Friends of the Earth Adelaide
CCSA, 111 Franklin St, Adelaide SA 5000.
www.adelaide.foe.org.au | facebook.com/foe.adelaide | e: adelaide.office@foe.org.au

SUBMISSION IN RESPONSE TO

THE ROYAL COMMISSION INTO THE NUCLEAR FUEL CYCLE

ISSUES PAPER 1

"EXPLORATION, EXTRACTION AND MILLING"

22 July 2015

INTRODUCTION

Friends of the Earth Adelaide do not support the expansion of uranium mining in Australia on broad social, health, safety, environmental and economic grounds. As current uranium mining contributes worldwide to nuclear weapons proliferation and terrorism risks, any increase in mining would necessarily increase these risks.

Friends of the Earth Adelaide call upon the Royal Commission to use its powers to investigate current problems, accidents, safety, environmental damage and non-compliance to standards in the uranium mining industry so as to inform its investigation into the implications of the potential expansion of this industry. In particular, we call upon the Royal Commission to address the questions asked in our Open Letter in Appendix 1.

Friends of the Earth hold the view that rather than expanding uranium exploration, extraction and milling, these activities should cease completely, as the risks and impacts of this industry far outweigh its benefits, and would continue to do so in the event of the industry's expansion. Friends of the Earth Adelaide further question the partiality of Terms of Reference that only consider the expansion of extraction, mining and milling, but do not allow for the consideration of the reduction of these activities.

This Submission is in response to sections 1.8 through 1.13 of Issues Paper 1: "Exploration, Extraction and Milling":

1.8 (Health and safety risks)
1.9 (Landholders and native title holders)
1.10 (Environmental risks)
1.11 (Environmental lessons)
1.12 (Potential economic benefits)

1.8 Bearing in mind existing arrangements, would an expansion in extraction activities give rise to new or different risks for the health and safety of workers and the community? If so, what are those risks and what needs to be done to ensure they do not exceed safe levels?

Workers are currently exposed to uranium and its associated hazardous radioactive and toxic health effects in both mechanical and acid leaching extraction processes and during milling. These hazards are currently not appropriately managed at existing uranium mines in Australia, so safety risks to workers would increase were there to be an increase in extraction activities. Friends of the Earth Adelaide invite the Royal Commission to investigate why the uranium mining industry does not keep lifetime exposure and medical records of its workers, and use this information to provide information and lessons to be learned when considering the expansion of the industry. Refer to the Open Letter in Appendix 1.

Uranium mine workers are often told that the radiation doses they receive are below or close to background levels and below permissible limits — the implication being that the radiation doses are 'safe'. However, the doses received at the mine site are additional to background radiation so workers are at additional risk of fatal cancers.[1]

Any increase in mining will also result in an increased safety risk to communities living along transport routes in case of accident and the inability of local first responders to safely deal with the incident.

CANCER RISKS

International cancer and mortality data show there are statistically significant links between radiation and all solid tumours as a group, as well as for cancers of the stomach, colon, liver, lung, breast, ovary, bladder, thyroid, and for non-melanoma skin cancers and most types of leukaemia. There are safety risks related to radon gas and its decay products. It is well established in scientific literature that increased exposure to radon decay products increases lifetime lung cancer risk, based on various studies of the health of former uranium mine workers[2]. Another example is the study reported in The Lancet which provides strong evidence of positive associations between protracted low-dose radiation exposure and leukaemia[3].

PERMITTED RADIATION LEVELS

Over the years the permitted levels of radiation exposure for workers and the public have dropped dramatically as research, particularly from radiation biologists, indicates harmful effects still exist at much lower exposure levels. For workers, the permitted dose was set at 500 millisieverts per year in 1934, decreased to 150 mSv in 1950, further decreased to 50 mSv in 1956, and decreased again to 20 mSv (averaged over five years) in 1991. The limit for members of the public is just 1 mSv.[4] This is evidence that the health and safety risks of exposure to radiation are not fully understood.

SAFETY AT OLYMPIC DAM MINE (SA)

The Olympic Dam (Roxby Downs) mine in SA has produced a radioactive tailings dump of 100 million tonnes, growing at 10 million tonnes annually. Uranium mine tailings are still radioactive with some up to 200 times as radioactive as background level, and are classified as low level radioactive waste. These tailings require long term security management for a time frame of more than 10, 0000 years.

A BHP-Billiton worker has reported the fact that workers at Olympic Dam are being exposed to unsafe levels of radiation. BHP Billiton has been warned about the risks, but according to South Australian Upper House Greens MP Mark Parnell the company has failed to take action. Levels of polonium-210, the toxic by-product of uranium production, have breached health standards.[5]

Documents produced by the BHP-Billiton worker show the company uses manipulated averages and distorted sampling to ensure the figures are below the maximum exposure levels set by government. The company manipulated the sampling by transferring workers to different areas when their exposure dose started escalating.[5]

Potential reasons for the exposure could include insufficient smelter ventilation, humans working in areas where robots should be used and airborne contaminated dust. Mr Parnell noted that *'Every time they've reviewed safe radiation exposure standards, they've been lowered. There are plenty of people who'll say there's no safe exposure level to radioactive material."*[5]

BHP-Billiton has a history of safety risks due to radiation leaks. Between 2003 and 2012 BHP-Billiton reported 31 radiation leaks at Olympic Dam of more than 3000 cubic metres of material. In 1994, Olympic Dam mine owner WMC reported that up to 5 million cubic metres of radioactive liquid had leaked from its Tailings Retention System at Olympic Dam. The leak had been happening for at least 2 years but was only

reported in January 1994. In July 2013 the SA Environmental Protection Agency reported that radiation safety plans for Olympic Dam were found to be more than 15 years out of date, and did not cover major changes that had occurred in operations over that time.[6]

Friends of the Earth Adelaide invite the Royal Commissioner to fully investigate why there was there a delay in advising the government of breaches of the Tailings Dam at Olympic Dam, and investigate what steps have been taken to ensure such delays are not reproduced. This will inform the Royal Commission on lessons to be learned for future planned activities. Please refer to the Open Letter in Appendix 1.

SAFETY AT RANGER MINE (NT)

The Ranger mine in the NT has generated over 30 million tonnes of tailings waste. In 2005, ERA was found guilty and fined $150,000 in relation to a contamination incident in March 2004 when approximately 150 people were exposed to drinking water containing uranium levels 400 times greater than the maximum Australian safety standard. Twenty-eight mine workers suffered adverse health effects including vomiting and skin irritation as a result of the exposure. A further charge related to contaminated vehicles leaving the mine site in breach of decontamination and clearance procedures – causing a serious and preventable radiation exposure to a local mechanic and his children.[1]

SAFETY ALONG URANIUM OXIDE TRANSPORT ROUTES

There are unacceptable risks to the health and safety of communities along the transport route should an accident during transport of the uranium oxide product occur. For example, in October 2014 there was an accident with the transport of uranium oxide at Outer Harbor in SA. The shipping container containing drums of uranium oxide slipped and emergency services and the Environmental Protection Agency were called to attend. As there were no safe handling facilities at Outer Harbor, the shipping container had to be taken back to Olympic Dam to be opened and assessed.[7] This highlights the fact that emergency services personnel are not equipped to deal with a spillage of radioactive material, especially if it occurs in a populated area. This is a danger to both emergency services personnel and residents.

WEAPONS PROLIFERATION

Nuclear weapons proliferation would not be possible without uranium mining. An increase in mining therefore increases the risk of weapons proliferation. Selling uranium to nuclear armed countries even for peaceful purposes such as power generation can free up that country's other supplies of uranium for nuclear weapons production. Australia has no control over what happens to our uranium once the customer country has taken delivery of it, so we have no way of verifying peaceful use. The risk of weapons proliferation increases when Australia sells uranium to countries who have not signed the Nuclear Non Proliferation Treaty, as is currently being implemented for India.

TERRORISM

There are countries and terrorist groups who resort to illegal activities to obtain nuclear material for violent purposes. The International Atomic Energy Agency (IAEA) has received information that shows *"a persistent problem with the illicit trafficking in nuclear and other radioactive materials, thefts, losses and other unauthorized activities".*[8]

The International Atomic Energy Agency Incident and Trafficking Database notes there have been 1,266 incidents reported by 99 countries over the last 12 years, including 18 incidents involving Highly Enriched Uranium or plutonium trafficking.[9]

1.9 Are the existing arrangements for addressing the interaction between the interests of exploration and extraction activities and other groups with interests such as landowners and native title holders suitable to manage an expansion in exploration or extraction activities? Why? If they are not suitable, what needs to be done?

Many landowners and Native Title holders are unhappy with existing uranium mining, and they oppose further extraction of uranium. A significant percentage of the general public are also opposed to uranium mining. For example, a June 2006 Newspoll of 1200 Australians found that 66% of Australians (including 78% of ALP voters and 53% of Coalition voters) oppose any new uranium mines.[1]

The Australian people have made their opposition to mining and enrichment based on sound scientific principles and evidence publicly available from reputable sources regarding risks to health, safety and the environment.

TRADITIONAL OWNERS

The wishes of Aboriginal Traditional Owners are frequently ignored when it comes to uranium mining as summarised in this quotation: *"Uranium mining company's interaction with Traditional Owners in Australia typically involves some or all of the following tactics: ignoring the concerns of Traditional Owners insofar as the legal and political circumstances permit; divide-and-rule tactics; bribery; humbugging Traditional Owners – exerting persistent, unwanted pressure until the mining company gets what it wants; providing Traditional Owners with false or misleading information; and threats, most commonly legal threats."*[1]

TRADITIONAL OWNERS - BEVERLY MINE SA

The Beverley uranium mine in SA was imposed on the Adnyamathanha people in north-east SA in the late 1990s by Heathgate Resources, owned by General Atomics. The company negotiated with a small number of Native Title claimants, but did not recognise the will of the community as a whole. According to Dr Jim Green, Friends of the Earth Australia Nuclear Campaigner: *"This divide-and-rule strategy, coupled with the joint might of industry and government, resulted in inadequate and selective consultation with the Adnyamathanha people."*[1]

Further evidence of the destructive tactics is found in the PhD thesis of Dr Jillian Marsh. *"The ideology behind 'impact assessment' and land use procedures within Australia remains dominated by a colonial framework committed to prioritising commercial perceptions of what is valuable based on national and global business related interests. This ideology fails to accommodate Indigenous cultural heritage values and denies Indigenous peoples' human rights. Findings reveal a disturbing scenario of inequitable engagement that unequivocally favoured miners' rights and brutally disempowered Adnyamathanha, a pattern consistent with global trends."*[10] More direct detailed information and evidence from the lived experience of the Adnyamathanha people including direct quotations is found within the thesis.

TRADITIONAL OWNERS – SA

Aboriginal people from 11 northern SA groups joined together in May 2015 at Port Augusta in South Australia and issued the following statement opposing the expansion of the nuclear industry (Appendix 2).

Statement from a community meeting held in Port, Augusta, on Saturday 16 May 2015 to discuss The Royal Commission Into The Nuclear Fuel Cycle

South Australian Traditional Owners say NO!

We oppose plans for uranium mining, nuclear reactors and nuclear waste dumps on our land.

We call on the SA Royal Commission to recommend against any uranium mining and nuclear projects on our lands.

We call on the Australian population to support us in our campaign to prevent dirty and dangerous nuclear projects being imposed on our lands and our lives and future generations.

Endorsed by members from the following groups, present at the Port Augusta meeting: Kokatha, Kokatha--Mirning, Arabunna, Adnyamathanha, Yankunytjatjara-Pitjanjatjara Antikirinya--Yunkunytjatjara, Kuyani, Aranda, Western Aranda Dieri, Larrakia, and Wiradjuri.

The meeting was also attended by non-Aboriginal people from Adelaide, Ceduna, Port Pirie, Port Augusta, Peterborough, Alice Springs and Melbourne".

TRADITIONAL OWNERS - JABILUKA MINE NT

Mining Company ERA and the Howard federal government unsuccessfully attempted to override the opposition of the Mirarr Traditional Owners to the Jabiluka uranium mine in the NT.[1]The Jabiluka mine site has been rehabilitated and the Mirarr have a veto over any future development of the mine. ERA still hopes to mine Jabiluka at some stage in the future, and it still operates the Ranger uranium mine nearby.

TRADITIONAL OWNERS – RANGER MINE NT

Jabiru traditional Owners warn they will not support mining after the Ranger mine's lease ends in 2021.[11]

TRADITIONAL OWNERS – WA

The elders of the Martu people in Western Australia's Pilbara region are opposed to the proposed Kintyre uranium mine. Martu man Curtis Taylor said *"Forever that uranium belongs to that place, underground. But it's poison, when you dig it up - when it gets exposed."*[12]

TRADITIONAL OWNERS – THE ROXBY DOWNS INDENTURE ACT

The Olympic Dam mine operates under the *Roxby Downs (Indenture Ratification) Act 1982,* which provides for wide-ranging exemptions from several South Australian laws, including the *Environmental Protection Act (1993), Freedom of Information Act (1991)*, the *Natural Resources Management Act (2004*), and the *Radiation Protection and Control Act (1982).* This contract between BHP Billiton and the South Australian Government over-rides key legislation in South Australia with the terms set out in the Indenture Agreement. These legal privileges have allowed the Olympic Dam mine to operate without the same level of scrutiny and legal accountability as other corporations operating in the state.

Subsections 7(1) and 7(2) of the Indenture Act highlight the sweeping nature of these legal privileges:

> *"(1) The law of the State is so far modified as is necessary to give full effect to the Indenture and the provisions of any law of the State shall accordingly be construed subject to the modifications that take effect under this Act.*
>
> *(2) Without limiting the generality of subsection (1), in the case of any inconsistency between the provisions of any Act or law and of the Indenture, the provisions of the Indenture shall prevail ..."* [13]

The effect of the Indenture Act is that it allows the Olympic Dam mine to operate shrouded in secrecy and with exemptions from key laws designed to regulate the environmental and social practices of exactly these types of developments. This is an untenable regulatory arrangement, particularly given that uranium mines pose the greatest environmental risk of all industrial projects, in that where environmental harm occurs, the effects may last tens of thousands of years. This consideration makes legal accountability and transparency even more important.

This existing legal and regulatory arrangement is relevant to the expansion of exploration or extraction activities because:

1. It provides a dangerous legal precedent for the regulation of uranium mines in South Australia.
2. It applies to prospective activities at Olympic Dam and the surrounding area.

The existence of the Indenture Act suggests the possibility that other prospective activities in South Australia will be regulated in such a way, and creates the reasonable expectation by other corporations seeking to establish activities in South Australia that they may do so under similar arrangements that circumvent state law.

The *Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011* extends the Indenture Act (with some modifications) to future mining developments at Olympic Dam. The Amendment Act came into operation in December 2011 and will commence when BHP Billiton gives "project notice," a formal commitment to a project expanding its current activities. In 2012 the sunset clause for the time period which BHP Billiton has to trigger the amended Indenture was extended by the state government to October 2016.[14]

It is thus already the law in the state, provided "project notice" is given prior to the October 2016 deadline. It is not required that the "project notice" triggering the commencement of the *Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011* be the original Olympic Dam expansion for which an Environmental Impact Statement (EIS)has been done, and which has been shelved by BHP Billiton. The scope of the amended Indenture extends far beyond the existing Environmental Impact Statement (EIS) and the original project approval. Although a further EIS may be required, the Indenture Agreement is locked in for all future expansions in the Olympic Dam Area (provided formal commitment is made prior to October 2016), and pursuant to Clause 2, Schedule 1 of the amended Indenture, would further apply to any Special Mining Lease (SML) that may be granted within the "Additional Olympic Dam Area." The "Additional Olympic Dam Area" is defined in the Third Schedule of the amended Act as the Wirrda Well copper, gold and uranium prospect, 20km south of Olympic Dam.

Given that these legal arrangements apply to the largest of two operating uranium mines in the state, and that they will continue to apply to any expansion of activities at Olympic Dam, arguably the most likely candidate for expansion, the Royal Commission should undertake a thorough investigation into the consequences of the legal exemptions and privileges defined in the current and amended Indenture Acts for the South Australian economy, community, and environment. With reference to the Terms of Reference for this inquiry, an examination of the current Indenture Act would inform considerations of lessons learned from past practices with regards to the environment. For example, what are the

implications or consequences of the current exemptions to the Environmental Protection Act, and has there been adequate transparency regarding environmental impacts given Confidentiality Clause 35? If this transparency is lacking how can there be a comprehensive investigation into lessons learnt from past practices?

With regard to prospective activities and the suitability of existing arrangements, the Indenture Act is not a suitable legal and regulatory framework for current or future extraction activities at Olympic Dam, because it circumvents existing state laws designed to regulate such projects. Particularly concerning are the exemptions from the Radiation Protection and Control Act,[*] given the radioactive properties of uranium, and the total exemption from the Aboriginal Heritage Act 1988.

Friends of the Earth notes that existing arrangements have been seriously misrepresented in the Issues Paper: sites of Aboriginal significance at Olympic Dam and the surrounding Stuart Shelf area are not protected by the Aboriginal Heritage Act 1988, *and will not be protected by this Act in the event of any expansion.*

The Indenture Act recognises the *Aboriginal Heritage Act 1979*, a historical version of the Act that was effectively repealed by the *Aboriginal Heritage Act 1988*. Section 9(10) of the Indenture Act further states that any subsequent amendment or repeal of the 1979 Act shall not affect its application for the purposes of the Olympic Dam mine, without the consent of the Joint Venturers (now BHP Billiton). This exemption from the *Aboriginal Heritage Act 1988* has carried through to the amended Indenture Act, to apply to future developments at Olympic Dam.

Pursuant to sections 9(1) and 9(10) of the *Roxby Downs (Indenture Ratification) Act 1982*, the application of the *Aboriginal Heritage Act 1979* extends beyond the Olympic Dam project area to cover the much larger geographic area of the "Stuart Shelf Area." This covers most of the Stuart Shelf at some 15,000 square kilometres. This estimate was provided in the Legislative Council by Gail Gago, with the qualification that it is an estimation as the government did not have an exact figure[15]. The Stuart Shelf Area is defined in Schedule 6 and Map B of the *Roxby Downs (Indenture Ratification) Act 1982*. Sections 9(1) and 9(10) have been retained in the *Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011.*

Section 9 of the *Roxby Downs (Indenture Ratification) Act 1982* grants BHP Billiton exemptions from the *Aboriginal Heritage Act 1979.* In particular, section 9 exempts BHP Billiton from provisions in sections 21 and 26 of the *Aboriginal Heritage Act 1979*, which relate to protected sites and the removal of artefacts. Broadly, the significance of these exemptions is that lands designated by the Indenture Act may not be declared by the Minister to be protected areas in order to protect aboriginal heritage sites without the agreement of BHP Billiton, or unless the site has already been identified by the company in the Environmental Impact Statement (Section 9(5) and 9(6)). The company must also agree before a person may enter and excavate the land to remove an item of aboriginal heritage (Section 9(7)(c)). Thus Section 9 of the Indenture Act grants BHP Billiton discretion on these matters, whereas under the Aboriginal Heritage Act these matters are decided by the Minister. Similar exemptions to the 1979 Act have carried through to the amended Indenture Act.

There is a substantive legal difference here with regards to whether matters of Aboriginal Heritage are adjudicated by the Minister or by the company. The sections of the current and amended Indenture Act that give BHP Billiton the discretion to determine matters of Aboriginal Heritage, including which areas are to be protected, arguably constitute a conflict of interest, in so far as a corporate body with a commercial interest in the land is also left to make determinations on competing non-commercial values.

BHP Billiton has chosen which parts of which laws should apply to its operations, and has shown an

[*] The Schedule of the *Radiation Protection and Control Act 1982* outlines modifications to this Act as a result of the Indenture.

absolute disregard for Aboriginal Heritage issues, insisting on observing an outdated piece of legislation that was superseded 27 years ago. The state government has facilitated this situation. Indeed given the Royal Commissions dismissive response to Friends of the Earth Adelaide's observations regarding the inaccuracy of stating that the *Aboriginal Heritage Act 1988* is law throughout the state, it appears that this Royal Commission also does not highly regard Aboriginal Heritage matters.

The Aboriginal Heritage Act 1988 is not law at Olympic Dam and the surrounding Stuart Shelf Area of some 15, 000 square kilometres. It will not be law in this area in the event of any expansion.

The Royal Commission should critically examine why such a grand legal exception in the form of the Indenture Act has been made for one corporation operating in the state, and justify why this legal arrangement should continue to apply in the event of an expansion of extractive activities in the area covered by the Indenture Act. Where is the guarantee that future projects outside of this area will not be governed under such a framework, allowing uranium mines to operate under whatever laws their operators find most convenient?

With respect to the application of the Indenture Act to future extractive activities, Friends of the Earth Adelaide recommend that the *Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011* be repealed*,* so that any expansion of extractive activities in the Olympic Dam area is subject to the same laws that apply elsewhere in the state. This would also remove any doubt as to future regulatory arrangements elsewhere the state.

1.10 Would a future expansion of exploration, extraction and milling activities create new environmental risks or increase existing risks? If so, are current strategies for managing those new risks sufficient? If not, in what specific respects? How would any current approach need to changed or adapted?

An expansion of exploration, extraction and milling activities would inevitably increase existing environmental risks.

An increase in extraction would result in an increase in tailings with their associated health and safety risks as described in section 1.8. The radioactivity of mine tailings requires long-term management for a time frame of greater than 10,000 years.

A 2003 Senate Inquiry into the regulation of uranium mining in Australia reported *"a pattern of under-performance and non-compliance",* it identified *"many gaps in knowledge and found an absence of reliable data on which to measure the extent of contamination or its impact on the environment",* and it concluded that changes were necessary *"in order to protect the environment and its inhabitants from serious or irreversible damage."*[16]

OLYMPIC DAM – GENERAL

The Olympic Dam principal environmental impacts which require pro-active management for the current Olympic Dam project include:[17]

1. groundwater management of Great Artesian Basin borefields;
2. energy consumption and associated greenhouse gas emissions;
3. water consumption and quality; air emissions (dust, sulfur dioxide, fumes, etc);
4. radiation exposure issues; mine waste and tailings management;
5. biodiversity impacts;
6. transport logistics; and
7. hazardous waste management (eg. spent chemicals, process residues, contaminated equipment, etc).

Any expansion of mining at Olympic Dam will increase all the above environmental impacts. As described in section 1.8, the Olympic Dam mine has already experienced more than 32 safety and environmental risks due to leaks of radioactive material.

Additionally, the current framework for regulating the greater environmental impacts associated with an expansion of uranium mining are inadequate at Olympic Dam. Any expansion at Olympic Dam will be regulated by the *Roxby Downs (Indenture Ratification) (Amendment of Indenture) Amendment Act 2011,* which contains various exemptions to South Australian laws intended to regulate such projects. An example of the potential environmental consequences of the application of this Act to any expansion is Clause 11(18) Schedule 1, which holds that while the Indenture is in force, should there be any changes (made by the state) to environmental laws, regulations or standards, resulting in additional costs to the company, "the State shall, upon request of the company, ***give due consideration to ameliorating the adverse effects of such costs."*** [14]

Although "due consideration" may not amount to a legal obligation, the requirement to at least consider the amelioration of increasing costs related to environmental standards is present nonetheless. It is arguable that this obligation may act as a deterrent to the state government increasing environmental standards where the need may arise, particularly in the case of an expansion of considerable size which may therefore incur large additional costs for the state in the event of an increase in environmental standards. It further signals the expectation by BHP Billiton that the state government should subsidise any future costs associated with an increase in environmental standards. This is the law for any expansion of activities at and surrounding Olympic Dam announced before October 2016 for the lifetime of the project. This disdain for progressive environmental standards should not be rewarded by the government with a legal agreement that creates the option for future government subsidisation of the costs of increasing environmental standards. The Royal Commission should investigate the environmental implications of the numerous other exemptions from South Australian laws contained in the Indenture.

OLYMPIC DAM - GREAT ARTESIAN BASIN (WATER)

The current Olympic Dam mine at Roxby Downs in SA requires the extraction of approximately 35 million litres per day of the Great Artesian Basin water. This has already destroyed some Mound Springs sacred to the Arabunna people, and has impacted negatively on other springs. An expansion of the uranium mining industry in SA would further damage Mound Springs and impact severely on the amount of water in the Great Artesian Basin.[18]

With operations at Roxby already leading to the unexpected destruction of two mound springs, Friends of the Earth Adelaide invite the Royal Commission to investigate the technical competence of the industry regarding their hydrological model and justify whether they expect further destruction from their activities. The answer to these questions posed in our Open Letter in Appendix 1 will inform future planned activities and be part of lessons learned from current activities.

OLYMPIC DAM – DESALINATION (WATER)

An expansion of uranium mining at Roxby Downs would need an expansion of fresh water. Proposals have been made to build a desalination plant in the Spencer Gulf region of SA.[18] Desalination plants have highly concentrated salt water as a discharge and this would have extremely negative impacts on marine life and fishery operations.

BEVERLEY AND HONEYMOON MINES - IN SITU LEACHING

In-situ leaching at the Beverley and Honeymoon uranium mine in South Australia pollute the aquifer with heavy metals, acid and radionuclides as a routine aspect of its operations, and the mine operators are under no obligation to rehabilitate the aquifer.[19] This Royal Commission should use its powers to fully investigate this situation to inform plans for future expansion.

RADIUM HILL SA

The Radium Hill project in SA closed in early 1962, and the radioactive tailings were abandoned. Erosion problems resulted in the dispersion of radioactive material into the environment, which led to inadequate

rehabilitation work completed in 1982. This mainly consisted of covering the tailings dams with soil covers. By the 2000's radioactive tailings were again exposed and at risk of dispersion into the environment and this has not yet been addressed appropriately and in accordance with regulations and best practice.[20] The Royal Commission should use its powers to fully investigate this situation.

RANGER MINE NT

The Ranger Uranium Environmental Inquiry recommended that due to the uniqueness of radioactive tailings, after the mine closure they should be stored back below ground surface by using in-pit tailings management. Current authorisation requires that at the completion of mining and milling activities at Ranger, tailings are required be returned to mined out pits and rehabilitated in such a manner that "the tailings are physically isolated from the environment for at least 10,000 years.[21]

Above ground storage of radioactive tailings in arid environments requires permanent and active maintenance as well as high quality rehabilitation. The Ranger Inquiry recommended that the best place for waste is secure below ground management.[21]

Significant safety breaches have occurred at the Ranger mine:[21]

- 2013, December: Acid leach tanks collapse, spilling 1 million litres of toxic radioactive slurry.
- 2011, January-June: Mill shut down due to a big wet season that threatened to fill up the tailings dam.
- 2010, May: Senate estimates committee is told that a tailings dam may have leached millions of litres of radioactive water into the Kakadu wetlands.
- 2006, April: Cyclone Monica knocks out water management systems.
- 2004, March: Radioactive process water accidently connected to drinking water.
- 2002, February: Incorrect stockpiling of low grade ore leads to escape of contaminated water into the nearby Corridor Creek.

RANGER MINE NT - DISCHARGE WATER POLLUTION

There is a clearly detectable downstream change in water quality in the Magela Creek due to the Ranger Mine (magnesium and sulfate elevated by approximately 300%), which has measurable effects on some aquatic species. Research is still ongoing to fully evaluate the extent of these impacts. Many of the incidents at Ranger have had major impacts on water quality on the site itself, and monitoring is often inadequate to properly evaluate the true extent of impact. This shows the seriousness of the risks posed by uranium mining in World Heritage ecosystems.[22]

RADON EMISSIONS – ALL MINES

Radioactive emissions data, e.g. radon gas, at Beverley have never been published, with very few studies at Ranger and Olympic Dam. The claims of low emissions are dubious. The available evidence clearly suggests that radon releases increase overall due to mining, so an increase in mining will increase radon releases and subsequent risk to employees.[23]

MINE REHABILITATION

At the Ranger mine in the Northern Territory the mining-milling plan changes every year, so there are no well-established plans for rehabilitation. The current bond held by the Australian Government is only one-fifth of the estimated cost of full rehabilitation. The SA government holds a bond of only one-tenth of the estimated cost for Olympic Dam in SA, so it is unclear who will pay for rehabilitation when the mine closes. The Beverley and Honeymoon projects are not required to rehabilitate contaminated groundwater following mining, and both companies acknowledge the potential for groundwater migration at their sites. No former Australian uranium mine site has demonstrated successful and stable long-term closure of mine wastes of tailings, waste rock and/or low grade ores.[24]

ERA recently revealed that it has not allocated funds to remediate the Ranger mine, and was counting on approval of an extension, Ranger Deeps 3, to provide such funds. Friends of the Earth Adelaide invite the Royal Commission to investigate whether other existing mining operations have allocated sufficient funds for remediation of old mine sites as this will inform future planned activities.

TRANSPORT ROUTE

There are unacceptable environmental risks apply to communities along the transport route should an accident during transport of the uranium oxide product occur. Communities along the transport route of uranium oxide face unacceptable environmental risks should an accident occur. Once such accident has occurred already at Outer Harbor in SA in October 2014 (refer section 1.8).

1.11 Given current techniques of extraction and milling and their regulation, what are the relevant lessons for the contemporary management of environmental impacts that should be learned from past extraction and milling practices?

Current negative impacts of uranium mining on safety, health and the environment have not been addressed adequately as described in section 1.8 and 1.9. Mining companies have a history of accidents and leaks and do not report or address these in a timely manner to relevant standards.
More lessons will be found in documents the mining companies hold confidentially and the Royal Commission should use its coercive powers to force the miners to fully divulge and make public their health, safety and environmental data and reports.

In particular, the Royal Commission should use its coercive powers to release documents held under confidentiality clause 35 of the *Roxby Downs (Indenture Ratification) Act 1982*.[13] Under this clause, BHP Billiton has veto powers over the public release of information pertaining to activities and negotiations undertaken in relation to land covered by the Indenture, which includes the Olympic Dam mine. The Indenture thus over-rides the Freedom of Information Act, as pursuant to section 7, in the event of any inconsistency between a law of the state and the Indenture, the Indenture prevails. If a Freedom of Information application is lodged clause 35 provides that there must be consent of both parties (the state and BHP Billiton) for documents to be released, other than those allowed to be released under other terms of the Indenture. Whilst the company is allowed to operate in secrecy, there can be no independent, external assessment of the impacts and lessons to be drawn from the existing mine.

Friends of the Earth Adelaide invite the Royal Commissioner to fully investigate why Olympic Dam operations require the Indenture Act to over-ride Aboriginal Heritage, Environmental, Health and Safety and Freedom of Information legislation. These laws apply to all other ventures in the state. Why should uranium mining be exempt from such oversight? The answers to these questions in our Open Letter (Appendix 1) will inform any future expansion activities in SA.

Other lessons for contemporary management are that worker safety and health are not assured and radioactive wastes are stored with inadequate attention to health and safety. In addition to the environmental damage caused by mining practices, it is impossible to eliminate accidents which also result in environmental damage. An increase in mining activities will result in an increase of accident risk.

The Royal Commission should use its powers to investigate current problems, accidents, safety, environmental damage and non-compliance to standards in the uranium mining industry for a comprehensive assessment of contemporary management and the implications for the expansion of extraction and milling practices.

1.12 If an expansion of exploration or extraction activities were viable, what would the estimated benefit be expected to be directly in those sectors, in terms of economic activity? Can growth in employment relating to the extraction or milling of uranium (alone or in conjunction with other commodities being extracted) be estimated? Is there evidence increased extraction and milling would create additional capabilities and capacities in related sectors? What are those sectors? What would their value be?

COST/BENEFIT ANALYSIS

Currently there is low demand and low prices for uranium on the world market, so an increase in uranium mining and milling would not produce much economic gain for SA. Both exploration and mining receive government subsidies which further decrease any net economic gain, if there is any economic gain to the state and taxpayers after subsidies are subtracted from revenue. A recent report indicated approximately half of all revenue received by governments is handed straight back to the industry as subsidies.[25]

Radioactive waste from mining activities is not stored according to best practice, which is underground. This needs to be corrected immediately and the costs of correcting this need to borne by mining companies and not taxpayers.

No amount of financial gain could justify the risks involved with the expansion of uranium mining. The major social, safety, health, environmental, weapons proliferation and terrorism risks far outweigh any potential economic benefits.

CONCLUSION

Friends of the Earth Adelaide do not support the expansion of uranium mining in Australia on broad social, health, safety, environmental and economic grounds. Current uranium mining contributes worldwide to nuclear weapons proliferation and terrorism risks.

Friends of the Earth Adelaide calls upon the Royal Commission to use its powers to investigate current problems, accidents, safety, environmental damage and non-compliance to standards in the uranium mining industry so as to inform its investigation into the implications of the expansion of this industry.

Friends of the Earth Adelaide recommend that rather than expanding uranium exploration, extraction and milling, these activities should cease completely, and question the partiality of Terms of Reference that consider the expansion of these activities, but exclude consideration of their reduction. The risks and impacts of this industry far outweigh its benefits, and would continue to do so in the case of the industry's expansion.

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APPENDIX 1

An Open letter to the Royal Commissioner

The Royal Commission into the Nuclear Fuel Cycle asks whether we should expand the nuclear industry in South Australia. Before we can sensibly answer this question, we need to review the performance of the industry to date. I invite the Commissioner to use the considerable powers of the Royal Commission to investigate the following questions:

(A) Why does the industry not keep lifetime exposure records of its workers?

It's very hard to measure the health and safety of workers without reliable records. Why does the industry fail to take obvious precautions?

(B) Why does Olympic Dam require the Indenture Act to override Aboriginal Heritage, Environmental, Health and Safety and Freedom of Information legislation?

These laws apply to all other ventures in the state. Why should uranium mining be exempt from such oversight?

(C) Why was there a delay in advising the government of breaches of the Tailings Dam at Roxby?

What steps have been taken to ensure such delays are not reproduced?

(D) Last year, problems with a yellowcake shipment to Port Adelaide required the package to be returned to Roxby.

What was the nature of the problem? Why could it not be handled by Port Authorities? What assurances have we that transport of radioactive material will be safe?

(E) Operations at Roxby have lead to the unexpected destruction of two mound springs.

How confident is the industry of their hydrological model? Do they expect further destruction from their activities?

(F) ERA recently revealed that it has not allocated funds to remediate the Ranger mine, and was counting on approval of an extension, Ranger Deeps 3, to provide such funds.

Have other existing mining operations allocated sufficient funds for remediation of old mine sites?

Any considered analysis of the possible expansion of the industry would require detailed investigation of these issues. Does the Royal Commission plan to undertake investigation of some or all of these issues?

Sincerely Yours,

Roman Orszanski,

Convenor, Friends of the Earth Adelaide

APPENDIX 2

"Statement from a community meeting held in Port Augusta, on Saturday 16 May 2015 to discuss The Royal Commission Into The Nuclear Fuel Cycle