FOREWORD

Subsection 36(1) of the *Environment Protection (Alligator Rivers Region) Act 1978* requires the Supervising Scientist to provide an Annual Report to Parliament on the operation of the Act and on certain related matters. The Act requires the following information to be reported:

- all directions given to the Supervising Scientist by the Minister for the Environment and Water Resources;
- information on the collection and assessment of scientific data relating to the environmental effects of mining in the Alligator Rivers Region;
- standards, practices and procedures in relation to mining operations adopted or changed during the year, and the environmental effects of those changes;
- measures taken to protect the environment, or restore it from the effects of mining in the region;
- requirements under prescribed instruments that were enacted, made, adopted or issued and that relate to mining operations in the Alligator Rivers Region and the environment;
- implementation of the above requirements; and
- a statement of the cost of operations of the Supervising Scientist.

SUPERVISING SCIENTIST'S OVERVIEW

The Supervising Scientist plays an important role in the protection of the environment of the Alligator Rivers Region through the supervision, monitoring and audit of uranium mines in the Region, as well as research into the possible impact of uranium mining on the environment of the Region.

Ranger is currently the only operational uranium mine in the Region, and is owned and operated by Energy Resources of Australia Ltd (ERA). Production commenced at Ranger in August 1981, and current plans will see mining in Pit 3 cease in 2008 or 2009 with milling of stockpiled ore expected to continue through until 2020.

As the time of mine closure and rehabilitation draws closer, the work of the Supervising Scientist has included a growing focus on these themes. Staff have been engaged with a broad range of stakeholders in discussions and research activities associated with rehabilitation and closure.

Apart from rehabilitation and mine closure planning, staff of the Division remained active in ongoing supervision, inspection and audit, radiological, biological and chemical monitoring, and research activities in relation to both present and past uranium mining activities in the Region. A significant area of work during the past year has been in developing improvements to the Supervising Scientist's water monitoring programme. This programme is highly relevant to both the operational and rehabilitation phases of mining. During the year there were no reported incidents that resulted in any environmental impact off the immediate minesite. The extensive monitoring and research programmes of the Supervising Scientist Division confirm that the environment has remained protected through the period.

At Ranger mine, higher than average rainfall during the 2005–06 wet season resulted in water inventories being greater than forecast going into the 2006–07 wet season. The 2006–07 wet season was also above average with Jabiru Airport recording 2537 mm of rain, the highest recorded since monitoring began in 1971. A significant proportion of this fell during a rainfall event associated with a tropical low that passed over the region between 27 February and 2 March 2007. Within this three-day period, 784 mm of rain fell at Jabiru airport, the highest three-day rainfall recorded in the Top End. In combination, the legacy of the 2006 wet season and the 2007 extreme rainfall event have resulted in increases in the amount of water retained at the mine. The 2007 extreme rainfall event also produced flooding in catchments around the mine. This flooding resulted in inundation and damage to monitoring infrastructure deployed by the Supervising Scientist Division within and adjacent to Magela and Gulungul Creeks, which flank Ranger to the east and west respectively.

The Jabiluka project remains in long-term care and maintenance, and the next stage of the project is a matter for discussion between ERA and the area's traditional Aboriginal owners.

The Nabarlek mine in western Arnhem Land was decommissioned in 1995 and the adequacy of the rehabilitation of this site remains under ongoing assessment. Tropical Cyclone Monica passed very close to the Nabarlek site on the evening of 24 April 2006. Extensive

damage to vegetation essentially reset the clock on revegetation of the site. The revegetation programme is currently under review.

Details on research outcomes of the Environmental Research Institute of the Supervising Scientist (***eriss***) are published in journal and conference papers and in the Supervising Scientist and Internal Report series. Some important programmes have been highlighted in this annual report.

In particular, the water quality monitoring programme has been considerably enhanced with the installation of continuous monitoring equipment for pH, electrical conductivity and turbidity in Magela Creek upstream and downstream of Ranger mine during the past two wet seasons. This programme will continue in parallel with the normal water quality monitoring programme for the immediate future to provide baseline information prior to a review of monitoring programmes.

The principal biologically-based toxicity monitoring approach since 1991 has been creekside monitoring, in which a continuous flow of water from the adjacent Magela Creek is pumped through tanks containing test animals. Also during the past two wet seasons, ***eriss*** staff have been evaluating the viability of in situ testing – deploying floating containers in Magela Creek itself, using the more sensitive test organisms currently used for the creekside monitoring programme. Potential technical advantages of this method include improved water flow-through and contact conditions for the test organisms, portability, and the ability to run an essentially continuous biological monitoring programme. In addition, reduced staff resourcing needs mean that more staff time will be available for other components of the monitoring programme and for interpretation of the data. These advantages make the in situ method appealing for future monitoring at Ranger and, potentially, also for use at other mine sites in the Northern Territory and elsewhere. The ease with which the trial in situ monitoring programme was able to be reinstated after the major flood event in early March 2007 also highlights an additional benefit of the method.

A major programme of research on characterisation of northern tropical rivers and assessment of risk from actual and potential threats is being carried out under the framework of the Tropical Rivers Inventory and Assessment Project (TRIAP). The work is funded by Land and Water Australia and the Natural Heritage Trust and is a collaborative effort between ***eriss***, James Cook University and the University of Western Australia, with additional involvement of the University of Wageningen in the Netherlands. The outcomes of this project, due for completion in 2007–08, will inform and support holistic approaches to management of tropical rivers and wetlands by the various stakeholder groups in the region. The datasets and methodologies developed during the project will be formally transferred and integrated into the research programme of the recently established Tropical Rivers and Coastal Knowledge (TRaCK) hub established by the Commonwealth Environmental Research Facilities (CERF) program.

In May 2006, the Australian Government announced funding of $7.3 million over four years to undertake rehabilitation of former uranium mining sites in the South Alligator River Valley in the southern part of Kakadu National Park. The Supervising Scientist Division has provided advice and assistance to the Director of National Parks on management of these

sites for a number of years, and continues to provide scientific and technical advice and assistance as the rehabilitation works progress.

A restructure of the Environment and Heritage portfolio during the year resulted in the appointment of the Hon Malcolm Turnbull MP as Minister for the Environment and Water Resources. Under these new arrangements, the Hon John Cobb MP, Assistant Minister for the Environment and Water Resources, assumed responsibility for the Supervising Scientist Division.

The Alligator Rivers Region Technical Committee (ARRTC) continues to play a vital role in assessing the science used in making judgements about the protection of the environment from the impacts of uranium mining. The Committee commenced a review of its definitive 'Key Knowledge Needs' document during 2006–07. Two of the independent scientific members of the committee have resigned since my last report. They are Mrs Jill Fitch and Dr Keith Hayes. I take this opportunity to acknowledge the valuable contribution made to the work of the committee by these members. Professor Peter Johnston has replaced Mrs Fitch as a member of ARRTC. Recruitment of a replacement for Dr Hayes is in progress.

Finally, I would like to offer my personal thanks to all the staff of the Supervising Scientist Division for their efforts during the year. The commitment and professionalism of all the Division's staff has been a vital factor in the Division being able to fulfil its role in ensuring that the environment of the Alligator Rivers Region remains protected.

Alan Hughes

Supervising Scientist