Joint ENGO Submission on Nuclear Issues as they Relate to the Environmental Protection & Biodiversity Conservation Act Review 2020

Written by Mia Pepper, Jim Green, Dave Sweeney, David Noonan & Annica Schoo.

Contents

Introduction

This submission is made on behalf of the following national and state peak environment groups: Australian Conservation Foundation, Australian Nuclear Free Alliance, Friends of the Earth Australia, Greenpeace Australia Pacific, Mineral Policy Institute, The Wilderness Society, Arid Lands Environment Centre, Environment Centre NT, Environment Victoria, Conservation Council SA, Conservation Council WA, Nature Conservation Council NSW and Queensland Conservation Council. This submission outlines the importance of retaining s140A of the EPBC Act which prohibits nuclear power; the retention of uranium exploration and mining in the definition of a Nuclear Action and the inclusion of Nuclear Actions as a Matter of National Environmental Significance (MNES). This submission is made in consideration of the broader objects and principles of the Act and is based on evidence from recent inquiries into both nuclear power and uranium mining. There is clear evidence that nuclear activities can have a significant environmental and public health risk and, in many cases, irreversible impacts, and this is consistent with the current dedicated legislative prohibitions for both nuclear power and scrutiny for uranium mining. While the current Act does not include a prohibition on uranium mining we strongly advocate that there be a national ban on uranium mining consistent with state legal or policy prohibitions in New South Wales, Queensland, Tasmania, Victoria and West Australia.

Summary of Recommendations

Uranium:

- that uranium mining and milling be included in s140A prohibitions as nuclear actions that the Minister must not approve, on the basis that the nuclear industry has failed to successfully remediate any uranium mine in Australia and has impacts inconsistent with the objects and principles of the EPBC Act.
- if the above recommendation is not adopted that uranium mining and milling remains within the definition of a 'nuclear action' and that nuclear actions continue to be listed as MNES and the protected matters continue to be listed as the 'environment' and so be subject to full environmental assessment at the state level
- DAWE to initiate an inquiry into the human and environmental impacts of uranium mining, as advised by the UN Secretary General following the Fukushima nuclear disaster, noting that Australian uranium was present in each of the Fukushima Daiichi reactors at the time of multiple reactor meltdowns.
- regulatory reform for existing operating mines
- that the review committee recommend DAWE prioritise the rehabilitation of abandoned uranium mines and processing facilities, exploration sites and uranium mines that have been in care and maintenance for more than two years.

Nuclear Power:

- the retention of s140A of the EPBC Act 1999 which states "No approval for certain nuclear installations: The Minister must not approve an action consisting of or involving the construction or operation of any of the following nuclear installations: (a) a nuclear fuel fabrication plant; (b) a nuclear power plant; (c) an enrichment plant; (d) a reprocessing facility."

Other Matters:

- a National Environmental Protection Authority be established
- the effectiveness of assessment bilateral agreements be reviewed, and approval bilateral agreements are not pursued
- legislate requirements for mine closure, address activities that are used to avoid mine closure and to work with states and territories to remediate existing legacy mine sites
- there be established internal process for DAWE to pursue the listing of newly identified species by referring to the Threatened Species Scientific Committee
- that the principles of free, prior and informed consent become a mandatory operational principle within the EPBC Act along with a governance mechanism to operationalise this principle

Uranium Trigger – Matters of National Environmental Significance

This section addresses key questions raised by the Committee including priority areas for reform and changes needed in the EPBC Act, whether the intention of the Act is being delivered, and questions on the administering of the Act. This section argues against changes being proposed by nuclear industry advocates to the definition of 'nuclear actions'. It considers recent inquiries into uranium mining and proposes areas of reform to improve environmental outcomes, including a prohibition on uranium mining. It presents cases studies which identify deficiencies within the approval processes and where there has been a failure to deliver on the principles and objects of the Act.

In subdivision E, section 22(1)(d) of the EPBC Act the "mining and milling of uranium ore" is listed as a 'nuclear action' which is a MNES. Within the EPBC Review discussion paper there is a suggestion that MNES have changed over time and there is a specific suggestion that 'nuclear actions' be removed from the list of MNES[1]. This view is being prosecuted by some stakeholders, most notably the Mineral Council of Australia, despite no change or reduction in the risk of nuclear actions. Uranium, and the radioactive wastes and by products remain a significant human health and environmental risk. There is still no example of a successfully

[1] EPBC Review Discussion paper pg 15

rehabilitated uranium mine site and ongoing pollution issues continue and emerge at operating mine sites (see Table below).

There is a misconception that over time regulations and standards have improved and in turn the risk of uranium mines has somehow diminished. This is simply not the case and there is evidence that existing regulations fall short of addressing the risks of uranium mining. Further, there are continuing concerns that the lack of scrutiny, studies and scientific evidence remains a significant knowledge gap in the management of uranium mine sites. The section "Regulating Uranium – Inquiries" gives greater detail about the outcome of inquiries and recommendations for improved regulations which identifies significant issues with the risks associated with uranium mining and its regulation.

Within the EPBC Review discussion paper there is the suggestion that the whole of project assessment required for uranium mines is a duplication of process given that states also have whole of project assessments[2]. Under existing assessment bilateral agreements, the Commonwealth has deferred the assessment of 'controlled actions' to the states and territories. The federal government, however, is still required to 'approve' controlled actions. Within this process there is an important mechanism for the federal government to apply conditions as part of an 'approval' to ensure consistency with the objects and principles of the EPBC Act 1999. This ability should not be compromised or reduced.

The bilateral agreements, which were designed to stop a perceived duplication of process, have not delivered good environmental assessment practice in relation to Australia's uranium sector. The sections below titled "Roxby Downs Indenture Act Case Study" and "Yeelirrie Case Study" highlight failures in the bilateral process to account for complex state legislation that overrides or de-prioritises other environment legislation along with a failure to uphold the objects and principles of the EPBC Act.

These examples demonstrate the constraints and limitations of some state processes and the need for meaningful federal oversight. One option to address this deficiency would be to establish a National Environmental Protection Authority (EPA) and or a National Environmental Commission. Another is to ensure that the uranium sector remains an active focus of federal attention through the nation's primary environmental law framework, the EPBC Act. This oversight and ability to apply conditions is particularly important for uranium mining where there is a disparity between state and federal requirements for radiation safety (see section Nuclear Power – Legislative Implications).[3]

The Productivity Commission released its draft report into resource sector regulation in March 2020 and suggests a review of the nuclear actions trigger in the EPBC Act. They suggest that

[2] EPBC Review Discussion paper pg 19
[3] Commonwealth Inquiry Submission 136 - ARPANSA pg. 3

the EPBC Act assessment of nuclear actions "deliver few, if any, benefits to the community, but adds significant costs." [4] This analysis should be a catalyst for improving regulations and oversight rather than a driver to further remove federal scrutiny. The Productivity Commission's perspective of scant benefit may also be attributed to the establishment of poorly weighted bilateral agreements between the Commonwealth and states/territories, which have diminished the role of the Department of Agriculture, Water and Environment (DAWE) in the assessment process.

The Productivity Commissions comments on uranium raise the issue of the costs of administering the uranium trigger. Greater detail on these costs would be of interest. An analysis of these costs, in conjunction with details on the long-term cost to the environment, with consideration to rehabilitation and post closure monitoring and maintenance, should be weighed against the overall benefit of the industry. This review would be a valuable process, particularly if it includes a meaningful investigation of the industry's overall impacts. Such investigations have been called for through the UN Secretary General, following the Fukushima Disaster, for all uranium producing countries.

It is essential that uranium exploration and mining remain within the definition of 'nuclear actions' and that nuclear actions remain listed as a MNES and that full environmental assessments under the EPBC Act are retained. While this process still falls short of effectively regulating the industry and has not and cannot be assured to deliver positive environmental outcomes, it's removal would profoundly weaken an already deficient regulatory framework for the sector which has both high risks and high rates of incidents. Australia's uranium sector is contested, flat-lining and characterised by under-performance and non-compliance – this is not the time for the Commonwealth to be walking away from dedicated scrutiny or reducing environmental protections.

In this section we call for:

- the prohibition of uranium mining in the EPBC Act on the basis that the nuclear industry has failed to successfully remediate any uranium mine in Australia and has impacts inconsistent with the objects and principles of the EPBC Act.
- the DAWE to initiate an inquiry into the human and environmental impacts of uranium mining, as advised by the UN Secretary General following the Fukushima nuclear disaster, noting that Australian uranium was present in each of the rectors at Fukushima Daiichi at the time of multiple reactor meltdowns.
- that uranium mining remains within the definition of 'nuclear action' and that nuclear actions continue to be listed as MNES and the protected matters continue to be listed as the 'environment' and so be subject to full environmental assessment at the state level

[4] Productivity Commission 2020. Draft Report - Resources Sector Regulation. Pg 16. March 2020

- regulatory reform for existing operating mines
- the rehabilitation of abandoned mines, processing facilities and mines that have been in care and maintenance for more than two years and the rehabilitation of exploration sites.

Australia's uranium mine legacy

This section focuses on some cases where there has been an adverse environmental outcome and a failure to deliver on the intention of the EPBC Act. Uranium mining in Australia began in the early 1900's. At every site, even where rehabilitation activities have been undertaken, there are continuing pollution issues that require ongoing and active management and remediation, predominantly at a cost to government. The table below documents the known uranium mining projects and advanced exploration projects in Australia and their impact and status. The industry promise of better practice and improved standards has routinely failed to be realised and should not be used to delay the protection of the environment. The evidence shows that the human health and environmental consequences of uranium mining is unacceptable with a significant drain on public funds and an unacceptable long-term risk to the public and environment.

Active Mines	State	Impact/ Status
Beverley Four Mile	SA	Despite warnings against ISL mining in a 2003 Senate Inquiry into uranium regulations, the Beverley Four Mile ISL uranium mine was approved. The project was subject to legal action over Aboriginal Heritage issues[5]. There are ongoing concerns about the ability to remediate this mine. See more on ISL environmental legacies below.
Olympic Dam	SA	There are extensive impacts and issues at BHP's Olympic Dam uranium mine[6]. The most pressing is the status of tailings dams. In 2019 the tailings facilities 1-3, 4 & 5 at Olympic Dam were risk rated as "extreme", with the consequences of failure having the potential to cause the deaths of 100 or more people[7]. The company is seeking to develop additional tailings facilities despite this risk and with no clear pathway to reducing this risk[8]. The tailings facility has been given an exemption from EPBC assessment. The broader expansion project is required to have environmental assessment under the

[5] Yurabila 2009 – Media Release July 15th 2009. Minister Garrett Urged to Review Decision to Approve Beverley Four Mile Uranium Mine, Traditional Owners Awaiting Heritage Investigation. Stop the Bullying, Lies and Deceit. https://yurabila.wordpress.com/media-releases/

[6] Some spills and other incidents from 2003 to 2014 are listed at: http://minerals.dmitre.sa.gov.au/mines_and_developing_projects/approved_mines/olympic_dam/olympic_dam_incident_summary_since_2003. Some spills and other incidents from 1987 to 2001 are listed at: http://archive.foe.org.au/anti-nuclear/issues/oz/u/roxby/incidents

[7] BHP 2019 - Tailings Facilities Disclosure: Response to the Church of England Pensions Board and the Council on Ethics Swedish National Pension Funds https://www.bhp.com/-/media/documents/environment/2019/190607_coe.pdf?la=en

[8] EPBC notices Submission #4210 BHP Referral Olympic Dam tailings expansion http://epbcnotices.environment.gov.au/_entity/annotation/0ffd8a29-a590-e911-8f1d-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1562747300689 & http://epbcnotices.environment.gov.au/_entity/annotation/0ffd8a29-a590-e911-8f1d-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1562747300689

		EPBC Act but assessment has been deferred to the state[9] through a process which is largely seen as deficient given the regulatory exemptions that exist under the Roxby Downs Indenture Act. Other environmental issues include significant impacts on the mound springs of the Lake Eyre region from excessive water extraction,[10] the ongoing deaths of birds as a consequence of exposure to contaminants in evaporation ponds,[11] incidents of workers deaths, workers leaking information about BHP using manipulated averages of workers exposure to radiation and outdated radiation plans.[12] [13] Many of the environmental and workers health and safety issues at the mine are overshadowed by the Roxby Downs Indenture Act which gives the operator special exemptions from almost every piece of relevant state legislation. This greatly restricts access to information about the mine's operations.
Pre-closure /care and maintenance		
Beverley	SA	The SA Department lists 59 spills between 1998 – 2012 (when the mine was placed into Care and Maintenance) including a spill of 62,000 litres of contaminated water in January 2002 and then 15,000 litres in May 2002. Beverley is an In-Situ Leach (ISL) mine which disposes of radioactive materials, heavy metals and acid mine waste by direct disposal to groundwater. While there is no ore extraction from the wells at Beverley, the site continues to operate as a regional hub processing and liquid waste disposal facility for the active Beverley Four Mile ISL mining operation. It also played this role for the Beverley North operations. The 2003 Senate Committee report into the regulation of uranium mining in Australia advised ISL mining "should not be permitted until more conclusive evidence can be presented on its safety and environmental impacts[14]". No such evidence exists, it is our informed understanding that the groundwater and aquifers below the three Beverley mine sites will become sacrifice zones with permanent contamination[15].
Beverley North	SA	Between 2012 and 2018 11 incidents, license breaches and spills were recorded with the SA Government. The most recent in 2018 involved a spill of 395 litres of iron dissolution solution

[9] http://epbcnotices.environment.gov.au/_entity/annotation/f1e59361-4a6a-ea11-b9e9-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1585021631235

[10] Mudd, G M, 2000, Mound Springs of the Great Artesian Basin in South Australia: A Case Study From Olympic Dam. Environmental Geology, 39 (5), pp 463-476. www.springerlink.com/link.asp?id=100512, posted at: http://archive.foe.org.au/sites/default/files/Mound%20Springs%20Mudd%201998.pdf
Mudd, G M, 1998, The Long Term Sustainability of Mound Springs In South Australia: Implications For Olympic Dam. Proc. "Uranium Mining & Hydrogeology II Conference", Freiberg, Germany, September 15-17 1998, pp 575-584. http://users.monash.edu.au/~gmudd/files/1998-UMH-2-ODam-v-MoundSprings.pdf
Daniel Keane, "The sustainability of use of groundwater from the Great Artesian Basin, with particular reference to the south-western edge of the basin and impact on the mound springs", http://archive.foe.org.au/sites/default/files/Keane%20Mound%20Springs%2097.pdf

[11] ABC, 11 Jan 2005, 'WMC acknowledges tailings dangerous for birds', www.abc.net.au/news/2005-01-11/wmc-acknowledges-tailings-dangerous-for-birds/616658

[12] *The Monitor*, 1 April 2009, 'BHP Billiton opens up on tailings', http://web.archive.org/web/20090912230611/http://themonitor.com.au/editions/2009/APR01-09.pdf

[13] Michelle Wiese Bockmann, 10 March 2006, 'Waste fears at uranium mine', *The Australian*

[14] Senate References and Legislation Committee, October 2003, 'Regulating the Ranger, Jabiluka, Beverley and Honeymoon uranium mines', www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Completed%20inquiries/2002-04/uranium/index

[15] Beverley Incident Report Department of Mines and Energy SA http://www.energymining.sa.gov.au/minerals/mining/mines_and_quarries/beverley_and_beverley_north_mines/beverly_uranium_mine_incident_summary_report

		containing uranium of which an estimated 320 litres entered an undisturbed environment. Beverley North is also an ISL mine – see above for risks associated with ISL mining[16].
Honeymoon	SA	The Honeymoon mine was approved in 1981 and has changed ownership multiple times. There was trial mining at the site in the 1980's and again in the late 1990's - early 2000's. During this second period of trial mining there were six spills releasing over 40,000l[17]. The mine only began formally operating in 2011 and was placed in care and maintenance shortly after in 2013. In that brief time the mine reported four incidents: 4m^3 of uranium oxide concentrate slurry leaking in 2011; a 30m^3 spill in 2012 – later revised as 441m^3 as a result of 16 cannister lids failing under pressure – affecting 11,800 m^2; dust and fumes released – expected to be from UOC in 2012; and later in 2012 as a result of an air valve being left open a chain of events caused 20l of foam from a precipitation tank – covering 16m^2 – to spill outside the bund area. The mine is also an ISL mine – see details in Beverley for the inherent risks and long-term pollution risks associated with ISL[18]. The project is clearly uneconomic and has significant environmental risks. Over a 39-year project life the mine has operated for just two years and has had multiple owners and operators. The deterioration of infrastructure at the site is likely to be a significant barrier to any current plans to restart operations. This mine should be required to close permanently with complete rehabilitation before any attempts are made by the current company – Boss Resources - to abandon the mine or sell to an even smaller company who may not have the capability to rehabilitate.
Ranger	NT	At Australia's longest running uranium operation mining has stopped and processing of ore stockpiles is continuing ahead of a mandated end of operation in January 2021. Rehabilitation and closure criteria are still being developed and rehabilitation works are the growing focus of attention. It is expected that rehabilitation costs will be in excess of $1billion. In 2009 it was revealed that there had been over 150 leaks, spills and license breaches and that 100,000 litres of contaminated water was leaking from the tailings daily [19]. A 2005 incident led to 150 people being exposed to drinking water containing uranium levels 400 times greater than safety standards allow[20]. In 2013 a leach tank collapsed spilling over 1 million litres of radioactive acid. Mine owner Rio Tinto and operator ERA have committed to rehabilitate the site however there are significant concerns about the prospects of successful rehabilitation.
Closed Mines		
Alligator River Region	NT	Between 1959 and 1965 there were thirteen uranium deposits that produced about 840 tonnes of uranium. In 2006 the federal government provided funding for four years of rehabilitation for these sites. This area is now the responsibility of the Australian government[21]. It is unclear how successful rehabilitation efforts have been or the extent of ongoing costs to government to manage these sites.
Hunters Hill	NSW	Hunters Hill was a processing facility in NSW. The site was abandoned in 1915, housing was built around the site up until the 1970's when concerns emerged around the risk of radiation exposure.

[16] Beverley North Incident Report Department of Mines and Energy SA http://www.energymining.sa.gov.au/minerals/mining/mines_and_quarries/beverley_and_beverley_north_mines/beverly_north_uranium_mine_incident_report

[17] http://www.energymining.sa.gov.au/__data/assets/pdf_file/0006/246417/honeymoon_reporting.pdf

[18] Honeymoon Incident Report Department of Energy and Mines SA http://www.energymining.sa.gov.au/minerals/mining/mines_and_quarries/honeymoon_uranium_mine/honeymoon_uranium_mine_incident_report_summary

[19] Sydney Morning Herald 2009. Polluted water leaking into Kakadu from uranium mine https://www.smh.com.au/national/polluted-water-leaking-into-kakadu-from-uranium-mine-20090312-8whw.html

[20] Supervising Scientist Report 184. Investigation of Potable Water Contamination Incident at Ranger Mine March 2004. https://www.environment.gov.au/system/files/resources/05208266-9122-4eb9-88b2-e5e5787ed8b3/files/ssr184-investigation-potable-water-contamination-incident-ranger-mine-march-2004.pdf

[21] Supervising Scientist 2018 – Uranium Mining in the Alligator Rivers Region Fact Sheet https://www.environment.gov.au/science/supervising-scientist/publications/uranium-mining-in-alligator-rivers-region

		Subsequently houses were bought and demolished by the government but without site remediation. In 2008 a government inquiry revealed details of the site[22]. After decades of delay and denial the government agreed to a remediation process in 2011 – original plans to move the material to a waste facility at Kemps Creek were abandoned after a community backlash.[23] In 2019 a proposal to encapsulate and store the material on site was also rejected by the local council and residents.[24] The problem continues without resolution or a clear pathway to remove the contamination.
Mary Kathleen	QLD	The site was rehabilitated between 1981 – 1985 at a cost of $19 million. Independent research through site visits have shown long term environmental legacies from the site, despite rehabilitation. There is ongoing seepage of radioactive radium and thorium from the tailings, acid mine drainage and ongoing low-level uptake of heavy metals and radionuclides into vegetation.[25] [26]
Mt Painter	SA	After several mining and exploration ventures beginning in 1910 the mine was eventually abandoned in 1999. The site remains unrehabilitated.[27]
Nabarlek	NT	During operations the mine experienced leaks and spills and uncontrolled run off from the site (1981, 1982, 1983, 1984, 1989) and tailings leaks (1983). The site was rehabilitated but the tailings continue to be a source of pollution, there are ongoing impacts on groundwater and significantly elevated gamma radiation rates compared to pre mining.[28] Ongoing monitoring is required and funded by government.
Port Pirie	SA	Port Pirie was a processing facility for uranium ore in Australia. The site now holds approximately 200,000 tonnes of tailings over 26 hectares. The dams are within 300 meters of homes, there was a lack of fencing for many years making the site accessible to children who would play at the site and the tailings walls failed in 1981 during high tides. Stop gap measures were taken to cap tailings and increase the wall height, build fences and develop a trench and evaporation pond to collect run off – at a cost of $1 million. The site has also been used to dump asbestos and continues to be used for slag dumping. In 2016 the SA Government released an environmental management plan for the site identifying climate change as a significant risk to the existing structures and groundwater levels that could compromise any containment at the site – this report does not outline further rehabilitation but focuses on management including security, signage and monitoring.[29]
Radium Hill	SA	A 2003 report by the SA Government revealed that the site contains approx. 400,000 tonnes of tailings and was used as a de-facto low level waste repository between 1981 – 1998. During this time, it is said the mine was rehabilitated. The SA Department states: “There are localised areas with some chemical

[22] NSW Legislative Council – 2008 - Report 28 - General Purpose Standing Committee No. 5 The former uranium smelter site at Hunter's Hill Ordered to be printed 30 September 2008 according to Standing Order 231

[23] Sydney Morning Herald (2012) Kemps Creek not getting contaminated Hunters Hill soil https://www.smh.com.au/national/nsw/kemps-creek-not-getting-contaminated-hunters-hill-soil-20140222-338of.html Feb 22, 2014

[24] ABC 2019 Hunters Hill Residents reject plan to store radioactive waste in their street, Michelle Brown, 24 July 2019 https://www.abc.net.au/news/2019-07-24/hunters-hill-radioactive-waste-plan-rejected/11339572

[25] Lottermoser, B.G. 2011, Colonisation of the rehabilitated Mary Kathleen uranium mine site (Australia) by Calotropis procera: Toxicity risk to grazing animals. Journal of Geochemical Exploration, 111 (1-2), pp 39-46. Lottermoser, B.G; Costelloe, M.T; Ashley, P.M. 2005, Contaminant dispersion at the rehabilitated Mary Kathleen uranium mine, Australia. Environmental Geology, 48 (6), pp 748-761.

[26] Mudd, G M & Diesendorf, M, 2010, Uranium Mining, Nuclear Power and Sustainability - Rhetoric versus Reality. In "Sustainable Mining 2010 Conference", Australasian Institute of Mining and Metallurgy (AusIMM), Kalgoorlie, Western Australia, Australia, August 2010, pp 315-340. https://www.ausimm.com.au/publications/epublication.aspx?ID=5676

[27] Brugger, J & Ansermet, S & Pring, A (2006-06-19). Uranium mineral from Mt Painter, northern Flinders Rangers, South Australia. Museum of Victoria.

[28] Mudd, G.M., 2008, ‘Radon Releases From Australian Uranium Mining and Milling Projects: Assessing the UNSCEAR Approach’. Journal of Environmental Radioactivity, 99 (2), pp 288-315. Available from Gavin.Mudd@monash.edu

[29] SA Department of State Development 2016 Port Pirie – Former Uranium & Rare Earth Treatment Plan – Radiation And Environment Management Plan.

		or metals contamination where ecological risk exceeded screening levels for flora and soil invertebrate..." and that the mineral resource division is developing a long-term management strategy.[30] The site remains in need of ongoing monitoring and rehabilitation – at a cost to government.
Rum Jungle	NT	Rehabilitation efforts have repeatedly failed. As a result of severe acid metalliferous drainage and radiation pollution from the site there are significant impacts on the East Branch of the Finniss River and downstream environments. A draft EIS for the rehabilitation has been released in late 2019 but there is yet to be a cost estimate or commitment to fund. It is broadly accepted that rehabilitation will be carried out by the NT government and funded by the Commonwealth.[31]
Wild Dog	SA	A small mine that operated from 1953-1955, the site has never been properly rehabilitated, fencing has been ripped open making the site accessible to the public. On a site visit in 2012 there was no signage about radiation risks.[32]
Approved mines that have never opened		
Kintyre	WA	Has state and federal environmental approval but requires significant other approvals. There is no indication the company, Cameco, will pursue mining. Rehabilitation of exploration drilling has been undertaken but the Department continues to monitor the effectiveness of that work.[33]
Mulga Rock	WA	Vimy Resources has state and federal environmental approval, but they require significant other approvals to develop the mine. They have been actively and unsuccessfully trying to secure funds to develop the mine. They are revising their Definitive Feasibility Study[34].
Wiluna	WA	Has state and federal environmental approval but requires significant other approvals. The company continues to consider ways to make the mine feasible and divest non-core assets. Toro are now focused on exploration for gold[35]
Yeelirrie	WA	Has state and federal environmental approval but requires significant other approvals and the company Cameco has no immediate plans to develop given the sustained low uranium price.[36]
Advanced Exploration		
Ben Lomond	QLD	The Qld government currently has a ban on uranium mining so this project is unable to be developed
Manyingee	WA	The WA government currently has a ban on uranium mining so this project is unable to be developed
Oban	SA	Requires rehabilitation of exploration activity
Samphire	SA	Requires rehabilitation of exploration activity
Valhalla	QLD	The Qld government currently has a ban on uranium mining so this project is unable to be developed
Westmoreland	QLD	The Qld government currently has a ban on uranium mining so this project is unable to be developed
Mines that have been stopped		
Angela Pamela	NT	Unsure of the rehabilitation status of earlier exploration activities

[30] SA Department of Mines and Energy. 2020. Website accessed 24/3/2020. Radium Hill http://www.energymining.sa.gov.au/minerals/mining/former_mines/radium_hill_mine

[31] Draft EIS Rum Jungle Rehabilitation Project 2020

[32] Mineral Policy Institute 2014 – Wild Dog http://www.mininglegacies.org/mines/south-aust/wild-dog/

[33] Correspondence with the WA Department of Mines, Industry, Regulation & Safety 7th July 2019.

[34] Vimy Resources Dec 2019 – Quarterly Activities Report http://clients3.weblink.com.au/pdf/VMY/02197673.pdf

[35] Toro Energy Annual Report 2019 https://hotcopper.com.au/documentdownload?id=uOMxKKzFkiWRTLKhOROKAxjvTDYD4w%2B7yBKZtPh8ke92GA%3D%3D

[36] Cameco 2020 Quarterly Report – Managements Discussion and Analysis https://s3-us-west-2.amazonaws.com/assets-us-west-2/quarterly/CCO-2019-Q4-MDA-FS-and-Notes.pdf pg 73

Jabiluka	NT	Following a sustained campaign by the Mirarr Traditional Owners this site underwent rehabilitation of mining activities with the return of mineralized ore, backfilling of the mine decline and removal of the retention pond and other site infrastructure.
Koongarra	NT	After sustained advocacy by the Djok Traditional Owner the Koongarra project area has now been formally incorporated into the Kakadu National Park World Heritage region. There remains uncertainty around the status of rehabilitation works and needs.
Mt Gee	SA	Unsure of rehabilitation of exploration activities

Given the ongoing failure of the uranium sector to meet license conditions, contain radiation and wastes, protect workers and communities or remediate uranium mines the most pragmatic and cost- effective response is to prohibit any further uranium mining in Australia. Isolating the damage done by the industry and requiring the important work of remediation and rehabilitation would limit further exposure and contamination. In many ways the trajectory of Australia's uranium sector reflects that of the asbestos mining industry. The product works, but at high cost and it is increasingly outperformed by cheaper, more popular and less hazardous alternatives. In this time of structural sector decline it is prudent to maintain active federal oversight in order to reduce the chances of further future cost-shifting to the public purse.

Mining Legacies

In addition to the specific failures of the uranium sector, it is important to acknowledge that there is a broader failure within the mining sector to close and rehabilitate mines. Most mine closures are unplanned, mines are vulnerable to economic and market factors and closure often comes at an expense to the environment and eventually the government[37]. In Australia there are over 50,000 abandoned mines,[38] between 400 – 2977 operating mines, between 206 – 972+ mines in Care & Maintenance (C&M) and only around 30 mines that are closed or undergoing closure.[39] The huge disparity between the number of closed or closing mines and all other mines demonstrates a significant failure of the industry to deliver on closure commitments and a greater policy failure to ensure companies are held to account on closure requirements.

Mine closures, for controlled actions assessed under the EPBC Act and bilateral agreements, are still regulated by state and territory governments. Through the Senate Environment and Communication Reference Committee Inquiry into the Rehabilitation of Mining and Resources Projects and Power Station Ash Dams as it Relates to Commonwealth Responsibilities 2019,

[37] Roche, C; Judd (2016) Ground Truths: Taking Responsibility for Australia's Mining Legacies. The Mineral Policy Institute. ISBN: 978-0-9946216-0-3v

[38] Unger, C.J; Lechner, A.M; Glenn, V; Edraki, M; Mulligan, D.R. (2012) Mapping and Prioritising Rehabilitation of Abandoned Mines in Australia. Life-of-Mine Conference 2012

[39] Campbell, R; Linqvist, J; Browne, B; Swann, T; Grudnoff, M (2017) Dark side of the boom. What we do and don't know about mines, closures and rehabilitation. The Australia Institute. April 2017.

Final Report [40] it was revealed that "Since implementation of the EPBC Act in 2000, there have been 118 mining and resource projects approved with conditions relating to rehabilitation, and 41 mining and resource projects approved with conditions relating to financial assurance mechanisms." These conditions, according to the Assistant Secretary of Environmental Protection Reform Taskforce with the DAWE, relates to MNES, not general rehabilitation requirements.

Given the policy failure evident across the jurisdictions in Australia to deliver closed mines and positive rehabilitation requirements, it is necessary and important for there to be a greater federal role in regulating this aspect of mining projects. The Senate Committee were unable to reach consensus on recommendations; but recommendations relating to the EPBC Act include:

"Labor Senators recommend that as a part of the upcoming legislated review of the EPBC Act and/or Labor's commitment to reforming environmental laws, the Commonwealth Government include in the consultation process the proposal to mandate that rehabilitation related conditions, as well as provisions regarding 'care and maintenance', must be applied to mining projects during consideration under the EPBC Act to ensure that approved mines have the lowest possible impact on matters of national environmental significance and to ensure approved mines are not left for extended periods of time in perpetual 'care and maintenance' while not being managed and monitored to avoid rehabilitation obligations."

"To ensure that approved mines have the lowest possible impact on matters of national environmental significance (MNES), the Australian Greens recommend that the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) be amended to mandate that rehabilitation related conditions must be applied to mining projects during consideration under the EPBC Act. This would include the following conditions:

- the proponent must submit a full life of mine and closure plan at the approvals stage which includes rehabilitation strategies designed to specifically protect at risk MNES;
- the proponent must submit a progressive rehabilitation plan including rehabilitation targets designed to enhance the protection of the at risk MNES during the mine's operational life;
- a requirement for an independent assessment of the closure cost estimate of the mine, based on the closure plan that informs the relevant jurisdiction's level of financial assurance with specific reference to protecting the MNES; and
- the approved final landform and land use must:
    - reflect the lowest possible residual impact on the at risk MNES; and

[40] Senate Environment and Communication Reference Committee Inquiry into the Rehabilitation of Mining and Resources Projects and Power Station Ash Dams as it Relates to Commonwealth Responsibilities 2019, Final Report. Pg. 30

- mandate that voids are backfilled and out-of-pit waste rock dumps and tailings storage facilities are eliminated where these landforms have a demonstrable residual impact on MNES.

The Australian Greens also had another 32 separate recommendations for Commonwealth regulation, funding, guidance and legislative amendments to address a range of issues with mine closure, although not all of these were related to the EPBC Act 1999.

It is clear from the Senate Inquiry deliberations that the policy failure of mine closure among the states and territories requires federal intervention. It is worth noting that the recommendation from the Australian Labor Party, and a separate recommendation from the Australian Greens, (recommendation 6) identify the use of care and maintenance as a mechanism for companies to avoid mine closure responsibilities. This disturbing trend has a significant impact on the environment and should be addressed in the EPBC Act 1999.

Through the EPBC Act 1999 review there is opportunity to ensure legislated requirements for mine closure, address activities that are used to avoid mine closure and to work with states and territories to remediate existing legacy mine sites. New national environmental law should include provision for the Federal Government to set binding national standards for mine-site rehabilitation. Such standards could be developed by a new independent authority, such as a National EPA or National Environmental Commission.

In Situ Leach Mining:

In Situ Leach (ISL) mining at Beverley, Beverley North & Four Mile involves pumping acid into an aquifer. This dissolves the uranium ore and other heavy metals and the solution is then pumped back to the surface for processing. The small amount of uranium is separated at the surface. The remaining liquid radioactive waste – containing radioactive particles, heavy metals and acid – is then simply dumped in groundwater. From being inert and immobile in the ore body, the radionuclides and heavy metals are now bioavailable and mobile in the aquifer.

A 2004 CSIRO report stated:[41] *"As stated in the Beverley Assessment Report, the bleed solutions, waste solutions from uranium recovery, plant washdown waters and bleed streams from the reverse osmosis plants are collected prior to disposal into the Namba aquifer via disposal wells. These liquid wastes are combined and concentrated in holding/evaporation ponds, with excess injected into selected locations within the mined aquifer. The injected liquid is acidic (pH 1.8 to 2.8) and contains heavy metals and radionuclides originating from the orebody."*

[41] Taylor, G.; Farrington, V.; Woods, P.; Ring, R.; Molloy, R. (2004): 'Review of Environmental Impacts of the Acid In-Situ Leach Uranium Mining Process', CSIRO Land and Water Client Report.

There are unresolved issues about the long-term management of those wastes, which are currently disposed of with no requirements for rehabilitation. For example, Heathgate Resources has no plans to clean up the aquifer as it says the pollution will 'attenuate' – that the aquifer will return to its pre-mining state over time. This claim has been queried by the scientific community as being speculative with no firm science behind it. Groundwater expert Dr Gavin Mudd asserts that General Atomics has withheld information relevant to the disposal of wastes in groundwater[42].

The 2003 Senate References and Legislation Committee report, discussed in more detail below, stated: *"The Committee is concerned that the ISL process, which is still in its experimental state and introduced in the face of considerable public opposition, was permitted prior to conclusive evidence being available on its safety and environmental impacts… The Committee recommends that, owing to the experimental nature and the level of public opposition, the ISL mining technique should not be permitted until more conclusive evidence can be presented on its safety and environmental impacts. Failing that, the Committee recommends that at the very least, mines utilising the ISL technique should be subject to strict regulation, including prohibition of discharge of radioactive liquid mine waste to groundwater, and ongoing, regular independent monitoring to ensure environmental impacts are minimised."*

Given the absence of conclusive information in environmental assessment documents and the history of spills, leaks and accidents, there can be no confidence that issues raised by the 2003 Senate Committee have been resolved. We urge the Review Committee to consider this as an additional reason for prohibiting uranium mining across Australia. At an absolute minimum there can be no credible rationale for further reducing Commonwealth oversight or scrutiny of the uranium sector at this time.

Regulating Uranium – Inquiries

This section highlights priority areas for regulatory reform, including a recommendation to prohibit uranium mining. Uranium is a mineral with unique properties and risks. It causes specific impacts at the mine site and produces a product that inevitably becomes long lived radioactive waste. The sector lacks social license, is suffering a sustained decline in commodity price and remains actively contested.

---

[42] Mudd, G M, 2020 Personal Correspondence 2020 & 1998, An Environmental Critique of In Situ Leach Mining: The Case Against Uranium Solution Mining. Research Report for Friends of the Earth (Fitzroy) with The Australian Conservation Foundation, July 1998, 154p, http://users.monash.edu.au/~gmudd/files/1998-07-InSituLeach-UMining.pdf
Mudd, G M, 2001, Critical Review of Acidic In-Situ Leach Uranium Mining: 2 Soviet Block and Asia. Environmental Geology, 41 (3-4), pp 404-416, www.springerlink.com/link.asp?id=100512
Mudd, G M, 2001, Critical Review of Acidic In-Situ Leach Uranium Mining: 1 USA and Australia. Environmental Geology, 41 (3-4), pp 390-403, www.springerlink.com/link.asp?id=100512

Uranium mining in Australia has been the subject of a series of reviews and inquiries over many years. Many of these processes have resulted in important recommendations that are directly relevant to uranium as a MNES. Below is a summary of reports, recommendations and regulations that we believe support the case for prohibition of uranium mining in Australia. At the very least the finding detailed below support the retention of the uranium trigger, regulatory reform and a wider national review of the long-term impacts of uranium mining and the capability of uranium mine regulations to manage those impacts.

It is important to note a significant inquiry which has not occurred. In September 2011 following the multiple nuclear reactor meltdowns at Fukushima, the UN Secretary-General called on Australia to conduct "an in-depth assessment of the net cost impact of the impacts of mining fissionable material on local communities and ecosystems." A month later Dr Robert Floyd, director-general of the Australian Safeguards and Non-Proliferation Office of the Department of Foreign Affairs and Trade confirmed "that Australian obligated nuclear material was at the Fukushima Daiichi site and in each of the reactors." Despite this important knowledge about Australia's direct role in the contamination that continues to be released from the Fukushima reactors there is yet to be inquiry into the net cost impact of mining uranium in Australia. This should occur as a matter of urgency and we urge the Review Committee to reflect this in your deliberations.

Bureau d'audiences publiques sur l'environnement (BAPE) 2014

The Bureau d'audiences publiques sur l'environnement (BAPE) Inquiry in Quebec, Canada is the most recent and comprehensive review of uranium mining to occur globally. The findings of the BAPE Inquiry into the environmental and health impacts of uranium mining demonstrate that uranium is different to other minerals and requires specific regulation to meet the challenges mining presents. The BAPE panel found that there are "significant gaps in scientific knowledge of the impacts of uranium mining on the environment and public health." BAPE recommended that a new regulatory system in Canada would be needed to regulate uranium mining. In an Australian context, the BAPE inquiry demonstrates the need for further scientific studies into the impacts of uranium mining on the environment and public health. Such a study would be broadly supported by environment groups who have for a long time called for further studies, particularly into the health outcomes near existing uranium mines. The BAPE findings do not support a reduction in oversight and regulation for the uranium sector, but instead support further studies and increased regulations and, importantly, a prohibition on uranium mining in the absence of evidence about the impacts of uranium mining on health and the environment.

Queensland Uranium Implementation Committee 2013

In 2012 when the Newman LNP government in Queensland lifted the state policy ban on uranium mining a committee was formed to consider the regulatory implications. In 2015

Queensland Labor was returned to government and promptly reintroduced the ban. Recommendations from the committee clearly demonstrate that uranium mining is different, requires high levels of oversight and that there are higher risks and different types of expertise needed to consider and address these risks. The committee also highlighted that the industry lacks public support and requires higher levels of public consultation. All these findings remain true. Recommendations specific to developing guidelines and responses that address the unique risks posed by uranium mining are shown below, other recommendations were made by the committee on establishing MOUs, stakeholder groups and whole of government working groups.

Recommendations from the committee included:

- A coordinated assessment process by referral of proposal to the Coordinator General
- Develop a MOU between regulators
- Develop specific mine safety and health guidance – for best standards for all stages of uranium mining
- Develop guiding principles for emergency response – and education and training for emergency workers
- Develop outcome focused environmental model conditions specific to uranium mining
- Review rehabilitation guidance to develop criteria specific to uranium mining
- The Queensland Government should apply a five per cent royalty regime to uranium, but also investigate use of a higher rate once the price of uranium reaches a certain higher threshold.

WA Uranium Advisory Group 2012

In 2012, shortly after the state Liberal government lifted the state ban on uranium mining a uranium advisory group was established. In 2017 WA Labor was returned to government and promptly reintroduced the ban. The former Minister promised “best practice regulation will govern any future uranium mining.” The group, led by the University of WA and CSIRO, reviewed WA’s regulations against world’s best practice and found significant gaps. It made recommendations to:

- Improve transparency,
- Ensure broad public consultation,
- Review OH&S legislation,
- Consider cumulative impacts
- Develop guidelines that integrate all aspects of managing uranium mining wastes

These recommendations were not adopted. The WA government took a clear position to ‘normalise’ uranium throughout regulations.

ECITA Senate Inquiry into the adequacy of federal regulation of Jabiluka, Ranger, Beverley and Honeymoon uranium mines – 2003

The Committee made 25 recommendations for the Northern Territory and South Australia, with many more specific recommendations for regulating individual mine sites. This inquiry made very clear and specific recommendations regarding the importance of federal involvement in regulating the uranium sector. These recommendations were strongly supportive of increasing the federal government's role, citing the unique public health and the environmental hazards and risks posed by uranium mining.

These recommendations outline a preference for regulation through environment departments acknowledging the conflicting objectives within resources and mines departments. Recommendations from the Committee included (in summary):

- Groundwater protection and quality limits
- Increased monitoring of groundwater impacts
- Compliance with water quality limits
- Independent monitoring
- More systematic approach to collecting and analysing data
- Public release of all data relating to incidents
- An increased role for the federal government in uranium assessment and regulation
- Confidentiality clauses to protect anonymity of concerned individuals
- Improved consultation and communication with stakeholders
- Independent inspection program of stockpiles and prevent discharge from runoff

Other findings include (in full):

- The Committee is of the view that uranium mining presents unique hazards and risks to both human health and the environment. Accordingly, its regulation at both the Commonwealth and State levels should be primarily the responsibility of environment agencies rather than agencies whose principal concern is with the advancement of mining interests (para 3.94).
- The Committee recommends that all serious leaks and spills be investigated by Environment Australia and that minor leaks and spills be scrutinised by South Australia's Chief Inspector of Mines in collaboration with EA. Given that different regulatory requirements attach to different categories of incidents, the Committee also recommends that the definitions as to categories of incidents be the subject of public consultation and be publicly available. A regulatory response, publicly available, should be provided following the investigation of an incident (para 3.109).
- The Committee recommends that, owing to the experimental nature and the level of public opposition, the ISL mining technique should not be permitted until more conclusive evidence can be presented on its safety and environmental impacts. Failing that, the Committee recommends that at the very least, mines utilising the ISL technique should be subject to strict regulation, including prohibition of discharge of

radioactive liquid mine waste to groundwater, and ongoing, regular independent monitoring to ensure environmental impacts are minimised.

- Fund and establish a culturally appropriate forum for Traditional Aboriginal Owners and other local Aboriginal people to monitor and commission independent research in relation to social and environmental impacts of mining operations and to develop policy recommendations in response to the findings.

The above Inquiries all conclude that uranium is different to other minerals, that there are unique risks and hazards and that different regulatory approaches are required to address these unique risks. The industry continues to have leaks, spills, accidents and breaches that expose workers and has a persistent pattern of failure to rehabilitate mine sites or isolate waste from the environment. Uranium is different, it has long lasting radioactive materials that require higher levels of consideration, longer term containment, it poses a greater risk to workers and the environment. Mining of uranium creates many pathways for radiation into the environment through dust and water. The industry has made promises about their performance and standards and have continuously failed to deliver on these self-declared goals. We call for the prohibition of uranium mining through the EPBC Act 1999 in line with existing prohibitions and policy bans in Queensland, New South Wales, Victoria, Tasmania and Western Australia.

Normalising uranium – undermining the risk

This section considers whether the EPBC Act is sufficient to address future challenges with relation to radiation safety. In recent years the Minerals Council of Australia (MCA) has become an active advocate of uranium mining. The membership of the MCA is gradually becoming made up of fringe uranium and coal companies and their climate and nuclear policies are attracting increasing internal and external criticism and scrutiny. The MCA presents as the peak industry group for the mining sector but is increasingly focused on promoting minerals that are economically marginal, at odds with public sentiment and lacking social license. Two of Australia's most controversial minerals, coal and uranium, receive disproportionate attention from the MCA. This is particularly noticeable in relation to uranium as the sector is economically marginal. This positioning may be attributed to both the career history of senior MCA executives and the membership of the MCA – see table below.

Coal	Uranium
Adani	Boss Resources
Anglo American Metallurgical Coal	BHP
BHP Billiton	Cameco Australia
Centennial Coal Company	Cauldron Energy
Centennial	Deep Yellow
Energy Australia	Heathgate Resources

Glencore	Energy Resources Australia
Jellinbah Group	Paladin Energy
New Hope Group	Rio Tinto
Peabody Energy Australia	Toro Energy
Pembroke Resources Pty Ltd	Vimy Resources
The Bloomfield Group	
Whitehaven Coal	
Yancoal	

The MCA is disproportionately dominated by a small group of activists but non-producing uranium companies. These are seeking to 'normalize' and integrate uranium into risk-based regulations and removing special provisions. There is a dangerous trend in seeking to normalise uranium which has consequences for health and safety. Establishing a culture that seeks to normalise radioactive material and diminishing the risks puts workers at harm. This is evident in a paper written by consultant radiologist and ARPANSA Radiation Health and Safety Advisory Council member Dr Peter Karamoskos who identifies that it "is estimated that up to 50 per cent of underground uranium miners in Australia do not use their masks, and thus drastically increase their risk of lung cancer while underestimating their actual radiation dose (since this is calculated assuming PPEs are used)."[43] This could be attributed to many factors, as outlined by Dr Karamoskos workers find personal protective equipment (PPEs) are hot and uncomfortable. But it also could be a choice they make based on an absence of information about the risks of radiation which come from a lax radiation safety culture.

Dr Karamoskos describes the risk of uranium mine workers: "At the Olympic Dam underground uranium mine, the total dose per miner is approximately 6 mSv, of which 2-4 mSv (allowing for the new ICRP dose coefficients) are due to radon and the balance due to gamma radiation….. The average miner at Olympic Dam is in his 20's and stays on average five years at the site. A typical calculation using the linear no threshold model and the latest BEIR-VII figures of radiation carcinogenesis risks indicates miners at Olympic Dam therefore have a 1:420 chance of contracting cancer, most likely lung cancer. Note that the research demonstrates that the risk of developing lung cancer is greater for younger workers. These risks are not insubstantial. Radiation safety and risk principles can be quite complex and it is debatable whether miners have the training to understand the basis, or are even informed of the risks in a comprehensive and accurate manner that they can comprehend and make an informed work decision."[44]

Seeking to normalise uranium has dangerous consequences for radiation health and safety culture on mine sites. Radiation has very real and significant risks to workers and, as suggested by Dr Karamoskos, workers may not be receiving the necessary training to properly understand

[43] Karamoskos, Peter, 'Nuclear power & public health', *Evatt Journal*, Vol. 10, No. 1, December 2011<https://evatt.org.au/papers/nuclear-power-public-health.html>
[44] ibid

those risks and take occupational health and safety seriously. The lobbying campaign run by the MCA, driven by the private interests of predominately junior uranium companies within the MCA exacerbates these risks by seeking to downplay the unique and dangerous properties of uranium.

Roxby Downs Indenture Act – Case Study:

This case study addresses issues with the application of the EPBC Act. The SA *Roxby Downs (Indenture Ratification) Act 1982*, a piece of specific legislation for BHP's Olympic Dam copper-uranium mine, overrides a suite of state laws. This has significant implications for the integrity and capacity of state processes to meet EPBC Act 1999 benchmarks and seriously undermines the public interest. During parliamentary debate on the Indenture Ratification Act, SA Liberal Party industry spokesperson Martin Hamilton-Smith said in Parliament, in relation to the *Roxby Downs (Indenture Ratification) (Amendment Of Indenture) Amendment Bill 2011*, that "every word of the [indenture] agreement favours BHP, not South Australians."[45]

The Productivity Commission Draft Report on Resource Sector Regulation, March 2020, explains that the "*Roxby Downs (Indenture Ratification) Act 1982* (SA) overrides any inconsistent provisions of other laws, such as licensing, environment, heritage, and freedom of informaiton, in the area of the town and mine. Instead, BHP has the power to make decisions about this legislation independently (in consultation with the South Australian Government)."[46]

Among the suite of laws outlined in section 7(2)(1) of the *Roxby Downs (Indenture Ratification) Act*, the *Development Act 1993* (SA) is included as a law that the Indenture Act "*takes precedence over*".[47] Under the EPBC bilateral agreement with SA[48] there is no mention of the Roxby Downs Indenture Act. The bilateral agreement does however accredit state environmental assessment processes, specifically the *Development Act 1993* (SA).

In effect, the federal government accredited the Indenture Act 1982 (SA) process to govern bilateral agreement EPBC Act assessments of Olympic Dam nuclear actions.

---

[45] Martin Hamilton-Smith, 8 November 2011, SA Parliament http://web.archive.org/web/20140308080015/http://martinhamilton-smith.com.au/Features/Speeches/tabid/86/articleType/ArticleView/articleId/3250/Roxby-Downs-Indenture-Ratification-Amendment-Of-Indenture-Amendment-Bill-2011.aspx

[46] Productivity Commission 2020. Draft Report - Resources Sector Regulation. Pg 16. March 2020

[47] These out-dated legal privileges were retained by the SA State Government in the Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011. No 49 of 2011 assented to 8.12.2011. Pg 3. 6—Amendment of section 7—Modification of State law

[48] Bilateral agreement made under section 45 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) relating to environmental assessment. 2014.

The federal Minister for Environment has made an EPBC Act decision[49] (19 March 2020) on BHP's "Olympic Dam Resource Development Project" Referral 2019/8570, that: "The project will be assessed by an accredited assessment under the (SA) *Development Act 1993*."

The *Development Act (SA) 1993* is overriden by the Indenture Act (SA) 1982. This concern is amplified given that the Indenture Act also takes precedence over the *Environment Protection Act (SA) 1993*; the *Native Vegetation Act (SA) 1991*; the *Natural Resources Management Act (SA) 2004* – incorporting water resource management issues; the *Freedom of Information Act (SA) 1991*; the *Mining Act (SA) 1971*; the *Aboriginal Heritage Act (SA) 1988* and a plethora of other SA Acts. Mining interests should not override public interests and the current approach lacks procedural rigour, independence and intergrity.

ACF, Conservation Council SA and FoE Australia have repeatedly called on BHP to surrender these outdated legal privileges and to agree that Olympic Dam be governed by a full set of contemporary public interest laws, standards and due process in SA[50].

BHP has failed to surrender the Indenture's outdated legal privileges since taking over Olympic Dam in 2005 and successive SA State governments have failed to seek reform of this historical legacy that has profound and adverse contemporary impacts.

The EPBC Act Review should recommend the Olympic Dam mine expansion Referral 2019/8570 is directly assessed under the EPBC Act, and not through a flawed bilateral agreement process that effectively gives precedence to the 1982 Indenture over the accredited assessment processes of the *SA Developement Act 1993*.

The current system is failing to properly assess the risks associated with the planned expansion of the Olympic Dam mine, Australia's biggest operating uranium mine.

The Indenture's outdated legal privileges increase the environmental risk from a copper-uranium mine which has had significant impacts on the Lake Eyre region through excessive water extraction[51]; the ongoing deaths of hundreds of protected birds each year as a

---

[49] EPBC Act Decision on Assessment Approach: Accredited Assessment Process 2019-8570-Assessment-Approach.pdf (85.37 KB)

[50] For instance, see "BHP legal privileges in the Olympic Dam Indenture Act 1982 override SA laws" - briefing produced for ACF, Conservation SA and FOE Australia by David Noonan – June 2019. https://nuclear.foe.org.au/wp-content/uploads/ODM-BHP-legal-privileges-Indenture-Act.pdf

[51] Mudd, G M, 2000, Mound Springs of the Great Artesian Basin in South Australia: A Case Study From Olympic Dam. Environmental Geology, 39 (5), pp 463-476. www.springerlink.com/link.asp?id=100512, posted at: http://archive.foe.org.au/sites/default/files/Mound%20Springs%20Mudd%201998.pdf
Mudd, G M, 1998, The Long Term Sustainability of Mound Springs In South Australia: Implications For Olympic Dam. Proc. "Uranium Mining & Hydrogeology II Conference", Freiberg, Germany, September 15-17 1998, pp 575-584. http://users.monash.edu.au/~gmudd/files/1998-UMH-2-ODam-v-MoundSprings.pdf

consequence of exposure to contaminants in evaporation ponds[52,53,54]; incidents of workers deaths, workers leaking information about BHP using manipulated averages of workers exposure to radiation and outdated radiation leak plans[55,56].

Current Olympic Dam developments and assessment:

EPBC 2019/8465 – Tailings Storage Facility 6

In June 2019 BHP proposed to "construct, commission, operate and close an additional tailings storage facility cell, and associated infrastructure, at the Olympic Dam mine and processing facility for the purpose of enabling continued operations of up to approximately 200,000 tpa copper and associated products."[57]

In Dec 2019 the Department of Agriculture, Water and Environment (DAWE)[58] decided Tailings Storage Facility 6 (TSF 6) is not a 'controlled' action under the Act and as such does not require EPBC assessment. This federal decision followed on from SA State government approval to BHP for TSF 6 - which was granted in Nov 2019.

Significant issues and concerns about the status and risk posed by this massive new Tailings Storage Facility were raised in public submissions[59] and in the the referral decision. The Australian National Committee on Large Dams (ANCOLD) has given existing Olympic Dam TSFs an "Extreme" consequences catagory, a ranking that is given for facilities that, if the dam fails, would cause the death of 100 or more people. These concerns were dismissed by BHP citing

---

Daniel Keane, "The sustainability of use of groundwater from the Great Artesian Basin, with particular reference to the south-western edge of the basin and impact on the mound springs", http://archive.foe.org.au/sites/default/files/Keane%20Mound%20Springs%2097.pdf

[52] ABC, 11 Jan 2005, 'WMC acknowledges tailings dangerous for birds', www.abc.net.au/news/2005-01-11/wmc-acknowledges-tailings-dangerous-for-birds/616658

[53] "Birds vs BHP: Evaporation ponds at BHP's Olympic Dam mine are killing hundreds of birds", The Advertiser newspaper 11 July 2019 https://www.adelaidenow.com.au/news/south-australia/evaporation-ponds-at-bhps-olympic-dam-mine-are-killing-hundreds-of-birds/news-story/1b886e4946f87fb7a729e201282f5cfb

[54] "Migratory Birds at Risk of Mortality if BHP Continues Use of Evaporation Ponds" briefing produced for ACF, Conservation SA and FoE Australia by David Noonan – June 2019. https://nuclear.foe.org.au/wp-content/uploads/ODM-Migratory-Birds-BHP-Evaporation-Ponds.pdf

[55] *The Monitor*, 1 April 2009, 'BHP Billiton opens up on tailings', Pg. 12 https://issuu.com/themonitornewspaper/docs/apr01-09

[56] Michelle Wiese Bockmann, 10 March 2006, 'Waste fears at uranium mine', *The Australian*

[57] BHP Olympic Dam EPBC Referral 2019/8465 Tailings Storage Facility 6 (June 2019) http://epbcnotices.environment.gov.au/_entity/annotation/0ffd8a29-a590-e911-8f1d-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1585449097156

[58] DAWE EPBC Act Decision (19 Dec 2019), Tailings Storage Facility 6 "is not a controlled action" http://epbcnotices.environment.gov.au/_entity/annotation/d26cc369-d522-ea11-a521-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1585448767449

[59] Joint ENGO submission to BHP Olympic Dam EPBC Act Referral 2019/8465 TSF 6 (David Noonan, lead author, June 2019) available at ACF website: https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/16149/attachments/original/1561529707/Joint_ENGO_Olympic_Dam_expansion_EPBC_submission.pdf?1561529707

that ANCOLDs ranking does not account for the likelihood of TSF failure[60] and this BHP position was adopted in the decision and 'statement of reasons' by DAWE.

The only plausible scenario in which DAWE could understand the likelihood of an occurrence that would cause the TSF to fail would be through environmental assessment. We suggest that DAWE did not consider this issue or its severity with enough rigour in relation to the proposed TSF 6. The matter must now be addressed in the assessment of 2019/8570.

Independent environmental researcher David Noonan explains that the proposed TSF 6 would be "larger in area than the CBD of Adelaide – at 285 hectares, and up to 30 metres in height – equal to the height of the roof over the *Great Southern Stand* at the MCG. BHP states the total footprint area of TSF 6 is intended to be 416 hectares."[61]

The tailings wastes generated at Olympic Dam Mine (ODM) contain approximately "80% of the radioactivity associated with the original ore"[62] and since mining at the site began in 1988 it is estimated some 180 million tonnes of tailings have been produced.

The definition of nuclear actions under the EPBC Act 1999 include: establishing or significantly modifying a nuclear installation, mining or milling uranium ores. This activity is both associated with the mining and milling of uranium ore and could be regarded as the significant modification of a nuclear installation – given the size of the proposed TSF6 and nature of materials to be stored there. In fact, ARPANSA advised DAWE on 1 July 2019 that the proposed TSF 6 action can be considered a nuclear action under section 22(1)(e) of the EPBC Act due to the establishment of a large-scale disposal facility for radioactive waste.[63]

The decision that TSF 6 is not a controlled action is alarming given the definition of nuclear actions, the content and volume of the wastes proposed for the facility, and the established "extreme" consequences category of existing TSF's at ODM.

TSF 6 has been proposed because the Olympic Dam Mine has reached a point of limited tailings storage capacity, with operations of TSF 4 having already been extended and unable to be further extended. TSF 4 should be closed and TSFs1-4 should be decommissioned. TSF 6 is

---

[60] Department of Agriculture, Water and Environment, 2020, Statement of Reasons. Olympic Dam Mine and Tailings Storage Facility 6 EPBC 2019/8465, p.2-3
http://epbcnotices.environment.gov.au/_entity/annotation/1fc85ef8-2546-ea11-b0a8-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1585039134518

[61] "BHP SEEK A TOXIC TAILINGS EXPANSION WITHOUT A FULL SAFETY RISK ASSESSMENT"
Briefing written by David Noonan for ACF, Conservation SA and FOE Australia, June 2092
https://nuclear.foe.org.au/wp-content/uploads/ODM-Tailings-Waste.pdf

[62] 1997 Olympic Dam Expansion Project Environmental Impact Statement, Summary, Tailings radiation control, p.21

[63] DAWE Statement of Reasons EPBC 2019/8465, (29 Jan 2020), p.3 2019-8465 Statement of Reasons - TSF6.pdf (2.47 MB)

intended to operate for the next 25 years in tandem with continued operations of TSF 5 – another "extreme" consequences tailings facility, in a 60:40 discharge of tails.

Since June 2019 ACF, Conservation Council SA and FoE Australia have repeatedly recommended a comprehensive Safety Risk Assessment of all Olympic Dam tailings and tailings storage facilities 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 ODM as a core part of an EPBC Act public environmental impact assessment process.[64]

As mining continues and storage capacity at TSF 5 and TSF 6 is consumed it can be expected that similar applications will be made in future. This type of piecemeal assessment fails to consider the cumulative impacts of tailings production and storage, misses opportunities to assess and review the operational standards at the existing facilities and sets a dangerous precedent for the management of some of the most toxic industrial wastes produced in Australia.

EPBC 2019/ 8570 – Olympic Dam Resource Development Strategy

Separate to the TSF 6 proposal BHP have referred the "Olympic Dam Resource Development Stategy". On the 23rd March 2020 the DAWE accepted the project as a controlled action but has deferred assessment of the proposal to the SA Government under the *Development Act (SA) 1993*[65] through a bilateral agreement process. As discussed above the *Development Act (SA) 1993* is among a suite of laws that are overriden by the Roxby Downs Indenture Act and concerns remain about the scope of the assessment and the transparency of studies and management plans through this process.

Within the Bilateral Agreement Object D must be applied to the assesment. Object D states that "The parties will work cooperatively so that Australia's high environmental standards are maintained by ensuring that: … b. Matters of National Environmental Significance (NES) are protected as required under the EPBC Act; c. there are high quality assessments of the impacts of proposals on Matters of NES; and d. authorized actions do not have unacceptable or unsustainable impacts on Matters of NES."

Applicable MNES that must be assessed and protected as required under the EPBC Act, include: "the environment" (the whole environment) consequent to uranium mining as a controlled "nuclear action"; Listed Bird Species and Migratory Bird Species subject to impact and mortality from BHP's TSFs and Evaporation Ponds; and Mound Springs protected as an

---

[64] See Recommendations No.1 & No.2 in: https://nuclear.foe.org.au/wp-content/uploads/Joint-ENGO-Recommendations-to-Federal-Gov-on-BHP-Olympic-Dam-Mine-Expansion-09Dec2019.pdf

[65] Department of Agriculture, Water and Environment, 2020, Notice of Referral Decision. Olympic Dam Resource Development Strategy (EPBC 2019/8570) http://epbcnotices.environment.gov.au/_entity/annotation/f1e59361-4a6a-ea11-b9e9-00505684324c/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1585021631235

Endangered Ecological Community under the EPBC Act, along with the natural flows of fossil Great Artesian Basin waters on which the unique and fragile Mound Springs depend.

Please consider an over-view article on EPBC Act regulatory responsibilities to Matters of National Environmental Significance in Olympic Dam mine issues, currently before the Productivity Commission "Resources Sector Regulation Study"[66]. This includes a discussion of BHP's "ESG Briefing: Tailings Dams" (June 2019)[67] which states (p.17) that if the the Olympic Dam tailings waste facilities fail there is the potential for the loss of life of over 100 employees.

The BHP Briefing (p.10) further explains that the "extreme" consequences category for Olympic Dam Tailings Storage Facilities includes potential impacts of an extreme loss of infrastructure and economics (which the Canadian Dam Association Dam Safety Guidelines 2007 cite to be in the order of US$1 billion), and a major permanent loss of environmental and cultural values - with restoration stated to be "impossible".

It is of concern that the BHP Olympic Dam Mine has been reported to not have a rehabilitation bond at federal or state levels[68]. Input to the Productivity Commission Resources Sector Regulation Study makes a Recommendation to: "Secure a Bond to cover 100% of project rehabilitation, waste management and closure liabilities at each resource project regulated in the federal jurisdiction." This applies to Olympic Dam.

Given the significant risk posed by the existing ODM, the proposed new TSF 6 "extreme" consequences catagory facility and the major mine expansion project we strongly urge the Review Committee to consider and advise that such a project should be required to have a cumulative impact assessment - as recommended by the joint ENGO's[69]. There is a clear need for wholistic project review, not the current practice of piecemeal consideration of different components. A greater level of federal oversight through DAWE to help ensure transparency is also critical to meet minimum community expectations on the environmental assessment process for such a signficant project with great risk.

---

[66] "BHP Olympic Dam Tailings: an "Extreme Risk" to Workers and to the Environment", David Noonan, B.Sc., M.Env.St., Independent Environment Campaigner (28 August 2019), Submission No.1 Attachment, to the Productivity Commission Resources Sector Regulation Study, at: https://www.pc.gov.au/__data/assets/pdf_file/0006/244788/sub001-resources-attachment.pdf

[67] 'ESG Briefing; Tailings Dams" BHP June 2019 https://www.bhp.com/-/media/documents/media/reports-and-presentations/2019/190607_esgbriefingtailingsdams.pdf?la=en

[68] David Noonan B.Sc., M.Env.St., Independent Environment Campaigner, Submission No.1 (28 August 2019), to the Productivity Commission Resources Sector Regulation Study https://www.pc.gov.au/__data/assets/pdf_file/0004/244786/sub001-resources.pdf

[69] See the ACF, Conservation SA and FoE Australia submission to BHP "Olympic Dam Resource Development Strategy" EPBC 2019/8570 (David Noonan, lead author, 09 Dec 2019) at: https://nuclear.foe.org.au/wp-content/uploads/2019-Dec-final-submission-joint-ENGOs-BHP-Olympic-Dam-EPBC-Referral-2019-8570.pdf

Yeelirrie Case Study:

This section considers issues with the application of the EPBC Act. It outlines the assessment process and decisions at a state and federal level in response to the application by Cameco to mine uranium at Yeelirrie in the Northern Goldfields region of WA. This identifies problems with the current assessment process and highlights that these problems would be exacerbated if the EPBC uranium trigger were to be removed. Without the whole of assessment required through the EPBC Act many issues associated with the project may have never been identified. The Yeelirrie experience clearly shows the importance of the uranium trigger and higher levels of assessment for mining more generally. This section also demonstrates the urgent need for improved environmental legislation that seeks to prevent political influence in decision making and improves the agility in the Commonwealth environment department to identify and classify threatened and endangered species.

State process

In early 2010's BHP Billiton commenced environmental studies at the proposed Yeelirrie site, including one of the most extensive subterranean fauna drilling programs ever conducted. In 2012 BHP sold the site to Cameco. There are many factors that led to the decision by BHP to sell including the results of the subterranean fauna testing and the drop in the global uranium price following the Fukushima nuclear reactor explosion. The decision may also have been influenced by the clear and public opposition from Traditional Owners who had directed their representative body to release a statement that they would not be negotiating with BHP as under no circumstances would the group support uranium mining.

Cameco released a Public Environment Review (PER) document in 2015, which was assessed as a 'controlled action' through the Commonwealth – WA Bilateral Agreement. In August 2016 the WA EPA recommended that the Yeelirrie project be rejected on the grounds that the project is inconsistent with three of the objectives of the WA Environmental Protection Act: the precautionary principle; the principle of conservation of biological diversity, and the principle of intergenerational equity. Following the EPA recommendation Cameco lodged an appeal arguing that the subterranean fauna identified at Yeelirrie may exist elsewhere and suggested that similar types of species (surrogates) were found elsewhere and so it was possible that the species only found at Yeelirrie could survive in other environments. This line of argument sidelines evidence that subterranean fauna has evolved over millions of years in complete isolation and so there is a high level of endemism. This approach further seeks to use uncertainty as a driver for proceeding, rather than taking a precautionary approach.

In December 2016 the WA Appeals Convenor and the former state Environment Minister rejected Cameco's appeal. This decision was consistent with the EPA's finding that if the project were to proceed there was a high probability that a number of subterranean fauna

species – including multiple stygofauna species and one troglofaunal species - would be made extinct, along with an endemic salt bush.

The former WA Environment Minister, Albert Jacobs, released a report detailing his response to the appeals. In this report the former Minister conceded that both the EPA and the Appeals Convenors findings were correct in relation to the evidence suggesting extinction was likely. Despite this clear and verified finding that the Yeelirrie uranium mine would likely cause the extinction of multiple species the Environment Minister approved the Yeelirrie uranium mine anyway. It is a fundamental failure in the WA environmental laws that a Minister can make a decision that is contrary to the findings of the WA EPA and the outcome of an Appeals process and which is inconsistent with the object and principles of the Environmental Protection Act.

The decision was made on the 20th of January 2017, just weeks before the State election, at which point it was apparent the Barnett Government would struggle to retain power. The WA Labor party has an anti-uranium mining position and so the approval of the Yeelirrie uranium mine and two other uranium mines in WA, was widely regarded as a fast-tracked political decision to protect the mining companies interests against a change in government. Indeed when WA Labor was elected one of their first ations was to reintroduce the ban on uranium mining. The approval of the Yeelirrie uranium mine was prioritised above the overwhelming evidence and consensus that the project threatens multiple extinctions.

The Conservation Council of WA (CCWA) and three Tjiwarl Native Title holders launched a judicial review in the WA Supreme Court in July 2017. After the Court dismissed the case CCWA and the three Tjiwarl Native Title holders took the case to the WA Supreme Court of Appeals. In July 2019 the Supreme Court of Appeals dismissed the case but highlighted the significance of the case in testing a grey area of the law. The decision confirmed that under WA state laws it is admissible for a Minister to approve a project that would knowingly cause the extinction of multiple species. This is a dangerous precedent and shows significant deficiencies in WA's environment laws which limits the Courts to consider only administrative errors, not whether a decision was a good or correct decision to make.

In the EPBC Review discussion paper it is asked, "Should the EPBC Act be amended to enable broader accreditation of state and territory, local and other processes?" The Yeelirrie case study should be a catalyst for environmental law reform and should initiate a review of the accreditation of WA's environmental assessment processes and laws through the EPBC bilateral agreement. It raises questions about how laws are accredited separately to processes. The processes are inconsequential if the laws fail to deliver the objects and principles of the Act and a broader accreditation of the laws and political processes is required as well as consideration to how political ideology can influence those decisions.

Federal Process

Before the court proceedings had concluded (July 2019) the former Commonwealth Minister for Environment Melissa Price, granted federal approval for the Yeelirrie project. This decision has several implications. In the first instance the decision was made on 10 April 2019 on the eve of the care-taker period preceding the 2019 Federal election and was not made public until the eve of ANZAC day public holiday. The documents outlining the decision were not released until weeks later raising questions about whether the decision was in fact final and complete before the caretaker period. Redacted information through Freedom of Information (FoI) documents raises further concerns about the actual date of the decision and necessary documentation (See Appendix 1 – 3).

The federal decision was also influenced by significant lobbying from the proponent, evident through documents released through Senate Estimates and FoI requests. These documents reveal that the proponent concedes they will never be able to prove that the project would not cause extinction. Information released through Senate Estimates and FoI requests also demonstrates that there was an informal and opaque process in which the proposed conditions for the mine were given to the proponent for them to argue against, a process no other stakeholders were afforded access to.

The federal Department prepared two sets of conditions for the project. The Department, reflecting that all the mitigation strategies proposed by the company would still result in the risk of extinction, advised the Minister to adopt conditions which would have required that the proponent "demonstrate that no species would be made extinct by implementation of the project prior to commencement of the project." The Minister, against the advice of her department, did not set any requirements for the proponent to prove extinction of stygofauna species would not occur. Instead the Minister set prescriptive mitigation strategies which the Department had advised would not eliminate the threat of extinction (see Appendix 1 pg.26 points 57, 58 & 59).

The proponent argued against the condition to provide evidence the project would not result in extinction by saying that the condition "is probably unachievable and unrealistic, given the uncertainty surrounding sampling and naming of subterranean fauna" (see Appendix 2 pg.67). This reasoning is directly inconsistent with the EPBC Act 1999 object 3A(b) "if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation". In this case the measure to prevent environmental degradation would be to not approve and/or to set conditions that require evidence and scientific certainty.

The federal decision also came after a public commitment by former Minister Price that she would wait until the outcome of the Supreme Court of Appeal proceedings before making any such decision. Much like the state Ministerial approval, the federal decision is widely seen as an

expedited political process to protect against a change in government where the incoming government may make a different decision.

Through FoI documents (see Appendix 3) it has also been revealed that throughout 2018 Cameco began lobbying the then federal Minister for Resources, Matthew Canavan who in turn began lobbying former federal Environment Minister Josh Frydenberg. Minister Canavan met with Simon Williamson from Cameco on the 14th of June at federal Liberal MP Rick Wilson's office in Kalgoorlie. Following this meeting Minister Canavan wrote to Josh Frydenberg saying that "given the significant delays already experienced by Cameco in relation to Yeelirrie, I would appreciate the Department of the Environment and Energy completing its processes expeditiously and I look forward to reviewing your proposed decision on the project shortly. Thank you for ensuring progress of the Commonwealth environmental approval for this project."

There is clear intent and pressure here to expedite the process, despite the ongoing Court proceedings. Minister Canavan's letter seeks to influence the proposed decision through asking to review a draft, and to ensure that the outcome of the process should be an approval for the project. This level of political influence, following direct lobbying from the company, seeking to directly influence both the speed and outcome of the assessment process is unacceptable and inconsistent with realising best environmental outcomes.

The pressure, especially with regard to the 2019 federal election, suggests that the company was concerned that a change in government may have led to a rejection of the proposal or to stricter conditions being applied – possibly in line with recommendations from the then Department of Environment and Energy. Any decision not to approve the mine would have been appropriate based on the evidence that the project would likely cause multiple extinctions and failed to meet a number of objects and principles of state and federal environment legislation.

Threatened species listings

The 10 stygofauna species, 5 troglofauna species and two different populations of an endemic salt bush – Atriplex Yeelirrie – which have all been identified as being at risk of extinction are all newly discovered species. Our understanding is that the process for classifying a species as endangered the species must first be formally 'described' and then nominated to the Threatened Species Scientific Committee (TSSC).

The subterranean fauna species in question include: *Enchytraeidae* sp. Y5, *Enchytraeidae* sp. Y6, *Halicyclops* cf. *eberhardi* sp. B, *Novanitocrella* 'araia'sp. n., *Schizopera akolos*, *Schizopera emphysema*, *Schizopera* sp. 7439, *Philoscidae* sp. n. Y2, *Atopobathynella* sp. 'line K', *Enchytraeidae* sp. Y4 and *Kinnecaris* 'lined' sp. n., and one (1) troglofauna species - *Trichorhina*

sp. n. F. The Yeelirrie Impact assessment report by Subterranean Ecology 2011 and the impact assessment report from Bennelongia 2015, as well as taxonomic publications Karanovic and Cooper 2011a, 2011b, 2012, Karanovic et al. 2014, and Baehr et al. 2012 provide substantial information about the species listed above. This information was submitted to both the WA and Commonwealth governments as part of the environmental assessment and later through Senate Estimates.

Through Senate Estimates questions by former Senator Scott Ludlam in 2016 and Senator Rachel Siewert in 2018 it became evident that there is no standard process for government agencies who become privy to information about newly identified species or their circumstance to advance the listing of those species as either threatened or endangered. In the case that a proponent discovers new species, as is the case at the Yeelirrie site, it is not in the interest of the proponent to have the species formally described or nominated to the TSSC and it is often beyond the skills or capabilities of third parties to advance. We strongly advocate that there be a process in which newly identified species, that are identified through environmental assessments of any kind, be subject to departmental process of formally describing species and referring them to the TSSC for consideration.

We simply cannot rely on third parties to advance the listing of species. The extinction rate of species in Australia is staggering, and it is likely that many more species that are yet to been identified have suffered this fate. We strongly urge the Review Committee to recommend the development of new processes for formally describing and listing species within the DAWE. Such processes may be activated by the Minister or Scientific and Heritage Committees and at the community's request where there is the prospect of immediate and significant threats.

The Yeelirrie uranium mine assessment process is a very clear indication of how environmental laws are failing to deliver fair and transparent processes that properly uphold the objects and principles of environmental laws or protect species from extinction. The decision at a state and federal level to approve a mine which the overwhelming evidence indicates will cause extinction, which expert government agencies recommended against and the proponent admitted they could not prove otherwise, demonstrates a deep divide in what our laws call for and what our decision makers do. Under existing bilateral agreements, the processes and laws are accredited but not the independence of the decision makers or other legal instruments that can sideline or override these laws and processes. We need stronger requirements on evidence and the distancing of political influence in decision making, this could be achieved through the establishment of an independent EPA.

Nuclear Power

The following sections consider the nuclear industry's specific proposed changes to the EPBC Act. The focus of this section is to demonstrate why this proposed change is inconsistent with the intention of the Act.

Section 140A of the EPBC Act 1999 states that: *The Minister must not approve an action consisting of or involving the construction or operation of any of the following nuclear installations: (a) a nuclear fuel fabrication plant; (b) a nuclear power plant; (c) an enrichment plant; (d) a reprocessing facility.*

The s140A prohibition in the EPBC Act is consistent with other prohibitions in the Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998 and similar prohibitions in state legislation in New South Wales, Victoria and Queensland. Legislation in Western Australia and South Australia prohibits the establishment of a nuclear waste storage facility, which would be a necessary requirement if nuclear power reactors were developed. These legislative prohibitions demonstrate the broad community concern over and rejection of nuclear power and nuclear waste storage in Australia.

Since these prohibitions were introduced under the Howard government nuclear power costs have increased dramatically while renewable energy costs have plunged considerably. The problems that prompted these prohibitions remain unresolved. Contemporary safety issues have been exposed including the multiple reactor meltdowns, fires and explosions at the Fukushima Daiichi nuclear power site. There is still no permanent nuclear waste disposal facility operating anywhere in the world for the high-level nuclear waste generated by nuclear power reactors. There are still dangerous links between the civilian nuclear fuel cycle and weapons proliferation, and the safeguards system remains limited and underfunded. The risk of reactors becoming military targets (as has been the case with research reactors in the Middle East on multiple occasions) remains a serious concern. Disturbingly, patterns of inadequate regulation persist in numerous countries. This continues despite the fact that inadequate regulation is widely accepted as a root cause of the Fukushima disaster.

There has been sustained pressure in the lead up to the EPBC review from nuclear lobbyists through the 2019 Hose of Representatives Standing Committee on the Environment and Energy Inquiry into the Pre-requisites for Nuclear Power (Commonwealth Inquiry); the NSW Upper House inquiry into the Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2019 (NSW Inquiry) and the Victorian Upper House Inquiry into Nuclear Prohibition (Victorian Inquiry). All three of these inquiries were instigated by avidly pro-nuclear members of Parliament who, in most cases, do not have the support of their own parties let alone their constituencies. These inquiries do not demonstrate public support, nor do they provide evidence to support nuclear power as a feasible energy source or environmentally safe option.

This section outlines the complicated legislative implications of any attempted pursuit of nuclear power in Australia, considers the incompatibility of nuclear power with the objectives and principles of the EPBC Act 1999 and responds directly to some of the questions posed in the EPBC Act Review discussion paper.

A detailed review of nuclear waste problems associated with nuclear power, issues with different models of nuclear reactors as well as the environmental, health and safety, economic and security issues with nuclear power is included in Appendix 4 – a submission to the 2019 Commonwealth Inquiry by key national and state/territory environment groups. We urge the EPBC Review Committee to consider Appendix 4 as part of this submission.

Legislative implications

Nuclear power and its by-products are incompatible with the objects and principles of the EPBC Act (details outlined in the following sections). The retention of the s140a nuclear power prohibition reflects this inconsistency. Removing the prohibition and allowing companies to submit proposals for nuclear power would become an administrative and government burden with significant costs associated for government, the proponent and for those in the public and organisations and institutions who would respond to any proposal. This burden is unnecessary given that any proposal is fundamentally inconsistent with the objects and principles of the EPBC Act and should be rejected. If not rejected any proposal is likely to be subject to extended legal proceedings which would add a further burden on government, the proponent and any organisation initiating legal proceedings, legal teams for all parties as well as our court system. The prohibition avoids all these unnecessary processes and reflects the insurmountable risks to the environment and public health which makes nuclear power fundamentally inconsistent with the objects and principles of the EPBC Act 1999.

There has been some suggestion from nuclear power proponents that establishing nuclear power is as simple as removing s140a from the EPBC Act. It is far from simple. There are prohibitions for nuclear power in the Commonwealth ARPANS Act 1998 section 10(b) and in state legislation in New South Wales, Queensland and Victoria. Removing prohibitions to nuclear power would then require significant reforms across a range of existing legislation that is not designed to deal with nuclear power. This would require a significant increase in government resources and require the recruitment of a workforce with the appropriate skills and capabilities that currently do not exist in Australia, as noted by ARPANSA in its submission to the 2019 federal nuclear inquiry.[70] The diversion of resources into nuclear power is a diversion from resourcing the very pressing issue of addressing climate change, securing a national energy policy and delivering modern environmental protection legislation.

[70] https://www.aph.gov.au/DocumentStore.ashx?id=bd453ef0-e584-45a0-a763-1c1d5f80f976&subId=669835

A submission to the Commonwealth Inquiry from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) discusses a 2018 peer review into Australia's regulatory framework for radiation safety against International Atomic Energy Agency (IAEA) standards. The report made 23 recommendations and 12 suggestions demonstrating the need for a national review and approach to radiation and nuclear safety. The report concedes that the existing radiation and safety regulatory framework in Australia falls short of international standards. There are existing deficiencies in regulatory standards and practices in Australia even without the far more challenging regulatory requirements of a nuclear power program.

ARPANSA identify significant barriers to establishing a regulatory system that could deal with nuclear power that would require:

- A review of the legal framework for radiation and nuclear safety across all the jurisdictions,
- A single piece of national legislation
- A national government agency that deals with radiation and nuclear safety – which is properly resourced
- The recruitment of a workforce with the necessary capabilities
- Establishing a long-term education and training program
- Changes to the National Radioactive Waste Management Act
- Address the high level of public concern over the transport of radioactive material which would increase significantly
- Review the framework for emergency preparedness and response which would require strengthening and resourcing; clear and defined roles in emergency response between the different jurisdictions and ARPANSA; as well as the recruitment and training to secure the necessary capabilities to respond to emergencies
- A review of relevant international conventions and Australia's obligations to be reflected in legislation

This is the tip of the iceberg for the types of reforms and considerations needed if Australia were to pursue nuclear power. Relevant issues would include securing sites for nuclear facilities, transport of nuclear materials, security of nuclear materials and facilities, management and storage of nuclear waste, decommissioning of reactors, community consultation, insurance arrangements, weapons proliferation risks and perceptions, occupational health and safety, water allocations, grid connectivity, jurisdictional issues between the Commonwealth and states/territories, and more.

The reforms that are being asked by the Minerals Council of Australia, who represent predominantly uranium and coal companies, is not as simple as removing a single section of the EPBC Act. There are significant implications which would require substantial government resourcing to identify all the legislative changes required, the design of new legislation,

consultation, review, parliamentary processes - and that is just the beginning. Removing the nuclear prohibition would be an expensive and resource intensive distraction from pursuing a comprehensive renewable energy plan for Australia. Renewable energy enjoys broad public support and is significantly cheaper, safer and cleaner than nuclear and has far less legislative implications or requirements for emergency preparedness and radiation safety.

Objects and Principles of the EPBC Act 1999

This section considers the compatibility of nuclear power with the objects and principles of the EPBC Act 1999.

Serious or irreversible environmental damage, biological diversity and ecological integrity

EPBC Act Section 3A(b): "if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation"

EPBC Act Section 3A(d): the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making

Catastrophic accidents provide the most dramatic illustration of irreversible environmental damage resulting from nuclear power.

Dr. Ian Fairlie, a radiation biologist and former member of the UK Government's Committee Examining the Radiation Risks of Internal Emitters, summarised the manifold impacts of the Chernobyl disaster in a detailed 2016 scientific report:[71]

- 40,000 fatal cancers are predicted in Europe over the next 50 years
- 6,000 thyroid cancer cases to date, 16,000 more expected
- 5 million people in Belarus, Ukraine and Russia still live in highly contaminated areas (>40 kBq/sq.m)
- 400 million in less contaminated areas (>4 kBq/sq.m)
- 37% of Chernobyl's fallout was deposited on western Europe;
- 42% of western Europe's land area was contaminated
- increased radiogenic thyroid cancers expected in West European countries
- increased radiogenic leukemias, cardiovascular diseases, breast cancers confirmed
- new evidence of radiogenic birth defects, mental health effects and diabetes

[71] Ian Fairlie, March 2016, 'TORCH-2016: An independent scientific evaluation of the health-related effects of the Chernobyl nuclear disaster', https://www.global2000.at/sites/global/files/GLOBAL_TORCH%202016_rz_WEB_KORR.pdf

- new evidence that children living in contaminated areas suffer radiogenic illnesses

Dr. Fairlie summarised the impacts of the Fukushima disaster in a 2015 study:[72]
"About 60 people died immediately during the actual evacuations in Fukushima Prefecture in March 2011. Between 2011 and 2015, an additional 1,867 people in Fukushima Prefecture died as a result of the evacuations following the nuclear disaster. These deaths were from ill health and suicides….From the UNSCEAR estimate of 48,000 person Sv, it can be reliably estimated (using a fatal cancer risk factor of 10% per Sv) that about 5,000 fatal cancers will occur in Japan in future from Fukushima's fallout."

"In sum, the health toll from the Fukushima nuclear disaster is horrendous. At the minimum

- Over 160,000 people were evacuated.
- Many cases of post-trauma stress disorder (PTSD), depression, and anxiety disorders arising from the evacuations.
- About 12,000 workers exposed to high levels of radiation, some up to 250 mSv
- An estimated 5,000 fatal cancers from radiation exposures in future.
- Similar (unquantified) numbers of radiogenic strokes, CVS diseases and hereditary diseases.
- Between 2011 and 2015, about 2,000 deaths from radiation-related evacuations due to ill-health and suicides.
- An, as yet, unquantified number of thyroid cancers.
- An increased infant mortality rate in 2012 and a decreased number of live births in December 2011.

"Non-health effects include

- 8% of Japan (30,000 km2), including parts of Tokyo, contaminated by radioactivity.
- Economic losses estimated between $300 and $500 billion."

There is much contention on the estimated death tolls from the Chernobyl and Fukushima. The widely cited estimate of 9,000 deaths from the World Health Organisation and other UN agencies only covers contaminated parts of the former Soviet Union.[73] Estimates of the Europe-wide death toll are in the tens of thousands.[74]

The World Health Organization released a report in 2013 which concluded that for people in the most contaminated areas in Fukushima Prefecture, the estimated increased risk for all solid

[72] Ian Fairlie, 2015, 'Summing the Health Effects of the Fukushima Nuclear Disaster', https://www.ianfairlie.org/wp-content/uploads/2015/08/Summing-up-the-Effects-of-the-Fukushima-Nuclear-Disaster-10.pdf
[73] http://www.who.int/mediacentre/news/releases/2006/pr20/en/
[74] Jim Green, 7 April 2016, 'Pro-nuclear environmentalists and the Chernobyl death toll', The Ecologist, https://theecologist.org/2016/apr/07/radiation-harm-deniers-pro-nuclear-environmentalists-and-chernobyl-death-toll

cancers will be around 4% in females exposed as infants; a 6% increased risk of breast cancer for females exposed as infants; a 7% increased risk of leukaemia for males exposed as infants; and for thyroid cancer among females exposed as infants, an increased risk of up to 70% (from a 0.75% lifetime risk up to 1.25%).[75]

In addition to the unprecedented human and environmental cost of these nuclear disasters there is an extreme financial impact. Between 2011 and 2016, the Japanese government's estimate of clean-up and compensation costs quadrupled and stood at ¥21.5 trillion as of in 2016 (A$339 billion).[76] No doubt the final clean-up and compensation costs will be far higher, and there are other enormous costs including losses to tourism and agricultural and fishing industries, and energy replacement costs.[77] A 2017 study by the Japan Centre for Economic Research found that costs could reach ¥50–70 trillion (A$788 billion to A$1,100 billion) – roughly 2–3 times the government's estimate of ¥21.5 trillion.[78] The costs of the Chernobyl disaster are estimated at US$700 billion (A$1,210 billion).[79]

The social costs of catastrophic nuclear power accidents are extraordinary and manifold. They cannot be reduced to a single number. Given that, one particular number is staggering. Over 500,000 people were evacuated after the Chernobyl disaster (350,000) and Fukushima disaster (160,000). The treatment of Fukushima evacuees has been highly problematic[80] and the same could be said about Chernobyl evacuees.

Regarding the conservation of biological diversity and ecological integrity, objectives cited in the EPBC Act, an academic paper that reviewed findings from 521 studies following the Chernobyl Nuclear disaster in Ukraine found that there has been biological contamination, behavioural, physiological and morphological changes in species along with negative impacts on ecological services through contamination of water, soil and food[81]. There is substantial evidence that a nuclear disaster means severe impacts to biological diversity and ecological integrity and that these impacts will persist over long timeframes. The size, scale and longevity

---

[75] World Health Organization, 28 Feb 2013, 'Global report on Fukushima nuclear accident details health risks', https://www.who.int/mediacentre/news/releases/2013/fukushima_report_20130228/en/

[76] Nikkei Asian Review, 10 Dec 2016, 'Japanese consumers will be paying for Fukushima for decades', https://asia.nikkei.com/Business/Japanese-consumers-will-be-paying-for-Fukushima-for-decades

[77] Nuclear Monitor #836, 16 Dec 2016, 'The economic impacts of the Fukushima disaster', https://www.wiseinternational.org/nuclear-monitor/836/economic-impacts-fukushima-disaster

[78] Kyodo / Japan Times, 1 April 2017, 'Real cost of Fukushima disaster will reach ¥70 trillion, or triple government's estimate: think tank', https://www.japantimes.co.jp/news/2017/04/01/national/real-cost-fukushima-disaster-will-reach-%C2%A570-trillion-triple-governments-estimate-think-tank/

[79] Jonathan Samet and Joann Seo, 2016, 'The Financial Costs of the Chernobyl Nuclear Power Plant Disaster: A Review of the Literature', https://www.greencross.ch/wp-content/uploads/uploads/media/2016_chernobyl_costs_report.pdf

[80] Nuclear Monitor #882, 19 Dec 2019, 'Forgetting Fukushima', https://wiseinternational.org/nuclear-monitor/882/forgetting-fukushima

[81] Wehrden, H.V; Fischer, J; Brandt, P; Wagner, V; Kummerer, K; Kuemmerle, T; Nagel, A; Olsson, O; Hostert, P. 2012 Consequences of nuclear accidents for biodiversity and ecosystem services. Conservation Letters 5:81-89 April 2012. DOI: 10.1111/j.1755-263X.2011.00217.x

of the threats to biological diversity and ecological integrity should preclude nuclear power from consideration, making the prohibition a sage decision.

Inter-generational equity

EPBC Act 3A(c): "the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations"

The radioactive and nuclear waste streams arising across the nuclear fuel cycle – and the inability of industry and governments to adequately manage these waste streams – are profoundly inconsistent with EPBC Act's principle of inter-generational equity.

Legislation banning nuclear power should be retained because no solution exists to for the safe, long-term management of nuclear waste streams. No country has an operating repository for high-level nuclear waste. The United States has a deep underground repository for long-lived intermediate-level waste – the only operating deep underground repository worldwide – but it was closed from 2014–17 following a chemical explosion in an underground waste barrel (see Section 5.4 of Appendix 4).

Safety standards and regulatory oversight fell away sharply within the first decade of operation of the U.S. repository – a sobering reminder of the challenge of safely managing dangerous nuclear wastes for tens of thousands of years.

Finland and Sweden are the countries most advanced with deep geological repository projects. However, the planned high-level nuclear waste repository in Finland is years behind schedule. The planned high-level nuclear waste repository in Sweden has hit a snag with the Swedish Land and Environmental Court ruling that SKB's application can only be approved if *"SKB can provide documentation that shows the final storage facility complies in the long-term with requirements of the Environmental Code despite the uncertainties remaining on how the canisters protective capability is effected by a) corrosion due to reaction in oxygen-free water"* and four other issues regarding copper corrosion, including the influence of radiation on three additional variables. Amongst other things, SKB has not carried out corrosion tests with a canister containing spent fuel.[82]

Other countries operating nuclear power plants – including the US, the UK, Japan, South Korea, and Germany – have not even established a site for a high-level nuclear waste repository, let alone commenced construction or operation. To give one example of a protracted, expensive

[82] Miles Goldstick, 29 Jan 2018, 'Swedish nuclear industry loses battle over repository but battle rages on', https://www.wiseinternational.org/nuclear-monitor/856/swedish-nuclear-industry-loses-battle-over-repository-battle-rages

and failed attempt to establish a high-level nuclear waste repository, plans for a repository at Yucca Mountain in Nevada were abandoned in 2009 – and recent attempts to revive the project were strongly contested and appear to have come to an end with President Trump indicating that the opposition of citizens of Nevada would be respected.[83] Over 20 years of work was put into the Yucca Mountain repository plan and well over A$10 billion wasted on the failed project.

Estimated construction costs for high-level nuclear waste repositories are in the tens of billions of dollars and cost estimates have increased dramatically. For details see Section 5.3 of Appendix 4.

The World Nuclear Waste Report, released in January 2019, details the difficulties with high-level nuclear waste management in seven countries (Belgium, France, Japan, Sweden, Finland, the UK and the US) and serves as a useful overview of the serious problems that Australia has avoided by eschewing nuclear power.[84]

In addition to high-level nuclear waste, there are troublesome waste streams at other stages of the nuclear fuel cycle. For example, uranium ore processing generates radioactive mine waste tailings which typically contain 80 - 85% of the radioactive materials from the ore. Whereas pre-mining this material was generally contained and inert this is made bioavailable and volatile in the environment through the mining and milling process. Existing best practice, through the Environmental Requirements (ER's) at the Ranger uranium mine in the NT, requires that this material be isolated from the environment for no less than 10,000 years.

The long-lived nature of radioactive materials, particularly spent nuclear fuel, is fundamentally at odds with the principles of intergeneration equity. These materials continue to be dangerous to human health and the environment across tens of thousands of years- a time frame during which there may be significant climatic changes and geological movement which can compromise any engineered facility and leave a complex and costly contamination legacy for future generations to manage. There is no plausible scenario in which any operator of a nuclear reactor could guarantee or prove that a reactor and the wastes produced from a reactor would not impact on future generations. There is no scenario in which companies and governments of today will be able to be held to account across a 10,000 – 100,000 time period.

Claims that problems with nuclear waste can be reduced or negated altogether with small modular reactors or Generation IV concepts are demonstrably false – the real-world

[83] Allison Macfarlane, 21 Feb 2020, 'The Yucca Mountain nuclear waste site has always been a political football. Trump is the latest president to fumble', https://thebulletin.org/2020/02/the-yucca-mountain-nuclear-waste-site-has-always-been-a-political-football-trump-is-the-latest-president-to-fumble/

[84] Robert Alvarez, Hideyuki Ban, Charles Laponche, Miles Goldstick, Pete Roche and Bertrand Thuillier, Jan 2019, 'Report - The Global Crisis of Nuclear Waste', https://www.greenpeace.fr/report-the-global-crisis-of-nuclear-waste/

experience has been disastrous (see Section 5.5 of Appendix 4). The promise that at some time in the future there will be a location and a method to safely store high level nuclear waste that meets all other requirements of social consent and is feasible, is fundamentally inconsistent with the Act. The EPBC Act 1999, precautionary principle is clear that "a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage." The measure required to prevent degradation that threatens irreversible damage is to prohibit uranium mining and nuclear power and any activity that generates nuclear waste.

To the contrary there is mounting evidence that attempts to store and transport nuclear waste have been met with accidents and incidents (see Section 5.7 of Appendix 4).

Radioactive waste management / mismanagement in Australia

The 2006 Uranium Mining, Processing and Nuclear Energy Review (UMPNER) report noted: "Establishing a nuclear power industry would substantially increase the volume of radioactive waste to be managed in Australia and require management of significant quantities of HLW [high-level nuclear waste]."[85]

In the mid- to late-2000s, Dr. Ziggy Switkowski, then Chair of the Board of the Australian Nuclear Science and Technology Organisation and head of the UMPNER Review, was promoting the construction of as many as 50 nuclear power reactors in Australia.[86] Over a 50-year lifespan, a 50-reactor (50-gigawatt) nuclear power program would:[87]

- be responsible for 1.8 billion tonnes of low-level radioactive tailings waste (assuming the uranium came from Olympic Dam).
- be responsible for 430,000 tonnes of depleted uranium waste.
- produce 75,000 tonnes of high-level nuclear waste (approx. 25,000 cubic metres).
- produce 750,000 cubic metres of low-level waste and intermediate-level waste.
- produce 750 tonnes of plutonium, enough for 75,000 nuclear weapons.

---

[85] Switkowski Review, 2006, Uranium Mining, Processing and Nuclear Energy Review, http://pandora.nla.gov.au/tep/66043

[86] Ziggy Switkowski, 3 Dec 2009, 'Australia must add a dash of nuclear ambition to its energy agenda', www.smh.com.au/opinion/politics/australia-must-add-a-dash-of-nuclear-ambition-to-its-energy-agenda-20091201-k3pq.html

[87] Based primarily on figures in the UMPNER report. For information on the calculations for uranium tailings waste, see: 'There's No Nuclear Power Without Waste', 3 Dec 2010, http://web.archive.org/web/20130117002550/http://newmatilda.com/2010/12/03/theres-no-nuclear-power-without-waste

A demonstrated ability to manage Australia's current radioactive waste challenges would be necessary to establish confidence that Australia could manage the streams of radioactive and nuclear wastes arising from a nuclear power program.

However, Australia's current radioactive waste challenges are either being mismanaged or not managed at all – for details see Section 5.1 in Appendix 4.

Nuclear Engineer Alan Parkinson summed up the problems in 2002: "The disposal of radioactive waste in Australia is ill-considered and irresponsible. Whether it is short-lived waste from Commonwealth facilities, long-lived plutonium waste from an atomic bomb test site on Aboriginal land, or reactor waste from Lucas Heights. The government applies double standards to suit its own agenda; there is no consistency, and little evidence of logic."[88]

Undermining the rights of Indigenous peoples

Relevant EPBC Act text: to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity… to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge... recognising and promoting indigenous peoples' role in, and knowledge of, the conservation and ecologically sustainable use of biodiversity

The EPBC Review Discussion Paper ask the following questions with regard to Indigenous Australians "How should the EPBC Act support the engagement of Indigenous Australians in environment and heritage management? How can we best engage with Indigenous Australians to best understand their needs and potential contributions? What mechanisms should be added to the Act to support the role of Indigenous Australians?"

It is inconceivable that nuclear power could be pursued in Australia without further disempowering Australia's First Nations. The current attempt to establish a radioactive waste facility in South Australia despite the clear opposition of Barngarla Traditional Owners highlights these problems and concerns.

The National Radioactive Waste Management Act (Cth) dispossesses and disempowers Traditional Owners in many respects. The nomination of a site for a radioactive waste facility/repository is valid even if Aboriginal owners were not consulted and did not give consent. The Act has sections which nullify State or Territory laws that protect archaeological or heritage values, including those which relate to Indigenous traditions. The Act curtails the application of Commonwealth laws including the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 and the Native Title Act 1993 in the important site-selection stage. Finally,

[88] Alan Parkinson, 2002, 'Double standards with radioactive waste', *Australasian Science*, https://nuclear.foe.org.au/flawed-clean-up-of-maralinga/

the Native Title Act 1993 is expressly overridden in relation to land acquisition for a radioactive waste facility/repository.[89]

The Federal Government is now pursuing amendments to the National Radioactive Waste Management Act which would exacerbate the problems outlined above and further reduced procedural fairness and options for judicial review.

The Act, the Amendment Bill, and the proposed nuclear waste facility in SA are all inconsistent with the UN Declaration on the Rights of Indigenous Peoples. The United Nations Committee on the Elimination of Racial Discrimination (CERD Committee) has said that Australia's historically "racially discriminatory land practices have endured as an acute impairment of the rights of Australia's indigenous communities". Imposing a nuclear waste facility on Barngarla Country would clearly exacerbate the problems identified by the CERD Committee.

In 2017, the CERD Committee expressed concern "about information that extractive and development projects are carried out on lands owned or traditionally owned by Indigenous Peoples without seeking their prior, free and informed consent" and recommended that Australia "ensure that the principle of free, prior and informed consent is incorporated into the Native Title Act 1993 and in other legislation as appropriate, and fully implemented in practice".

There is no consent from Barngarla Traditional Owners to the proposed nuclear waste facility, let alone free, prior and informed consent. The National Radioactive Waste Management Amendment Act systematically disempowers and dispossesses Traditional Owners, and the Amendment Bill worsens the situation and strips Traditional Owners of their legal review rights. Legal advice in a February 2020 report by the Parliamentary Joint Committee on Human Rights notes that the Bill "would enable native title to be extinguished, without the consent of the traditional owners", and it raises further concerns about the Bill's intention to permit the acquisition of land for an access route without any Parliamentary oversight or right of appeal.

The EPBC Review Committee is strongly encouraged to draw attention to the above-mentioned problems and to recommend that the principles of free, prior and informed consent become a mandatory operational principle within the EPBC Act along with a governance mechanism to operationalise this principle. While the comments above focus on radioactive waste management, there are also similar, disturbing patterns and problems in relation to uranium mining.[90] Enshrining principles and developing structures that support the operationalisation of

[89] https://nuclear.foe.org.au/nrwma/

[90] See for example Jillian K. Marsh and Jim Green, 2019, 'First nations rights and colonising practices by the nuclear industry: An Australian battleground for environmental justice', The Extractive Industries and Society, https://www.sciencedirect.com/science/article/pii/S2214790X18302491
See also https://nuclear.foe.org.au/racism

free, prior and informed consent in the EPBC Act would be a prudent way to improve the handling of both radioactive waste management proposals and the uranium mining industry.

Effective consultation with First Nation's people about regulatory reform is critical, other reform areas for consideration in consultation with communities may include the recognition of Indigenous Protected Areas as MNES, valuing Indigenous knowledge in assessments and decision making (while safeguarding communities and people) and providing support for communities to conduct independent environmental impact assessments.

Additional Reasons to Maintain Legal Prohibitions Against Nuclear Power

The following section considers the EPBC Acts ability to meet future challenges, it summarises a suite of reasons that make nuclear power a dangerous distraction from pursuing other energy options for Australia. These include catastrophic cost overruns, proliferation and terrorism, a lack of social license, excessive water requirements, climate change abatement and the perpetual failures of Generation IV reactor types and small modular reactors.

Catastrophic cost overruns

Laws banning nuclear power have saved Australia from the huge costs associated with failed and failing reactor projects that can be seen in Europe and North America. For example, the Westinghouse project in South Carolina was abandoned after the expenditure of at least US$9 billion (A$15.2 billion). The Westinghouse / South Carolina fiasco could so easily have been replicated in Australia if not for the current prudent and popular legal bans.

There are many other examples of shocking nuclear costs and cost overruns, including:

- The estimated cost of Argentina's SMR has increased 22-fold above early estimates.[91]
- The cost estimate for the Vogtle project in US state of Georgia (two AP1000 reactors) has doubled to more than A$20 billion (US$13.5 billion) per reactor and will increase further.[92] In 2006, Westinghouse said it could build an AP1000 reactor for as little as A$2.0 billion (US1.4 billion) - 10 times lower than the current estimate for Vogtle.[93]
- The estimated cost of about €12.4 billion (A$22.7 billion) for the only reactor under construction in France is 3.8 times greater than the original €3.3 billion estimate.[94]
- The estimated cost of about €11 billion (A$20.1 billion) for the only reactor under construction in Finland is 3.7 times greater than the original €3 billion estimate.[95]

[91] https://wiseinternational.org/nuclear-monitor/872-873/smr-cost-estimates-and-costs-smrs-under-construction
[92] https://www.wiseinternational.org/nuclear-monitor/867/vogtles-reprieve-snatching-defeat-jaws-defeat
[93] https://www.nytimes.com/2006/07/16/magazine/16nuclear.html
[94] https://www.thelocal.fr/20191028/french-nuclear-power-plant-is-seven-years-late-and-costs-have-tripled
[95] https://www.worldnuclearreport.org/World-Nuclear-Industry-Status-Report-2018-HTML.html#lien21

- The estimated combined cost of the two EPR reactors under construction in the UK, including finance costs, is A$53.5 billion (£26.7 billion - the EU's 2014 estimate of £24.5 billion[96] plus a £2.2 billion increase announced in July 2017[97]). The UK National Audit Office estimates that taxpayer subsidies for the project will amount to A$60.4 billion (£30 billion).[98] In the mid-2000s, the estimated construction cost for one EPR reactor in the UK was A$4 billion (£2 billion), almost seven times lower than the current estimate.[99]

The nuclear industry is in crisis – as industry insiders and lobbyists freely acknowledge. A growing number of countries are phasing out nuclear power including Germany, Switzerland, Spain, Belgium, Taiwan and South Korea.

Laws banning nuclear power should be retained because nuclear power could not possibly pass any reasonable economic test. Nuclear power clearly fails the two economic tests set by Prime Minister Scott Morrison. Firstly, nuclear power could not possibly be introduced or maintained without huge taxpayer subsidies. Secondly, nuclear power would undoubtedly result in higher electricity prices.

Proliferation and terrorism

Nuclear power plants have been described as pre-deployed terrorist targets and pose a major security threat. This in turn would likely see an increase in policing and security operations and costs and a commensurate impact on civil liberties and public access to information.

Other nations in our region may view Australian nuclear aspirations with suspicion and concern given that many aspects of the technology and knowledge-base are the same as those required for nuclear weapons.

Former US Vice President Al Gore summarised the proliferation problem: "For eight years in the White House, every weapons-proliferation problem we dealt with was connected to a civilian reactor program. And if we ever got to the point where we wanted to use nuclear reactors to back out a lot of coal ... then we'd have to put them in so many places we'd run that proliferation risk right off the reasonability scale."

---

[96] http://europa.eu/rapid/press-release_IP-14-1093_en.htm
[97] https://www.theguardian.com/uk-news/2017/jul/03/hinkley-point-c-is-22bn-over-budget-and-a-year-behind-schedule-edf-admits
[98] https://www.theguardian.com/uk-news/2016/jul/13/hinkley-point-c-cost-30bn-top-up-payments-nao-report
[99] https://energypost.eu/saga-hinkley-point-c-europes-key-nuclear-decision/

Lack of social license

Laws banning nuclear power should be retained because there is no social license to introduce nuclear power to Australia

As discussed in Section 8 of Appendix 4:

- Opinion polls find that Australians are overwhelmingly opposed to a nuclear power reactor being built in their local vicinity (10–28% support, 55–73% opposition).
- Opinion polls find that support for renewable energy sources far exceeds support for nuclear power (for example a 2015 IPSOS poll found 72–87% support for solar and wind power but just 26% support for nuclear power).

As the Clean Energy Council noted in its submission to the 2019 federal nuclear inquiry, it would require "a minor miracle" to win community support for nuclear power in Australia.

The lack of social license is demonstrated further in submissions to the 2019 federal nuclear inquiry. One submission was signed by 61 groups including the ACTU and other unions, the Uniting Church and other faith groups, the Public Health Association of Australia and other health groups, the Australian Conservation Foundation and numerous other national, state and local environment groups, and Indigenous groups, collectively representing millions of Australians. This shows unwavering opposition to nuclear power and makes a call for immediate and urgent action on climate change (see Appendix 5).

The pursuit of nuclear power would also require bipartisan political consensus at state and federal levels for several decades. Currently, there is a bipartisan consensus at the federal level to retain the legal ban. Some within the Coalition parties are lobbying for nuclear power but their push has been rejected by, amongst others, the federal Liberal Party leadership (which has committed to retaining the legal prohibitions), the Queensland Liberal-National Party, the SA Liberal government, and the Tasmanian Liberal government.[100]

Dr Ziggy Switkowski said in evidence to the federal inquiry: “As I'm sure the committee is aware, currently there is no bipartisan support for a nuclear energy strategy … There is no social licence at this time.” Across the political spectrum there is broad opposition to nuclear power.

Water consumption

2013 amendments to the EPBC Act made water resources a MNES, in relation to coal seam gas and large coal mining development. Water depletion and contamination are serious problems

[100] See the submissions to the federal nuclear inquiry by the Queensland Liberal-National Party, the SA Liberal government, and the Tasmanian Liberal government.

at various stages of the nuclear fuel cycle.[101] The two operating uranium mines in Australia illustrate various problems.[102] The Olympic Dam mine's consumption of about 40 million litres of Great Artesian Basin water daily has adversely affected precious Mound Springs. At the Beverley / Four Mile mine, also in South Australia, wastewater contaminated with radionuclides, heavy metals and other pollutants is routinely disposed of to groundwater.

Nuclear power is extraordinarily thirsty. A single nuclear power reactor consumes 35–65 million litres of water *per day* for cooling.[103]

Water consumption of different energy sources (litres / kWh):

- Nuclear 2.5
- Coal 1.9
- Combined Cycle Gas 0.95
- Solar PV 0.11
- Wind 0.004

Multiple studies, some dating back to 1970s (Cairns 1971; Kendrick 1977), indicate that during operation of nuclear power reactors there are adverse impacts on aquatic and marine species and on aquatic and marine ecosystems.[104] [105] [106] A significant aspect of the operating of nuclear reactors is the cooling system, in some reactors this involves releasing warm water into water systems, this is known as thermal water pollution which changes the ecosystem integrity and function in the receiving environment. When reactors shut for refuelling this can also cause a dramatic and quick cooling in the receiving environment which is reported to cause fatalities in the aquatic fauna.

Climate change abatement

Expanding nuclear power is impractical as a short-term response to climate change. An analysis by Australian economist Prof. John Quiggin concludes that it would be "virtually impossible" to

---

[101] WISE/NIRS Nuclear Monitor #770, 24 October 2013, Water & The Nuclear Fuel Cycle, http://www.wiseinternational.org/node/4031

[102] See Section 10 in the Joint NGO submission to the NSW Inquiry into the Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2019, https://www.parliament.nsw.gov.au/lcdocs/submissions/66348/0064%20Australian%20Conservation%20Foundation,%20Nature%20Conservation%20Council%20and%20%20Friends%20of%20the%20Earth%20Australia.pdf

[103] https://www.wiseinternational.org/nuclear-monitor/770/how-much-water-does-nuclear-power-plant-consume

[104] Teixeira, T.P; Neves, L.M; and Araújo, F.G. 2009. Effects of a Nuclear Power Plant Thermal Discharge on Habitat Complexity and Fish Community Structure in Ilha Grande Bay, Brazil, Mar. Environ. Res. 68, 188 (2009).

[105] Eaton, J.G; Scheller, R.M 1996. Effects of Climate Warming on Fish Thermal Habitat in Streams of the United States. Limnol. Oceanogr. 41, 1109 (1996).

[106] Jebakumar, J.P.P; Nandhagopal, G; and Babu, B.R. 2018. Impact of Coastal Power Plant Cooling System on Planktonic Diversity of a Polluted Creek System, Mar. Pollut. Bull. 133, 378 (2018)

get a nuclear power reactor operating in Australia before 2040.[107] More time would elapse before nuclear power has generated as much as energy as was expended in the construction of the reactor: a University of Sydney report concluded that the energy payback time for nuclear reactors is 6.5–7 years.[108] Taking into account planning and approvals, construction, and the energy payback time, it would be a quarter of a century or more before nuclear power could even begin to reduce greenhouse emissions in Australia (and then only assuming that nuclear power displaced fossil fuels). Clearly that is an impractical timeframe given the need to urgently reduce greenhouse emissions.

Laws banning nuclear power should be retained because the introduction of nuclear power would delay and undermine the development of effective, economic energy and climate policies based on renewable energy sources and energy efficiency. A December 2019 report by CSIRO and the Australian Energy Market Operator found that construction costs for nuclear reactors are 2–8 times higher than costs for wind or solar.[109] The CSIRO/AEMO report also fund that levelised costs for nuclear are 2–3 times greater per unit of energy produced compared to wind or solar including either 2 hours of battery storage or 6 hours of pumped hydro energy storage.

Similarly, Peter Farley, a member of the Institution of Engineers, recently compared nuclear power and renewables and concluded that Australia can get renewables and backup power for one-third of the cost of nuclear power, in one-third of the time.[110]

Internationally, the latest Lazard report on levelised costs of electricity finds that nuclear (US$118–192 per megawatt-hour) is more uncompetitive than ever compared to utility-scale solar ($32–42/MWh) and onshore wind ($28–54/MWh).[111]

With the relatively short deployment times for renewable energy projects, and their drastic cost reductions over the past decade, there is clearly a viable, affordable low-carbon energy future for Australia which does not include nuclear power. A large body of academic and scientific literature attests to those points.[112]

---

[107] https://johnquiggin.com/2018/08/13/coal-and-the-nuclear-lobby/
[108] http://pandora.nla.gov.au/pan/66043/20061201-0000/www.dpmc.gov.au/umpner/docs/commissioned/ISA_report.pdf
[109] https://aemo.com.au/-/media/files/electricity/nem/planning_and_forecasting/inputs-assumptions-methodologies/2019/csiro-gencost2019-20_draftforreview.pdf
[110] https://www.openforum.com.au/nuclear-cost-and-water-consumption-the-elephants-in-the-control-room/
[111] Lazard, Nov. 2019, 'Lazard's Levelized Cost of Energy Analysis – Version 13.0', https://www.lazard.com/media/451086/lazards-levelized-cost-of-energy-version-130-vf.pdf
[112] See for example the literature cited in: https://www.parliament.nsw.gov.au/lcdocs/other/12959/Friends%20of%20the%20Earth%20-%20Supplementary%20Submission%20NSW%20-%20QoN%20-%20Nov%202019.pdf

Nuclear power plants are vulnerable to threats which are being exacerbated by climate change. These include dwindling and warming water sources, sea-level rise, storm damage, drought, and jelly-fish swarms. Nuclear engineer David Lochbaum states. "I've heard many nuclear proponents say that nuclear power is part of the solution to global warming. It needs to be reversed: You need to solve global warming for nuclear plants to survive."[113]

In January 2019, the Climate Council, comprising of Australia's leading climate scientists and other policy experts, issued a policy statement concluding that nuclear power plants "are not appropriate for Australia – and probably never will be".[114]

By contrast, the *REN21 Renewables 2015: Global Status Report* states that renewable energy systems "have unique qualities that make them suitable both for reinforcing the resilience of the wider energy infrastructure and for ensuring the provision of energy services under changing climatic conditions."

Dystopian Generation IV reactor types and small modular reactors

Generation IV reactor types and small modular reactors (SMRs) are discussed in detail in Appendix 4 (Sections 2, 3, 5.5, Appendices 2–6).

The Commonwealth Inquiry report titled “Not without your approval: a way forward for nuclear technology in Australia” recommends retaining a ban on Generation I, Generation II and Generation III reactors but removing the ban on Generation III+ and Generation IV reactors. Excluding Generation III+ and Generation IV reactors from a prohibition in the Act would require careful definition of those technologies, this is particularly challenging in that Generation III+ and Generation IV reactors are general terms that are used to incorporate a number of types of reactors. Proponents may also seek to blur the definitions and seek to have a conventional reactor, best classified as Generation II or III, classed as a Generation III+.

Nuclear proponents routinely claim that 'advanced' (Generation III+/IV reactors and SMRs) would resolve some or all of the problems associated with conventional nuclear power. Those claims do not stand up to scrutiny. Indeed, the real-world experiences with these reactor types is disturbing and dystopian. As discussed in Appendix 4 and in a 2019 article:[115]

- Russia and China are both pursuing SMR projects in support of efforts to mine fossil fuels in the Arctic, the South China Sea and elsewhere.

---

[113] https://www.usnews.com/news/national-news/articles/2019-07-01/nuclear-power-once-seen-as-impervious-to-climate-change-threatened-by-heat-waves

[114] Climate Council, 2019, 'Nuclear Power Stations are Not Appropriate for Australia – and Probably Never Will Be', https://www.climatecouncil.org.au/nuclear-power-stations-are-not-appropriate-for-australia-and-probably-never-will-be/

[115] Nuclear Monitor #881, 9 Dec 2019, 'The 'advanced' nuclear power sector is dystopian', https://wiseinternational.org/nuclear-monitor/881/advanced-nuclear-power-sector-dystopian

- Russia and China are both pursuing SMR projects to advance their agendas of establishing military and economic control of regions such as the Northern Sea Route (Russia) and the Paracel and Spratly Islands (China).
- Generation IV reactor projects have clearly worsened, not improved, nuclear waste management issues and problems.
- SMRs will likely produce more, not less, nuclear waste per unit of energy produced compared to conventional reactors. The 2015/16 South Australian Nuclear Fuel Cycle Royal Commission said in its Final Report that "SMRs have lower thermal efficiency than large reactors, which generally translates to higher fuel consumption and spent fuel volumes over the life of a reactor."[116]
- Generation IV concepts and SMRs are likely to worsen, not improve, weapons proliferation and security risks and problems.

Conclusion

Nuclear Power

Nuclear power is inherently dangerous and inconsistent with the objects and principles of the EPBC Act 1999. Nuclear power lacks bipartisan support and social license, is prohibitively expensive and would require significant government resources and upskilling to develop the necessary legislative changes and regulatory framework. It is prudent to retain the prohibition on nuclear power in s140a of the EPBC Act and this is consistent with state bans against nuclear power. The prohibition is also consistent with bans against nuclear power in Italy and Lithuania who no longer have nuclear reactors and Belgium, Germany, Spain and Switzerland who are phasing out nuclear power.

Uranium

There is a disparity between the objectives of the EPBC Act and the environmental and wider outcomes at uranium mines across Australia. The uranium sector has been deficient in relation to protecting species at risk of extinction, containing wastes and chemicals, protecting workers from exposure to radiation and meeting expectations around transparency and accountability and rehabilitation.

Successive inquiries into the uranium sector reveal a pattern of underperformance, regulatory non-compliance, license breaches, spills and accidents. There are calls from the BAPE inquiry and the UN Secretary General for investigations and studies into the environmental and health impacts of uranium mining which have yet to be conducted. Considering the precautionary principle and the mounting evidence of environmental harm at uranium mines in Australia we

[116] http://yoursay.sa.gov.au/system/NFCRC_Final_Report_Web.pdf

call for the Review Committee to consider the prohibition of uranium mining through the EPBC Act 1999 and recommend that a dedicated inquiry into the environmental and health impacts of uranium mining be initiated.

Bilateral agreements, as demonstrated in the Yeelirrie and Olympic Dam case studies, have failed to uphold the objects and principles of environmental laws, by deferring responsibilities to the states and territories where there are clear deficiencies in state and territory processes. There is an absence of community involvement and transparency in federal process which have been delegated to the States and Territories through EPBC bilateral agreements. There is too often an opaque process in which companies and governments negotiate conditions behind closed doors. As we have seen in the Yeelirrie case study this led to substandard conditions which allow proponents to proceed with projects where the overwhelming evidence suggests the project will cause extinction or significant damage.

There is disproportionate influence from private interests in decision making which increasingly preferences political and corporate imperatives over science, evidence and the public interest. Processes for decision making should be evidenced based, transparent and should exclude political lobbying. They need to have provisions in place to identify and prevent political donations made by proponents to either decision makers party or a third-party fundraising organisation for that party, ahead of and following a decision.

There is an absence of process to use incoming information to identify species at risk of extinction and appropriately describe those species and ensure their protection. The administrative focus on establishing offsets or finding a way to balance economic interests with environmental interests demonstrates a willingness to trade environmental values on some presumption they can be bought back. We have seen tipping points in our environment that show the balance that needs to be struck is on an ecosystem level. Disrupting the balance in ecosystems have far reaching consequences and this is not reflected in the administration of the Act. The Yeelirrie case study shows this clearly.

For our environmental laws to be effective they should focus on outcomes, not prescriptive measures that may or may not achieve an outcome and reduce the accountability for companies who fail to meet the objective. Outcome focused regulation is reliant on clear trigger levels and criteria as well as strong monitoring and reporting requirements and should be based on high levels of evidence and open to public scrutiny and independent review. If a proponent cannot prove a project will not cause irreversible harm the project should be rejected as being inconsistent with the objects of the Act.

Retaining the ‘mining and milling of uranium ore’ as a definition of a nuclear action is imperative as is the inclusion of nuclear actions as a Matter of National Environmental Significance. Uranium exploration and mining poses unacceptable risks to the environment and

public health and has a history of spills, leaks and license breaches. The unique risks are and should continue to be reflected in legislation by making a distinction between uranium and other minerals. Removing the 'uranium trigger' from the definition of nuclear actions would remove important federal oversight for an industry with unique risks and implications.

Thank you for the opportunity to comment on the EPBC Act 1999. For any further comment or questions please contact one of the authors

Dave Sweeney: dave.sweeney@acf.org.au
Australian Conservation Foundation, Nuclear Free Campaigner

Jim Green: jim.green@foe.org.au
Friends of the Earth Australia, Nuclear Free Campaigner

Mia Pepper: mia.pepper@protonmail.com
Mineral Policy Institute, Campaigner

Glossary

ANCOLD – Australian National Committee on Large Dams
ARPANSA - Australian Radiation Protection and Nuclear Safety Agency
ARPANS Act - Australian Radiation Protection and Nuclear Safety (ARPANS) Act 1998
BAPE - Bureau d'audiences publiques sur l'environnement
Commonwealth Inquiry – House of Representatives Standing Committee on the Environment and Energy Inquiry into the Pre-requisites for Nuclear Power
EPBC Act – Environmental Protection and Biodiversity Conservation Act 1999
DAWE - Department of Agriculture, Water and Environment
FoI – Freedom of Information
IAEA - International Atomic Energy Agency
NSW Inquiry - NSW Legislative Council inquiry into the Uranium Mining and Nuclear Facilities (Prohibitions) Repeal Bill 2019
Victorian Inquiry – Victorian Legislative Council Inquiry into Nuclear Prohibition
MNES - Matter of National Environmental Significance
SMRs - Small Modular Reactors
TSSC - Threatened Species Scientific Committee