

# MINING ACT 1990 AND REGULATIONS (NORTHERN TERRITORY)

## THIRD SCHEDULE

### ENVIRONMENTAL REQUIREMENTS FOR THE JABILUKA

#### URANIUM PROJECT

1. Environmental requirements for the Jabiluka Project are formulated on the basis of and will be implemented in a manner consistent with design concepts set out in the Jabiluka Project Final Environmental Impact Statement prepared in accordance with the requirements of the Environment Protection (Impact of Proposals) Act 1974 of the Commonwealth.

#### Definition

'Best practicable technology, is that technology from time to time relevant to the Jabiluka Project which produces the minimum environmental pollution and degradation that can reasonably be achieved having regard to:

- (a) 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;
- (b) the total cost of the application or adoption of that technology relative to the environmental protection to be achieved by its application or adoption;
- (c) evidence of detriment, or of lack of detriment, to the environment after the commencement of the Jabiluka Project;
- (d) the physical location of the Jabiluka Project;
- (e) the age of equipment and facilities in use on the Jabiluka Project and their relative effectiveness in reducing environmental pollution and degradation; and
- (f) social factors including possible adverse social effects of introducing new technology;

'Applicable Law' means every law (whether Commonwealth, Territory or other) from time to time validly in operation in the Northern Territory which is applicable according to its tenor to any aspect of the operations of the lessees in the Jabiluka Project Area.

'Manager' has the same meaning, as in the Uranium Mining environment Control) Act.

'Supervising Authority' in respect of any action, activity or matter specified herein, means the person having responsibility for or in relation to that action, activity matter under an applicable law or if there is no applicable law the person for the time being performing the duties of Supervising Scientist under the Environment Protection (Alligator Rivers Region) Act 1978 of the Commonwealth.

#### Technology

1. Taken as a whole, and in their component parts, the plant and the mine shall be designed and the mining, milling and related operations within the Jabiluka Project Area shall be carried on, in accordance with the best practicable technology.

2. Nothing in these Environmental Requirements shall be interpreted to prevent or discourage the lessee from attaining higher environmental standards than those specified.

### Staffing and Environment

3. (a) The lessees shall appoint and provide:
  - (i) as Environment Protection officer, a Person having appropriate qualifications and experience who shall be responsible to the project management to ensure effective environmental control of the project,
  - (ii) as Radiation Safety Officer, a person qualified in the principles and practices of radiation protection in the mining and milling of radioactive ores who shall be responsible to the Manager for radiation protection associated with the mine and mill,
  - (iii) as Ventilation Officer, a person qualified in the principles and practices of ventilation as they apply to the mining and milling of radioactive ores who shall be responsible to the Manager for ventilation in the mine and mill , and
  - (iv) persons and resources to support the Environment Protection Officer, Radiation Safety Officer and Ventilation Officer as is deemed appropriate by the Supervising Authority.
- (b) The Environment Protection Officer and his staff shall ensure effective environmental control of the project including:
  - (i) protection of biological resources, including rehabilitation aspects,
  - (ii) protection of persons on or adjacent to the project lease, and
  - (iii) the carrying out of an archaeological survey to each area to be affected by construction work before construction work commences in that area and recording and protecting from environmental or other damage Aboriginal art, archaeological and sacred sites in the Jabiluka Project Area.
4. The lessees shall instruct all employees of the lessees and of their contractors and subcontractors to the extent relevant and consistent with these environmental requirements in the need for environment protection, the monitoring programs and the role, responsibilities and powers of the relevant Supervising Authorities. This course of instruction must be suitable for the level of interest and education of all employees of the lessees and of their contractors and subcontractors and shall be undertaken prior to or as soon as possible after the first arrival of staff and at appropriate intervals thereafter.
5. As part of the course of instruction described in Clause 4 the lessees shall explain to the extent relevant the requirements of, or having effect under, prescribed instruments as defined in the Environment Protection (Alligator Rivers Region) Act 1978, insofar as those requirements relate to any matter affecting the environment in relation to the Jabiluka Project to all employees of the lessees and of their contractors and subcontractors prior to or as soon as possible after their first arrival in the Jabiluka Project Area.
6. The lessees shall make available, for perusal by all employees of the lessees and of their contractors and subcontractors involved in the Jabiluka Project Area, up to date copies of all relevant Commonwealth and Territory legislation relating to the protection of the environment

(Including the legislation dealing with the preservation of Aboriginal sacred sites, relics and works of art) and parks and reserves.

7. (a) The lessees shall ensure that all persons on the Jabiluka Project Area observe the provisions of these Environmental Requirements, other prescribed instruments and the applicable law. If any infringement is discovered the lessees shall take such action as is required under the applicable law and commence such remedial action as is necessary and as is consistent with the applicable law, and at the same time shall inform the relevant Supervising Authority.
- (b) If an employee of the lessees or of their contractors or subcontractors knowingly infringes any of the provisions described in Clause 7(a), the lessees or their contractors or subcontractors as the case may be shall take such disciplinary action against that officer, servant or employee as may seem appropriate to the lessees in the circumstances and, in cases where dismissal is the appropriate remedy, shall dismiss that officer, servant or employee.
8. The lessees shall require that all employee of the lessees and of their contractors and subcontractors do not introduce or permit or suffer the introduction onto the Jabiluka Project Areas of flora or fauna exotic to the Alligator Rivers Region save such flora or fauna as the supervising Authority shall permit. The lessees shall promptly take any action specified by the Supervising Authority to remove from the Jabiluka Project Area any exotic flora or fauna which may be introduced into that Area.

#### Control of Water and Tailings Disposal

9. (a) For the purposes of this clause "mineralised material" means
  - (i) material which contains more than 0.02 per cent of uranium dry weight as measured by sampling of the relevant material in a manner approved by the Supervising Authority; or
  - (ii) natural rock containing quantities and concentrations of sulphide mineralisation in excess of quantities and concentrations defined by the Supervising Authoritybut does not include specimens or samples of types approved by the Supervising Authority.
- (b) All areas, whether on the surface of the Jabiluka Project Area or underground which might, in the opinion of the lessees or the supervising Authority, come into contact with mineralised material, or with the products, intermediate products or by-products of the ore treatment plant, or with the liquid effluent from the mine or the ore treatment plant shall be designated Restricted Release Zones.
- (c) All Restricted Release Zones shall be defined on the ground by the lessees and each such definition shall be approved by the Supervising Authority.
- (d) A Restricted Release Zone may be redefined by the lessees from time to time subject to approval by the Supervising Authority.
- (e) Approved plans of Restricted Release Zones shall, upon request, be made available by the Supervising Authority to members of the public.

- (f) The water management system shall be established in a manner allowing no intentional releases to the environment of water from a Restricted Release Zone, and the lessees shall not allow to flow from a Restricted Release Zone liquid water other than the natural sub-surface flow of groundwater, provided that this requirement shall not apply to seepage which cannot be prevented by the use of the best practicable technology. This system shall be maintained unless the Supervising Authority gives approval for the release of water from the Zone.
- (g)
  - (i) The lessees shall, to the maximum extent practicable, ensure that a "zero release of contaminants system" is implemented, and that all practicable modifications to the project design which would achieve this objective are introduced. In the event that approval is given by the Supervising Authority for water to be released from a Restricted Release Zone that water shall not be discharged generally but shall be discharged in a manner approved by the Supervising Authority.
  - (ii) The approval of the Supervising Authority shall specify the following:
    - (A) the maximum approved rate of discharge;
    - (B) the maximum concentration of contaminants in water to be discharged;
    - (C) the maximum quantity of contaminants to be released in any one discharge and in any one year (being a year commencing on 1 September and ending on 31 August); and
    - (D) the maximum length of the approved period of continuous discharge.
  - (iii) The lessees shall not release water from a Restricted Release Zone until they have carried out to the satisfaction of the Supervising Authority such investigations as he may require into the flow, mixing and dispersion characteristics that will exist in the Magela system at the time of a proposed release. The lessees shall use the information obtained from such investigations to develop release procedures to ensure that standards specified by the Supervising Authority will be met with due regard being taken of other mining developments within the Magela catchment.
  - (iv) The lessees shall keep records of actual discharges made. These shall be made available to the Supervising Authority. These records shall specify :
    - (A) the actual rate of discharge;
    - (B) the period of discharge;
    - (C) the concentration of contaminants in the discharged water; and
    - (D) the total quantity of contaminants released in each discharge and in each year.
- (h) Waste rock shall not be deposited outside a Restricted Release Zone without the approval of the Supervising Authority.
- (i) Equipment which has been in contact with mineralised material, or with the products, intermediate products or by-products of the ore treatment plant, or with liquid effluents from the mine or the ore treatment plant, may be removed from within a Restricted

Release Zone provided that it has been cleaned to a standard set by the Supervising Authority.

- (j) Mineralised material, the products, intermediate products or by-products of the ore treatment plant or liquid effluent from the mine or the ore treatment plant shall not be taken, or allowed to move outside the limits of a Restricted Release Zone without the approval of the Supervising Authority. This clause shall not apply to product yellowcake (U 3 O 8) packed in containers approved by the Supervising Authority or gold bullion or used lubricants destined for salvage and reprocessing.
  - (k) No mineralised material shall be mined, drilled or otherwise handled outside the limits of a Restricted Release Zone, except as authorised by the Supervising Authority.
10. Erosion products resulting from the mining operations in the Jabiluka Project Area shall to the maximum extent practicable be prevented from entering the Magela system and the method of so doing shall be the subject of approval by the Supervising Authority.
11. The quality and quantity of runoff water entering the Magela system from the Jabiluka Project Area is to be continually monitored by the lessees to the satisfaction of the Supervising Authority.
12. (a) The tailings and water management systems and structures shall be designed and constructed in accordance with good engineering practice.
- (b) The lessees shall submit to the Supervising Authority a design study report and management plan for the tailings and water management systems containing detailed plans and specifications for the construction and use of those systems and the management of seepage from them and plans for the decommissioning and rehabilitation of the tailings disposal areas.
- (c) No construction of the tailings and water management systems shall commence without the written approval of the Supervising Authority, which may contain conditions relating to the design, construction and use of the tailings and water management systems.
- (d) Construction of the tailings and water management systems shall be in accordance with such procedures, including approved Quality Control Programs, as the Supervising Authority may require. The tailings and water management systems shall not be brought into use except with the written approval of the Supervising Authority.
- (e) No tailings shall be discharged from the uranium mill until the structure of the tailings and water management systems, the arrangements for management of seepage from them and any use of tailings material as mine fill or for any other purpose have received the Supervising Authority's written approval.
- (f) Seepage to groundwater from the tailings and water management systems shall be controlled by the lessees in accordance with the management plan and such conditions as may be specified by the Supervising Authority.
13. (a) The lessees shall prepare a plan for the treatment, method of transfer, final disposal and rehabilitation of the tailings. The final plan shall be based on information obtained from studies carried out by the lessees on waste rock actual tailings obtained from the mill.

- (b) The Supervising Authority, in granting approval to the discharge of tailings from the mill pursuant to subclause 12(e) shall, subject to any method of tailings disposal which is approved by the Supervising Authority, require the lessees to observe the following requirements:
  - (i) tailings shall to the maximum extent practicable be dealt with by being deposited in or transferred to the mine excavation progressively with mining in a manner approved by the Supervising Authority; and
  - (ii) tailings disposal and rehabilitation shall be completed by the lessees within five years after cessation of mining and milling on the Jabiluka Project Area or such other time as the Supervising Authority may require.
- 14. In addition to any other fencing required from time to time by the Supervising Authority the lessees shall erect a fence around the tailings and water retention system to Specification A.S. 1725-1975 and shall take all necessary and practicable action to prevent animals from drinking from sources of water within the Jabiluka Project Area that are, in the opinion of the Supervising Authority, contaminated as a result of mining and ore treatment operations in the Jabiluka Project Area.

#### Atmospheric Pollution Control

- 15. The lessees shall establish, operate and maintain a meteorological station or shall co-operate as required by the Supervisory Authority in the establishment of a regional station. The meteorological station shall be situated at a site selected and equipped and operated to standards approved by the Supervising Authority taking account of the advice of the Bureau of Meteorology and other appropriate authorities. The meteorological station is to provide adequate data for air emission control purposes as well as to provide climatological record and analysis for the site. Data so obtained will be made available to the Supervising Authority.
- 16. (a) For the purposes of this clause and clause 17, "installation" means a mine, ore treatment plant, sulphuric acid plant or power generation plant in the Jabiluka Project Area.
  - (b) Before the operation of an installation commences, the lessees shall develop appropriate air quality models in relation to emissions from the installation, suitable for assisting in making operational decisions relating to the protection of human health, biological resources and material objects of Aboriginal culture. The models shall be approved by the Supervising Authority before being used for the purpose of making operational decisions and may be Modified as necessary with the approval of the Supervising Authority in the light of operational experience.
  - (c) No emissions from an installation shall be released to the atmosphere by the lessees until a discharge authorisation based on standards determined by the Supervising Authority has been issued. Emissions to the atmosphere shall be managed as proposed by the lessees and approved by the Supervising Authority.
- 17. Unless otherwise approved or directed by the Supervising Authority emissions from an installation shall not exceed the values specified in the National Emission Standards for Air Pollutants, National Health and Medical Research Council, 1979, as amended from time to time. Radioactive emissions shall be managed in accordance with the Mines Safety Control (Radiation Protection) Regulations of the Northern Territory.

18. The calciner and yellowcake processing plant shall be fitted with emission control equipment which reduces the emission of dust, fumes and total uranium to the environment to as low a level as can be achieved by the use of best practicable technology.
19. Appropriate dust control measures shall be employed at all times and in all phases of the construction, mining and ore treatment operations to keep dust levels below values specified by the Supervising Authority from time to time.
20. The lessees shall develop a test procedure for use during the initial start up of the calciner and the start up after any interruption to its operation to ensure that, before ignition, -the system is operating satisfactorily.

#### Sulphur Stockpiles

21. Sulphur is to be stored in the manner approved by the supervising Authority. Without affecting the generality of the foregoing, bund walls surrounding the sulphur stockpile are to be constructed in such a way as to contain all molten or burning sulphur and prevent it from spreading from the stockpile in case of fire.

#### Blasting

22. (a) Before commencement of any blasting, whether on the surface or underground the lessees shall establish measuring sites at points to be agreed with the Supervising Authority and shall carry out and measure the effects of test blasts in collaboration with the Supervising Authority to provide information to define standard blasting practices. Records of measurements shall be made available to the supervising Authority.
- (b) The standard blasting practices to be adopted by the lessees shall first be approved by the Supervising Authority.

#### Vegetation and Landscape Protection

23. (a) For the purpose of protecting vegetation, the lessees shall fence such areas within the Jabiluka Project Area as specified by the Supervising Authority.
- (b) The lessees shall, in consultation with the Supervising Authority, take all practicable steps to protect from trampling, cutting, unplanned and uncontrolled burning, picking or other disturbance all vegetation in the Jabiluka Project Area, disturbance of which is not essential to mining operations.
24. The lessees shall carry out soil conservation measures within the Jabiluka Project Area as and when specified by the Supervising Authority.
25. (a) The sites of mining and ancillary operations, the tailings and water retention system and other areas where the ground has been disturbed shall be rehabilitated and revegetated by the lessees in accordance with a plan updated from time to time and approved by the Supervising Authority. Such rehabilitation shall be carried out to the satisfaction of the Supervising Authority. The initial plan shall be submitted before mining operations commence.
- (b) In revegetation the lessees shall establish appropriate ground cover plants in accordance with the directions of the Supervising Authority and shall fence, protect and, if necessary, renew the establishing vegetation as may be necessary to bring about the rapid restoration of stable vegetation native to the Region.

- (c) The obligations of the lessees under (a) and (b) above shall cease upon issue of a certificate of revegetation by the Supervising Authority.
  - (d) Prior to the commencement of works, the lessees shall prepare contour maps in sufficient detail to permit restoration of disturbed areas to their original contours or to such other contours as the Supervising Authority may approve.
  - (e) Before mining operations commence, the lessees shall conduct a vegetation survey of the Jabiluka Project Area to the satisfaction of the Supervising Authority.
  - (f) All topsoil from areas that have been disturbed shall be stored in a manner acceptable to the Supervising Authority and used for the purpose of rehabilitation.
  - (g) The lessees shall establish a nursery, or make other suitable arrangements, for the supply of such plants as may be approved by the Supervising Authority for use in rehabilitation.
26. Except where otherwise authorised by the Supervising Authority, all structures which remain in the Jabiluka Project Area at the end of the mining and ancillary operations shall be disposed of or removed entirely in a manner approved by the Supervising Authority. Mine access openings including ventilation shafts shall be sealed in a manner approved by the Supervising Authority. Unwanted materials and rubbish including concrete shall in a manner to be approved by the Supervising Authority be buried, covered with rock and soil materials and the surface revegetated.

#### Transportation

27. Transportation of yellowcake from the ore treatment plant shall be undertaken in a manner approved by the Supervising Authority.

#### Radiation Protection

28. The lessees shall ensure that exposures to radiation of all persons on or near the Jabiluka Project Area shall be reduced to the lowest practicable level below the appropriate limits set out in the Mines Safety Control (Radiation Protection) Regulations of the Northern Territory.

#### Contingency Plans

29. Bearing in mind possible hazards to human health and the local and more distant environments resulting from effects on the project of natural disasters, operational emergencies, materials failure and other unscheduled events, including any interruptions to monitoring programs, the lessees shall before bringing into commission each successive element of the project to which such an event may apply, develop and have approved by the Supervising Authority, contingency plans for minimizing the impact and remedying the damage resulting from such an event.

Such contingency plans shall take into account and be consistent with the applicable law and shall include:

- (i) details of the program of action to be carried out in relation to each contingency plan;
- (ii) nomination of the lessees personnel responsible for implementation of the contingency plan; and
- (iii) provision for the continuation of monitoring programs during any of the events referred to earlier in this clause.



30. The lessees shall ensure that all members of their staff are conversant with the provisions and objectives of current contingency plans.
31. The lessees shall immediately notify the Supervising Authority and the Supervising Scientist of the occurrence of any of the such events outlined in clause 29 and of the initiation of action under the approved contingency plan.

### Monitoring

32. (a) The lessees shall design monitoring programs covering construction, commissioning, operating and decommissioning phases of the Jabiluka Project to the approval of the Supervising Authority. The programs shall be designed to continue without interruption at such locations within the Jabiluka Project Area and elsewhere, as the Supervising Authority shall specify. They shall include measurements in relation to biota, water, sediments, soils and air and will include a personal and environmental radiation monitoring program. The programs will include details of numbers and the level of training of staff involved, methods to be used and details of the times and/or frequencies of monitoring measurements. Appropriate basic programs shall be brought into operation in the form approved by the Supervising Authority before mining and treatment of ore commence. Monitoring as approved by the Supervising Authority shall continue for the duration of the project and for such time after its termination as is necessary for the environment to return to conditions acceptable to the Supervising Authority.
  - (b) Subject to the written approval of the Supervising Authority, the lessees shall be permitted to develop the monitoring programs in stages which take into account the time sequence of the project development, but shall ensure that each element of the total monitoring activity is approved by the Supervising Authority before commencing that part of the project development to which the associated monitoring program element applies.
33. The lessees shall comply with the directions of the Supervising Authority relating to the co-ordination of monitoring programs and the standardisation of equipment and methods used in monitoring programs.
  34. The lessees shall conduct their monitoring accordance with standards and methods approved by the Supervising Authority. Any laboratory which is operated by the lessees shall be of a standard that would enable the laboratory and laboratory personnel to obtain registration with the National Association of Testing Authorities Australia. The lessees shall maintain continuous records of the performance and calibration of monitoring equipment referable to independent laboratories participating in national intercomparison and calibration programs.
  35. The lessees shall, as far as practicable and as required by the Supervising Authority, present data in a format compatible with computer analysis and suitable for data interchange with relevant national organisations.
  36. The lessees shall ensure proper analysis of monitoring results and shall make data and reports available to the Supervising Authority at times and in a form prescribed by the Supervising Authority.

### Research

37. The lessees shall undertake appropriate investigations as required by the Supervising Authority to define the design and operating conditions capable of meeting environmental protection criteria applied to the Jabiluka Project.
38. The lessees shall co-operate with the Supervising Authority in undertaking appropriate investigations and in providing information relevant to identifying and overcoming environmental problems within or relevant to the Jabiluka Project Area.