APPENDIX 1

24 MAY 1978

Dear Mr. Everingham,

I am writing to you to seek the agreement of the Northern Territory Government to provide regulatory services for uranium mining operations in the Northern Territory.

As you will appreciate, many of the environmental, mining and other requirements that will apply to Ranger, and in due course, to other uranium mining projects in the Northern Territory would normally involve the various agencies of the Northern Territory Executive in regular inspection, supervision and monitoring activities consistent with relevant Ordinances, Regulations, Licences, etc.

I would be grateful to have the agreement of your Government that these regulatory services will be provided, as required, after the executive authority for such services passes to the Northern Territory Government.

In respect to payment for such services, I understand that the broad financial arrangements agreed between the Commonwealth and the Northern Territory provide for the Commonwealth to make funds available to meet the cost of existing and approved establishments of the Northern Territory Executive, but that no provision exists for any additional services that may be needed as a consequence of the development of uranium mining operations. The Commonwealth agrees, in principle, to reimburse the Northern Territory Government for the cost of providing such regulatory services.

In order to advance this matter, I suggest that consultations take place between officials to identify more clearly the scope of the services needed, the estimated cost involved, and the most appropriate arrangements to be made for the use of these regulatory services. If you agree, could you let me know as soon as possible the name of the person with whom Commonwealth officials should make contact.

Yours sincerely,

(J.D. ANTHONY)

Mr. P.A.E. Everingham, M.L.A.,
Majority Leader,
Northern Territory Legislative Assembly,
P.O. Box 4396,
DARWIN N.T., 5794.

NORTHERN TERRITORY OF AUSTRALIA

CHIEF SECRETARY

P.O. BOX 4396.
DARWIN. N.T. 5794.

25 May 1978

The Rt. Hon. J. D. Anthony, M.P.,
Deputy Prime Minister and Minister for
Trade and Resources,
Parliament House,
CANBERRA, A.C.T. 2600

Dear Mr. Anthony,

Thank you for your letter of 24 May which was telexed to me and seeking our agreement to provide regulatory services for uranium mining operations in the Northern Territory.

I am particularly pleased to know that you want the Northern Territory to become involved at this early stage and I can assure you of our full support in providing the regulatory services for uranium mining operations in the Northern Territory subject, of course, to reimbursement of the costs involved.

You will be aware that until 1 July 1978, we have limited resources and so I propose that until that time, my Director General, Mr. M. R. Finger should be the person Commonwealth officials should contact in the matter. His telephone number is Darwin 812122.

Yours sincerely.

(PAUL EVERINGHAM)

For [illegible]
For [illegible] action
For information
MIN. No. 7348
Private Secretary

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PRIME MINISTER

CANBERRA

17 JUL 1978

My dear Chief Minister,

Thank you for your letter of 20 June 1978 concerning the negotiations between the Commonwealth and the Northern Land Council on the Ranger Uranium Project.

Early conclusion of these negotiations is of course essential for an early start to the Ranger Project which is an objective which we both share. The negotiations are ranging over a considerable number of complex issues. I am satisfied that good progress is being made and will continue to be made towards reaching agreement with the Council.

I would like to take this opportunity to express my appreciation for the assistance and co-operation which you have indicated in providing the regulatory services for uranium mining in the Northern Territory. The Commonwealth considers that uranium mining in the Territory should be regulated to the maximum extent possible through the laws of the Northern Territory. Following your correspondence with Mr Anthony on this matter I understand that there have been discussions between officials to define the various supervisory functions which will be necessary and to examine the legislative basis for these functions. It seems that a considerable number of the environmental requirements for the Ranger Project could be implemented through the law of the Territory and that some amendments to existing ordinances and the drafting of regulations related to the Ranger Project would be desirable to ensure that a comprehensive area of applicable law is available.

Your assistance in establishing the necessary legal framework for the regulatory aspects of the Ranger Project as soon as possible would be greatly appreciated.

Yours sincerely,

(Malcolm Fraser)

Mr P. Everingham,
Chief Minister,
Northern Territory Legislative Assembly,
P.O. Box 4396,
DARWIN N.T. 5794

CHIEF MINISTER

DARWIN

17 August, 1979

The Right Hon. M. Fraser, C.H., MP.,
Prime Minister,
Parliament House,
CANBERRA CITY, A.C.T. 2601

My dear Prime Minister,

I refer to our exchange of telexes of 19 and 20 June, 1979, and to other earlier correspondence relating to proposed working arrangements between our two Governments to cover the co-ordination of activities for the regulation of environmental aspects of uranium mining in the Alligator Rivers Region.

Following significant consultation between Commonwealth and Northern Territory Government officers, a final document has now been prepared which is acceptable to the Northern Territory Government and has received the concurrence of the Supervising Scientist. A copy of the final document is enclosed.

The document has been prepared as a statement of mutually acceptable working arrangements setting out the procedures which will achieve maximum co-operation and consultation. To this end the document is in fairly broad terms and reflects the executive and legislative controls vested in the Northern Territory Government as well as the Commonwealth's involvement in the area. These working arrangements are largely in force already and seem to be operating satisfactorily. Provision has also been made for the arrangements to be reviewed six (6) months after their adoption and thereafter as required.

The document, which involves no legal implications, might best be described as setting out the working arrangements between the Supervising Scientist (who largely represents the Commonwealth in the area in accordance with the Environment Projection (Alligator Rivers Region) Act 1978), and the Northern Territory Government Departments working in the area, and it is suggested that the document be adopted in this spirit. If you concur with the arrangements copies will be distributed to all relevant Northern Territory Government Departments and Authorities with instructions that the procedures are to be observed.

Yours sincerely,

PAUL EVERINGHAM

Scheduled 27/8/79 pm (3)
A.S. Res
Ack. Prepared ✓

11916

PRIME MINISTER

CANBERRA

17 SEP 1979

My dear Chief Minister,

Thank you for your letter of 17 August 1979 attaching the document entitled "Agreed Working Arrangements for Co-ordinating the Regulation of the Environmental Aspects of Uranium Mining in the Alligator Rivers Region".

I note that the document has been drawn up after detailed consultation between officers of the Northern Territory Government and the Office of the Supervising Scientist and that it is acceptable to your Government and the Supervising Scientist. I am also pleased to note that the working arrangements are largely in force already and seem to be operating satisfactorily.

Accordingly I am pleased to endorse the document on behalf of the Commonwealth subject to a review of the Arrangements in six months' time as provided in paragraph 23.

I have asked the Minister for Science and the Environment to arrange for the document to be distributed to appropriate Commonwealth agencies.

Yours sincerely,

Malcolm Fraser

(Malcolm Fraser)

MINISTER FOR SCIENCE

17 SEP 1979

The Hon. P. Everingham, M.L.A.,
Chief Minister of the Northern Territory,
P.O. Box 3146,
DARWIN N.T. 5794

DIRECTOR GENERAL
DEPARTMENT OF THE CHIEF MINISTER
DARWIN

C.R., 1979/26

3 OCT 1979

CIRCULAR MEMORANDUM RESTRICTED

TO: HEADS OF DEPARTMENTS AND
CHIEF EXECUTIVE OFFICERS
OF STATUTORY AUTHORITIES

AGREED WORKING ARRANGEMENTS ON PROCEDURES FOR CO-ORDINATING THE REGULATION OF THE ENVIRONMENTAL ASPECTS OF URANIUM MINING IN THE ALLIGATOR RIVERS REGION

The abovementioned Working Arrangements have been agreed to recently by the Prime Minister and the Chief Minister, on behalf of the Commonwealth and Northern Territory Governments. A copy is attached for your information.

The main purpose of the Arrangements is to establish procedures for consultation between the Supervising Scientist, who is the Commonwealth Government's representative in the area, and the Northern Territory Departments who have statutory responsibilities in the area, for environmental aspects of uranium mining. The emphasis is on co-operation and consultation, and although the Arrangements have been operating on an informal basis for some time, the formal agreement makes it more important than ever that Northern Territory Government staff strictly observe the established procedures.

In relation to paragraph 17 of the Arrangements, Mr E J Simpson, Controller, Office of Special Development Projects, of this Department, has been nominated as the Co-Ordinating Officer.

Would you please advise all appropriate staff of your Department/Authority of the Arrangements.

M.R. FINGER

Agreed to in September 1979

AGREED WORKING ARRANGEMENTS ON PROCEDURES FOR CO-ORDINATING THE REGULATION OF THE ENVIRONMENTAL ASPECTS OF URANIUM MINING IN THE ALLIGATOR RIVERS REGION

Preamble

1. In an exchange of letters between the Deputy Prime Minister and the Chief Minister dated 24 and 25 May 1978 it was agreed that the uranium operations in the Alligator Rivers Region would be regulated as far as possible through the laws of the Northern Territory. The Commonwealth Government has agreed in principle to reimburse the Northern Territory Government for the cost of providing such regulatory services. It was agreed in an exchange of letters between the Chief Minister and the Prime Minister dated 9 November, 1978 and 2 February, 1979 that these arrangements should be the subject of a formal financial agreement, to be entitled "Alligator Rivers Region (Environmental Regulatory Services) Reimbursement Agreement" (called the "Financial Assistance Agreement"). This agreement is being finalised. In pursuance of the discharge of his functions as set out in the Environment Protection (Alligator Rivers Region) Act the Supervising Scientist has a role in scrutinising proposals for research and monitoring projects under these reimbursement arrangements.

2. The main Northern Territory laws under which the environmental aspects of uranium mining are regulated are -

Mining Act
Mines Regulation Act
Mines (Radiation Protection) Regulations
Uranium Mining (Environment Control) Act
Control of Waters Act
Soil Conservation and Land Utilization Act.

3. The Uranium Mining (Environment Control) Act lays down specific requirements for uranium mining and permits the Minister for Mines and Energy to issue authorisations to carry out works subject to conditions. In exercising the powers and duties conferred on him under the Act, the Minister is obliged inter alia to have primary regard to the Environmental Requirements set out in Schedules 1 and 2 of the Act.

4. Under the Environment Protection (Alligator Rivers Region) Act 1978 the Supervising Scientist has a responsibility to co-ordinate and supervise measures for the protection and restoration of the environment in the Alligator Rivers Region from the effects of uranium mining operations in the Region. He is advised by the Co-ordinating Committee for the Alligator Rivers Region comprising nominees of bodies with an interest in the uranium mining operations in the Region. The Co-ordinating Committee is required inter alia to consider and keep under review and make recommendations to the Supervising Scientist on environmental research and monitoring programs, standards, practices and procedures in relation to environmental aspects of uranium mining, and measures for the protection and restoration of the environment in the Region. The Supervising Scientist also manages the Alligator Rivers Region Research Institute which, under the terms of the Act, has the function of carrying out research into the effects on the environment of uranium mining operations in the Region and collecting and assessing information on such effects.

5. In an exchange of correspondence between the Prime Minister and the Chief Minister dated 8 and 18 December 1978, it was agreed that there should be frequent and detailed communication between the Supervising Scientist and the Northern Territory Authorities responsible for the various environmental aspects of uranium mining in the Alligator Rivers Region and that formal working arrangements should be developed.

6. On 9 January 1979 the Commonwealth Minister for Trade and Resources issued an authority under Section 41 of the Atomic Energy Act 1953 authorising the Ranger Joint Venturers to carry on operations for a period of 26 years on the land described in Schedule 1 of the Authority subject to the conditions and restrictions in Schedule 2 of the Authority. Under paragraph 3 of Schedule 2 the Ranger Joint Venturers must comply with applicable law and subject to this, with the Environmental Requirements set out in Appendix A of Schedule 2.

7. On 23 March 1979 the Northern Territory Minister for Mines and Energy acting on the advice of the Commonwealth Minister for Trade and Resources, issued Special Mineral Lease No. 94 under the Mining Act to Queensland Mines Ltd., authorising uranium mining in a designated area at Nabarlek subject to certain conditions, including compliance with the Environmental Requirements set out in the Third Schedule of the Lease and the provisions of the Uranium Mining (Environment Control) Act.

Purpose of the Working Arrangements

8. The purpose of these Working Arrangements is to establish procedures for consultation between the Supervising Scientist and Northern Territory Authorities concerned so as to ensure that -

- each Authority involved appreciates its own role and the roles of others;

- technical aspects of proposed research and monitoring programmes are examined in time for incorporation into annual estimates of reimbursement costs under the Alligator Rivers (Environmental Regulatory Services) Reimbursement Agreement;

- no Supervising Authority grants an approval or takes any related action in connection with the environmental aspects of uranium mining without consulting and having regard to the views of other relevant Supervising Authorities and the Supervising Scientist where practicable or appropriate.

- wherever possible authorisations are given in time to avoid delays in uranium operations;

- all relevant considerations are taken into account in the above activities;

- effective reporting procedures are established.

- all relevant matters are referred to the Co-ordinating Committee having due regard to its role under the Environment Protection (Alligator Rivers Region) Act.

Review of Applicable Law

9. The Financial Assistance Agreement provides that the laws of the Northern Territory be reviewed from time to time in order to assess their relevance and force in regulating uranium mining consistent with the environmental standards established from time to time under the Uranium Mining (Environment Control) Act or other applicable law for the Ranger and Nabarlek Projects. Such review should be undertaken within the Working Arrangements established in this document, and may be combined with the review provided for at paragraph 23.

Environmental Regulatory Services

10. Both the Northern Territory Supervising Authorities and the Supervising Scientist will consult in the development of a program for the provision by the Northern Territory of environmental regulatory services relating to uranium mining and milling in the Alligator Rivers Region.

Funding

11. In order to meet the timetable for the preparation of the Commonwealth and Northern Territory estimates the Northern Territory Supervising Authorities will submit details of their proposed projects under the terms of the Financial Assistance Agreement referred to in paragraph 1, to the Northern Territory Co-ordinating Officer who will arrange for consultations and the development of a co-ordinated program. When complete the program will be submitted to the Supervising Scientist and the Department of Science and the Environment. The Department handles the financial administration aspects on behalf of the Commonwealth. The Supervising Scientist will advise the Department on the technical aspects and will arrange at an appropriate stage for the Co-ordinating Committee to consider and, when satisfied, endorse the general aims of and necessity for the program. All parties will seek to reach agreement on the program by mid April each year.

Environmental Requirements Imposed on the Mining Companies

12. With the exception of approvals, permits, etc., required to be issued at short notice because of emergencies etc., or having no significant environmental effect, neither the relevant Northern Territory Supervising Authority nor the Supervising Scientist will give an approval or authorisation, issue a licence, permit etc., in connection with the environmental aspects of uranium mining without prior consultation with and regard to the views of the other party. Each party will send to the other party copies of all authorisations, approvals, permits etc., issued by it.

13. Neither the relevant Northern Territory Supervising Authority nor the Supervising Scientist will set a standard in connection with any permit, licence etc., relating to environmental aspects of uranium mining without prior consultation with and regard to the views of the other party.

14. Neither the relevant Northern Territory Supervising Authority nor the Supervising Scientist will engage a consultant, other than a Government agency, in connection with the environmental aspects of uranium mining, without prior consultation with and regard to the views of the other party as to the firm to be engaged, and the terms of reference: In determining his consultancy requirements, the Supervising Scientist will give primary consideration to the use of relevant Northern Territory Government agencies.

Disagreements

15. In the event of major continuing disagreements between the relevant Northern Territory Authority and the Supervising Scientist, the parties will refer the matter to the officers nominated by the Prime Minister and the Chief Minister in an exchange of telex messages dated 19 and 20 June 1979..

Delegations

16. The Supervising Scientist is empowered to delegate any of his powers other than the power of delegation. If he delegates a power, he shall inform all relevant Supervising Authorities, the mining companies and the Northern Territory Co-ordinating Officer (see "Consultative Arrangements" below). In an exchange of letters dated 30 April and 29 May the Prime Minister and the Chief Minister have agreed that the Supervising Scientist should delegate his powers in relation to certain Environmental Requirements to relevant Supervising Authorities in appropriate circumstances. Any such delegations will be the subject of side letters to these Working Arrangements.

Consultative Arrangements

17. The Northern Territory Government has designated a Co-ordinating Officer to act as initial contact point and co-ordinator for all activities covered by this document.

18. Both the Department of the Chief Minister and the Supervising Scientist will, subject to the approval of Government, forewarn the other party of significant briefings of or statements by the respective Ministers concerning matters encompassed within these working arrangements, giving such details as will be necessary to deal with the matter in the respective Parliaments or in the media. At a more general level and where a matter falls outside the responsibility of the Supervising Scientist, the N.T. Co-ordinating Officer may consult with the nominated officer of the Department of Prime Minister and Cabinet.

Infringements

19. Both the Supervising Authorities and the Supervising Scientist will inform each other of any infringements of the Environmental Requirements as soon as possible after they come to notice. In the case of non serious infringements, details will be provided by each party at the end of each month.

Reporting

20. The Northern Territory Authorities have established machinery for regular reviews of progress and exchanges of information among Northern Territory Supervising Authorities and other relevant Northern Territory Supervising agencies at the operating level. Representatives of the mining companies may be invited to the meetings as appropriate and representatives of the Supervising Scientist and other relevant Commonwealth Authorities may also be invited to take part where appropriate.

21. Research projects and monitoring programmes may contain requirements for periodic reporting. All Northern Territory Supervising Authorities will provide to the Supervising Scientist, with comments as appropriate, copies of all reports on monitoring programs submitted to them by the uranium mining companies under applicable law. In addition it has been arranged that at the end of March, June, September and December each Northern Territory Supervising Authority will send to the Northern Territory Co-ordinating officer a report on work done during the preceding quarter, on agreed research and monitoring programs and approvals in connection with the environmental aspects of uranium mining including staffing aspects and any problems encountered. These reports will be conveyed to the Supervising Scientist who will arrange for them to be tabled in the Co-ordinating Committee. The Supervising Scientist will similarly file reports quarterly to the Northern Territory Co-ordinating Officer who will provide copies to the Northern Territory Supervising Authorities and will arrange for them to be tabled in the Co-ordinating Committee.

22. All Supervising Authorities will arrange for a copy of all final research reports to be sent to the central repository maintained by the Department of the Chief Minister.

Review

23. The Supervising Scientist and Northern Territory Co-ordinating Officer will jointly review the working arrangements six months after their adoption and thereafter as required.

APPENDIX 2

ALLIGATOR RIVERS REGION ADVISORY COMMITTEE (ARRAC)

Charles Webb (Chairperson)
Northern Territory University

Mark Wakeham
Environment Centre NT

vacant
Jabiru Town Council

Peter Burns
Australian Radiation Protection and Nuclear Safety Agency

vacant
Department of Industry, Tourism and Resources

Peter Wollenberg
Afmex

Tony McGill
Northern Territory Department of Business, Industry and Resource Development

Peter Blake
Northern Territory Department of Business, Industry and Resource Development

Barbara Singer
NT Department of Land, Planning and Environment

Richard Weston
ERA – Ranger Mine

Shirley Hendy
Territory Health

Peter Cochrane
Parks Australia North

Ron Matthews
Cameco Aust P/L

Shane Maraldo
Hanson Australia P/L
(formerly Pioneer)

Mike Butler
Northern Territory Parks and Wildlife

Phil Devine
ERA Ranger Mine (representing employees)

vacant
Northern Land Council

Philip Alderson
Gagudju Association

Jonathon Nadji
Djabulukgu Assoc.

Yvonne Margarula
Gundjehmi Association.

Arthur Johnston
Supervising Scientist

APPENDIX 3

ALLIGATOR RIVERS REGION TECHNICAL COMMITTEE (ARRTC)

Barry Hart (chairperson)
Monash University

Jill Fitch
SA Department of Human Services

Douglas Holdway
University of Prince Edward Island

Gerald Nanson
University of Wollongong NSW 2522

Ray Evans
Salient Solutions Australia Pty Ltd

Terry Hillman
La Trobe University

Carl Grant
Alcoa World Alumina Australia

Peter Wellings
Parks Australia North

Anthony Milnes
EWL Sciences

Shane Maraldo
Hanson Australia Pty Ltd

Mark Foy
Northern Lands Council

Tony McGill
NT Department of Business, Industry and Resource Development

Arthur Johnston
Supervising Scientist

APPENDIX 4

THIS MEMORANDUM OF UNDERSTANDING made the Twenty eighth day of September one thousand nine hundred and ninety five.

BETWEEN:

COMMONWEALTH OF AUSTRALIA of the one part

AND:

NORTHERN TERRITORY OF AUSTRALIA of the other part

WHEREAS:

The Commonwealth Minister for Environment, Sport and Territories, the Commonwealth Minister for Primary Industries and Energy and the Northern Territory Minister for Mines and Energy agreed to conclude a Memorandum of Understanding (MOU) concerning the supervision and regulation of environmental aspects of the uranium mining in the Alligator Rivers Region.

1. NOW THE PARTIES AGREE that this MOU:

   (a) revokes and replaces the Working Arrangements agreed by the Prime Minister and Chief Minister in 1979;

   (b) clarifies the roles of the Northern Territory Department of Mines and Energy and the Supervising Scientist, including the process of twice yearly Environment Performance Reviews;

   (c) emphasises the need for close consultation between the Northern Territory Department of Mines and Energy, the Supervising Scientist, the Department of Primary Industries and Energy (DPIE) and other interested parties, including the Australian Nature Conservation Agency, the Conservation Commission of the Northern Territory, the Northern Land Council and conservation groups;

   (d) rationalises the committee structure for consultation and co-operation between the parties;

   (e) establishes arrangements for reporting of incidents;

   (f) provides a mechanism for provision of information to interested parties;

   (g) does not create legal obligations between the parties.

2. The Parties agree to the attached working arrangements contained in Attachment A.

SIGNED by Senator the Honourable JOHN FAULKNER, Minister for the Environment Sport and Territories of the Commonwealth of Australia in the presence of:

.....

SIGNED by Senator the Honourable BOB COLLINS, Minister for Primary Industries and Energy of the Commonwealth of Australia in the presence of:

.....

SIGNED by the Honourable MIKE REED MLA, Minister for Mines and Energy of the Northern Territory of Australia in the presence of:

.....

JOHN ANTHONY COLEMAN

APPENDIX 5

AGREEMENT BETWEEN THE COMMONWEALTH OF AUSTRALIA AND THE NORTHERN TERRITORY OF AUSTRALIA IN RELATION TO PRINCIPLES TO BE APPLIED IN THE REGULATION OF URANIUM MINING IN THE NORTHERN TERRITORY OF AUSTRALIA

THIS AGREEMENT is made the 17th day of November 2000

BETWEEN:

the **COMMONWEALTH OF AUSTRALIA** ("the Commonwealth")

AND:

the **NORTHERN TERRITORY OF AUSTRALIA** ("the Territory")

WHEREAS:

The Commonwealth and the Territory desire to build upon the working relationship that exists between them in order to ensure that the processes necessary to protect the environment of the Territory are in place and are being worked upon cooperatively between the Commonwealth and the Territory.

AND WHEREAS:

The Commonwealth and the Territory agree that there is no intention to diminish the role of the Territory in this regard but that there is need to clarify and make completely transparent the existing arrangements between the Commonwealth and the Territory and the Commonwealth's final accountability for uranium mining in the Territory.

AND WHEREAS:

The Commonwealth Minister for Industry, Science and Resources and the Territory Minister for Resource Development recognise that there is a need to revise Agreements between the Commonwealth and the Territory relating to the mining of prescribed substances in the Territory to accommodate the development and operation of Uranium Mining Projects in the Territory and to ensure that the highest environmental standards are applied.

AND WHEREAS:

It is desired to make it clear that Ministers of the Territory continue to have the necessary executive authority under section 35 of the *Northern Territory (Self-Government) Act* 1978 (Cth) to exercise, observe and perform the duties, powers, functions and authorities under the relevant laws of the Territory in relation to the matter of mining of uranium and other prescribed substances in the Territory, on the terms hereafter provided.

NOW THE PARTIES AGREE as follows:

1. This Agreement repeals and replaces the following agreements:

   - the Agreement dated 22 March 1979 between the Commonwealth of Australia and the Territory signed by the Commonwealth Minister for Trade and Resources and the Chief Minister of the Territory;

   - the Agreement of April 1979 between the Commonwealth of Australia and the Territory signed by the Commonwealth Acting Minister for Trade and Resources and the Chief Minister of the Territory;

   - the Agreement dated 8 February 1982 between the Commonwealth of Australia and the Territory signed by the Commonwealth Minister for Trade and Resources and the Chief Minister of the Territory;

   - the Agreement dated 12 May 1982 between the Commonwealth of Australia and the Territory signed by the Commonwealth Minister for Trade and Resources and the Chief Minister of the Territory;

   - provided that these repeals shall not affect the validity or legal force of anything done prior to the commencement of this Agreement pursuant to, or in reliance on, or in any way by reference to any of those repealed agreements.

2. In this Agreement, unless the contrary intention appears:

   "***Atomic Energy Act***" means the *Atomic Energy Act* 1953 (Cth);

   "**Commonwealth**" means Commonwealth of Australia;

   "**Commonwealth Minister**" means the Commonwealth Minister of State for the time being administering section 41 of the *Atomic Energy Act*;

   "**ERA**" means Energy Resources of Australia Limited (A.C.N. 008 550 865);

   "**Jabiluka Mine Project**" means the undertaking of activities connected with the Jabiluka Mineral Lease;

   "**Jabiluka Mineral Lease**" means the mineral lease (MLN1) dated 12 August 1982 granted under the *Mining Act* to Pancontinental Mining Ltd and Getty Oil Development Ltd and assigned to ERA;

   "**Jabiluka Requirements**" means the requirements set out in the letters dated 8 October 1997 and 27 August 1998 from the Commonwealth Minister for Resources and Energy to ERA (set out in Attachments A and B to this Agreement);

   "***Mine Management Act***" means the *Mine Management Act* (NT) and regulations made under that Act, or any Act that repeals and replaces that Act, whether or not in conjunction with any other Territory legislation;

"***Mining Act***" means the *Mining Act* (NT) and regulations made under that Act;

"**Northern Territory Act**" or "**Northern Territory Acts**" includes regulations made under that Act or those Acts;

"**prescribed substance**" has the same meaning as in the *Atomic Energy Act*;

"**Ranger Authority**" means the authority to carry on operations on the Ranger Project Area for a period of 26 years commencing 9 January 2000 granted to ERA under section 41 of the *Atomic Energy Act*;

"**Ranger Project Area**" has the same meaning as in the *Atomic Energy Act*;

"**Supervising Scientist**" has the same meaning as in the *Environment Protection (Alligator Rivers Region) Act* 1978;

"**Territory Minister**" in relation to a Northern Territory Act or an activity under such an Act, means the Minister of the Territory appointed under section 36 of the *Northern Territory (Self-Government) Act* 1978 (Cth) and for the time being administering that Northern Territory Act, or any other Minister of the Territory acting for or on behalf of that Minister of the Territory;

"**UMEC Act**" means the *Uranium Mining (Environment Control) Act* (NT) and regulations made under that Act, or any Act that repeals and replaces that Act, whether or not in conjunction with any other Territory legislation.

General Obligations

3. The Commonwealth and the Territory agree that it is in the public interest that the laws of the Commonwealth and the Territory applicable to mining prescribed substances in the Territory be observed and enforced to ensure to the greatest extent possible the reduction of any adverse environmental effects, consistent with the exploration for and mining of those prescribed substances.

4. Whenever the *Mining Act*, the UMEC Act or the *Mine Management Act* apply to or in relation to the mining of prescribed substances in the Territory, the parties hereto agree that the Territory Minister shall continue to have executive authority under section 35 of the *Northern Territory (Self-Government Act* 1978 (Cth) with respect to any matters arising under those Northern Territory Acts or any of them, and subject as hereinafter provided, the Territory Minister shall exercise, observe or perform, with respect to the mining of those prescribed substances, the duties, powers, functions and authorities imposed or conferred on the Territory Minister by or under those Northern Territory Acts.

5. The Commonwealth and the Territory recognise the basic principle that the Territory shall consult with the Commonwealth in respect of any matters

agreed in writing between them relating to the mining of prescribed substances in the Territory. The Territory Minister shall act in accordance with any advice on the matter which is provided by the Commonwealth Minister. The Territory Minister will seek appropriate amendment of Northern Territory Acts to achieve this principle.

6. The Territory Minister shall give or cause to be given to the Commonwealth Minister such information in respect of any matter relating to mining for prescribed substances in the Territory as the Commonwealth Minister may request.

7. The Commonwealth Minister shall give or cause to be given to the Territory Minister such information in respect of any matter relating to mining for prescribed substances in the Territory as the Territory Minister may request.

8. Wherever it appears to the Commonwealth Minister or the Territory Minister that the exercise of any powers, duties or functions by the Territory Minister under the *Mining Act*, the UMEC Act, the *Mine Management Act* or any other Northern Territory Act relating to the mining or milling of prescribed substances in the Territory may affect the exercise by the Commonwealth Minister, or any other Minister of the Commonwealth, of any powers, duties or functions with respect to prescribed substances in the Territory, the Commonwealth Minister and the Territory Minister will, at the request of either of them, consult together to resolve any differences which may arise. Where, following such consultation, advice is provided by the Commonwealth Minister to the Territory Minister, the Territory Minister will give effect to any advice so provided.

Mining Act

9. In all matters under the *Mining Act* relating to prescribed substances situated in the Territory, that are so agreed in writing, but in any event including the grant or renewal of a mineral lease under that Act for the mining of prescribed substances, the Territory Minister:

   (a) shall exercise or perform his or her duties, powers, functions and authorities in accordance with, and give effect to, the advice of the Commonwealth Minister, and

   (b) shall not exercise or perform his or her duties, powers, functions and authorities otherwise than in accordance with that advice.

10. The Territory Minister shall ensure that:

   (a) whenever the Territory Minister or an officer of the Territory becomes aware of any mining project that involves or may involve prescribed substances, consultations between the Commonwealth Minister and the Territory Minister or their officers will be held at the earliest practicable stage;

(b) in every mineral lease granted, renewed or approved under the *Mining Act* for the mining of a prescribed substance, there is specified in terms approved by the Commonwealth Minister, all relevant matters relating to the determination, variation, assessment and payment of royalty to be paid in respect of prescribed substances mined in the Territory under that mineral lease.

UMEC Act

11. (1) In the exercise or performance of a duty, power or function under the UMEC Act relating to the grant or variation of an authorization under that Act, the Territory Minister:

(a) will refer the matter to the Supervising Scientist for comment; and

(b) shall not act until he or she receives comments from the Supervising Scientist. Such comments are to be made within fourteen (14) days unless the urgency of the situation requires an earlier response;

(2) Where the Supervising Scientist has advised the Territory Minister that he or she has referred the matter to the Commonwealth Minister, the Territory Minister shall not exercise his duties, powers, functions and authorities under the UMEC Act otherwise than in accordance with the advice of the Commonwealth Minister.

12. The Territory Minister:

(a) recognises that any Authorisation or Approval issued under the UMEC Act should incorporate and reflect the environmental requirements to which the Ranger Authority is subject; and

(b) will seek appropriate amendment of the UMEC Act to achieve this result.

Mine Management Act

13. In the exercise or performance of a duty, power or function under sections 5 and 41 of the *Mine Management Act* relating to the management of mines extracting, or for exploration activities relating to, a prescribed substance, the Territory Minister:

(a) will consult with the Commonwealth Minister and give effect to any advice provided to the Territory Minister by the Commonwealth Minister; and

(b) shall not exercise or perform his or her duties, powers, functions and authorities otherwise than in accordance with that advice.

The Territory Minister will seek appropriate amendment of the *Mine Management Act* to achieve this result.

Jabiluka Requirements

14. The Territory Minister acknowledges the Jabiluka Requirements and will seek the appropriate amendment of relevant Northern Territory Acts to incorporate the Jabiluka Requirements in a form to be agreed by the Commonwealth Minister and the Territory Minister. Where appropriate, the substance of those requirements will be imposed as conditions of operation on ERA in respect of the Jabiluka Mine Project.

Jabiluka Mineral Lease Environmental requirements

15. The Territory Minister will seek to amend the environmental requirements attached as a condition to the Jabiluka Mineral Lease to reflect changes to be developed by the Commonwealth after consultation with the Territory to more closely reflect the environmental requirements to which the Ranger Authority is subject.

Working Arrangements

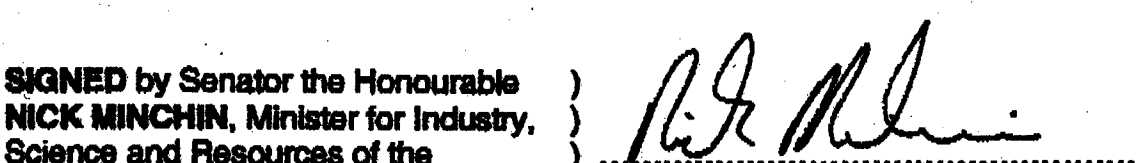
16. While recognising the efficacy of the arrangements to date, the Territory Minister and the Commonwealth Minister agree to review the Working Arrangements agreed to by the Commonwealth Minister for Environment, Sport and Territories, the Commonwealth Minister for Primary Industries and Energy and the Territory Minister for Mines and Energy in September 1995, to more clearly define by agreement the roles and responsibilities shared between the Territory and the Commonwealth in relation to the mining of prescribed substances in the Territory. The revised Working Arrangements will reflect both the responsibility of the Territory for the day to day regulation of uranium mining activities in the Territory and the responsibility of the Commonwealth under relevant Commonwealth legislation relating to the mining of prescribed substances in the Territory.

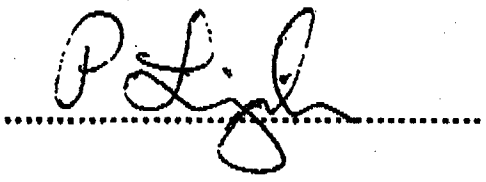
General

17. The Territory Minister and the Commonwealth Minister agree to maintain through appropriate working arrangements the high degree of consultation between the Territory and the Commonwealth and other stakeholders, such as the traditional owners of Aboriginal land and the relevant Land Councils under the *Aboriginal Land Rights (Northern Territory) Act* 1976, in relation to the mining of prescribed substances in the Territory.

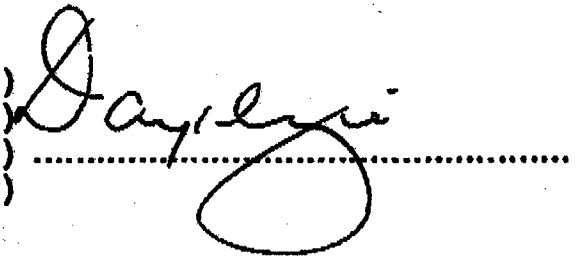
EXECUTED by the parties as an Agreement

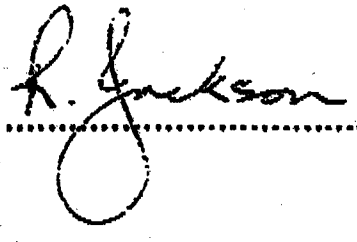
SIGNED by Senator the Honourable **NICK MINCHIN**, Minister for Industry, Science and Resources of the Commonwealth of Australia in the presence of:





SIGNED by the Honourable **DARYL MANZIE MLA**, Minister for Resource Development of the Northern Territory of Australia in the presence of:





APPENDIX 6

30 June 1999

Environmental Requirements of the Commonwealth of Australia for the Operation of Ranger Uranium Mine

Preamble

The Environmental Requirements for the Ranger uranium mine set out the Commonwealth's environmental protection conditions with which the company must comply. These are conditions of the Authority issued under s41 of the *Atomic Energy Act 1953* and also reflect the Commonwealth's role in the Alligator Rivers Region under the *Environment Protection (Alligator Rivers Region) Act 1978.* The operational procedures and practices, and environmental standards, guidelines, codes, regulations or limits relevant to meeting these conditions are set out in Northern Territory legislation and the Ranger General Authorisation established under the *Uranium Mining (Environment Control) Act 1979 (NT).*

Arrangements for consultation and approval concerning operations at Ranger are set out in the "Working Arrangements" contained in the Memorandum of Understanding between the Commonwealth and Northern Territory governments, as amended from time to time. These arrangements require the Supervising Authority to consult with and have regard to the views of the Supervising Scientist and the Northern Land Council (NLC) prior to:

(a) granting an approval or authorisation, or issuing a licence or permit, in connection with environmental aspects of operations; or

(b) granting approval of environmental management reports; or

(c) setting standards in connection with any permit, licence, etc relating to environmental aspects of operations; or

(d) agreeing to the outcome of Best Practicable Technology assessments.

The Supervising Authority will notify the Minister of any action or determination in respect of these Environmental Requirements and act on or implement any subsequent advice from the Minister.

Primary Environmental Objectives

1 Environmental Protection

1.1 The company must ensure that operations at Ranger are undertaken in such a way as to be consistent with the following primary environmental objectives:

(a) maintain the attributes for which Kakadu National Park was inscribed on the World Heritage list;

(b) 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);

(c) protect the health of Aboriginals and other members of the regional community; and

(d) maintain the natural biological diversity of aquatic and terrestrial ecosystems of the Alligator Rivers Region, including ecological processes.

1.2 In particular, the company must ensure that operations at Ranger do not result in:

(a) damage to the attributes for which Kakadu National Park was inscribed on the World Heritage list;

(b) 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);

(c) an adverse effect on the health of Aboriginals and other 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;

(d) change to biodiversity, or impairment of ecosystem health, outside of the Ranger Project Area. Such change is to be different and detrimental from that expected from natural biophysical or biological processes operating in the Alligator Rivers Region; and

(e) 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.

2 Rehabilitation

2.1 Subject to subclauses 2.2 and 2.3, the company must 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 Minister with the advice of the Supervising Scientist, the rehabilitated area could be incorporated into the Kakadu National Park.

2.2 The major objectives of rehabilitation are:

(a) revegetation of 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;

(b) 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;

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

2.3 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 subclauses 2.1, 2.2 and 3.1.

Secondary Environmental Objectives

3 Water Quality

3.1 The company must 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.

3.2 The company must, to the extent necessary to achieve the primary environmental objectives, 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 to concentrate and contain contaminants within the site.

3.3 Background values for key variables in water quality, including values for conductivity, pH and uranium, are determined by the Supervising Scientist from time to time and communicated to the company and other major stakeholders. Should the values for these variables measured at Gauging Station GS8210009, or other key locations, show trends away from, or be abruptly divergent from, those background values, and if, in the opinion of the Minister, with the advice of the Supervising Scientist, the results may be attributable to mining operations, then the company must undertake such investigations and remedial actions as required by the Supervising Authority after consultation with the Supervising Scientist and other major stakeholders.

3.4 Process water must be totally contained within a closed system except for:

(a) losses through natural or enhanced evaporation;

(b) seepage of a quality and quantity that will not cause detrimental environmental impact outside the Ranger Project Area; and

(c) subject to clauses 3.1, 3.2 and 3.3, process water which has been treated to achieve a quality which:

(i) conforms to a standard practice or procedure recommended by the Supervising Scientist; and

(ii) is not less than that of the water to which it is to be discharged.

4 Air Quality

4.1 Emissions of gaseous and particulate contaminants must 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.

4.2 Air quality must be managed in such a way that there is no physical or chemical detriment to any known sites of Aboriginal culture or heritage.

5 Radiological Protection

5.1 The company must 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 must 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 clause 5.3, the company must achieve the following outcomes:

(a) Radiation doses to company employees and contractors must be kept as low as reasonably achievable and must always remain less than the dose limit for workers.

(b) Radiation doses to people who are not company employees or contractors must be kept as low as reasonably achievable and must always remain less than the dose limit for members of the public.

(c) Ecosystems surrounding the Ranger Project Area must not suffer any significant deleterious radiological impacts.

5.2 The company must comply with any dose constraints established or amended by the Supervising Authority or the Minister with the advice of the Supervising Scientist to take account of other anthropogenic radiation sources such that subject to clause 5.3, the total radiation dose received by members of the public does not exceed the applicable dose limit.

5.3 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.

6 Storage, Use and Disposal of Hazardous Substances and Wastes

6.1 All hazardous substances (including chemicals, reagents, fuels and oils) must 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 or the Minister with the advice of the Supervising Scientist to minimise the risk to human health and ecosystem health.

6.2 The company must 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.

6.3 From the date of the Authority the company must 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 must 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.

7 Management of Excavated Material

7.1 All excavated material must be managed such that there is no detrimental environmental impact outside of the Ranger Project Area, and that environmental impacts within the Ranger Project Area are as low as reasonably achievable.

8 Blasting

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

9 Rehabilitation Plan

9.1 The company must prepare a rehabilitation plan which is approved by the Supervising Authority and the Minister with the advice of the Supervising Scientist, the implementation of which will achieve the major objectives of rehabilitation as set out in subclause 2.2, and provide for progressive rehabilitation.

9.2 All progressive rehabilitation must be approved by the Supervising Authority or the Minister with the advice of the Supervising Scientist and subject to the NLC agreeing that the aim and objectives for rehabilitation as described in clause 2 are met.

9.3 The company's obligations under clause 9 will cease in respect of any part of the Ranger Project Area over which a close-out certificate is issued by the Supervising Authority subject to the Supervising Scientist and the NLC agreeing that the specific part of the Ranger Project Area has met the requirements of clause 2.

9.4 Where agreements under subclause 9.2 or 9.3 cannot be reached the Minister will make a determination with the advice of the Supervising Scientist.

10 Protection of Soil, Vegetation and Fauna

10.1 All operations should be managed to minimise, to the maximum extent practicable, and to the satisfaction of the Supervising Authority or the Minister with the advice of the Supervising Scientist:

(a) the disturbance of soil, vegetation and fauna within the Ranger Project Area; and

(b) the risk to fauna as a result of drinking contaminated water.

10.2 The company must 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.

11 Management of Tailings

11.1 During mining operations and prior to final placement, covering and rehabilitation of the tailings, tailings must be securely contained in a manner approved by the Supervising Authority or the Minister with the advice of the Supervising Scientist which prevents detrimental environmental impact.

11.2 By the end of operations all tailings must be placed in the mined out pits.

11.3 Final disposal of tailings must be undertaken, to the satisfaction of the Minister with the advice of the Supervising Scientist on the basis of best available modelling, in such a way as to ensure that:

(i) the tailings are physically isolated from the environment for at least 10,000 years;

(ii) any contaminants arising from the tailings will not result in any detrimental environmental impacts for at least 10,000 years; and

(iii) 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 tailings disposal.

Other Provisions

12 Best Practicable Technology

12.1 All aspects of the Ranger Environmental Requirements must be implemented in accordance with BPT.

12.2 Where there is unanimous agreement between the major stakeholders that the primary environmental objectives can be best achieved by the adoption of a proposed action which is contrary to the Environmental Requirements, and which has been determined in accordance with BPT, that proposed action should be adopted. Where agreement can not be reached the Minister will make a determination with the advice of the Supervising Scientist.

12.3 All environmental matters not covered by these Environmental Requirements must be dealt with by the application of BPT.

12.4 BPT is defined as:

That technology from time to time relevant to the Ranger Project which produces the maximum environmental benefit that can be reasonably achieved having regard to all relevant matters including:

(a) the environmental standards achieved by uranium operations elsewhere in the world with respect to

(i) level of effluent control achieved; and

(ii) the extent to which environmental degradation is prevented;

(b) the level of environmental protection to be achieved by the application or adoption of the technology and the resources required to apply or adopt the technology so as to achieve the maximum environmental benefit from the available resources;

(c) evidence of detriment, or lack of detriment, to the environment;

(d) the physical location of the Ranger Project;

(e) the age of equipment and facilities in use on the Ranger Project and their relative effectiveness in reducing environmental pollution and degradation; and

(f) social factors including the views of the regional community and possible adverse effects of introducing alternative technology.

12.5 Proposals to amend or introduce operational approaches, procedures or mechanisms must be supported by a BPT analysis. The rigour of the BPT analysis must be commensurate with the potential environmental significance of the proposal. The BPT analysis must involve consultation with and having regard to the views of the major stakeholders and copies of the BPT analysis must be provided to each of the major stakeholders.

12.6 A precautionary approach is to be exercised in the application of BPT in order to achieve outcomes consistent with the primary environmental objectives.

13 Environmental Monitoring

13.1 During operations the company must carry out a comprehensive monitoring program, as required by the Supervising Authority or the Minister with the advice of the Supervising Scientist, which:

(a) includes monitoring stations on Magela Creek upstream and downstream of the mine at Gauging Stations GS8210028 and GS8210009 and such other sites as may be approved or required by the Supervising Authority or the Minister with the advice of the Supervising Scientist; and

(b) is sufficient to allow interpretive analysis of impacts from operations.

13.2 The company must ensure proper analysis of monitoring results to the satisfaction of the Supervising Authority or the Minister with the advice of the Supervising Scientist and:

(a) must make data and reports available to the major stakeholders; and

(b) must make reports of monitoring results and analysis, other than commercial-in-confidence matters, available to members of the Advisory Committee established under the *Environment Protection (Alligator Rivers Region) Act 1978.*

13.3 The company must carry out a monitoring program approved by the Supervising Authority or the Minister with the advice of the Supervising Scientist following cessation of operations until such time as a relevant close-out certificate is issued under clause 9.3.

14 Staffing

14.1 The company must 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.

15 Research

15.1 The company must undertake research with a view to maximising the level of environmental protection at Ranger. Plans and results of environmental research by the company will be provided to the Technical Committee established under the *Environment Protection (Alligator Rivers Region) Act 1978* to enable the committee to effectively co-ordinate environmental research in the region.

16 Reporting Incidents

16.1 The company must directly and immediately notify the Supervising Authority, the Supervising Scientist, the Minister and the Northern Land Council of all breaches of any of these Environmental Requirements and any mine-related event which:

(a) results in significant risk to ecosystem health; or

(b) which has the potential to cause harm to people living or working in the area; or

(c) which is of or could cause concern to Aboriginals or the broader public.

17 Environmental Standards

17.1 Nothing in these Environmental Requirements must be interpreted to prevent or discourage the company from attaining higher environmental standards than those specified.

18 Environmental Management Report

18.1 The company must prepare an Environmental Management Report which is approved by the Supervising Authority and the Minister with the advice of the Supervising Scientist. Approval may be given conditionally. The company must submit the Environmental Management Report to the NLC at the same time as submitting it for approval. The Environmental Management Report must be prepared in accordance with guidelines as determined by the major stakeholders. The report must provide details of:

(a) the company's environmental management over the preceding 12 month period; and

(b) the company's proposals for complying with the Environmental Requirements and all applicable environmental laws over the following 12 months.

18.2 The report required under clause 18.1 must deal specifically with the following matters:

(a) water management;

(b) land management;

(c) protection of cultural sites;

(d) counter disaster and emergency procedures;

(e) environmental research;

(f) environmental monitoring, including any environmental monitoring required by the Supervising Authority;

(g) social impact monitoring;

(h) hazardous substances and industrial waste management;

(i) radiation monitoring and management;

(j) air quality management;

(k) tailings management;

(l) excavated material management;

(m) environmental planning and operating systems, including employment and training programs; and

(n) rehabilitation.

18.3 The company must ensure that the Environmental Management Report is updated and submitted at such times as are required by the Supervising Authority or the Minister with the advice of the Supervising Scientist, and no less often than annually.

18.4 The company must comply with the proposals set out in each Environmental Management Report as approved and subject to any conditions set by the Supervising Authority or the Minister with the advice of the Supervising Scientist.

19 Interpretation of the Environmental Requirements

19.1 In interpreting this document, a construction that would promote the primary environmental objectives must be preferred to a construction that would not promote those objectives.

19.2 In the interpretation of a provision in this document, consideration should be given to any relevant explanatory material agreed to by the major stakeholders and published by the Supervising Scientist.

[Note: explanatory material may include material that is in a report of the Supervising Scientist published under section 36 of the Environment Protection (Alligator Rivers Region) Act 1978].

19.3 In this document, unless the contrary intention appears, a word or phrase has the same meaning as in the Authority.

19.4 The Preamble and headings are not part of these Environmental Requirements and shall not be used in the interpretation or construction of these Environmental Requirements.

20 Definition of Terms

Alligator Rivers Region or **Region** has the same meaning as in the *Environment Protection (Alligator Rivers Region) Act 1978*.

Authority means the Authority to carry on operations granted under section 41 of the *Atomic Energy Act 1953*.

Background values are the background values for water quality determined by the Supervising Scientist on the basis of:

(a) the extensive historical data sets that are available in the region;

(b) using data that will ensure that the background values reflect the water quality that would exist in the absence of mining;

(c) an assessment of the natural distribution of chemical constituents in the stream.

Biological diversity means the variety within and among living organisms and of the ecological systems they comprise.

BPT means best practicable technology as defined in subclause 12.4.

Close-out means the point at which the Supervising Authority determines that the requirements of clause 2 have been met or are assured, appropriate regulations and standards have been met, and the site is suitable for the intended future land use.

Company means the company or organisation which is the grantee of the Authority or its permitted successors or assignees.

Detrimental environmental impact means any impact arising from the mining operation, whether direct or indirect, which causes or is likely to cause a change to biodiversity, or impairment of ecosystem health. Such change is to be different and detrimental from that expected from biophysical or biological processes operating in the Alligator Rivers Region.

Dose constraint means a radiation dose target, which is less than the radiation dose limit for workers or the radiation dose limit for members of the public, as applicable, below which radiation doses should be able to be maintained in a well managed operation.

Ecosystem means a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Ecosystem health means the ability to support and maintain a balanced, integrative, adaptive community of organisms having a species composition, diversity and functional organisation comparable to that of the natural habitat of the region.

Environment includes:

(a) ecosystems and their constituent parts, including people and communities; and

(b) natural and physical resources; and

(c) the qualities and characteristics of locations, places and areas; and

(d) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b) or (c).

Environmental Management Report means Environmental Management Reports prepared by the company pursuant to clause 18.

Excavated material means all rock and soil removed from its original site as part of the operations.

Minister means the Minister for the time being administering section 41 of the *Atomic Energy Act 1953*.

Major stakeholders means the primary groups directly responsible for or representing people affected by Ranger. They are the company, the Northern Territory government, the Commonwealth government, and the Northern Land Council.

Precautionary approach is an approach where decisions are guided by careful evaluation to avoid serious or irreversible damage to the environment.

Primary environmental objectives means the objectives set out in clauses 1 and 2.

Process water means water that has been used in the milling and processing of ore materials, or the transport of waste to any tailings repository, including any water held within a tailings repository.

Ranger means the mine or the operations undertaken on the Ranger Project Area.

Ranger General Authorisation means the authorisation issued by the NT Minister for Mines and Energy under the *Uranium Mining (Environment Control) Act 1979*.

Regional community means people living or working in the Alligator Rivers Region.

Rehabilitation includes decommissioning to remove plant and equipment, foundations and related infrastructure; civil works to reshape and stabilise the mine site, primarily to minimise erosion, contain contamination, and for aesthetic reasons; the final placement of tailings and all other excavated material and any hazardous substances; and revegetation.

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*.

Tailings means the ground-up rock and process chemical residues after processing and extraction of the economic mineral from the ore.

APPENDIX 7

RANGER GENERAL AUTHORIZATION
Number A82/3

Issued under the

Uranium Mining (Environment Control) Act 1979 (NT)

TABLE OF CONTENTS

SCHEDULE 1 DEFINITIONS

1.1 In this Authorization, unless a contrary intention appears:

1.1.1 "the Act" means the *Uranium Mining (Environment Control) Act (NT) 1993*;

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 appointed under the *Mine Management Act (NT) 1996*;

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" has the same meaning as it does under the Act;

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 "manager" has the same meaning as it does under the Act;

1.1.12 "Inspector" has the same meaning as it does under the Act;

1.1.13 "mine" has the same meaning as it does under the Act;

1.1.14 "mining" has the same meaning as it does under the Act

1.1.15 "operator of the mine" means the owner or the manager of the mine;

1.1.16 "mine site employees" means employees of the operator of the mine whose usual place of work is in the Ranger project area;

1.1.17 "the Code " means the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987);

1.1.18 "designated employees" has the same meaning as it does in the Code;

1.1.19 “controlled area” has the same meaning as it does in the Code;

1.1.20 “supervised area” has the same meaning as it does in the Code;

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

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

SCHEDULE 2 AUTHORIZED OPERATIONS AT THE RANGER MINE

2.1 The operator of the mine is authorised to:

2.1.1 mine Ranger #3 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;

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 Aboriginals and other 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 Aboriginals and other 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. Such change is to be 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 Manual;

3.3.2 conduct the mining in general accordance with the latest approved revision of the Ranger Mining Manual 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 Manual; 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 Manual.

3.3.4 minimise, to the maximum 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 Ore Treatment Manual; and

4.1.2 conduct ore treatment in general accordance with the latest approved revision of the Ranger Ore Treatment Manual 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 an Inspector;

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 an Inspector;

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 43.5 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 43.5 m AHD, the target operating level in the tailings dam will, from 1 December until 30 March each year, be RL 43.0 m 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.

5.6 By the end of operations all tailings must be placed in the mined out pits.

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 Authorization 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 an Inspector 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 an Inspector 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 an Inspector and noted in the Mining Manual.

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 Water Management System Operation Manual 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, 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;
- the surface water monitoring program; and
- details of the proposed wet and dry season operating levels and limits for Retention Pond 2.

Note: the basis for the calculation of the Wet season operating level for Retention Pond 2 shall be that sufficient freeboard is maintained to accommodate runoff from a 72 hour, 1 in 100 Annual Exceedance Probability Storm.

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 runoff from the irrigation areas is monitored in accordance with the requirements of Annex A;

7.6.2.2 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;

7.6.2.3 during irrigation, a daily inspection of the irrigation areas is made to detect any waterlogging, seepage, or other visible adverse effects; and

7.6.2.4 during April and November each year, an inspection of vegetation is carried out by a suitably qualified person to detect any recognisable physiological responses resulting from irrigation.

7.7 The operator of the mine shall maintain to the satisfaction of the Minister and for examination by an Inspector, 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 m^3 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	Measurement	Frequency
Designated bores	L	January, February, March, April, May, July, September, November, December
Primary sites		
Tailings dam area 1A, 7A, 17A, 19A, 20, 24, 30, 41, 42A, RN23551	EC, magnesium, and sulfate	Every two months
	W1, W2, W7	May and November
	W8	Every two years
Secondary sites		
Tailings dam area 21A, 23, 28, 43	EC and magnesium	Every two months
	W1, W2, W7	May and November
Tertiary sites		
All areas 2A, 4A, 6A, 10A, 13A, 44, RN23552 29, 79/2	W1, W2, W7	May and November
	W8	Every two years
Piezometers	L	Dependent on situation
Dewatering bores MBL, DW3A	EC, pH and Uranium	Every two months

Designated observation bores, with corresponding Registration No.:

OB	RN	OB	RN	OB	RN
1A	22902	20	22934	41	26590
2A	22904	21A	22935	42A	28431
4A	22908	23	22937	43	26592
6A	22912	24	22938	44	26593
7A	22914	28	22939	79/2	9329
10A	22920	29	22940		22901
13A	22924	29	22940		RN23551
17A	22931	30	22941		RN23552
19A	22933				

A.2 Potable Water	Measurement	Frequency
Mine site (Jabiru East supply)	W1 plus uranium and radium-226	Monthly
	W6	Quarterly
	W2, W4 plus sulfate	November

A.3 Impounded water	Measurement	Frequency
RP1		
Weir	L	Weekly, or during overflow, a frequency that will allow estimation of the daily volume of overflow.
	W1 except sulfate	Weekly October to May, and prior to overflow
	W1, W7, W8	Monthly October to May
RP2		
Gauge board	L, EC, and pH	Weekly
	W2, W7, W8, W9 plus NH4 and sulfate	Quarterly
Tailings dam		
Return water pontoon	W2, W7, W8 plus NH4 and sulfate	Quarterly
Tailings dam seepage collection system		
North wall manhole	W1, W2, W7, W9 plus NH4	Quarterly
Return pipes to tailings dam	Flowmeter volumes	Monthly
RP2 seepage collector system		
Return pipe to RP2	W1, W2, W7, and flowmeter volume	Monthly

A.4 Spray irrigation	Measurement	Frequency
Bores (all bore numbers have the prefix MC)		
6, 32, 33, 34	L	Weekly during irrigation, otherwise monthly
35,36,37,38	L	Weekly during irrigation
19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31	L, pH, and EC	Weekly during irrigation, otherwise monthly
	Sulfate, Mn, U	Monthly during irrigation, otherwise every two months
21 and 24	Radium-226	Monthly during irrigation, otherwise every two months
35,36,37,38	pH, EC and sulfate	Monthly during irrigation and once during the month immediately following the cessation of irrigation

A.4 Spray irrigation	Measurement	Frequency
Irrigation water	pH, EC, sulfate, Mn, U	Weekly
Seepage sites	pH, EC	Weekly April to December

Land application area bores (with numbers having the prefix MC), with corresponding Registration No.:

MC	**RN**	**MC**	**RN**	**MC**	**RN**
6	25394	19	25406	20	25407
21	25408	22	25409	23	25465
24	25466	25	25467	26	25468
27	25469	28	25470	29	25471
30	25472	31	25473	32	25474
33	25475	34	25476	35	29460
36	29461	37	29462	38	29463

A.5 Releases	Measurement	Frequency
RP2		
Prior to release		
Waters to be released (at point of discharge)	W1, W2, W7, W8, W10 plus NH4 and PO4	At least once within one week of release
Magela Creek (upstream of pipeline outlet)	W1, Mg, Ca, Mn, U	At least once just prior to release
GS8210009	W1, Mg, Ca, Mn, U	At least once just prior to release
During release		
Waters to be released (at point of discharge)	W1, Mg, Mn, U	Daily during release
	W1, W7 plus Mg and alkalinity	Weekly during release if period of release exceeds one week
Magela Creek (upstream of pipeline outlet)	W1, Mg, Mn, U	Daily during release
GS8210009	W1, Mg, Mn, U	Daily during release
After release		
Magela Creek (upstream of pipeline outlet)	W1, Mg, Ca, Mn, U	Once within seven days since the end of any release
GS8210009	W1, Mg, Ca, Mn, U	Once within seven days since the end of any release
RP1 and Djalkmarra Billabong		
Prior to first release (in any Wet season)		
Waters to be released (at point of discharge from pond)	W1, W2, W7, W8, W10 plus NH4 and PO4	At least once within one week of first release
Magela Creek (upstream of	W1, Mg, Ca, Mn, U	At least once just prior to first release

A.5 Releases	Measurement	Frequency
outlet)		
GS8210009	W1, Mg, Ca, Mn, U	At least once just prior to first release
During release (to be sampled on the same day)		
Waters to be released (at point of discharge from pond)	W1, Mg, Mn, U	Weekly during release
Magela Creek (upstream of outlet)	W1, Mg, Mn, U	Weekly during release
GS8210009	W1, Mg, Mn, U	Weekly during release

A.6 Creeks and billabongs	Measurement	Frequency
Magela Creek		
Water/GS8210009	W1 plus Mg, uranium and radium-226	Monthly
Gulungul Creek		
Water/Highway	W1 plus uranium and radium-226	Monthly
Georgetown Creek		
Water/Upstream GS	W1 plus uranium and radium-226	Monthly
Georgetown Billabong		
Water/GB	W1 plus radium-226	Monthly
	W9	Quarterly
Bottom sediment/one site (0-5 cm)	SED	Yearly
Djalkmarra Billabong		
Water	W1 plus uranium and radium-226, W2	Monthly
Water/GB	W9	Quarterly
Bottom sediment/one site (0-5 cm)	SED	Yearly
Coonjimba Billabong		
Water/GB	W1 plus uranium and radium-226	Monthly
Water/GB	W9	Quarterly
Bottom sediment/one site (0-5 cm)	SED	Yearly
Gulungul Billabong		
Water/GB	W1 plus uranium and radium-226	May and November
Bottom sediment/one site (0-5 cm)	SED	Yearly
Mudginberri Billabong		
Water/GB	W1 plus uranium and radium-226	May and November
Mussel, 40-60 mm (flesh)	B	Yearly
Bottom sediment/one site (0-5 cm)	SED	Yearly

A.7 Soil monitoring	Measurement	Frequency
Project Area		
Soil/Sites No. R82, R80, R27, R28, R79, R52, R4, R10, R1, R77, R95 (0-5 cm)	SOIL	3-yearly
Land application area		
Soil Site Nos.: R85 and R86, R90 and R91, R87 and R96, R88 and R89, R92A and R93, and R94 and R101	S	Yearly in April
For each site five soil cores are to be bulked for 0-5, 40-50, 90-100 and 140-150 cm depths (or to depth of refusal of auger).		

A.8 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_2SO_4	Quarterly
Power house stack emissions	SO_2	A frequency that will allow reliable quarterly maxima and averages to be reported

Notes

Abbreviations

The following abbreviations are used in this Annex:

EC	-	Electrical Conductivity
L	-	level
RP	-	retention pond
W1	-	EC, pH, turbidity, and sulfate
W2	-	sodium, potassium, calcium, magnesium, alkalinity, chloride, and nitrate
W4	-	copper, lead, manganese and zinc
W6	-	total coliform, E. coli, and faecal Streptococci
W7	-	manganese, uranium, and radium-226
W8	-	copper, lead, and zinc
W9	-	magnesium (filtrate); copper, lead, zinc, uranium, manganese, radium-226 (all filtrate + residue); residues are to be digested prior to analysis
W10	-	thorium-230, lead-210, and polonium-210
B	-	copper, lead, manganese, zinc, uranium, and radium-226
S	-	pH, EC, sulfate, exchangeable sodium, potassium, magnesium, calcium, cation exchange capacity, uranium, manganese, and radium-226
Uranium	-	uranium determined in filtered sample
SED	-	copper, lead, manganese, zinc, uranium, and radium-226
SOIL	-	uranium, radium-226, sulfate, pH, and EC
Mussel	-	Velesunio angasi

GB - Gauge board

GS - Gauging station

U - natural uranium

A.9 Criteria for direct release of water from RP2 to Magela Creek

A.9.1 The flow rate in Magela Creek at GS8210009 shall be greater than 20 m^3/s before water may be released.

A.9.2 The water release rate shall be restricted so that any increase in the value in Magela Creek at GS8210009 of the individual water quality parameters listed in Table 1 is limited to the maximum allowable increases specified in Table1.

This implies that the water to be released must be of such a quality that the formula

$C < A \times F / D$

is satisfied, where:

C is the concentration of a constituent in the water being released;

A is the maximum allowable addition of that constituent as in Table 1;

F is the Magela Creek flow rate at GS8210009; and

D is the discharge rate of water being released.

A.9.3 The water release rate shall also be restricted so that the total load of those constituents listed in Table 2 does not exceed the additional annual load limits specified in Table 2 in any twelve-month period commencing in September.

A.9.4 In addition to the monitoring program specified in this Annex, if any other parameter in the water being released is found to limit the water release rate in order that the formula given above is satisfied, then that parameter shall be monitored daily at the point of discharge, upstream of the pipeline outlet to Magela Creek, and at GS821009.

A.9.5 Results of analyses performed for the water release monitoring program are to be forwarded weekly to the Director.

A.9.6 Within six weeks of the end of releases for a season, a full report is to be submitted to the Director, 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.10 Criteria for releases of water from RP1 and Djalkmarra Billabong

A.10.1 The water release rate shall be restricted so that any increase in the value in Magela Creek at GS8210009 of the individual water quality parameters listed in Table 1 is limited to the maximum allowable increases specified in Table1.

A.10.2 The water release rates shall also be restricted so that the total load of those constituents listed in Table 2 does not exceed the additional annual load limits specified in Table 2 in any twelve-month period commencing in September.

A.10.3 Results of analyses performed for the water release monitoring program are to be forwarded weekly to the Director, in conjunction with monthly routine monitoring reports.

TABLE 1 Standards for release of water to Magela Creek.

Constituent	**Unit**	**Maximum Allowable Addition**
Turbidity	NTU	15
Calcium	mg/L	1.3
Magnesium	mg/L	10
Sulfate	mg/L	19
Nitrate/nitrite (as N)	mg/L	0.6
Phosphate (as PO_4)	mg/L	0.01
Copper, total	µg/L	0.6
Lead, total	µg/L	0.7
Zinc, total	µg/L	5
Manganese, total	µg/L	24
Uranium, total	µg/L	3.8

TABLE 2 Additional annual load limits for release of water to Magela Creek

Constituent	**Unit**	**Additional Annual Load Limit**
Uranium-(238+234)	GBq/y	88
Thorium-230	GBq/y	170
Radium-226	GBq/y	13
Lead-210	GBq/y	8
Polonium-210	GBq/y	7
Copper	t/y	90
Lead	t/y	8
Manganese	t/y	6
Zinc	t/y	200
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		
Controlled areas:		
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
Supervised areas:		
Tailings circuit	Monthly	
Acid plant (outdoors) Acid plant (indoors)	Monthly	Refer to B.1.2
Environmental areas		
Jabiru Jabiru East	Monthly	Refer to B.1.4
Long Lived Alpha Activity (dust)		
Controlled areas		
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
Supervised areas		
Tailings circuit	Quarterly	No dosimetry required
Acid Plant (outdoors) Acid Plant (indoors)	Quarterly	Refer to B.1.2
Environmental areas		
Jabiru and Jabiru East	Monthly	No dosimetry required

	Frequency	Dosimetry
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^{o} 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 x 10^{-3} mSv/alpha disintegration per second for ore dust;
- 5.3 x 10^{-3} mSv/alpha disintegration per second for mill tailings dust; and
- 6.2 x 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

Annual Environmental Management Report

C.1 The operator of the mine shall prepare an Environmental Management Report which is approved by the Minister. The Environmental Management Report must be prepared in accordance with guidelines as determined by the major stakeholders. The report shall provide details of:

- the company's environmental management over the preceding 12 month period; and
- the company's proposals for complying with the Environmental Requirements and all applicable environmental laws over the following 12 months.

C.1.1 The report required shall cover the period 1 September to 31 August and be submitted by 16 October each year, and shall provide details of the following matters the operation and performance of the Water Management System;

- 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.2 The operator of the mine shall comply with the proposals set out in each Environmental Management Report as approved and subject to any conditions set by the Director.

Quarterly Reports

C.3 The operator of the mine shall submit, for approval by the Director, trend and monitoring data summary reports as follows:

C.3.1 Trend and monitoring data summary reports shall contain, at least, the following:

- a comparison of corresponding data reported over the immediately preceding three months;
- identification of any trends evident from the data comparison; 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.3.2 The trend and monitoring data summary report for the period commencing 1 March each year shall include details of water releases that may have occurred throughout the preceding Wet season.

C.3.3 Trend and monitoring data summary reports shall be submitted for the quarterly periods commencing 1 September, 1 December and1 March each year. The report for the period commencing 1 June is subsumed by the Annual Environmental Management Report.

C.3.4 Trend and monitoring data summary reports shall be submitted within one month after the end of each reporting period.

Monthly Reports

C.4 The operator of the mine shall submit, for approval by the Director, preliminary environmental monitoring data reports as follows:

C.4.1 Preliminary monitoring data reports shall include water management data (rainfall and pond levels) and available water quality data without analysis or interpretation.

C.4.2 Preliminary monitoring data reports shall be submitted monthly, except where subsumed by quarterly or annual reports.

C.4.3 Preliminary monitoring data reports shall be submitted within one month of the end of each reporting period.

Annual Radiation and atmospheric monitoring interpretive report

C.5 The operator of the mine shall submit, for approval by the Minister, radiation and atmospheric monitoring interpretive reports as follows:

C.5.1 The interpretive 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.5.2 The interpretive report should be submitted for the period 1 January to 31 December each year, by 31 March in the following year.

Radiation and atmospheric monitoring data summary reports

C.6 The operator of the mine shall submit, for approval by the Director, radiation and atmospheric monitoring data summary reports as follows:

C.6.1 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.6.2 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.6.3 Radiation and atmospheric monitoring data summary reports shall be submitted within six weeks after the end of each reporting period.

Tailings dam surveillance reports

C.7 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.

APPENDIX 8

Jabiluka Authorization

A98/2

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SCHEDULE 1 DEFINITIONS

1.1 In this authorization, unless a contrary intention appears:

1.1.1 "the Act" means the Northern Territory Uranium Mining (Environment Control) Act;

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 Mines and Energy;

1.1.4 "Jabiluka Lease Area" has the same meaning as it does under Northern Territory Mining Lease N1 (MLN1);

1.1.5 "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 Jabiluka Lease 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;

1.1.6 "manager" has the same meaning as it does under the Act;

1.1.7 "Inspector" has the same meaning as it does under the Act;

1.1.8 "mine" has the same meaning as it does under the Act;

1.1.9 "mining" has the same meaning as it does under the Act

1.1.10 "operator of the mine" means the owner or the manager of the mine;

1.1.11 "mine site employees" means employees of the operator of the mine whose usual place of work is in the Jabiluka Lease Area;

1.1.12 "designated employees" has the same meaning as it does in the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987);

1.1.13 “controlled area” shall have the same meaning as it does in the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987);

1.1.14 “supervised area” shall have the same meaning as it does in the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987);

1.1.15 "Restricted Release Zone" has the same meaning as it does in ER9(b) of MLN1 1;

1.1.16 "Radiation Safety Officer" has the same meaning as it does in the Code of Practice on Radiation Protection in the Mining and Milling of Radioactive Ores (1987); and

1.1.17 "site" has the same meaning as "Jabiluka Lease Area".

1.1.18 "sulfide mineralisation" means natural rock having Net Acid Producing Potential (NAPP) of greater than –20 kg H_2SO_4 per tonne.

SCHEDULE 2 AUTHORIZED OPERATIONS

2.1 The operator of the mine is authorized to:

2.1.1 construct a portal and access decline at the Jabiluka Project and construct associated infrastructure in accordance with the provisions of SCHEDULE 5;

SCHEDULE 3 COMPLIANCE

3.1 The operator of the mine shall report as soon as practicable to the Minister any infringement of the conditions and requirements of this Authorization.

3.2 After notifying the Minister, the operator of the mine shall report as soon as practicable to the Department of Primary Industries and Energy, and the Supervising Scientist Group any infringement of the conditions and requirements of this Authorization.

SCHEDULE 4 ENVIRONMENTAL STUDIES

4.1 In order to protect the environment, the operator of the mine shall ensure that the following studies are approved by the Director and are completed to the greatest extent practicable before the commencement of any works that might compromise the integrity of the data:

4.1.1 flora and fauna surveys: including detailed surveys of the proposed haul road route and mine site with a focus on threatened species and species covered by the China-Australia Migratory Bird Agreement and the Japan - Australia Migratory Bird Agreement;

4.1.2 cultural heritage: including an assessment of current values of the site;

4.1.3 archaeology and European heritage: including detailed surveys for the proposed haul road route and mine site and confirmation of existing information for the surrounding area;

4.1.4 soil and geotechnical: including an assessment of the proposed haul road route and mine site; and

4.1.5 hydrogeology: including determination of the nature of connection between shallow and deep aquifers: potential impacts on soaks and sacred sites.

4.2 In order to protect the environment, the operator of the mine shall conduct studies of surface water quality and stream flow until an annual review indicates that they are no longer required.

4.3 In order to protect the environment, the operator of the mine shall investigate:

4.3.1 the expected sediment loads and concentrations in Swift Creek as a consequence of development activities; and

4.3.2 silt loads in watercourses along the haul road until an annual review indicates that they are no longer required.

SCHEDULE 5 MINING OPERATIONS FOR THE JABILUKA #2 OREBODY

5.1 In order to protect the environment, the operator of the mine shall:

5.1.1 unless a comprehensive radiation protection program has been approved by the Director, cease decline development on reaching the location of the S1 raise or on reaching mineralised material, whichever is sooner;

5.1.2 conduct the mining in general accordance with the document titled “Application for Approval to Construct a Portal and Access Decline at the Jabiluka Project with associated infrastructure” dated April 1998, or as revised from time to time by the operator of the mine and approved by the Director;

5.1.3 manage waste rock which has the potential to generate acid in accordance with an Acid Rock Plan which is approved by the Director; and

5.1.4 implement the measures and procedures included in the document titled "ANNEXURE A", annexed hereto.

SCHEDULE 6 WATER MANAGEMENT

6.1 In order to protect the environment, the operator of the mine shall operate a water management system in conformance with the latest approved revision of the Water Management System Operation Manual.

6.2 The operator of the mine shall:

6.2.1 within four weeks of the end of October each year submit for the approval of the Director a revision of the Water Management System Operation Manual, including:

6.2.1.1 a complete explanation of the operation and maintenance of the water management system;

6.2.1.2 the contingency procedures for disruptions in the operation and maintenance of the water management system;

6.2.1.3 the surface water monitoring program; and

6.2.1.4 details of the proposed Wet and Dry season operating levels and limits for the Retention Pond;

6.2.2 maintain up-to-date versions of drawings depicting the currently approved boundaries of the Restricted Release Zone; and

6.2.3 instruct all personnel involved in the operation of the water management system in the detailed operation of the system and in the implementation of contingency procedures.

6.3 In order to protect the environment, the operator of the mine shall ensure that water from the approved Restricted Release Zone is not released without the approval of the Supervising Authority.

6.4 In order to protect the environment, the operator of the mine shall dispose of water from dewatering bores that are located between the portal and the S1 raise in areas and in the manner approved by the Director.

6.5 The operator of the mine shall maintain to the satisfaction of the Minister and for examination by an Inspector, 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 the rehabilitation of all disturbed areas.

6.6 The operator of the mine shall submit reports in accordance with the requirements specified in the document annexed hereto and marked "ANNEXURE D".

SCHEDULE 7 DECOMMISSIONING AND REHABILITATION

7.1 In order to protect the environment the operator of the mine shall:

7.1.1 plan rehabilitation in accordance with the following goal and objectives:

7.1.1.1 Goal

To establish an environment in the Jabiluka Lease Area that reflects, to the maximum extent that can reasonably be achieved, the environment existing in the adjacent areas of Kakadu National Park, so that the rehabilitated area could be incorporated into Kakadu National Park without detracting from Park values of adjacent areas.

7.1.1.2 Objectives

To revegetate the disturbed sites of the Jabiluka Lease Area with local native plant species in similar density and abundance to that existing in adjacent areas of Kakadu National Park, in order 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 disturbed sites of the Jabiluka Lease Area so that, with a minimum of restrictions on use of the area, the public dose limit will not be exceeded and the health risk to members of the public, including traditional owners, will be as low as is reasonably achievable.

To limit erosion in rehabilitated areas, as far as can reasonably be achieved, to that characteristic of similar landforms in surrounding undisturbed areas.

7.1.2 at the end of every twelve month period, or of such other period as the Minister may determine, submit for the approval of the Minister an amended plan of rehabilitation detailing specifications for the physical decommissioning and rehabilitation of the mine, the uranium treatment plant and all ancillary works and services, which specifications shall include:

7.1.2.1 a detailed specification of all rehabilitation works which are proposed to be undertaken in the 12 months following the preparation of the report; and

7.1.2.2 a conceptual specification covering decommissioning and rehabilitation for the remaining years of life of the project.

7.2 The work estimate to be included with the specifications to be submitted under 7.1.2 shall encompass forecasts of the extent of works required, 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:

7.2.1 removal of all plant, equipment, buildings and other structures, including mine and support facilities;

7.2.2 removal of civil works and facilities that are not required for other purposes;

7.2.3 dewatering of the water management system;

7.2.4 removal of all unnecessary water-retaining structures and other earthworks; and

7.2.5 revegetation of all disturbed areas.

SCHEDULE 8 ENVIRONMENTAL AND OCCUPATIONAL HEALTH MONITORING

8.1 In order to protect people and the environment, the operator of the mine shall:

8.1.1 implement the environmental and occupational health monitoring programs included in the documents annexed hereto and marked "ANNEXURE B" and "ANNEXURE C";

8.1.2 conduct contingency monitoring in a manner approved by the Minister in the event of the malfunction of monitoring equipment;

8.1.3 determine the average Net Acid Generating (NAG) pH of the product of each blast for mined rock not specifically exempted by the Director of Mines or material which is described in Environmental Requirement 9(a)(i). Each sample which reports a NAG pH of less than 4.5, and in any case at least every tenth NAG sample, will be submitted to a recognised Net Acid Producing Potential (NAPP) test.

8.1.4 keep a record of animal deaths and these are to be reported in the environmental annual report, and any unusual death must be reported immediately to the Supervising Authority and Parks Australia; and

8.1.5 present reports in accordance with the requirements specified in the document annexed hereto and marked "ANNEXURE D".

SCHEDULE 9 ANCILLARY OPERATIONS, SERVICES AND REQUIREMENTS

9.1 In order to protect the environment, the operator of the mine shall ensure that:

9.1.1 all mine site employees attend an induction course which shall explain the environment protection programs, Aboriginal culture, and the plan of management of the Kakadu National Park. Employees shall also be given an introduction to:

9.1.1.1 general safe working practices;

9.1.1.2 accident reporting system;

9.1.1.3 removal of road kills;

9.1.1.4 isolating procedures for electrical equipment and valves;

9.1.1.5 procedures for entering and working in confined spaces and hazardous areas;

9.1.1.6 procedures for entering and working in contaminated areas;

9.1.1.7 standards in personal hygiene and work-place housekeeping; and

9.1.1.8 the correct use of safety equipment.

9.1.2 all mine site employees are issued with a radiation protection manual explaining the nature of the hazards associated with the handling of uranium ores and the safe working procedures to be adopted in the work area; and

9.1.3 all employees are given detailed training and information on these topics from time to time thereafter.

9.2 In order to protect the environment, the operator of the mine shall in relation to:

9.2.1 the extraction of soil, clay, sand or gravel for ancillary purposes, ensure that:

9.2.1.1 prior to the commencement of extraction operations, a plan of the proposed operations is approved by the Director. This plan shall depict the extent of the proposed borrow areas and the location of associated roads or other infrastructure developments. It shall also include details of proposed rehabilitation;

9.2.1.2 after extraction has been completed the borrow areas are carefully reshaped so as to minimise erosion; and

9.2.1.3 any other rehabilitation measures specified by an Inspector are carried out as soon as is reasonably practicable.

9.2.2 waste disposal, ensure that:

9.2.2.1 records are kept on all wastes disposed of on the lease area; and

9.2.2.2 sewerage sludge from septic tanks is not disposed of on the lease area.

ANNEX A OPERATIONAL PROCEDURES - MINING JABILUKA #2 OREBODY

A.1 Mine operations

The mining method to be employed in the Jabiluka #2 mine is conventional underground hardrock mining. The main operations are to be as follows:

A.1.1 Drilling

Blasthole drilling is to be done by drilling rigs fitted with dust collection or water injection systems.

A.1.2 Blasting

Ground vibration may exceed 5mm/sec up to a limit of 10mm/sec (PPV) for not more than 5% of the total number of blasts.

Airblast overpressure may exceed 115 dB up to a limit of 120 dB (linear) for not more than 5% of the total number of blasts.

A.1.3 Excavation

If a specific volume of rock or earth in the mine is determined by careful scanning or probing to be waste (less than 0.02% uranium dry weight), excavated material from that volume may be dumped without being despatched to the discriminator.

All other excavated material must be taken from the mine for discriminator measurement. After discrimination it must be conveyed to designated dumping locations.

A.1.4 Construction materials

No material excavated from the mine, other than waste, may be used for construction purposes outside the designated total containment zone. Waste not selected for construction purposes must be tipped on the waste dump.

A.1.5 Road construction and maintenance

Haulroads must be constructed with safe gradients and in accordance with the current mine plan. They must be kept drained and maintained with smooth surfaces by regular grading. Dust on road surfaces must be suppressed by regular watering.

A.2 Health and safety

A.2.1 Controlled and Supervised areas

Physical delineation of these areas should be by:

traffic bunds as defined by the Manager from time to time; and

approved notices placed in conspicuous positions.

A.2.2 Service and maintenance

Daily servicing of plant and replacement of minor wearing parts may be carried out within the Controlled area.

If engine air-filters are vacuum-cleaned, the dust must be disposed of as directed by the Radiation Safety Officer.

Emergency breakdown repairs are to be carried out in the Controlled area only to the extent necessary to allow the machine to be removed to the workshop. In such cases special precautions must be taken, as directed by the Radiation Safety Officer.

All plant removed from the Controlled area to the workshop must be cleaned in accordance with the directions of the Radiation Safety Officer.

A.2.3 Air conditioning

A.2.3.1 All plant that is to be used in the drilling, excavation and dumping of mineralised material must be fitted with air-conditioned cabs, unless exempted by an Inspector. Air-conditioner filters are to be washed or cleaned at regular intervals, at least weekly.

A.2.3.2 Notwithstanding the provisions of A.2.3.1 above, the following types of vehicles need not be air-conditioned in order to enter or be used in the Controlled area:

- supervisors' vehicles, or vehicles being used by technical staff or officers of the Department of Mines and Energy or of the Supervising Scientist on official duties;
- maintenance and service vehicles; and
- graders and water trucks.

A.2.4 Personnel

Restraints and special provisions affecting the movement of people into and out of the Controlled area are summarised as follows:

A.2.4.1 All designated employees must wear thermoluminescent dosimeters (TLDs) throughout their shift;

A.2.4.2 All persons entering or remaining in areas where dust levels are likely to exceed derived dust concentration limits must wear protective clothing and respiratory devices, as specified by the Radiation Safety Officer; and

A.2.4.3 Air stream helmets will be worn when outside air conditioned cabins and in air with Radon Decay Product concentrations which threaten the annual dose constraints.

A.2.5 Consumption of food and drink

A.2.5.1 Alcohol shall not be taken onto the Jabiluka lease without written permission of the Northern Land Council.

A.2.5.2 All persons whose employment requires them to be in the Supervised areas at the time of the shift meal break are required to take their meal only in the crib room. All persons who eat their meals in the crib room must wash their hands thoroughly before taking their meal and must use the contamination monitor in the manner directed by the Radiation Safety Officer.

A.2.5.3 An adequate supply of cold drinking water must be maintained close to the working areas in containers sealed against contamination.

ANNEX B JABILUKA ENVIRONMENTAL MONITORING PROGRAM

Note: all coordinates in the tables below are based on the AMG 66 datum, grid number 53.

B.1 Monitoring of groundwater

B.1.1 Designated Regional Downgradient Bores

Location	Frequency	Parameters
RN031998 RN031999 RN032001 RN032002 RN032003 RN032004 RN032005	Quarterly	pH, EC, water level, Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn, Ra^{226})
	Annually	ICP-MS scan of trace elements

B.1.2 Seepage Monitoring Bores

Location	Frequency	Parameters
RN031990 RN031991 RN031992 RN031993 RN031994 RN031995 RN031996 RN031997	Quarterly	pH, EC, water level, Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn, Ra^{226})
	Annually	ICP-MS scan of trace elements

B.1.3 Dewatering bore water

Location	Frequency	Parameters
All active bores	Monthly	pH, EC, Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, residue and filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn,)
	Quarterly	residue and filtered (acidified) Ra^{226}
	Annually	ICP-MS scan of trace elements

B.1.4 Potable Bore Water

Location	Frequency	Parameters
All active bores	Monthly	EC, pH, turbidity, SO_4, total coliform, E. Coli and faecal streptococci
	Monthly for first 6 months, then quarterly	Na, K, Ca, Mg, Cl, NO_3, HCO_3/CO_3, and total trace elements (Cu, Pb, Zn, U, Ra^{226})
	Initially, then annually	Ra^{228} and Gross-β

B.2 Monitoring of site waters

B.2.1 Total containment zone pond

Frequency	Parameters
Weekly	Field measurements of pH, EC and water level
Monthly	Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, soluble reactive P, residue and filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn,)
Quarterly	residue and filtered (acidified) Ra^{226}
Before the commencement of the Wet season	TOC, DOC, Hydrocarbons in the following fractions : C6-C9; C10-C14; C15-C28; and C29-C36
Annually	ICP-MS scan of trace elements

B.3 Creek and billabong monitoring

B.3.1 Swift Creek:

Location	Frequency	Parameters
GS8215127 GS8215131 GS8215132 GS8215120	Weekly	Grab samples for turbidity and suspended solids, and field measurements of pH, EC and flow rate (GS8215127only)
	Monthly commencing with first flush	Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, soluble reactive P, residue and filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn)
	Quarterly commencing with first flush	residue and filtered (acidified) Ra^{226}
	First flush event and 1 month thereafter	TOC, DOC, Hydrocarbons in the following fractions: C6-C9; C10-C14; C15-C28; and C29-C36
	Annually	ICP-MS scan of trace elements

B.3.2 Tributaries to Swift Creek

Location	Frequency	Parameters
GS8215105 GS8215106 GS8215130	Weekly	Grab samples for turbidity and suspended solids, and field measurements of pH and EC
	Monthly commencing with first flush	Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, soluble reactive P, residue and filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn)

B.3.3 Sediment Sampling:

Location	Frequency	Parameters
Bottom sediment (one upstream and one downstream site, 0-5 cm)	Yearly	U, Pb, Cu, Zn, Mn, and Ra^{226}

B.3.4 North Magela and 7J Creeks

Location	Frequency	Parameters
GS8215125 (North Magela) GS8215126 (7J Creek)	Weekly	Grab samples for turbidity and suspended solids, and field measurements of pH and EC
	Monthly commencing with first flush	Na, K, Ca, Mg, Cl, SO_4, HCO_3/CO_3, NO_3 and NO_2, NH_4, soluble reactive P, residue and filtered (acidified) trace elements (Al, Mn, U, Fe, Pb, Cu, Zn)

B.4 Soil monitoring

B.4.1 Lease Area:

Location	Frequency	Parameters
JSOIL1 JSOIL2 JSOIL3 JSOIL4 JSOIL5 JSOIL6 JSOIL7 JSOIL8	Annually (in April)	pH, EC, SO_4, U, Pb, Cu, Zn, Ra^{226}

B.5 Meteorology

Frequency	Parameters
Continuous	Wind speed and direction, temperature, rainfall and evaporation

B.6 Emissions from blasting

Northing	Easting	Frequency	Parameters
8617542	272085	Every blast	ground vibration, airblast overpressure
8616360	272872		

ANNEX C OCCUPATIONAL HEALTH MONITORING PROGRAM

C.1 The protection factor of an airstream helmet shall be taken as 10 and 50 for radon progeny and dust respectively and these factors shall be used to determine committed doses. These factors are in line with the latest information and is more conservative than is currently specified by Australian Standard 1715.

	Monitoring Type	**Frequency**	**Dosimetry**
External gamma			
All designated employees	Personal monitoring	3 monthly	The dose equivalent is assessed from the TLD reading
Area gamma in new development headings	Survey	weekly	
Radon progeny			
Each occupied heading	grab sample	weekly	Average level to be assessed and used to calculate the effective dose
Radioactive dust			
One third of the individuals in the most exposed work group	Personal dust sampling	monthly	Average level to be assessed and used to calculate the effective dose
One individual in each of the other work groups	Personal dust sampling	monthly	Average level to be assessed and used to calculate the effective dose

ANNEX D REPORTING REQUIREMENTS

Reports required under this authorization shall be produced and submitted in accordance with the following conditions:

D.1 Water management

D.1.1 Description

The report shall describe the operation and performance of the Water Management System.

D.1.2 Reporting periods

The reporting period shall be 1 September - 31 August each year.

D.1.3 Due date

The report shall be submitted within eight weeks after the end of the reporting period.

D.2 Environmental monitoring

D.2.1 Preliminary monitoring data reports

D.2.1.1 Description

Preliminary monitoring data reports shall include water management data (rainfall and pond levels) and available water quality data without analysis or interpretation.

D.2.1.2 Frequency

Preliminary monitoring data reports shall be submitted monthly, except where subsumed by quarterly or annual reports.

D.2.1.3 Due date

Preliminary monitoring data reports shall be submitted within one month of the end of each reporting period.

D.2.2 Trend and monitoring data summary reports

D.2.2.1 Description

Trend and monitoring data summary reports shall contain, at least, the following:

- the time, 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);
- a comparison of corresponding data reported over the immediately preceding three months;
- identification of any trends evident from the data comparison; 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.

D.2.2.2 Reporting periods

Trend and monitoring data summary reports shall be submitted for the quarterly periods ending 31 July, 31 October and 31 January each year. The report for the period ending 30 April is subsumed by the annual interpretative report.

D.2.2.3 Due date

Trend and monitoring data summary reports shall be submitted within one month of the end of each reporting period.

D.2.3 Interpretative report

D.2.3.1 Description

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.

D.2.3.2 Reporting period

The interpretative report shall be submitted for the period 1 May - 30 April each year.

D.2.3.3 Due date

The interpretative report shall be submitted within eight weeks of the end of each reporting period.

D.3 Radiation and atmospheric monitoring

D.3.1 Radiation and atmospheric monitoring data summary reports

D.3.1.1 Description

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.

D.3.1.2 Reporting periods

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.

D.3.1.3 Due date

Radiation and atmospheric monitoring data summary reports shall be submitted within eight weeks of the end of each reporting period.

D.3.2 Interpretative report

D.3.2.1 Description

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.

D.3.2.2 Reporting period

The interpretative report should be submitted for the period 1 January to 31 December each year, by 30 April in the following year.

D.4 Environmental Management Plan

D.4.1 Description

Using the Environmental Impact Statement as the interim plan, the operator shall develop and submit an Environmental Management Plan by 1 November 1999.

The operator shall submit annual updates of the Environmental Management Plan.

The Environmental Management Plan shall include summaries of the conclusions of, and detail actions to manage any deficiencies identified in, the reports described in D.1 to D.3.

D.4.2 Reporting periods

The reporting period for the plan shall be 1 September - 31 August each year.

D.4.3 Due date

The plan shall be submitted within eight weeks of the end of the reporting period.

APPENDIX 9

REVISED WORKING ARRANGEMENTS FOR CO-ORDINATING THE REGULATION OF THE ENVIRONMENTAL ASPECTS OF URANIUM MINING IN THE ALLIGATOR RIVERS REGION

Preamble

A number of Government agencies have responsibilities in relation to uranium mining in the Alligator Rivers Region. Relevant Legislation includes:

- Environment Protection (Alligator Rivers Region) Act 1978 (Cth)
- Atomic Energy Act 1953 (Cth)
- Aboriginal Land Rights (Northern Territory) Act 1976 (Cth)
- Uranium Mining (Environment Control) Act 1979 (NT)

Working Arrangements for co-ordinating the supervision and regulation of the environmental aspects of uranium mining in the Alligator Rivers Region (ARR) were originally agreed by Commonwealth and Northern Territory Ministers in September 1979. Following a comprehensive review of the 1979 arrangements, these revised Working Arrangements have been developed to facilitate greater co-operation between the Supervising Scientist (SS) and Northern Territory regulatory authorities.

Among other things, the revised arrangements reflect the Supervising Scientist's new emphasis on environmental outcomes instead of day to day management of mine site environmental controls. The primary mechanism to be used by the SS to assess the impact of uranium mining on the ARR environment will be regular reviews of the environmental performance of the mining operations. These reviews will be conducted jointly with the Northern Territory Department of Mines and Energy (NT DME). While the Office of the Supervising Scientist (OSS), which acts on behalf of the SS, will no longer perform site inspections, except as part of the environmental reviews or following incidents, NT DME will continue to routinely check on the adequacy and accuracy of the environmental monitoring programs required to be undertaken by the mining companies.

The Working Arrangements will embrace the concept of best practicable technology (BPT) in assessing the appropriate level of environmental protection within the lease areas, i.e.:

> *The mining operations should be managed by the application of best practicable technology (BPT) so that impact on the environment is as low as can be reasonably achieved during the operational period of the mine and in such a way as to be compatible with or not compromise the requirements of the final land use in the post mining phase.*

Purpose of the Working Arrangements

The purpose of the Working Arrangements is to establish procedures for consultation between the SS and NT DME (which will act on behalf of all NT authorities responsible for environmental aspects of mining in the ARR) to ensure that:

- each party can carry out its legal responsibilities with maximum efficiency and minimum duplication;
- technical aspects of proposed research and monitoring programs are examined and comments exchanged;
- there is open communication between the two parties in connection with the environmental aspects of uranium mining;
- wherever possible authorisations are approved in time to avoid delays in mining operations; and
- the main interested parties, DPIE, ANCA, the Northern Land Council and relevant conservation groups, are kept informed via effective consultative and reporting procedures.

Consultation and Co-operation

There should be frequent and detailed communication between the SS and NT DME. These communications and consultations between the SS and NT DME should be based on an appreciation of their respective roles, with the NT DME responsible for day-to-day regulation of uranium mining in the ARR and the SS responsible for research and advice on the effects on the environment of the ARR of uranium mining and for the development of standards, practices and procedures for the protection and restoration of the environment from the effects of mining.

NT DME will:

- consult and have regard to the views of the SS prior to granting an approval or authorisation, or issuing a licence or permit, in connection with environmental aspects of uranium mining operations in the ARR.
- consult with and have regard to the views of the SS prior to setting standards in connection with any permit, licence, etc., relating to environmental aspects of uranium mining.
- send to the SS copies of all authorisations, approvals and directions issued by the NT Minister.

In the event that approvals and directions are required to be issued at short notice because of emergencies, NT DME will inform and consult with the SS as soon as practicable thereafter.

NT DME and the SS will collaborate in developing standards or measures which will enable acceptable and unacceptable levels of impact to be determined.

Both NT DME and the SS will, subject to the approval of Government, forewarn the other party of significant briefings of, or statements by, their respective Ministers concerning matters encompassed by these working arrangements, giving such details as will be necessary to deal with the matter in Parliament or the media.

Wherever practicable, the NT DME will consult with the Northern Land Council (NLC) and have regard to their views prior to the issuing of any approval, authorisation, licence or permit, or the setting of any standard, relating to environmental aspects of uranium mining in the ARR.

Committees

Regular consultation and collaboration between OSS, NT DME, the mining companies and the NLC will be facilitated for each minesite by a Minesite Technical Committee (MTC). These committees will provide a forum for discussion of a wide range of matters relevant to the regulatory functions of NT DME and the supervisory and assessment functions of the SS, including any current or anticipated issues, short and long term issues, and operational, pre-operational or post-operational issues which may be of consequence to the environment.

Ranger Minesite Technical Committee

The Ranger MTC will be chaired by NT DME. Core members will comprise representatives of the SS, Energy Resources of Australia (ERA) and the NLC. The Ranger MTC will normally convene within eight weeks after the Ranger environmental performance reviews (i.e. at least twice each year) to:

- take action in response to the outcomes and recommendations of the environmental performance reviews
- routinely address the following issues:
  - practices, procedures and measures for the management, storage and disposal of water and tailings and waste material;
  - performance of the approved water and tailings management systems and structures;
  - radiological exposures to workers and members of the public;
  - environmental monitoring programs and reports, and the environmental impact of mining operations;
  - applications for Authorisation alterations or approvals, where practicable within the required time frame for action; and
  - address minesite rehabilitation planning and works.

For meetings where issues involve groups other than the core members, technical experts from these groups will be invited to put a view.

Bearing in mind that the current Authority to Mine issued under section 41 of the *Atomic Energy Act 1953* requires that rehabilitation is to commence in the year 2000, part of the objective of the subcommittees to the MTC is to devise and agree standards and measures for the Ranger area, by January 1998.

Nabarlek Minesite Technical Committee

The Nabarlek MTC will be chaired by NT DME. Core members will comprise representatives of the SS, Queensland Mines Pty Ltd (QMPL) and the NLC. The Nabarlek MTC will meet at least

once a year, and will meet after each environmental performance review (i.e. twice a year) if requested by the review team. The meetings will normally take place within eight weeks after an environmental performance review.

The committee may agree to meet more frequently during periods of high activity during decommissioning works on the minesite. The committee will:

- take action in response to the outcomes and recommendations of the environmental performance reviews
- routinely address issues related to planning for and execution of decommissioning and rehabilitation of the Nabarlek site, including radiological safety and post-closure environmental management, with emphasis on environmental impact and the level of site restoration achieved.

Ad hoc Technical Working Groups may be convened when required to address topical operational and other matters thought to have developed or have the potential to develop into an unacceptable environmental situation and which have not been discussed at the MTC. They may also be convened to consider ways of minimising environmental impact during the planning stage of future developments, and to consider detailed technical issues such as erosion, re-vegetation, water quality and radiation aspects of rehabilitation research. The TWGs will comprise technical experts from NT DME, the SS, NLC and the companies and where appropriate, other organisations.

In addition to these minesite-specific committees and working groups, collaboration on a broader scale will also occur through the Alligator Rivers Region Advisory Committee and the Alligator Rivers Region Technical Committee.

Alligator Rivers Region Advisory Committee (ARRAC)

ARRAC consists of an independent chairperson, the Supervising Scientist, the Director of National Parks and Wildlife, and representatives of NT authorities, mining companies, unions, Aboriginal and conservation groups, plus such other members or their deputies as are from time to time appointed by the Commonwealth's Environment Minister. ARRAC provides a formal forum for consultation among interest groups on matters relating to the effects of uranium mining operations on the ARR environment, and on matters relating to environmental research in the region that are referred to it by the Alligator Rivers Region Technical Committee. The results of the EPRs are to be presented to and discussed at ARRAC. A summary record of all meetings of ARRAC will be prepared and made available to the public.

Alligator Rivers Region Technical Committee (ARRTC)

ARRTC consists of an independent chairperson and appropriate technical experts representing the SS, NT authorities, ANCA, the NLC and mining companies, plus such other members as are from time to time appointed by the Commonwealth's Environment Minister. ARRTC advises the Environment Minister on the nature and extent of research necessary to protect and restore the ARR environment, and on the most appropriate organisations to undertake that research. In undertaking this role, ARRTC will consider all relevant research conducted in the region by the Environmental Research Institute for the Supervising Scientist (ERISS), mining companies, NT authorities, the NT University and other Commonwealth agencies.

A summary record of all meetings of ARRTC will be prepared and will be made available to the public.

Environmental Requirements

In addressing proposals from a company and defining appropriate standards, practices, procedures and measures, NT DME and the SS will ensure effective implementation of the current Environmental Requirements as attached to the NT *Uranium Mining (Environment Control) Act* and other instruments. In implementing these Requirements, the SS and NT DME will consider their underlying rationale and will avoid an excessive focus on individual Environmental Requirements without regard to their overall impact.

Any revision of the Environmental Requirements would be undertaken by the SS, NT DME, the Commonwealth Department of Primary Industries and Energy (DPIE) and the respective mining company, in full consultation with the NLC and other bodies as appropriate.

Environmental Performance Reviews

The SS and NT DME will initially conduct twice-yearly reviews of the impact of uranium mining operations on the ARR environment. Some reviews may pursue a particular theme, such as the mining companies' environmental management, water management systems, radiological safety, research and planning activities etc., with a view to producing over time a comprehensive understanding of the overall environmental performance of the mines. Particular attention will be given to identifying any mining practices, procedures and measures which threaten the ARR environment. The frequency of the reviews will be reassessed as required.

Any issues or concerns identified during an environmental performance review will be fully discussed with the mining company prior to preparation of the review report. These reports will be made publicly available and submitted to the NT Minister for Mines and Energy and the Commonwealth Ministers for the Environment and for Primary Industries and Energy. The findings of the reviews of environmental performance will be referred to Minesite Technical Committee meetings held after each review (or at least annually for Nabarlek, see above). The review reports will also be made available to the meetings of ARRAC, generally very soon after the reviews are concluded, and to ARRTC.

Site inspections will no longer be performed by OSS except as part of the environmental reviews or to examine the sites of environmental events or incidents. NT DME as the regulatory authority will continue to undertake routine site inspections and will promptly provide reports of these inspections to the SS emphasising any items of significance. The frequency and design of the site inspections and of NT DME's program of check monitoring will meet the Commonwealth's expectations, as agreed between the SS and NT DME. These expectations will be detailed in the latest version of the document 'Agreed Commonwealth Requirements for Environmental Monitoring by the Northern Territory Regulatory Authorities of Uranium Mining in the Alligator Rivers Region'.

Reporting

Any mine-related event or longer term management practice which results in significant risk to biological integrity will be considered unacceptable, for example where there are:

- deaths to aquatic or terrestrial biota outside natural rates;
- increases in mine-derived solute loads to aquatic and terrestrial ecosystems that result in species compositions significantly different from the natural compositions;
- impacts on groundwater resources used or with the likelihood of being used as a potable water supply, which result in the water becoming unpotable (solute levels as defined by NHMRC; the sum of all radiological exposure to be within the public dose limit [currently 1mSv/yr]).

NT DME is responsible for ensuring that the mining companies directly and immediately notify NT DME , the Supervising Scientist, DPIE and NLC, should such events or practices occur. In addition, NT DME is responsible for ensuring that the mining companies immediately report any environmental event or incident which has the potential to:

- cause harm to people living or working in the area; or
- cause concern to traditional owners or the broader public.

Initial notification of such incidents will be provided by telephone or facsimile as soon as possible after the event and will be followed by a written report from the mining company outlining the nature of the event/incident and any response action taken.

In addition to notification of incidents, NT DME will ensure that companies provide monthly environmental monitoring data direct to the SS and NT DME. These data will be accessible to the public at the offices of NT DME and the SS. The annual environmental reports of the companies will evaluate and interpret the data for the twelve month period and discuss the short and long term implications for any trends detected.

NT DME will ensure that all regulatory environmental monitoring data and reports from the mining companies are provided to the SS and NT DME one week before being made publicly available.

NT DME will prepare six-monthly evaluative reports on the results of its check monitoring programs. The SS will also produce six-monthly reports which evaluate the mining company data and NT DME's monitoring program. The SS and NT DME will provide each other with draft versions of these and any other major reports that they produce relating to the environmental impacts of uranium mining operations in the ARR. Any comments provided by the other party will be considered in finalising these reports. The six-monthly evaluative reports prepared by NT DME and the SS will be produced in time for consideration by the environmental performance reviews and by ARRAC.

Copies of all reports prepared by the mining companies, NT DME and the SS on the environmental impacts of uranium mining operations in the ARR should be provided to the NLC.

Similarly, any reports produced by the SS or NT DME on particular uranium mining operations should be provided to the relevant mining company at least one week before being made available to the public.

Review of Working Arrangements

These working arrangements may be jointly reviewed by NT DME and the SS at the request of either party.

APPENDIX 10

Ranger Environmental Requirements

Explanatory Material relating to Section 19.2

Best Practicable Technology

Foreword

Section 19.2 of the Environmental Requirements of the Commonwealth of Australia for the Operation of the Ranger Uranium Mine (the Ranger ERs) provides for the publication of explanatory material agreed to by the major stakeholders to assist in the interpretation of provisions of the Ranger ERs.

This document has been published by the Supervising Scientist under section 19.2 to assist in the interpretation of the Ranger ER (ER12) which relates to Best Practicable Technology (BPT) and should be read in conjunction with ER12.

Definition Of BPT

Section 12 of the Ranger ERs defines BPT as follows;

> That technology from time to time relevant to the Ranger Project that produces the maximum environmental benefit that can be reasonably achieved having regard to all relevant matters including:
>
> a) the environmental standards achieved by uranium operations elsewhere in the world with respect to
>
> i) level of effluent control achieved; and
>
> ii) the extent to which environmental degradation is prevented;
>
> b) the level of environmental protection to be achieved by the application or adoption of the technology and the resources required to apply or adopt the technology so far as to achieve the maximum environmental benefit from the available resources;
>
> c) evidence of detriment, or lack of detriment, to the environment;
>
> d) the physical location of the Ranger Project;
>
> e) the age of the equipment and facilities in use on the Ranger Project and their relative effectiveness in reducing environmental pollution and degradation
>
> f) social factors including the views of the regional community and possible adverse effects of introducing alternative technology.

The objectives of the National Strategy for Ecologically Sustainable Development (NSESD) provide a national context and basis for understanding Best Practicable Technology as applied to the Ranger Project Area. The goal is to ensure the protection of the environment through the application of relevant technologies at the site within a strategic environmental management system. The NSESD principles are;

- integrating economic and environmental goals in policies and activities;

- ensuring that environmental assets are properly valued;
- providing for equity within and between generations;
- dealing cautiously with risk and irreversibility; and
- recognising the global dimension.

Interpretation

Objective Of BPT Provisions

The Ranger ERs are attached to the Authority to Mine issued by the Commonwealth under Section 41 of the Atomic Energy Act for the explicit purpose of authorising mining and milling operations within the Ranger Project Area. Thus the objective of BPT is in the context of some unavoidable environmental disruption as a consequence of the authorised operations.

BPT as defined in the Ranger ERs establishes a framework for the technical assessment of proposed actions connected with mining and milling operations and rehabilitation on the Ranger Project Area. The objective of including BPT provisions in the Ranger ERs is to provide the company with flexibility in environmental management to ensure that the Primary Environmental Objectives (section 1 of the Ranger ERs) are met under all circumstances, including any which were unforeseen when the Ranger ERs were drafted.

Interpretation Of BPT To Be Undertaken With Strict Reference To The Primary Environmental Objectives

The level of environmental protection required by the Primary Environmental Objectives within the Ranger Project Area is significantly different to that required beyond the project area in Kakadu National Park. The Primary Environmental Objectives require that environmental impacts within the Ranger Project Area are as low as reasonably achievable, but do not allow any significant impacts on Kakadu National Park.

Maximum Environmental Benefit

It is not the intent of the Ranger ERs that the definition of BPT be interpreted as a veto on mining and milling operations authorised by the Commonwealth. Any proposal to amend or introduce operational approaches, procedures or mechanisms which ranks highest among a range of widely researched options when assessed under Section 12.5 of the Ranger ERs, and which is determined to be consistent with the Primary Environmental Objectives would normally be accepted as BPT.

The BPT option that reasonably achieves the maximum environmental benefit should also be the option that achieves the most efficient allocation of environmental protection resources. That is, the environmental benefit derived from the resources applied to environmental protection should be maximised thus ensuring that environmental protection is optimised.

To identify the BPT option that maximises environmental benefit, all relevant matters including the six criteria listed in Section 12.4 (a) to (f) must be assessed against each option. An explanation of these factors is provided in Table 1. As provided in Section 12.5, the rigour of the BPT analysis must be commensurate with the potential environmental significance of the proposal.

Table 1 Explanation of Relevant Matters/Criteria to be Included in BPT Assessment.

Environmental Requirement Clause	Explanation
12.4 BPT is defined as: That technology from time to time relevant to the Ranger Project which produces the maximum environmental benefit that can be reasonably achieved having regard to all relevant matters including:	*BPT* That technology that ranks highest when assessed against the factors below and is consistent with the Primary Environmental Objectives.
(a) the environmental standards achieved by uranium operations elsewhere in the world with respect to (i) level of effluent control achieved; and (ii) the extent to which environmental degradation is prevented;	*World's Best Practice* Options must be compared with the environmental standards set by world's best practice in uranium mining and milling at the time they are to be implemented, with respect to the level of effluent control achieved and the prevention of environmental degradation.
(b) the level of environmental protection to be achieved by the application or adoption of the technology and the resources required to apply or adopt the technology so as to achieve the maximum environmental benefit from the available resources;	*Cost-effectiveness* Options should be assessed with respect to both the level of environmental protection achieved, and the cost of implementation.
(c) evidence of detriment, or lack of detriment to the environment;	*Proven Effectiveness* Proposals for which there is practical evidence of their effectiveness should be favored over proposals for which there is only experimental or theoretical evidence.
(d) the physical location of the Ranger Project,	*Location* The Ranger mine is located in the Wet/Dry tropics, on Aboriginal land surrounded by Kakadu National Park, remote from high population density cities. Hence the level of protection required for the environment and community is very high and the technology chosen should be designed accordingly.
(e) the age of equipment and facilities in use on the Ranger Project and their relative effectiveness in reducing environmental pollution and degradation; and	*Age of Equipment* Technology in use should be reviewed periodically to determine whether or not recent advances have been made that would result in enhanced environmental protection. Technology installed at Ranger in accordance with BPT should be reasonably allowed to fulfil its serviceable life with due consideration given to the advances in technology and the amount of serviceable life expended.
(f) social factors including the views of the regional community and possible adverse effects of introducing alternative technology.	*Social Factors* The views of the regional community must be incorporated into BPT assessment. This includes where the introduction of new technology would improve the level of environmental protection but may also have negative social consequences. Benefits in environmental effectiveness may not necessarily result in greater social acceptability.

BPT Analysis

Section 12.5 states that "Proposals to amend or introduce operational approaches, procedures or mechanisms must be supported by BPT analysis. The rigour of the BPT analysis must be commensurate with the potential environmental significance of the proposal. The BPT analysis must involve consultation with and having regard to the views of the major stakeholders and copies of the BPT analysis must be provided to each of the major stakeholders.

The six elements listed in Table 1 must be considered in a BPT analysis. The BPT analysis technique employed should provide a systematic and consistent methodology for evaluating a proposal in terms of each of the six BPT elements. It should allow the valid comparison of proposals in order to determine which is BPT. The type of analysis technique to be employed should be chosen by stakeholder consensus for each specific application on a case by case basis. Environmental risk assessment is an integral step in BPT analysis.

The BPT analysis technique employed should be kept under review by the stakeholders to ensure that it is and remains consistent with relevant industry standards, government policies, international agreements and expert opinion.

The Precautionary Approach

The precautionary approach as defined in Section 20 is “an approach where decisions are guided by careful evaluation to avoid serious or irreversible damage to the environment”. In Section 12.6 “a precautionary approach is to be exercised in the application of BPT in order to achieve outcomes consistent with the Primary Environmental Objectives”.

The precautionary approach as it relates to the six criteria provided in Section 12.4 (a) to (f) should be applied by all stakeholders when taking part in BPT assessment. In particular, when proven effectiveness is assessed, application of the precautionary approach should result in the thorough investigation of all available information regarding the technologies under consideration together with an assessment of the risk-weighted consequences. This is particularly important where a technology has not been previously applied at Ranger. Current research and track record information should be assessed with consideration given to the relevance of this information if the technology were to be applied to the location of Ranger.

APPENDIX 11

Matrix for BPT Assessment for environmental protection in Alligator Rivers Region

Score	Comparative standard	Cost Effectiveness		Proven Operational Performance	Location	Age of Equipment or Technology	Social Factors
		Environmental Effectiveness	**Cost**				
	Options must be compared with the environmental standards set by world's best practice in uranium mining and milling at the time they are to be implemented, with respect to the level of effluent control achieved and the prevention of environmental degradation.	Options should be assessed with respect to both the level of protection achieved, and the cost of implementation. A separate score is allocated for each parameter as they are not necessarily correlated.		Proposals for which there is practical evidence of their effectiveness should be favored over proposals for which there is only experimental or theoretical evidence.	Operations are located in the Wet/Dry tropics, on Aboriginal land surrounded by Kakadu National Park and remote from high population-density cities. Hence the level of protection required for the environment and community is very high and the technology chosen should be designed accordingly.	Technology in use should be reviewed periodically to determine whether or not recent advances have been made that would result in enhanced environmental protection. Technology installed in accordance with BPT should be reasonably allowed to fulfil its serviceable life with due consideration given to the advances in technology and the amount of serviceable life remaining.	The views of the regional community must be incorporated into BPT assessment. This includes where a proposed change of technology would improve the level of environmental protection but may also have negative social consequences..i.e. bBenefits in environmental effectiveness may not necessarily result in greater social acceptability. e.g. reduction in workforce numbers required for operation of the option
0	Option does not meet current standards	Nil	Uneconomic	Unproven	Option is inappropriate to physical location.	Technology exposing the environment to significant risk.	Active widespread negativity towards option
1	Option meets some current standards	Low	High	Successfully pilot tested or good theoretical support	Option presents some risk related to the. physical location.	The option replaces technology that has not fulfilled its operational life and that is offering a sustainable high standard of environmental protection.	Regional concerns raised in regards to option, but local neutrality or support.
2	Option equivalent to current practice in similar situations	Moderate	Moderate	Operating successfully elsewhere	Option has no impact on physical location risks.	Intermediate	General support with some dissent.
3	Option meets or exceeds current best practice	High	Low	Operating effectively at multiple sites or a history of successful application locally	Option is highly suited to physical location with collateral benefits from implementation	The option replaces outdated technology in need of replacement or not delivering a high standard of environmental protection, or The option retains technology that has not fulfilled its operational life and that is offering a sustainable high standard of environmental protection	Full consensus and collaboration for introduction