

BHP seek a Toxic Tailings Expansion without a full Safety Risk Assessment

Briefing produced for Friends of the Earth Australia by David Noonan – June 2019

BHP Olympic Dam tailings pose a significant - near intractable - long term risk to the environment.

“The tailings at Olympic Dam contain approximately 80% of the radioactivity associated with the original ore.” (In: 1997 Olympic Dam Expansion Project Environmental Impact Statement, [Summary](#), Tailings radiation control, p.21)

BHP tailings characteristically also retain around one third of the uranium from the original ore. With average uranium extraction rates reported at 67% across Olympic Dam mining from 1988 to 2010 ([Olympic Dam Without Uranium Recovery](#), Dr G Mudd, Dec. 2010, p.2).

Radioactive tailings wastes retain the radioactive decay chains of uranium, thorium and radium and must be isolated from the environment for over 10,000 years (Dr G Mudd, p.6).

Since 1988 Olympic Dam has produced around 180 million tonnes (Mt) of radioactive tailings that are intended to be left in extensive above ground piles on-site, effectively forever. In comparison, the Ranger uranium mine in the NT has produced around 120 Mt of tailings by 2018, which are required to be disposed to a former mine pit.

BHP tailings piles are eventually to be closed by the addition of a one metre clay cover to try to reduce the emission of radon, a highly potent radioactive gas, *“to acceptable levels”* (1997 EIS Summary p.21). Rock rubble is to be placed up the 20 degree slopes of the tailings piles for stability, in perpetuity.

BHP produces up to 10 Mt per year of radioactive tailings in mining Olympic Dam and intends to increase tailings output to over 14 Mt/yr through an expansion in the rate of underground mining.

BHP radioactive tailings waste management facilities at Olympic Dam are extensive, covering an area totalling 960 hectares (ha) (see BHP [Monitoring Program – Waste, July 2018](#) p.2) or 9.6 km² - an area far larger than the [Melbourne City Centre](#) of 6.2 km². They include:

- five Tailings Storage Facilities (TSF) totalling 725 ha or 7 ¼ km² of tailings piles for dumping toxic tailings slurry, hazardous wastes and low-level radioactive wastes
- five Evaporation Ponds totalling 144 ha in area for *“excess”* acidic tailings liquor, with *“ponds ranging in depth from 4.2 to 5.5 m”*. These kill hundreds of protected birds each year.

Multiple TSF are operated for decades with water sprays used to limit dust release and relying on natural ventilation *“to disperse and dilute radon and radon decay products”* (1997 EIS Summary p.21) – a practice that effectively dumps radioactive gas into the atmosphere. This remains the outdated standard of practice in BHP tailings management system.

Currently 40% of mine tailings slurry is deposited to TSF 4. This is 190 ha in area and 27 metres in height at the centre of the pile. The other 60% of tailings slurry is deposited to TSF 5 which is 260 ha and 11 metres in height.

TSF 4 is already the height of a nine storey building at the centre of the tailings pile and covers over 100 times the playing area of the Melbourne Cricket Ground.

In February 2015 a new approval was granted to BHP to increase the height of TSF 4 to reach a central pile height of 40 metres – equivalent to the height of a 13 storey building by Sept 2023 ([Wall Height increase of TSF 4 Olympic Dam EPBC 2015/7416](#), Federal Department of Environment).

TSF No.1, 2 and 3 total 190 ha in area and are 28.5 to 30 metres in height, around the height of a 9 to 10 storey building and up to the height of the roof over the MCG's "Great Southern Stand" at 30 metres. These TSF no longer receive tailings slurry but have not been closed or covered.

The "[Olympic Dam Major Projects Declaration](#)" (SA Government Gazette, 14 Feb 2019, p.461-462) seeks to set up a two-tiered mining and regulatory system at Olympic Dam.

It unjustifiably differentiates between ongoing mining up to a scale of copper production of 200,000 tonnes per annum (tpa) and a proposed expansion to produce up to 350,000 tpa of copper - with a consequent major increase in tailings waste output.

This SA government Declaration restricts the comprehensive assessment of BHP's expansion through exemptions that "exclude" the impacts of existing mining and a range of major "enabling activities" from public scrutiny and environmental impact assessment, especially around tailings and waste management issues (p.462):

"such as: waste treatment, storage and disposal, including but not limited to, Tailings Storage Facility 6, Evaporation Pond 6, and additional cells for the contaminated waste disposal facility" .

The Declaration seeks to "exclude" an SA assessment process from evaluating a major new TSF 6 and Evaporation Pond 6 with resultant impacts - including bird mortality - as "enabling activities".

In practice this means the 2019-2020 SA EIS Assessment would only be allowed to evaluate risks and impacts from an increase in scale of tailings production from 10 Mt/year to around over 15 Mt/year.

This is contrary to federal government [Approval Condition 32 \(EPBC 2005/2270\)](#) set in October 2011 at the time of an earlier BHP expansion application that mandated a Mine Closure Plan across all radioactive tailings at Olympic Dam that must:

"contain a comprehensive safety assessment to determine the long term (from closure to in the order of 10,000 years) risk to the public and the environment from the tailings storage facility."

Safety must be comprehensively assessed and subject to public scrutiny across all BHP tailings at Olympic Dam without any restrictions or exemptions to favour BHP vested interests.

Federal government responsibilities to protect the environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) require that the June 2019 BHP Olympic Dam EPBC Act Referral (Reference Number [2019/8465](#)) proposing a major new Tailings Storage Facility No.6 must be subject to a public environmental impact assessment process.

BHP's major new Tailings Storage Facility 6 is intended to be larger in area than the CBD of Adelaide.

Recommendations:

A comprehensive Safety Risk Assessment of all Olympic Dam mine tailings

In the public interest, the federal government must require a comprehensive Safety Risk Assessment to determine the long-term (in the order of 10,000 years) risk to the public and the environment from all radioactive tailings produced and stored at Olympic Dam. This approach is consistent with [federal EPBC Act Approval Condition 32 Mine Closure, Oct 2011](#).

This comprehensive Safety Risk Assessment of tailings waste must be subject to public consultation in an assessment process under the EPBC Act prior to the approval or advance of any new Tailings Storage Facilities or the proposed expansion of toxic radioactive tailings production.

Federal standards have been set at the Ranger uranium mine in the NT “to ensure that:

- (i) *The tailings are physically isolated from the environment for at least 10,000 years;*
- (ii) *Any contaminants arising from the tailings will not result in any detrimental environmental impact for at least 10,000 years.”*

This prudent approach and requirement must be applied at Olympic Dam to the June 2019 BHP EPBC Act Referral (Reference Number [2019/8465](#)) for a major new Tailings Storage Facility No.6.