

1 INTRODUCTION

1.1 Role and functions of the Supervising Scientist

The Supervising Scientist is a statutory office under the *Environment Protection (Alligator Rivers Region) Act 1978* and the occupant of the office is the head of the Supervising Scientist Division within the Department of the Environment and Heritage.

The Supervising Scientist Division consists of the Environmental Research Institute of the Supervising Scientist (*eriss*) and the Office of the Supervising Scientist (*oss*).

eriss conducts environmental monitoring and research into the impact of uranium mining on the environment and people of the Alligator Rivers Region of the Northern Territory. *eriss* also conducts research on the ecology and conservation of tropical wetlands, and is a partner in the National Centre for Tropical Wetland Research (*nctwr*).

oss carries out supervision, audit and policy functions in relation to uranium mining in the Alligator Rivers Region.

In summary, the functions of the Supervising Scientist, as specified in the EPARR Act, are to:

- develop, coordinate and manage programmes of research into the effects on the environment of uranium mining within the Alligator Rivers Region;
- develop standards, practices and procedures that will protect the environment and people from the effects of uranium mining within the Alligator Rivers Region;
- develop measures for the protection and restoration of the environment;
- coordinate and supervise the implementation of requirements made under laws applicable to environmental aspects of uranium mining in the Alligator Rivers Region;
- provide the Minister for the Environment and Heritage with scientific and technical advice on mining in the Alligator Rivers Region; and
- on request, provide the Minister for the Environment and Heritage with scientific and technical advice on environmental matters elsewhere in Australia.

1.2 Performance summary

Performance information for the Supervising Scientist is provided against sub-outputs contained within the Department of the Environment and Heritage's 2003–04 Portfolio Budget Statements (PBS).

The activities of the Supervising Scientist fall within Outcome 1, which is:

The environment, especially those aspects that are matters of national environmental significance, is protected and conserved.

Outcome 1 is divided into twelve individual Outputs. The Supervising Scientist reports against sub-activities within the Industry (Output 1.6) and Inland Waters (Output 1.7) Outcomes.

1.2.1 Performance summary for Output 1.6 – Industry

SUPERVISION AND RESEARCH ON THE ENVIRONMENTAL IMPACT OF URANIUM MINING IN THE ALLIGATOR RIVERS REGION

Accuracy, timeliness and comprehensiveness of advice provided to the Minister on the environmental impact of uranium mining in the Alligator Rivers Region.

Timeframes were met and policy advice met the Minister's requirements.

Extent to which environmental research on the effects of uranium mining provides the Supervising Scientist with the information required to undertake his role.

Research conducted by the Environmental Research Institute of the Supervising Scientist provided the Supervising Scientist with the scientific and technical information needed for him to fulfil his role. Ecotoxicological assessments of magnesium sulfate, aluminium and uranium for local aquatic organisms were either completed or commenced. Environmental monitoring programmes were implemented at Ranger and Jabiluka to assess potential impacts of the minesites. Information from the monitoring programmes indicated that ecosystems downstream of mining activities were protected from the potential deleterious impacts of uranium mining. Baseline stream suspended sediment transport conditions have been established for Swift Creek (Ngarradj). Work on the erosion and hydrology of the Nabarlek minesite was carried out to assess the status of rehabilitation of the mine. A radon and meteorological measurement network has been set up and data were obtained from locations in the Ranger/Jabiluka region. Research activities are described in Section 3 of this Annual Report.

Extent to which the Commonwealth Environmental Requirements are met.

The Supervising Scientist has indicated that the Ranger potable water contamination incident (see Section 2.2.4) and the radiation clearance procedures incidents (see Section 2.2.5) were breaches of the Commonwealth Environmental Requirements.

Extent to which routine minesite inspections and environmental audits are completed consistent with the requirements of the ISO14000 series of standards and are supported by an environmental monitoring programme.

Routine inspections of minesites were carried out with representatives of the Northern Territory Department of Business, Industry and Resource Development (DBIRD) and the Northern Land Council (NLC). The Annual Environmental Audit and Mid Term Review were completed in accordance with the requirements of the ISO 14000 series of standards. The Supervising Scientist's Environmental Monitoring Programme provided data that supported these audit processes. Detailed information on these inspections can be found in Section 2 of this Annual Report.

Extent to which local standards for air and water quality and radiation levels are met.

Local standards for air and water quality at the Ranger and Jabiluka sites were met during 2003–04. There were no recorded occasions when site-specific water quality limits were exceeded at either site as a result of mining operations. The potable water contamination incident at Ranger resulted in short-term adverse effects (skin irritations and gastrointestinal distress) for some workers but longer-term effects are not expected. The contaminated earth-moving equipment incident resulted in low-level radiation exposure of three members of the public at approximately the public limit. Longer-term effects are not expected. Further information on monitoring programme outcomes is included in Sections 2 and 3 of this Annual Report.

Number of reports including peer reviewed articles and presentations on standards, practices and procedures developed to protect the environment and people from the effects of uranium mining.

Fifty-seven reports, including peer reviewed articles and presentations on standards, practices and procedures developed to protect the environment and people from the effects of uranium mining, were prepared in 2003–04. Appendix 2 and 3 of this Annual Report contain a full list of articles and presentations in 2003–04.

Number of reports including peer reviewed articles and presentations on measures developed for the rehabilitation of the environment following uranium mining activities.

Twenty-five reports, including peer reviewed articles and presentations on measures developed for the rehabilitation of the environment following uranium mining activities, were prepared in 2003–04, including relevant information.

Appendix 2 and 3 of this Annual Report contain a full list of articles and presentations in 2003–04.

1.2.1 Performance summary for Output 1.7 – Inland Waters

WETLAND ECOLOGY AND CONSERVATION

Accuracy, timeliness and comprehensiveness of advice provided to the Minister on wetland ecology and conservation.

The Supervising Scientist did not provide any specific advice on wetland ecology and conservation to the Minister for the Environment and Heritage during 2003–04.

Extent to which threats to tropical wetlands are identified and assessed.

In collaboration with Charles Darwin University (Key Centre for Tropical Wildlife Management), Parks Australia North (PAN) and Traditional Land Owners, a Decision Support Tool for the management of feral pig damage in different wetland habitats was developed.

Two papers on the aquatic toxicity and ecological risks of the herbicide, Tebuthiuron, to tropical freshwater species were accepted for publication in peer-reviewed journals.

The presence and significance of endocrine disrupting compounds (originating from human activities) in recreational water holes and wetlands receiving treated sewage effluent and stormwater from the Jabiru township in Kakadu was determined in a collaboration with PAN and the University of Sussex, UK.

Extent to which threats to tropical wetlands are identified and assessed (continued)

A risk assessment of the wetland weed, *Mimosa pigra*, in northern Australia, was published as a Supervising Scientist Report.

In collaboration with Parks and Wildlife Commission of the Northern Territory and the Australian Quarantine Inspection Service, a risk assessment of the ginger ant, *Solenopsis germinata*, to seabird colonies at Ashmore Reef was commenced.

Extent to which the Environmental Research Institute of the Supervising Scientist (eriss) contributes to requirements of international agreements and national policies on the wise use of wetlands and methods of assessment.

Technical guidance, particularly in relation to wetland inventory, assessment and monitoring, was provided for international agreements and assessments, such as the Ramsar Convention's Scientific and Technical Review Panel, Intergovernmental Panel on Climate Change and the Millennium Ecosystem Assessment and Wetlands International projects.

Nationally, technical guidance and advice was provided on wetland inventory and assessment to the DEH Inland Waters Section and DEH Coastal Policy Section, the latter being for the coastal wetland component of the Reef Water Quality Protection Plan (RWQPP).

Further information can be found in Section 6 of this Annual Report.

Extent to which managers and users of tropical wetlands are provided with information and expertise to enable the wise use of wetlands through sustainable practices.

Information and expertise on the wise use of tropical wetlands was made available to managers and users through a range of publications, presentations at conferences and seminars, and through the Supervising Scientist's web site, www.deh.gov.au/ssd. Further information can be found in Section 5 of this Annual Report.

Appendix 2 of this Annual Report contains a full list of articles and presentations in 2003–04.

Number of reports, including peer reviewed articles and presentations, on techniques developed for mapping wetlands distribution and monitoring change (including that caused by climate change and sea level rise).

A total of thirty-four reports on techniques developed for mapping wetlands distribution and monitoring change (including that caused by climate change and sea level rise) (including peer reviewed articles and presentations) were prepared during 2003–04. These included reports on techniques developed for mapping wetlands distribution and monitoring change (including that caused by climate change and sea level rise).

Appendix 2 of this Annual Report contains a full list of articles and presentations in 2003–04.

1.3 The Alligator Rivers Region and its uranium deposits

The Alligator Rivers Region is approximately 220 km east of Darwin (see Figure 1.1). Encompassing an area of about 28 000 km², it includes the catchments of the West Alligator, South Alligator and East Alligator Rivers, extending into west Arnhem Land. The World Heritage listed Kakadu National Park is wholly enclosed within the Alligator Rivers Region.

There are four mineral leases within the Alligator Rivers Region that pre-date the proclamation of Kakadu National Park. These are Ranger, Jabiluka, Koongarra and Nabarlek.

Ranger is currently the only operational uranium mine in the region. Development work at Jabiluka ceased in 1999 and the site was placed in long-term care and maintenance in 2003–04. The Koongarra uranium deposit is significant but permission to develop a mine has not yet been sought. Nabarlek was operational in the 1970s and 1980s but has now been decommissioned and rehabilitation and revegetation work is continuing.

There are also a number of former uranium mines in the South Alligator River valley that date back to mining and milling activities in the 1950s and 1960s.

1.3.1 Nabarlek

Nabarlek is located approximately 280 km east of Darwin. Queensland Mines Ltd (QML) undertook mining at Nabarlek during the dry season of 1979, and milling of the ore continued until 1988. Some 10 857 t of uranium concentrate (U₃O₈) was produced whilst the mill was operational.

The mine was decommissioned in 1995–1996 and the performance of the rehabilitation and revegetation programme continues to be monitored prior to final close-out.

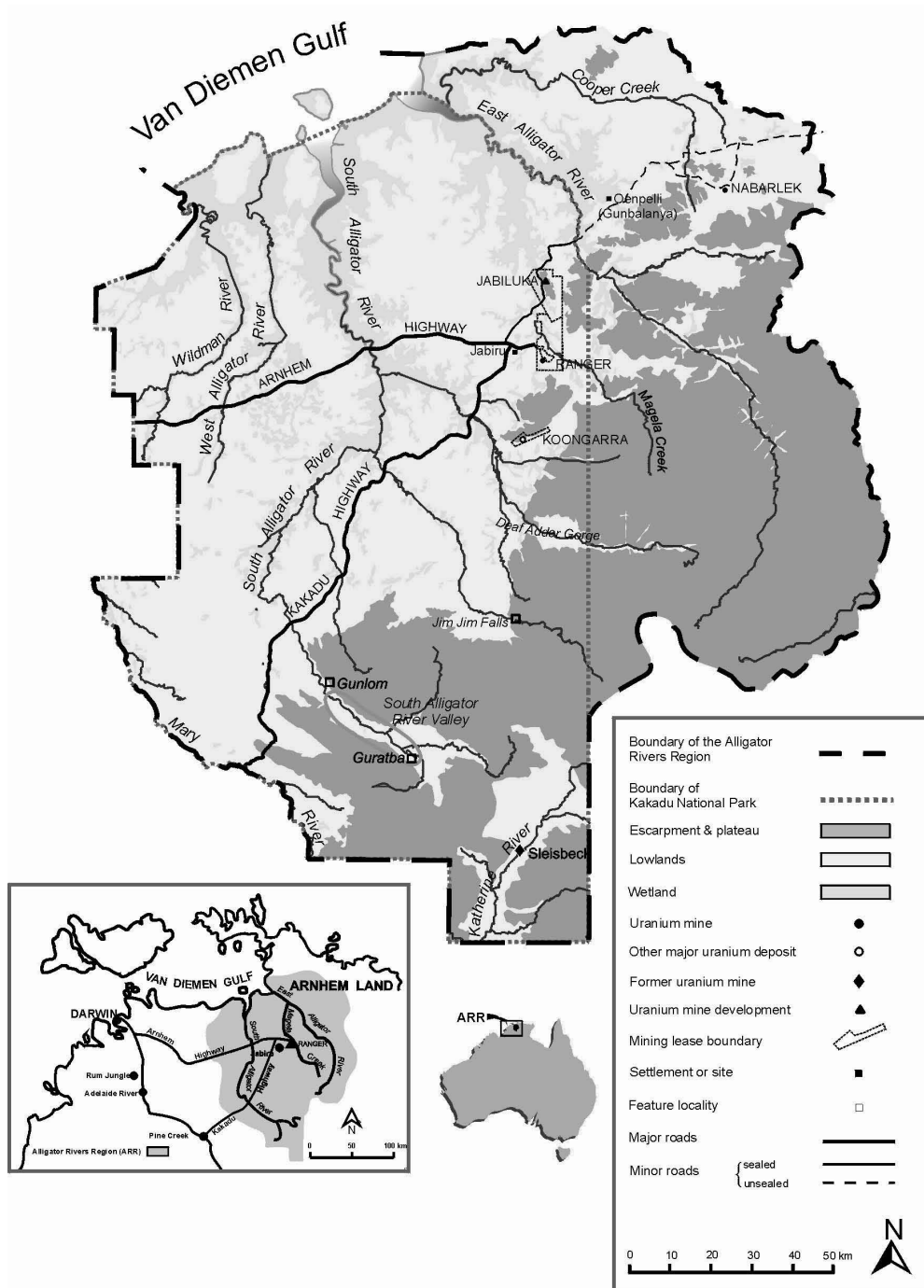


Figure 1.1 Alligator Rivers Region

1.3.2 Ranger

Energy Resources of Australia Ltd (ERA) operates the Ranger mine, which is 8 km east of the township of Jabiru. The mine lies within the 78 km² Ranger Project Area and is adjacent to Magela Creek, a tributary of the East Alligator River. The Ranger Project Area is surrounded by, but does not form part of, Kakadu National Park.

Ranger is an open cut mine and commercial production of uranium concentrate (U₃O₈) has been under way since 1981. Orebody No. 1 was exhausted in December 1994 and excavation of Orebody No.3 began in May 1997.

Some 76 742 t of uranium concentrate (U₃O₈) had been produced at Ranger between the commencement of milling in 1981 and 30 June 2004.

Planning has commenced for the eventual decommissioning and rehabilitation of the site.

1.3.3 Jabiluka

The Jabiluka mineral lease abuts the northern boundary of the Ranger Project Area, with the Jabiluka minesite situated some 20 km north of the Ranger minesite. It is also owned by Energy Resources of Australia Ltd (ERA).

Unlike the Ranger and Nabarlek deposits, the Jabiluka orebody lies beneath a cover of cliff-forming sandstone. It is in the catchment of the East Alligator River, adjacent to Ngarradj (Swift Creek), which drains north to the Magela floodplain. It is also surrounded by, but not part of, Kakadu National Park. The Commonwealth Government completed its assessment of ERA's Environmental Impact Statement, which provided for milling of Jabiluka ore at Ranger, on 22 August 1997.

Since Traditional Owners have not agreed to the milling of Jabiluka ore at Ranger, ERA subsequently submitted a Public Environment Report (PER) based on a proposal to construct a new mill on the Jabiluka lease. The PER was accepted subject to a number of conditions. Construction of the portal, decline and ancillary facilities, elements common to both proposals, commenced on 15 June 1998 after the required approvals from the Commonwealth and Northern Territory Governments were granted. Stage 1 of the main decline was completed in June 1999.

Development of Jabiluka ceased in September 1999 and the site was then placed in an environmental management and standby phase that lasted until 2003–04.

Discussions between ERA, the Commonwealth and Northern Territory Governments, the Northern Land Council and the Gundjeihmi Aboriginal Corporation (GAC – representing the area's Traditional Owners, the Mirarr people) took place during 2002–03 with the broad goal of establishing a more passive long-term management system. On 30 June 2003 ERA applied to the Northern Territory Government for approval to implement a long-term care and maintenance programme that involved backfilling the decline with the mineralised material and waste rock stockpiled on the surface and cleaning the Interim Water Management Pond. Some light revegetation and erosion control works were also undertaken. ERA completed these works in early December 2003.

Development of the Jabiluka Long-Term Care and Maintenance Agreement between ERA, GAC and NLC occurred during 2002–03 and 2003–04. This Agreement is expected to include an ERA undertaking not to engage in mining activities at Jabiluka without the consent of the Mirarr people. The Agreement was endorsed by the NLC in April 2004 and is expected to be approved by the Minister for Immigration and Multicultural and Indigenous Affairs in 2004–05.

1.3.4 Koongarra

The Koongarra deposit is about 25 km south-west of Ranger, in the South Alligator River catchment. An Act (the *Koongarra Project Area Act 1981*) providing for a change of the boundaries of the project (and thus the area of excision from Kakadu National Park) was passed in 1981 but has not been proclaimed. The Koongarra deposit is owned by Cogema Australia Ltd.

1.3.5 South Alligator Valley Mines

Several small uranium mining and milling operations occurred during the 1950s and 1960s in the South Alligator River Valley, in the southern part of the Alligator Rivers Region. Mining occurred at several locations in the valley, principally at El Sharana, El Sharana West, Rockhole Creek and Coronation Hill (Guratba). Milling occurred at Rockhole Creek within the South Alligator Valley as well as at nearby Moline, which lies outside the Alligator Rivers Region.

Most of these sites now lie within Kakadu National Park, and are the responsibility of the Commonwealth Director of National Parks through Parks Australia North.

Output from these mines was relatively small. It is estimated that less than 1000 t of uranium concentrate was produced at the Rockhole Creek and Moline mills from the ore mined in the South Alligator Valley during the 1950s and 1960s.

The Supervising Scientist Division has been involved in a number of projects assisting Parks Australia North with rehabilitation and containment works at former mine and mill sites in the South Alligator Valley.

This work is further described in Sections 2.5.1 and 2.5.2 of this Annual Report.

1.4 Senate Inquiry into the Environmental Regulation of Uranium Mining

On 20 June 2002 the Senate referred to its Environment, Communications, Information Technology and the Arts References Committee the matter of the environmental regulation of uranium mining for inquiry and report. The Committee's report was originally due for tabling on 5 December 2002, but this date was extended twice by the Senate and the report was tabled on 14 October 2003.

The terms of reference for the inquiry were:

The regulatory, monitoring, and reporting regimes that govern environmental performance at the Ranger and Jabiluka uranium operations in the Northern Territory and the Beverley and Honeymoon in situ leach operations in South Australia, with particular reference to:

- the adequacy, effectiveness and performance of existing monitoring and reporting regimes and regulations;
- the adequacy and effectiveness of those Commonwealth agencies responsible for the oversight and implementation of these regimes; and
- a review of Commonwealth responsibilities and mechanisms to realise improved environmental performance and transparency of reporting.

The Supervising Scientist made four submissions to the inquiry. Further information on those submissions can be found in the Supervising Scientist's 2002–03 Annual Report.

The main body of the report contained a total of 25 recommendations, with recommendations 1–15 applying to the Northern Territory mines, and recommendations 16–25 applying to the South Australian mines.

The report also contained a Government Members' dissenting report that contained three additional recommendations on the Northern Territory mines, and comments on 23 of the 25 main recommendations relating to both South Australian and Northern Territory mines, as well as additional comments from the Australian Greens in relation to Aboriginal people.

As at 30 June 2004 the Australian Government was considering the report's recommendations with a view to formally responding.