

Schedule
“SCHEDULE
Conditions of Authorisation number 0108-10

TABLE OF CONTENTS

SCHEDULE 1	DEFINITIONS
SCHEDULE 2	AUTHORISED OPERATIONS AT THE RANGER MINE
SCHEDULE 3	MINING OPERATIONS
SCHEDULE 4	TREATMENT PLANT OPERATIONS
SCHEDULE 5	OPERATION OF TAILINGS REPOSITORIES
SCHEDULE 6	OTHER SERVICES, OPERATIONS AND REQUIREMENTS
SCHEDULE 7	WATER MANAGEMENT
SCHEDULE 8	DECOMMISSIONING AND REHABILITATION
SCHEDULE 9	ENVIRONMENTAL AND RADIATION MONITORING AND REPORTING
ANNEX A	ENVIRONMENTAL MONITORING PROGRAM
ANNEX B	RADIATION MONITORING PROGRAM
ANNEX C	REPORTING REQUIREMENTS

SCHEDULE 1 DEFINITIONS

- 1.1 In this Authorisation, unless a contrary intention appears:
- 1.1.1 "the Act" means the *Mining Management Act 2001*;
 - 1.1.2 "the Minister" means the Minister of the Northern Territory responsible for the Act;
 - 1.1.3 "the Director" means the Director of Mines Division of the Northern Territory Department of Business, Industry and Resource Development;
 - 1.1.4 "the Commonwealth Minister" means the Minister administering the *Atomic Energy Act 1953*;
 - 1.1.5 "the Authority" means the Authority issued under section 41 of the *Atomic Energy Act 1953* by the Commonwealth Minister on 14 November 1999;
 - 1.1.6 "the Environmental Requirements" mean the requirements attached as Appendix A to the Authority;
 - 1.1.7 "the Supervising Scientist" means the person performing the duties of Supervising Scientist under the *Environment Protection (Alligator Rivers Region) Act 1978*;
 - 1.1.8 "the Supervising Authority" means the person having responsibility under an applicable law or if there is no applicable law the person performing the duties of Supervising Scientist under the *Environment Protection (Alligator Rivers Region) Act 1978*.
 - 1.1.9 "Ranger project area" means the land described in Schedule 2 to the *Aboriginal Land Rights (Northern Territory) Act 1976*;
 - 1.1.10 "owner", in relation to a mine, has the same meaning as it does under the Act, and, in relation to the mine that lies within the Ranger project area, means Energy Resources of Australia Ltd (ACN 008 550 865), and having its registered office at C/- Mallesons Stephen Jaques, 10th Floor Advance Bank Centre, 60 Marcus Clarke Street, Canberra City, ACT 2601;
 - 1.1.11 "Mining Officer" has the same meaning as it does under the Act;
 - 1.1.12 "mining site" has the same meaning as it does under the Act
 - 1.1.13 "operator " has the same meaning as it does under the Act;
 - 1.1.14 "mine site employees" means employees of the operator of the mine whose usual place of work is in the Ranger project area;
 - 1.1.15 "the Code " means the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987);
 - 1.1.16 "designated employees" has the same meaning as it does in the Code;
 - 1.1.17 "controlled area" has the same meaning as it does in the Code;
 - 1.1.18 "supervised area" has the same meaning as it does in the Code;

1.1.19 "Radiation Safety Officer" has the same meaning as it does in the Code; and

1.1.20 "site" has the same meaning as "Ranger project area".

SCHEDULE 2 AUTHORISED OPERATIONS AT THE RANGER MINE

2.1 The operator of the mine is authorised to:

- 2.1.1 mine Ranger #3, to the extent of the Shell 50 design specified in the proposal submitted by Energy Resources of Australia on 12 December 2007 (ref MR2007/0355), in general accordance with the provisions of SCHEDULE 3;
- 2.1.2 operate an ore treatment facility for the production of uranium oxide in general accordance with the provisions of SCHEDULE 4;
- 2.1.3 operate the tailings dam and Pit#1 tailings repository and to carry out such associated activities as may be required for their operation, in general accordance with SCHEDULE 5;
- 2.1.4 carry out ancillary works and services necessary for the conduct of mining and the continuing operation of ore treatment facilities in general accordance with SCHEDULE 6;
- 2.1.5 dispose of water by direct release from Retention Pond 1 and Djalkmarra Billabong in general accordance with SCHEDULE 7;
- 2.1.6 dispose of water from Retention Pond 2 by irrigation within areas which are approved by the Director, in general accordance with SCHEDULE 7;
- 2.1.7 dispose of water from pit dewatering bores by flood irrigation within areas which are approved by the Director;
- 2.1.8 pump water from Magela Creek to Retention Pond 2 subject to the approval of the Director and subject to the conditions of SCHEDULE 7; and
- 2.1.9 to construct and operate a dolomite treatment plant in accordance with the provisions of SCHEDULE 4;
- 2.1.10 operate a hydrogen peroxide storage facility, and operate a Caro's acid production facility, in general accordance with the document titled "Application for Approval Construction and Operation of a Hydrogen Peroxide Storage Facility Including the Production of Caro's Acid" dated October 1995; and
- 2.1.11 store drill core and samples from the Djarr Djarr camp in a manner approved by the supervising authority.

SCHEDULE 3 MINING OPERATIONS

Environmental Protection

- 3.1 The operator of the mine shall ensure that mining operations at Ranger are undertaken in such a way as to be consistent with the following Primary Environmental Objectives for Kakadu National Park.
 - 3.1.1 maintain the attributes for which Kakadu National Park was inscribed on the World Heritage list;
 - 3.1.2 maintain the ecosystem health of the wetlands listed under the Ramsar Convention on Wetlands (i.e. the wetlands within Stages I and II of Kakadu National Park);
 - 3.1.3 protect the health of members of the regional community; and
 - 3.1.4 maintain the natural biological diversity of aquatic and terrestrial ecosystems of the Alligator Rivers Region, including ecological processes.
- 3.2 In particular, the operator of the mine shall ensure that operations do not result in:
 - 3.2.1 damage to the attributes for which Kakadu National Park was inscribed on the World Heritage list;
 - 3.2.2 damage to the ecosystem health of the wetlands listed under the Ramsar Convention on Wetlands (i.e. the wetlands within Stages I and II of Kakadu National Park);
 - 3.2.3 an adverse effect on the health of members of the regional community by ensuring that exposure to radiation and chemical pollutants is as low as reasonably achievable and conforms with relevant Australian law, and in particular, in relation to radiological exposure, complies with the most recently published and relevant Australian standards, codes of practice, and guidelines;
 - 3.2.4 change to biodiversity, or impairment of ecosystem health, outside of the Ranger Project Area, of a nature that is different and detrimental from that expected from natural biophysical or biological processes operating in the Alligator Rivers Region; and
 - 3.2.5 environmental impacts within the Ranger Project Area which are not as low as reasonably achievable, during mining excavation, mineral processing, and subsequently during and after rehabilitation.

Conditions

- 3.3 In order to meet the Primary Environmental Objectives and the primary environmental objectives for rehabilitation described in 8.1.2, the operator of the mine shall:
 - 3.3.1 develop and update to the approval of the Director, the Ranger Mining Management Plan;
 - 3.3.2 conduct the mining in general accordance with the latest approved revision of the Ranger Mining Management Plan insofar as that document does not conflict with the Schedules contained herein; and
 - 3.3.3 dump and stockpile ore and waste material:

- 3.3.3.1 in general conformity with the Ranger Mining Management Plan; and
- 3.3.3.2 without passing through the discriminator if the material is from an area which has been probed or scanned and ascertained to be waste; or
- 3.3.3.3 according to the uranium content determined by the discriminator, which has a nominal accuracy of plus or minus 50% at the 0.02% uranium level, and which is to be calibrated in accordance with the procedure approved by the Director; and described in the Mining Management Plan.
- 3.3.4 minimise, to the greatest extent practical and to the satisfaction of the Director:
 - 3.3.4.1 the disturbance of soil, vegetation and fauna within the Ranger Project Area; and
 - 3.3.4.2 the risk to fauna as a result of drinking contaminated water.
- 3.3.5 ensure that the operations at Ranger will not result in any adverse impact on Kakadu National Park through the introduction of exotic fauna or flora.
- 3.4 All mining operations shall be implemented in accordance with Best Practicable Technology, defined as that technology from time to time relevant to the Ranger Project which produces the minimum environmental pollution and degradation that can reasonably be achieved having regard to:
 - the level of effluent control achieved, and the extent to which environmental pollution and degradation are prevented, in mining and milling operations in the uranium industry anywhere in the world,
 - the total cost of the application or adoption of that technology relative to the environmental protection to be achieved by its application or adoption,
 - evidence of detriment, or of lack of detriment, to the environment after the commencement of the Ranger Project,
 - the physical location of the Ranger Project,
 - the age of equipment and facilities in use on the Ranger Project and their relative effectiveness in reducing environmental pollution and degradation, and
 - social factors including possible adverse social effects of introducing new technology.

SCHEDULE 4 TREATMENT PLANT OPERATIONS

- 4.1 In order to protect the environment, the operator of the mine shall:
- 4.1.1 develop and update to the satisfaction of the Director, the Ranger Mining Management Plan; and
 - 4.1.2 conduct ore treatment in general accordance with the latest approved revision of the Ranger Mining Management Plan insofar as that document does not conflict with the Schedules contained herein.
- 4.2 The operator of the mine shall ensure that:
- 4.2.1 sufficient appropriate equipment is available to wash down the uranium treatment plant and to collect any spilt or leaked material;
 - 4.2.2 the interlocks in the uranium treatment plant are tested at intervals no greater than six months and the records of those tests are available for inspection by a Mining Officer;
 - 4.2.3 the counter-disaster procedures are practised at least once annually and that reports on these practices are maintained on site for perusal by a Mining Officer;
 - 4.2.4 where a potential exists for dust generation, such as at crushing, screening, and transfer points within the mill, dust control devices shall be installed and their functioning in accordance with specifications checked annually and after maintenance;
 - 4.2.5 the emission of sulfur dioxide does not exceed 2 kg per tonne of 100% acid produced; and the emission of acid mist expressed as sulfuric acid does not exceed 0.075 kg per tonne of 100% acid produced; and
 - 4.2.6 the combined rate of emission of uranium and uranium compounds, expressed as uranium, from the uranium calciner stack and the product packaging dust control systems does not exceed 1.5 kg/day.

SCHEDULE 5 OPERATION OF TAILINGS REPOSITORIES

- 5.1 During mining operations and prior to final placement, covering and rehabilitation of the tailings, tailings shall be securely contained in a manner approved by the Director which prevents detrimental environmental impact.
- 5.2 In order to protect the environment, the operator of the mine shall:
 - 5.2.1 to the maximum extent possible, deposit tailings in tailings repositories in such a way as to result in the maximum practicable dry density;
 - 5.2.2 minimise dusting from the surface of the tailings by ensuring that exposed surfaces of tailings are maintained in a coherent near-saturated condition; and
 - 5.2.3 ensure that the water level in the tailings dam does not exceed RL 50.0 m AHD. Subject to the availability of such capacity to transfer water from the tailings dam to Pit#1 that the addition of the volume of water that would be expected during a 72 hour, 1 in 100 rainfall event would not cause the level to rise above RL 50.0 m AHD, the target operating level in the tailings dam will, from 1 December until 30 March each year, be RL 49.5m AHD.
- 5.3 The operator of the mine shall submit a report on proposed actions to manage the water level in the tailings dam to the Director within three days of the target operating level being exceeded by more than 0.1 m.
- 5.4 Final disposal of tailings shall be undertaken to the satisfaction of the Minister on the basis of best available modelling, in such a way to ensure that:
 - 5.4.1 the tailings are physically isolated from the environment for at least 10,000 years;
 - 5.4.2 any contaminants arising from the tailings will not result in any detrimental environmental impact for at least 10,000 years
 - 5.4.3 radiation doses to members of the public will comply with relevant Australian law and be less than limits recommended by the most recently published and relevant Australian standards, codes of practice and guidelines effective at the time of the final disposal.
 - 5.4.4 by the end of operations all tailings must be placed in the mined out pits.
- 5.5 The operator of the mine shall submit reports on each tailings repository in accordance with the requirements of Annex C.

SCHEDULE 6 OTHER SERVICES, OPERATIONS AND REQUIREMENTS

Infringements

- 6.1 The operator of the mine shall notify the Minister as soon as is practicable, of any infringement of the conditions and requirements of this Authorisation or the Environmental Requirements.

Staffing and Induction

- 6.2 The company shall employ adequate numbers of competent, appropriately qualified and experienced staff to ensure that it can provide the required level of protection to the environment, human health, and Aboriginal culture and heritage.
- 6.3 All mine site employees shall attend an induction course, which shall explain the environment protection and monitoring programs, radiation protection and responsibilities, Aboriginal culture, and the plan of management of Kakadu National Park.
- 6.4 All mine site employees shall be issued with a radiation protection manual explaining the nature of the hazards associated with the handling of uranium ores and concentrates and the safe working procedures to be adopted.

Air Quality

- 6.5 Emissions of gaseous and particulate contaminants shall conform with Australian law, and, taking into account the most recently published and relevant Australian standards, codes of practice, and guidelines, be managed to minimise the effects of particulate and gaseous contaminants from the point of view of all possible radiological, physical and chemical hazards.
- 6.6 Air quality shall be managed in such a way that there is no physical or chemical detriment to any known sites of Aboriginal culture or heritage.

Extraction of Sand and Gravel for Ancillary Purposes

- 6.7 All excavated material shall be managed such that there is no detrimental environmental impact outside the Ranger Project Area, and that environmental impacts within the Ranger Project Area are as low as reasonably achievable.
- 6.8 The operator of the mine shall ensure that:
- 6.8.1 prior to the commencement of extraction operations, a plan of the proposed operations is submitted to a Mining Officer for approval. This plan shall depict the extent of the proposed borrow areas and the location of associated roads or other developments. It shall also include details of proposed rehabilitation; and
 - 6.8.2 rehabilitation measures specified by a Mining Officer are carried out as soon as is reasonably practicable.

Explosives Manufacture and Blasting Operations

- 6.9 The company shall ensure that detonation of explosives cannot damage the environment outside of the Ranger Project Area, or any sites significant to Aboriginal culture and heritage.

- 6.10 In the conduct of blasting operations, in order to protect the environment, the operator of the mine shall ensure that no blast is fired in which the weight of explosive per millisecond delay interval exceeds the maximum weight determined from time to time by the Director and noted in the Mining Management Plan.

Storage, use and Disposal of Hazardous Substances and Waste

- 6.11 All hazardous substances (including chemicals, reagents, fuels and oils) shall be stored, used and disposed of in conformance with relevant Australian law and in accordance with any standards, practices or procedures advised by the Supervising Authority to minimise the risk to human health and ecosystem health.
- 6.12 The company shall ensure that wastes will not result in any detrimental environmental impact outside of the Ranger Project Area, and that environmental impacts within the Ranger Project Area are as low as reasonably achievable.
- 6.13 From the date of the Authority the company shall prepare and maintain records of the location, state and chemical characteristics of all hazardous substances and wastes contained, used and disposed of on the Ranger Project Area. The company shall take all reasonable steps to include in the record details of hazardous substances contained, used or disposed of on the Ranger Project Area before the date of the Authority.
- 6.14 In order to protect the environment, the operator of the mine shall, in relation to the domestic and industrial waste disposal site, ensure that:
- 6.14.1 all reasonable precautions are taken to prevent the breeding of flies, vermin, or other pests, and to prevent the dispersal of windblown rubbish;
 - 6.14.2 when filled, the trench is covered and compacted with soil to above the surrounding ground level so as to compensate for anticipated subsidence.

SCHEDULE 7 WATER MANAGEMENT

- 7.1 The operator of the mine shall not allow either surface or ground waters arising or discharged from the Ranger Project Area during its operation, or during or following rehabilitation, to compromise the achievement of the Primary Environmental Objectives as described in 3.2 and 8.1.
- 7.2 In order to protect the environment, the operator of the mine shall operate a water management system in general accordance with the latest approved revision of the Mining Management Plan insofar as that document does not conflict with the Schedules contained herein.
- 7.3 The operator of the mine shall, to the extent necessary to achieve the Primary Environmental Objectives as described in 3.2, take steps to: minimise the volume of contaminated water that is required to be managed on site; minimise the load of contaminants within that water; and concentrate and contain contaminants within the site.
- 7.4 Process water shall be totally contained within a closed system except for:
 - 7.4.1 losses through natural or enhanced evaporation;
 - 7.4.2 seepage of a quality and quantity that will not cause detrimental environmental impact outside the Ranger Project Area; and
 - 7.4.3 subject to 7.1 and 7.3, process water which has been treated to achieve a quality which:
 - 7.4.3.1 conforms to a standard practice or procedure recommended by the Supervising Scientist; and
 - 7.4.3.2 is not less than that of the water to which it is to be discharged.
- 7.5 The operator of the mine shall:
 - 7.5.1 within two weeks of the end of October each year submit for the approval of the Director, a revision of the Water Management System Operation Manual as a component of the Ranger Mining Management Plan, including:
 - a complete explanation of the operation and maintenance of the water management system;
 - the contingency procedures for disruptions in the operation and maintenance of the water management system; and
 - the surface water monitoring program.
 - 7.5.2 maintain up-to-date versions of drawings depicting the current surface runoff drainage system; and
 - 7.5.3 instruct all personnel involved in the operation of the water management system in the details of its operation and in the implementation of contingency procedures.

- 7.6 In order to protect the environment, the operator of the mine:
- 7.6.1 shall ensure that any discharge of waters from waterbodies other than Retention Pond 1 or Djalkmarra Billabong is made only with the approval of, and in accordance with conditions set by, the Minister;
 - 7.6.2 shall, in relation to the disposal of Retention Pond 2 water by irrigation, ensure that flood irrigation is used as the primary irrigation option and spray irrigation is used only as a backup option during periods when demand for irrigation capacity exceeds that available through flood irrigation, subject to the following conditions:
 - 7.6.2.1 the volume of water discharged by each section of the irrigation system, the times of commencement and of cessation of irrigation, and any observed adverse effects of irrigation, are recorded daily in a log book kept specifically for this purpose;
 - 7.6.2.2 during irrigation, a daily inspection of the irrigation areas is made to detect any waterlogging, seepage, or other visible adverse effects.
- 7.7 The operator of the mine shall maintain to the satisfaction of the Minister and for examination by a Mining Officer, all records and data associated with the operation and monitoring of the water management system for the life of the mine up to and including rehabilitation.
- 7.8 With reference to the pumping of water from Magela Creek to Retention Pond 2, the operator of the mine shall ensure that:
- 7.8.1 such pumping is carried out by pumps having their intake situated just north of the confluence of the main channel of the Magela with the Georgetown Branch;
 - 7.8.2 such water is conveyed by pipeline laid on surface from the pumping station to the north-east corner of the plant fenced area and shall have an "open" discharge to Retention Pond 2, so that water cannot syphon back from the pond into the creek;
 - 7.8.3 the rate and cumulative quantity of water extracted is measured and reported weekly and this rate shall not exceed 25,000 m³ per day. The rate of flow of the Magela immediately upstream of the point of extraction shall be measured and similarly reported; and
 - 7.8.4 the pump installation shall be constructed in a manner which will prevent pollution of the surrounding environment by fuel, lubricants or other foreign matter.
- 7.9 The operator of the mine shall submit reports in accordance with the requirements of Annex C.

SCHEDULE 8 DECOMMISSIONING AND REHABILITATION

Rehabilitation

- 8.1 In order to protect the environment the operator of the mine shall plan rehabilitation in accordance with the following Primary Environmental Objectives for rehabilitation:

8.1.1 Goal

Subject to 8.1.2 and 8.1.3, the operator of the mine shall rehabilitate the Ranger project area to establish an environment similar to the adjacent areas of Kakadu National Park such that, in the opinion of the Commonwealth Minister with the advice of the Supervising Scientist, the rehabilitated area could be incorporated into Kakadu National Park.

8.1.2 Objectives

To revegetate the disturbed sites of the Ranger project area using local native plant species similar in density and abundance to those existing in adjacent areas of Kakadu National Park, to form an ecosystem the long-term viability of which would not require a maintenance regime significantly different from that appropriate to adjacent areas of the Park.

To establish stable radiological conditions on areas impacted by mining so that, the health risk to members of the public, including traditional owners, is as low as reasonably achievable; members of the public do not receive a radiation dose which exceeds applicable limits recommended by the most recently published and relevant Australian standards, codes of practice, and guidelines; and there is a minimum of restrictions on the use of the area.

To establish erosion characteristics which, as far as can reasonably be achieved, do not vary significantly from those of comparable landforms in surrounding undisturbed areas.

8.1.3 Facilities that may remain following rehabilitation

Where all the major stakeholders agree, a facility connected with Ranger may remain in the Ranger Project Area following the termination of the Authority, provided that adequate provision is made for eventual rehabilitation of the affected area consistent with principles for rehabilitation set out in 8.1.2 and 7.1.

- 8.2 At the end of every twelve month period, the operator of the mine shall prepare a rehabilitation plan for the approval of the Minister and the Commonwealth Minister with the advice of the Supervising Scientist, the implementation of which will achieve the major objectives of rehabilitation of the Ranger Project Area and will include:

- 8.2.1 a detailed specification of all progressive rehabilitation works which are proposed to be undertaken in the 12 months following the preparation of the report;
- 8.2.2 a conceptual specification covering decommissioning and rehabilitation for the remaining life of the project.

- 8.3 The work estimate to be included with the specifications to be submitted under 8.2 shall encompass forecasts of the extent of works, the resources to be applied in the execution of those works, and the likely cost and time required for completion. These aspects shall take into account:
- 8.3.1 removal of all plant, equipment, buildings and other structures;
 - 8.3.2 removal of civil works and facilities that are not required for other purposes;
 - 8.3.3 dewatering of the water management system;
 - 8.3.4 disposal of tailings.
 - 8.3.5 removal of all unnecessary water-retaining structures and other earthworks;
 - 8.3.6 backfilling of the open pits;
 - 8.3.7 revegetation of all disturbed areas; and
- 8.4 The obligations on the operator of the mine imposed by SCHEDULE 8 will cease in respect of any part of the Ranger project area over which a close-out certificate is issued by the Minister subject to the Supervising Scientist and the NLC agreeing that the specific part of the Ranger Project Area has met the aims and objectives for rehabilitation.

SCHEDULE 9 ENVIRONMENTAL AND RADIATION MONITORING AND REPORTING

- 9.1 The operator of the mine shall implement a system to control the radiological exposure of people and the environment arising from its mining and milling activities. The system and the dose limits applied shall comply, at the minimum, with relevant Australian law taking into account the most recently published and relevant Australian standards, codes of practice, and guidelines. Subject to 9.2, the company shall achieve the following outcomes:
- 9.1.1 Radiation doses to company employees and contractors shall be kept as low as reasonably achievable and shall always remain less than the dose limit for workers.
 - 9.1.2 Radiation doses to people who are not company employees or contractors shall be kept as low as reasonably achievable and shall always remain less than the dose limit for members of the public.
 - 9.1.3 Ecosystems surrounding the Ranger Project Area shall not suffer any significant deleterious radiological impacts.
- 9.2 Radiation doses received from natural background sources or as the result of undergoing medical procedures are not subject to the system and are not to be included in the calculation of radiation doses.
- 9.3 In order to protect the environment, and in compliance with Environmental Requirements 13.1 and 13.2 relating to monitoring and analysis, the operator of the mine shall:
- 9.3.1 implement the environmental and radiation monitoring programs included in Annex A and Annex B;
 - 9.3.2 conduct contingency monitoring in a manner approved by the Director in the event of the malfunction of monitoring equipment; and
 - 9.3.3 submit to the Director, reports in accordance with the requirements of Annex C.
- 9.4 The company shall carry out a monitoring program approved by the Director following cessation of operations until such time as a relevant close-out certificate is issued under 8.4.

ANNEX A ENVIRONMENTAL MONITORING PROGRAM

A.1 Groundwater ¹	Measurement	Frequency
Gulungul Creek Catchment Bore 21030 deep (270604 East; 8597301 North)	L, pH, EC; dissolved ² magnesium, sulphate, manganese & uranium dissolved ²²⁶ Ra	Quarterly Annually (May)
Coonjimba Creek Catchment Bore 23931 deep (272457 East; 8599561 North)	L, pH, EC; dissolved magnesium, sulphate, manganese & uranium dissolved ²²⁶ Ra	Quarterly Annually (May)
Djalkmara Creek Catchment Bore 83/1 deep (274420 East; 8598263 North)	L, pH, EC; dissolved magnesium, sulphate, manganese & uranium dissolved ²²⁶ Ra	Quarterly Annually (May)
Corridor Creek Catchment Bore OB 27 (275528 East; 8597063 North)	L, pH, EC; dissolved magnesium, sulphate, manganese & uranium dissolved ²²⁶ Ra	Quarterly Annually (May)

A.2 Potable Water	Measurement	Frequency
Mine site (Jabiru East supply)	pH, EC, turbidity; dissolved sulphate	Monthly
	Total coliform, <i>E. coli</i> ; gross- α and gross- β ³	Quarterly
	Alkalinity; total sodium, potassium, calcium, magnesium, chloride, nitrate, sulphate, copper, lead, manganese, uranium & zinc	November

¹ Grid references are provided in the GDA94 system.

² All references to "dissolved" mean the fraction of solution which passes through a 0.45 micron filter.

³ The need for further radionuclide analyses is dependent on the results of gross- α and gross- β determinations undertaken on unfiltered water in accordance with recommendations contained within the Australian Drinking Water Guidelines current at the time of sampling.

A.3 Surface water	Measurement	Frequency ⁴
Magela Creek (GS8210009) (MG009)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Weekly
	total radium-226	Monthly
	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Daily during RP2 release and once just prior to release
Magela Creek (MCUS)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Weekly
	total radium-226	Monthly
	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Daily during RP2 release and once just prior to release
RP1 Weir (RP1W)	L, pH, EC, turbidity; dissolved magnesium, sulphate, manganese & uranium; residue uranium	Weekly during RP1 weir overflow; monthly at all other times
RP1 Weir (RP1W) prior to release	pH, EC, turbidity; dissolved magnesium, sulphate, manganese, nitrate & phosphate; total uranium, radium-226 & polonium-210	At least once within one week of first release
Djalkmara Billabong (DJKPS) prior to release	pH, EC, turbidity; dissolved sulphate, magnesium, nitrate, phosphate & manganese; total uranium, radium-226 & polonium-210	At least once within one week of first release
Djalkmara Billabong (DJKPS) during release	pH, EC, turbidity; dissolved sulphate, magnesium, manganese, uranium; residue uranium	Weekly
RP2 prior to release	pH, EC, turbidity, alkalinity; dissolved magnesium, sodium, potassium, calcium, ammonium, chloride, nitrate, sulphate, phosphate, manganese, total uranium; radium-226 & polonium-210	At least once within one week of first release
RP2 during release	pH, EC, turbidity; dissolved sulphate, magnesium, manganese & uranium; residue uranium	Daily if period of release is ≤ 7 days
	pH, EC, turbidity, alkalinity; dissolved sulphate, magnesium & manganese; total uranium, radium-226 & polonium-210	Weekly if period of release is >7 days
Coonjimba Billabong (CB)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	The week prior to, and weekly from, RP1 weir overflow; monthly at all other times
Georgetown Creek (GC2)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Weekly during flow
Georgetown Billabong (GTB)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Weekly during flow at GC2; monthly at other times
Gulungul Creek Arnhem Highway (GCH)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium total radium-226	Weekly Monthly
Gulungul Creek Up Stream (GCC)	pH, EC, turbidity; dissolved magnesium, calcium, sulphate, manganese & uranium	Weekly Monthly

⁴ From the start of flow unless otherwise indicated.

A.3 Surface water	Measurement	Frequency ⁴
	total radium-226	

A.4 Atmospheric monitoring	Measurement	Frequency
Calciner stack emissions	Uranium	Monthly
Product packing area stack emissions	Uranium	Monthly
Sulfuric acid plant stack emissions	SO ₂	A frequency that will allow reliable quarterly maxima and averages to be reported
	H ₂ SO ₄	Quarterly
Power house stack emissions	SO ₂	A frequency that will allow reliable quarterly maxima and averages to be reported

A.5 Criteria for direct release of water from RP2 to Magela Creek

- A.5.1 The flow rate in Magela Creek at GS8210009 shall be greater than 20 m³/s before water may be released.
- A.5.2 The water release rate shall also be restricted so that the total load of those constituents listed in Table 1 does not exceed the additional annual load limits specified in Table 1 in any twelve-month period commencing in September.
- A.5.3 Results of analyses performed for the water release monitoring program are to be forwarded weekly to the Director.
- A.5.4 A Wet Season Report is to be submitted to the Director in accordance with Annex C.1, detailing:
- release quantities and timing;
 - monitoring results;
 - calculations of loads;
 - analysis of trends; and
 - demonstration of compliance with the receiving water standards for Magela Creek.

A.6 Criteria for releases of water from RP1 and Djalkmarra Billabong

- A.6.1 The water release rates shall also be restricted so that the total load of those constituents listed in Table 1 does not exceed the additional annual load limits specified in Table 1 in any twelve-month period commencing in September.

Table 1: Additional annual load limits for release of dissolved manganese, phosphate and nitrate and total uranium, radium-226 and polonium-210 in water to Magela Creek

Constituent	Unit	Additional Annual Load Limit
Uranium-(238+234)	GBq/y	88
Radium-226	GBq/y	13
Polonium-210	GBq/y	7
Manganese	t/y	6
Phosphate	t/y	2.8
Nitrate	t/y	4.4

ANNEX B RADIATION MONITORING PROGRAM

	Frequency	Dosimetry
External Gamma		
All designated employees Non-designated employees (see B.1.2)	Quarterly	Dose to be assessed from the TLD reading
Radon Decay Products		
<u>Controlled areas:</u>		
Pit area Stockpiles Inside mine offices Outside mine offices Primary crusher Secondary crusher Secondary crusher control room Grinding CCD SX Grinding control room SX control room	Monthly	Average level to be assessed and used to calculate the effective dose equivalent to designated employees
<u>Supervised areas:</u>		
Tailings circuit	Monthly	
Acid plant (outdoors) Acid plant (indoors)	Monthly	Refer to B.1.2
<u>Environmental areas</u>		
Jabiru Jabiru East	Monthly	Refer to B.1.4
Long Lived Alpha Activity (dust)		
<u>Controlled areas</u>		
Designated employees	Refer to B.1.5	Average levels to be assessed and used to calculate the effective dose equivalent to designated employees
Stockpiles Secondary crusher	Monthly	No dosimetry required
<u>Supervised areas</u>		
Tailings circuit	Quarterly	No dosimetry required
Acid Plant (outdoors) Acid Plant (indoors)	Quarterly	Refer to B.1.2
<u>Environmental areas</u>		
Jabiru and Jabiru East	Monthly	No dosimetry required

Surface contamination		
Accessible surfaces (including ore crushing areas, drumming and packing area, control rooms, crib and ablution rooms, and sample preparation areas)	Monthly	No dosimetry required

Meteorology		
Ranger Project Area	Wind speed and direction	The percentage wind frequency and average wind speed in 22.5° sectors, are to be recorded and reported. This wind information is to be used to assess doses to members of the public in Jabiru and Jabiru East.

B.1 Notes

B.1.1 Abbreviations used are:

CCD	Counter-current Decantation
SX	Solvent Extraction
TD	Tailings Dam (down-wind wall)
TLD	Thermoluminescent Dosimeter

B.1.2 Doses to non-designated employees are to be calculated using the most exposed group for each source on a quarterly and annual basis and reported in the quarterly and annual reports. The dose to this most exposed group consists of the gamma exposure to Emergency Services Officers and dust and radon decay product exposure to employees working in the acid plant and power station area.

B.1.3 The average radon decay product levels are to be determined from measured levels and the dose is to be calculated in accordance with the current revision of the Code. The effective dose conversion factors are:

- 0.0014 mSv/(μJhm^{-3}) for Radon-222 decay product exposure to workers;
- 0.0011 mSv/(μJhm^{-3}) for Radon-222 decay product exposure to members of the public;
- 5.7×10^{-3} mSv/alpha disintegration per second for ore dust;
- 5.3×10^{-3} mSv/alpha disintegration per second for mill tailings dust; and
- 6.2×10^{-3} mSv/alpha disintegration per second for uranium product dust.

B.1.4 The dose to inhabitants of Jabiru is to be calculated annually.

B.1.5 The monitoring frequencies to be adopted are to be sufficient to allow reliable monthly averages to be calculated.

B.1.6 The Radiation Safety Officer must maintain a list of designated employees in accordance with the Code.

B.1.7 During the non-operational periods of the mine or mill, monitoring will be carried out as deemed necessary by the Radiation Safety Officer and approved, as soon as practicable after its introduction, by the Director.

ANNEX C REPORTING REQUIREMENTS

C.1 Wet season report

- C.1.1 The operator of the mine will prepare annually a Wet Season Report which will be presented to the Supervising Authority.
- C.1.2 The report will be submitted within 6 weeks of flow ceasing in Magela Creek at the end of each wet season. The report will consider the results of surface and groundwater site monitoring listed in Annex A and, in particular,
- whether the operator met receiving water standards at MG009;
 - short and long term trends in water chemistry; and,
 - operational effects on water chemistry and hydrology within sub-catchments of Magela Creek on the Ranger lease.

C.2 Annual Environment Report

- C2.1 The operator of the mine will prepare annually an Environment Report which will be presented to the Supervising Authority.
- C2.2 The report will cover the period 1 September to 31 August and be submitted by 16 December each year, and shall provide details of the following matters:
- water management;
 - tailings management;
 - excavated material management;
 - land management;
 - air quality management;
 - hazardous substances and industrial waste management;
 - radiation monitoring and management;
 - environmental monitoring;
 - environmental research;
 - protection of cultural sites and social impact monitoring;
 - environmental planning and operating systems, including employment and training programs;
 - counter disaster and emergency procedures; and
 - rehabilitation.

C.3 Provision of monitoring data and its interpretation

- C.3.1 The operator of the mine will provide the members of the Ranger Mine Site Technical Committee with intranet access to monitoring data, or access to data by alternative arrangements, which is collected in accordance with Annex A ie the 'statutory' monitoring program.
- C.3.2 In addition to meeting the statutory monitoring program, the operator of the mine will submit annually to the Ranger Minesite Technical Committee an operational monitoring program listing sites, frequency of sampling and analytes and, where appropriate, amend the plan in the light of stakeholder advice.
- C.3.3 On request by the Director, the operator of the mine will make available by intranet access, or by alternative arrangements, additional monitoring data which is collected as part of operational monitoring.
- C.3.4 The operator of the mine will provide the Ranger Mine Site Technical Committee with weekly updated data and graphs for key variables at the following sites: MG009, MCUS, GC2, RP1W, GCH and GCC.

C.4 Annual Radiation and atmospheric monitoring interpretative report

- C.4.1 The operator of the mine shall submit, for approval by the Director, radiation and atmospheric monitoring interpretative reports as follows:
- C.4.2 The interpretative report shall contain, at least, the following information:
- a statement of the results of the monitoring measurements taken over the report period;
 - a comparison with data included in the corresponding preceding report period;
 - where appropriate, a comparison of the average and maximum values with the derived limits and pre-mining baseline values for items in the monitoring programs;
 - where appropriate, an illustration of trends through graphs or histograms showing spatial, temporal or other trends evident from the data;
 - where appropriate, notes on errors in the data, including systematic, random and total, and a statement on the level of confidence to be found in the reported data;
 - a statement of the conclusions drawn from the results, and an assessment of the performance of the monitoring program;
 - a summary of any significant or unusual results in the operation of the monitoring program, giving the reasons and contributing factors in those results;
 - a summary of any infringements in the operation of the monitoring program and of events which have impinged on the operation or results of that program; and
 - an explanation of changes or proposed changes in the technology or techniques applied in carrying out the monitoring programs.
- C.4.3 The interpretative report should be submitted for the period 1 January to 31 December each year, by 31 March in the following year.

C.5 Radiation and atmospheric monitoring data summary reports

- C.5.1 The operator of the mine shall submit, for approval by the Director, radiation and atmospheric monitoring data summary reports as follows:
- C.5.2 Radiation and atmospheric monitoring data summary reports shall contain, at least, the following information:
- the number and site of measurements taken;
 - the results of measurements (where the measurements comprise a range or series of values, the range and the average shall be given);
 - identification of any trends evident from the data; and
 - a statement of any conclusions to be drawn from monitoring in the summary period, together with comments on any unusual measurements or events affecting the performance of the monitoring programs.
- C.5.3 Radiation and atmospheric monitoring data summary reports shall be submitted for the quarterly periods ending 31 March, 30 June, 30 September and 31 December each year.
- C.5.4 Radiation and atmospheric monitoring data summary reports shall be submitted within six weeks after the end of each reporting period.

C.6 Tailings dam surveillance reports

- C.6.1 A report on the integrity and stability of the tailings dam embankments, written in accordance with the specifications set out in the document entitled "Ranger Uranium Mines Pty. Ltd. - Stage IV/RL 44.5 - Construction, Quality Control and Monitoring" approved by the Quality Control Committee on 13 December 1990, and amended with the approval of the Director, shall be submitted by 30 September each year."

NORTHERN TERRITORY OF AUSTRALIA

Mining Management Act

AUTHORISATION NUMBER 0108-10

(VARIATION OF AUTHORISATION NUMBER 0108-09)

TO: Energy Resources of Australia Ltd
Locked Bag 1
Jabiru NT 0886

I, Christopher William Natt, Minister for Mines and Energy, under section 38(2) of the *Mining Management Act* and having regard to the matters referred to in section 34 of the Act, vary Authorisation Number 0108-09 by omitting the Schedule to the Authorisation and substituting the Schedule to this instrument.

Dated 24 April 2008

A handwritten signature in black ink, appearing to read 'C. Natt'.

Minister for Mines and Energy



Australian Government

Department of the Environment, Water, Heritage and the Arts

Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

27 February 2009 15:15

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

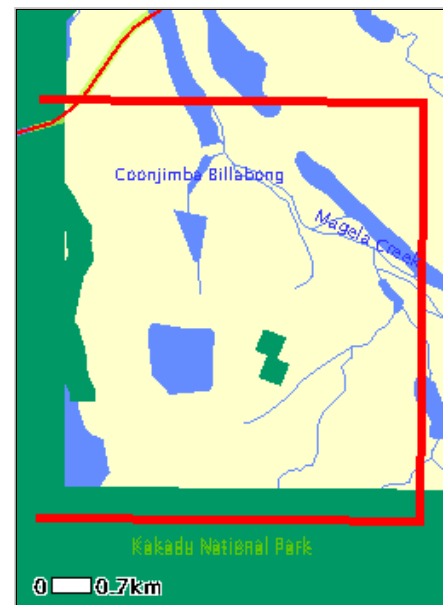
Search Type: Line
Buffer: 0 km
Coordinates: -12.65097,132.8807, -12.65143,132.9387, -12.71472,132.9382, -12.71426,132.8802



Report Contents: [Summary](#)
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgments](#)



This map may contain data which are
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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see

<http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	1
National Heritage Places:	1
Wetlands of International Significance: (Ramsar Sites)	3
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None

Threatened Species:	12
Migratory Species:	20

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at <http://www.environment.gov.au/heritage/index.html>.

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

Commonwealth Lands:	2
Commonwealth Heritage Places:	None
Places on the RNE:	3
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	1

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Other Commonwealth Reserves:	None
Regional Forest Agreements:	None

Details

Matters of National Environmental Significance

World Heritage Properties [[Dataset Information](#)]

[Kakadu National Park NT](#)

National Heritage Places [[Dataset Information](#)]

[Kakadu National Park NT](#)

Wetlands of International Significance [[Dataset Information](#)]
(Ramsar Sites)

[COBOURG PENINSULA](#)

Within same catchment as Ramsar site

[KAKADU \(STAGE 1 & 3\)](#)

[KAKADU \(STAGE 2\)](#)

Threatened Species [Dataset Information]	Status	Type of Presence
--	--------	------------------

Birds[*Epthianura crocea tunneyi*](#)

Yellow Chat (Alligator Rivers)

Endangered Species or species habitat may occur within area

[*Erythrotriorchis radiatus*](#)

Red Goshawk

Vulnerable Species or species habitat likely to occur within area

[*Erythrura gouldiae*](#)

Gouldian Finch

Endangered Species or species habitat may occur within area

[*Geophaps smithii smithii*](#)

Partridge Pigeon (eastern)

Vulnerable Species or species habitat likely to occur within area

[*Tyto novaehollandiae kimberli*](#)

Masked Owl (northern)

Vulnerable Species or species habitat may occur within area

Mammals[*Conilurus penicillatus*](#)

Brush-tailed Rabbit-rat, Brush-tailed Tree-rat

Vulnerable Species or species habitat may occur within area

[*Dasyurus hallucatus*](#)

Northern Quoll

Endangered Species or species habitat may occur within area

[*Mesembriomys macrurus*](#)

Golden-backed Tree-rat

Vulnerable Species or species habitat may occur within area

[*Zyomys maini*](#)

Arnhem Rock-rat, Arnhem Land Rock-rat

Vulnerable Species or species habitat likely to occur within area

Reptiles[*Egernia obiri*](#)

Arnhem Land Egernia

Endangered Species or species habitat may occur within area

Sharks[*Pristis microdon*](#)

Freshwater Sawfish

Vulnerable Species or species habitat likely to occur within area

Plants[*Hibiscus brennanii*](#)

a shrub

Vulnerable Species or species habitat may occur within area

Migratory Species [[Dataset Information](#)]

Status Type of Presence

Migratory Terrestrial Species**Birds**[*Coracina tenuirostris melvillensis*](#)

Melville Cicadabird

Migratory Species or species habitat may occur within area

[*Erythrura gouldiae*](#)

Gouldian Finch

Migratory Species or species habitat may occur within area

[*Haliaeetus leucogaster*](#)

White-bellied Sea-Eagle

Migratory Species or species habitat likely to occur within area

[*Hirundo rustica*](#)

Barn Swallow

Migratory Species or species habitat may occur within area

[*Merops ornatus*](#)

Rainbow Bee-eater

Migratory Species or species habitat may occur within area

[*Poecilodryas superciliosa cerviniventris*](#)

Derby White-browed Robin

Migratory Species or species habitat likely to occur within area

[*Rhipidura rufifrons*](#)

Rufous Fantail

Migratory Species or species habitat may occur within area

Migratory Wetland Species**Birds**[*Actitis hypoleucos*](#)

Common Sandpiper

Migratory Species or species habitat likely to occur within area

[*Ardea alba*](#)

Great Egret, White Egret

Migratory Species or species habitat may occur within area

[*Ardea ibis*](#)

Cattle Egret

Migratory Species or species habitat may occur within area

<i>Charadrius veredus</i> Oriental Plover, Oriental Dotterel	Migratory	Species or species habitat may occur within area
<i>Glareola maldivarum</i> Oriental Pratincole	Migratory	Species or species habitat may occur within area
<i>Numenius minutus</i> Little Curlew, Little Whimbrel	Migratory	Species or species habitat may occur within area
<i>Numenius phaeopus</i> Whimbrel	Migratory	Species or species habitat likely to occur within area
<i>Tringa stagnatilis</i> Marsh Sandpiper, Little Greenshank	Migratory	Species or species habitat likely to occur within area
<i>Xenus cinereus</i> Terek Sandpiper	Migratory	Species or species habitat likely to occur within area

Migratory Marine Birds

<i>Apus pacificus</i> Fork-tailed Swift	Migratory	Species or species habitat may occur within area
<i>Ardea alba</i> Great Egret, White Egret	Migratory	Species or species habitat may occur within area
<i>Ardea ibis</i> Cattle Egret	Migratory	Species or species habitat may occur within area

Migratory Marine Species**Reptiles**

<i>Crocodylus porosus</i> Estuarine Crocodile, Salt-water Crocodile	Migratory	Species or species habitat likely to occur within area
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Other Matters Protected by the EPBC Act

Listed Marine Species [Dataset Information]	Status	Type of Presence
Birds		
<i>Actitis hypoleucos</i> Common Sandpiper	Listed	Species or species habitat likely to occur within area
<i>Anseranas semipalmata</i> Magpie Goose	Listed - overfly marine area	Species or species habitat may occur within area
<i>Apus pacificus</i> Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea alba</i> Great Egret, White Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Ardea ibis</i> Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
<i>Charadrius veredus</i> Oriental Plover, Oriental Dotterel	Listed - overfly marine area	Species or species habitat may occur within area
<i>Glareola maldivarum</i> Oriental Pratincole	Listed - overfly marine area	Species or species habitat may occur within area
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	Listed	Species or species habitat likely to occur within area
<i>Hirundo rustica</i> Barn Swallow	Listed - overfly marine area	Species or species habitat may occur within area

<i>Merops ornatus</i> Rainbow Bee-eater	Listed - overfly marine area	Species or species habitat may occur within area
<i>Numenius minutus</i> Little Curlew, Little Whimbrel	Listed - overfly marine area	Species or species habitat may occur within area
<i>Numenius phaeopus</i> Whimbrel	Listed	Species or species habitat likely to occur within area
<i>Rhipidura rufifrons</i> Rufous Fantail	Listed - overfly marine area	Species or species habitat may occur within area
<i>Tringa stagnatilis</i> Marsh Sandpiper, Little Greenshank	Listed - overfly marine area	Species or species habitat likely to occur within area
<i>Xenus cinereus</i> Terek Sandpiper	Listed - overfly marine area	Species or species habitat likely to occur within area

Reptiles

<i>Crocodylus johnstoni</i> Freshwater Crocodile	Listed	Species or species habitat may occur within area
<i>Crocodylus porosus</i> Estuarine Crocodile, Salt-water Crocodile	Listed	Species or species habitat likely to occur within area

Commonwealth Lands [[Dataset Information](#)]

Environment and Heritage

Unknown

Places on the RNE [[Dataset Information](#)]
Note that not all Indigenous sites may be listed.

Indigenous

[Nourlangie Rock or Mount Brockman Massif NT](#)

Natural

[Alligator Rivers Region NT](#)

[Kakadu National Park and \(former\) Gimbat and Goodparla Leases NT](#)

Commonwealth Reserves [[Dataset Information](#)]

Kakadu National Park (Commonwealth), NT

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans,

State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgments

This database has been compiled from a range of data sources. The Department acknowledges the following custodians who have contributed valuable data and advice:

- [New South Wales National Parks and Wildlife Service](#)
- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUcliM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

[Department of the Environment, Water, Heritage and the Arts](#)

Last updated: Thursday, 20-Nov-2008 14:17:56 EST

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Environment Policy



Energy Resources of Australia Ltd (ERA) is a publicly listed company and since 1980 has mined uranium ore to produce uranium oxide (U_3O_8) at the Ranger mine.

One of ERA's core values is that the natural and cultural values of the surrounding World Heritage-listed Kakadu National Park must continue to be protected.

Our goal is to ensure that environmental harm resulting from our activities is minimised and does not compromise future land uses. In this way we will demonstrate the sustainability of our activities.

ERA's environment policy is to:

- Recognise that exemplary environmental management is crucial to our long-term success.
- Comply with, and endeavour to exceed, all applicable legislation and other commitments.
- Continuously improve our environmental management performance.

Employees and contractors have an individual responsibility to ensure that environmental harm resulting from our activities is minimised and ERA expects them to:

- Conduct a risk assessment for all activities that have the potential to cause environmental harm.
- Implement to the best of their ability all measures designed to mitigate environmental harm.
- Follow all environmental rules and procedures.
- Report all incidents immediately.
- Consider the potential impacts to the environment in all that they do.

To support this policy, ERA will:

- Maintain a risk based approach to the identification and management of hazards and opportunities. This will include establishment of measurable objectives and targets to sustain environmental performance improvements.
- Respect all agreements with the Northern Land Council and Aboriginal Traditional Owners.
- Maintain an effective Environmental Management System that is externally audited and certified.
- Establish, maintain, improve and encourage effective participation in programmes to eliminate hazards, conserve resources, minimise emissions and appropriately manage the disposal of waste.
- Develop and implement plans to improve energy efficiency and minimise greenhouse gas emissions.
- Ensure that environmental accountabilities are incorporated into the day-to-day work of team members and that they are provided with the resources, development and training to fulfil them.
- Communicate this policy to all employees, contractors, persons working on behalf of the organisation, outside stakeholders and the wider community, and ensure all personnel comply with this policy.
- Continue to increase understanding of the environmental impacts of producing uranium oxide (U_3O_8), rehabilitation and closure to demonstrate the sustainability of ERA's business.
- Rehabilitate land on which ERA operates, to establish an environment similar to the adjacent areas of Kakadu National Park.
- Conduct research to develop improved environmental management practices.
- Ensure that this policy is reviewed periodically.



Rob Atkinson
Chief Executive

November 2008

