Energy Resources of Australia Ltd
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Submission to the Senate Environment, Communications, Information Technology and the Arts References Committee

Environmental Regulation of Uranium Mining

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Executive Summary

Energy Resources of Australia Limited (ERA) wishes to make the following primary points to the inquiry:

1. ERA's Ranger mine and Jabiluka site meet the most stringent and independently monitored environmental management procedures in the mining industry. ERA's environment management regime provides for independent review of its sites and procedures and its environmental reporting is open, transparent and accountable.

2. ERA is very conscious of the location of the Ranger mine and Jabiluka site bordering Kakadu National Park, a World Heritage area, and has adopted and implemented a sophisticated system of environmental management, which ensures that its operations do not impact adversely on Kakadu National Park, particularly water quality.

3. As ERA's water management system has been designed to ensure minimal deviation from natural background levels, the current reporting regime requires ERA to report any potentially significant deviation from average water quality levels or any other event, regardless of the cause or environmental significance. Those deviations have been and continue to be represented by some as "leaks" or "spills" into the Kakadu environment. This propensity to engender misrepresentation has caused distress to some local people and has resulted in a perception in some quarters that the Ranger mine does damage the Kakadu environment. This is not the case.

4. The fact that ERA's operations have not impacted adversely on the Kakadu environment has been substantiated by every independent review.

Key Points

Terms of Reference 1:

"the adequacy, effectiveness and performance of existing monitoring and reporting regimes and regulations."

A comprehensive and complex suite of environmental regulations has been established for the Ranger mine and Jabiluka project at both the Commonwealth and Northern Territory levels. ERA suggests the following criteria for carrying out the assessment of the adequacy, effectiveness and performance of these regulations.

(1) Has Kakadu National Park been protected from any adverse impact caused by uranium mining?

(2) Can the community be confident that Kakadu National Park will continue to be protected?

(3) Can the community be confident that the Ranger and Jabiluka sites can be successfully rehabilitated?

(4) Does the reporting regime provide adequate assurance to the communities in the vicinity of the operations and the public at large?

ERA contends that the answers to these questions are "yes", "yes", "yes" and "no".

Terms of Reference 2:

"the adequacy and effectiveness of those Commonwealth agencies responsible for the oversight and implementation of these regimes."

ERA believes that the Office of the Supervising Scientist has the scientific expertise to be able to advise the Minister of the potential impacts of uranium mining on the environment and carries out its duties with professionalism and integrity.

Terms of Reference 3:

"a review of Commonwealth responsibilities and mechanisms to realize improved environmental performance and transparency of reporting."

A review such as this Senate Inquiry, which canvasses the role for Government in realising improvements in environmental performance and reporting, should also deal with the weaknesses of the current system. The central issue is the absence of appropriate context in the dissemination of data to the stakeholders. As it stands the process engenders misrepresentation and, on occasion, community alarm, neither of which is warranted and neither of which is ultimately in the public interest.

1. Environmental Regulations – A Comprehensive Legislative Framework

A comprehensive and complex suite of environmental regulations has been established for the Ranger mine and Jabiluka project at both the Commonwealth and Northern Territory levels. These regulations have evolved over time, and are now arguably the most stringent and independently monitored environmental regulations in the mining industry.

1.1 Atomic Energy Act

The Commonwealth Government's decision to allow the mining and milling of uranium to proceed was made in August 1977 following the recommendations of the First and Second Reports of the Ranger Uranium Environmental Inquiry (the Fox Inquiry) which was established under the provisions of the Commonwealth's *Environmental Protection (Impact of Proposal) Act 1974*.

Under section 41 of the *Atomic Energy Act* 1953 (Cth), the Commonwealth Minister has granted an Authority, to mine and process uranium ore at Ranger. The Ranger Environmental Requirements (ERs) are attached to this Authority. In January 2000, a new Section 41 Authority was issued which incorporates revised Environmental Requirements for Ranger.

The new Ranger Environmental Requirements set out *Primary* and *Secondary Environmental Objectives* which establish the principles by which the Ranger operation is to be conducted and the standards which are to be achieved.

The Primary Environmental Objectives relate to environmental protection and rehabilitation. They dictate that present and future activities at Ranger must not impact upon the values, attributes and ecosystem health of Kakadu National Park nor the health of the regional community, and require that the site be rehabilitated to establish an environment such that it could be incorporated into Kakadu National Park.

The Secondary Environmental Objectives deal with a number of particular aspects of environmental management which are to be specifically addressed and reported on, including water quality, air quality and hazardous substances, to ensure that the Primary Environmental Objectives are not compromised.

The Environmental Requirements include monitoring and reporting obligations, both on a periodic basis and in response to "incidents", including any mine-related event "which is of or could cause concern to Aboriginals or the broader public."

1.2 Aboriginal Land Rights Act

The Northern Land Council (NLC), representing the traditional Aboriginal owners of the land, is given specific roles under the Environmental Requirements, and in the Agreement between the Commonwealth and the NLC pursuant to section 44 of the *Aboriginal Land Rights (Northern Territory) Act* 1976 (Cth), the Commonwealth has committed to ensuring that ERA complies with the Environmental Requirements.

1.3 Mining Act (NT)

The *Atomic Energy Act* does not apply to the Jabiluka Project. Jabiluka is a Mineral Lease granted by the Northern Territory government under the *Mining Act* 1980 (NT). A separate set of Environmental Requirements exists for Jabiluka and are attached to that Mineral Lease.

1.4 Mining Management Act (NT)

The operational approvals for Ranger and Jabiluka are contained in *Authorizations A82/3* and *A98/2* respectively, originally granted pursuant to the *Uranium Mining (Environment Control) Act* (NT) and continued in force since the repeal of the legislation with effect from 1 January 2002 by the *Mining Management Act.* The Authorisations reflect the Environmental Requirements and contain additional prescriptive requirements aimed at protecting the environment and achieving the Primary Environmental Objectives, and also containing more detailed provisions relating to monitoring and reporting.

The Authorizations have evolved over time as a result of extensive dialogue with key stakeholders to meet changing expectations, with changes ultimately being approved by the Northern Territory Minister for Business Industry and Resource Development, who is the "Supervising Authority" for the purposes of the Environmental Requirements.

2. Regulating and Overseeing Bodies

In parallel with the comprehensive environmental regulations, there have been a number of statutory bodies established to enforce the regulations and ensure independent and rigorous overview of the measures used to protect the environment.

2.1 Supervising Scientist

The Office of the Supervising Scientist (OSS) and the Environmental Research Institute of the Supervising Scientist (*eriss*) are established by the *Environmental Protection (Alligator Rivers Region) Act 1978.* The Supervising Scientist's functions include providing advice to the Commonwealth Minister for the Environment and Heritage on environmental matters associated with uranium mining in the Alligator Rivers Region, as well as developing and co-ordinating research and monitoring programs and devising and developing standards practices and procedures in relation to uranium mining aimed at protecting the environment

In addition, the Environmental Research Institute of the Supervising Scientist, carries out independent research and monitoring into the effects of uranium mining on the environment in the Alligator Rivers Region.

> **ERA believes that the Office of the Supervising Scientist has the scientific expertise to be able to advise the Minister of the potential impacts of uranium mining on the environment and carries out its duties with professionalism and integrity.**

2.2 Northern Territory Department of Business, Industry and Resources Development (NT DBIRD):

For the purposes of the Environmental Requirements, the Minister of Business, Industry and Resources Development is the designated Supervising Authority and is responsible for ensuring the environmental regulations at Ranger and Jabiluka are complied with.

2.3 Minesite Technical Committees

The Ranger Minesite Technical Committee (MTC) and the Jabiluka Minesite Technical Committee are the key forums for discussion on environmental matters relating to Ranger and Jabiluka. The MTCs were established under a set of working arrangements agreed between the Commonwealth Government and the Northern Territory Government. Both committees are chaired by the NT Government (DBIRD) and includes representatives from ERA, the NLC, and the Commonwealth Government (OSS).

The role of the MTCs is to provide advice to the NT DBIRD in defining, establishing and maintaining best mining practice in relation to site-specific technological, scientific and environmental factors and constraints. Accordingly, the compliance monitoring and reporting system described by the Ranger and Jabiluka Authorizations have evolved to take account of stakeholders' concerns, views and information requirements, and to maintain transparency in reporting.

> **While the Minesite Technical Committees have no executive or regulatory authority, ERA values the contribution made by MTC members in the provision of advice in assisting it to meet the expectations of its stakeholders.**

2.4 ARRAC and ARRTC

Two bodies were established under the *Environmental Protection (Alligator Rivers Region) Act 1978 (Cth)*, - the Alligator Rivers Region Advisory Committee (ARRAC) and Alligator Rivers Region Technical Committee (ARRTC).

ARRAC was established to provide a formal forum for consultation on matters relating to the effects on the environment in the region of uranium mining and other environmental research matters. Its members include representatives of the Northern Territory Government (DBIRD, Department of Lands, Planning and the Environment, Territory Health Services, Parks and Wildlife Commission of the Northern Territory) the Commonwealth Government (OSS, the Director of National Parks, Department of Industry, Tourism and Resources, ARPANSA), the Northern Land Council, Aboriginal associations (Gundjehmi Aboriginal Corporation, Gagudju Association, Djabulukgu Association) companies (ERA, Cameco Australia Pty Ltd, Queensland Mines Pty. Ltd.), the Jabiru Town Council and the NT Environment Centre. It is chaired by Professor Charles Webb of the Northern Territory University. ARRAC can provide a valuable forum for discussion and tabling of stakeholder concerns.

The role of ARRTC is to consider research programs and programs for the collection and assessment of information relating to the effects on the environment in the region of uranium

mining. ARRTC provides advice to the Commonwealth Minister for Environment and Heritage as to whether the quality of the science used is of an appropriately high standard.

Following recommendations by the Independent Science Panel (ISP) of the International Council of Science Unions, the composition of ARRTC was revised in 2001. The Minister for Environment and Heritage invited the Federation of Australian Scientific and Technological Societies to nominate members with specific technical expertise. Key stakeholder groups[1] remain represented on ARRTC.

> **ERA believes that the independence and expertise of the ARRTC committee members ensures that rigour is applied to the research into and assessment of environment protection at Ranger and Jabiluka.**

2.5 Ministerial Decision-making Authority

Although the NT Minister is the Supervising Authority under the Ranger Environmental Requirements, the Commonwealth Minister has the primary decision-making role. As described by Senator Minchin, the then Minister for Industry, Science and Resources in his letter to ERA enclosing the settled form of the Environmental Requirements:

> "…the attached ERs provide for direct intervention by myself on key issues where the Commonwealth considers it appropriate. In exercising this role, I would be taking advice from the Supervising Scientist. The NT would retain its day-to-day regulatory responsibilities."

3. No Adverse Environmental Impact on Kakadu National Park

It is a Primary Environmental Objective of the Environmental Requirements that the operations be conducted in such a way as to maintain the attributes for which Kakadu National Park was inscribed on the World Heritage List and to maintain ecosystem health, public health and biological diversity. That objective has been met.

3.1 External Reviews

Since construction commenced at Ranger in 1979, and at Jabiluka in 1998, the Ranger mine and Jabiluka site have been subjected to unprecedented levels of scrutiny by a wide variety of organizations under various governments. These include:

- Monthly inspections and half-yearly and annual environmental audits by NT DBIRD.
- Annual reports by the OSS, independent of NT DBIRD;
- Specific reports by the OSS on particular events that have occurred from time to time;
- Reviews of the Jabiluka site by the World Heritage Committee and the Independent Science Panel of the International Council of Science; and

[1] ERA, NLC, NT DBIRD, Queensland Mines Pty Ltd and Parks Australia North.

- Two Senate Inquiries (1997 and 1999)

None of these processes has identified any adverse environmental impact on Kakadu National Park caused by uranium mining at Ranger and the Stage 1 development and subsequent care and maintenance regime at Jabiluka.

3.2 Water Quality

Stringent standards have been set for levels of certain key variables, including uranium, in watercourses at the main compliance monitoring points for Ranger and Jabiluka. Levels below these would not generate an impact on the most sensitive local aquatic organisms.

The level of uranium allowed in water at the downstream statutory monitoring sites at Ranger and Jabiluka is 5.8 parts per billion (ppb). This compares with the Australian Drinking Water Guidelines of 20 ppb. The mean level of uranium at the main statutory monitoring point for Ranger (in Magela Creek) is about 0.15 ppb, i.e. more than 100 times below the Australian Guidelines for drinking water. The mean level at the main statutory monitoring point at Jabiluka (in Swift Creek) is about 0.015 ppb, i.e. more that 1000 times below the Australian Standard for drinking water. (The natural background level of uranium is much higher in Magela Creek than Swift Creek.)

ERA has never failed to meet compliance criteria at the main statutory monitoring points for Ranger (in Magela Creek) or Jabiluka (in Swift Creek). The Office of Supervising Scientist has verified this fact for every year of operation.

3.3 Reported Incidents:

Since construction started at Ranger in 1979, and Jabiluka in 1998, there have been a number of "incidents" at Ranger and Jabiluka. Such incidents are reported even though they involve negligible environmental risk. A large proportion of these incidents occurred when water, rock or tailings, classed as *Restricted Release Zone* materials, entered a *Non-Restricted Release Zone*, irrespective of the often small quantities involved.

When such incidents take place, the reasons for their occurrence are investigated immediately by ERA and the necessary steps are taken to minimize the likelihood that they re-occur. Depending on the seriousness of the incident, the Supervising Authorities may conduct their own investigations and determine actions that ERA must take to meet any concerns the Authorities might have. Such incidents are assessed and documented in the Northern Territory Department of Mines and Energy (the predecessor to DBIRD) reports, Supervising Scientist Annual Reports, tabled papers for Alligator Rivers Region Advisory Committee (ARRAC) and Alligator Rivers Region Technical Committee (ARRTC) meetings and ERA Annual Environmental Reports.

These reports have concluded that none of the incidents that has occurred since Ranger and Jabiluka commenced, has affected the environment of the Kakadu National Park.

3.4 Recent Events

Earlier in 2002, ERA advised the authorities that a mistake had been made in stockpile management at Ranger which compromised a stakeholder-approved wet season runoff trial. At about the same time, ERA was late in reporting some elevated readings (later shown to be erroneous) at Swift Creek near Jabiluka.

However, as with other reported incidents, the OSS concluded that these events *"… neither resulted in any harm to the environment of Kakadu National Park or to the health of people living in the region. This conclusion is supported by all stakeholders including the Traditional Owners of the Ranger and Jabiluka sites."* [2]

4. ERA's Environmental Management Systems: a Sophisticated Regime of Water Management

Because Ranger and Jabiluka are in a high-rainfall region with a very distinct difference between wet and dry seasons, ERA has developed infrastructure (eg. water retention ponds and bunds, wetland filtration cells), practices (eg. stockpile surface compaction) and monitoring regimes to ensure that the surface water is managed most effectively according to quality. The water management system operates on the basis of three types of water, namely:

- process water, which has been used in the uranium extraction process, and cannot be disposed of other than by evaporation or water treatment;
- surface water and seepage that has come into contact with mineralised stockpiles and is retained for disposal by wetland filtration and land irrigation within the minesite; and
- rainfall runoff from barren or specially prepared stockpiles and undisturbed parts of the project area that is directed through retention ponds and wetland filters and then overflows into the creek systems during the wet season.

Both constructed and natural wetlands within the operating area are very effective at removing materials from surface water utilising natural processes including filtration, precipitation and adsorption. Dilution of residual material by large volumes of rainfall runoff is also an important process that ensures that waters originating from the mine area do not exceed statutory compliance limits before they reach the boundary of Kakadu National Park.

4.1 Monitoring

There are two components to ERA's monitoring program, namely: *operational environmental monitoring*, and *statutory monitoring*.

Operational environmental monitoring (OEM) embodies the principles of environmental awareness and risk management; provides essential data for the development, optimisation and verification of environmental strategies; and offers tactical feedback on the environmental performance of mining and milling operations. Since the start of mining and milling operations at Ranger, OEM has formed the larger part of environmental monitoring at Ranger

[2] *Investigation of the Stockpiling and Reporting Incidents at Ranger and Jabiluka 2002*, Supervising Scientist Environment Australia, April 2002

and will continue to do so over the mine life. The OEM program acts primarily as an operational tool and is constantly evolving.

The principal objective of the statutory monitoring program is to verify whether, in the case of Ranger, Magela Creek and its environs downstream of the mine remain protected. Statutory monitoring is also undertaken to demonstrate that particular operations and practices meet the conditions of specific approvals. The OSS and NT DBIRD conduct extensive check monitoring of ERA's own statutory monitoring program, involving independent sampling and analysis.

The large part of the monitoring program at Ranger and Jabiluka is centered on discrete sampling and chemical interpretation of change. However, to overcome any shortfalls that may be presented by discrete chemical sampling, the OSS independently undertakes biological monitoring of potential mining impact in Magela Creek using creekside monitoring to verify that the aquatic ecosystem downstream of Ranger remains protected.

4.2 Interpretation of Data

To ERA's knowledge, it was the first company in Australia to adopt the Australian Guidelines for Water Quality Monitoring and Reporting (October 2000) as a basis for setting water receiving standards downstream of the Ranger and Jabiluka sites.

Under these guidelines, ERA uses a statistical approach to determine whether the level of key variables at the point of compliance is consistent with what would be expected from natural variation in these variables. If the levels are consistent with natural variations, it can be concluded that there is no discernable change that is attributable to mining.

In practice, "focus" and "action" levels have been set for the main compliance points in Magela Creek and Swift Creek for a number of key water quality variables. These levels are derived from extensive ERA and government baseline datasets for water quality upstream of Ranger and Jabiluka. For the key variable of uranium, the focus and action levels are as follows:

	Focus Level	**Action Level**
Magela Creek	0.2 ppb	1.4 ppb
Swift Creek	0.02 ppb	0.03 ppb

When a water sample shows a level at or above the "focus" level, an internal watching brief is required to be established. If a sample is recorded above the "action" level, an immediate investigation and notification to authorities is triggered.

While an individual value falling above the action levels may not in itself be significant, when a value lying above the action level is part of a clear trend or there are successive values above the action levels it can be interpreted that there is a reasonable likelihood that there has been a real change in water chemistry. Such a change must be investigated to determine whether it is due to mining activities or not. Hence, focus and action levels provide ERA and key stakeholders with an early awareness system to track very small fluctuations in variables, such as uranium, so that the source of any change in water chemistry can be understood and, if necessary, action taken to prevent any actual detrimental environmental impact.

It should be noted that

- the action level for uranium is set well below the allowable level of 5.8 ppb at Ranger and Jabiluka, and

- that reaching an action level in itself has no environmental consequence.

4.3 Continuous Improvement of Environmental Management Systems

ERA has developed and implemented a continuous improvement process for its Environmental Management System (EMS). Recent initiatives under this process include:

- the implementation and maintenance of an Environmental Management System (EMS) to comply with ISO 14001 standard.
- the restructuring of the ERA Environment Department including the appointment of a new Environment Manager and specialist staff to lead the Water Management, Environmental Support and Environmental Systems Groups.
- re-engineering of stockpiles and surface water drainage systems to ensure that optimal management and wetland treatment of mine waters is achieved on site; and
- improving internal communications processes to ensure that environmental plans are implemented as specified and to ensure a culture of environmental excellence.

5. Rehabilitation of the Ranger and Jabiluka Sites

One of the Primary Environmental Objectives under the Ranger and Jabiluka Environmental Requirements is the requirement that the Project Area be rehabilitated to such a standard that it could be incorporated into Kakadu National Park.

Each year, ERA prepares rehabilitation plans for Ranger and Jabiluka so that in the event the operations were curtailed prematurely, a strategy exists and funding secured for decommissioning and rehabilitation. Twenty-seven rehabilitation plans have been prepared so far for Ranger and five for Jabiluka. All of these have been reviewed and approved by the Minesite Technical Committees.

The rehabilitation plans have also been approved by the Northern Territory and Commonwealth Governments.

As well as the annual rehabilitation plans, ERA has also developed a blueprint for decommissioning and rehabilitating the operation at the end of the expected life of Ranger. As with the annual rehabilitation plan, the purpose of final rehabilitation is to produce physical landforms and ecosystems that are appropriate to the ultimate proposed land use – i.e. National Park. For Ranger, this will entail a major exercise in depositing all tailings and low grade ore back into the open pits and securely encapsulating this material with barren rock.

6. Does the Reporting Regime fulfill its objective?

ERA' s Ranger and Jabiluka environmental monitoring and reporting regime was intended to provide assurance to stakeholders, especially Traditional Owners and the immediate Alligator Rivers Region community, including the interests connected with Kakadu National Park, that the environment surrounding the two sites remains protected.

These scientifically precise monitoring and reporting regimes have been generated over 21 years of operation, and are set to report deviation from design norms at downstream compliance sites. It was planned that regular reporting of water quality from sites throughout the operational areas of the sites, in conjunction with regular audits, inspections and reviews, would ensure transparency in environmental management systems and communicate ERA's determination to manage its operations effectively. Early awareness of unusual movement of dissolved material from mine landforms would be recognised and the strategies of ERA in relation to intervention developed.

Furthermore, ERA is required to report any event that could be perceived to be of concern to the local Aboriginal people or the broader community, not just incidents that are acknowledged infringements, and does so.

Despite this high level of transparency and information flow, the reporting regime does not give confidence to local communities, or the broader community.

ERA is concerned that there is no separate interpretive process to effectively communicate to local communities and the broader public what the monitoring data actually means. Despite the scientific interpretation contained in ERA's reports that go to stakeholders, the data is subjected to capricious dissemination in the media and among community groups. This process allows scope for misinterpretation of the data, whether inadvertently or deliberately.

This is unsatisfactory in relation to the interests of all stakeholders:
1. The local communities are at risk of disinformation and unnecessary concern;
2. The NLC has to devote resources to addressing ill-founded concerns;
3. Both Commonwealth and NT Government regulators are essentially marginalised and undermined;
4. ERA, the Commonwealth Government and the NT Government have to devote resources to responding to erroneous or unfair attacks;
5. The public debate is hijacked.

Accordingly, while the monitoring and reporting regime incorporates a range of innovative and exacting features, its value is undermined by the inadequate process for dissemination of the data.

In this way, the reporting of low threshold deviation from nominated levels is "re-reported" by stakeholders and local and national media. In this process, a deviation becomes a "leak", a "spill" or "contamination". Far from engendering comfort for stakeholders, the process encourages outrage and fuels distrust between ERA and its local community, where none is warranted.

7. The Key Issue:

A review such as this Senate Inquiry, which canvasses the role for Government in realising improvements in environmental performance and reporting, should also deal with the weaknesses of the current system. The central issue is the absence of appropriate context in the dissemination of data to the stakeholders. As it stands the process engenders misrepresentation and community alarm, neither of which is warranted, and neither of which is in the public interest.