Preface

The Environmental Research Institute of the Supervising Scientist (***eriss***) is part of the Supervising Scientist Division of the Commonwealth Department of Environment and Heritage. Its primary role is to undertake monitoring of and research into the impact of uranium mining activities in the Alligators Rivers region to protect human and ecosystem health, and to provide advice to the Supervising Scientsist. ***eriss*** also conducts research on tropical river systems and the ecology and conservation of tropical wetlands with a focus on the sustainable use of water resources.

This report contains summaries of research projects undertaken by ***eriss*** over the 2004–05 financial year. For additional information, readers are referred to the annual publications list (Appendix 1) which details all of the material published, and conference and workshop papers presented by ***eriss*** staff in 2004–05.

The balance and strategic prioritisation of work within the uranium component of ***eriss***'s project portfolio is defined by Key Knowledge Needs (KKNs) developed by consultation between the Alligator Rivers Region Technical Committee (ARRTC), the Supervising Scientist, Energy Resources of Australia and other stakeholders. Six thematic areas (based primarily on geographic provenance) have been identified as being the primary KKN's topic areas to ensure the current and future protection of the environment of the Alligator Rivers Region (Appendix 2). The content of the research program developed for each of these areas is assessed and reviewed annually by ARRTC in consultation with stakeholder groups.

Each of the thematic areas comprises research themes for assessing current (operational) status by monitoring and for developing the requirements, procedures and practices needed to rehabilitate the terrestrial and aquatic ecosystems within the disturbed footprint to a state consistent with the World Heritage values of Kakadu National Park. A critical outcome of the research on rehabilitation aspects will be defensible closure (relinquishment) criteria and the identification and prioritisation (in both technical need and time dimensions) of post closure monitoring programs.

The list of KKNs and research themes identified for 2004–05 are detailed in Appendix 2. The research themes provide the basis for defining the specific project activities to be carried out from year to year.

eriss contributes to the addressing of the KKNs by applying its expertise in:

- Ecotoxicology
- Environmental radioactivity
- Hydrological and geomorphic processes
- Monitoring and ecosystem protection
- Biophysical pathways and ecological risk assessment
- Aquatic chemistry

Not all of the KKN research areas are able to be covered by ***eriss***, since not all of the required disciplines are available within the Institute. To address these gaps, collaborative projects have been initiated with researchers from other organisations such as Charles Darwin University and Earth Water Life Sciences Pty Ltd (the technical consulting business unit of Energy Resources of Australia Ltd). The outcomes from such collaborations are included in this report. KKN projects related to hydrogeology or tailings management are conducted by other organisations.

This report has been structured under five main headings, consistent with the KKN framework:

1 Ranger – Current Operations

2 Ranger – Rehabilitation

3 Jabiluka

4 Nabarlek

5 General Alligators Rivers Region

The sixth KKN – Knowledgement Management and Communication – has not been included as a specific section since many of the theme areas are embedded in the project approvals process and in the work programs for the projects that have been described. For examples, the intent of KKN 6.6.1 (Appendix 2) is addressed by the report on Ecological risk assessment of the Magela floodplain' in Part 5. Communication between research providers (KKN 6.3) is being addressed by stakeholder presentations and interactions at ARRTC meetings, as well as by conduct of formal multistakeholder workshops. Communication with local Indigenous people and other regional stakeholders is an integral part of the project approvals process. A dedicated Aboriginal Communications Officer is stationed at Jabiru for this purpose. The outcomes of research projects are also communicated to local peoples by this route.

Three maps (following this Preface) provide the regional context for the locations referenced in the KKN research reports. Map 1 shows Kakadu National Park and the locations of the Ranger Mine, Jabiluka project area, the decommissioned Nabarlek Mine, and the South Alligator River Valley. A schematic of the Ranger mine site is provided for reference in Map 2. Map 3 shows the locations of billabongs and waterbodies used for the aquatic ecosystem monitoring and research programs for assessing impacts from the Ranger Mine.

The final part of the report contains a summary of non-uranium mining related external projects carried out by ***eriss*** during 2004–05. Commercial-in-confidence projects have been excluded from this compilation.

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