mining and Milling Committee” ([Ch.4 Occupational Health and Safety, 1997](#)) to ensure public disclosure of Olympic Dam dose exposure records.

This BHP Olympic Dam Major Project involves a highly contested and publicly controversial industrial nuclear activity in uranium mining. Significant public concerns exist over uranium sales and the impacts of the wider nuclear industry. These include intractable nuclear waste management, major accidents, nuclear safety, security and weapons proliferation and diversion issues.

A September 2011 federal Department of Environment report acknowledged nuclear security and safety concerns ([“Olympic Dam expansion assessment report EPBC 2005/2270”](#), 5.13 Nuclear Security/Safety, p.57), stating:

“Nuclear safety, security and safeguards controls are discussed in detail in Appendix E3 of the DEIS. ... Around a quarter of the public submissions received on the DEIS raised concerns about the export of uranium from Olympic Dam and the associated nuclear security and safety risks. Key concerns related to: the potential use of uranium from Olympic Dam in nuclear weapons; the adequacy of nuclear safeguards in ensuring that uranium from Australia is only used for peaceful purposes; the effectiveness of nuclear safeguards associated with export of uranium-copper concentrate to China; nuclear waste storage; and the safety of nuclear power plants.”

(Note: There were over 4 000 submissions in total)

[Australian uranium fuelled the Fukushima nuclear disaster](#). It has been formally confirmed that Australian uranium directly fuelled the continuing Fukushima nuclear crisis:

In October 2011 Dr Robert Floyd, Director General of the Australian Safeguards and Nuclear Safety Organisation stated: *“We can confirm that Australian obligated nuclear material was at the Fukushima Daiichi site and in each of the reactors”*.

However, Australia has yet to properly address a United Nations study on the implications of the Fukushima nuclear accident.

The SA government should now belatedly instigate the recommendation of the [UN Secretary General’s Nuclear Safety and Security Report](#) (Sept 2011, p.14) for *“an in depth assessment of the net cost impact”* of uranium mining, as a requirement in the Guidelines for the EIS Assessment.

Australian uranium sales and institutional arrangements are often not transparent, and uranium is sold to nuclear weapon states that are not compliant with their NPT nuclear disarmament obligations or to non-transparent regimes in China and, earlier, Russia.

Further Australian uranium is intended to be sold to nations and utilities in unstable regions including the UAE, Ukraine and India – a nation outside of the NPT and involved in a nuclear arms race and border conflict with Pakistan.

Australia must not fuel further adverse nuclear impacts or risks. In 2019 any credible EIS Assessment of Olympic Dam uranium mining must properly assess both a Nuclear Events Risk Analysis across the life cycle impacts of the nuclear fuel chain and the feasible alternative for only non-radioactive products and materials: copper, silver and gold to leave the Olympic Dam mine site.

The Guidelines to the EIS Assessment must require the proponent BHP to assess a full Nuclear Events Risk Analysis as part of addressing BHP's social license to operate in the sale of uranium.

It is pivotal that these concerns are explicitly addressed in the assessment of the proposed Olympic dam expansion and are subject to public consultation in the EIS process.

Following the Australian uranium fueled Fukushima nuclear crisis the uranium commodity price has fallen steeply. Around the world primary uranium production has declined and the Australian uranium sector has seen projects deferred or scrapped. In this context and given that uranium's share of Olympic Dam revenues has declined over time to be currently less than 20 per cent, the no uranium project configuration must be explicitly canvassed.

[Dr Gavin Mudd's report](#) reviews the principal environmental issue associated with the feasible alternative to retain all uranium on site at Olympic Dam, in the radioactivity of toxic mine tailings waste and the required long-term management of tailings as radioactive waste, stating:

"If the Olympic Dam project were to proceed with no uranium recovery, the range of environmental impacts would essentially stay the same, with minor increases to the radioactivity of the mine tailings (due to no uranium recovery and liquid wastes from acid leaching of concentrates being discharged to the tailings) and slightly lower volumes of spent chemicals, process residues and contaminated equipment." (p.6)

Since the Olympic Dam operation started in 1988 the mine tailings have retained around 80% of the radioactivity from the original ore and around one third of the uranium from the ore.

BHP Olympic Dam tailings total around 180 million tonnes and retain the radioactive decay chains of uranium, thorium and radium with associated generation of a potent hazard - radioactive radon gas.

Retaining all uranium on-site discharged to the tailings would not significantly increase radon output from tailings. In any case, Olympic Dam mine tailings waste need to be isolated from the environment and managed as radioactive waste for over 10,000 years - irrespective of whether uranium is extracted or not.

In order to be consistent with federal government tailings management requirements that apply at Rio Tinto/ERA's Ranger operation in Kakadu, Olympic Dam mine tailings waste should have to be isolated from the environment and managed as radioactive waste for at least 10,000 years.

Public interest concerns over uranium processing and uranium sales risks and impacts should not be solely left for BHP with clear vested interests, or for the SA government whose pro-mining position can lead to a perceived conflict of interest, to decide. Community confidence is best advanced through transparent, inclusive, robust and evidence-based assessment.

The challenge is for the SA State government to require BHP to conduct a proper EIS Assessment of a prudent and feasible project alternative with better environmental and public interest outcomes: by retaining all uranium on site at Olympic Dam.

Recommendations:

The need to assess a feasible no-uranium sales alternative for Olympic Dam:

The EIS Guidelines set by the SA government should direct the proponent BHP to properly assess:

- A [No Uranium Sales](#) approach as a feasible alternative project configuration. This would see no uranium removed from the mine site with all uranium retained on-site and discharged to the tailings waste system. This assessment would explore potential savings in water, electricity and chemicals, economic costs and benefits, radiation exposures, nuclear safety and related issues;
- BHP has a primary duty of care to properly assess the benefits in potentially significant lower ionizing radiation exposures to workers by not processing uranium oxide at Olympic Dam.

The UN Secretary General's recommendation for a net cost impact assessment of uranium mining:

Following the Australian uranium fuelled Fukushima nuclear crisis in 2011 the United Nations conducted a detailed nuclear industry review that has important implications for Australia's uranium sector, including the recommendation that:

"An in depth assessment of the net cost impact of the following is required: ...

- *Local Impacts of Mining. There are concerns regarding the impact of mining fissionable material on local communities and ecosystems."* (Paragraph 70, p.14)

"High-level Meeting on Nuclear Safety and Security convened by the Secretary-General. United Nations system-wide study on the implications of the accident at the Fukushima Daiichi nuclear power plant. [Report of the Secretary General](#) (Sept 2011, SG/HLM/2011/1)"

Consideration of any BHP expansion proposal should include this in depth impact assessment. It is not credible to further expand Australian uranium production and exports post Fukushima without conducting this overdue review.

Efficacy of existing occupational health and safety and radiological protection regimes:

An assessment of the efficacy of existing occupational health and safety and radiological protection regimes, including:

Implementation of key Inquiry Recommendation No.5 by the *"Senate Select Committee on Uranium Mining and Milling"* ([Ch.4 Occupational Health and Safety, 1997](#)) to ensure public disclosure of Olympic Dam dose exposure records:

"The Olympic Dam indenture agreement should be amended or repealed to ensure that the public has access to all dose records in a form which does not allow individual identification (except individual records which remain the property of the individual)."

A Nuclear Events Risk Analysis is needed to address uranium sector social license issues:

A full Nuclear Events Risk Analysis examining the life cycle impacts of the nuclear fuel chain is needed. This would include an assessment of the potential economic consequences for the proposed project and the potential for loss of BHP's social license to operate in sale of uranium across the following potential nuclear events and issues:

- Nuclear accidents, including in use of Australian origin nuclear materials and uranium (as occurred at the Fukushima nuclear disaster on 11 March, 2011);

- Continued unresolved nuclear waste management and consequences for Australian origin nuclear materials derived from the use of BHP Olympic Dam uranium;
- Adequacy of state and federal transparency and accountability on nuclear issues, including a review of the state *Roxby Downs (Indenture Ratification) Act 1982*;
- Assessment of the impact of sustained high-level water extraction from the Great Artesian Basin, including impacts on the Mound Springs ecological community;
- Assessment of the adequacy of nuclear regulation in customer countries for Olympic Dam uranium. This is particularly needed given the concerns over inadequate regulation in some of those countries (e.g. China, India) and the wide recognition that inadequate regulation was a fundamental cause of the 2011 Fukushima nuclear disaster, which was directly fuelled by Australian uranium;
- Potential nuclear terrorist actions or threats;
- Nuclear proliferation, the diversion of nuclear materials and the threat of use or the actual use of nuclear weapons.

