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*eriss* research summary

2008–2009



DR Jones & AL Webb (eds)



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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 2008–2009 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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# Contents

<b>Preface</b>	<b>viii</b>
<b>Maps</b>	<b>x</b>
<b>PART 1: RANGER – CURRENT OPERATIONS</b>	<b>1</b>
<b>1.2 ONGOING OPERATIONAL ISSUES</b>	
<b>KKN 1.2.1 Ecological risks via the surface water pathway</b>	
Contaminant pathway conceptual models for Ranger uranium mine <i>S Parker, R van Dam &amp; R Bartolo</i>	2
<b>KKN 1.2.2 Land irrigation</b>	
Characterisation of contamination at land application areas at Ranger (collaborative project with EWLS) <i>A Bollhöfer, R Akber, P Lu, B Ryan &amp; G Passmore</i>	5
<b>KKN 1.2.4 Ecotoxicology</b>	
Chronic toxicity of uranium to larval purple-spotted gudgeon ( <i>Mogurnda mogurnda</i> ) <i>K Cheng, D Parry, S Markich, A Hogan, A Harford &amp; R van Dam</i>	12
Amelioration of uranium toxicity by dissolved organic carbon <i>M Houston, J Ng, B Noller, S Markich &amp; R van Dam</i>	16
Development of a reference toxicity testing program for routine toxicity test species <i>K Cheng, R van Dam, A Hogan, A Harford, C Costello, D White &amp; M Houston</i>	23
Effects of magnesium pulse exposures on aquatic organisms <i>A Hogan, R van Dam, A Harford, K Cheng &amp; K Turner</i>	27
The effects of suspended sediment on tropical freshwater biota <i>A Harford, M Saynor, R van Dam, A. Hogan &amp; D White</i>	32
The toxicity of uranium to sediment biota of Magela Creek backflow billabong environments <i>R van Dam, C Humphrey, A Harford, S Simpson, K Gibb &amp; J Stauber</i>	37
<b>KKN 1.3.1 Monitoring</b>	
Atmospheric radiological monitoring in the vicinity of Ranger and Jabiluka <i>A Bollhöfer, R Cahill, R Thorn, J Pfitzner &amp; A Esparon</i>	46

Monitoring of radionuclides in groundwater at Ranger	50
<i>B Ryan</i>	
Surface water radiological monitoring in the vicinity of Ranger and Jabiluka	54
<i>P Medley, A Bollhöfer &amp; K Turner</i>	
Surface water transport of mine-related solutes in the Magela Creek catchment using continuous monitoring techniques	58
<i>K Turner &amp; D Jones</i>	
Review of solute selection for water quality and bioaccumulation monitoring	66
<i>K Turner &amp; D Jones</i>	
<b>Results from the routine stream monitoring program in Magela Creek catchment, 2008–09</b>	<b>73</b>
Introduction	74
<i>C Humphrey, A Bollhöfer &amp; D Jones</i>	
Chemical and physical monitoring	75
<i>J Brazier</i>	
Toxicity monitoring in Magela Creek	81
<i>C Humphrey, C Davies &amp; D Buckle</i>	
Bioaccumulation of uranium and radium in freshwater mussels from Mudginberri Billabong	83
<i>A Bollhöfer, C Humphrey, B Ryan &amp; D Buckle</i>	
Monitoring using macroinvertebrate community structure	85
<i>C Humphrey, L Chandler &amp; C Camilleri</i>	
Monitoring using fish community structure	88
<i>D Buckle, C Humphrey &amp; C Davies</i>	
<b>Stream monitoring program for the Magela Creek catchment: research and development</b>	<b>93</b>
Introduction	94
<i>C Humphrey, A Bollhöfer &amp; D Jones</i>	
Enhancements to SSD's stream monitoring program for Ranger	95
<i>J Brazier, C Humphrey, K Turner, D Jones &amp; D Buckle</i>	
A study of radionuclide and metal uptake in mussels from Mudginberri Billabong	99
<i>A Bollhöfer, C Humphrey, B Ryan &amp; D Buckle</i>	

## **PART 2: RANGER – REHABILITATION**

### **KKN 2.1.1 Defining the reference state and baseline data**

- Define the geomorphic characteristics of Gulungul Creek catchment 106  
*D Moliere, K Turner, K Evans & M Saynor*

### **KKN 2.2.1 Landform design**

- Revegetation trial and demonstration landform – erosion and chemistry studies 109  
*M Saynor, K Turner, R Houghton & K Evans*

### **KKN 2.2.4 Geomorphic behaviour and evolution of the landscape**

- Assess the impact of extreme rainfall events on Ranger rehabilitated landform geomorphic stability using the CAESAR landscape evolution model 113  
*KG Evans, GR Hancock, TJ Coulthard & JBC Lowry*
- Validation of the SIBERIA model, its erosion parameters and erosion rate predictions 115  
*G Hancock & K Evans*
- Definition of sediment sources and their effect on contemporary catchment erosion rates in the ARR: landslips 119  
*GW Staben, MJ Saynor & JBC Lowry*
- Assess the impact of tailing subsidence on rehabilitated landform erosional stability 125  
*R Houghton*

### **KKN 2.2.5 Radiological characteristics of the final landform**

- Pre-mining radiological conditions at Ranger mine 130  
*A Bollhöfer & A Esparon*
- Radon exhalation from a rehabilitated landform 135  
*A Bollhöfer, B Ryan, A Esparon & J Pfitzner*

### **KKN 2.5.1 Development and agreement of closure criteria from ecosystem establishment perspective**

- Development of surface water quality closure criteria for Ranger billabongs using macroinvertebrate community data 140  
*C Humphrey, D Jones & K Turner*
- Effects of fine suspended sediment on billabong limnology 143  
*D Buckle, C Humphrey & D Jones*

## **KKN 2.5.2 Characterisation of terrestrial and aquatic ecosystem types at analogue sites**

- Use of vegetation analogues to guide planning for rehabilitation of the Ranger mine site 150  
*C Humphrey & G Fox*

## **KKN 2.5.3 Establishment and sustainability of ecosystems on mine landform**

- Charles Darwin University seed biology research 155  
*S Bellairs, M McDowell, C Humphrey, M Daws & P Christophersen*

## **KKN 2.5.4 Radiation exposure pathways associated with ecosystem re-establishment**

- Investigating radium uptake in *Passiflora foetida* (bush passionfruit) 164  
*P Medley, A Bollhöfer & D Parry*
- Storing, accessing and communicating the bushtucker project information 169  
*D Walden, R Bartolo, B Ryan & A Bollhöfer*

## **KKN 2.6.1 Monitoring of the rehabilitated landform**

- Radio- and lead isotopes in sediments from the Nourlangie and Koongarra catchments (PhD project) 174  
*A Frostick, A Bollhöfer & D Parry*

## **KKN 2.6.2 Off-site monitoring during and following rehabilitation**

- Assessment of the significance of extreme events in the Alligator Rivers Region – impact of Cyclone Monica on Gulungul Creek catchment, Ranger mine site and Nabarlek area 179  
*K Evans & D Moliere*
- Assessment of suspended sediment movement upstream and downstream of Ranger 185  
*K Evans & D Moliere*

## **PART 3: JABILUKA**

### **KKN 3.1.1 Monitoring during the care and maintenance phase**

- Monitoring sediment movement in Ngarradj 188  
*K Evans, K Turner & M Saynor*

## **PART 4: NABARLEK**

## **PART 5: GENERAL ALLIGATOR RIVERS REGION**

### **KKN 5.2.1 Assessment of past mining and milling sites in the South Alligator River valley**

Remediation of the remnants of past uranium mining activities in the South Alligator River Valley	194
<i>A Bollhöfer, B Ryan, M Fawcett, K Turner &amp; D Jones</i>	

## **RESEARCH CONSULTANCIES 201**

Ecotoxicological assessment of mine site seepage water	202
<i>A Harford, R van Dam, A Hogan &amp; A Storey</i>	
TRaCK 4.1 – Flood inundation mapping for the Mitchell and Daly River catchments	203
<i>R Bartolo, D Ward &amp; D Jones</i>	

## **APPENDICES**

<b>Appendix 1 SSD publications and presentations for 2008–09</b>	<b>204</b>
<b>Appendix 2 ARRTC membership and functions</b>	<b>213</b>
<b>Appendix 3 ARRTC Key Knowledge Needs 2008–2010: Uranium mining in the Alligator Rivers Region</b>	<b>214</b>

# 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 the Environment, Water, Heritage and the Arts. *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. A major part of its 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 uranium mining in the ARR.

*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 (ARRTC – see ARRTC membership and function in Appendix 1), the Supervising Scientist, Energy Resources of Australia 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.

The KKNs comprise six thematic areas based primarily on geographic provenance (Appendix 2). The content of the research programs developed for each of these areas is assessed and reviewed annually by ARRTC in consultation with stakeholder groups.

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 particular gaps, collaborative projects are conducted between *eriss* and researchers from other organisations, or 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 Energy Resources of Australia Ltd. 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](http://www.environment.gov.au/ssd/communication/committees/arrtc/meeting.html).

This report documents research projects undertaken by *eriss* over the 2008–09 financial year. Much of the monitoring and research work conducted by *eriss* is focused on the wet season and its immediate aftermath since it is during this period that the environment is potentially at most risk from past and current uranium mining activities. By way of context the wet season rainfall of 1186 mm for 2008–09 was well below the running average of 1583 mm, with decreasing annual rainfall now having been recorded over each of three successive wet seasons (2006–07, 2540 mm; 2007–08, 1658 mm).



The U-mining-related section of the research summary 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

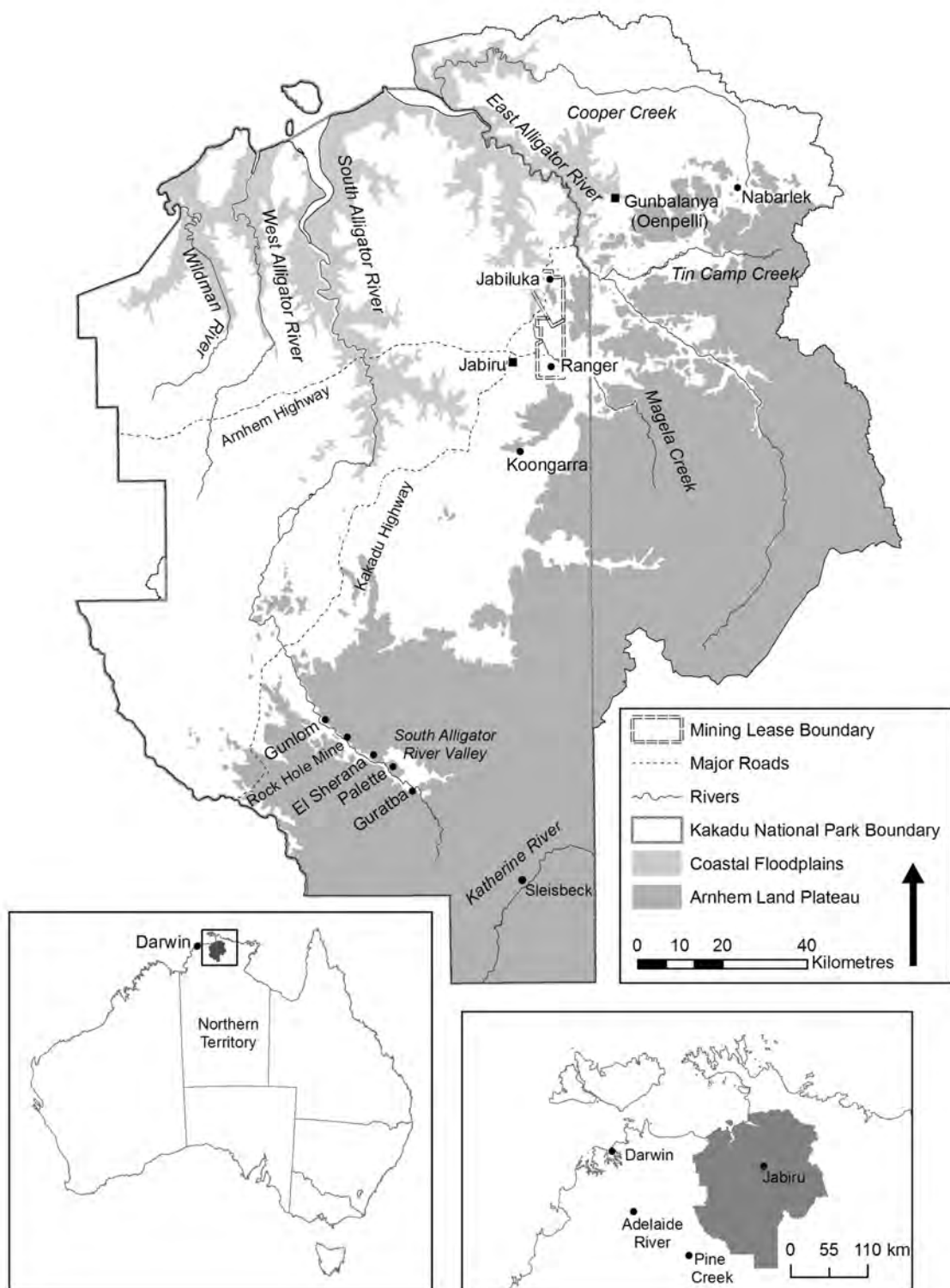
Three maps (following this Preface) provide the regional context for the locations that are referenced in the research papers. Map 1 shows Kakadu National Park and the locations of the Ranger Mine, Jabiluka project area, the decommissioned Nabarlek Mine, and the South Alligator River Valley. A schematic of the Ranger 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 Ranger mine.

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

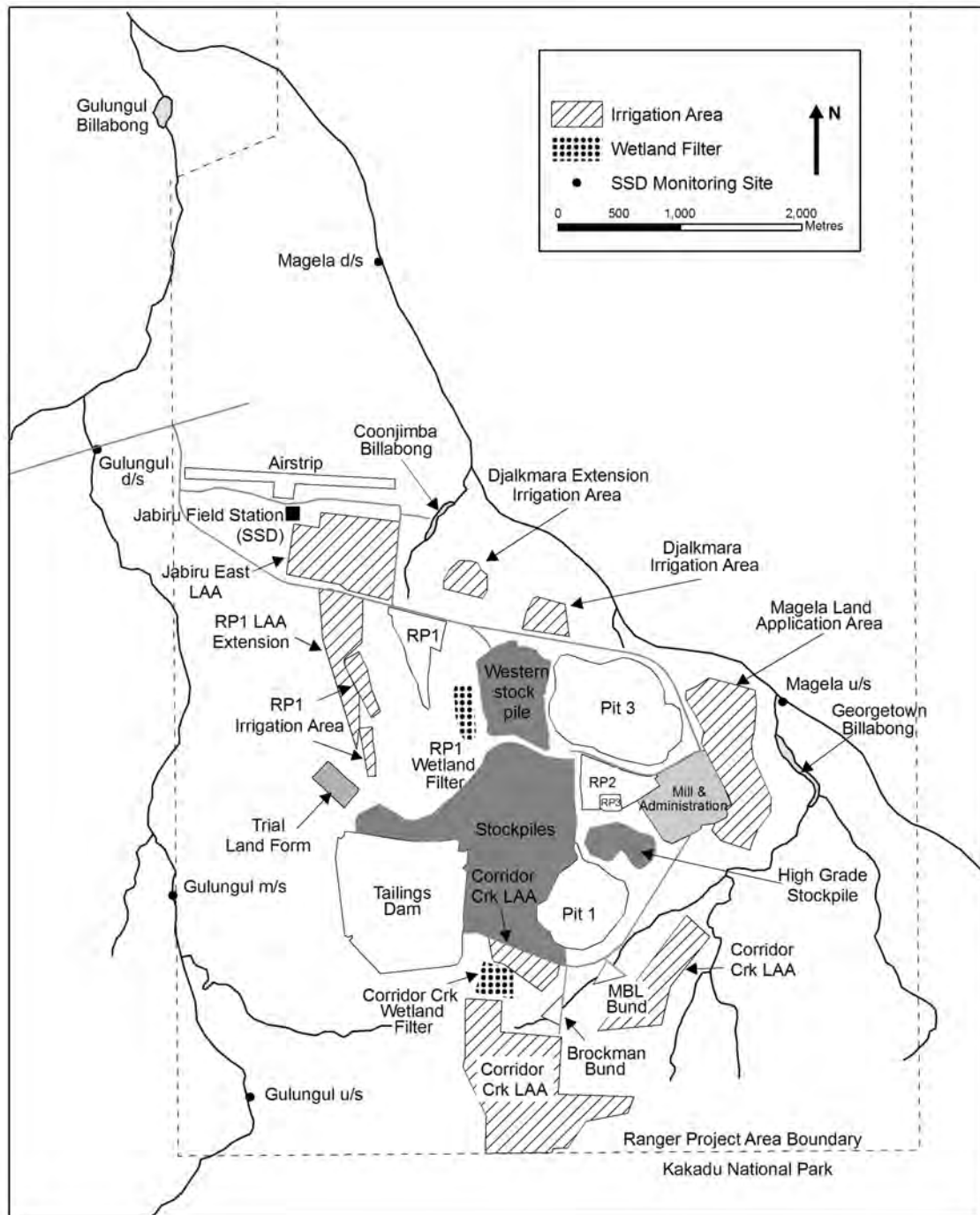
For additional information, readers are referred to the annual publications list (Appendix 3) that details all of the material published, and conference and workshop papers presented by *eriss* staff in 2008–09.

**Dr DR Jones**

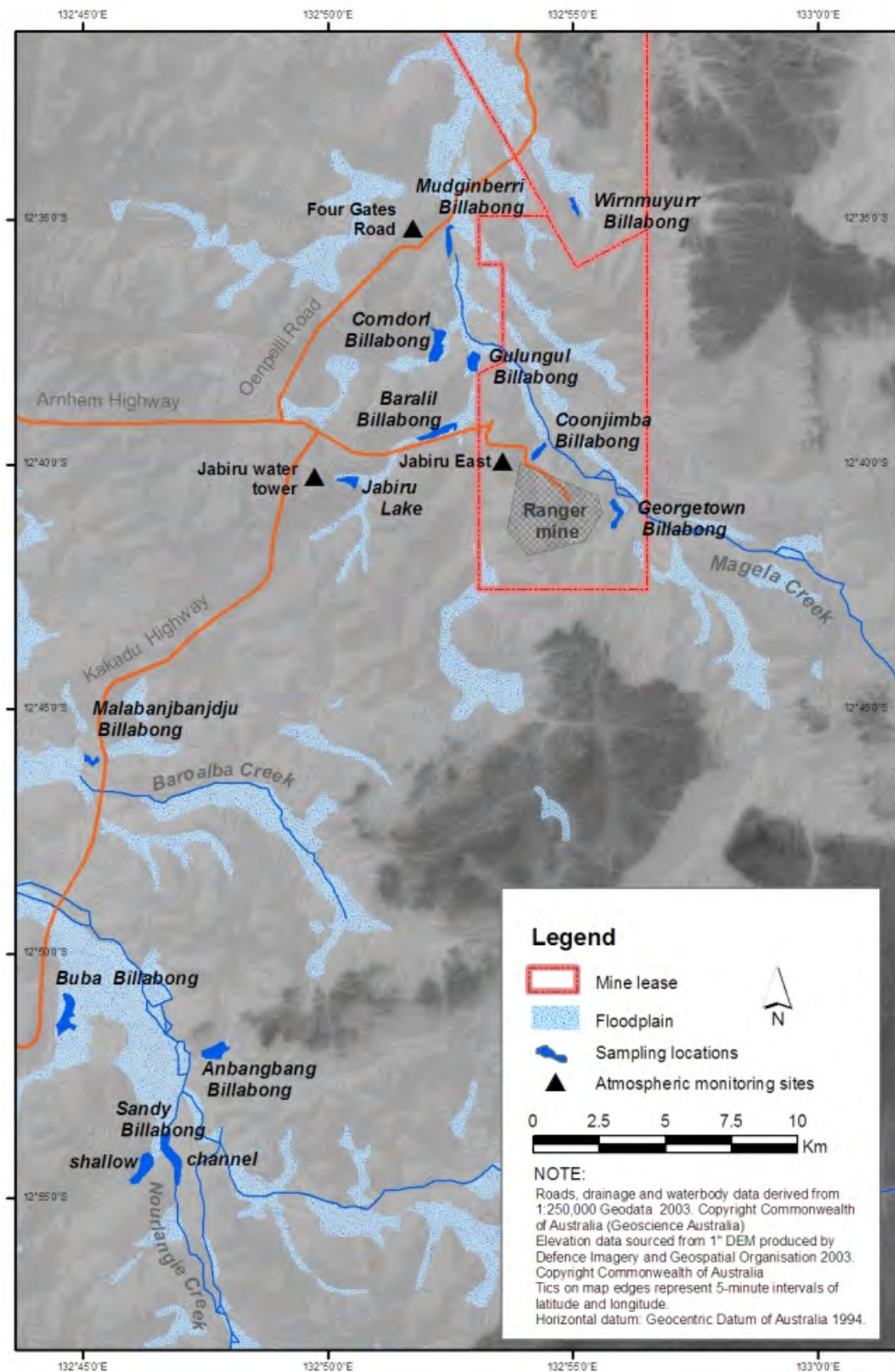
*Director, Environmental Research Institute of the Supervising Scientist*



**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 monitoring programs