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eriss research summary

2009–2010

DR Jones & AL Webb (eds)

Australian Government

Department of Sustainability, Environment, Water, Population and Communities
Supervising Scientist

It is SSD policy for reports in the SSR series to be reviewed as part of the publications process.

This Supervising Scientist Report is a summary of the 2009–2010 research program of the Environmental Research Institute of the Supervising Scientist and has been reviewed internally by senior staff and the editors of this volume.

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Preface

The Environmental Research Institute of the Supervising Scientist (***eriss***) is part of the Supervising Scientist Division (SSD) of the Australian Government's Department of Sustainability, Environment, Water, Population and Communities (SEWPaC). ***eriss*** provides specialist technical advice to the Supervising Scientist on the protection of the environment and people of the Alligator Rivers Region (ARR) from the impact of uranium mining. Its major function is to conduct research into developing best practice methodologies for monitoring and assessing the impact of uranium mining on water and air (transport pathways) and soil, and on the bushfoods that are consumed by the local indigenous people. This research spans the operational, decommissioning, and post rehabilitation phases of mining.

eriss also applies its expertise to conducting research on the sustainable use and environmental protection of tropical rivers and their associated wetlands, and engaging in a limited program of contract research on the impacts of mining elsewhere in the north Australian tropics.

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 (see ARRTC membership and function in Appendix 2), the Supervising Scientist, Energy Resources of Australia Ltd (ERA) and other stakeholders. The KKNs are reviewed periodically (approximately every three years) to ensure their currency in the context of any significant changes that may have occurred in U-mining related activities and issues in the ARR. The current revision of the KKNs will apply until the end of 2010.

Not all of the KKN research areas (Appendix 3) are able to be covered by ***eriss***, since not all of the required disciplines are available within the Institute. To address these particular gaps, collaborative projects are conducted between ***eriss*** and researchers from other organisations, and consultants are commissioned by ***eriss*** and others to undertake specific pieces of work. For example, KKN projects related to detailed hydrogeology or tailings management on the Ranger lease are conducted and reported separately by consultants engaged by ERA. A more complete picture of the scope of research work that is conducted by all parties can be obtained by referring to the minutes that are produced for the meetings of ARRTC: www.environment.gov.au/ssd/communication/committees/arrtc/meeting.html.

This report documents research projects undertaken by ***eriss*** over the 2009–10 financial year (1.7.09 to 30.6.10). A particular focus was the consolidation of all components of the research program that underpin the acquisition and interpretation of continuous water quality monitoring data, as SSD moves towards this being its primary monitoring method for the 2010–11 wet season and beyond. A key component was continuing with the extensive ecotoxicological testwork, involving exposure of a suite of five aquatic test organisms to pulses of magnesium over periods of 4, 8 and 24 h, required to derive appropriate trigger values spanning this range of exposure durations. Other major areas of activity related to the acquisition of data from erosion plots constructed on the Ranger Trial Landform and assisting Parks Australia Operations with the final phases of radiological assessment for rehabilitation activities in the South Alligator River valley. The final phases of data analysis and reporting were also completed for projects to assess the current status of surface and groundwater at the Rum Jungle legacy site.

The uranium mining section of the research summary is structured according to the five major topic areas in the KKN framework, noting that this year there are no research papers for Jabiluka or Nabarlek.

1 Ranger – current operations

2 Ranger – rehabilitation

3 Jabiluka

4 Nabarlek

5 General Alligators Rivers Region

The Jabiluka site is in long-term care and maintenance and the current work of the Supervising Scientist is focused on maintaining a routine continuous monitoring program for flow and electrical conductivity downstream of the formerly disturbed area. The Nabarlek lease was taken over by Uranium Equities Ltd to pursue exploration activities. Environmental monitoring and assessment for this site is being conducted via Mining Management Plans submitted to the Northern Territory Government.

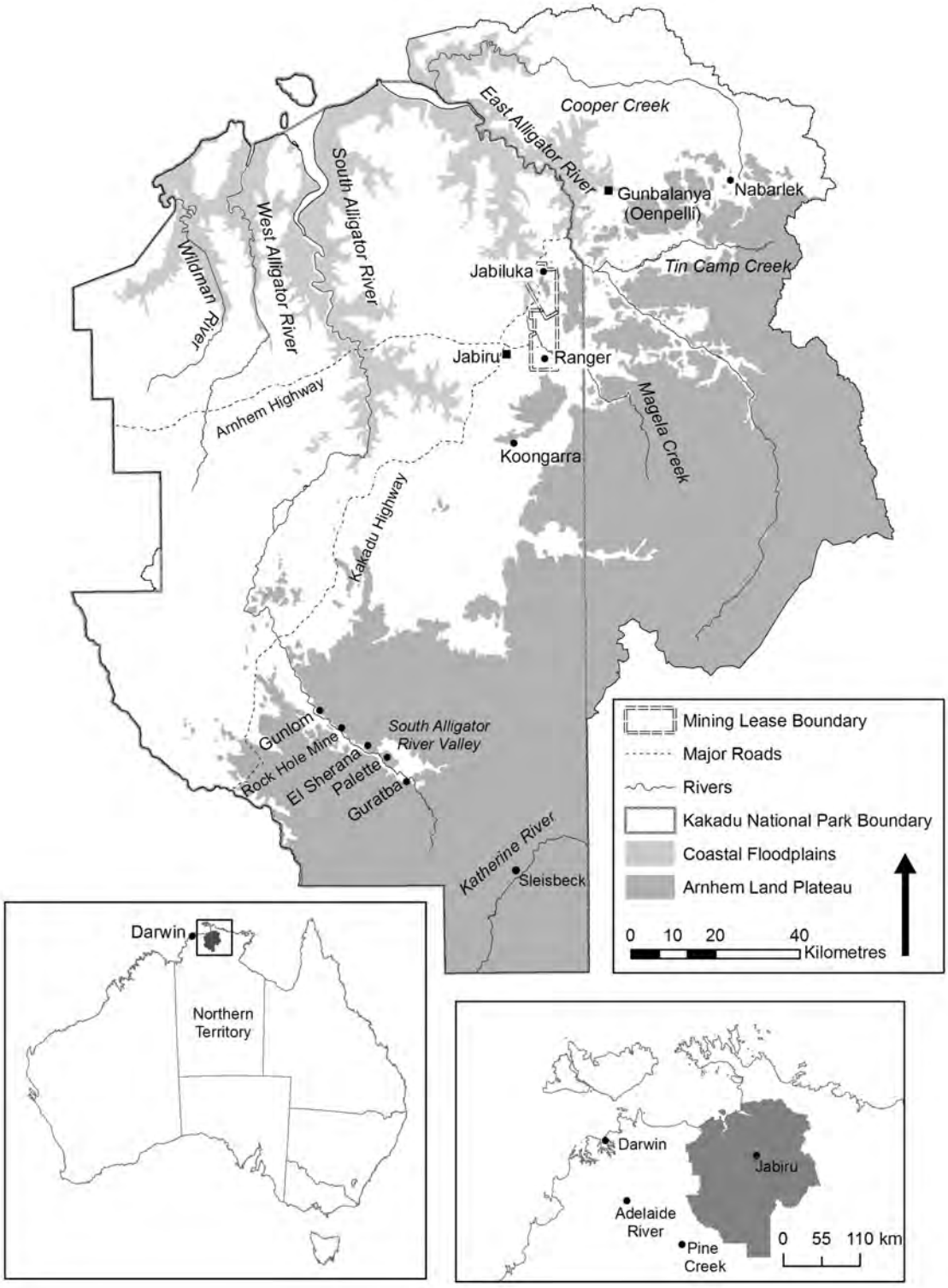
Three maps (following this Preface) provide the regional context for the locations that are referenced in the research papers. Map 1 shows Kakadu National Park and the locations of the Ranger mine, Jabiluka project area, the decommissioned Nabarlek mine, and the South Alligator River valley. A schematic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

The final section of this report contains summaries of the non-uranium mining related external projects. Commercial-in-confidence projects have been excluded from this compilation.

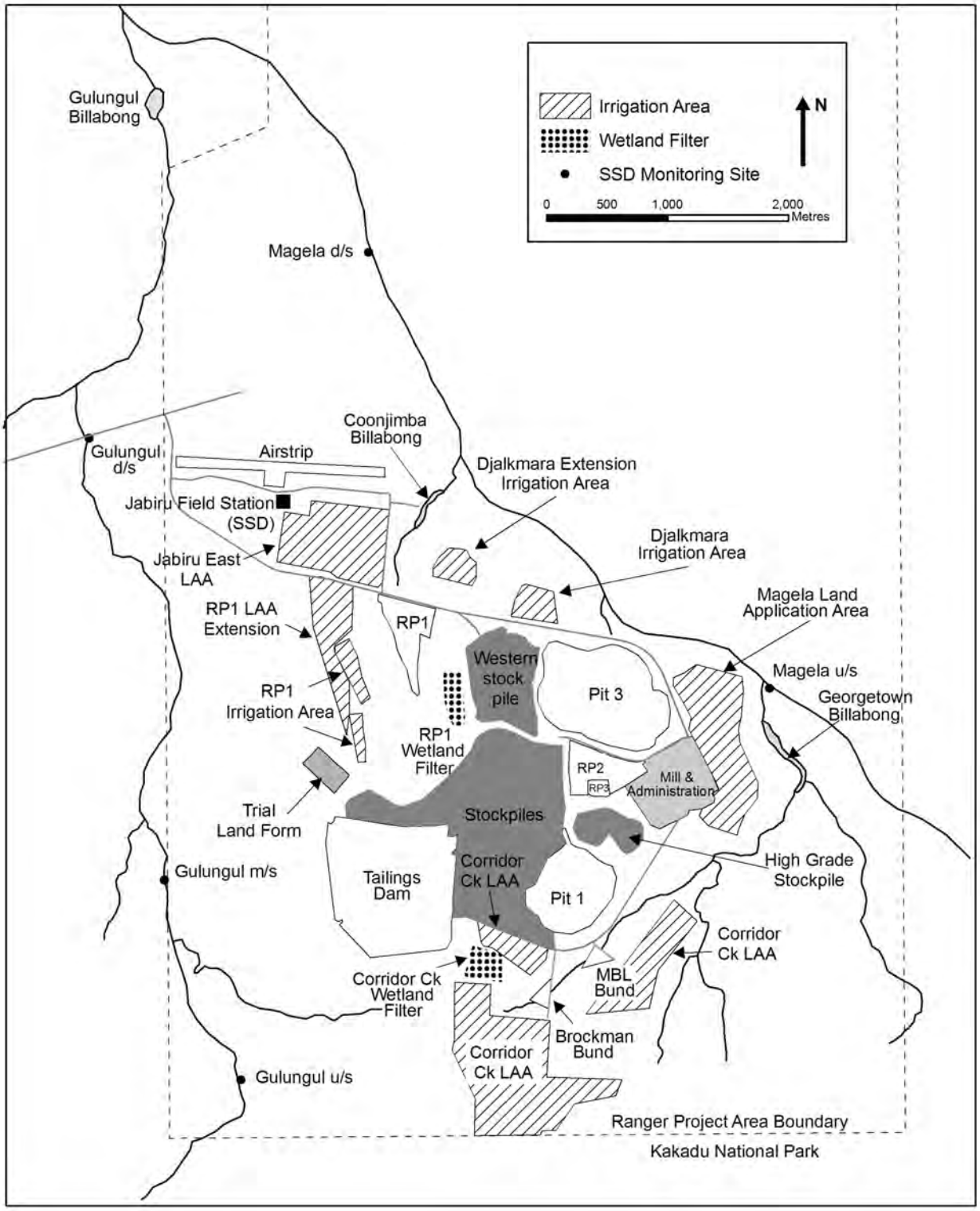
For additional information, readers are referred to the annual publications list (Appendix 1) that details all of the material published, and conference and workshop papers presented by ***eriss*** staff in 2009–10.

Dr DR Jones

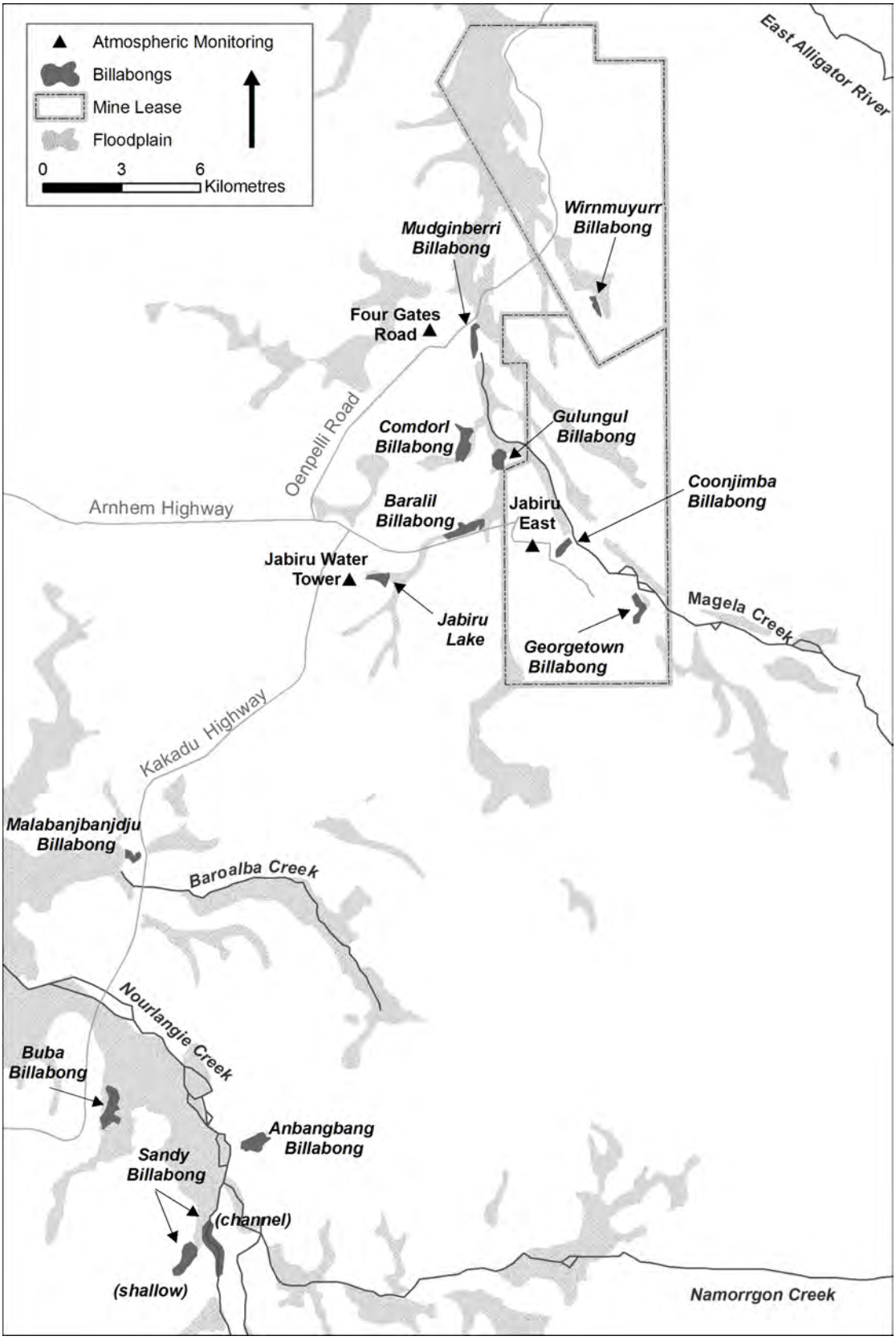
Director, Environmental Research Institute of the Supervising Scientist



Map 1 Alligator Rivers Region



Map 2 Ranger minesite showing adjacent billabongs, creek systems and key water quality monitoring sites



Map 3 Location of waterbodies and atmospheric monitoring sites used in the SSD environmental research and monitoring programs