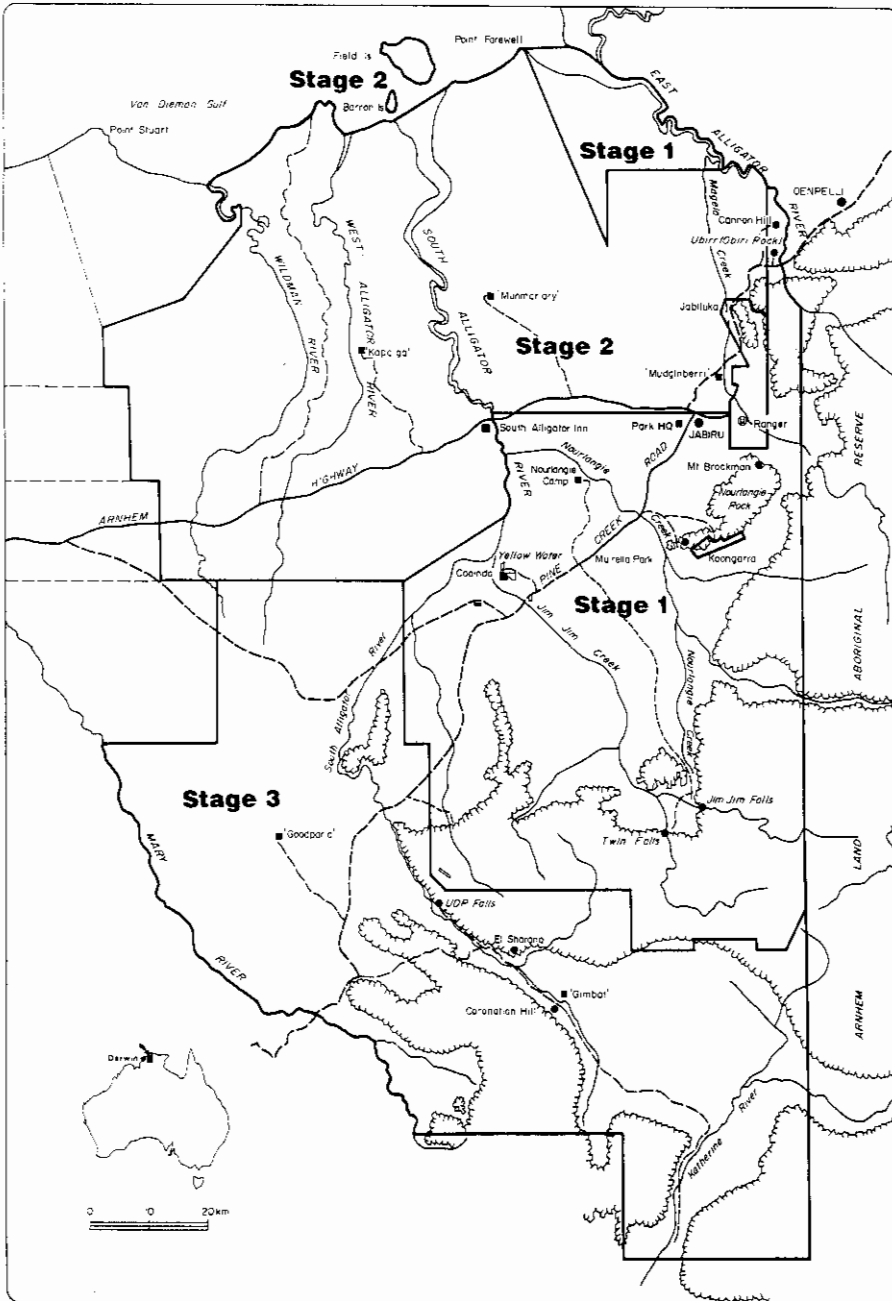


THE POTENTIAL OF THE KAKADU NATIONAL PARK REGION

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Kakadu National Park Region
 Map courtesy Australian National Parks and Wildlife Service

THE PARLIAMENT OF THE COMMONWEALTH OF AUSTRALIA

THE POTENTIAL OF THE KAKADU NATIONAL PARK REGION

SENATE STANDING COMMITTEE ON
ENVIRONMENT, RECREATION AND THE ARTS

NOVEMBER 1988

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The Committee acknowledges the assistance of the Secretariat in carrying out this inquiry.

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PREFACE

On 9 October 1985, the Senate resolved that the following matter be referred to the Standing Committee on National Resources:

The potential of Kakadu National Park region with particular reference to:

- (a) the nature of the resources available for exploitation; and
- (b) the impact of utilisation of these resources, particularly mining and tourism.

Following a reorganisation of the Senate Committees on 22 September 1987, the inquiry was referred to the Standing Committee on Environment, Recreation and the Arts.

During the course of the inquiry, the National Resources Committee received submissions from 69 individuals and organisations (see Appendix 1) and held 11 days of public hearings (see Appendix 2).

In addition, the National Resources Committee undertook seven inspections;

4-6 June 1985	Kakadu National Park
19-21 May 1986	Kakadu National Park region, including Coronation Hill, and Rum Jungle
9 September 1986	Coal Mining Rehabilitation in the Hunter Valley, NSW
10 September 1986	Sand mining Rehabilitation in the Myall Lakes area north of Newcastle, NSW
30 October 1986	CSIRO Kapalga Research Station, Kakadu National Park
10 February 1987	Wilsons Promontory National Park, Victoria
9 March 1987	Coronation Hill

The National Resources Committee completed taking evidence in June 1987 and began preparation of a draft report. After the new Parliament met in September 1987, there was a re-organisation of the Senate Committees and, with the National Resources Committee no longer in existence, the inquiry on the potential of the Kakadu National Park region was referred to the newly formed

Environment, Recreation and the Arts Committee. This Committee took over the evidence, submissions and the draft report prepared by the former National Resources Committee. In addition the Environment, Recreation and the Arts Committee held briefings with a number of organisations in Darwin on 1 February and undertook an inspection of the Kakadu National Park on 2 and 3 February 1988. Two submissions and a number of supplementary submissions were received by the Committee.

LIST OF ABBREVIATIONS

ACF	Australian Conservation Foundation
AFANT	Amateur Fishermen's Association of the Northern Territory
ANPWS	Australian National Parks and Wildlife Service
ARRI	Alligator Rivers Research Institute
BMR	Bureau of Mineral Resources
BTEC	Bovine Tuberculosis and Brucellosis Eradication and Control
CHJV	Coronation Hill Joint Venture
COZAC	Conservation Zone Advisory Committee
CSIRO	Commonwealth Scientific and Industrial Research Organisation
ERA	Energy Resources of Australia
IUCN	International Union for the Conservation of Nature and Natural Resources
JTDA	Jabiru Town Development Authority
NT	Northern Territory
NTFIC	Northern Territory Fishing Industry Council
OSS	Office of the Supervising Scientist
RP	Retention Pond
RRZ	Restricted Release Zone
RUEI	Ranger Uranium Environmental Inquiry
UNESCO	United Nations Educational, Scientific and Cultural Organization

RECOMMENDATIONS

CHAPTER TWO

Paragraph 42

The Committee recommends that ANPWS:

- (i) continues to enforce strictly the regulations concerning restriction of access to Aboriginal living areas and sites of significance;
- (ii) uses all the means at its disposal to explain to visitors why these regulations are necessary; and
- (iii) ensures that measures to upgrade tourist facilities in the Park do not in any way jeopardise the privacy of the Aboriginal inhabitants.

Paragraph 43

The Committee recommends that ANPWS works in association with the Northern Territory Tourist Commission, the Darwin Tourist Promotion Association, tourist operators and other interested bodies, including the appropriate Aboriginal groups, to ensure that tourist information, including travel commentaries, does not portray misleading or inaccurate information about Aborigines and their role in the region.

Paragraph 44

The Committee recommends that:

- (i) ANPWS introduce a permit system for tour operators in the Park and that the issue of permits be subject to the conditions that the information provided by the operator be accurate and responsible and that the activities of the operators be consistent with what is appropriate for a World Heritage area; and
- (ii) ANPWS introduce an accreditation scheme for persons providing interpretation and information services to tourists in the Park

Paragraph 45

The Committee recommends that ANPWS, in conjunction with its regular visitor surveys and in consultation with the local Aboriginal communities, should assess the level of interest in an Aboriginal cultural centre within the Park and, depending on the response, prepare a proposal for the development of such a centre.

Paragraph 47

The Committee recommends that all the decision making bodies involved with policy development for the Park or with the Park's management should have Aboriginal representatives. (This matter is more fully considered in Chapter 7 on consultation mechanisms)

Paragraph 51

The Committee recommends that:

- (i) archaeological and art sites within the Park should not be opened to the public until adequate facilities and staff have been provided; and
- (ii) ANPWS should continue to monitor the impact of visitors at all art and archaeological sites that are open to the public.

Paragraph 54

The Committee recommends that ANPWS should continue the program of weed control in all areas of the Park and that if additional resources become necessary for this program they should be provided as a matter of priority.

Paragraph 67

The Committee recommends that ANPWS should, as a matter of urgency, carry out a study of the fish populations of the Park with a view to determining the impact on them of recreational fishing. If in order to complete the study it is necessary to close areas of the Park to fishing, this should be done.

Paragraph 85

The Committee recommends that, as a matter of urgency, ANPWS introduce a series of charges for entry into Kakadu National Park and for the use of facilities such as camping grounds. The fees levied should be related to the provision, improvement and maintenance of services and facilities in the Park. The introduction of fees should be associated with an advance booking system that can be used to ration access to the most popular areas of the Park in a fair and equitable manner.

Paragraph 91

The Committee recommends that ANPWS take steps to co-ordinate a detailed long-range tourist strategy for the Park which, inter alia, covers expected visitor numbers, the growth in visitor numbers at particular destinations within the Park, the maximum visitor carrying capacity of different areas and the optimum pattern of tourist infrastructure. The development of the strategy should allow for full public consideration and the strategy should be an important element in the subsequent development of the Park plan of management.

CHAPTER THREE

Paragraph 83

The Committee recommends that the Office of the Supervising Scientist should continue to monitor the biological effects of all water releases from Retention Pond 4 at the Ranger Uranium Mine.

Paragraph 88

The Committee recommends that the Office of the Supervising Scientist should continue to give a high priority to work directed towards assessing the effects of the spray irrigation technique being used by Ranger Uranium Mine to dispose of excess water.

Paragraph 90

The Committee recommends that the Office of the Supervising Scientist should identify all possible causes of leakage from the Ranger Uranium Mine tailings dam and should monitor the level and any effects of the leakage taking place.

Paragraph 92

The Committee recommends that at the completion of mining at Ranger, and unless any more secure alternative is found, all tailings be replaced into the pit and properly secured.

Paragraph 95

The Committee recommends that the resources made available for the study of the environmental impact of the Ranger Uranium Mine should, as a minimum, be maintained at current levels.

Paragraph 96

The Committee recommends that Section 31 of the Environmental Protection (Alligator Rivers Region) Act 1978 be amended as a matter of priority so that the Supervising Scientist is no longer prevented from making available information on the environmental impact of the Ranger Uranium Mine collected by his Office.

Paragraph 108

The Committee recommends that a full and detailed plan for rehabilitation should be required before any mining operations are allowed at Coronation Hill and that payments should be required on an annual basis into a trust fund to be used for the rehabilitation work. ANPWS and the Office of the Supervising Scientist should be fully involved in the preparation and approval of the rehabilitation plan. Similar arrangements should be in place for any further mining or exploration activity in the Conservation Zone.

Paragraph 109

The Committee recommends that in examining the Environmental Impact Assessment being prepared by the Coronation Hill Joint Venture in relation to the proposed mine at Coronation Hill the Government should pay special attention to all factors which might cause discharge of contaminated water from the mine site, either during or after the operational life of the mine.

Paragraph 113

The Committee recommends that in order to reduce to the minimum possible the environmental impact of exploration activity in the Conservation Zone, strict environmental guidelines and safeguards, developed in conjunction with ANPWS and the Office of the Supervising Scientist, should be strictly enforced.

Paragraph 114

The Committee recommends:

- (i) that any proposal for mining activity in the Conservation Zone should be examined very carefully, and that approval should not be given if the proposal has the potential to cause environmental damage within the catchment area of the South Alligator River which might result in damage to areas of the Park; and
- (ii) that any infrastructure permitted for exploration or mining activity should be planned in consultation with ANPWS and in such a way as to facilitate the later use of the area as a national park.

Paragraph 133

The Committee recommends:

- (i) that applications for exploration or mining leases within the Conservation Zone be considered only when the applicants are able to demonstrate that full consultation has taken place with Aborigines having land claims in the area concerned, that the views of the Aborigines have been taken into account and that appropriate arrangements for compensation of the Aborigines have been negotiated; and
- (ii) that the Joint Venture should be required, to make provision for royalty payments, even if the Coronation Hill project proceeds before a land claim is finalised.

Paragraph 134

The Committee recommends that all companies seeking exploration or mining licences in the Conservation Zone be required to adopt employment policies which provide opportunities for Aborigines, especially those with traditional ties to the area.

Paragraph 146

The Committee recommends that a period of at least one month should be allowed for a review of information provided to the Sacred Sites Authority before it formalises any action following from the provision of such information.

Paragraph 147

The Committee recommends that all Companies seeking to undertake exploration or mining activity in the Conservation Zone should be made fully aware of the role and responsibilities of the Sacred Sites Authority and of the boundaries of sacred sites within the Zone.

CHAPTER FOUR

Paragraph 19

The Committee recommends that in monitoring the planning and future development of Jabiru, ANPWS, in consultation with the Jabiru Town Council and the Gagudju Association, should consider the effect of future development on Aborigines and ensure that there are no adverse consequences.

Paragraph 25

The Committee recommends that the Office of the Supervising Scientist should be given a clearly defined and on-going responsibility to monitor the environmental impacts of Jabiru on the Park ecosystems.

Paragraph 32

The Committee recommends that in future all proposed developments in Jabiru, and in other parts of Kakadu National Park, be subject to an environmental evaluation, as stipulated in the Park plan of management and required under certain circumstances by the Environment Protection (Impact of Proposals) Act 1974.

Paragraph 37

The Committee recommends that no additional population centre should be developed in Stages 1 and 2 of Kakadu National Park and that any proposal for a tourist development in Stage 3 of the Park should be subject to a stringent environmental impact study. This should take into full account the potential sociological impacts and, in particular, the potential impact on Aborigines having interests in the area.

CHAPTER FIVE

Paragraph 22

The Committee recommends that the policy of phasing out commercial fishing in Kakadu National Park be implemented according to the timetable presented in the second Kakadu National Park Plan of Management.

Paragraph 23

The Committee recommends that commercial fishers displaced from the Park be offered compensation by the Commonwealth for their total removal from fishing activities in Northern Territory waters. The compensation should be at a level received by those who surrender entitlements under the present net buy-back scheme, together with a component relevant to the vessel and equipment involved.

Paragraph 27

The Committee recommends that the Kakadu National Park remain closed to commercial crabbing operations.

CHAPTER SIX

Paragraph 45

The Committee recommends:

- (i) that, as a matter of urgency, ANPWS work with the Gagudju Association to consider the feasibility of establishing a disease free herd of buffalo in a controlled area within the Park to meet Aboriginal needs for field killed meat. This recommendation should be read in conjunction with (ii). Should the proposal contained in (ii) proceed, it may be possible to put into place arrangements that will accommodate the matters referred to above; and
- (ii) that the proposal for a buffalo park adjacent to the boundaries of Stage 3 of Kakadu National Park be investigated and, subject to necessary environmental safeguards, that it be supported.

Paragraph 53

The Committee recommends that, with the exception of fishing, recreational hunting within the Park continue to be banned.

CHAPTER SEVEN

Paragraph 18

The Committee recommends that, as a matter of urgency, a Board be created to manage Kakadu National Park.

Paragraph 19

The Committee recommends that when a Board of Management is established for Kakadu National Park there be a review of administrative practices, and particularly of financial delegations, to ensure that the management of the Park can be accomplished in an efficient and effective manner

Paragraph 33

The Committee recommends that the Government:

- (i) urgently consider locating all operations of the OSS in the Northern Territory; and
- (ii) carefully examine increased responsibilities for the OSS and its strengthening as appropriate, to take account of the issues discussed in the preceding paragraphs.

Paragraph 35

The Committee recommends that when a Board of Management is established for Kakadu National Park, the Chairman of the Board should take up a position on the Co-ordinating Committee for the Alligator Rivers Region, in addition to that occupied by the Director of ANPWS.

Paragraph 41

The Committee recommends that a levy be placed on all exploration and mining activity in the Conservation Zone in order to maintain an overall cost-recovery similar to present levels for the costs associated with the additional responsibilities given to the Office of the Supervising Scientist as a result of the declaration of the Conservation Zone.

Paragraph 46

The Committee recommends that when a Board of Management is established for Kakadu National Park the terms of reference of the Conservation Zone Advisory Committee should be changed so that the Committee provides advice to the Board of Management.

CHAPTER ONE

INTRODUCTION

DEFINITION

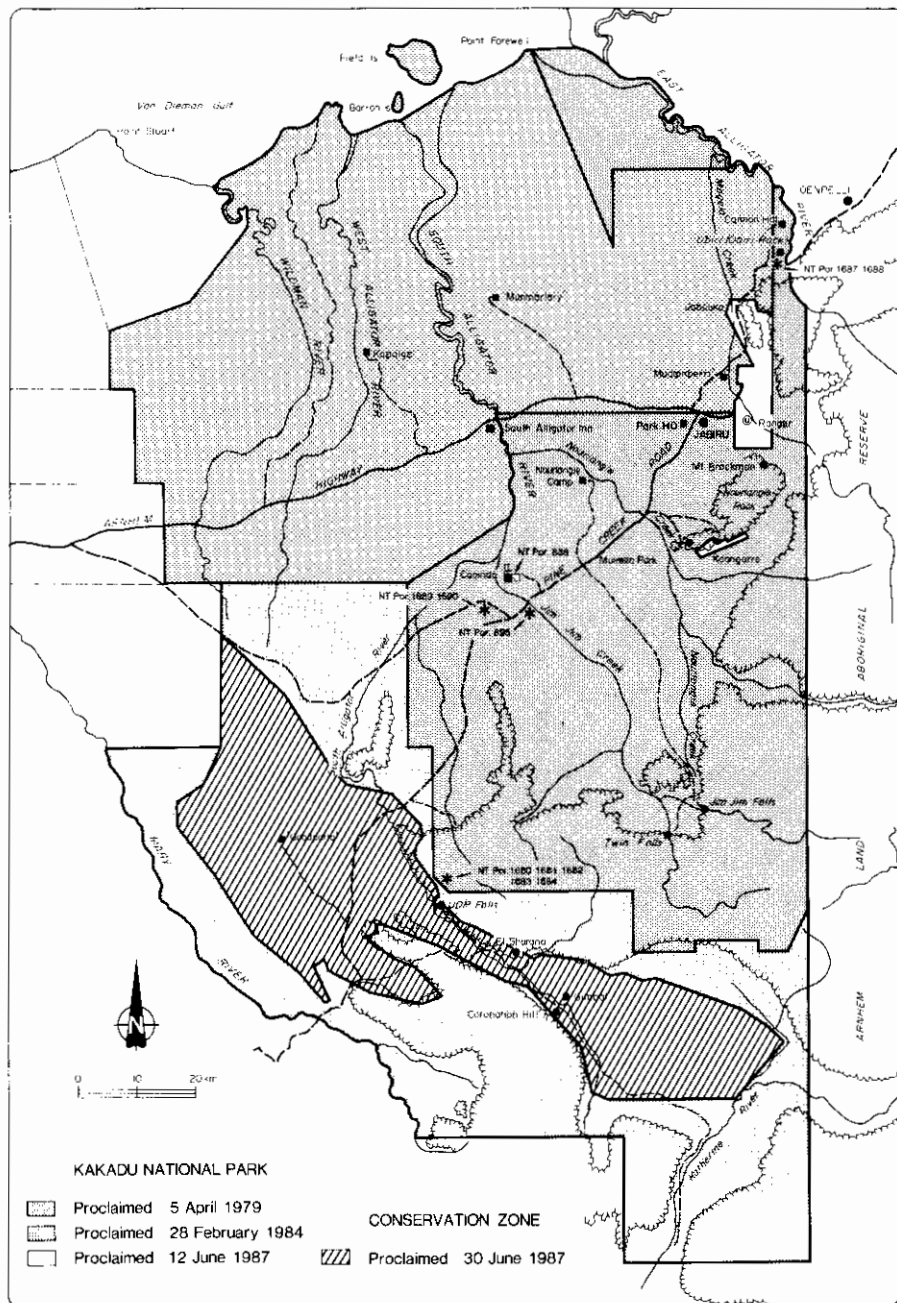
1. The Kakadu National Park region is located some 120 km east of Darwin and encompasses an area of 19 804 square kilometres. It extends west of the Wildman River, east to the Arnhem Land border and from the low water mark in Van Diemen Gulf south to the Mary River and the Gimbat pastoral lease boundary.

2. For the purpose of this report the Kakadu National Park region is taken to be the area within the outermost boundaries of Stages 1, 2 and 3 of Kakadu National Park. Defined in this way the region includes areas which, while within Park boundaries, have been excluded from the Park proper. (See Figure 1.1) These areas are:

- . the Conservation Zone in Stage 3 of 2252 square kilometres;
- . the Ranger Project Area 8300 ha;
- . the Jabiluka Project Area 7275 ha;
- . Noranda Australia Ltd (Koongarra) 1228 ha S.M.L. 69 (application);
- . Cooida 259.64 ha (NT Por. 838 and NT Por.895);
- . Dampier Mines 80.9 ha (NT Por. 1680, 1681, 1682, 1693 and 1684);
- . the Border Store 2.42ha (NT Por. 1688 and 1687); and
- . Spring Peak 2.12 ha (NT Por. 1689 and 1690).¹

It should be noted that in this report Stage 1, Stage 2 and Stage 3 are used to indicate geographical regions which include the areas listed above which are not part of the national park.

Figure 1.1



Kakadu National Park region:

Map courtesy Australian National Parks and Wildlife Service

Unless otherwise indicated these should not be taken in the strict sense of applying only to land included within Kakadu National Park.

DESCRIPTION

3. The Kakadu landscape results from a process of ongoing weathering, erosion and sedimentation that has taken place over some 2000 million years. The tidal flats of the coast and the broad estuaries with their fringing patches of mangrove forest form a link between the marine and terrestrial environments. Inland there are expanses of sedge, grass and paperbark. Fresh supplies of sediment are received each year on the lowlands when the rivers flood, depositing their loads. The drier lowland hills are covered by a mosaic of grassland, savannah and open eucalypt forest. To the east and south the spectacular 500 kilometres long sandstone escarpment, with its striking rock formations and waterfalls, marks the edge of the Arnhem Land Plateau. Criss-crossed with deep fissures, dotted with caves and hollows and with vast tracts of exposed rock, the Plateau presents a stark and rugged terrain which is rich in plant and animal life. As the escarpment eroded and retreated eastward, outliers of more resistant rock were left behind. The geographical features are complemented by the long history of Aboriginal occupation which has given the region a rich legacy of rock paintings and Aboriginal sites.²

HISTORY OF THE REGION

4. The first settlement of the area took place probably over 40 000 years ago,³ taking advantage of both the great variety of food sources and the shelter provided by caves and overhangs in the area of the escarpment. It has been estimated that before white man came there were 2000 Aborigines living in the region.

5. The first known contact with outsiders came from Maccassan fishermen in the early 18th century.⁴ The first contact with white people was established when Raffles Bay and Port Essington were settled in 1827 and 1838 respectively. When Ludwig Leichardt crossed the region in 1845, he claimed to have met Aborigines who could speak English. In 1850 white settlers passed through the southern part of the region.

6. From the late 1860s further contact between Aboriginal people and white settlers was made with the establishment of Palmerston (now Darwin), the construction of the overland telegraph, the development of Pine Creek gold fields and the establishment of pastoral properties. Some Aborigines were employed in pastoral and agricultural work, in mining and in buffalo hunting.⁵ These developments had an adverse effect on the Aboriginal population. For example, the establishment of pastoral properties, including Gimbat and Goodparla from 1880 onwards had far-reaching effects on Jawoyn demography and lifestyle,⁶ and some Aborigines were drawn to Palmerston. During the latter part of the 19th century and the early 20th century large numbers of Aborigines died, due largely to the spread of disease, including tuberculosis and leprosy.⁷

7. Further changes took place in the early 1920s when the West Arnhem Land Reserve (later incorporated in the larger Arnhem Land Reserve) was created 'as a consequence of the deleterious effects of (white) contact on the Aboriginal population'.⁸ In 1925 the Church Missionary Society established a mission at Oenpelli, confronting the Aboriginal population with social and religious change. As a consequence there was movement of traditional Aboriginal land owners west to Oenpelli, although these moves were not permanent. Another event which caused the dispersal of Aborigines from their traditional land was World War II when groups were housed in army camps along the Stuart

Highway.⁹ In 1942 Aborigines were moved to Mataranka and Katherine as a result of being officially prohibited from living North of the Edith River.¹⁰

8. The early 1950s saw an improvement in accessibility when a graded road was put in from Moline to Jim Jim Creek and the importance of the area for recreational activities began to increase. In the south of the region the discovery and subsequent mining of uranium in the Stage 3 area of the region caused numbers of Aborigines to leave the area¹¹ and from the late 1950s the number of Aborigines working in pastoral properties in the area declined. In 1961 there were 12 Aborigines living and working the Gimbat pastoral lease and in 1979 there were no Aborigines at Gimbat. In 1975 there were about 600 Aborigines living at Oenpelli and about 200 in the Kakadu National Park region.¹²

HISTORY OF THE PARK

9. As early as 1964 part of the region was recognised as having biological significance and the Woolonga Aboriginal reserve, located in the Nourlangie Creek catchment, was proclaimed as a wildlife sanctuary.¹³ During the late 1960s further proposals for a national park were made and in 1972 the Alligator Rivers Wildlife Sanctuary was declared.¹⁴ In 1973 the then Prime Minister announced there would be a national park named Kakadu.¹⁵ The name Kakadu is derived from Gagudju, one of the several Aboriginal languages of tribes which inhabited the area.¹⁶

10. In 1975 the Ranger Uranium Environmental Inquiry was set up to consider the future of the Alligator Rivers Region, following further discoveries of major uranium deposits at

Jabiru, Jabiluka, Koongarra and Narbalek. In 1975 the inquiry reported and the recommendations included the establishing of a major park in the region.¹⁷

11. Kakadu National Park was declared progressively in three stages. Stage 1, an area of 6144 sq.kms. was proclaimed on 5 April 1979.¹⁸ Stage 2, an area of 6929 sq.kms., was declared on 28 February 1984.¹⁹ Stage 3, an area of 4479 sq.kms., was proclaimed on 12 June 1987 along with a Conservation Zone area of 2252 square kilometres which is contained within the boundaries of Stage 3.

STATUS OF THE PARK

12. In 1981 Stage 1 of the Park was inscribed on the list of World Heritage Properties, a list authorised in the UNESCO Convention Concerning the Protection of Wildlife Conservation and National Heritage. Stage 2 of the Park was listed in 1987 and, at this time, Stage 3 was foreshadowed to UNESCO as a possible listing for the future. Countries which are parties to the UNESCO Convention are required to protect and conserve the natural and cultural heritage of areas on the World Heritage List.

13. Quite apart from obligations imposed by the inclusion of Stages 1 and 2 of the Park on the World Heritage List, Australian Government policy has been to accept that national parks have a particular status, requiring conservation. In 1970 for example, State and Commonwealth Ministers agreed upon a definition of a national park which provides for protection 'from all interference other than essential management priorities'.²⁰ The presence of Aboriginal sacred sites in the region also imposes some restrictions on the use of the Park. Many such sites have been registered by the Aboriginal Sacred Sites Authority for their protection.

14. Recent amendments to the National Parks and Wildlife Conservation Act 1975 have prohibited mining in Kakadu National Park. This prohibition does not apply to the Conservation Zone which, although contained within the boundaries of Stage 3, is not part of the Park, or to other areas excluded from the Park proper (see paragraph 2). Exploration and mining may be allowed in the Conservation Zone, under certain strict conditions. These activities are required to be strictly regulated, as the Zone forms part of the catchment area of the Park and activities carried out there may have environmental implications for other parts of the Park.

OWNERSHIP OF THE LAND

15. Almost all of the land in Stage 1 of the Park is Aboriginal land, the title to which was granted under the Aboriginal Land Rights (Northern Territory) Act 1976. This land is leased back to the Director of the Australian National Parks and Wildlife Service (ANPWS). The Jabiru Town Site, the Cooina Motel and Border Store leases are not included in the land granted to Aborigines.

16. Approximately seven per cent of Stage 2 of the Park is Aboriginal owned. The remainder belongs to the Commonwealth.

17. The Gimbat and Goodparla pastoral leases, now resumed by the Commonwealth, constitute Stage 3 of the Park and the Conservation Zone. The whole of Stage 3 is now the subject of a land claim by Aborigines.

MANAGEMENT OF THE REGION

18. The potential of the Kakadu National Park region can be viewed from many different perspectives. Some regard the region as having great spiritual significance, while others note the value of the mineral deposits. Another group sees the region's potential in providing wilderness experience or to view an ancient heritage and stunning scenery and wildlife. To still others it is a catchment area of great environmental significance

encompassing major river systems, major wetlands and escarpment country, each area having its own particular plant, animal and fish habitats and needing to be protected from the depredations of undue or uncontrolled human interference or exploitation. Others see wildlife, both native and introduced, as a resource to be exploited for commercial purposes. Buffalo are the subject of an eradication program because of the environmental damage they have caused and because they are reservoirs of brucellosis and tuberculosis.

19. These views are not necessarily mutually exclusive but the realisation of different values within the region can create and has created conflict. There are those who believe the environment should be preserved at all costs, to the exclusion of mining and the restriction of tourism. Arguments have been presented in favour of and against the commercial and recreational exploitation of animals, especially buffalo and barramundi. There is debate about the priorities Aboriginal people, traditional land owners living in the area, should have personally and culturally. Since the creation of the Park, Aborigines have moved back into their traditional land and today there are about 277 living in the region. Aborigines may exercise their traditional rights to fish, hunt and gather plant material in the Park.²¹ Some have employment working in the region, with the Australian National Parks and Wildlife Service, Ranger, BHP and the Gagudju Aboriginal Association.

20. The resolution of these conflicting views and competing demands is not an easy task and it forms the subject of the subsequent chapters of the report. All that need be said here is that at present the Park is managed by the Director of the Australian National Parks and Wildlife Service (ANPWS) in close liaison with the traditional Aboriginal owners. Local interest groups provide input into the administration of the Park through

the Kakadu Interest Group Advisory Committee. The Co-ordinating Committee for the Alligator Rivers Region assists the Supervising Scientist to monitor the effects of uranium mining operations on the region. The Director of ANPWS and the Kakadu Conservation Zone Advisory Committee manage the Conservation Zone in Stage 3.

21. A plan of management for the Park is prepared by the Director of the Australian National Parks and Wildlife Service. It sets out a description of the way in which the Park is to be managed for the next five years. Matters dealt with in the plan of management include zoning, fauna and flora habitat, cultural resource management, access, information, residents and occupancies, visitor accommodation, tour operators, recreational activities, research, monitoring and environmental evaluations, administration and control works.²²

1. Australian National Parks and Wildlife Service (ANPWS) 1986 Plan of Management p. 67
2. ANPWS 1982 Kakadu National Park Northern Territory Pamphlet p. 3
3. Derrick Ovington 1986. Kakadu a World Heritage of Unsurpassed Beauty AGPS p. 6
4. Ranger Uranium Environmental Inquiry (RUEI), Second Report 1977. AGPS p. 6
5. Evidence p. 1590
6. Evidence p. 1591
7. RUEI op cit p. 38
8. ibid p. 38
9. RUEI op. cit p. 39
10. Evidence p. 1008
11. Evidence p. 820
12. RUEI op cit p. 39
13. RUEI op cit p. 19
14. Evidence p. 1745
15. RUEI op. cit. p. 19
16. ANPWS 1988 Kakadu National Park Visitor Guide
17. RUEI op cit p. 328
18. Evidence p. 1762
19. Evidence p. 1763
20. Evidence p. 1699
21. ANPWS 1986 Kakadu Plan of Management p. 30
22. ibid p. 2

CHAPTER TWO

TOURISM

FEATURES OF THE REGION

1. The Kakadu National Park region holds many attractions for tourists. There are areas of great scenic beauty, a variety of plants and animals, impressive galleries of Aboriginal rock art, and opportunities for a range of recreational activities. Many tourists also consider the continuing presence of Aboriginal people as an important feature of the area. The present chapter will examine these various attractions and consider the impact made upon them by the growing number of tourists who are drawn to the region.

Landscape

2. The landscapes of the region show great variety. The tidal flats along the northern fringe merge into floodplains with meandering rivers, billabongs and swamps. Moving south, one encounters extensive lowlands with forest-covered plains and hills, and isolated pockets of dense rainforest. Further to the east and south the impressive 500 kilometres long escarpment of the Arnhem Land plateau traverses the Park with waterfalls at times reaching as high as 200 metres. Beyond the escarpment are the western extremities of the Arnhem Land Plateau itself, presenting a rugged landscape of weathered rocks and pinnacles. In the Stage 3 area to the south and south-west, lies an area of hills edged with low cliffs, separated by the valleys of the Mary, South Alligator, and Katherine River systems. In addition to this scenic variety there is the sheer size of the total area.

As Professor J.D. Ovington, Director of ANPWS, commented, '[v]ery rarely does a National Park give such a feeling of untouched wilderness and have such an immense variety of landscapes as Kakadu'.¹

3. There are some outstanding scenic highlights which include Twin Falls and Jim Jim Falls where water cascades from the rocky escarpment; Yellow Water, a billabong area teeming with birdlife and a habitat for crocodiles; UDP Falls in the south which featured in the film Crocodile Dundee; and Koolpin Gorge where the escarpment has eroded to form a spectacular chasm. The escarpment itself offers many impressive sights, such as Mount Brockman, with its sheer sandstone cliffs, and Ubirr which, in addition to its galleries of rock art, offers a sweeping view across the floodplains.

Fauna and flora

4. The region is home for a wide variety of animals. Scientists have recorded approximately 75 reptile species, 275 bird species, 50 mammals and 45 fish. One of the most popular attractions for tourists is the crocodile. Both saltwater and fresh water crocodiles are found in the region, the saltwater variety occurring on the tidal flats and floodplains, and the fresh water crocodile living further inland. Visitors to the Park are frequently able to see saltwater crocodiles during conducted boat tours at Yellow Water. In Kakadu, as elsewhere in the Territory, crocodile numbers appear to be increasing.

5. Birds are an important attraction, particularly for visitors with specialised ornithological interests. The variation in topography and vegetation provides a wide range of habitats and about one-third of all Australian species are found in the region. Several of these are rare.² Populations vary with habitat. Estuarine mangroves for example provide shelter for egrets, cormorants, mangrove herons, brahminy kites and a range

of other species. Other habitats are afforded by the rainforests, the escarpment, the coastal woodlands - where the rare hooded parrot and Gouldian finch are found - the sandstone spinifex areas of the Arnhem Land Plateau, and the important wetlands areas which are frequented by a wide variety of birds in large numbers.³ Commenting on the wetlands, the submission from the CSIRO stated that:

[o]ne of the great natural wonders of Australia is the huge number of waterbirds - geese, ducks, herons, egrets, ibises, the jabiru, the brolga, etc. - that congregate during the dry season on the complex of persistent swamps and the moist soil that constitute the floodplains of Kakadu. Counts have shown that there are millions of birds present in some seasons... The significance to Australia of this complex of wetlands and its bird fauna is difficult to exaggerate. No other region of the continent can boast such enormous populations of waterbirds.⁴

Migratory species also make annual visits to the Park region. At certain periods the swamps, watercourses, billabongs and tidal flats provide wintering habitats for many Asiatic waders, while a number of other species shelter in the region's forests.⁵

6. Although a wide variety of mammal species is found in the region, particularly in the forests and hills,⁶ many have nocturnal habits or a shy nature and are rarely seen. Others such as the agile wallaby (Macrophus agilis) and the dingo are a more common sight. Buffalo, which are an introduced species, occur in many areas and are frequently a source of curiosity for tourists. However, because of the damage they cause to the environment and because they are reservoirs of disease, buffalo numbers are progressively being reduced through an eradication program.

7. As indicated above, there are 45 species of fish in the creeks and rivers of the region. The majority of these are found only in freshwater habitats. By comparison, it is interesting to

note that the Murray-Darling river system, which is the most extensive in Australia, supports 27 fish species. None of the species found in the Park region is regarded as endangered, although the Primitive Archer Fish is regarded as rare.⁷ Several fish species are known to have only a limited distribution in northern Australia.⁸ The Park plan of management includes measures to prevent the introduction of exotic fish and so far this has not occurred. Both commercial and recreational fishing have taken place in the region over a long period, although restrictions are now being applied. Aspects of recreational fishing are discussed later in this chapter. Commercial fishing is treated separately in Chapter five.

8. The plant life of the Kakadu National Park region has been described as 'one of the richest, yet least known floras in Australia'.⁹ About 1500 species have been identified, their distribution varying with the changing topography. An attractive selection can be found in the well-illustrated work Wildflowers of Kakadu which was provided to the Committee in the course of its inquiry. The plant life throughout the region has considerable scenic value, one popular source of interest being the flora on the floodplains which includes waterlilies and sedges. Tourists visiting Yellow Water are able to view this rich aquatic flora together with the large numbers of waterbirds which inhabit the area.

Aboriginal presence

9. The Kakadu region has an Aboriginal presence not only in terms of cultural legacies such as rock art but also in the form of a viable contemporary community. As indicated earlier in this report, nearly all the area corresponding to Stage 1 of the Park, together with a small portion (approximately seven per cent) of Stage 2, is Aboriginal land granted under the Aboriginal Land Rights (NT) Act. The Committee was told that the creation of a national park over this land has helped to provide Aboriginal people with an environment in which they feel comfortable¹⁰ and where some aspects of their traditional lifestyle, such as

religious practices, can be retained if they so desire. There has been an increase in the Aboriginal population in the region from the 60-70 residents at Mudginberri in 1975, to 139 in 1980. In 1986 there were 277 Aborigines located in various areas around the Park.¹¹ This increase has been largely due to the employment opportunities offered by the Park. As indicated in Chapter One, parts of Stage 3 and the Conservation Zone are currently the subject of an Aboriginal land claim and this may increase the Aboriginal population of the region. There is evidence to suggest that for some tourists, particularly those from overseas, the Aboriginal presence may be one of the attractions of the Kakadu region. The implications of this, and the impact on the Aboriginal people themselves, are discussed later in this chapter.

Aboriginal rock art and archaeological sites

10. The Arnhem Land escarpment and its rock outliers contain large numbers of caves and rock shelters which were frequented over thousands of years by the Aboriginal inhabitants of the region. Many of these secluded places display examples of rock art. In the words of one witness, these constitute 'the largest, and in general, best preserved body of rock art in the world.'¹² Exact dating of the paintings is difficult but it has been estimated that some are at least 20,000 years old, equal in age to the famous French and Spanish art sites at Lascaux and Altamira.¹³ The most recent examples belong to the last few decades. In many cases, surfaces have been painted and repainted in a succession of styles. The richness and archaeological significance of these sites has been widely recognised and was a major reason for the inclusion of Stage 1 of the Park on the World Heritage List.

11. Some rock art sites are easily accessible for tourists. An outstanding example is Ubirr in the north of the Park where numerous galleries are located beneath rock overhangs. A major attraction here is the main gallery which has fine examples of the "X-ray" style of painting.¹⁴ Another well-known site is Nourlangie Rock further to the south where a major feature is a large frieze, repainted in the 1960s, depicting a number of mythological beings. Little Nourlangie Rock nearby has a rare example of paintings using blue pigment.

12. There are also numerous archaeological sites throughout the region resulting from Aboriginal occupation over thousands of years. The few completed excavations have revealed the oldest occupied sites yet found in tropical Australia, dating back at least 23 000 years.¹⁵ ANPWS estimates that there are several thousand archaeological sites in the Park. One site has now been opened for public viewing at Nourlangie Rock.¹⁶

Recreational opportunities

13. Both the current and the previous plan of management for Kakadu National Park have recognised that one objective of the Park is to provide for a range of appropriate recreational activities while ensuring protection for the area's cultural and natural assets. The major activities currently catered for are walking, camping, bird-watching, recreational driving, boating and fishing.

Walking

14. Walking is a popular means of appreciating the scenic and cultural attractions of the region. The current plan of management distinguishes four walking categories: walking from carparks via formed tracks to established tourist sites, such as Ubirr; longer walks to a particular location using unformed tracks, or the general exploration of a camping or picnic area;

bushwalking involving camping en route, with a permit system for camping in other than designated camping areas; and guided or self-guided nature walks assisted where possible by explanatory pamphlets. ANPWS intends to maintain this range of walking opportunities to cater for the different interests and capabilities of visitors. Additional walking tracks are being considered and facilities such as informative signposts are to be progressively improved.¹⁷

Camping

15. Camping facilities are available at the two motels in the Park and at a number of camping areas provided by ANPWS. Facilities provided at the three major camping areas at Merl (East Alligator), Mardukal and Muirella Park, include a landscaped central section with a modern ablutions block, solar powered hot water, and lighting. Access is via sealed roads. These camping grounds are located near Ubirr, Yellow Water and Nourlangie Rock respectively. Other camping areas at Malabanbandju, Baroalba and Gadjaduba have graded access, pit toilets and a rubbish disposal service. The facilities are beginning to be over taxed by the recent dramatic increase in the number of visitors to the Park. Visitor information and boat launching facilities are also available at the major camp sites.¹⁸ Camping in recognised areas has so far been free of charge although the current plan of management foreshadows a possible change to this policy.

Bird-watching

16. An outstanding opportunity to view the birdlife of the wetlands is provided by the guided boating tours of Yellow Water. ANPWS has published a bird check list¹⁹ and further viewing hides are being constructed near places where birds, and other

wildlife, are known to congregate.²⁰ Some tour operators are now beginning to offer excursions which cater specially for tourists interested in bird-watching.²¹

Scenic driving and tours

17. Part of the road system in the region is suitable for conventional vehicles and there is no difficulty during the dry season in travelling between main centres such as Ubirr, Jabiru and Coinda. In addition there are a number of tracks suitable for four wheel drive vehicles, such as those giving access to Jim Jim Falls, Twin Falls and Koolpin Gorge. This network of roads and tracks is used extensively by both private vehicles and commercial tour operators. The standard of the road system within the region was the subject of some comment during the inquiry and is discussed later in this chapter.

Boating

18. Recreational boating is becoming increasingly popular in the region. Many visitors bring their own boats and make use of the rivers and billabongs. Boating opportunities are increased in the wet season and at high tides. Access and launching facilities have been provided at some locations and two billabongs have been set aside for non-motorised craft. The use of such craft is discouraged in some areas however, in view of the threat posed by saltwater crocodiles.²²

Fishing

19. According to the Amateur Fishermen's Association of the Northern Territory, recreational fishing is the most popular specialised activity in the Park. The Association claimed that 'perhaps more than 50% of recreational fishing across the Top End' takes place within the Park.²³ Results from an ANPWS survey indicates that 37 per cent of private visitors bring fishing gear

with them. The most sought-after fish is undoubtedly the barramundi which is prized, according to the Amateur Fishermen's Association, for 'its size, its aggressive nature, its fighting ability, its appearance and its table qualities.'²⁴ The Northern Territory is generally recognised as Australia's premier location for barramundi fishing. Recreational anglers in the Kakadu region also fish for such species as saratoga, sooty grunter, threadfin salmon, jewfish, golden snapper, queenfish, trevally and mangrove jack. Restrictions applying to recreational fishing are discussed later in this chapter.

Other recreational activities

20. Other activities in the region include swimming, rockclimbing, target shooting, aerial tours and visits to the Ranger Uranium Mine. Swimming is generally not encouraged in natural waterways and in many places the presence of saltwater crocodiles has led to its prohibition. There is a public pool in Jabiru. Rockclimbing currently occurs at two places only. Many of the suitable sites have Aboriginal significance and their use would require the approval of traditional owners. Target shooting is prohibited in the Park but is permitted near Jabiru for recognised clubs. Hunting, whether by firearms or other means, is prohibited except in the case of Aborigines with traditional rights. Aerial tours offer a means of appreciating the vastness and the diversity of the Kakadu landscape. A number of such tours currently operate, both from Darwin and from Jabiru. The Ranger Uranium Mine also provides a point of interest for some tourists. Mine management estimates that 15,000 tourists visited the mine in 1985 and 18,000 in 1986. In the calendar year to the end of October 1987 a total of 22 300 people visited the mine,²⁵ including visitors who are shown the mine as part of an organised tour of the Park. Data supplied by ANPWS suggests that approximately 15 per cent of private visitors include Ranger on their itinerary.²⁶

Accommodation

21. There are currently two commercially operated motels within the Kakadu National Park - the Kakadu Holiday Village (previously the South Alligator Inn) and the Cooina Hotel/Motel located near Yellow Water. The first offers motel rooms, demountable rooms and dormitory style accommodation, and caters for up to 260 people. There are also caravan and tent sites. The Cooina Hotel/Motel has motel rooms for 150 people as well as some caravan and tent sites. Motel accommodation is also available at the Bark Hut Inn, 38 kilometres west of the Park. In accordance with original intentions, Jabiru has so far not provided any tourist accommodation. Work has now been completed however on the construction of a 110 room crocodile-shaped motel in the township of Jabiru. The motel is a joint project of the Gagudju Association and Industrial Equity Limited.

22. In addition to accommodation at motels, camp sites are provided at a number of locations. Camping facilities are discussed in paragraph 15 above.

23. A survey conducted by ANPWS shows that visitors to the Park fall into four main groups:

1. international and interstate tourists seeking high class accommodation coupled with air, land and boat tours;
2. specialist tour groups such as ornithologists, archaeologists, scientific and educational research groups;
3. visitors interested in a range of recreational activities as well as park appreciation seeking moderately priced accommodation other than camping;
4. visitors seeking camping/caravanning opportunities in a range of settings.

The current plan of management for the Park acknowledges that present accommodation facilities do not cater adequately for this range of requirements. The construction of the new motel at Jabiru will assist with the first group, although the plan suggests that another motel may need to be established in the southern part of the Park. The plan also recognises the need for 'simple, moderately priced lodge style accommodation ... which would be intermediate in standard between the high class hotel/motels and the camping grounds.'²⁷ This would help in catering for the third group identified in the survey. Low cost accommodation would be provided by establishing Youth Hostel facilities, initially at Yellow Water. For researchers and special interest groups, the plan suggests 'a limited amount of cabin accommodation' together with some reliance on accommodation provided for general visitors. The plan also envisages a number of measures to improve facilities for camping. The Northern Territory Government has criticised provisions for tourist accommodation in the Park, referring in particular to shortages of motel rooms in peak periods. This is discussed later in this chapter.

Other facilities

24. The two motels within the Park sell petrol and have stores which stock basic food supplies. The Border Store near Ubirr sells food supplies and petrol. The township of Jabiru has a recreation lake, a public swimming pool, a golf course, shooting range, supermarket, chemist, service station, post office, medical centre and police station. On completion of the new motel, Jabiru will also offer accommodation. The current plan of management suggests that construction of a new motel in the southern part of the Park would be likely to generate a need for facilities such as a store, a restaurant and a garage.

Information and education

25. ANPWS uses a variety of means to provide information about Kakadu National Park and to foster an appreciation of the Park's natural and cultural heritage. Visitor information is provided through static and portable displays, signs, brochures, books, posters and maps. Topics include geology, climate, ecology, flora and fauna, prehistory, Aboriginal art and the current Aboriginal population in the area. There are guided tours of the major rock art sites, and four walking trails. Orientation talks are provided on request to Jabiru residents, the Darwin community, school camps, and other interested groups. Courses are conducted for tour operators bringing visitors to the Park. ANPWS intends to upgrade these information and education facilities in a number of respects and a major audio-visual bird centre has been opened at Park headquarters. In addition to material provided by ANPWS, there is a growing number of well-illustrated books about aspects of the region and its inhabitants. Tour operators also provide numerous pamphlets and brochures.

TOURIST NUMBERS AND CHARACTERISTICS

26. The popularity of the region as a tourist destination has been steadily increasing in recent years. The Kakadu Visitor Use Survey which is carried out by ANPWS on a continuing basis gives the figures for visitor numbers for the period 1982 to 1986 shown in Table 2.1. The extent of the recent increase in visitor numbers is demonstrated by the fact that in 1987 more people visited the Park in July than in the whole 12 months of 1982.²⁸

Table 2.1

ANNUAL VISITOR NUMBERS - KAKADU NATIONAL PARK²⁹

	Number of visitors	% annual increase
1982	45,800	
1983	57,850	26
1984	75,200	30
1985	101,600	35
1986	131,000	29
1987	185,000	41

27. The survey also provides an estimate of visitor days spent in the Park. Over the period in question the total annual visitor days, which also showed a steady increase, were as shown in Table 2.2. These figures indicate an average visitor stay in excess of three days for each of the years surveyed, with a slight increase in average stay over the period. The length of stay varies between private and tour visitors. On current trends, private visitors spend an average of 4.61 days in the Park, with tour participants having a average stay of 1.96 days.

Table 2.2

ANNUAL VISITOR DAYS - KAKADU NATIONAL PARK³⁰

	Number of visitor days	% annual increase
1982	150,800	
1983	185,750	23
1984	268,300	44
1985	370,150	38
1986	500,450	35
1987	660,000	31

28. The ANPWS survey also provides some information on the characteristics of visitors to the Park. Private visitors have consistently been more numerous than visitors travelling on organised tours, the ratio being of the order of 5.5 to 1. More than half of the private visitors carry camping equipment while the majority of overnight visitors on tour stay in hotel/motel accommodation. In each of the five years of the survey, overseas visitors represented about 10 per cent of private visitors and 15 to 18 per cent of tour participants. Approximately 50 per cent of overseas private visitors are from Europe (mainly from the United Kingdom, West Germany and Sweden), with 25 per cent from the USA and Canada and 14 per cent from New Zealand. Tour operators are becoming increasingly conscious of the interest being shown by travellers from overseas, one operator reporting a 65 per cent increase in international visitors over a recent two year period.³¹ Specialised tours are becoming more common. Mr T. Winter of the Darwin Tourist Promotion Association told the Committee of groups of tourists from America with special interests such as bird-watching, geology and Aboriginal culture. European groups were often in search of wilderness areas.

29. The ANPWS survey indicates that visitors tend to focus on a number of key sites. They include the East Alligator region, Coinda/Yellow Water, Aboriginal rock art sites at Ubirr and Nourlangie and Park Headquarters.³² The most popular activities enjoyed by tourists include camping fishing, picnics and barbeques, swimming, boat tours, and shopping/hotel visit.³³ 'The overwhelming majority of feedback' for the survey 'is complimentary as well as constructive'.

ECONOMIC IMPACT OF TOURISM

30. Tourism is the Northern Territory's second most important industry after mining. According to the Northern Territory Tourist Commission, tourism has been the catalyst for substantial infrastructure expenditure and generated \$285.9m in direct revenue in 1986/87.³⁴ A submission received from the Northern Territory Government stated that:

[t]ourism is the Territory's fastest growing industry with an annual growth rate of over 10% p.a. It currently employs 8% of the Territory's workforce. It offers the best chance for creating employment opportunities in the short term.³⁵

Mr A. Morris of the Department of the Chief Minister referred to Bureau of Industry Economics figures indicating that 'for every 250 Australian tourists visiting somewhere, there is one new job there', and that 'for every 26 overseas tourists there is one new job'.³⁶ The Northern Territory Government's submission argued that 'because the Northern Territory has fewer strings to its economic bow than Australia as a whole, tourism is of more paramount importance to the Territory.'³⁷

31. The importance of Kakadu in this context was stressed by a number of witnesses. The Northern Territory Government argued that the Park should form 'one of [the] most critical components' of the Territory's tourist industry³⁸ while another witness described it as '100 per cent the backbone of Top End tourism.'³⁹ There are difficulties in estimating revenues generated specifically by a regional area such as Kakadu since figures available on average daily expenditures by tourists relate to spending in Australia generally, rather than to particular locations. However, some idea of the importance of the region within the Territory's tourist economy may be gained by comparing it with other major centres. Figures supplied by the Northern

Territory Tourist Commission allow a comparison of tourist trends at Kakadu with two other popular destinations in the Territory - Katherine Gorge, and the Uluru National Park. These are the three most popular tourist destinations in the Territory. The figures (shown in Table 2.3) indicate that, starting from a much lower base, Kakadu has now nearly drawn level with the other two centres in terms of visitor numbers.

Table 2.3

VISITOR NUMBERS - THREE MAJOR NORTHERN TERRITORY DESTINATIONS

	KAKADU (000's)	KATHERINE GORGE (000's)	ULURU/OLGAS (000's)
1981/82	37.5	75	86.9
1982/83	49.9	90	87.9
1983/84	66.5	100	106
1984/85	80.3	120	110.1
1985	101.6	-	132
1986	131	145	141.1
1987	200	180	250

Source: Northern Territory Tourist Commission

32. The Commission also indicated that tourists tend to stay longer at Kakadu than at the other two destinations in question. The average stay at Uluru and Katherine Gorge is 1.5 days and 2 days respectively, while the average stay at Kakadu is four to five days.⁴⁰ In terms of visitor days therefore, the relative importance of Kakadu increases.

33. The Northern Territory Government advocated a faster rate of expansion of tourism in the Park region. The Territory's submission criticised what it saw as the restrictive policies followed by ANPWS and urged the adoption of strategies which would favour stronger tourist growth while still providing protection for Aboriginal residents and the environment. ANPWS,

for its part, expressed satisfaction with the current rate of growth of tourist facilities which, it claimed, were appropriate to the current level of demand. This debate is examined in more detail later in this chapter, following an examination of the impact of tourism on Aborigines and the environment.

IMPACT ON ABORIGINAL INTERESTS

Aborigines in the Park

34. As indicated earlier there are now some 277 Aborigines resident in Kakadu National Park. Living areas have been established at several locations in the northern half, including one at Jabiru. There is a likelihood that Aboriginal residents may also establish themselves in the southern area if land claims relating to Stage 3 and the Conservation Zone prove to be successful.

35. ANPWS regulations permit traditional owners and others with traditional rights to move freely throughout the Park and to hunt and gather plants for food.⁴¹ In addition special measures are available to protect Aboriginal interests. Under the National Parks and Wildlife Conservation Act the Director of ANPWS is empowered to restrict entry to certain land to protect the privacy of Aboriginal communities, and to prevent public access to other designated areas. Certain restrictions have in fact been applied. In the interests of privacy, road access to Aboriginal living areas is limited to persons having business there and to those invited by residents.⁴² Several locations of particular importance to Aboriginal residents, such as burial grounds and ceremonial areas, have also been the subject of formal closures. The total area involved is small, amounting to about 23 square kilometres or 0.18 per cent of the total area of Stages 1 and 2 of the Park.⁴³

36. The effectiveness of these measures in protecting Aboriginal interests was the subject of some comment in the course of the inquiry. Representatives of the Department of Aboriginal Affairs indicated that they were satisfied with the current arrangements which, in their view, assisted Aboriginal people in establishing 'the sort of lifestyle they want in particular locations within the region'. Evidence of this could be seen in 'the number of people who have now gone back and resumed life in ... homeland centres or outstations in the area'.⁴⁴ The Department felt that Aborigines now living in the Park 'are not strongly opposed to the presence of visitors' provided appropriate protective measures are taken for themselves and the environment.⁴⁵ There were potential benefits for Aborigines since tourism is 'a potential income earner' for Aboriginal people and one of the developments 'in which [they] have an interest and may well want to participate.'⁴⁶ As the Department noted, this is already occurring through the Gagudju Association's ownership of the Cooinda Motel and the Border Store. More recently, Aboriginal involvement in the tourist industry has increased substantially with the Association's decision to establish a motel in Jabiru.

37. There were some less optimistic comments. The Department of Aboriginal Affairs itself acknowledged that 'many Aborigines find the presence of strangers disturbing and feel restricted in their use of many hunting and fishing areas.'⁴⁷ Mr S. Brennan from the Bureau of the Northern Land Council expressed a similar view. Acknowledging that the Gagudju Association has 'an obvious interest in tourism', Mr Brennan commented that Association members want 'controlled development', not 'unrestricted development that is ad hoc.' The Gagudju people, he said:

do not like the idea of being a bit like a zoo, feeling that they are on display for tourists to come and see what an Aboriginal person looks like in his environment, to see whether he still walks around with a spear.

They certainly do not like that concept of tourism.⁴⁸

The view repeatedly expressed by Gagudju Association members, Mr Brennan added:

is that they do not want the visitor numbers to become so great that there would be environmental damage to the park, and certainly that they are interested in being able to have private living areas that are not intruded upon.⁴⁹

Mr J. Christophersen, Deputy Chairman of the Council, stated there had been tourist pressure on sacred sites and instances of bones being removed from burial grounds.⁵⁰

38. The Australian Conservation Foundation also commented on the impact of tourists on Aboriginal communities. The Foundation spoke of the Aborigines' 'very real fears of widespread tourism,'⁵¹ and argued that Aboriginal traditional owners fear a rapidly expanding tourist industry more than mining 'because of tourism's "permanent" and growing scale.'⁵² The Committee is also aware of the warning sounded in the Australian Institute of Aboriginal Studies' report, Aborigines and Uranium, which examined the impact on Aboriginal communities of uranium mining at Ranger and Nabarlek. This report identifies certain adverse effects resulting from these operations and argues that any major new developments, including those connected with tourism, will 'seriously intensify the grave problems already being faced by people in the Aboriginal domain.'⁵³

39. Many Aborigines are reluctant to place themselves in situations in which contact with tourists is likely to occur. In Aborigines and Tourism, which examined the impact of tourism on Aborigines in the Kakadu region, it was stated that many Aborigines 'do not at present seek out encounters with visitors although they may respond positively to those encountered on the road or at the Coinda Motel'.⁵⁴ The employment of Aborigines as

Park rangers has not led to extensive interaction, the report commented, since Aborigines are 'not very keen on conducting guided tours', partly out of shyness, and partly because they 'preferred not to have to act as "policemen" to rebuke tourists for their actions (for example, with respect to rock art damage).'55 The report suggested that the recent tendency to promote the Park as an all year-round tourist destination, together with the upgrading of some roads, may increase the level of interaction with tourists. The Wet season has so far been regarded by Aborigines as a period in which tourist numbers fall off markedly, but this was less likely to be the case in the future.56

40. There is conflicting evidence about the extent to which tourists desire contact with Aborigines. A survey of visitors to the Park conducted in 1983 and 1984 by Professor F. Gale of the University of Adelaide commented that:

[v]isitors had been led to believe that here they would meet Aboriginal people because Arnhem Land is one of the few extensive areas which was never settled by Europeans ... Such visitors were understandably surprised to discover that they did not come into contact with any Aboriginal people.57

According to the Northern Territory Tourist Commission 33 per cent of interstate tourists express regret and disappointment that they did not have contact with Aborigines in the Territory. The 1984 Tourist Development Priorities Plan found that most segments of the tourist market were expecting more contact with 'Aboriginal lifestyle and culture.'58 On the other hand, a travel survey conducted in 1982 found that only one per cent of those interviewed, which included overseas, interstate and local visitors, were specially attracted to the Territory to see Aborigines or Aboriginal paintings. This group expressed virtually no interest in Aboriginal culture.59 The survey evidence is therefore somewhat equivocal, although it should be

noted that both these surveys are dated, particularly given the very significant increase in visitor numbers that has taken place since 1982. It is nevertheless true, as described in the the report Aborigines and Tourism, that there has been an increasing tendency to utilise Aboriginal culture as an integral part of tourism promotion and that tourists' expectations are likely to be influenced by the ways in which the Park is depicted in advertisements and brochures.

41. In the Committee's view, the steady increases in tourist numbers in the region, and the progressive improvements in facilities, suggest that tourist pressure on Aboriginal communities will increase substantially in coming years. The Committee believes there are measures which may assist in dealing with this problem.

42. Firstly, Aborigines need to feel that they have sufficient living space to avoid encounters with tourists if they so desire, and that areas of particular importance to them will be protected from interference. To this end, Park regulations concerning restriction of access should be strictly enforced in relation both to living areas and to sites of religious or ceremonial significance. ANPWS should also continue to ensure that measures to upgrade tourist facilities in the Park, including improvements to roads and accommodation, do not jeopardise the privacy of Aboriginal communities. In recommending this the Committee fully recognises the resentment that is felt by some visitors when they discover that they are excluded from certain areas of the Park. ANPWS and the Aboriginal communities themselves will need to be conscious of this and show sensitivity in the enforcement of the regulations. In particular, ANPWS should explain why these closures are necessary in its literature and other information services.

Recommendation

The Committee recommends that ANPWS:

- (i) continues to enforce strictly the regulations concerning restriction of access to Aboriginal living areas and sites of significance;
- (ii) uses all the means at its disposal to explain to visitors why these regulations are necessary; and
- (iii) ensures that measures to upgrade tourist facilities in the Park do not in any way jeopardise the privacy of the Aboriginal inhabitants.

43. Secondly, accurate information concerning Aborigines in the Park should be readily available to tourists. ANPWS currently provides useful information on Aborigines and their culture through displays at Park headquarters, pamphlets and explanatory notices. The Service also conducts training programs for tour guides. The Committee supports these measures and notes with interest that the current plan of management proposes a community education program to develop knowledge of and respect for the traditions, languages and culture of the Aboriginal people.⁶⁰ Despite such efforts however, problems may still be created if commercial advertising, or information provided by commercial tour guides, generates misleading impressions. This might occur, for example, through suggestions that visitors are likely to encounter Aborigines leading a traditional lifestyle, through a failure to stress the Aborigines' entitlement to privacy, or through inaccurate accounts of contemporary Aboriginal culture. The Committee would hope that the Northern Territory Tourist Commission and other interested bodies such as the Darwin Tourist Promotion Association would join with ANPWS to assist in discouraging tendencies of this kind. Accurate and realistic information is clearly in the long-term interests of the tourist

industry itself as well as the Aborigines, since disappointed or disgruntled tourists are unlikely to be a good advertisement for the region.

Recommendation

The Committee recommends that ANPWS works in association with the Northern Territory Tourist Commission, the Darwin Tourist Promotion Association, tourist operators and other interested bodies, including the appropriate Aboriginal groups, to ensure that tourist information, including travel commentaries, does not portray misleading or inaccurate information about Aborigines and their role in the region.

44. The Committee notes that Regulation 7AA of the National Parks and Wildlife Regulations provides that, whenever a fee is charged for any commercial activity, a commercial operator will be required to have the permission of the Director. Permits may be granted subject to conditions and a permit system would provide a mechanism for controlling the activities of tour operators.⁶¹ The plan of management for the Park also indicates that tour operators will be required to ensure their staff providing information and interpretation services are accredited by ANPWS prior to involvement with the Park.⁶²

Recommendation

The Committee recommends that:

- (i) ANPWS introduce a permit system for tour operators in the Park and that the issue of permits be subject to the conditions that the information provided by the operator be accurate and responsible and that the activities of the operators be consistent with what is appropriate for a World Heritage area; and

- (ii) ANPWS introduce an accreditation scheme for persons providing interpretation and information services to tourists in the Park

45. A submission to the Committee from the Australian Heritage Commission suggested the establishment of a cultural museum in Kakadu National Park which would serve both Aboriginal and European interests but in which 'the highest priority should be given to the interpretation of Aboriginal society and culture.'⁶³ The Australian Conservation Foundation proposed a similar institution, suggesting that it could perhaps be an extension of the Museum of Australia.⁶⁴ The Committee believes that such a museum could be of benefit to both tourists and Aborigines, particularly if it were in part a 'living museum' incorporating contemporary arts and crafts displays, and included information on the culture of Aborigines presently living in the Park. Apart from its general educational value, such a museum might well act as a buffer between tourists and Aborigines by helping to satisfy the natural curiosity of the former about Aboriginal lifestyle and culture. The Committee notes with interest that the current plan of management suggests the development of 'an interpretation prospectus for a museum and cultural centre for the display of local Aboriginal culture.'⁶⁵ In particular, the plan states that:

ANPWS will co-operate and provide assistance to the Aboriginal community in developing an Aboriginal Cultural Centre to serve both Aboriginal and European interests. ANPWS may develop such a facility itself if the Aboriginal community is unable to proceed with this project. This should have a high level of involvement by Aboriginal people and assurance of the continuity of the highest standards of professional curation. It will be a major commitment by Australia to the preservation and promotion of Aboriginal cultural achievement.⁶⁶

A useful preliminary measure might be to gauge the likely level of interest through the regular visitor surveys conducted by ANPWS.

Recommendation

The Committee recommends that ANPWS, in conjunction with its regular visitor surveys and in consultation with the local Aboriginal communities, should assess the level of interest in an Aboriginal cultural centre within the Park and, depending on the response, prepare a proposal for the development of such a centre.

46. Thirdly, the Committee believes it essential that Aborigines have a substantial say in any Park management decisions which may affect them. Both plans of management have recognised the need for close consultation with Aboriginal communities, particularly in relation to matters concerning living areas.⁶⁷ The Department of Aboriginal Affairs felt that this aspect of Park management was working well, commenting that:

[ANPWS] management recognize the importance of Aboriginal culture and heritage and there is close cooperation with Aboriginal residents in administering the Park in order to minimise the adverse impacts of tourism and visitor use on Aboriginal interests.⁶⁸

According to the Northern Land Council however, Aborigines in the region feel that they should be more closely involved in decision-making structures. Mr S. Brennan of the Bureau of the Northern Land Council told the Committee that:

[o]ne of our officers spent three months in the field consulting with people on their views of the plan of management. The major factor that emerged from that was that the Aboriginal people wanted to have a say in the

management and control of the park. It is thought best that this can be done through a board of management on which they have a majority membership.⁶⁹

Mr Brennan commented that King's Canyon Park and Coburg Park which are under the day-to-day control of the Northern Territory Conservation Commission have boards of management for policy issues, both of which have a majority of Aboriginal members. Mr Brennan believed these arrangements worked well.⁷⁰ These views received support from the Australian Conservation Foundation which argued that there should be 'some formal structure which recognises the rights of Aborigines to be significant role players in the decisions of Park Management.'⁷¹ The Foundation pointed to the policy of the Northern Territory Conservation Commission in providing the opportunity for traditional owners to be 'significant decision-makers' on boards of management.

47. The Committee notes that the Gagudju Association is a member of the Kakadu Interests Groups Advisory Committee which is a body established by ANPWS to 'provide input into' matters relating to the administration of the Park.⁷² This Committee has a rather circumscribed role however, and is not involved in broad policy issues. The Committee believes that, as traditional owners and residents of the Park, Aborigines should be part of the decision-making structure on major policy issues, particularly those which affect their interests. This matter is examined more fully in Chapter Seven in the context of a general discussion of consultative and advisory mechanisms for the management of the region.

Recommendation

The Committee recommends that all the decision making bodies involved with policy development for the Park or with the Park's management should have Aboriginal representatives. (This matter is more fully considered in Chapter 7 on consultation mechanisms)

48. Fourthly, as the report Aborigines and Tourism points out, the Kakadu region is a finite space and the time may come when the steadily increasing visitor numbers reach saturation point, given that tourism will always be required to co-exist with Aboriginal interests. This suggests that there would be advantages in a long-range strategy for tourist development in the Park which would seek to provide an estimate of the maximum visitor numbers which could be permitted before pressure on Aboriginal communities reached unacceptable levels. Such a strategy would need to indicate, in broad terms at least, the nature and extent of the tourist infrastructure which would eventually be permitted, since both issues are interdependent. The result might well provide a valuable reference point for planning purposes and act as a counter to any assumptions that tourist numbers will be allowed to expand indefinitely. This issue is also important in relation to the impacts of tourism on the environment and it is discussed more fully later in this chapter.

Art and archaeological sites

49. The Committee also considered the impact of tourism on rock art sites and the other sites of Aboriginal significance in the region. There has been concern for some time that growth in tourist numbers may result in increasing damage to these sites and this concern was mentioned in a number of submissions to the inquiry. There is no doubt, for example, that in the early seventies serious acts of desecration, including the theft of skeletal material, occurred at a number of sites in Kakadu. Mr R. Ellis of the Aboriginal Sacred Sites Protection Authority commented in relation to in Stage 3 of the Park that:

[t]here is a whole range of rock art sites which have not been properly documented in this area. The museum has done some work. They are the sorts of places that are going to

attract tourism, if there is to be tourist development in that area. Our experience has been, in the past, that art sites are opened up for tourism with little or no preparatory work being done to protect that resource, and it is a very finite resource, from destruction. We think it is very important that if we are going to promote Aboriginal culture as a means of attracting tourists to this part of the Northern Territory we also have to husband that resource in such a way as to ensure that it is ongoing and not exploited to extinction within the first few years of its life.⁷³

According to the Northern Land Council, Aboriginal traditional owners wished to limit visitor numbers in certain areas such as Ubirr and Nourlangie, and to exclude visitors from certain areas. They were concerned about the preservation of art and archaeological sites throughout the region.⁷⁴

50. The Committee's attention was drawn to an interesting piece of research on this topic by Professor F. Gale of the University of Adelaide. A team led by Professor Gale observed tourist behaviour at Ubirr and two other art sites in Stage 1 in 1982 and 1983 during peak tourist seasons. The observations at Ubirr took place over a period of time in which facilities in the form of well-defined barriers, explanatory signs and instructions were progressively improved. The results of the study showed that such facilities greatly lessen the chances of wilful or accidental damage to art sites and that if visitors can be kept well back from the art, increasing tourist numbers will not increase deterioration. This supports the view of Mr D. Gillespie, Assistant Director ANPWS, that because of the good level of management of cultural visitor sites their cultural integrity is now 'more secure than it has been for the last two decades'.⁷⁵ Because overt acts of vandalism are more likely to occur when other people are not present, large numbers of tourists tend to reduce the risk of damage. In Professor Gale's words:

[i]t appears tourists do protect the art from each other if they are educated to do so and clearly guided by paths, fences and boundaries and are instructed by positive and encouraging notices.⁷⁶

51. The conclusion to be drawn from this appears to be that sites ought not to be opened up for tourism unless adequate preparatory work has been done. This may involve inevitable delays. The Northern Territory Government argued in its evidence to the Committee that only a small number of 'the 4000-odd art sites'⁷⁷ are open to the public and that ANPWS appeared to show 'a distinct lack of motivation' to improve this situation.⁷⁸ The Committee sympathises with the view that sites should be accessible to the public but believes it would be counter-productive to do this without adequate preparation. It would seem preferable to follow the policy in the current plan of management that any new art or archaeological sites opened to the public should have 'the requisite facilities and staff to protect those sites.' The Committee notes with approval that ANPWS intends to continue monitoring the effects of tourist visits at sites which are open.⁷⁹

Recommendation

The Committee recommends that:

- (i) archaeological and art sites within the Park should not be opened to the public until adequate facilities and staff have been provided; and
- (ii) ANPWS should continue to monitor the impact of visitors at all art and archaeological sites that are open to the public.

IMPACT ON THE ENVIRONMENT

52. A topic raised in a number of submissions was the impact of tourism on the vegetation and the fauna of the region, particularly in view of the increasing numbers of visitors and the progressive upgrading of tourist facilities. As the CSIRO commented in a submission to the Committee:

[i]t does not need stressing that increasingly large numbers of people, whether tourists or residents engaged in local service, mining or other industries, may put at risk fragile vegetation communities, particularly the rarer ones or those of limited extent or distribution, and the rarer fauna and their habitats.⁸⁰

The environmental effects of tourism, like those of mining, are not always easy to predict with accuracy. There are, however, a number of specific threats which can be identified - in particular the spread of weeds and other damage to vegetation, disturbance to fauna and destruction of habitats, increased incidence of unwanted fires, littering and occasional vandalism, and the destruction of the wilderness quality of the region.

Weeds

53. Several submissions stressed the potential hazard associated with the spread of weeds such as mimosa, water hyacinth, Salvinia molesta and Hyptis. The tropical climate, which allows for rapid growth, together with the extensive wetlands areas, make the region exceptionally vulnerable to such infestations.⁸¹ As the CSIRO commented, 'unless eliminated, weeds could dramatically alter the whole character of the floodplains, in particular, in only a few years.'⁸² Existing weed problems are due in large measure to feral buffalo whose numbers are now decreasing as a result of the eradication program. However, people and vehicles are increasingly being seen as important

agents in weed dispersal, and seeds can be carried to remote areas by the growing numbers of four-wheel drive vehicles.⁸³ As noted in Chapter Three, this is also a possible consequence of mineral exploration or mining operations within the Park.

54. ANPWS conducts a continuing weed control program involving three full time staff, with periodic assistance from others including Aboriginal residents. The Committee notes that under the current plan of management, vehicles or machinery regarded as possible carriers of mimosa should be washed down to remove seeds before entering the Park.⁸⁴ Examples would be buffalo contractor vehicles and construction machinery. These measures appear to be having considerable success. The Director of ANPWS commented with respect to mimosa:

I think mimosa control is one thing which the park service can be very proud of. We recognised the problem fairly early and we instituted measures to try to protect the park against invasions by this weed ... These measures have proved so remarkably effective that the park stands out within the Northern Territory as being outstanding in this respect. We recently had a visit from the heads of divisions of CSIRO and they complimented us on what we had achieved and urged us to continue. It is not easy, because it is a continuing exercise.⁸⁵

The Committee notes the effective work which has been done in relation to weed control and agrees that it must be continued. ANPWS may need additional resources to cope with the problem as tourist members grow and access to the different parts of the Park is improved.

Recommendation

The Committee recommends that ANPWS should continue its program of weed control in all areas of the Park and that if additional resources become necessary for this program they should be provided as a matter of priority.

Damage to vegetation

55. Direct damage to vegetation can also result from the movement of people or vehicles, especially in the absence of established walking tracks and roads. In some areas of heavy and continuous use, particularly on sandy surface soils, plant cover may be destroyed. This in turn can result in run-off erosion. In such cases, as CSIRO suggested in its submission, duplicate facilities such as alternative walking tracks may eventually be required to allow for periods of recovery. In extreme cases the temporary closure of certain areas will be necessary.

Fauna

56. Tourism can affect the local fauna in a number of ways. Since vegetation communities provide habitats and food sources for wildlife, damage to the region's vegetation may have adverse effects on the animal population. Noise arising from tourist activities may also have undesirable consequences. There is some evidence for example that noise from two-stroke motors on tourist boats disturbs birdlife in certain locations.⁸⁶ The submission from CSIRO also mentioned possible damage to aquatic fauna in the small creeks and waterholes in the escarpment complex. Many reptile and frog species of the escarpment contract to the vicinity of these pools during the dry season. The pools are also attractive to tourists however, and CSIRO considers that 'their

regular use by even a small number of people could profoundly alter the status of endemic escarpment animals.⁸⁷ Such threats to the region's fauna will require careful monitoring of rising tourist numbers.

Impact of recreational fishing

57. A major issue in this context is the impact on the region's fish fauna of tourists engaged in recreational fishing. As indicated in paragraph 19 above, recreational fishing is a popular activity in the Park. ANPWS estimates that 37 per cent of private visitors take fishing gear to the Park, and the Amateur Fishermen's Association of the Northern Territory commented that 'perhaps more than 50%' of the recreational fishing in the Top End takes place in the Park.⁸⁸ A variety of species is caught although the most popular is barramundi.

58. The first plan of management permitted recreational fishing throughout the whole Park provided that relevant Northern Territory regulations, including bag limits, were observed. The current plan has introduced new arrangements, the major change being the proposed closure of the upstream parts of six of the major creek systems. The area concerned coincides in part with the section of the Park which has been designated a wilderness zone. ANPWS has adopted this new policy in response to what it sees as growing pressure on fish populations from recreational anglers. Submissions which commented on this topic generally supported the change, the main opposition coming from the Amateur Fishermen's Association of the Northern Territory. The issues involved require some detailed examination.

59. The major river systems in the region are those of the East, South, and West Alligator Rivers, and the Wildman River - all of which flow north through the Park into Van Diemen Gulf, and also the Mary River, part of which forms the south-western border of the Park but which reaches the Gulf west of its

boundary. Each of these river systems is readily accessible through the Arnhem Highway and, compared with other river systems in the Territory, each is subject to a high level of recreational fishing (see Table 2.4). On the basis of the ANPWS estimate that 37 per cent of private visitors bring fishing gear with them, the numbers of recreational fishers in the Park, excluding any who may come as part of an organised tour, would be about 40 500 in 1986 and 61 000 in 1987. These numbers are not evenly spread across the river systems but tend to concentrate on the East and South Alligator river systems, particularly in their lower reaches.

60. There are relatively few data available on the numbers of fish caught by recreational anglers. Estimates vary considerably. A report to the Northern Territory Government in 1985 from a Barramundi Task Force stated that as a 'suppositional estimate' the average annual amateur catch over the preceding five years comprised about 20 per cent of the Northern Territory barramundi catch.⁸⁹ However, another report estimated that 58 per cent of the total catch in the Territory in 1985/86 was made by non-commercial fishers; 43 per cent by Territory residents and 15 per cent by tourists.⁹⁰ Despite the discrepancy between the two sets of figures, it seems clear that the recreational catch is large, and, as Table 2.4 indicates, the popular river systems of the Park are likely to account for a major part of this. The current Park plan of management quotes a partial survey conducted by the Northern Territory Fisheries Division which shows that for the 1978/79 financial year, approximately 45 tonnes of barramundi were taken in the Park by amateur fishers resident in the Darwin area. The survey team concluded that 'the amateur component of the total barramundi yield, at least for this popular area, is highly significant.'⁹¹ The growth in visitor numbers over recent years suggests that quantities of fish caught by recreational anglers may have increased substantially since this survey was conducted.

TABLE 2.4

STATUS OF MAJOR FISHING AREAS IN THE NORTHERN TERRITORY

RIVER (and or system)	1984 COMMERCIAL YIELD (TONNES)	% N.T. TOTAL COMMERCIAL CATCH	RECREATIONAL USE
VICTORIA Incl. Fitzmaurice	26	4	Low
DALY Incl. Reynolds	64	10	High
FINNISS Incl. Darwin, Adelaide	56	9	High
MARY Incl. Wildman	127	20	Very High
ALLIGATORS	100	16	Very High
ARNHEM	64	10	Negligible
ROPER	85	14	Med - Low
MCARTHUR	55	9	Med - Low
OTHER	40	7	Very Low

Note: Source Table 10 from Barramundi Task Force Report of the Northern Territory Department of Ports and Fisheries.

61. While this general situation is clear enough, it is less easy to determine the nature and extent of the impact which recreational fishing is having on fish stocks. Evidence presented to the Committee on this point was somewhat inconclusive. The Northern Territory Government argued that existing regulations concerning matters such as bag limits and other measures were sufficiently effective to preserve fish stocks and that closure of areas within Kakadu National Park was unnecessary.⁹² The

Territory's submission contended that ANPWS had not produced any evidence to contradict this view. The submission suggested that the closure of the designated areas would place greater pressure on other fishing spots within the Park and that rather than close certain areas, a research program should be undertaken in conjunction with Northern Territory fisheries authorities to establish whether controls on recreational fishing are necessary and what form they should take.⁹³ In a similar vein Mr W. A. Thomas of the Conservation Commission of the Northern Territory commented that:

[i]n my discussions with the department [of Ports and Fisheries], or amateur fishermen, I have never had any indication that the particular area of Kakadu National Park which is proposed to be closed is under any particular threat from recreational fishing.⁹⁴

Mr Thomas supported the view that closures would increase pressures on other areas.

62. The Amateur Fishermen's Association of the Northern Territory (AFANT) also opposed the closure. Mr A. Julius, a committee member of the Association, explained that AFANT was well aware of the need to protect fish stocks from over-exploitation and supported the existing regulations on bag limits. Mr Julius argued however that there was a lack of evidence to support the closure of the designated areas and that he saw 'no justification whatsoever' for the decision. The Association argued that so little fishing was done in the area concerned that they could not see 'why ANPWS would bother to close it.' A better policy would have been to declare the area 'a catch and release' zone and require fishers to use lures only.⁹⁵

63. The rationale for the closure which is presented in the current plan of management lays emphasis on the increasing numbers of visitors to the Park and the finding, mentioned above, that more than one third come with intent to fish. The plan

quotes the Fisheries Division 1978-79 survey referred to above and comments that by 1985 the number of amateur fishers in the Park was twenty times that of the period 1978-79. Even allowing for diminishing individual catches, the plan argues, 'it is evident that the barramundi populations in the Park are under growing pressure.'⁹⁶

64. ANPWS has also been influenced by research conducted by the Alligator Rivers Region Research Institute which highlighted the importance of dry season refuges for some of the freshwater species. The submission from ANPWS quoted a statement from the Supervising Scientist for the Alligator Rivers Region that:

[r]ecent improved access to escarpment Dry Season refuges in Kakadu National Park has possibly introduced threats to the continued survival of some fish populations, for example, the threat of amateur overfishing of prespawning refuge populations. Black bream (Hephaestus fuliginosus) is most prone to this as it is extremely easy to catch, withdraws almost totally to refuges in the Dry, spawns in the early Wet Season and moves downstream at this time in closely packed schools. Fishing is allowed in some accessible escarpment refuge areas within the National Park. For unstated reasons fish are not afforded the same protection as other fauna in the Park. This policy should be carefully examined, particularly for Dry Season refuge areas.⁹⁷

ANPWS had also noticed that in some waterways visible shoals of fish are becoming a popular tourist attraction. It was considered important to preserve this opportunity for tourists to see fish in large numbers, and this required the exclusion of fishers in those areas.⁹⁸

65. In the Committee's view the closure proposed by ANPWS is minor. All parties are agreed that the numbers of recreational anglers visiting this area is relatively small. The inconvenience caused is therefore likely to be limited and any resultant

increase in pressure on other fishing areas should be slight. The more important point to emerge from an examination of this issue however, is that there is an obvious lack of relevant information about fish populations and behaviour in the river systems of the region. As CSIRO pointed out in its submission, the rational control of fishing in the region 'requires detailed knowledge of fish stocks, the dynamics of fish populations and the consequences of various types of disturbances on these populations.'⁹⁹ The information relied upon by supporters of the closure and by its critics would seem to fall well short of this. In view of the steadily increasing tourist numbers in the region and the consequent growing pressure on fish stocks, it would seem vital to remedy this deficiency. The Committee believes that studies should be conducted which can be of direct benefit in reaching decisions about recreational fishing policy within the Park and that ANPWS should regard this as a priority research topic. The proposed closure of the areas listed in the current plan of management may assist this work by establishing a region in which fish are largely free from human interference. The proposed closures do not encompass any complete river system and this further step may eventually be desirable, as Professor Ovington intimated in the course of the inquiry, as a means of ascertaining the natural balance of fish numbers and species, and discovering how fish stocks recover after fishing has ceased.¹⁰⁰ Such information could well prove invaluable in the management of recreational fishing throughout the region.

66. Finally, it should be noted that some witnesses questioned whether any fishing should be permitted within the Park. This view is reflected in the statement by the Office of the Supervising Scientist quoted above which notes that 'for unstated reasons fish are not afforded the same protection as other fauna in the Park'. The issue was raised more directly by Dr J. Baker of the World Wildlife Fund Australia who commented in relation to national park polices that:

[o]ur human judgment of aquatic resources is quite different from that of terrestrial resources. For example, we would never think to go out and shoot a kangaroo, or a wallaby, or a koala bear or the natural terrestrial species, yet for some unknown reason we believe it is quite okay to go out and catch indiscriminately the barramundi, the yellow-belly or other naturally occurring aquatic species. It is my personal opinion, and I think one shared by the majority of WWF people, that the aquatic species should be considered much more carefully by all management authorities and a more consistent approach be developed between the two - terrestrial and aquatic.

We would stand very firmly behind our recommendation that the aquatic natural species deserve the same protection as do those most valued natural species of the Australian terrestrial environment.¹⁰¹

The World Wildlife Fund also quotes the International Union for the Conservation of Nature which lists fishing as one of the forms of 'exploitation of natural resources' which should be prohibited in national parks'.¹⁰² These views received support from the Australian Heritage Commission which recommended that ANPWS 'extends the waterways to be closed to recreational fishing, with the ultimate aim of prohibiting fishing in the Park.¹⁰³ Dr J. Mosley, then Director of the Australian Conservation Foundation, noted that '[s]tandards vary around Australia whether fishing is allowed in a national park or not,' but expressed the view that 'from the point of view of the ideal approach fishing does not really belong [in national parks]'.¹⁰⁴ This proposition would presumably apply even more strongly to areas such as Kakadu which have been included on the World Heritage List.

67. The Committee has some sympathy with these views. Logic would seem to require, as Dr. Baker suggests, that aquatic animals within national parks receive the same protection as all other species. Recreational fishing in other words might quite reasonably be seen as a form of hunting, which would disqualify

it as a legitimate activity within Kakadu National Park. The Committee is nevertheless aware of the important role which recreational fishing plays in tourism in the Kakadu region and is not prepared at this time to recommend complete closure of the Park to this activity. There is a pressing need however for more information about the aquatic fauna in the Park so that ANPWS is in a position to describe the situation accurately, identify undesirable trends, and take any necessary remedial action. If the research required to collect this information cannot be carried out without the closure of certain areas, including an entire river system, this measure should be adopted with the minimum of delay.

Recommendation

The Committee recommends that ANPWS should, as a matter of urgency, carry out a study of the fish populations of the Park with a view to determining the impact on them of recreational fishing. If in order to complete the study it is necessary to close areas of the Park to fishing, this should be done.

Fire

68. A further possible consequence of increasing tourism is a greater incidence of unwanted fires. Fire has traditionally been an important management tool for the Aboriginal inhabitants of the region who used it to modify and shape the landscape and to maintain a variety of plant communities.¹⁰⁵ ANPWS continues to make use of fire in Park management, in part to reduce the frequency, extent and intensity of wildfires and also to protect species and habitats particularly sensitive to fire. The general aim of fire management policies is to re-establish as far as possible the traditional Aboriginal patterns of burning.¹⁰⁶ Considerable damage to the environment can result from the lighting of unwanted fires at inappropriate times or places. The risk of such damage is increased by the growth in tourist

numbers. Designated fireplaces are provided but some fires are caused through carelessness or ignorance. According to CSIRO 'there is an obvious need for an education program aimed at both tourists and Northern Territory residents'.¹⁰⁷ The Committee notes that ANPWS provides educational information concerning fires to visitors and residents, and that there are plans to develop this further.¹⁰⁸

Littering and vandalism

69. Littering and occasional instances of vandalism can also be a consequence of tourist pressure. Prior to the creation of the Park, damage of this kind had reached serious levels in the Alligator Rivers region, and a planning committee in 1969 commented that 'the countryside is already defiled with empty cans and stubbies ... Names have been scratched on white gum trees, and shotgun cartridges beside waterholes tell their own story.'¹⁰⁹ It appears to the Committee that this situation is now well under control, due largely to the activities of Park staff. However increasing visitor numbers could see a change for the worse unless there is a continuing campaign to alert people to their responsibilities in the area.

Wilderness quality

70. Some witnesses regretted the impact of tourism on what was termed the 'wilderness' quality of the Park. Mr T. Winter from the Darwin Tourist Promotion Association reported occasional complaints about this from some tourists. The Australian Conservation Foundation also expressed concern on this issue and supported the concept of dividing the Park into zones, including some as wilderness areas.¹¹⁰ The Foundation opposed the concept of providing substantial tourist infrastructure within the Park, and criticised the proposal to provide hotel/motel accommodation in Jabiru. In the Foundation's view, additional accommodation of this kind should be located to the west of the Park boundary.¹¹¹

71. The Committee notes that the current plan of management introduces zone planning to the Park and provides for four categories - intensive management zones, intermediate management zones, minimum management zones, and a wilderness zone. Substantial areas, particularly in the south east of the original Stage 1, have been designated as wilderness. The Committee believes this is a sensible approach which takes account of the varying pattern of visitor usage of the Park area and also allows for a more efficient use of management resources. The effectiveness of these arrangements, and the possible need to alter the boundaries of the different zones, will need to be monitored over time.

Jabiru

72. As indicated earlier the township of Jabiru will begin to play a more significant role in tourism following completion of the crocodile-shaped motel. This development appears to mark the beginning of Jabiru's transition from a mining town with a limited life to a permanent centre for tourism and related activities. In view of this, a consideration of the environmental impact of tourism in the region needs to take account of the emerging role of Jabiru as a tourist centre. The impact of Jabiru, both in terms of its role as an adjunct to the Ranger mine and in terms of tourism, is considered separately in Chapter Four.

Tourism and Mining

73. The following chapter of this report addresses the issue of mineral activity in the Park region and it is worth noting here that a number of witnesses sought to compare the effects of mining and tourism on both the environment of the region and the Aboriginal residents. The burden of several of these comments was that tourism is potentially the greater threat to the environment and to the Aborigines. The implication in some cases appeared to

be that this constituted an argument in favour of increased mining activity in the region. The Northern Territory Chamber of Mines for example referred to certain 'negative and destructive' aspects of tourism which it saw as inevitable such as 'the fishing out of waterholes, creation of new tracks by four-wheel drive vehicles, desecration of Aboriginal Sacred Sites', and a number of other problems. By contrast, the Chamber said, 'mineral exploration and mining is, generally speaking, carried out by highly professional people' and is strictly controlled by legislation. This being the case, the Chamber urged, if the negative impacts of tourism are to be accepted in the Park 'it would be intellectually dishonest to reject mineral exploration and mining in the area.'¹¹²

74. Not all witnesses shared this perception of mining and, as indicated in Chapter Three, the Committee received considerable evidence concerning potential short and long-term dangers associated with mineral operations in the Park. There is in addition the question - also discussed in Chapter Three - of whether the exploitation of mineral resources is incompatible with the concept of a national park, particularly one which is in part a World Heritage area. The important point for present purposes however is that tourism should not, in the Committee's view, be permitted to cause the kind of damage which the Chamber of Mines describes. As one witness commented in relation to this point, 'the degree to which tourists are going to damage the environment depends on the degree to which tourism is controlled and regulated'.¹¹³ Tourism which leads to consequences such as the fishing out of waterholes and the desecration of sacred sites is not being adequately controlled. Aberrations of this kind would not constitute an argument in favour of mining in the Committee's view, but rather, an indication that tourist management arrangements had gone seriously awry.

NATURE AND EXTENT OF TOURIST DEVELOPMENT

75. The present chapter has discussed tourism in the Kakadu region in terms of its role in the Northern Territory economy, its impact on Aboriginal residents, and its effects on the environment. These are the three key issues to consider in deciding how much tourist infrastructure should be permitted in the Park and where it should be located. This topic produced some marked differences of opinion among witnesses.

76. One view was that tourist infrastructure within the Park should be substantially improved with the minimum of delay. The Northern Territory Government for example argued that the strong growth rates in tourism in the Kakadu region demanded improvements in the provision of accommodation, the road system, and in aviation and boating facilities. The Territory's submission claimed that accommodation in the Park is 'lagging behind demand' and that motels were being forced to turn away bookings in peak periods.¹¹⁴ The Northern Territory Tourist Commission claimed that tour operators:

have been hurt as clients have been forced to cancel trips to the NT due to lack of accommodation - and therefore unavailability of tours - in Kakadu.¹¹⁵

The Commission also pointed out that almost half of the tours conducted by commercial operators to Kakadu are for one day only, and suggested that this was partly a result of the lack of accommodation. The Territory's submission criticised ANPWS for causing delays in the commencement of the new motel at Jabiru¹¹⁶ and contended that the 100 rooms planned for this motel will be insufficient to meet the anticipated growth in demand.¹¹⁷ In relation to roads, the submission urged the construction of an 'all-weather road network giving convenient access to the Park's main attractions.'¹¹⁸ It argued that greater emphasis should be given to loop roads and a grid-like system instead of the present

'fish-bone pattern' which requires backtracking.¹¹⁹ The submission also called for a new regional airstrip in the vicinity of Jabiru with 'facilities for Boeing 737 jet and night operation,' as well as greater use of the waterways in the Park by small, shallow-draft passenger cruise vessels.¹²⁰ In the Territory Government's view, Kakadu has now assumed the status of one of Australia's major tourist destinations and the number of visitors will grow steadily whether or not extensive promotion campaigns are undertaken. The worst scenario for the Park, it was argued, 'would be a build up of tourist pressure not matched by suitable planning and developed infrastructure.' This would lead to 'lost economic opportunity, frustrated tourists and an endangered environment.'¹²¹

77. The Commonwealth Department of Sport, Recreation and Tourism also saw a need for improved facilities in the Park. Representatives of the Department considered that the Park should offer a full range of accommodation facilities 'from the basic tent, caravan sites and through basic motel-type accommodation up to five star accommodation.'¹²² In addition to Jabiru, they saw a need for 'satellite developments ... where people can stay a day or a couple of days as they move through the Park.'¹²³ These developments would need to be accompanied by an upgraded road system at a standard which would allow tourists to visit the Park in the wet season.¹²⁴

78. Some witnesses believed that development within the Park should be minimised. As noted earlier, the Australian Conservation Foundation (ACF) opposed the concept of Jabiru as a permanent centre for tourism. The Foundation's view is that a township such as Jabiru is not appropriately located within the Park boundaries and that it should continue to be regarded solely as a mining town which is required only as long as the Ranger mine is in operation.¹²⁵ Dr. Mosley, Director of ACF at the time, likened the location of Jabiru within the Park to 'having a shop in the middle of a golf course or some incompatible activity

stuck in the middle of a golf course.'¹²⁶ The Foundation argued that major tourist accommodation should be kept outside the Park boundaries, although camping facilities¹²⁷ or simple cabin accommodation¹²⁸ would be acceptable inside the Park.

79. Opposition to extensive tourist accommodation within the Park was also expressed by Mr T. Winter from the Darwin Tourist Promotion Association. Mr Winter felt that Jabiru was 'an ideal place' to build a motel, but argued that 'the rest of the tourist infrastructure should be on the outside edge of the Kakadu National Park, not on the inside.'¹²⁹ Urging the retention of the wilderness aspect of the region, Mr. Winter added that '[i]f you build bitumen roads, two-lane highways and an international airport in the Park, you will destroy the last frontier we have in the Top End...'¹³⁰ A general caution against rapid infrastructure development was also given by the Northern Territory Environment Centre. Ms L. Allen, Co-ordinator of the Centre, expressed particular concern at pressure for the upgrading of roads. She agreed that Kakadu has world class attributes which people should be able to appreciate but felt that 'we should not jeopardise these things by letting people walk and drive all over it.'¹³¹

80. ANPWS argued that it is steering a middle course between opposing views such as these. Responding to the claim that development had been too slow, Professor J. D. Ovington argued that Park management policies were now less restrictive than they had been, and allowed, among other things, for expanded hotel accommodation and the upgrading of roads.¹³² ANPWS rejected as 'without foundation' the view that it had been responsible for delays in the construction of the new motel in Jabiru.¹³³ The Service cautioned however against the possibility of accommodation running ahead of demand, arguing that:

[t]ourist accommodation is best developed in a balanced way and at a rate matched to the nature and scale of visitor needs and demands. At Kakadu the expansion of accommodation facilities must also match a level of visitation which can be managed effectively without environmental damage and undue stress on traditional owners.¹³⁴

Similarly, ANPWS pointed to improvements in road, air and water access and claimed that these have kept pace with visitor needs while ensuring protection for the environment and the interests of traditional owners. In relation to calls for a new airport at Jabiru, the current plan of management states that the:

possibility will be fully investigated following receipt of a formal proposal.¹³⁵

81. The conclusions one draws from this debate depend in part on the perspective from which one approaches it. The Northern Territory government is conscious of the importance of tourism in the Territory's economy and is understandably anxious to gain the maximum possible advantage from the attractions which the Kakadu region has to offer. The Territory government claims that it is fully aware of the need to protect environmental and Aboriginal interests, and that to do otherwise would be to destroy the reasons for which tourists come to the region. The Territory contends however that the development of well-planned tourist infrastructure assists in the protection of environmental and Aboriginal interests, while a build-up of tourist pressure (which is seen as inevitable) without adequate facilities will lead to 'frustrated tourists and an endangered environment.'¹³⁶ This argument finds some support in the results of the research by Professor F. Gale into the protection of Aboriginal rock art sites, which was discussed earlier. Professor Gale suggested that the art sites were more effectively protected when facilities such as information signs and fences were provided and when visitor numbers were quite substantial. The presence of other tourists and tourist facilities appeared to act as a controlling

influence on visitor behaviour. A similar argument may be applicable more generally to protection of the Park's natural and cultural resources from the impact of tourism.

82. The perspective of a body such as the Australian Conservation Foundation is quite different. The Foundation regards the question of tourist potential as a secondary consideration and is interested above all in the preservation of the natural and cultural heritage of the Park. This emphasis is reflected in the Foundation's comment that:

[m]otivation for tourism is primarily for purposes other than for the maintenance of Park values. Tourism is a park use not a park purpose. We must first get our philosophies straight...¹³⁷

Tourism as an industry, the Foundation argues, 'must remain as a by-product' of the other essential purposes of the Park.¹³⁸ A somewhat similar approach was evident in the submission from the Environment Centre, Northern Territory, which cautioned against 'exploitation' of the Park by the tourist industry and stated that:

too much emphasis has been placed on provision of tourist infrastructure with insufficient regard given to addressing basic management requirements...¹³⁹

Ms L. Allen of the Environment Centre mentioned two places in the Park - Barramundi Gorge and Nourlangie Rock - where in her view tourism had resulted in 'obvious degradation due to over-use.'¹⁴⁰

83. ANPWS appears to see its own position as attempting to satisfy both conservation and tourist interests. The Service's submission to the inquiry stated that 'national parks generally are not regarded as treasure houses to be kept locked up and unused by people.' While ensuring that natural features are not endangered, a responsible managing authority should, in ANPWS's

view, treat a park as 'a multiple use area' intended to satisfy a range of interests including 'tourism through the provision of recreation facilities.'¹⁴¹ ANPWS believes this approach is reflected in its plans of management for the Park which seek to protect the environment and Aboriginal interests, as well as to develop tourist facilities. Professor J.D. Ovington told the Committee that in his view the ultimate purpose of the protective measures taken within national parks was to provide for 'the enjoyment of people.' He added:

[t]his is where I think there are misunderstandings. I believe that if you have a large park you can do this in different ways. Different people who go to national parks have different interests. Some want a wilderness experience, some want to look at art sites, some want to fish and so on. Within the objectives, you have to try to combine these in some kind of balanced way. A fundamental purpose is to maintain the beauty and integrity of the area for future generations whilst allowing public enjoyment, inspiration and relaxation. That is why there is this very close link between national parks and tourism, because in a sense that is what tourism is based on.¹⁴²

84. While the need to balance the competing interests of different visitors to the Park is of fundamental importance, the Committee believes that this can be achieved only if the facilities required by the different groups are available as needed. There seems to be no doubt that the spectacular increase in visitor numbers is already beginning to subject some areas of the Park, and some facilities such as camping grounds, to near maximum acceptable usage level. Action is clearly necessary to control and ameliorate some of the problems that are beginning to arise. In the longer term this will require the preparation of a detailed tourist strategy, as discussed in the following section. More immediately, there are other mechanisms available to limit the damage and problems being caused by excessive visitor numbers.

85. One obvious way of controlling visitor impact is to introduce the zoning provisions contained in the plan of management and discussed above. This could be associated with the introduction of a series of charges for entry into the Park and for the use of facilities within the Park. Entry fees are payable at national parks and nature reserves elsewhere in Australia and the Committee is aware that ANPWS has announced that a \$10 entry fee for the Park will come into force on 1 January 1989. It is the Committee's view that the introduction of fees at Kakadu is unlikely to reduce the level of visitor numbers and that the revenue ANPWS would receive from the fees could assist in the provision of new facilities and in the improvement and maintenance of existing facilities. The introduction of fees should be accompanied by a requirement for advance booking, at least in the peak season. This would enable limits to be placed on the numbers of people allowed in designated areas and, if necessary, it could be used to impose limits on the number of days visitors could remain at any one site. Such a system could help ensure as many people as possible are able to see the Park without overloading the facilities that are available.

Recommendation

The Committee recommends that, as a matter of urgency, ANPWS introduce a series of charges for entry into Kakadu National Park and for the use of facilities such as camping grounds. The fees levied should be related to the provision, improvement and maintenance of services and facilities in the Park. The introduction of fees should be associated with an advance booking system that can be used to ration access to the most popular areas of the Park in a fair and equitable manner.

86. In addition to fees charged for entry to the Park and the use of facilities, the Director should impose a realistic scale of fees on the permit which it is recommended should be imposed on tour operators. The conditions imposed can be used to

restrict tour operators to specific areas and times, and to place conditions on vehicle type, numbers of people, and other matters. Given that around 25 per cent of the visitors in the Park are members of tour groups, this provides another mechanism which may eventually need to be used to control visitor levels in different areas of the Park.

PLANNING

87. This chapter has described a range of potential dangers which tourism poses for Aboriginal interests and for the Park environment. Excluding the effects of recreational fishing which, for reasons stated earlier, are difficult to assess, these dangers do not as yet seem to have resulted in serious damage and seem unlikely to do so in the immediate future. The numbers of visitors are nevertheless continuing to rise quite rapidly and the popularity of the Park as a tourist destination shows no signs of having reached its peak. In these circumstances there are obvious advantages in forward planning to ensure that the potential threats posed by tourism are kept in check. This is one of the functions of the Park plans of management which set out management prescriptions for successive five year periods. It is worth considering however whether there are any possible improvements to the planning process.

88. One proposition put to the Committee was that there has been insufficient consultation between ANPWS and other bodies interested in tourism in the Park and that ANPWS pays insufficient regard to the views of other bodies. It was also argued that interested organisations should have a greater opportunity on a continuing basis to influence decisions relating to tourism in the Park. One example mentioned earlier is the view expressed by the Northern Land Council that Aboriginal residents in the Park should play a more important role in determining management policies. A further instance is the suggestion by the Northern Territory Government that there should be 'a meaningful

consultative mechanism' between ANPWS and other tourist interests in the Territory.¹⁴³ The Committee agrees that the question of consultation is important, but is aware that Park management policies affect other interests in addition to tourism. In view of this the issue of appropriate consultative mechanisms is considered separately in Chapter seven where the Committee has developed proposals which seek to have a broader reach.

89. Commenting on future trends in tourism in the region the Australian Heritage Commission drew attention to the 'dramatic increase in visitation over recent years' and suggested that 'the numbers are going to continue to escalate exponentially'. The Commission felt that the current plan of management for the Park had not responded adequately to this situation arguing that:

[s]ince the Plan is to cater for the next five years, it is imperative that information be provided on visitor growth projections over those years with emphasis on visitor destinations. Only in this way will it be possible to enable national allocation of tourist facilities and other resources.¹⁴⁴

The Committee notes that ANPWS conducts a Visitor Use Survey and that the current plan of management provides information on visitor numbers from 1982 to 1985.¹⁴⁵ The plan also sets out the general management objectives for the Park which include the provision of 'appropriate recreational opportunities' without impairing natural or cultural values or adversely affecting the interests of Aboriginal residents.¹⁴⁶ As suggested by the Australian Heritage Commission however, the plan does not refer in any specific way to likely visitor numbers over the five-year period or to the probable growth in numbers at particular destinations within the Park. This kind of information would, in the Committee's view, provide a useful basis on which proposed developments could be assessed, and would give a clearer picture of anticipated trends in tourism in the Park.

90. Linked to this is the broader question of whether it may be desirable to produce a long-term plan for tourism within the Park which would describe an optimum pattern of infrastructure and provide an estimate of the maximum carrying capacity of the Park and the major destinations within it. This question of maximum tourist capacity was mentioned by the Environment Centre, Northern Territory, which drew attention to the upgrading of facilities taking place in response to strong tourist interest, and commented that:

[t]o date no assessment of the human carrying capacity of the park has been attempted; nor have any areas had access restricted despite some obvious degradation due to overuse. Instead it would appear that more and more areas of the park are to be opened up for heavy visitor use.¹⁴⁷

As indicated earlier in this chapter, the question of maximum tourist capacity is also relevant to the protection of Aboriginal interests and in this connection the Aboriginal Sacred Sites Authority expressed the view that:

[m]anagement of Kakadu must take careful account of the impacts of tourism both ecologically and socially. Visitation levels must be carefully balanced against impacts upon physical sites and local communities. It is therefore essential that long-term evaluation and management of visitor numbers be undertaken in full consultation with relevant Aboriginal communities.¹⁴⁸

91. The Committee sympathises with these comments and believes there could be advantages in anchoring Park management strategies in some form of long term plan. Such a plan might forecast how tourist numbers are likely to evolve, what kind of infrastructure might be provided, where the major facilities might be located and what might be the maximum carrying capacity for the whole Park and for its most popular centres. A long-term

plan of this kind would provide a context and a rationale for the policies adopted in successive plans of management and give a sense of where the Park is ultimately heading. It would provide an overall framework for policies concerning the protection of the region's natural and cultural heritage and also provide the tourist industry with some reasonably clear ideas of the nature and extent of the tourist development which is likely to be possible over time. The latter aspect should help avoid unrealistic expectations on the part of the tourist industry and reduce the potential for friction between the industry and Park authorities. Any such long-term plan would of course need to be subject to periodic review and revision in light of growing understanding of the impact of tourism. The development of the plan and its subsequent review would also need to be carried out in consultation with all organisations whose interests are likely to be affected. The Committee does not underestimate the difficulties which are likely to be encountered in drawing up such a plan, but it believes the effort to be justified in the interests of clarifying the underlying objectives of Park management policies.

Recommendation

The Committee recommends that ANPWS take steps to co-ordinate a detailed long-range tourist strategy for the Park which, inter alia, covers expected visitor numbers, the growth in visitor numbers at particular destinations within the Park, the maximum visitor carrying capacity of different areas and the optimum pattern of tourist infrastructure. The development of the strategy should allow for full public consideration and the strategy should be an important element in the subsequent development of the Park plan of management.

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11. Letter from Mr Beadman, Department of Aboriginal Affairs, to Chairman dated 25 November 1987
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18. ANPWS 1986 op cit p. 76
19. Evidence p. 2131
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26. ANPWS June 1986, Kakadu National Park Visitor Use Summary Report p. 15
27. ANPWS 1986 op cit p. 69
28. Mr D. Gillespie 1988. Tourism in Kakadu National Park. North Australia Research Unit of the Australian National University p. 7
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39. Evidence p. 2324
40. Tourist Commission Letter, dated 12 November 1987
41. Evidence p. 1800
42. Evidence p. 1799
43. Evidence p. 1784
44. Evidence p. 1615
45. Evidence p. 1594
46. Evidence p. 1619
47. Evidence p. 1592
48. Evidence p. 1021
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CHAPTER THREE

MINERAL RESOURCES

GEOLOGY OF THE PARK REGION

1. The Kakadu National Park region is situated in the eastern part of a major geological structure known as the Pine Creek Geosyncline, which extends from about 80 km east of Oenpelli, south to Bamyili, west to the Fitzmaurice River, and north to Fog Bay. The combination of rock formations in the Pine Creek Geosyncline, particularly in the eastern part, is regarded by geologists as a favourable setting for mineral deposits of economic significance.

2. In the Stage 1 and Stage 2 areas of the Park, the mineralisation is principally located in a series of rocks known as the Cahill Formation which contains the Ranger, Jabiluka and Koongarra uranium deposits. Exploration results in this area have indicated the presence of a range of metals, including gold. The concentrations of uranium in the Cahill Formation are described by geologists as 'unconformity-type' deposits. This is a major form of uranium deposit on a world scale, another example being the very large deposits in Saskatchewan, Canada. In the Stage 3 area of the region, the mineralisation located to date occurs principally in a series of rocks known as the El Sherana Group and includes gold, platinum and minor deposits of uranium.

3. While regarded as highly prospective for minerals, the region presents difficulties for mineral exploration. In many areas the prospective rocks are masked by younger overlying sequences, the most notable of which are the sandstones forming

the Arnhem Land escarpment. These rocks, which are not known to contain ore accumulations, can be up to 300 metres in depth. In addition, erosion of the younger rocks has produced a deep soil cover over much of the region, typically some 40 metres deep. The soil has undergone a process known as lateritisation which hampers recognition of the chemical and other non-geophysical criteria used in mineral exploration. A further obstacle to exploration is posed by the wet season when accumulations of water in many areas hinder vehicle access and impede the operation of drilling equipment.

HISTORY OF MINERAL ACTIVITY IN THE REGION

Background

4. Although exploration and mining in the area between Darwin and Katherine extends back for over 100 years, the Kakadu region to the east received little attention until about 1950. The discovery of uranium at Rum Jungle, south of Darwin, in 1949 led to further exploration in the Kakadu area and in 1953 a uranium deposit was discovered at Coronation Hill in the Gimbat lease.¹ By 1960, thirteen uranium mines, five also carrying gold, had been discovered in the Gimbat and Goodparla leases, particularly in the South Alligator River Valley. This activity was relatively short-lived however, and the mines progressively closed during the early 1960s in the face of a declining uranium market and low gold prices.²

5. Following improvements in the mineral market in the late 1960s, many exploration tenements were taken up in the Kakadu region, particularly in the future Stage 1 and Stage 2 areas. Technological advances, including the use of airborne surveys, allowed difficult terrain to be prospected more easily and, with the assistance of such techniques, a number of significant uranium deposits were identified. These included the large

deposits at Ranger, Nabarlek, Koongarra and Jabiluka, which had all been discovered by 1971.³

6. Shortly afterwards, a number of significant government decisions led to the scaling down of exploration activity. In 1973 the Commonwealth Government appointed Mr Justice Woodward to inquire into the establishment of land rights for Aborigines in the Northern Territory. This resulted in restrictions on mineral activity in the region and by 1974, following the second report of the Woodward Commission, the granting of new exploration or mining tenements had effectively ceased pending the outcome of expected Aboriginal land claims.

7. The Ranger Uranium Environmental Inquiry, established in the following year, had major implications for mineral activity. The second report of the Inquiry, tabled in Parliament in May 1977, recommended the staged development of a national park in the region, the exclusion from the Park of project areas at Ranger and Jabiluka if mining were to proceed there,⁴ and that most of the land in Stage 1 of the Park, together with the Ranger area, become Aboriginal land.⁵ The Report recommended against any early resumption of mineral activity in the proposed Park, stating that:

there should be no activities associated with mining, including exploration, within the park for the time being. In the future it should not be permitted except after very careful consideration. If it is found necessary it should be carefully controlled in accordance with a formally developed plan of management as provided for in the National Parks and Wildlife Conservation Act.⁶

8. The Commonwealth Government subsequently gave approval for uranium mining at Ranger and production commenced in 1981. Project areas at Jabiluka and Koongarra were excluded from the Park although approvals to mine were not granted. In line with the Ranger Inquiry's recommendation, further mineral activity

within the Park was discouraged and no new exploration or mining titles were granted.⁷

9. Prior to 1980, exploration in the Kakadu National Park region can therefore be seen as taking place in two phases: an early period in the 1950s and early 1960s when deposits of uranium were located and mined in the Gimbat and Goodparla leases; and a period from about 1969 to 1974 when an improved market for minerals encouraged further exploration efforts, principally in the future Stage 1 and Stage 2 areas. This second phase concluded with the developments outlined above. Exploration activity recommenced in the early 1980s when a surge in gold prices stimulated renewed interest in the Gimbat area on mineral leases granted prior to 1974. In 1987 a Conservation Zone was created within Stage 3 of the Park in which a five year mineral exploration program is to be permitted. (This is discussed in more detail later in this chapter.)

Legislative provisions affecting mineral activity

10. Current provisions concerning mineral activity in the Kakadu region need to be seen in the context of a series of legislative and administrative developments which have taken place over the past decade. In June 1978 the Northern Territory (Self-Government) Act received royal assent. The Act vested mineral rights in the Territory with the Northern Territory Government. In the same year however, pursuant to Section 70 of this Act, the Commonwealth acquired from the Northern Territory the area of land corresponding to the planned three stages of the Kakadu National Park, and the mineral rights for this area consequently reverted to the Commonwealth. (The position with respect to 'prescribed substances' in the Territory - notably uranium - is slightly different. From the early 1950s, rights over these substances were exercised independently by the Commonwealth through the Atomic Energy Act 1953. This situation remains unaffected by the changes discussed here.)

11. On 5 April 1979, Stage 1 of Kakadu National Park was proclaimed following the settlement of a lease-back arrangement with Aboriginal traditional owners to whom the land had been granted under the Aboriginal Land Rights (Northern Territory) Act 1976. Stage 1 did not include mining project areas set aside at Ranger and Koongarra. The National Parks and Wildlife Conservation Act 1975, under which the Park was proclaimed, provided that no operations for the recovery of minerals could be carried out within the Park except with the approval of the Governor-General and in accordance with conditions to be laid down in the Park plan of management. In 1981, Stage 1 was accepted for inscription on the World Heritage List and the Commonwealth Government accepted the obligations imposed by the UNESCO World Heritage Convention to ensure the protection and conservation of the area. This obligation is widely seen as precluding the possibility of mining.

12. In February 1984, Kakadu National Park Stage 2 was proclaimed, omitting a mining project area at Jabiluka. Stage 2 henceforth became subject to the provisions of the National Parks and Wildlife Conservation Act relating to exploration and mining. Prior to proclamation, title to approximately seven per cent of the land, including the Jabiluka project area, was granted to Aboriginal traditional owners under the Aboriginal Land Rights (Northern Territory) Act. In 1986 the Commonwealth Government decided to seek the inclusion of Stage 2 on the World Heritage List. This decision was declared invalid by the Federal Court, however, following an application by Peko-Wallsend Pty Ltd on the grounds of a denial of natural justice, which required that they be given a chance to be heard before such a decision was made.⁸ However, the Commonwealth appealed to the full court of the Federal Court and the appeal was upheld on the grounds that the decision of the executive government to seek listing of Stage 2 on the World Heritage List could not be reviewed by a court, nor did it attract the obligations of natural justice.⁹

13. Stage 3 of the Park, which comprises about 66 per cent of the Gimbat and Goodparla leases, was proclaimed in June 1987. The remaining portion of the leases was declared a Conservation Zone under the National Parks and Wildlife Conservation Act. Within the Zone a mineral exploration program is to be permitted for a period of five years. The policy announced by the Commonwealth Government prior to proclamation is that mining will be allowed to proceed in the Zone only where projects prove to be of major economic significance, not merely where they are economically viable. Following the five year exploration period, any areas required for mining projects will be set aside for that purpose and the remainder incorporated into the Park. Special arrangements (which are discussed later in this chapter) have been introduced to control the environmental effects of mineral activities in the Zone. In addition, the Aboriginal Land Rights (Northern Territory) Act has been amended to make provision for Aboriginal land claims over the areas incorporated into the Park and the Conservation Zone.

14. While the developments outlined above placed serious obstacles in the way of mineral activities within the Park itself, they did not exclude that possibility completely. This situation changed in 1987 when amendments to the National Parks and Wildlife Conservation Act expressly prohibited exploration for minerals or mining on any lands within Kakadu National Park. The prohibition extends to pre-existing mineral interests, and the Commonwealth is not liable to pay compensation as a result of the amendment.

15. Recent legislative changes affecting conditions applying to mineral activities on Aboriginal land should also be noted. Previously the Aboriginal Land Rights (Northern Territory) Act required that the consent of traditional owners be obtained before either exploration or mining could take place on Aboriginal land. Under the new provisions, consent of Aboriginal

owners is required before exploration can commence, but is not required for the grant of a mining interest. In practice once an exploration licence is granted it cannot be withdrawn to prevent mining. However, an application for an exploration licence must set out a comprehensive proposal for exploration, including the likely effects of the proposed exploration and the methods for the recovery of any minerals found as a result of exploration. Once exploration has begun, the relevant Land Council can notify the Minister that exploration is not being conducted in accordance with the proposed program and the Minister has power to cancel the licence under certain conditions. This change may affect the conduct of mineral operations in the Conservation Zone if parts of the area become Aboriginal land. This matter is discussed in further detail later in this chapter.

16. In essence therefore, the present position is as follows: the major part of the Gimbat and Goodparla leases has been added to the Park, with the remainder of this area being declared a Conservation Zone. Both exploration and mining are now prohibited over the whole Park. A five year exploration program is to be permitted over the remaining portion of Gimbat and Goodparla (the Conservation Zone area), with the possibility that mining will be allowed to proceed in certain cases. Almost all of Stage 1 is Aboriginal land, as well as the project areas at Ranger and Koongarra which were excluded from the Park. A small portion of Stage 2 (about seven per cent) is Aboriginal land as well as the excluded Jabiluka project area. Stage 3 and the Conservation Zone are now the subject of Aboriginal land claims.

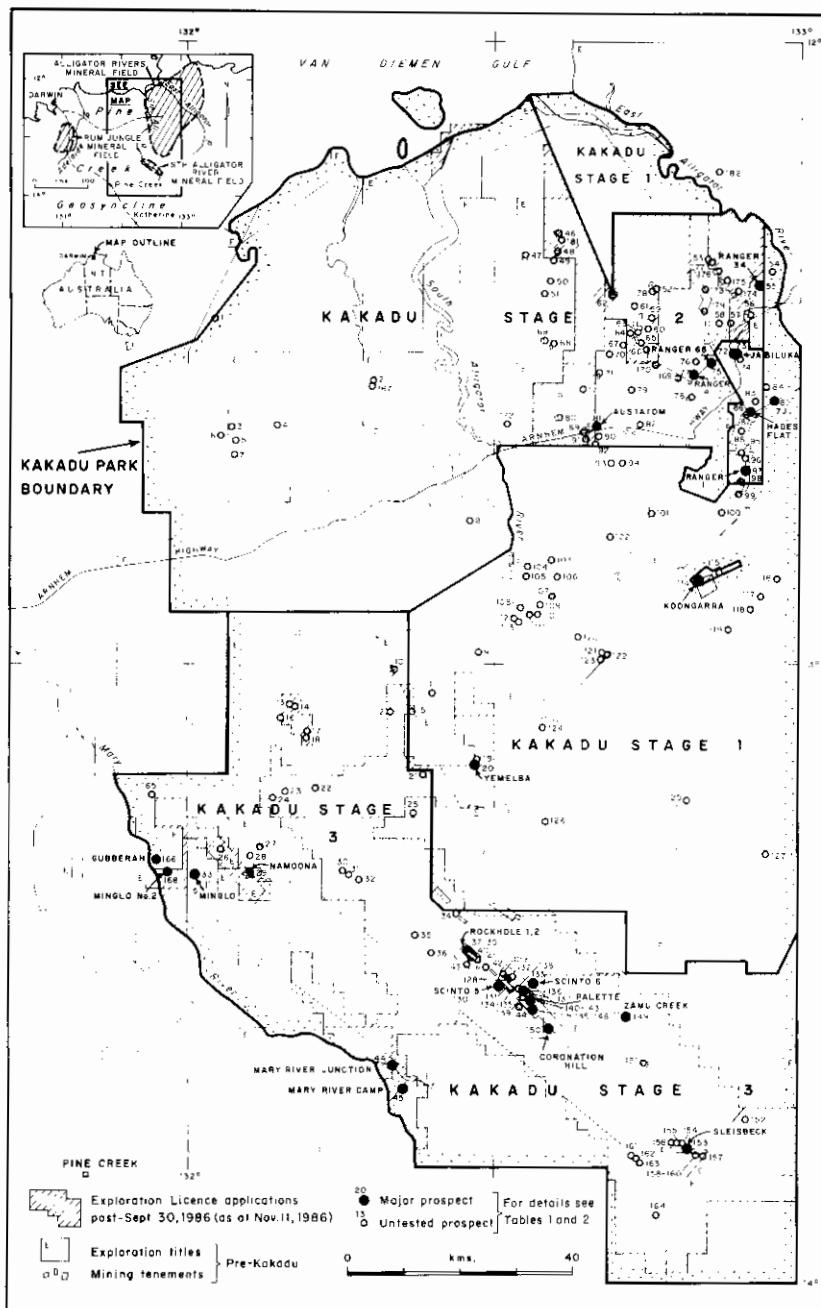
ASSESSMENT OF THE REGION'S MINERAL POTENTIAL

17. Mineral exploration of the Kakadu region has been relatively limited. The total area is large - one third the size of Tasmania¹⁰ - and there are difficulties of access in many places.¹¹ Apart from the early uranium discoveries in the Gimbat and Goodparla areas, surface exploration over much of the region

did not commence until about 1969 and, as indicated above, this fell away rapidly after 1974. In addition, much of the exploration effort was concentrated on uranium, with little attention being paid to other metals. Exploration for gold, in particular, was not a serious interest until the early 1980s when world prices rose sharply, and at this time (prior to the declaration of the Conservation Zone) only small areas in the proposed Stage 3 remained accessible to mineral explorers. According to information provided by the Northern Territory Department of Mines and Energy, some 182 mineral prospects had been located in the region by the time intensive exploration was curtailed in the early 1970s. These prospects are shown on Figure 3.1. Thirty four of these prospects were considered to be of major importance, including those where some mining had already taken place. About a half of these would require further testing if their status were to be determined accurately. The remaining 148 prospects are virtually untested.

18. In addition to the fragmentary nature of these data, there are other factors which need to be borne in mind in assessing the mineral potential of the region. One major variable is fluctuation in mineral prices. This can have quite dramatic effects on the economic viability of mining operations. Other variables include changes in mining technology, the extent of the infrastructure already in place in the area of the deposit, and the nature of the legislative and regulatory conditions applying at the time exploration and mining occurs. Factors such as these have an important bearing on the ease with which deposits can be identified and recovered, and hence on the ultimate value of a mineral resource. The information provided to the Committee on the mineral potential of the Kakadu National Park region is summarised below.

Figure 3.1



Mineral Prospects, Exploration and Mining Titles in Kakadu National Park: Courtesy Australian Mining Industry Council

Uranium

19. Several witnesses expressed the view that the Kakadu region contains uranium deposits on a par with the world's largest known deposit in the Athabasca Basin in Saskatchewan, Canada. The then Department of Resources and Energy noted that:

[t]he region is probably the world's greatest uranium province. Although by comparison with other major uranium provinces little exploration has been carried out, several world class and a number of smaller uranium deposits have been found.¹²

20. As at July 1986 the total 'proved and probable' resources of uranium in the Park region, including Nabarlek, amounted to 355 426 tonnes of uranium oxide (U₃O₈). Total production from Ranger to July 1986 was 14 886 tonnes and production from Narbalek to the same date was 8 325 tonnes.¹³ The size of each resource, as published by the companies concerned, is shown in Table 3.1.

21. Other deposits and prospects which have been identified in the region include: Ranger 68, five kilometres west of Jabiluka 1, at which the approximate contained uranium so far defined is some 5500 tonnes of U₃O₈ and where substantial further ore may exist;¹⁴ Hades Flat, ten kilometres north of Ranger 1 which is estimated to contain at least 700 tonnes of U₃O₈; and Austatom, 28 kilometres west of Ranger 1 which, according to information provided by the Northern Territory Department of Mines and Energy, contains a deposit of 10 000 tonnes of U₃O₈.

22. The Northern Territory Department of Mines and Energy provided the Committee with estimated values of these deposits. Including Narbalek the estimated, total in-ground value of these uranium deposits, expressed in June 1985 prices, is almost \$34 billion of which Ranger and Jabiluka account for 88 per cent.¹⁵

**Table 3.1: Published proved and probable
uranium resources (U₃O₈),
Major Deposits, Alligator Rivers uranium field,
as at 1 July 1986**

	Grade %	Tonnes	Reference and year published
RANGER 1			
No 1 Orebody	0.328	31 652 proved)	Energy Resources of Australia Ltd (1986)
	0.147	329 probable)	
Stockpiled	0.308	6 834)	
No 3 Orebody	0.207	72 838 probable)	
JABILUKA 1	0.25	3 400	Pancontinental Mining Ltd (1979)
JABILUKA 2	0.39	204 000	
KOONGARRA			
No 1 Orebody	0.269	13 300	Noranda Australia Ltd (1979)
No 2 Orebody	-	2 300	
NABARLEK	1.84	773(a) (in ore stockpile)	

Total proved and probable 335 436 tonnes U₃O₈

Grade per cent is the percentage of uranium oxide (U₃O₈) in the ore.

(a) Final EIS (January 1979) stated the in-situ resource as 9098 t U₃O₈, from which production to 1 July 1986 (8325 t) has been deducted.

Source: Australia's Uranium Resources, BMR, 1987

23. An alternative indication of the size of the reserves may be gained by national and international comparisons. As shown in Table 3.1, the total proved and probable resources of the Alligator Rivers field, excluding Narbalek, is 334 653 tonnes of U₃O₈. This represents 41 per cent of Australia's proved and probable uranium deposits as at 1 January 1986. The size of these deposits in international terms can be gauged by noting that Australia's total reserves represent 29 per cent of the Western world's low cost, reasonably assured resources of uranium. 'Western world' in this context is equated with WOCA - World Outside Centrally-Planned-Economies Areas. Reasonably assured resources can be defined as uranium occurring in deposits such that it can be recovered within given production cost ranges with current mining and processing technology.

24. Several witnesses expressed the view that further exploration in the region would reveal a lot more uranium. According to Mr A. Hosking of the Northern Territory Department of Mines and Energy, '[i]t is entirely feasible to state that at least twice as much again remains undiscovered'.¹⁶ The Commonwealth Department of Resources and Energy commented that:

[t]he potential for discovering additional uranium deposits in the region is very high ... Most of the known deposits occur in a particular stratigraphic formation, much of which, however, is covered by younger sandstone and superficial deposits; consequently, it is estimated that less than 20 per cent of the unit has been effectively explored and only a fraction of the uranium present in the region found.¹⁷

25. Apart from Narbalek, the only producing uranium mine in the region is Ranger. The current level of production at Ranger is approximately 3000 tonnes of uranium oxide per annum and there is the potential to increase this. To place this production level in context, Ranger Uranium Mines Pty Ltd commented that the current annual production of uranium oxide from Ranger provides fuel for power generation at a rate of 30 000 megawatts of electricity continuously for a year, which is about one and a half times Australia's current annual electrical power consumption.¹⁸ On current estimates of reserves, Ranger could continue to supply uranium at this rate until well into the twenty first century.¹⁹ The economic impact of Ranger on the Kakadu region, on the Northern Territory generally, and on the Australian economy as a whole is discussed later in this chapter.

Gold

26. Small amounts of gold were extracted from the uranium mines which were worked in the Gimbat lease in the 1950s and early 1960s. Numerous gold workings also existed in the Goodparla area much earlier in the 1920s and 1930s.²⁰ The substantial increase in gold prices in the early 1980s has seen renewed exploration in this area, principally by the Coronation Hill Joint Venture, comprising BHP Minerals Ltd, Noranda Australia Ltd, and the Electrolytic Zinc Co of Australia Ltd. Exploration drilling on pre-existing leases in the South Alligator River Valley has produced encouraging results including a significant deposit at Coronation Hill. In March 1988 BHP Gold advised the Committee that at the present stage of exploration an in situ resource of approximately 650 000 ounces (20217 kg) of gold was indicated at Coronation Hill, consisting of drill proven plus possible resources.²¹ At March 1988 prices this would have a value of about \$394 million. Mining could commence in 1988 if results continue to be favourable.²² In the context of current price levels, much of the Conservation Zone is regarded as prospective for gold. Contained gold at the El Sherana West site might equal or exceed that at Coronation and according to BHP there is a 'very high probability' that yet another deposit of at least equal size could be discovered in the Conservation Zone.²³

BHP estimates that the total value of the gold/platinum/palladium deposits in the Conservation one is \$1.5 billion at March 1988 prices.

27. Another significant gold discovery occurred at Jabiluka 2 in the course of exploration drilling for uranium. Pancontinental Mining Ltd advised that the total contained gold in the deposit is 12 000 kilograms (385 809 ounces). At current gold price levels of \$23 per gram this would have an in-ground value of \$276 million. The location of the deposit within the orebody would prevent it from being mined separately from the uranium. Similarly, the Koongarra Number One orebody contains more than 100 000 ounces (3110 kg) of gold which at March 1988 values would be worth over \$60 million.²⁴

28. While little is known of the extent and nature of the gold mineralisation in the Kakadu region, a number of submissions saw a strong likelihood of further significant deposits. According to the then Department of Resources and Energy:

[e]xploration specifically for gold in this part of the Northern Territory was deterred until the 1980s by the low world price. The attitude has changed as the price of gold has risen, but exploration has been prevented by the effective locking up of the region. The incidental discovery of gold at Jabiluka 2, and the occurrence of gold in some of the former uranium mines, make areas in the Kakadu region with particular geological characteristics highly prospective for gold with or without accompanying uranium.²⁵

Platinum and Palladium

29. Platinum and palladium were discovered in association with gold at Coronation Hill. In March 1988, the Committee was informed that at the current stage of exploration 40 000 ounces (1244 kg) of platinum and 100 000 ounces (3110 kg) of palladium were indicated, consisting of drill proved plus possible resources.²⁶ At current prices these would have a value of over \$28 million and over \$16 million respectively. The Joint Venture is currently investigating the most efficient method of extraction.

30. Platinum group metals (platinum, palladium, osmium, iridium, rhodium and ruthenium) are principally used as catalysts in the automotive, chemical and petroleum industries, and as corrosion-resistant materials in the chemical, electrical, glass and dental-medical industries. They are also regarded as important strategic minerals. Platinum and palladium are the two most widely used metals in the group. World production emanates almost entirely from South Africa and the USSR, with South Africa supplying about 80 per cent of the platinum. High prices and limited sources of supply have generated interest in exploration for platinum group metals within Australia. At the present time the Coronation Hill deposit is regarded as one of the most promising, and is seen as evidence of further deposits in the region.²⁷ According to information provided by BHP all the areas in the South Alligator Valley which are prospective for gold are also likely to contain associated platinum and palladium, with the contained gold, platinum and palladium at El Sherana West perhaps equalling or exceeding Coronation Hill. There is a high probability that another resource at least equal to these two also exists in the Conservation Zone.²⁸

Other Metals

31. Exploration in the Kakadu region has revealed deposits of other metals such as copper, iron, tin, nickel, lead, zinc and silver. Little is known of the extent of the deposits although they appear to be less significant than the minerals discussed above, particularly in the context of current prices. Commenting on copper, lead and zinc, the then Department of Resources and Energy stated that:

[although base metals (copper, lead and zinc) occur in most of the uranium ore mined in the South Alligator Valley and in some of the ore discovered in Kakadu National Park, base metal deposits are rare. On present knowledge the region is considered to have only moderate potential for the discovery of economically viable base metal deposits, particularly at current low price levels.²⁹

BHP representatives who appeared before the Committee were somewhat more optimistic and considered that there is potential for significant lead zinc deposits in the Goodparla area. They suggested that previous exploration had not always used modern techniques which have proved to be successful recently in similar environments in Australia.³⁰ The NT Department of Mines and Energy also saw potential for zinc mining in this area.³¹ BHP Gold Mines Limited informed the Committee that some significant silver assays have been recorded at El Sherana in the Conservation Zone and that it is possible that silver could become a byproduct from some of the gold/platinum/palladium deposits in the Zone.³²

Diamonds

32. Evidence of diamond deposits in the Kakadu region is as yet rather slim. BHP representatives expressed the view that the whole of Arnhem Land is an area of regional uplift, geologically comparable with other major diamond-producing areas in the world. They reported the recent discovery of a diamond in the Katherine River which drains part of the Stage 3/Conservation Zone area,³³ and said that Kimberlitic indicator minerals have also been found in the vicinity. Stockdale Prospecting Ltd also told the Committee that they saw potential for diamonds in the region.³⁴

ECONOMIC IMPACT OF MINERAL ACTIVITY

33. Mining activity in the Kakadu region has an impact on the local economy, the economy of the Northern Territory, and on Australia as a whole. A number of submissions provided information on these issues.

Ranger

34. Much of the evidence relating to economic impact concerned the operation at Ranger. Information from Ranger³⁵ indicated that between commencement of production in 1981 and the end of June 1987, Ranger had:

recorded sales of	\$ 1 344 000 000
made pre-tax profits of	\$ 588 000 000
paid income tax of	\$ 277 000 000
created payment to Aboriginal interests of	\$ 65 000 000
made royalty payments to the Commonwealth Government of	\$ 19 000 000

35. The Department of Primary Industries and Energy provided the following information on recent financial year expenditures and tax payments from the operation of the Ranger mine.

- . Wages and salaries paid in 1986-87 - about \$8.4 million. (Average weekly earnings at Ranger were \$595, against NT \$506 and Australia \$465.)

- . Purchases of goods and services in 1986-87 - \$43.3 million, spent as follows:
 - \$4.0 million in Jabiru
 - \$11.8 million in Darwin,
 - \$0.3 million elsewhere in the NT,
 - \$27.2 million in rest of Australia and overseas.

- . Taxes and government charges paid in 1986-87 - \$63.7 million, comprising
 - Local Government rates at Jabiru - \$0.6 million,
 - NT payroll tax and royalties - \$4.2 million,
 - Commonwealth company tax, withholding tax, customs duty, and employee income tax - \$58.9 million.³⁶

The mine employs about 500 people, comprising some 400 Ranger employees and 100 on-site contractors. The Office of the Supervising Scientist, which is responsible for environmental standards at Ranger, has about 83 staff, 53 of whom are based in the region. Indirect employment has been generated in a number of other areas.

36. According to the Northern Territory Government, Ranger plays an important part in the Territory's economy. Mr A. Morris of the Department of the Chief Minister commented that:

[m]ining is an extremely important activity in this part of Australia. In 1984-85 mining contributed nearly \$900m to the Northern Territory. It is our principal economic

activity. Over \$400m of this, that is, nearly half, came from Ranger and Nabarlek.³⁷

37. Submissions also drew attention to the upgrading of infrastructure in the region which had resulted from the establishment of the mine. This included the construction of the town of Jabiru, with a current population of about 1500, the sealing of the road from Darwin to Jabiru, and the construction of the Ranger airstrip. These developments, it was argued, had also assisted the growth of the tourist industry in the region, and the mine itself had become a significant tourist attraction with over 22 300 visitors in the calendar year to the end of October 1987.

38. In considering the economic impact of Ranger, the Committee had the benefit of a useful report prepared by Dr C. O'Faircheallaigh of the Australian National University's North Australia Research Unit which examines the impact of the Ranger uranium mine on the local, Northern Territory, and Australian economies. The report covers the period from 1982 to 1985.

39. In relation to government revenues Dr O'Faircheallaigh found that:

[t]he Ranger project will have a major impact on Commonwealth revenues from 1984/85, the first year in which the parent company, Energy Resources of Australia (ERA), incurred full tax liability. ERA's tax liability in 1984/85 was approximately \$54 million, and during the next decade it is estimated that ERA, which is only one of 80,000 companies paying tax in Australia, will account for 1 per cent of all company tax payments. On recent trends, it will probably account for between 10 and 20 per cent of income tax paid by the mining sector, and its payments will be considerably more stable than those of other major mining companies.

Since its inception, Ranger has had a major impact on NT government mineral royalty receipts, accounting for 46 per cent of all royalties and grants-in-lieu of royalties during 1982-84.³⁸

40. The report also comments on Ranger's net contribution to NT and Commonwealth revenues - that is, revenues from Ranger minus expenditures attributable to the project. Expenditures attributable to the Commonwealth include, for example, its funding of infrastructure at Jabiru (directly and via grants to the Northern Territory Government) and its funding of the Office of the Supervising Scientist.³⁹ The positions of the two governments appear to differ considerably with respect to Ranger's net contribution to revenues:

[t]he Commonwealth will recover its total expenditures to date on Ranger/Jabiru during ERA's first year of full tax liability, and thereafter will receive a very substantial net contribution from Ranger (probably \$50 million plus per annum). In contrast, the NT government's expenditures on provision of services in Jabiru and on regulation of uranium mining will absorb nearly all of the additional revenue generated directly and indirectly by Ranger.⁴⁰

41. The report provides an analysis of Ranger's impact on Australia's balance of payments, which was an issue raised in a number of submissions to the Committee. It examines net foreign exchange inflows associated with the project (i.e. export earnings less outflows of foreign exchange to repay loans, pay dividends to foreign shareholders, purchase imports, etc.) and finds that:

[n]et foreign exchange inflow averaged \$136.5 million during 1982/83-1984/85, and will increase substantially as overseas loans are repaid and foreign interest payments consequently decline. In 1982/83 and 1983/84, Ranger's net foreign exchange inflow amounted to 2.3 per cent and 1.9 per cent respectively of Australia's current account deficit.⁴¹

42. In relation to employment generation the report concluded that:

[t]he Ranger project is highly capital intensive and consequently provides little direct employment (about 400 jobs) in relation to the investment involved. Less than 2 people were employed at Ranger in 1982-83 per million dollars of value added, compared to 10 in Australian mining as a whole and 34 in Australian manufacturing.⁴²

On the other hand, the report contends that the capital used to develop Ranger would not otherwise be available for investment in more labour-intensive uses, and that over 60 per cent of the jobs fall in the skill categories in which unemployment nationally and in the Northern Territory is concentrated. Total indirect employment is put at 485, in addition to some 160 people employed in government departments and in agencies providing services in Jabiru or monitoring the impact of uranium mining in the region.

43. Certain economic side-effects of Ranger are also noted. These include training programs which help to raise skill levels in the general workforce, development of infrastructure which assists the tourist and related industries, and environmental programs which generate scientific knowledge with possible applications elsewhere.

44. These findings are useful in placing the economic impact of Ranger in context. They confirm the Committee's own conclusion that, like mining operations generally, Ranger has not created large employment opportunities in relation to the capital investment involved and that the indirect employment effects are fairly modest in absolute terms. However it should be noted that in the context of the Northern Territory the employment opportunities resulting from the project are significant. On the other hand, the analysis indicates that while the net revenue

result for the Northern Territory Government seems less advantageous than might have been expected, the position in relation to net Commonwealth revenues and net foreign exchange inflows is quite favourable.

Impact of further mining

45. The Committee also received evidence on some economic aspects of the proposed operations at Jabiluka and Koongarra, the project currently under consideration for the recovery of gold and platinum group metals at Coronation Hill, and possible further mining in the Conservation Zone.

Jabiluka and Koongarra

46. As indicated earlier the Jabiluka deposit contains both uranium and gold. The uranium resource is almost twice as large as that at Ranger and is a major deposit of high grade ore. The gold grading is 10.76g/t, which is superior to most operating gold mines in Australia.⁴³ Pancontinental Mining Ltd, which holds a 65 per cent interest in the Joint Venture seeking to develop the Jabiluka Project, told the Committee that the gross value of the resource is 'in excess of \$A20,000 million at the uranium oxide floor price of \$US31 per pound, a gold price of \$US 325 per troy ounce and a \$A/\$US exchange rate of 0.70'.⁴⁴ The capital cost of developing the project was estimated in 1983 to be \$600 million. Authorisations were given in 1982 to the Joint Venturers to enter the market place as a prospective supplier of uranium oxide and, during the period they were in force, commitments from end users covering 50 per cent of the planned annual production had been achieved 'by the securing of a signed contract, a detailed memorandum of understanding and a number of letters of interest'. The authorisations were withdrawn in 1983, following the change of government and the signed contract was not approved by the Government.

47. The following information on the possible economic implications of the Koongarra project was provided to the Committee by Denison Australia Pty Limited in March 1988.⁴⁵ It is based on the need of Denison Mines Limited to increase its current production rate in order to meet existing long term contracts and it assumes commencement of production from Koongarra One on 1 July 1991. If the decisions necessary to allow this production to take place are not made, the forward sales are to be sourced from Denison mines in Canada.

48. Construction and development costs are estimated to total \$185.9 million, with 78 per cent of the development expenditure being incurred in Australia. The construction period would require a workforce of 580 people while operations would require 130 workers. The non discounted ten years total export revenue is estimated at \$1.76 billion, with the total cost of sales amounting to \$420 million. Other fixed costs amount to 6.8 per cent of gross revenue. Payment to Aboriginal interests would amount to \$256 million, with \$170 million going to the Kunjeidmi Association, \$44 million to the Aboriginal Benefit Trust Fund and the remainder to the Northern Land Council. Total government revenue from sources directly connected to the project is estimated at \$175 million, including Northern Territory Royalties and the Custom Export Duty.

49. The Committee does not make any recommendations as to whether permission should be given for the Jabiluka and Koongarra mines to go into production. A wide range of matters would need to be considered in making such recommendations, including the state of the world market for uranium. However, the Committee believes that any decision made by the Government to allow mining should, as a necessary but not sufficient condition, require the companies involved to meet stringent guidelines. These guidelines, which should apply to any mining project, should cover environmental safeguards; rehabilitation; consultations with ANPWS regarding impact on the surrounding Park and the

planning of necessary infrastructure; and consultation and agreements with traditional land owners regarding employment opportunities, royalties and management role. The extent to which these preconditions are already being met is discussed in later sections of this chapter. At this point it is intended to do no more than note that the Federal Government approved the Environmental Impact Statement prepared for the Koongarra project in February 1981, and that the Environmental Impact Statement prepared for the Jabiluka project was approved in 1982.

Coronation Hill

50. The value of the Coronation Hill gold/platinum/palladium deposit is estimated at \$500 million. According to information provided by BHP, Coronation Hill is planned to have an initial annual production of 50 000 ounces gold, 1 600 ounces platinum and 7 000 ounces palladium extracted from an open cut mine. With the introduction and expansion of underground mining operations production is planned to rise to 100 000 ounces gold, 35 00 ounces platinum and 15 000 ounces of palladium.⁴⁶ This higher annual production level would generate export earnings of around \$65 million at current prices and 'should stimulate an additional \$46 million in output elsewhere in the economy'.⁴⁷ The development phase of Coronation Hill is expected to involve a workforce of 200 and the operational phase around 150 permanent workers, rising with the projected mine expansion to 200-250. It is stated that these would generate another 175 indirect jobs.⁴⁸ The annual wage payment in the initial phase would be around \$5 million, then rising to possibly \$9 million in 1988 values.⁴⁹

Conservation Zone

51. In view of its high prospectivity, the Conservation Zone is likely to attract keen interest from mineral explorers over the five year period set aside for exploration. Gold and platinum group metals will probably be major targets in current market

circumstances. At this stage it is difficult to predict whether further mining operations will result but BHP believe that it is quite likely that in situ mineral resources with a value of \$1.5 billion at today's prices will be discovered. They informed that Committee that:

[b]ecause 45 mineral prospects are presently known and awaiting exploration in the area it is probable further commercial deposits could be discovered if rational and responsible mineral exploration is allowed to proceed. Capital investments of around \$150 million and direct employment of up to 500 people could reasonably be expected.⁵⁰

This would involve an annual wages bill of around \$20 million in 1988 dollars. The figures quoted include Coronation Hill itself and are based on a postulated three gold/platinum/palladium deposits, two of which could be in full production at the same time.

ENVIRONMENTAL IMPACTS OF MINERAL EXPLORATION AND MINING

Mining and national parks

52. Proposals to explore or mine inside the boundaries of Kakadu National Park raise the broader issue of whether mineral activity should ever be regarded as legitimate within an area designated as a national park. Conflicting views on this point were expressed to the Committee. These ranged from the position that exploration and mining should be banned from national parks in all circumstances to the view that, given suitable conditions, mining activity is compatible with national park status. These views are considered in the following paragraphs.

53. A submission received from the Western Australian Government claimed that, given suitable environmental controls, mining should be permitted in national parks.⁵¹ The submission

argued that the community regularly makes demands for both resource development and resource preservation, and that these competing demands need to be reconciled by an appropriate land use policy. 'Land use decisions', the submission continued:

can only be made effectively when a full inventory of the land and its resources is available. In most cases in Australia, the knowledge of mineral and petroleum resources in areas which have been declared as National Parks is minimal. While it is accepted that there will be specific areas and locations within National Parks that will need to be preserved and protected, this should not prevent the adequate assessment of the mineral or petroleum resources of National Parks.⁵²

The submission concludes that:

mineral and petroleum resource exploration, and carefully planned, managed, and controlled resource developments are not incompatible with the concept of National Parks as areas of natural environment for public enjoyment and conservation.⁵³

54. A similar view was expressed by representatives of the Northern Territory Government who argued that a policy of 'multiple land use', which would allow for exploration and mining under controlled conditions, is compatible with the concept of a national park, particularly one as large as Kakadu.⁵⁴ The Northern Territory Government argued that there is support for their view in the World Conservation Strategy developed in 1980 by the International Union for the Conservation of Nature and Natural Resources (IUCN). One of the themes of this strategy is that policies for conservation and sustainable development are mutually dependent although 'conservation and development have so seldom been combined that they often appear and are sometimes represented as incompatible'.⁵⁵ The Northern Territory Government proposed that this approach should be adopted in the case of Kakadu National Park and that development should include mining.

55. The National Conservation Strategy for Australia was also cited in support of this view. This document resulted from the IUCN World Conservation Strategy, which had recommended that a national conservation strategy be developed by each member country. The National Conservation Strategy for Australia, which was accepted by the Commonwealth Government in 1984, endorses the World Strategy concept of the interdependence of conservation and sustainable development. On this basis a number of submissions argued that the National Strategy does not exclude mining in national parks.

56. These arguments were contested by several witnesses. The then Department of Arts, Heritage and Environment for example submitted that the National Conservation Strategy should not be interpreted in this way. According to the Department:

[t]he strategy is concerned with the conservation of living resources and supporting ecosystems such as soil and water. More specifically, the stated objectives of the strategy are to maintain ecological processes, preserve genetic diversity and ensure the sustainable utilisation of species and ecosystems. The only mention of mining in the strategy is a reference which reads:

Promote the retention of native vegetation on all lands including those used for agriculture, pastoralism, forestry, mining and transportation.⁵⁶

57. The Department regarded mining as an activity which is not compatible with the national park concept. The general understanding of that concept, in the Department's view, 'precludes any exploitative industries, such as mining, which degrade national park attributes'.⁵⁷ In support of this, the Department's submission referred to the International Union for the Conservation of Nature and Natural Resources (IUCN) definition of a national park which states in part that:

[a] national park is a relatively large area ... where the highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the whole area and to enforce effectively the respect of ecological, geomorphological or aesthetic features which have led to its establishment.⁵⁸

The Department added that the IUCN has compiled a United Nations List of National Parks and Equivalent Reserves and that the criteria for inclusion in the list include effective protection against exploitation of natural resources, including the removal of minerals. In the Australian context, the Department drew attention to a definition of national parks adopted in 1970 by a meeting of Ministers with environment responsibilities in all States and the Commonwealth. The definition refers to a national park as a 'relatively large area ... protected from all interference other than essential management practices so that its natural attributes are preserved'.⁵⁹

58. In considering these issues the Committee was interested to note the policies of the various State and Territory governments concerning exploration and mining in national parks. It should be noted that in some cases State governments have taken steps to identify and exclude areas with mineral potential before a park is declared. Moreover national parks vary greatly in size and some are quite small. There are also various kinds of recreation parks and conservation reserves which have a lesser status than national parks and which are often subject to less stringent provisions. With these qualifications however, the position in the various States and Territories for areas expressly designated as national parks is essentially as follows:

New South Wales:

The combined effect of legislative requirements and government policy effectively prohibits all exploration or mining.⁶⁰

Victoria:

Government policy is opposed to exploration and mining. There are rare exceptions in the case of certain pre-existing commitments. These operations are to be phased out.⁶¹

Queensland:

Exploration and mining within national parks is prohibited except in the case of petroleum where exploration and extraction is possible under conditions specified by the State Director of the National Parks and Wildlife Service.⁶²

Western Australia:

Controlled exploration is permitted. Mining may be permitted after approval of an Environment Review and Management Program.⁶³

South Australia:

Exploration and mining are permitted only under special circumstances, which include the requirement for a resolution of both Houses of Parliament (Oil exploration has been allowed in the State's two largest national parks).⁶⁴

Tasmania:

Exploration or mining may be allowed under a management plan which is subject to approval by a resolution of both Houses of Parliament. Management plans so far approved have not included any provision for exploration or mining.⁶⁵

Northern Territory:

Exploration or mining are permitted under specified conditions relating to environment protection.⁶⁶

Australian Capital Territory:

The ACT is not considered as an area of significant mineral potential. Approval for exploration or mining is in any case unlikely.⁶⁷

59. This survey indicates some differences in policy. The majority view of the States, nevertheless, seems to be that exploration and mining are activities which are difficult to reconcile with the national park concept as defined in paragraph 57. The Committee concurs with this approach while noting the wide variation in the concept of a national park as described in the preceding paragraphs. The conclusion is not inconsistent with passages in the World Conservation Strategy, which stress the

compatibility of conservation and development. A careful reading of both those documents indicates, in the Committee's view, that these passages should be seen as applying to a nation's land use policies generally, rather than to management policies specifically for national parks. The IUCN's concept of a national park, which was referred to by the then Department of Arts, Heritage and Environment, seems to be more directly relevant. That concept involves the exclusion of activities which exploit a park's natural resources. Operations to recover minerals would clearly fall into this category.

Mining and World Heritage Values

60. Stage 1 of Kakadu is not only part of a national park but is also inscribed on the World Heritage List. This point was stressed by Professor J. D. Ovington who commented that:

[w]hat I think this inquiry is about is not about a national park; it is about the fact that, having looked at all of the suite of national parks within Australia, Kakadu was selected as the premier, the first national park, to go on the World Heritage List, because of its outstanding cultural and biological value which are recognised internationally. So we are not talking about mining in a national park, we are talking about mining in the first area that Australia put on the World Heritage List. I think that is a very big difference.⁶⁸

61. Under the World Heritage Convention, governments undertake to ensure that effective and active measures are taken for 'the protection, conservation, and preservation' of places inscribed on the World Heritage List. The degree of international prestige and importance attaching to areas inscribed on the list places governments under an obligation to provide the maximum possible degree of environmental protection. A policy which permitted mining in Kakadu Stage 1 or 2 would almost certainly be seen as incompatible with this obligation, and Australia's

reputation as a signatory to the World Heritage Convention would undoubtedly suffer if mining were to take place.

62. The World Heritage status of Stages 1 and 2 also has implications for areas adjacent to it. The South Alligator River has its headwaters in Stage 3 and flows through the Conservation Zone before flowing through part of Stage 1. Tributaries of the East Alligator River, including Magela Creek, flow through the Ranger project area and parts of Stage 2 before joining the East Alligator in the northern section of Stage 1. These interconnections highlight the environmental importance of the areas adjacent to Stage 1 and constitute a further reason why mineral activities should be discouraged within the Park region as defined in this report.

Environmental effects of exploration and mining

63. The Committee received evidence concerning the environmental impact of mineral activity within the region. The main topics raised were: the likely effects of uranium mining at Ranger; the likely impact of mining at Jabiluka and Koongarra; and the proposed mineral activity in the Conservation Zone including the possible operation at Coronation Hill.

Mineral activity within the Park

64. Some witnesses argued that any damage to the Park which might result from mineral activity would be minimal and quite within acceptable limits; others felt that despite environmental controls, an unacceptable level of damage would be virtually inevitable, at least in the long term. This section will consider these arguments as they relate to exploration, mining and rehabilitation.

(i) Exploration - a mineral resource inventory?

65. One proposal advanced in the course of the inquiry was that, whether or not mining was eventually to be permitted, the national interest requires that an exploration program be conducted throughout the entire region to establish an inventory of the mineral resources which it contains.⁶⁹ There was some disagreement, however, about the means which might be employed to carry out this task. Professor J. D. Ovington, who agreed that an inventory was desirable, saw it as 'knowledge of the basic stratigraphy', much of which could be gained without drilling. He thought that the Bureau of Mineral Resources might properly be responsible for this work.⁷⁰ A somewhat different view was expressed by Mr A. Hosking of the Northern Territory Department of Mines and Energy. Mr Hosking regarded drilling as indispensable in drawing up an inventory. He commented that:

[y]ou have to decide what is an inventory. You can do as much work as you like on the surface. You can walk around and use all sorts of sophisticated techniques on the surface. At the end of the day, you still have to drill holes.⁷¹

This view was supported by Mr L. Nicholls, Planning Manager with Ranger Uranium Mines Pty Ltd. Mr Nicholls argued that a knowledge of the stratigraphy would not be sufficient and that the Bureau of Mineral Resources would not be the appropriate body to do the work:

[a]n organisation such as BMR is not in a position to carry out a survey and produce an inventory of economic mineralisation of the region. A broad knowledge of stratigraphy, rock types, and sequences, indicates only where minerals may occur ... Mineral discoveries are normally made by looking for unusual (or anomalous) features in an area that is known to be favourable for valuable minerals to occur, and then painstakingly investigating those anomalies. Of the methods

available for the investigation of what are usually quite small target areas, drilling is the only one to define an orebody at depths of more than a metre or two, to, occasionally a few metres below the surface.⁷²

66. The question of possible environmental damage which might result from exploration activity of this kind was discussed in a number of submissions. The Northern Territory Department of Mines and Energy, which claimed that any environmental effects would be negligible, sought to substantiate this view by describing the steps involved in exploration. The preliminary phase of geologic mapping, the Department explained, involves traversing the area of interest by vehicle and foot with perhaps some sampling of rock formations. This causes 'virtually no disturbance to rock, soil or wildlife'. Where drilling takes place, the area affected rarely exceeds 10 metres square. Holes may vary in depth from a few metres to hundreds of metres and may be drilled at intervals of about 100 metres over areas of special interest, or at intervals of one or two kilometres for 'wildcat drilling'. On completion, the Department said, 'holes are sealed, rubbish collected and the site restored to as near natural condition as possible'. There is localised noise but this has 'no lasting effect' on wildlife.⁷³ As areas of particular interest are defined, some small-scale excavations may be required. These are usually less than five metres wide and 50 metres long and are filled-in after use. Excavators or back-hoes are normally used. Exploration may involve the setting up of temporary camps, construction of access tracks, and the pegging of grids. Control is maintained on camp sites, and wooden grid pegs are either left in the field to decay naturally or removed. On completion of work the effects of exploration are, the Department claimed, 'undetectable' after one or two years.⁷⁴

67. Not all witnesses accepted this view of the matter. Professor Ovington mentioned the exploration activities at Coronation Hill which, he felt, had resulted in damage. Problems caused by exploration, he argued, take a variety of forms:

[ilt is not just a matter of the point of the drill. You have drilling engineers and vehicles travelling quite widely in the Park. This can pose a variety of threats - partly in terms of physical damage, partly in terms of more people wandering around in the Park in not such a controlled way and in the spread of weeds such as mimosa and others. Drilling programs can have important environmental effects. In fact, some of the environmental problems which the Park now faces have arisen because of exploration people bushwhacking all through the Park.⁷⁵

This view received some support from CSIRO, whose submission noted that the movement of people and vehicles through the Park would be likely to increase the incidence of unwanted fires and the spread of noxious weeds.⁷⁶

68. The Committee believes that the environmental consequences of mineral exploration in the Park are difficult to predict with any accuracy. Much would depend of the extent of the area covered, the intensity of the effort, techniques employed, and equipment used. Some drilling would seem to be an essential element, and it might reasonably be assumed that minor excavations of the kind described above would be required periodically. If the exploration program were to provide a reasonably comprehensive inventory, it would need to range extensively throughout the Park since the locations regarded as prospective are widely scattered. (See Figure 3.1) This would require the transport of workers and equipment, frequently through areas where there are no established roads. The effects of this could include the spread of noxious weeds, increased fire risk, and damage to vegetation. Even, if the exploration sites themselves could be restored to something approximating original condition, it is less certain that the consequences of the movement of exploration teams through the Park would be equally controllable. There exists the potential for significant damage, particularly if the exploration program were a large one.

(ii) Mining and rehabilitation

69. Some witnesses were firmly of the view that mining operations would be unlikely to cause significant damage to the Park. Mining companies, it was argued, have become keenly aware of the need to protect the environment from any adverse effects of their operations and are now skilled in the procedures necessary to achieve this. In addition, there are strict controls imposed by environmental legislation. Disturbance at the mine site itself is inevitable but mining companies, it was submitted, are now aware of the need for effective rehabilitation and are capable of carrying this out. Appropriate rehabilitation procedures have been developed, such as the stockpiling of topsoil for later resspreading, and the careful management of revegetation. Such techniques, according to Mr W. Thomas of the Conservation Commission of the Northern Territory, ensure that 'the land surface becomes virtually indistinguishable from the surrounding countryside in terms of its flora and fauna characteristics'.⁷⁷ It was conceded that there are many examples of environmental damage from mining in the past, but such consequences would now be prevented.

70. Members of the National Resources Committee made a number of site visits to examine for themselves the effectiveness of the rehabilitation measures employed on mined areas. In May 1986 the the Rum Jungle Rehabilitation Project at Batchelor was visited with a view to assessing the quality of rehabilitation at the site of a former uranium mine. The Committee was able to observe the rehabilitation of areas including the tailings dam, overburden heaps, the diversion of the Finnis river, the treatment of water in the open cuts and the general clean up and re-vegetation of the area. In September of the same year the Committee undertook a further two days inspections in the Hunter Valley and Myall Lakes districts in New South Wales. In the Hunter Valley district the Committee observed coal mine

rehabilitation and re-afforestation at a number of mine sites. In the Myall Lakes district, north of Newcastle, the Committee inspected sand mining rehabilitation. In no cases did the Committee see land restored to its original state but did see attempts with varying success to stem further degradation and provide acceptable land status.

71. It was argued also that in view of the large surface area of the Kakadu National Park region, the proportion likely to be affected by mining and requiring rehabilitation would always be very small. The Northern Territory Government claimed that if all the locations which they regard as prospective were mined, the surface area affected would be less than one per cent of the total.⁷⁸ Moreover, this activity would not all take place at once since mines would commence operation at different times and would not all have the same productive life. It was contended also that the small proportion of the region which might be affected by mining would not generally be in locations which are of major scenic or cultural value. According to a submission from Geopeko, 'those places in the Region which have high and obvious Park values do not generally coincide with those places of high mineral potential'. The prime example was the escarpment areas which were important in terms of park values but were not regarded as a favourable location for exploration or mining. The more likely target, Geopeko indicated, would be the 'monotonous plains area that comprise much of the Region, but little of its Park value'. Even here only 'minute' areas would be affected.⁷⁹

72. Some submissions expressed strong reservations about these claims. A number of witnesses questioned the reliability of measures to prevent the escape of contaminants used in processing plants. This raised the possibility of material being released which could threaten the ecosystems of the Park. This threat would persist for long periods where highly polluted water and tailings need to be contained on a long term basis.⁸⁰ A submission from Dr R. J. Wasson, who had carried out substantial

research on these issues, argued that 'there is a real chance that even the best engineered impoundment structure will fail under extreme weather conditions' with devastating consequences for the environment.⁸¹ Other detrimental effects of mining which were mentioned included more opportunities for weed infestations and the introduction of feral animals, increased fire risk, a greater demand for roads and material for road construction, and erosion.⁸² Doubts were also expressed about the effectiveness of rehabilitation. The then Department of Arts, Heritage and Environment argued that:

even if ... disturbed areas are stabilised and re-vegetated, the landscape is usually markedly different from the natural form. This is particularly the case with open-cut mining where permanent loss of environmental quality of large areas is likely to be involved.⁸³

73. The proposition that mining would affect only small areas was also contested. It was pointed out that the Park is located across the catchments of a number of river systems and that mining activity in any one locality would represent a potential threat to much larger areas. One scientist who appeared before the Committee described the suggestion that mining could affect only a small area as 'alarming' because it ignored this ecological situation.⁸⁴ Whether or not some parts of the Park are regarded as 'monotonous and unappealing', as Geopeko suggests, is of little consequence on this view. All areas are potentially vulnerable since all are part of wide catchment systems.

74. The Committee is aware that there are some unknowns in this debate. Of necessity, one is discussing an unspecified number of mines, extracting one or more of a range of possible minerals, in unspecified locations. In addition there is little 'hard evidence' about the environmental effects of mining in the region. The only operating mine is Ranger and despite the ongoing research program of the Office of the Supervising

Scientist, much is still unknown about the effects of Ranger on the environment. This dearth of information about the environmental consequences of mining was one of the points stressed in the submission from CSIRO which commented that:

[i]t is easy to speculate in general terms on the likely effects of mining in Kakadu National Park ... it is more difficult to predict with certainty the specific impact of ... mining development.⁸⁵

Dr J. Landsberg and Professor P. Werner from CSIRO stated that, on the basis of their research in the region, they saw the potential consequences of increased mining as including the spread of pollutants, the risk of erosion resulting from the construction of access roads, weed dispersal, and increased fire risk. Strict environmental controls and the limiting of operations to specific localities could reduce these risks and in such circumstances, Dr Landsberg conceded, 'mining probably can be carried out with minimal mess (although) it is not going to be absolutely safe and there will be weeds ...'. The CSIRO submission stressed, however, that there are many uncertainties involved and that it may be 'unwise' to encourage mining or large scale tourist facilities 'while we are ignorant about the ecological processes at work ... and without a full understanding of the consequences'.⁸⁶

75. In view of these uncertainties the Committee is not confident that the proportion of the Park likely to be affected by mining would never exceed the figure of one per cent mentioned by the Northern Territory Department of Mines and Energy and others. Representatives of the Department rejected the suggestion sometimes made that mining companies would like to 'swiss cheese' the Park. Such a phrase gives an inaccurate impression of the likely effects of mining, given the large area involved and the limited number of mines which would ever be likely to operate. On the other hand, the estimate of one per

cent does seem open to question. The Department itself acknowledged in the course of hearings that this figure referred to mine sites only, and did not include roads, possible towns, and other infrastructure.⁸⁷ These additional components have their own consequences such as soil erosion and other risks associated with the presence of larger populations within the Park, including the spread of weeds and the introduction of feral animals. Even where a mine does not lead to the establishment of a mining town, these risks cannot be completely discounted. There are also the possible effects of the mine itself on the ecosystem through the entry of contaminants into creeks and rivers, either through spillage or seepage. For all of these reasons it could not be guaranteed that mining would never affect more than one per cent of the Park. There are unavoidable effects which extend beyond the mine site, and possible effects which could extend to the ecosystem as a whole. These factors seem likely to operate in much the same way wherever the mine is located. Roads and other infrastructure will be a requirement in virtually every case, and the heavy monsoonal run-off throughout the region ensures that all locations are in some way linked to the complex system of creeks and rivers.

76. These considerations also cast some doubt on the possibility of satisfactory rehabilitation after the cessation of mining. The Committee accepts that rehabilitation techniques have improved in recent years and that mining companies generally aim to restore a mined area to a condition which closely approximates its natural state. Given that this is possible - and in cases such as open-cut mining it may not be possible at all - the point remains that in the case of Kakadu National Park the area of concern stretches well beyond the site of the mining operation itself. The environment at risk includes the downstream portion of the catchment in which the mine is located and, potentially, damage which happened to extend this far would be virtually impossible to repair.

Ranger

77. The Committee did not attempt a detailed study of all environmental aspects of the Ranger mine as these have already been the subject of a number of reports including the Ranger Uranium Environmental Enquiry itself, the Annual Reports of the Office of the Supervising Scientist, a 1986 report on Ranger's water management system by the House of Representatives Standing Committee on Environment and Conservation and, most recently, a study by a Technical Working Group entitled Application Of Best Practicable Technology To Water Management At Ranger Uranium Mine.⁸⁸ This is not to suggest that the environmental effects of Ranger have now been adequately studied. On the contrary, the Committee agrees with a number of witnesses who felt that many aspects are not fully understood and that further research is essential. Given that its terms of reference concerned the whole Park region however, the Committee chose to focus on the main points raised in submissions.

78. The uranium ore mined at Ranger is processed on site and the process used is essentially the same as that intended to be used at Jabiluka. In outline, the ore is first crushed, mixed with water and ground to a slurry. This slurry is then thickened and pumped to leaching vessels where, over a 24 hour period, 90 per cent of the uranium ore is dissolved using sulphuric acid and pyrolusite. The uranium solution is then separated from the depleted ore and the latter is neutralised before being pumped to the tailings dam. The uranium solution is then filtered and passes through a solvent extraction process in which organic compounds are used to separate uranium from the unwanted elements. The result is a relatively pure, weak solution of uranium. This is precipitated in the form of yellowcake (ammonium diuranate) which is dried to U_3O_8 before being packed in sealed drums for transportation.

79. The general layout of the Ranger mine is shown in Figure 3.2. In establishing the mine, a Restricted Release Zone (RRZ) was designated which includes all areas likely to generate or store contaminated run-off from the mine or from processing activities. Water from within the RRZ cannot be released except under specified conditions and with the written approval of the supervising authorities. There have been no releases to date. The area enclosed by the RRZ includes the mine pit, the tailings dam, retention ponds 2 and 3 (RP2 and RP3) and the mill site.

80. The significance of the Restricted Release Zone does not always seem to have been fully appreciated. The Movement Against Uranium Mining expressed concern about the release of 'contaminated' water from the mine site, stating that:

regulated releases of about two million cubic metres of contaminated water from the mine during each wet season carry radioactive radium and such toxic pollutants as selenium, copper, lead, calcium and arsenic down nearby Magela Creek and into the floodplains.⁸⁹

81. The controlled releases into Magela Creek have been from retention pond 4, outside the RRZ. Mr R. M. Fry, Supervising Scientist for the Alligator Rivers Region, told the Committee that although the water from retention pond 4 is constituted somewhat differently from the water in the creek, it has not been the subject of any environmental concern. According to Mr Fry, approval is required to release water from retention pond 4 and this approval is given only if specified standards are met - which had been done so far without difficulty.⁹⁰

82. The Committee believes, nevertheless, that the effects of these releases merit careful study. During the 1984-85 wet season a program of biological monitoring of water released from retention pond 4 was conducted by the Office of the Supervising Scientist and the results were described by Mr Fry in the following terms:

Figure 3.2



Legend

- A Tailings dam
- B Number 1 mine pit
- C Mill area
- D Retention pond 1
- E Retention pond 2
- F Retention pond 3
- G Retention pond 4
- H Jabiru East
- I Magela Creek

Ranger Uranium Mine: Courtesy NT Department of Lands and Housing.

[w]e did detect two effects while the water was being discharged quite near the pipeline outlet where the concentrations of the elements in the water and the temperature were perhaps different from that flowing in the stream. We observed that some of the fish that normally swim up the creek were inhibited in doing that by the plume of water that was coming out from the pipeline. I do not believe we know what the cause of that was - whether it was just the mechanical effect of the plume or different temperatures or a different smell to the fish. The other effect was a temporary inhibition of the production of larvae in some mussels which were living close to the outlet of the pipe. The intensity of this effect decreased as you went away from the discharge point. This diminution in the production of larvae lasted while the discharge occurred and returned to normal some days after the discharge ceased.⁹¹

83. Mr Fry said there had been no report of lasting effects on the mussels. The Committee is aware nevertheless that this incident has been a source of concern in some quarters - and to the local Aboriginal community - and has been interpreted in some cases as evidence that dangerous contaminants are entering the creek system. The Committee believes that the monitoring program which took place in the 1984-85 Wet season should be repeated for future releases until it is firmly established that the procedure has no adverse effects.

Recommendation

The Committee recommends that the Office of the Supervising Scientist should continue to monitor the biological effects of all water releases from Retention Pond 4 at the Ranger Uranium Mine.

84. A number of submissions expressed concern about the volumes of water accumulating within the RRZ. The Ranger Uranium Environmental Inquiry recommended that a basic objective of water management at Ranger should be to ensure that the total amount of contaminants released from the operation was minimal.⁹² This was to apply to run-off and to intentional releases, both during and after mining. As mentioned above, no approvals have so far been given for releases from within the RRZ. This policy of complete containment, together with Wet season rainfall which has varied substantially from the anticipated pattern, has led to an unexpectedly large accumulation of water within the RRZ. This is despite the fact that in the 1981-1982 Wet season there was a very low rainfall, during which Ranger pumped water into RRZ mainly to keep the tailings covered.⁹³ It became necessary in 1986 to canvass the options for disposal of the excess water, which included the possibility of release into the creek system. The issues involved in this have been analysed in the 1986 House of Representatives report referred to above and, more recently, by the Technical Working Group which reported to the Commonwealth Government on the Application Of Best Practicable Technology To Water Management At Ranger. The Government announced its policy in March 1987, deciding that no releases of water would be permitted in the short term, and that Ranger should be required to enlarge its water storage capacity in retention pond 2 so that the probability of water releases would be no more than one year in ten.

85. The Committee does not intend to re-examine the issues involved in this decision, particularly in view of the detailed nature of some of the material involved. It wishes to stress however that there is continuing disagreement about the safety of releases into the creek system. Mr L. Nicholls of Ranger Uranium Mines Pty Ltd told the Committee that:

[w]e believe that the release of this water would have no adverse impact whatever on the Magela Creek system and its biota, and hence on human users of the creek's resources. The water in RP2, if diluted seven times, would meet current National Health and Medical Research Council standards for all contaminants. The minimum proposed dilution factor for release is 70:1, a factor of ten higher, and when we would actually want to release it there could be a further factor of ten higher, that is 700:1.⁹⁴

However, such assurances are frequently not accepted. Mr C. Moore of the Movement Against Uranium Mining argued that 'to suggest that that sort of release can take place without endangering people who drink the water downstream ... and whose food supplies are affected by the water, is just implausible'.⁹⁵ The Environment Centre, Northern Territory suggested that the mine operators had opted for releases into Magela Creek because this was 'a very cheap alternative'.⁹⁶

86. An alternative method employed recently to assist in the disposal of excess water is spray irrigation - sometimes termed land application. This process is used during the dry season and is designed to dispose of waste water by infiltration into the soil and by evaporation. Following a trial period, Ranger was given approval in April 1986 to use the spray irrigation technique over a 33 hectare area.⁹⁷ The approval allowed for irrigation with water from retention pond 2, which is inside the RRZ. Over a period of 230 days, this procedure could result in the disposal of nearly 1 000 000 cubic metres of water.⁹⁸

87. Some concern was expressed at the possible environmental effects of this technique. Professor Ovington of ANPWS commented that 'very little, if any, research' had been done on the effects of 'putting large quantities of water day after day on an area which has an ecologically monsoonal type of climate'. The possible consequences which he mentioned were the creation of an imbalance in the micro-organisms in the soil and an alteration in

the properties of the soil itself.⁹⁹ The Committee is also aware of concerns that the groundwater in the area may eventually be affected.

88. Little appears to be known about the effects of this method of water disposal and further research would seem to be essential. The 1985/86 Annual Report of the Office of the Supervising Scientist comments that extensive monitoring of groundwater quality and observation of any biological or other effects within or near the trial area will continue and a project with the principal aim of assessing the capability of irrigated soils to retain retention pond 2 contaminants during both irrigation and Wet season rains was set up with CSIRO on a consultancy basis.¹⁰⁰ The Committee would see this as a high priority, particularly in view of the heavy reliance which seems likely to be placed on this technique to reduce the need to release excess water into the creek system.

Recommendation

The Committee recommends that the Office of the Supervising Scientist should continue to give a high priority to work directed towards assessing the effects of the spray irrigation technique being used by Ranger Uranium Mine to dispose of excess water.

89. Another major source of concern to some witnesses was the tailings dam itself. The Movement Against Uranium Mining expressed concern about the current method of storing tailings within the dam. The previous requirement was that a cover of two metres of water should be maintained over the tailings, since this was thought necessary to minimise the emanation of radon. Currently the tailings need only be kept damp. The Movement Against Uranium Mining commented that the original requirement is now being 'ignored' and that '[t]his is one indication that companies place less importance on environmental protection than

they do on profits'.¹⁰¹ The Committee notes, however, that the changed method of storage has the approval of the Office of the Supervising Scientist which explains in its Annual Report for 1985-86 that:

[o]riginally it was required that the settled solids should be under a cover of 2 metres of water but for some years, and at the urging of the OSS, no minimum depth of water is now specified. The belief that a substantial layer of free water was necessary to control radon emanation from the tailings is mistaken. Reduction in radon emanation is brought about by filling pore spaces in the tailings pile with moisture and adequate control of radon levels in the atmosphere in the vicinity of the dam is obtained merely by keeping the tailings damp. OSS believes that any small and doubtful benefit associated with a free water layer is outweighed by a number of certain environmental advantages of keeping water volumes in the tailings small.¹⁰²

90. The possible leakage of contaminated water from the tailings dam into the creek system was also a matter of concern to the Movement Against Uranium Mining which claimed that there had been 'growing seepage of contaminated water caused by rising groundwater'.¹⁰³ Recent monitoring by the Office of the Supervising Scientist has identified some movement of seepage into the groundwater. The Office's Annual Report for 1985-86 comments that '[t]hese changes in groundwater quality are not, in themselves, of environmental concern,' but adds that 'the trends in the results of further monitoring are being closely watched'.¹⁰⁴ The Committee agrees that this and any other possible causes of leakage from the tailings dam need to be carefully monitored.

Recommendation

The Committee recommends that the Office of the Supervising Scientist should identify all possible causes of leakage from the Ranger Uranium Mine tailings dam and should monitor the level and any effects of the leakage taking place.

91. Dr R. J. Wasson expressed concern over the long-term storage of tailings. The Second Report of the Ranger Uranium Environmental Inquiry recommended that all tailings be replaced in the mine pit and did not favour the option of permanent storage in the tailings dam because 'it fails to cope with the major problems associated with the tailings dam - its stability over hundreds of years, continuing seepage from the dam, and the continuous release of radon from tailings in the dam'.¹⁰⁵ Dr Wasson commented that 'none of the options which I have seen would make it economically feasible to put all the tailings back in the pit'¹⁰⁶ but he believed this would be the best solution available.¹⁰⁷ Given the long half-lives of some of the radioactive substances in the tailings, Dr Wasson explained, the tailings impoundment would need to last for at least a thousand years if the tailings are not to be removed to the pit. During such a long period, extremes of weather would be certain to occur and these would 'severely strain a tailings impoundment and most likely lead to extensive pollution of the wetlands'.¹⁰⁸ Moreover large feral animals such as buffalo 'tramping up and down the sides of the impoundments' would inevitably cause damage to tailings dams.¹⁰⁹

92. The Committee agrees that the long-term storage of tailings in the dam would be likely to pose grave risks to the environment and should not be contemplated. The then Department of Resources and Energy told the Committee that 'under the present plan of rehabilitation, at the end of the day those tailings go back into the pit. They are covered with certain layers of material and they remain there'.¹¹⁰ The Committee understands this to be the safest option by far and has not received any evidence to support the view of Dr Wasson that this is not economically feasible. It believes it should be considered a matter of settled policy unless a more secure alternative is eventually found. Ranger Uranium Mines Pty Ltd allocates funds each year to cover costs of rehabilitation and the Committee

believes the objective should be to set aside amounts sufficient to ensure the eventual return of tailings to the pit.

Recommendation

The Committee recommends that at the completion of mining at Ranger, and unless any more secure alternative is found, all tailings be replaced into the pit and properly secured.

93. In examining the environmental effects of Ranger account should also be taken of the impact of the town of Jabiru, which was established to accommodate mine employees. Jabiru is the major centre in the Kakadu region and, after construction of the motel mentioned in Chapter Two, will begin to play a role in the development of tourism. In view of the growing importance of the town and the variety of issues which it raises, the impact of Jabiru is considered separately in Chapter Four.

94. Speaking generally of the impact of Ranger, Geopeko asserted that:

[w]e know of no publication in which the impact of Ranger One on Park values has been shown to be more than that produced by the presence of a town and its associated population.¹¹¹

Ranger Uranium Mines Pty Ltd also claimed that the mine 'has not had any adverse impact on the surrounding Park', pointing out that the successive annual reports of the Supervising Scientist for the Alligator Rivers Region 'contain no reference to any

untoward effects on the environment' from the minor infringements of the mine's authority to operate which have been reported since commencement.

95. While not disagreeing with these statements as they stand, the Committee believes they present a somewhat too comfortable picture. Certainly there seems to be no warrant for some of the more extreme comments which are sometimes directed at the mine - such as the remark that it is 'leaking like a sieve',¹¹² or the claim in another submission that mining companies seek to use Magela Creek as an 'industrial drain'.¹¹³ However, there are a number of aspects of the mine's operation which are potential sources of concern and which require continuing attention. These include the safe, long-term storage of tailings, the degree of seepage from the tailings dam, the consequences of spray irrigation, the effects of possible releases of excess water from within the restricted release zone and the effects of water releases from outside the restricted release zone (As noted in Chapter Four, the impact of Jabiru also needs to be monitored on a continuing basis). The Committee believes that there is much still to be understood about these matters and the environmental effects of Ranger generally. There should certainly be no diminution of effort in the ongoing program of research into these issues and the Committee would not favour any suggestion that the resources made available for this purpose should be reduced.

Recommendation

The Committee recommends that the resources made available for the study of the environmental impact of the Ranger Uranium Mine should, as a minimum, be maintained at current levels.

96. Finally, the Committee believes that, in the interests of improving community understanding of the Ranger operation, information about the environmental aspects of the mine should be

as accessible as possible to the public at large. Mr R. Charles of the Friends of the Earth claimed that too little is known about the operation and that:

[i]f you care to ask the authorities I am sure that they will say that they are monitoring this, that and the other, but in terms of what the public is getting it is nothing. They will offer you computer ticker tape, if you can interpret and analyse that.¹¹⁴

The Supervising Scientist, Mr R. M. Fry, explained to the Committee that the secrecy provision in the legislation under which he operated imposed restrictions on the information which could be made available to the public. The precise effect of this provision was not clear but advice from the Attorney-General's Department appeared to give it a very broad application. The advice suggested, Mr Fry said, that 'if I divulge anything I might learn about in the course of my duties that concerns the activities of Ranger or the mining company, I am up for a \$1000 fine or six months gaol'.¹¹⁵ Mr Fry added that he believed the legislation should be changed and that he had brought the matter to the attention of his Minister. The Committee agrees that the provision should be amended. Generally speaking, no good purpose seems to be served by restricting public access to information about the environmental aspects of Ranger. Removal of these restrictions may help in correcting misunderstandings, and promoting more informed public debate.

Recommendation

The Committee recommends that Section 31 of the Environmental Protection (Alligator Rivers Region) Act 1978 be amended as a matter of priority so that the Supervising Scientist is no longer prevented from making available information on the environmental impact of the Ranger Uranium Mine collected by his Office.

Koongarra

97. The likely environmental effects of developing Koongarra would be similar to those at Ranger. Koongarra would be mined using an open cut method. Mining would be completed over three years and the mined materials placed in separated stockpiles and reclaimed as required by the mill. Uranium production would be at an annual rate of three million pounds of U_3O_8 over a ten year period using a process similar to that described for Ranger. An environmental impact statement for the project was prepared in 1979 and in February 1981 the Minister advised that there were no environmental objections to approval being given for the project. According to Denison Australia Pty Limited, the process of environmental consideration:

has gone far beyond the normal requirements of the legislation in an attempt to secure the higher environmental protection standards that can be achieved.¹¹⁶

The company also informed the Committee that, following the preparation of the environmental impact statement for the project, it had been informed in September 1981 that the then Minister for Environment, Housing and Community Development had advised that there were no environmental objections to approval being given to the project. Environmental requirements for the project have been endorsed by the Commonwealth, the Northern Territory, the Northern Land Council and the Company. Draft applications filed in 1982 and 1983 under the Uranium Mining (Environment Control) Act 1978 to mine and construct a uranium mill facility were approved, among others, by the Commonwealth Departments of Environment, ANPWS, the Australian Radiation Laboratory, the Office of the Supervising Scientist, the Northern Land Council, and the Northern Territory Conservation Commission.¹¹⁷ While noting this the Committee is aware that Koongarra is situated on the head waters of the Nourlangie River system and that this is separate from the Magela Creek on which Ranger is situated.

Jabiluka

98. In July 1979 the Pancontinental and Getty Oil Joint Venturers published the Jabiluka Project Environmental Impact Statement pursuant to the Environment Protection (Impact of Proposals) Act 1974. This document was assessed as required by the Act. When the Company subsequently satisfied further conditions imposed by the Minister and an agreement between the Joint Venturers and the Northern Land Council, advice was given to the Northern Territory Minister for Mines and Energy by the Federal Government that a Mineral lease be granted to the Joint Venture. The lease was granted in 1982. According to Pancontinental Mining Limited:

[t]he major conclusion reached in the preparation of the Environmental Impact Statement and subsequently endorsed by the Federal Government was that the impact on the physical and social environment would be acceptable.¹¹⁸

Jabiluka is situated very close to the Magela creek system on which Ranger is situated. Because mining at Jabiluka would be underground, disturbance of the surface area would be less than that created by the open cut mining at Ranger.¹¹⁹ The visual impact of the mine would also be less than that at Ranger. Disturbance of the above ground areas would be restricted to ore treatment, water management, tailings disposal, shafts, entrances to underground tunnels and facilities for filling the underground tunnels after use. Cement and waste from the mine would be used to fill underground excavation. Pancontinental contended that with underground mining there would also be less accumulation of water from rainfall¹²⁰ and less radon produced in the

atmosphere.¹²¹ Dr Wasson considered that the mining of Jabiluka posed difficulties for the environment, if the preliminary proposal's most economic method for mining went ahead. This involved boring a tunnel at the back of the escarpment and putting a mill and mill tailings pond next to the Magela Swamp. He stated that the fallibility of rock and earth filled dams was well known and that the tailings impoundment would eventually fail. When this happened a substantial fraction of the tailings would end up in the Magela swamp. If the tailings dam at Ranger failed there would be a substantial distance between the impoundment and the Magela swamp and contamination would therefore be less. Dr Wasson considered the biological component of Kakadu was a vital aspect of the Park and said that 'the development of Jabiluka is setting off a time bomb for biological destruction'.¹²² He also indicated there were severe hazards to miners working under ground.¹²³

Coronation Hill

99. The proposed gold mine at Coronation Hill is still in the planning stages. In compliance with the Environment Protection (Impact of Proposals) Act 1974, the Coronation Hill Joint Venture is currently in the process of preparing an environmental impact statement. The Committees visited the mine site on three occasions in the course of their inquiry and also held two hearings with BHP personnel responsible for management of the project. At the second of these hearings in June 1987, the Committee was given a progress report on the preparation of the environmental impact statement which is expected to be completed by the end of 1988.

100. BHP representatives told the Committee that the shallow portion of the Coronation Hill deposit would be mined by standard open pit methods, resulting in an excavation which would initially be about 400 metres long, by 170 metres wide, by 120 metres deep. Extensions to both length and depth are envisaged,

although the maximum depth would be about 150 metres. Deeper parts of the orebody could be recovered by underground mining methods.

101. In addition to the mine itself, the project infrastructure would include a treatment plant, a short haul road between the mine and the plant, a residue dam, a waste rock dump, a process water dam and workers' accommodation. Metallurgical studies are currently being carried out on optimum treatment methods for the ore. A conventional sodium cyanide leaching process is likely to be used to dissolve the gold, for recovery by conventional carbon in pulp technology.¹²⁴ Research will be undertaken in conjunction with CSIRO to investigate ways of maximising the recovery of platinum group metals.¹²⁵

102. BHP explained that waste from the process plant would be pumped to the residue dam located at the head of a small valley behind Coronation Hill, where the catchment of natural run-off is expected to be small. They informed the Committee that:

[t]he tailings dam is deliberately located at the very extremity of that valley so that its catchment area is also minimised. We believe that by doing this most of the water from this particular valley can actually be diverted around the retention pond from undisturbed areas and actually bypass the whole process of the Coronation Hill project.¹²⁶

It was expected that the concentration of free cyanide dissolved in the alkaline tailings liquor would be about 50 parts per million on discharge and that this level would subsequently decline through oxidation.¹²⁷ Studies of regional hydrology and subsurface conditions are being conducted to assist in the dam design. A 'retention pond' would also be constructed further down the valley to trap any spillage from the dam, although BHP regards this as an 'unlikely event'.¹²⁸ These arrangements are intended to ensure that chemicals such as cyanide do not enter

the South Alligator River or any of its minor tributaries in the area. Fluids in the residue dam would be recycled through the plant in a closed system to make maximum use of the treatment chemicals.¹²⁹ Residue in the dam itself is expected to break down naturally with time. The Joint Venture's submission stated that:

[c]yanide is rendered harmless by oxidation in normal conditions and this process is aided in the tropical environment by such factors as increased temperature and higher rainfall. Remnant toxic levels in the residue dam will therefore decrease naturally with time. This will minimise any long term problems.¹³⁰

The Joint Venture believes that the ore at Coronation Hill has a very low sulphide and base metal content so that residues will not pose the kind of potential long-term threat to the environment which arose at Rum Jungle.¹³¹ This matter is still under investigation by BHP.

103. The proposed water management arrangements provide that water which has been contaminated by the mining operation will be contained on site for use in the treatment plant, although the Joint Venture's submission commented that 'the option of ... treatment (of the water) before being discharged from the project site will also be evaluated'.¹³² Contaminated water would include rainfall run-off from areas such as the open pit, process areas, haulroads, overburden dumps, and the residue dam. Water which is not chemically contaminated would be allowed to pass from the project area.¹³³

104. The existing road from Pine Creek, which would form the major route to the southern part of Stage 3 of the Park, would be used to provide surface access to the mine. Once the mine was operational, the need for road access would be reduced as most personnel would be flown in, and the gold bullion produced by the mine flown out. The main use of the road would then be for the transport of bulk operating supplies.¹³⁴

105. At its initial level of operation the mine is likely to employ a total workforce of about 100, with additional personnel of up to 200 required during the construction phase. The workforce would operate on a seven or fourteen day cycle and commute on a fly-in/fly-out basis. Single person accommodation would be provided at the project site.

106. Several studies of the physical, biological and social environments of the region are either proposed or currently under way. In addition to those mentioned above, these include a study of the terrestrial and aquatic biology of the area, an assessment of the natural revegetation which has occurred since mining ceased in the 1950s, research in conjunction with CSIRO on rehabilitation techniques, a study of the social impacts of the project, and archaeological and ethnographic studies of the area to be undertaken by the Northern Territory Museum.

107. Summing up the situation at the Committee's hearing in June 1987, Mr W. Hewitt, Project Manager for Coronation Hill, expressed the view that exploration and mining at Coronation Hill, and elsewhere in the South Alligator Valley, 'will prove in practice to be fully acceptable on any rational assessment and fully compatible with the national park status of the surrounding country'.¹³⁵ The Committee considers that it is not in a position to say whether these standards will in fact be reached. As witnesses from CSIRO pointed out, the environment of the Gimbat/Goodparla area, including its hydrology, is not well understood. In addition, the environmental research program for the Coronation Hill project is not yet completed. In these circumstances, the Committee believes it would be premature to express an opinion about the likely effects of the project on the surrounding environment and its ecosystems. The Committee notes, for example, that studies yet to be completed include those concerning rainfall patterns, and groundwater movements. These issues will be critical in ensuring that spillage or seepage of

contaminants does not occur, and they will need to be fully understood before the project could proceed with any degree of safety. As indicated above, the option of discharging some processed water into the river has not been completely excluded, and this would also require careful evaluation.

108. The eventual rehabilitation of the project area is another issue which requires close attention. Witnesses from BHP assured the Committee that the open pit, which will remain as a large excavation after the mine is decommissioned, would be 'made safe' after mining had ceased. Parts that might slump in would be fenced off and a bund would be pushed up around the pit so as to prevent people casually wandering into it. Whether or not water would readily drain out of the pit is still being determined.¹³⁶ Such matters are of importance in view of the proximity of the mine to the South Alligator River and the Committee believes that if mining is to proceed arrangements should be put in place to ensure that a full and detailed rehabilitation plan is agreed in advance and that payments are made by the Joint Venturers to a rehabilitation trust fund on a year by year basis.

Recommendation

The Committee recommends that a full and detailed plan for rehabilitation should be required before any mining operations are allowed at Coronation Hill and that payments should be required on an annual basis into a trust fund to be used for the rehabilitation work. ANPWS and the Office of the Supervising Scientist should be fully involved in the preparation and approval of the rehabilitation plan. Similar arrangements should be in place for any further mining or exploration activity in the Conservation Zone.

109. As mentioned earlier, the South Alligator River river plays a central role in the ecosystem of Kakadu National Park and flows through the World Heritage Area. Extreme care will need to

be taken both during and after the mining phase to ensure that nothing is done which could adversely effect the river or the biological systems which depend upon it. No doubt this will be seen as a critical consideration when the environmental aspects of the project are formally evaluated. The Committee recommends nonetheless that the Environmental Impact Statement pay special attention to all factors which might cause discharge of contaminated water from the mine site, either during or after the mine's operational life. This matter should also be carefully monitored through the continuing environmental protection arrangements for the Conservation Zone which are described below.

Recommendation

The Committee recommends that in examining the Environmental Impact Assessment being prepared by the Coronation Hill Joint Venture in relation to the proposed mine at Coronation Hill the Government should pay special attention to all factors which might cause discharge of contaminated water from the mine site, either during or after the operational life of the mine.

Further exploration and mining in the Conservation Zone.

110. As indicated earlier, legislation passed by Federal Parliament in 1987 provides for the declaration of a Conservation Zone in the Gimbat and Goodparla leases. The Zone, covering approximately 33 per cent of the area, has now been declared. Government policy allows a five year period of exploration and a resource assessment program for the Zone, which will run from the grant of the first Commonwealth Government exploration licence. The Committee understands no licences have been issued to date although the Minister for Administrative Services has issued two authorities covering the operations of BHP Gold Mines Ltd at Coronation Hill. One authority allows exploration work to continue on the pre-existing mineral lease areas, the other permits access to parts of the Conservation zone outside the

leases so that work can be undertaken on the environmental impact statement. Both authorities are subject to stringent environmental conditions and can be varied at any time, or terminated, if these conditions are not met.¹³⁷ Proposals to mine will be considered only where projects are of 'national economic significance'. BHP representatives told the Committee in June 1987 that they anticipated 'intense interest' in the Zone on the part of mining companies in view of its high mineral prospectivity. The level of mineral exploration activity in the Zone is therefore likely to increase markedly in the near future, and proposals to establish further mines may eventually be put forward.

111. Amendments passed in 1987 to the Environment Protection (Alligator Rivers Region) Act 1978 and the National Parks and Wildlife Conservation Act 1975 make arrangements for environmental protection in the Conservation Zone including Coronation Hill. The amendments confer on the Supervising Scientist for the Alligator Rivers Region the functions of providing advice on environmental aspects of exploration and mining activities within the Zone. In addition, the powers of the Director of ANPWS are extended to allow for the regulation of environmental aspects of exploration and mining within the Zone. This power covers any areas later excised from the Zone for mining purposes. Conditions relating to environmental protection will be attached to exploration or mining leases to be granted under the Commonwealth's Lands Acquisition Act, and the Environmental Group attached to the Northern Territory Department of Mines and Energy will be invited to assist in the monitoring of these conditions. A Conservation Zone Advisory Committee comprising representatives from the Department of the Arts, Sport, the Environment, Tourism and Territories, the Department of Primary Industries and Energy, and the Australian National Parks and Wildlife Service will have a policy co-ordinating role.¹³⁸

112. These arrangements have been introduced to minimise environmental damage arising from exploration and mining within the Conservation Zone. The Committee supports these measures although it notes that there appear to be overlaps of responsibility which may cause confusion - for example between ANPWS and the Northern Territory Department of Mines and Energy, which are both likely to play a direct role in environmental monitoring and control. The important question, however, is whether even the strict regime of environmental protection which is envisaged will be able to provide sufficient assurance that unacceptable damage will not occur. If, as BHP predicts, there is intense interest in the mineral deposits in the Zone, there is likely to be strong pressure for a high level of exploration activity. The five year time limit on the exploration program will add to these pressures since companies will probably seek to extract the maximum amount of information in the time available. These pressures may well pose serious environmental risks for the area. The Coronation Hill Joint Venture expressed concern on this point in its submission to the Committee, commenting that:

[t]he CHJV considers that it is not practical to have a number of exploring groups sharing access tracks and undertaking field disturbing activities in close proximity to each other in an area of such widespread environmental interest. Heavy use by numbers of groups of existing limited access tracks will result in an inevitable increase in environmental damage.¹³⁹

The Joint Venture added that such a situation would also be likely to cause confusion for those charged with the responsibility for supervising and monitoring environmental impacts.

113. The Committee shares these concerns, particularly since much of the exploration is likely to be concentrated in the South Alligator River Valley or in the catchment areas of its local tributaries. To help cope with these problems, the Coronation

Hill Joint Venture suggested that the number of companies granted exploration titles in the Conservation Zone be minimised and that each organisation be allocated a large area. Where a company wished to explore within the catchment of the South Alligator River, the Joint Venture proposed the area granted to them should include a major stretch of the river and all tributaries entering within this length. The Committee supports this general approach, which it sees as one way of defining areas of responsibility with some degree of clarity and reducing the complexity of the situation for those responsible for environmental protection. As noted later in this chapter, the increase in the number of mining companies active in the Conservation Zone may also pose problems for the Aborigines with traditional ties to the area. The allocation of a large area of land to each company may help alleviate these difficulties as well.

Recommendation

The Committee recommends that in order to reduce to the minimum possible the environmental impact of exploration activity in the Conservation Zone, strict environmental guidelines and safeguards, developed in conjunction with ANPWS and the Office of the Supervising Scientist, should be strictly enforced.

114. One can only speculate at this stage about the number of applications to mine which might result from the proposed five year exploration program. The Coronation Hill Joint Venture has already had promising results in at least one other lease in the vicinity of Coronation Hill, and the whole Conservation Zone area is generally regarded as highly prospective. The policy of granting approval only to those operations which are of 'national economic significance' may limit the possibilities, although this criterion has not been defined with any precision. The Committee would recommend that any further proposals to mine be examined very carefully, particularly if - as is not unlikely - such proposals involve the catchment of the South Alligator River. It

cannot be stressed sufficiently that the Conservation Zone is an integral part of one of the major river catchments on which the Kakadu National Park depends, and that it flows through part of the World Heritage area. A proliferation of mining operations within the Zone could pose a serious threat to the Park in both the short and long term, despite strict environmental controls. It should be borne in mind also that the Zone itself, with mining areas excised, is to be incorporated into the Park after the expiry of the period set aside for exploration. Mining damage to the area should be minimised if it is to represent a worthwhile addition to the Park and any infrastructure required for the exploration activity should be planned in such a way as to facilitate the use of the area as a national park.

Recommendation

The Committee recommends

- (i) that any proposal for mining activity in the Conservation Zone should be examined very carefully, and that approval should not be given if the proposal has the potential to cause environmental damage within the catchment area of the South Alligator River which might result in damage to areas of the Park; and
- (ii) that any infrastructure permitted for exploration or mining activity should be planned in consultation with ANPWS and in such a way as to facilitate the later use of the area as a national park.

IMPACT OF MINERAL ACTIVITY ON ABORIGINES

115. An important focus of the Committee's inquiry was the impact of mineral activities on the Aboriginal people of the Kakadu region. The evidence received on this topic included hearings conducted in the Northern Territory with representatives

of the Northern Land Council and of two of the region's Aboriginal communities. The major issues which arose were the impact on Aboriginal communities of mining royalties, the availability of employment opportunities in mining projects, the effects of exploration or mining on areas registered as sacred sites, and the environmental and social consequences of mining as they affected Aboriginal communities. The present section discusses these issues in relation to Ranger, Koongarra, Jabiluka, Coronation Hill and the Conservation Zone.

Ranger

Royalty payments and indirect benefits

116. As part of the arrangements for the establishment of the Ranger mine, agreement was reached for the payment of stipulated amounts to Aboriginal interests as provided for under the Aboriginal Land Rights (NT) Act. As a result of this agreement, the Gagudju Association, which represents the traditional owners in the area, gained an entitlement to:

- (1) an annual rental of \$200,000
- (2) sequential payments, tied to stages of the mine's development, totalling \$1.3 million
- (3) a 30 per cent share of monies paid to the Aboriginals Benefit Trust Account from the 4.25% royalty paid by Energy Resources of Australia (the parent company of Ranger Uranium Mines Pty Ltd) to the Commonwealth Government.¹⁴⁰ (Anticipated payment for 1987-88 to Aborigines through the Aboriginal Benefit Trust Account under the Aboriginal Land Rights (Northern Territory) Act 1976 from Ranger is \$12,659,000).¹⁴¹

The sequential payments have now been completed. Figures supplied by the Department of Aboriginal Affairs indicated that from commencement in 1981 to June 1986 the royalty payments received by the Gagudju Association totalled more than \$14m.¹⁴² The Department said that the Association receives approximately \$3.2m in royalty equivalents per year.¹⁴³

117. In 1987, the Gagudju Association had 210 adult members. There were also 108 children, who would become eligible for membership of the Association at the age of 18. The Association has used its funds to establish a number of commercial enterprises and also to improve the material welfare of its members. The enterprises include the Coinda Hotel-Motel, near the popular tourist attraction of Yellow Water, the Border Store which is a small tourist store on the border of Arnhem Land, and a contracting company. As indicated in Chapter Two, the Association has engaged in a joint venture with Industrial Equity Limited to build a major new tourist motel at Jabiru. Some funds have also been placed in investments. Projects undertaken by the Association for the welfare of its members include the erection of houses, provision of water supply and lighting, and the running of two schools at outstations in the Park. A small portion of the funds is also paid directly to individual members of the Association. The Department of Aboriginal Affairs indicated that as at August 1986, \$1,500 per annum was paid to each adult member, with a similar amount paid into trust for each child.

118. Amounts equal to monies received by the Northern Territory and Commonwealth Governments in respect of mining on Aboriginal land in the Northern Territory are paid into the Aboriginal Benefit Trust Account from Consolidated Revenue. The Gagudju Association receives a 30 per cent share of the total royalty amount paid by Energy Resources of Australia to the Commonwealth Government in respect of the Ranger mine. A further forty per cent of the amount paid into the Aboriginal Benefits Trust Account is distributed among the three land Councils, with the remainder being used for the benefit of Aborigines in the Northern Territory generally. This thirty/forty/thirty division is in accordance with the procedures laid down in the Aboriginal

land Rights (NT) Act. Figures supplied by the Department of Aboriginal Affairs indicated that from 1981 to mid 1986 the total amount emanating from Ranger which was available for distribution in this way was over \$50 million.¹⁴⁴

119. Money derived from mining royalties is providing various sources of employment for Aboriginal people in the area. Through its income-generating enterprises and welfare projects, the Gagudju Association provides employment for approximately 30 local Aborigines in areas such as teaching, teaching assistants, health care assistants, office work and laboratory jobs. The Committee understands that there will be employment opportunities for local Aborigines at the new motel at Jabiru.

Impact of royalties on Aboriginal communities

120. The impact of mining royalties on Aboriginal communities is a complex matter which has been examined in a number of studies including a report completed in 1984 by the Australian Institute of Aboriginal Studies entitled Aborigines and Uranium. This report, which examined the effects on Aboriginal communities of uranium mining at Ranger and Nabarlek over the period from 1978 to 1984, sees royalty payments as having both positive and negative consequences. On the positive side, the report points out that funds from royalties have led to the establishment of the Gagudju Association which 'is rapidly growing into an organisation which is felt to be representative of Aborigines in the area'.¹⁴⁵ The Association is described as 'viable' and 'dynamic', with a range of activities which now 'far exceeds that of handling of money from the Ranger agreement'. Facilities including outstation vehicles, outstation servicing, education and health have been provided for communities in the Park. This means that 'the Kakadu residents, as well as Kakadu owners derive benefit from the Association'.¹⁴⁶

121. Speaking of both Ranger and Nabarlek the report argues, however, that the establishment of the Gagudju Association and the counterpart Kunwinjku Association for Nabarlek royalties has led to a degree of social division:

[m]ining provides a large source of money; those who control the channels through which it is distributed exert the greatest power and influence. Serious inequities have arisen through uneven distributions: this has created divisiveness and a 'money greed'.¹⁴⁷

The claim is also made - again with reference to Nabarlek as well as Ranger - that mining royalties are not necessarily laying the foundations for a secure financial future for recipient groups. The report comments that 'Aborigines know little or nothing about investment and the workings of the economy in general'.¹⁴⁸ In addition, the Aboriginal economy is based on sharing rather than accumulation. These two factors mean that 'no relationship can be established between present and future royalty payments, and Aboriginal financial security in the future'.¹⁴⁹

122. The conclusion reached by the report is that 'a delicate, perhaps precarious, equilibrium is being established between Aborigines and the other actors in the region'.¹⁵⁰ If mining is to continue even at the present level 'this embryonic equilibrium will need careful nurturing'.¹⁵¹ The report recommended the establishment of a task force to assist Aborigines in gaining the knowledge and skills which they lack, as well as efforts to 'draw [them] further into the decision-making process'.¹⁵² A caution is given against any new projects of substantial size:

[g]iven the findings of this Project and the demonstrated fragility of the community at this point, any new mining or other major development in the Region, including tourism, in the present circumstances and under

prevailing conditions will seriously intensify the grave problems already being faced by people in the Aboriginal domain.¹⁵³

123. Evidence received by the Committee also suggested that there are positive and negative consequences from mining royalties. The Department of Aboriginal Affairs stressed the improvements in material welfare, and educational and health facilities which mining royalties had made possible. The Department also commented in favourable terms about organisational changes which had resulted. The Aboriginal people, the Department commented:

have had to establish institutions which allow them to make decisions about distribution and about various developments that they either want to be involved in or indeed, may wish to oppose. But, when one considers what the area and the Aboriginal people's capacity to organise was, prior to all of these developments having occurred, and this regime being put in place, then it certainly was a very different situation then, than it is now. Now, we have a group of people who have the capacity to be heard; have the capacity to organise; have the capacity to participate in a way that certainly was not the case, more than just a decade ago.¹⁵⁴

124. A somewhat different view was expressed by Mr V. Brown and Mr R. Buckle, two administrators working with the Kunwinjku Trading Association which receives mining royalty funds generated from Nabarlek. Mr Brown spoke of the situation at nearby Oenpelli where, he said, 'the greatest pollutant of all is money.' At Oenpelli, according to Mr Brown:

[t]he introduction of dollars and cents into what was once a poor community has brought it to people that they have to try to make decisions about a substance they know nothing at all about.¹⁵⁵

The availability of money, he felt:

can ruin a community; it can get misused; it causes racism, simply because other people in the community look around and say 'Why give them all that money? They spend it on cars, they drink too much', and so it goes on.¹⁵⁶

Mr Brown urged the introduction of controls over money so that only limited amounts were available for spending and the rest could be invested for the future.

125. One difficulty in dealing with this issue is to distinguish the effects of income generated by mining royalties from the effects on Aboriginal communities of contact with white Australian society generally. This point was put to the Committee persuasively by Dr K. Palmer, Director of Research at the Australian Institute of Aboriginal Studies. Responding to the question 'Are mining royalties a mixed blessing?' Dr Palmer said:

I suppose the answer to that has to be yes, but a lot of Aboriginal people would say that most of their encounters with white Australia are a mixed blessing. You would have to see it in that context.¹⁵⁷

Referring to the report Aborigines and Uranium, Dr Palmer continued:

The Australian Institute of Aboriginal Studies ... spent five years monitoring the effects of uranium mining on the Oenpelli people and the people in the Park. Its conclusions were that this was a society in crisis. Having worked in a great many Aboriginal communities across Australia, I remind members of this Committee that there are a great many Aboriginal communities in crisis and some of them are a very, very long way from any mine. So again, there is not necessarily a connection or a relationship between the exploitation of natural resources and the payments of royalties and the concurrence of a group of Aboriginal people living in a certain way.¹⁵⁸

126. The Department of Aboriginal Affairs indicated that Aborigines had mixed views on further mining development in the Park. Radioactive pollution of major river systems and damage to flood plain areas were matters of particular concern. In this respect the development of Koongarra, on the head-waters of the Nourlangie water system, which at this stage was unaffected by any mining development, was known to cause concern to traditional owners. On the other hand there was less opposition to the Jabiluka mine, on the Magela Creek system which was already perceived to be at some risk from pollution from the Ranger mine.¹⁵⁹ It is interesting to note the Department stated that financial benefits from mining are in no way regarded as compensating for damage to sacred sites or disruption to the social environment.¹⁶⁰ In October 1987 nineteen Aboriginal people were employed at Ranger Uranium Mine.¹⁶¹

Koongarra

127. In February 1980 Denison entered into negotiations with the Northern Land Council in order to reach an agreement for the payment of stipulated amounts to Aboriginal interests as provided for under the Aboriginal Land Rights (Northern Territory) Act 1976. This Agreement provides for an annual royalty payable directly to the Northern Land Council; a land rental; a series of cash payments after certain specified events have occurred; and a number of non-financial commitments. These include preferential employment for Aborigines; five long-term contracts for preferential tender by Aborigines; scholarships for secondary and tertiary training; the construction of an Aboriginal outstation supply store; the free transfer to Aborigines of residential facilities no longer required by the company; and assistance with the establishment of outstations and an Aboriginal school. Other conditions relate to non-Aboriginal employees residing in Darwin and being flown to the site on a roster basis. A second agreement by which the Aboriginal traditional owners will acquire an undivided 25 per cent interest in the project was negotiated in parallel. According to this Agreement the operation should be carried out as a Joint Venture between Koongarra and the

Association, and administered by a Joint Venture Committee formed by two Aborigines and two company representatives. The two Agreements received endorsement from the traditional owners at Koongarra in 1985, and from the Northern Land Council in 1986. They were also approved by the Federal Minister for Aboriginal Affairs on 3 June 1987, pursuant to statutory obligations under the Aboriginal Land Rights (Northern Territory) Act 1976.¹⁶²

Jabiluka

128. Following the assessment of the Jabiluka Environmental Impact Statement and compliance by the Joint Venturers with further conditions imposed by the Minister, an agreement was signed in 1979 between the Joint Venturers and the Northern Land Council.¹⁶³ Pancontinental told the Committee that an agreed consultative process will be instituted with local Aboriginal groups and individuals to ensure that the impact of the companies' activities on the local Aboriginal social structure is a positive one. The agreement entered into between the Joint Venture partners and the Northern Land Council on behalf of the traditional Aboriginal land owners:

provides for acknowledged substantial social and financial benefits to Aboriginal people and communities for the duration of the development and operation of the Project.

The financial benefits include payments to the Northern Land Council for distribution to local Aboriginal Associations.¹⁶⁴

According to Pancontinental the social benefits would include the encouragement and maximisation of Aboriginal employment, the provision of educational, training and apprenticeship facilities for Aborigines, and the providing of advice and assistance to Aborigines to identify and take advantage of business

opportunities associated with the development of the project. There would also be special rights of access to the Project area for Aborigines and assistance in protecting Aboriginal sites.¹⁶⁵

Coronation Hill and the Conservation Zone

129. As indicated earlier, recent legislative changes clear the way for the determination of Aboriginal land claims over Stage 3 and the Conservation Zone. The original Jawoyn (Katherine area) land claim covered a small part of Stage 3 of the Park, but this was not recommended for grant by the Land Commission - no decision has been made by the Government on the granting of land in this claim. In June 1987 the Northern Land Council lodged a claim on behalf of the Jawoyn people over the whole of Gimbat and Goodparla. This claim has not yet come on for hearing by the Commission. It is likely therefore that a number of exploration projects will be sited in areas which may become Aboriginal land, and it is possible that some of these projects will proceed to the mining stage.

130. The sequence of events may however work to the disadvantage of the Jawoyn. Previous experience in the settlement of land claims suggests that the Jawoyn claim may take some time to finalise. Given the time limit on the exploration program in the Conservation Zone, mining companies have commenced exploration work there with the minimum delay. In all probability, this will mean that most of the exploration will have commenced before the Jawoyn land claim is settled and (assuming their land claim is successful) before there is any requirement to seek their consent to explore. Recent legislative changes may also place them at a disadvantage. As indicated earlier, recent amendments to the Aboriginal Land Rights (NT) Act provide that while the consent of Aboriginal traditional owners is required before exploration can commence, consent cannot be withdrawn if a company wishes to proceed to the mining stage. Assuming the Jawoyn land claim is successful, it seems likely

therefore that even if the claim is settled before any mining commences, some projects would be able to proceed to the mining stage on Jawoyn land without consent having been granted at any point.

131. The amended legislation retains the requirement for a 'terms and conditions' agreement at both the exploration and mining stages (which allows, *inter alia*, for the negotiation of royalty payments if mining is to proceed). The sequence of events may however affect this as well. Depending on the time required for the settlement of the land claim, companies may in some cases be ready to commence mining before a land grant is made. As the Committee understands the position, this would have the effect of removing the legal requirement for a 'terms and conditions' agreement in relation to mining even if the area to be mined were subsequently to be included in the land grant.

132. In the Committee's view it will be unfortunate if delays in settling land claims have the effect of allowing Aboriginal interests to be ignored. The Committee acknowledges that the problem is difficult. Even assuming that the Jawoyn land claim has some success, the boundaries of the land which is granted will not be known until the claim is settled. There is a real possibility that procedural delays may prevent the Aborigines concerned from exerting any influence on developments taking place on land which they have claimed and which may eventually be theirs. In these circumstances, the Committee believes that even where no legal obligations exist, mining companies should consider the interests of Aborigines who may eventually be affected. Specifically the Committee recommends that where applications for exploration or mining leases are being considered with respect to land which is the subject of a land claim, mining companies should be required to demonstrate that they have consulted with the Aborigines concerned, and have given due consideration to their views regarding both the question of consent to explore, and any arrangements for terms and

conditions. The fulfilment of this requirement - which does not go beyond a requirement to consult and consider - could be made a condition of exploration or mining leases. The Committee also recommends that the mining companies should establish a trust fund, or make other appropriate arrangements, to ensure that any approval of mining before a land claim is settled does not prove detrimental to the financial or other interests of the successful claimant.

133. The Coronation Hill Joint Venture told the Committee that in the course of their activities at Coronation Hill they had consulted extensively with the Jawoyn people and had included in their Aboriginal Affairs budget some provision for community aid for the outstation at Eva Valley where the Jawoyn are attempting to establish a viable cattle operation.¹⁶⁶

Recommendation

The Committee recommends:

- (i) that applications for exploration or mining leases within the Conservation Zone be considered only when the applicants are able to demonstrate that full consultation has taken place with Aborigines having land claims in the area concerned, that the views of the Aborigines have been taken into account and that appropriate arrangements for compensation of the Aborigines have been negotiated and;
- (ii) that the Joint Venture should be required to make provision for royalty payments, even if the Coronation Hill project proceeds before a land claim is finalised.

134. Mining activities in the Conservation Zone could provide opportunities for the training and employment of Aborigines, particularly those whose land may be affected. The Committee

notes that the Coronation Hill Joint Venture has already taken initiatives in this direction. In February 1988 the Joint Venture reported that ten Jawoyn were working at their exploration site, which represented 50 per cent of the full-time field work force. The Joint Venture indicated an intention to expand employment and training opportunities for Aborigines as the project progressed. The Committee endorses this objective and recommends that all companies seeking exploration or mining licences in the Zone be required to adopt employment policies which provide opportunities for Aborigines, especially those with traditional ties to the area.

Recommendation

The Committee recommends that all companies seeking exploration or mining licences in the Conservation Zone be required to adopt employment policies which provide opportunities for Aborigines, especially those with traditional ties to the area.

135. Professor J. D. Ovington of the Australian National Parks and Wildlife Service told the Committee that land systems 'associated with the riverine situation of the South Alligator' could be under threat from mining.¹⁶⁷ Dr J. G. Mosley, the Director of the Australian Conservation Foundation, also expressed concern to the Committee over the problems posed by mining in the upper catchment of the South Alligator River at Gimbat. He told the Committee that the associated mineral processing in particular 'should be looked at more thoroughly by means of an environmental impact assessment'.¹⁶⁸ The Committee recognises the importance of this catchment area in relation to the overall Kakadu region, the fact that the proposed mine is very close to the South Alligator River and the serious nature of the potential chemical pollutants involved. The Committee is also aware of concerns being expressed by Aborigines about possible contamination from mining activities in the area. The environmental impact assessment required under existing procedures will need to deal with these issues. Because this assessment has not yet been released the Committee is unable to reach a definite opinion on these matters.

Sacred sites

136. The Department of Aboriginal Affairs indicated a major concern of Aboriginal people in the Stage 3 area was that exploration activities should not disturb sacred sites. These sites were capable of releasing enormous destructive power if disturbed and the Jawoyn people had taken steps to register sites under the Northern Territory Legislation out of concern for their protection.¹⁶⁹

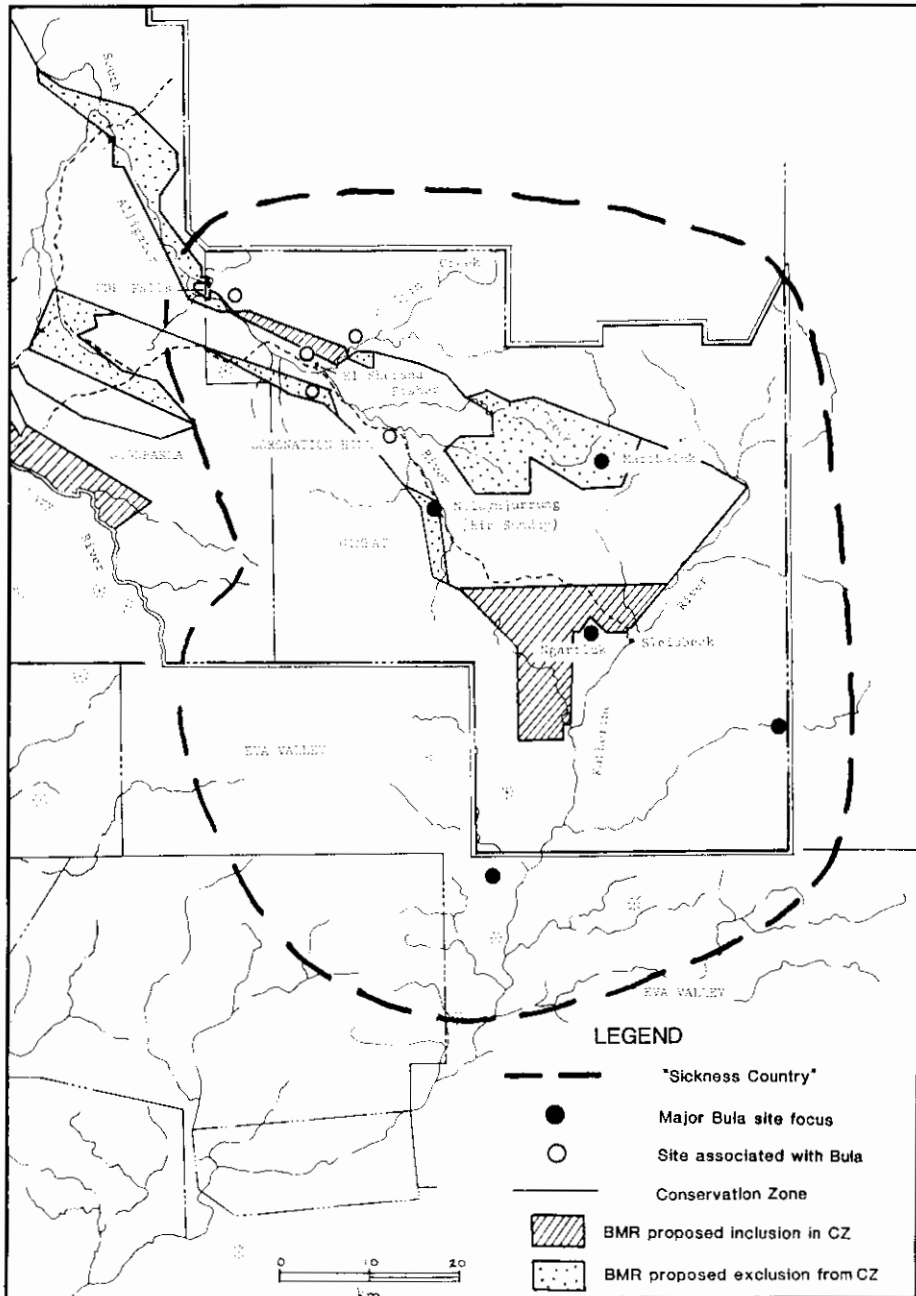
137. The impact of exploration and mining on Aboriginal sacred sites is a question which the Committee considered in some depth. Where the Ranger mine is concerned, this issue was dealt with by the Ranger Uranium Environmental Inquiry which recommended the relocation of the boundaries of the project area to avoid the Djidbidjidbi and Dadbe sacred sites in the vicinity of Mt Brockman. In the Park itself, mining has ceased to be a potential threat to sacred sites following the recent amendments to the National Parks and Wildlife Act prohibiting all mineral activity in the Park. (As indicated in Chapter Two, ANPWS has closed certain sacred sites within the Park to protect them from entry by tourists.) There are sacred site areas in the Conservation Zone, however, which may require protection from proposed mineral activity (see Figure 3.3).

138. This issue has already caused some difficulty in relation to the exploration and proposed mining on the Joint Venture's lease at Coronation Hill. The circumstances surrounding this matter are complex and it is not possible to provide a detailed account here. The main points however are relatively straightforward. In 1980, the Northern Territory's Aboriginal Sacred Sites Authority was advised by an anthropologist, Dr F. Merlan, of a request by Jawoyn custodians for protection of sacred sites in the Gimbat and Goodparla lease areas.¹⁷⁰ In 1982, Coronation Hill was recorded as a sacred site in a land claim lodged by the Jawoyn.¹⁷¹ On 18 September 1985, Aboriginal

custodians made an oral request to an Aboriginal Sacred Sites Authority field officer for registration of the site, and a formal, written request signed by four custodians was subsequently made on 27 September 1985. A few days later, the Aboriginal Sacred Sites Authority determined the boundaries of the site and formally registered it. Under the terms of the relevant Northern Territory legislation, registration provides legal protection for a site against access or interference without consent of the Aboriginal custodians. The site was described as the Upper South Alligator Bula Complex and included part of the lease areas then held by BHP at Coronation Hill as well as a larger area to the south and west.¹⁷² (See Figure 3.3)

139. The Coronation Hill Joint Venture commenced exploration work at Coronation Hill in 1984. Following notification of the registered sacred site, BHP held the planned investigation program in abeyance and representatives made contact with the Jawoyn community to seek permission for the work they wished to undertake.¹⁷³ In March 1986, a full meeting of the Jawoyn Association, which is the formal body representing the interests of the Jawoyn community, declined to grant this permission. BHP made further approaches to the Jawoyn in an effort to secure a more favourable outcome. On 1 July 1986 a further meeting of the Jawoyn Association reversed the earlier decision and agreed to exploration at Coronation Hill. On 3 July 1986 a meeting of the Aboriginal Sacred Sites Authority duly considered the result of the 1 July meeting and issued BHP with a formal authority to carry out exploration work. On 4 July, however, the Jawoyn Association held a further meeting at which it agreed to ask the Aboriginal Sacred Sites Authority not to issue the consent to explore. The Aboriginal Sacred Sites Authority reviewed these developments shortly afterwards. It decided that the permission issued on 3 July should stand.¹⁷⁴ The BHP exploration program then went ahead.

Figure 3.3



The Conservation Zone in Relation to the Bula 'Sickness Country' and Major Mythological Sites.

140. A related event which was described to the Committee involved the intervention of Mr S. Davis, manager of a firm which had previously carried out negotiations relating to sacred sites in the Northern Territory.¹⁷⁵ The Committee understands that on 3 July 1986, Mr Davis accompanied a small group of Jawoyn senior custodians to a sacred 'bula' site some 50 kilometres from Coronation Hill. The 'bula' is a powerful and feared ancestral creator figure who dwells deep within the earth and who will, if disturbed, bring on an apocalypse which, Aboriginal people fear, will destroy the earth.¹⁷⁶ Mr Davis formed the impression in the course of this visit that this area was a genuine 'bula' site, and that Coronation Hill had no sacred significance and was nothing more than a 'named locality'.¹⁷⁷ This evidence seemed to cast some doubt on the validity of the original decision to include Coronation Hill within a registered sacred site.

141. This conclusion, and the evidence on which it is based, was strongly contested by the Aboriginal Sacred Sites Authority which cited both anthropological sources and the Jawoyn request for registration in support of its position. The Authority agreed that the area visited by Mr Davis has major 'bula' significance (and had registered the site in 1980) and also agreed that the significance of Coronation Hill does not derive from its role in the bula cycle. The Authority contended, nevertheless, that the Upper South Alligator Bula Complex including Coronation Hill has an important place within traditional Jawoyn myth and ritual and is quite appropriately registered as a sacred site.

142. Evidence given to the Committee by the Aboriginal Sacred Sites Authority indicated that three of the senior custodians, Peter Jatbula, Shorty Jalong and Willy Martin, considered Coronation Hill to be a sacred site.¹⁷⁸ This view was supported when in May 1988 the Committee held an informal meeting with Mr Jatbula and Mr Fordimail, another senior Jawoyn custodian. Mr David Cooper of the Sacred Sites Authority and Mr Michael Dodson

of the Northern Land Council were also present. A video entitled 'Bulajang: Sickness Country', which had been prepared by the Aboriginal Sacred Sites Authority on behalf of the senior Jawoyn custodians was viewed during the meeting. The video outlined the main concerns of the Jawoyn custodians about exploration and mining activities within the Bula sickness country. At the meeting Mr Jatbula and Mr Fordimail both expressed the view that mining companies should not be allowed to operate in the sickness country, which includes Coronation Hill. They emphasised that in protecting the sickness country the custodians had heavy responsibilities to other tribal groups as, if the Bula was disturbed, these groups would also be at risk.

143. A report written in August 1987 by the Aboriginal Sacred Sites Authority and adopted by the Jawoyn custodians states that the custodians consider it is inappropriate to conduct exploration or mining activities within that part of the conservation zone lying within the 'sickness country'. This covers the whole of Coronation Hill and almost the whole of the Conservation Zone. Despite the views of the Jawoyn custodians, Jawoyn people have been working at Coronation Hill since 1986 when four Jawoyn were employed following the implementation of an employment and training program for Aboriginals by BHP. The number employed on site is now ten.

144. The Committee acknowledges that three of the senior custodians have declared that Coronation Hill is a sacred site.¹⁷⁹ The Committee is also aware of the view that permission for mining exploration may have been granted on a sequential basis with the custodians not fully aware of the likely extent of interference with the sites.¹⁸⁰ It believes, however, that the problems which have arisen may have stemmed in large measure from difficulties in inter-cultural communication, a point which was stressed by Dr K. Palmer from the Australian Institute of Aboriginal Studies in evidence before the Committee. In Dr Palmer's view, the notion of a 'sacred site' may itself give

rise to confusion and misunderstanding to members of Western societies if it is not appreciated in terms of traditional Aboriginal religious belief. In particular, he commented, it is misleading to think in terms of a clear distinction between sites which are 'sacred' and those which are not. Aboriginal people, Dr Palmer explained, believe that mythological ancestors moved around the countryside following a particular path. At places along that path, these beings performed various tasks and the importance of the place depends on the nature of the task:

[y]ou have a kind of sliding scale but it is very difficult to ask Aboriginal people: 'Is this a really important site or only just a very unimportant site?' In their understanding they would probably say: 'That is the place where Bula was'. Maybe if you understand the culture, rituals and myths associated with it, it may be possible to say that this is a really important site and this is just an open plain, there is nothing much there. These very complex cultural attributes of what we call an Aboriginal site are very easily confused and misunderstood by people who perhaps have not been exposed to or who have not had the formal training to understand specifically the complexities of Aboriginal religious belief and practice in relation to sites on the land.¹⁸¹

145. Dr Palmer recommended that the best course to adopt now in relation to Coronation Hill, would be to allow the Jawoyn a 'breathing space' in which they could clarify for themselves the status of the site and the importance they wish to attach to it. This would require a moratorium on all mineral activity for at least two years during which further anthropological research work could be done to establish the extent and significance of the site. More detailed information could also be collected on which people have traditional custodianship. Dr Palmer acknowledged that the mining companies concerned may not consider such a moratorium to be an acceptable option.

146. The Coronation Hill Joint Venture has already undertaken a substantial exploration program on the basis of the permit issued to it in July 1986. The Joint Venture is hoping to commence mining in 1988¹⁸² and has clearly been proceeding on the basis that an application to commence would be considered without lengthy delays. This is a reasonable expectation given that an established mechanism exists, in the form of the Aboriginal Sacred Sites Authority, for the consideration of applications to carry out activities such as mining on registered sacred site areas. The Committee's view is that, in addition to the requirement for a satisfactory environmental impact statement, the procedures of applying for a permit through the Aboriginal Sacred Sites Authority should operate. The Committee has, however, formed the opinion that there should be a cooling off period of at least one month before any final action by the Sacred Sites Authority is formalised, in order to allow for a review of the information it uses for this purpose.

Recommendation

The Committee recommends that a period of at least one month should be allowed for a review of information provided to the Sacred Sites Authority before it formalises any action following from the provision of such information.

147. The Committee believes, nonetheless, that every effort should be made to avoid the recurrence of such problems in the course of the five-year exploration program planned for the Conservation Zone. As indicated earlier, it is likely that mining companies will show strong interest in the area, and there is the possibility that some of the locations targeted may coincide with

sites of religious significance to the Jawoyn. The Committee believes that the events surrounding the granting of an exploration permit for Coronation Hill have caused considerable stress to the Jawoyn community, and that measures should be taken to avoid the possibility of this occurring again. The agency with primary responsibility in this field is the Aboriginal Sacred Sites Authority and the Committee believes that in order to clarify lines of communication and reduce pressure on the Aboriginal people, the Authority's role in dealing with these matters should be reaffirmed.

Recommendation

The Committee recommends that all Companies seeking to undertake exploration or mining activity in the Conservation Zone should be made fully aware of the role and responsibilities of the Sacred Sites Authority and of the boundaries of sacred sites within the Zone.

1. Evidence p. 1653
2. Evidence p. 1636
3. Evidence p. 1636
4. Ranger Uranium Environmental Inquiry (RUEI) Second Report 1977
AGPS p. 36
5. RUEI p. 322
6. ibid p. 290
7. ibid p. 331
8. Peko-Wallsend Limited and Others v the Minister for Arts,
Heritage and Environment and others 70 ALR p. 523
9. Minister for Arts, Heritage and Environment v Peko Wallsend
Limited 75 ALR p. 218
10. Evidence p. 10
11. Evidence p. 1636
12. Evidence p. 1640
13. Bureau of Mineral Resources, Geology and Geophysics, 1987.
Australian Uranium Resources. Resource Report 1, AGPS p. 26
14. Peko-Wallsend Operations Ltd, Electrolytic Zinc Company of
Australasia. Information Portfolio. Ranger 68 An Ore Deposit
in the Alligator Rivers Region of the Northern Territory. p. 5
15. Evidence p. 1140
16. Evidence p. 2618
17. Evidence p. 1644
18. Evidence p. 785
19. Letter from Dr T Gardner, Ranger Uranium Mines Pty Ltd to
Chairman, dated 18 November 1987
20. Evidence p. 1070
21. Letter from Mr R J Carter, BHP Gold at Mines Limited to the
Chairman dated 15 March 1988, p. 3
22. Evidence p. 2648
23. Letter from Mr R J Carter op cit p. 4
24. The Koongarra Project, prepared by Denison Australia Pty Ltd for
the Standing Committee on the Environment March 8, 1988 p. 1
25. Evidence p. 1644
26. Letter from Mr R J Carter, BHP Gold Mines Limited to Chairman
dated 15 March 1988 p. 3
27. Evidence p. 1644
28. Letter from Mr R J Carter BHP Gold Mines Limited to Chairman
dated 15 March 1988 p. 4
29. Evidence p. 1645
30. Evidence p. 263
31. Evidence p. 1139
32. Letter from Mr R J Carter BHP Gold Mines Limited, to Chairman
dated 15 March 1988 p. 2
33. Evidence p. 265
34. Evidence p. 281
35. Letter from Dr T Gardner, Ranger Uranium Mines Pty Ltd to
Chairman, dated 18 November 1987
36. Letter from Mr R J Thomas, Department of Primary Industries and
Energy, to Committee Chairman dated 9 March 1988
37. Evidence p. 1229
38. Dr C. O'Faircheallaigh 1986, The Impact of the Ranger Mine on
the Northern Territory and Australian Economics. A report
to the Ranger Uranium Mines Pty Ltd Australian National
University, North Australia Research Unit. p. iii
39. ibid p. 34
40. ibid p. iv
41. ibid p. iv

42. *ibid* p. ii
43. Evidence p. 1642
44. Evidence p. 408
45. The Koongarra Project. Prepared by Denison Australia Pty Limited for the Senate Standing Committee on the Environment, March 8, 1988
46. Letter from Mr R. J. Carter, BHP Gold Mines Limited, to Chairman, dated 15 March 1988 p. 5
47. *ibid* p. 6
48. *ibid* p. 6
49. *ibid* p. 7
50. *ibid* p. 1
51. Western Australian Government submission number 43 p. 1
52. *ibid* p. 1
53. *ibid* p. i
54. Evidence p. 2469
55. Evidence p. 2608
56. Evidence p. 1719
57. Evidence p. 1708
58. Evidence p. 1699
59. Evidence p. 1700
60. Commonwealth, State, Northern Territory Working Group, 1985, Exploration and Mining in National Parks, Report to Australian Minerals and Energy Council p. 20
61. *ibid* p. 21
62. *ibid* p. 22
63. *ibid* p. 23
64. *ibid* p. 23
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66. *ibid* p. 25
67. *ibid* p. 26
68. Evidence p. 2244
69. Evidence p. 2491
70. Evidence p. 2194
71. Evidence p. 2619
72. Ranger Uranium Mines Pty Ltd, 27 October 1987 Supplementary submission to Committee p. 2
73. Evidence p. 1153
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76. Evidence p. 1930
77. Evidence p. 1274
78. Evidence p. 1269
79. Evidence p. 28
80. Australian National Parks and Wildlife Service (ANPWS). Response to Committee's questions dated 5 December 1986 p. 9
81. Evidence p. 1487
82. ANPWS *op cit* p. 9
83. Evidence p. 1708
84. Evidence p. 117
85. Evidence p. 1907
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87. Evidence p. 1270

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90. Evidence p. 688
91. Evidence p. 686
92. RUEI op cit p. 114.
93. Evidence p. 811
94. Evidence p. 788
95. Evidence p. 473
96. Evidence p. 888
97. Report of the House of Representatives Standing Committee on Environment and Conservation 1986, Ranger Uranium Water management System p. 23
98. Supervising Scientist for the Alligator Rivers Region, Annual Report 1985-86 p. 36
99. Evidence p. 2228
100. Supervising Scientist for the Alligator Rivers Region, Alligator Rivers Region Research Institute Annual Research Summary 1986-87 p. 46
101. Evidence p. 438
102. Supervising Scientist for the Alligator Rivers Region Annual Report op cit p. 38
103. Evidence p. 435
104. Supervising Scientist for the Alligator Rivers Region op cit p. 38
105. RUEI op cit p. 150
106. Evidence p. 1501
107. Evidence p. 1503
108. Evidence p. 1487
109. Evidence p. 1500
110. Evidence p. 1674
111. Evidence p. 27
112. Evidence p. 201
113. Evidence p. 135
114. Evidence p. 183
115. Evidence p. 663
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117. ibid p. 5
118. Evidence p. 409
119. Evidence p. 424
120. Evidence p. 424
121. Evidence p. 419
122. Evidence p. 1499
123. Evidence p. 1498
124. Evidence p. 2678
125. Evidence p. 2686
126. Evidence p. 2698
127. Evidence p. 2699
128. Evidence p. 2654
129. Evidence p. 2653
130. Evidence p. 2654
131. Evidence p. 2677

132. Evidence p. 2680
133. Evidence p. 2680
134. Evidence p. 2655
135. Evidence p. 2684
136. Evidence p. 2704
137. Senate Hansard, 16 March 1988 p. 843
138. Senate Hansard 30 April 1987 p. 2056
139. Evidence p. 2669
140. Department of Aboriginal Affairs 1985. Background Notes on the Gagudju Association. p. 2
141. Department of Aboriginal Affairs - Explanatory Notes 1987-88 Community Services and Health Portfolio. Budget Related Paper No. 8 4C p. 90
142. Evidence p. 1607
143. Evidence p. 1592
144. Evidence p. 1608
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150. ibid 302
151. ibid p. 302
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153. ibid p. 305
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160. Evidence p. 1597
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163. Evidence p. 415
164. Evidence p. 411
165. Evidence p. 411
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168. Evidence p. 1483
169. Evidence p. 1597
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171. Evidence p. 2374
172. Mr R. W. Ellis. Summary of Notes on the Davis Report, dated 9 October 1986, p. 6
173. Evidence p. 2681
174. Evidence p. 2371
175. Evidence p. 2631
176. Evidence p. 820
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- 178. Evidence p. 2373
- 179. Evidence p. 2373
- 180. Informal discussion at Canberra 18 May 1988
- 181. Evidence p. 2745
- 182. Evidence p. 2648

CHAPTER FOUR

JABIRU

INTRODUCTION

1. In its second report (1977) the Ranger Uranium Environmental Inquiry recognised that, if the proposed mining in the region were to take place, it would be necessary to accommodate a relatively large resident population within a reasonable distance of the mine. The inquiry concluded it would be preferable for mine employees to be accommodated in a town of high amenity in which firm environmental controls would be imposed. The town should be in the national park and planned and managed in accordance with the Park plan of management. The inquiry recommended that the Northern Land Council be consulted in connection with the general control, planning and management of the town and that no accommodation be provided for tourists for the time being.¹

2. Shortly after the publication of this report the Commonwealth Government announced its decision to allow uranium mining to proceed and accepted the conditions of the inquiry relating to the construction of a town in the region. Construction of Jabiru did not commence, however, until mid-1979.² In the meantime, Aboriginal land claims were negotiated with the Commonwealth Government³ and ANPWS appointed consultants to update their original design study for the town.⁴ The design study included extensive assessment of the likely environmental impact of the town and recommended appropriate measures to ensure least disturbance to the environment.⁵

3. In December 1978 a town plan was presented to the major parties involved with Jabiru. After some changes, including an additional area for future development, a change in the residential street pattern and relocation of the golf course, ANPWS withdrew from direct involvement in the planning. Responsibility passed to the Northern Territory Government which had assumed self-government earlier that year. The Jabiru Town Development Authority, comprising representatives of the NT Government and the mining companies, was created under NT legislation in January 1979 to finance, develop and operate the new town.⁶ Construction of the town began in July 1979⁷ and the first residents arrived in 1980, when production began at the mine.⁸ The town was officially opened in July 1982⁹ and in the same year an Advisory Council was created to enable citizen participation in town government. The Jabiru Town Council was established in 1984 giving Jabiru a form of self-government.¹⁰

4. Jabiru is 230km east of Darwin and 10km west of the Ranger mine. The current population is about 1200, the majority being employed at Ranger with others in service industries associated with mining, such as the Alligator Rivers Region Research Institute. The town site occupies 13 square kilometres of Park land, within a town area of about 69 square kilometres.¹¹ It is not Aboriginal land, and is held under a 40-year lease by the Jabiru Town Development Authority (JTDA) from the Director of the Park.¹² The JTDA, in turn, sub-leases to occupants and controls leasing and licensing of commercial and business activities in Jabiru. The lessee is required to comply with the plan of management, Park regulations and the Town Plan.

5. Facilities at Jabiru include an Olympic-size swimming pool, recreation lake, a shopping centre with six speciality shops, public schooling to year 10, a library, health care centre, social club, golf course, shooting ranges, regional police station and other government-related offices and services.¹³

6. Residents of Jabiru are subject to the same restrictions as any visitors to the Park, except where special provision has been made in the plan of management, Park regulations or other laws and regulations.

THE IMPACT OF JABIRU ON THE PARK

Sociological effect

7. Jabiru is a town with a difference, a mining population centre for the Alligator Rivers Region, in a World Heritage area, a 'white enclave in a region with a permanent Aboriginal population.'¹⁴ It is regulated by Commonwealth and Northern Territory legislation, and town by-laws. The town was planned for 3,500 people, a much larger population than the current 1200. The planning was based on the possibility that Pancontinental Mining Limited and Denison Australia Ltd might gain permission to mine leases at Jabiluka and Koongarra respectively. This did not happen and the population of the town consists mainly of Ranger employees.¹⁵ Despite this, Jabiru is the sixth largest town in the Northern Territory.

8. Jabiru residents live in a mining town in which they do not pay the normal social cost of living in an urban environment. One question raised by a member of the Committee was the extent to which this had led to 'a "cradle-to-grave" mentality of everything being provided for them' and whether, as a result of this, they lacked any incentive to become involved in community affairs. Dr R. B. Zehner, Senior Lecturer from the School of Town Planning, University of NSW said that this was generally a problem in mining communities having a limited life-span and that Jabiru was not unique in this respect. There was a lack of interest in becoming involved in the town community, with only 25 per cent of eligible residents voting in the elections for the town council. He thought the development of tourism in Jabiru

would remedy this to some extent.¹⁶ Over the next ten years a sizeable part of the population would enter 'their 50s' and he foresaw the population would be looking to what they would do in the future. Tourism would provide an alternative proposition.¹⁷

9. A Jabiru community survey¹⁸ found that a majority of residents saw living in the Park as an advantage, despite controlling regulations. Residents indicated that the Park was attractive and provided recreation opportunities while the presence of Park management policies helped preserve what the Park had to offer. Over 90 per cent of the residents made use of the Park¹⁹ but almost half the residents expressed concern about regulations which limited their use of the Park.²⁰

10. Ranger provides orientation courses for residents in Jabiru to explain what people are able to do and not do in the area. Attendance by Ranger employees is compulsory.²¹ The Australian National Parks and Wildlife Service also holds induction courses for Ranger staff and their families.²²

11. The restrictions imposed on residents include regulations on the types of pets which can be kept. Cats, horses and exotic birds are prohibited. There are also restrictions on the types of plants which can be introduced. Sale of liquor requires permission of the Director and sand and gravel cannot be imported. Then there are the general restrictions which apply to all Park users, including Jabiru residents. For example fires may be lit only in particular areas, hunting is prohibited and camping is restricted. It has been reported that 'a significant number of billabongs and camping areas, popular with Jabiru residents, have been declared out of bounds for non-Aboriginals'.²³ According to Dr Zehner, feelings of resentment against these restrictions were held by 'some very vocal people within the town - a minority but a vocal minority'.²⁴

12. Regulation 20E of the National Parks and Wildlife

Regulations requires the Director's approval for the sale of liquor in the Park. In addition the vendor must hold a licence under the Liquor Act of the Northern Territory. The Northern Territory Government expressed dissatisfaction with these legislative arrangements and argued that provisions for the control of liquor should be uniform throughout the Territory. It said that the approval of the Director was unnecessary. There had already been some confusion over applications for special licensing and the legality of licenses in the town.²⁵ The sale of alcohol to Aborigines is further controlled. An unofficial rule has been established with the Sports Club that Aboriginal members may purchase only one carton of beer per day.²⁶ It was contended that some Aborigines see this as discrimination and would rather have normal access to alcohol.²⁷

Impact on Aborigines

13. Aborigines tended to regard Jabiru largely as a visitors town, which is how Jabiru residents in fact see themselves.²⁸ A number of Aborigines do live within Jabiru. Around 46 live at the Manaburduma camp site within the town. Only a small number of these are members of the Gagudju Association, the traditional owners within the area.²⁹ In addition, an estimated three per cent of the men and women in Jabiru are Aborigines living in Ranger - or Government - supplied housing. Depending on the season and the accessibility of the rest of the Park a variable number of Aborigines also live in part of Jabiru East, some 5km from Jabiru at the Koonjimba camp site.³⁰

14. Jabiru offers a convenient living base for those Aborigines employed by Ranger or ANPWS. It also offers a base for other Aborigines who wish to live in the Park and is a location for essential services.

15. The Gagudju Association has serviced and improved Aboriginal living areas throughout the Park and the Department of Aboriginal Affairs has also contributed funds for Manaburduma. This settlement is managed by the Jabiru Town Council as an agent of the Jabiru Town Development Authority and has a water supply, houses and ablution facilities.³¹ Aboriginal children who live in Jabiru attend the Jabiru school.³²

16. The NT Government, in its review of the plan of management for Stage 1, asserted that the town had generally a beneficial impact on Aborigines. Consultation with the Northern Land Council had ensured suitable facilities, liquor licensing and privacy for those Aborigines living in camping areas. The supermarket, health services and schools were readily available, and the availability of alcohol had not increased 'alcohol abuse.' In this respect the provision of camping areas in the town had reduced the risk of road accidents.³³

17. The Australian Institute of Aboriginal Studies has predicted that there will be adverse impacts on Aborigines should tourism be developed at Jabiru. There could be an increase in the requests by tourists for permits to visit Arnhem Land which, if granted, would exert a certain amount of pressure on neighbouring Aboriginal populations. A Northern Land Council (NLC) office is located in the centre of Jabiru³⁴ and inquiries for permission to visit Arnhem Land have already increased.³⁵ Often there is little understanding of why a permit to a particular area might be difficult to obtain and, as a consequence, arguments sometimes develop about land rights.³⁶ NLC staff have sensed on occasions that Aborigines wish to refuse permission for permits but feel unable to do so,³⁷ while the NLC office in Jabiru has come to serve almost as a travel agency and a broker between tourists and Aborigines.³⁸

18. Some signs of strain are already evident in the Aboriginal population in the Park. Aborigines residing near popular non-Aboriginal fishing places have asked for more signs to be erected to keep tourists away from their living areas. Some signs declaring Aboriginal land have been removed and some Aboriginal residents on off-shore islands and coastal communities have applied to the Northern Land Council to have entry to seas restricted within 2km of the shore. There have also been complaints about rubbish left behind by tourists.³⁹

19. In general, however, there appears to be a good relationship between the Aboriginal and non-Aboriginal communities in Jabiru.⁴⁰ It appears that Jabiru has had a mixed impact on the Aboriginal population, but by no means entirely adverse. There is no doubt that the effect of diversification of the town's function will be hard to predict. On one hand the development of tourism in Jabiru should provide long-term financial benefit to the Gagudju Association and some employment opportunities, but on the other privacy will become more of a problem for Aborigines. On balance, the Committee considers appropriate planning and administration of the town and Park should minimise further unacceptable effects. Matters such as enforcement of limited access to Aboriginal areas, appropriate licensing laws and Aboriginal housing will require careful consideration.

Recommendation

The Committee recommends that in monitoring the planning and future development of Jabiru, ANPWS, in consultation with the Jabiru Town Council and the Gagudju Association, should consider the effect of future development on Aborigines and ensure that there are no adverse consequences.

Environmental Impact

20. The Ranger Uranium Environmental Inquiry identified the following kinds of environmental damage as a likely consequence of the establishment of a town such as Jabiru:

- . disturbance of flora and fauna;
- . littering and dumping rubbish;
- . lighting fires;
- . vandalism;
- . keeping pets which could become feral;
- . use of four-wheel drive vehicles and trail bikes off road; and
- . damage to archaeological sites.

21. In order to reduce and prevent these impacts, constraints have been imposed on Park users through the plan of management and other regulations. The Inquiry also concluded that firm environmental controls should be communicated to new arrivals at the outset and that Ranger and ANPWS should conduct induction courses for new employees⁴¹, Ranger being responsible for describing the mining controls and ANPWS for discussing the Park regulations. As discussed earlier, this is being done.

22. The Ranger Uranium Environmental Inquiry concluded that:

[t]he evidence is clear that domestic dogs and cats must without exception be excluded from the region because of the destruction that they could cause to native wildlife, particularly if they go wild'.⁴²

Despite this, each family at Jabiru is allowed to keep two registered dogs.⁴³ Moreover, concern was expressed that the restrictions on animal ownership which apply to Jabiru residents do not apply to residents in other parts of the Park. Outside of Jabiru goats, pigs, cats and horses are kept and Ranger argued

that these pose a threat to the ecology of the Park, whoever keeps them.⁴⁴ Evidence indicated that there were cats in Jabiru⁴⁵ and along watercourses in the Park.⁴⁶ The Department of Health contended it was difficult to estimate the damage these animals caused in an area such as the Park.⁴⁷ Control was carried out on an 'opportunistic' basis.⁴⁸ The Committee received no evidence of feral dogs creating any problems.

23. There are claims of infringement of Park regulations on the part of Jabiru residents. Although hunting is prohibited under the plan of management, a local bow-hunter's association is reputed to exist in the town and there is anecdotal evidence to suggest Jabiru residents are the 'worst offenders in poaching large numbers of fish'.⁴⁹ One study in the region indicated that people living in Jabiru regard themselves as locals, and as therefore having more 'rights' than other visitors.⁵⁰

24. Town services inevitably have the potential to affect the environment. For example sewage is treated and discharged into Magela Creek via Corndorl Creek.⁵¹ There was no suggestion during the Committee's inquiry that there had been environmental problems caused by any of the town services, although there was a potential for adverse effects. Friends of the Earth considered that the Office of the Supervising Scientist should have the power to monitor releases from the town and from Mudginberri abattoir, which could influence water quality and interact with mining wastes. They asserted that a combination of industrial and domestic wastes is 'one of the nastiest combinations you can come up with so far as toxic wastes are concerned'.⁵² The Committee notes in this context that the Supervising Scientist, in his submission to the Committee, included Jabiru waste as a potential and actual source of environmental impact.⁵³ Mr A. Dix concluded that the establishment of Jabiru had increased rates of erosion; dirt tracks had caused a run-off into the river systems, but the consequential environmental effects were unknown.⁵⁴

25. The former Commonwealth Department of Health pointed out that another source of chemical contamination was fertilizer run-off from lawns in Jabiru. This caused nutrient enrichment of the billabongs receiving the runoff and, as a result, algal bloom occurs.⁵⁵

Recommendation

The Committee recommends that the Office of the Supervising Scientist should be given a clearly defined and on-going responsibility to monitor the environmental impacts of Jabiru on the Park ecosystems.

General Impact

26. It could be argued that, of all development that has taken place so far in the region, Jabiru has the greatest impact on the Park. Now that tourists are being catered for it must be seen as a permanent development, not solely dependent on the mining industry, although the size of the town will still vary in accordance with mining requirements.

27. One witness asserted that the establishment of Jabiru was 'by far the most damaging impact of mining, particularly in respect of the social and recreational activities of miners.'⁵⁶ He commented that:

[i]t is conceivable that the impacts of Jabiru residents on Kakadu are far more serious than impacts associated with tourism. The reasons are manifold and include:

- town residents develop an intimate knowledge of the area and learn how to access places and resources not available to most tourists;

- because they are residents, they tend to assume ownership rights in the area, even to the extent of developing antagonistic attitudes towards tourist activity and Aboriginal rights;
- mining, being in many respects the antithesis of park objectives, tends to attract staff that are unsympathetic towards park management priorities. Many are from backgrounds that do little to induce an understanding of the issues.⁵⁷

28. The Australian Conservation Foundation was entirely opposed to the existence of Jabiru. The Foundation took the view that it was not only incongruous to have a town in the middle of a national park, but that the consequential development of roads and other infrastructure was unacceptable.⁵⁸

FUTURE DEVELOPMENT

29. The development of Jabiru to cater for tourists was favoured by a majority of the submissions mentioning this issue.

30. About 80 per cent of residents were in favour of encouraging tourism in the area.⁵⁹ Specific groups and organisations in favour of the development included Ranger⁶⁰, the Jabiru Town Council, the Northern Territory Government,⁶¹ the Victorian Friends of the Earth,⁶² the Park Management, and the Darwin Tourist Promotion Board.⁶³ The Australian Conservation Foundation, opposed to Jabiru's existence, asserted that the development of Jabiru for tourism should not take place. It claimed that all kinds of proposals would be put forward, such as one for an additional airstrip, and the situation would become very difficult from a Park planning point of view.⁶⁴ The Foundation argued a new town should be created outside the Park boundaries and the whole question of accommodation for Park visitors should be a question of Park management, not just a simple matter of using Jabiru because it is there.⁶⁵

31. The Gagudju Association has indicated its approval for the development of Jabiru for tourists by putting forward a proposal for a new motel to accommodate visitors to the Park. The Association took the view this would be unlikely to increase the impact already felt⁶⁶ and would 'also take mounting pressure off the fragile environment of Kakadu National Park'.⁶⁷ The motel is now completed.

32. Whilst recognising the control imposed by the Northern Territory Building Authority, local town planning and by-laws, the Committee nevertheless finds it somewhat surprising that no environmental impact study or environmental evaluation was undertaken before the tourist development proposal for Jabiru was agreed upon. The plan of management was in operation at this time and specifically states 'all proposed developments in Kakadu National Park will be subject to environmental evaluation which may be conducted by ANPWS staff, consultants or outside agencies'.⁶⁸

Recommendation

The Committee recommends that in future all proposed developments in Jabiru, and in other parts of Kakadu National Park, be subject to an environmental evaluation, as stipulated in the Park plan of management and required under certain circumstances by the Environment Protection (Impact of Proposals) Act 1974.

33. Although Dr Zehner detected some community uncertainty about what would happen to the town if mining ceased, he thought an alternative tourism-based economy would take over.⁶⁹ The population in Jabiru was relatively young at present and tourism would become more attractive as a source of employment for Jabiru residents in about five or ten years.⁷⁰ Strong support for the development of tourism was evident from all sections of the Jabiru community.⁷¹ The Jabiru Town Council contended that tourists were already coming to Jabiru and their needs should be

accommodated. Residents felt that tourism would bring money into the town and create jobs so that Jabiru would become more of an open town. Tourists had often been turned away and the lack of facilities had been an embarrassment to them and to the Council.⁷²

34. One of the most important aspects of the development in Jabiru is the effect it will have on the Aboriginal community in the Park. The Ranger Uranium Environmental Inquiry had been pessimistic about the development of the town. Expert evidence indicated that:

the rapid development of a European community within and adjacent to, an Aboriginal traditional society has in the past always caused the breakdown of the traditional culture and the generation of intense social and psychological stresses within the Aboriginals.⁷³

Although there have been certain pressures exerted on Aboriginal people in relation to the exploitation of mining and tourism and the existence of Jabiru, the Committee takes the view that the consequences of building Jabiru have not been so dire. In particular, despite the views of the Ranger Uranium Environmental Inquiry, no evidence has been offered that Jabiru in itself has been the cause of any intense social or cultural pressure.

35. It is difficult to predict whether an overall increase in the number of residents in the town, albeit many of them less permanent than the present population, will precipitate a change in character, and increase what pressures already exist on the Aboriginal population to an unacceptable level. Since the Gagudju Association favours development, it would appear that the Aboriginal people themselves are not unduly concerned, although the Association does not of course speak for all Aboriginal people in the Park.

36. Whether tourism development in Jabiru would be of general sociological benefit to residents is questionable, given a suggestion in evidence that a change in the status of Jabiru could have some effect on the relationship between Aborigines and non-Aboriginal residents. In seeking information on the implications of Jabiru being a predominantly white enclave in a region with a permanent Aboriginal population, the Committee was told that Aboriginal and non-Aboriginal communities in Jabiru had a certain stability, if not necessarily 'a good working relationship', but that would continue only as long as the community stayed relatively closed.⁷⁴

37. The Committee concludes that Jabiru should be developed to provide facilities for tourists. It is already a tourist attraction and on the itinerary of some commercial tours. Approximately 80 000 tourists visit Jabiru each year.⁷⁵ It has some appeal as a mining town and is a source of supplies for long stay tourists.⁷⁶ The Committee considers one town within the Park is sufficient for this purpose. Any additional population centres should be in areas outside the Park boundaries, with the possible exception of a development in Stage 3. This, however, should not be undertaken without due consideration being given to its social, cultural and environmental impacts.

Recommendation

The Committee recommends that no additional population centre should be developed in Stages 1 and 2 of Kakadu National Park and that any proposal for a tourist development in Stage 3 of the Park should be subject to a stringent environmental impact study. This should take into full account the potential sociological impacts and, in particular, the potential impact on Aborigines having interests in the area.

38. The Committee understands that underdevelopment in Jabiru, which was originally designed for a population of 3500, has caused problems. Businesses already depend on tourist income for profitability.⁷⁷ Tourist development will improve their situation. At this stage the Committee sees no reason to provide for a population above 3500. Once the tourist industry is established in Jabiru the Committee believes that a study of the effects of the industry on the town and in the region should be undertaken. Matters to be considered should be the social and environmental impact of this development on the local Aboriginal population, and the implications for future town planning and future planning for the Park. Should further tourist development be considered, these studies should be taken into account before any decision is taken to develop either within or outside the Park. In this connection it should be noted that Jabiru is able to support a larger population, at least as far as water and sewerage supply systems are concerned. These were oversized for a population of 6000, as part of 'good town planning'.⁷⁸

39. With the opening of the new motel in Jabiru the Committee wishes to draw attention to problems that may arise should government policy change in the future and restrictions on the number of uranium mines be removed. The Committee makes no attempt to provide a solution, only to draw attention to a possible future dilemma, should for example Jabiluka and or Koongarra be developed. In this situation, the 'good town planning' over-provision for the projected population of Jabiru would suggest accommodation for mine workers might still be provided in Jabiru, along with tourist accommodation. However, the Committee believes that any proposal along these lines should be considered only after consultation with Aboriginal groups. The Committee is aware, for example, that the agreements negotiated by Denison in relation to Koongarra specify that no

non-Aboriginal person, other than the Project site manager and dependants, will reside in Jabiru. During production all non-Aboriginal employees will reside in Darwin and be flown to the mine site to work for a roster period.⁷⁹

1. Ranger Uranium Environmental Inquiry (RUEI) Second Report 1977
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2. Evidence p. 549
3. Evidence p. 549
4. Evidence p. 559
5. A A Heath and Partners Pty Ltd, Jabiru, Advanced Design Study
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6. Evidence p. 551
7. Evidence p. 550
8. Evidence p. 543
9. Evidence p. 561
10. Evidence p. 861
11. Australian National Parks and Wildlife Service (ANPWS), 1980,
Kakadu National Park Plan of Management p. 301
12. Evidence p. 544
13. Evidence p. 763
14. Evidence p. 543
15. Evidence p. 543
16. Evidence p. 586
17. Evidence p. 592
18. Robert B Zehner and John P Lea, 1984, Jabiru Community
Survey, School for Town Planning, University of New South
Wales p. 31
19. ibid p. 33
20. Evidence p. 582
21. Evidence p. 583
22. ANPWS 1986 Kakadu National Park Plan of Management p. 58
23. Robert B Zehner and John P Lea op cit p. 29

24. Evidence p. 582
25. Evidence p. 1199
26. Robert Lawrence and Maggie Brady, Aborigines and Tourism, A
study of the Impact of Tourism on Aborigines in the Kakadu
Region, Northern Territory, Ed. Kingsley Palmer, 1985, p. 42
27. Evidence p. 1627
28. Evidence p. 574
29. Evidence p. 582
30. Evidence p. 583
31. ANPWS 1986 op cit p. 62
32. Evidence p. 1626
33. Evidence p. 1224
34. Robert Lawrence and Maggie Brady op cit p. 49
35. ibid p. 46
36. ibid p. 47
37. ibid p. 47
38. ibid p. 49
39. ibid p. 50
40. Evidence p. 579
41. Evidence p. 505
42. RUEI 1977 op cit p. 218
43. ANPWS 1986 op cit p. 60
44. Letter from Mr T Gardner, Ranger Uranium Mines Pty Ltd, to
Professor J D Ovington ANPWS dated 10 July 1986 p. 9
45. Evidence p. 1417
46. Letter from Professor J D Ovington ANPWS to Ms E Mountain,
National Resources Committee dated 5 December 1986 p. 6
47. Evidence p. 1425
48. Professor J D Ovington op cit p. 6

49. Robert Lawrence and Maggie Brady op cit p. 45
50. ibid p. 50
51. RUEI 1977 op cit p. 221
52. Evidence p. 358
53. Evidence p. 649
54. Evidence p. 107
55. Evidence p. 1425
56. Evidence p. 1278
57. Evidence p. 1278
58. Evidence p. 1466
59. Evidence p. 589
60. Evidence p. 781
61. Evidence p. 756
62. Evidence p. 141
63. Evidence p. 2317
64. Evidence p. 1466
65. Evidence p. 1468
66. Robert Lawrence and Maggie Brady op cit p. 41
67. Evidence p. 759
68. ANPWS 1986 op cit p. 86
69. Evidence p. 575
70. Evidence p.592
71. Evidence p. 589
72. Evidence p. 754
73. RUEI 1977 p. 233
74. Evidence p. 578
75. Evidence p. 763
76. Robert Lawrence and Maggie Brady op cit p. 44
77. Evidence p. 762
78. Evidence p. 768
79. The Koongarra Project. Prepared by Denison Australia Pty Limited for the Senate Standing Committee on the Environment March 8, 1988 p. 8

CHAPTER FIVE

COMMERCIAL FISHING

BACKGROUND

1. Commercial fishing has taken place in river estuaries of the Kakadu region for about forty years. The principal target is barramundi although substantial quantities of threadfin salmon are also caught. Some harvesting of mud crabs takes place as well. The Committee received evidence on the operation of the commercial fishing industry and on the proposal to phase out this activity in the Kakadu region over the period of the current Park plan of management.

2. Commercial fishing takes place in many areas along the Northern Territory coastline. Licences are issued by the Northern Territory Department of Ports and Fisheries and there are currently forty commercial licence holders in all. About six of these regularly fish in the Kakadu region although this number can rise to nine when fish are especially plentiful. The Northern Territory Fishing Industry Council told the Committee in October 1986 that about 15-20 per cent of the total Territory commercial catch came from the region.¹ The relative importance of the major fishing areas in the Territory as calculated in 1984 is shown in Table 5.1. The table also indicates the level of recreational fishing in these rivers. There is a growing recognition that recreational and commercial fishing exert joint effects on fish populations within individual river systems and that recreational fishing may be having a large impact. Barramundi, for example, are now thought to complete their life cycle within the one river system. Tagging studies show that very few fish move between rivers and that most stay within or just outside their resident

rivers. Consequently, prolonged overfishing in any one river will almost certainly cause long term depletion of that particular stock of barramundi.

TABLE 5.1

STATUS OF MAJOR FISHING AREAS - NORTHERN TERRITORY

River (and/or system)	1984 Commercial Yield (tonnes)	% NT Total Commercial Catch	Recreational Use
VICTORIA including Fitzmaurice	26	4	Low
DALY including Reynolds	64	10	High
FINNISS including Darwin, Adelaide	56	9	High
MARY including Wildman	127	20	Very High
ALLIGATORS	100	16	Very High
ARNHEM	64	10	Negligible
ROPER	85	14	Medium-Low
MCARTHUR	55	9	Medium-Low
OTHER	40	7	Very Low

Source: Department of Ports and Fisheries, NT: Report of Barramundi Task Force. 1985.

3. The NT Fish and Fisheries Act prohibits commercial fishers from operating upstream of stipulated points in each river. In the Kakadu region the rivers can be fished for distances varying from five to eight miles from their mouths. Standard fishing technique within the rivers is to set gill nets of approximately 50 metres in length. Outside, along the tidal mudflats, nets of between 200 and 750 metres are used. The nets are visited at least four times a day by fishers operating out of dinghies. The catch is stored in freezer vessels, which are usually about ten metres long. An average operation involves two people who work a selected area for two to four weeks or until freezers are full.² Fishing regulations provide that a licence holder may not set more than 1000 metres of net, that fish should be of a minimum size, that net mesh also be of stipulated minimum size, and that nets should not be set across more than half the width of a stream. In addition, certain areas are closed to commercial fishing and there is a complete ban on taking of barramundi during the spawning season from 1 October to 31 January each year.

COMMERCIAL FISHING IN THE PARK

4. The first plan of management for the Park was issued in 1980. It made reference to the CSIRO pre-management study of 1979, which suggested that barramundi were on the point of being over-exploited, and outlined procedures for the phased reduction of the commercial fishing effort.

5. This policy was not implemented during the life of the first plan and normal commercial operations continued in accordance with the provisions of Northern Territory fishing regulations. The current plan of management has reaffirmed the objective of phasing out commercial fishing in the Park and sets out a timetable for implementation. All commercial fishing is to cease within five years of 1986, the commencement date of the

plan, with the stated intention of bringing all operations to an end within three years of the plan's commencement. The plan requires commercial fishing to have been prohibited in the East Alligator River in its first year.

6. The plan mentions three considerations underlying this policy. Firstly, reference is made to information assembled in the report of a Barramundi Task Force established by the Northern Territory Government in 1985. The plan notes that the barramundi catch per unit effort 'has decreased dramatically' in the period 1972 to 1984, which 'supports the view that barramundi populations in the Park have declined considerably' during this period. It is suggested that this trend may have been accelerated by the impact of recreational fishing. Secondly, the plan states that 'commercial harvesting of native fauna, including fish, is incompatible with national park aims' and comments that 'the effects of fishing are not confined to fish, since crocodiles and other animals are also caught in the nets.'³ Thirdly it quotes a Specialist Group of the International Union for the Conservation of Nature (IUCN) which expressed concern in 1984 at the continuing commercial netting of barramundi 'to the detriment of the C. porosus [saltwater crocodile] which are an important part of the park ecosystems.'⁴

7. In evidence before the Committee in October 1986, the Director of ANPWS, Professor J. D. Ovington, reaffirmed the intention to phase out commercial fishing and mentioned three grounds for the decision. Professor Ovington saw 'some evidence that fish stock are suffering, are being depleted' and noted that 'the Northern Territory Government ... has taken various measures elsewhere in the Northern Territory to improve this situation.' Secondly, Professor Ovington mentioned 'growing concern because of the advent of a disease called Bundaberg disease in the Northern Territory which is having adverse effects on a wide variety of fish species.' The third consideration was the IUCN request mentioned above concerning the preservation of saltwater crocodiles.⁵

8. The policy of closing the Park to commercial fishing received support directly or indirectly from other witnesses. As indicated in the discussion of recreational fishing in Chapter Two, the World Wildlife Fund highlighted the fact that while hunting of terrestrial species is not permitted in the Park, aquatic fauna are not afforded the same protection. The Fund recommended that fishing should be prohibited. Similar sentiments were expressed by the Australian Conservation Foundation, and by the Australian Heritage Commission. The latter body commented:

{the Commission supports the Australian National Parks and Wildlife Service in its plan to phase out commercial fishing in Kakadu National Park over a three year period. Fishing for native fish is not an appropriate recreation within a national park (just as koala shooting is not appropriate).⁶

9. Strong opposition to commercial fishing was also expressed by Professor H. Messel of the University of Sydney. On the basis of research conducted in the Northern Territory over a number of years, Professor Messel argued that as well as depleting barramundi stocks, commercial fishing had resulted in the killing of large numbers of saltwater crocodiles which were caught and drowned in fishing nets. Professor Messel made reference to the IUCN Specialist Group (of which he was a member) which had expressed concern in 1984 at the effect of commercial fishing on saltwater crocodiles in the Kakadu area. He believed that the Australian Government was under an obligation to ensure that commercial fishing cease in the Park.

10. Support for the prohibition of commercial fishing was also expressed by the Amateur Fishermen's Association of the Northern Territory (AFANT), although the Association expressed

concern about the pressure likely to be exerted on rivers outside the Park by fishers who would need to relocate their operations. As indicated in Chapter Two, the Association opposes the closure of any areas in the Park to recreational fishing.

11. Opposition to the phasing out of commercial fishing came principally from the Northern Territory Government and the Northern Territory Fishing Industry Council. These both challenged the proposition that commercial operations were resulting in the depletion of barramundi stocks or in serious effects on the crocodile population.

12. Representatives of the Northern Territory Fishing Industry Council (NTFIC) argued that commercial fishers had noticed signs of overfishing several years ago and that this had led the NTFIC to propose new management measures to conserve stocks. The major innovations were the imposition of maximum net lengths and the introduction of a net 'buy back' scheme. Before 1981 a maximum net length of 1500 metres per licensee was imposed and this was reduced to 1000 metres in 1982.⁷ The net 'buy back' scheme which commenced in 1982 allowed individual net units (each unit being equivalent to 250 metres), or a whole commercial fishing licence, to be sold back to the Northern Territory government at a stipulated price per unit.⁸ The size of a net unit was reduced in 1983 and the buy-back price per unit increased over the calendar period 1982 to 1988, as it became more difficult to move people from the fishery.⁹ This scheme was finalised at the end of 1987 when the number of licences remaining in the fishery was 38,¹⁰ compared to the 123 licences held before the scheme was undertaken.¹¹ In 1988 a new buy back scheme intended to give emphasis to the Mary River was introduced. This covered the buy back of five full licences (1000m net/licence) at a price of \$60 000 per licence. The NTFIC

measures had led to a considerable reduction in the fishing effort in Northern Territory coastal waters.¹²

13. The Northern Territory Fishing Industry Council argued that these changes protect the barramundi stock from overfishing. The Council bases this claim on conclusions reached by the Barramundi Task Force. The Task Force's report concluded that the maximum sustainable yield - the fishing level at which fish stocks are in equilibrium - would be reached if the fishing effort was of the order of 61 300 hundred metre net days. (One 'hundred metre net day' is 100 metres of net set for one day, or any combination of net length and days which equals 100.) As a result of the new management procedures the current level of effort is 35 000 hundred metre net days.¹³ On this basis the Council argues that barramundi are 'biologically safe and are not 'over exploited'.¹⁴ The Council claims that 'the number of fish is on the rise.'¹⁵

14. These arguments received support from the Northern Territory government. The Northern Territory Department of Ports and Fisheries stated that it has:

an on-going research monitoring programme to assess the status of the barramundi fishery. This is oriented to the continuing refinement of estimates of desirable fishing levels in the aggregate derived from catch and effort data. Some 14 to 15 years of data is now available for this purpose. The models used indicate that current effort is below the commercial optimum.¹⁶

The Northern Territory Government's submission stated that ANPWS had misrepresented the conclusions of the Barramundi Task Force Report¹⁷ and that the fish resource cannot be regarded as 'at risk under the present arrangements.'¹⁸ The submission argued that ANPWS had chosen to ignore 'dramatic reductions in the number of fishermen' together with 'significant reductions in

fishing effort'. The submission claimed that ANPWS had also omitted to mention the Barramundi Task Force's conclusion that additional fishing control measures were not required for the Alligator Rivers area because the existing fishing effort there was below the optimum.¹⁹ In examining these arguments the Committee noted that the Task Force study not only questioned the accuracy of the various models used to predict sustainable yields²⁰ but also went on to add that various other factors (environmental, changes in fishing strategy, geographical distribution etc.) had resulted in 'somewhat inflated estimates of sustainable yield'.²¹ The report further concluded that a study of river systems and their exploitation 'gives a clear indication of the need to impose additional restrictions overall ...'²²

15. The claim that commercial fishing kills large numbers of crocodiles was disputed by the Northern Territory Fishing Industry Council. It characterised this proposition as based on 'rumours [which] are often spread by Southerners who have no idea of the true situation.'²³ Council representatives commented that fishers had previously used a heavy netting material from which crocodiles found it difficult to escape. Current practice was said to entail a monofilament, nylon netting which crocodiles are able to break out of more easily.²⁴ Some crocodiles still get caught, the Council acknowledged, but these represent only a very small proportion:

[m]ost crocodiles live very happily with nets using the bunt of the net to assist them in catching fish. There are of course some "rogue" crocodiles, a very small percentage of any one area of crocodile population, who take fish from nets and who are occasionally caught. These crocodiles, where possible, are released from the nets, occasionally they drown. We would estimate that the percentage of any river's population so killed would be slightly less than 1% and would in no way compete with cannibalism or death from fighting that would occur naturally.²⁵

Council representatives said that crocodile numbers are increasing. They quoted figures provided by the Northern Territory Conservation Commission indicating that the current rate of increase is 10.8 per cent per annum and that the population of the South Alligator River in particular is increasing at an annual rate of 22.5 per cent.²⁶ This is also supported by the ANPWS Plan of Management which states that the number of saltwater crocodiles 'is increasing even though some animals are drowned in commercial barramundi nets set in the mouth of rivers'.²⁷

16. The suggestion that commercial fishing may have some causal role in the spread of Bundaberg disease was also disputed. Mr. D. Dunstan, Executive Officer of the Northern Territory Fishing Industry Council said:

[w]e are told that this disease has always been present. But nobody knows why it has come out this year. It is confined in the main to freshwater billabongs. The commercial fishers have had very small instances of diseased fish this year. It has been a very low percentage compared to what is being caught by amateurs in inland freshwater areas ... it is clear that barramundi is the least affected fish by the disease. It seems to be standing up to it a lot better than catfish and other incidental types of fish.²⁸

The Committee notes that little appears to be known about the disease. Professor Ovington explained that it is thought to be a virus, possibly of South East Asian origin, and that it is causing high mortality rates in many fish species. It is known to be in the South, East and West Alligator Rivers, the Wildman River and Coopers Creek just outside the Park.²⁹

17. Finally, there was dissent from the proposition in the Park plan of management that commercial fishing 'is incompatible with national park aims.' The Northern Territory Government described this as an 'ambit claim' which it could not accept and

which was also 'incompatible with the principles adopted by the Commonwealth in the context of the National Conservation Strategy in relation to conservation and resource utilisation.'³⁰ (The National Conservation Strategy, as indicated in Chapter Two, adopted as a general principle that conservation and resource utilisation should be treated as interdependent.)

18. The Committee finds some of these arguments more substantial than others. The question of Bundaberg disease can be dealt with quite briefly since there appears to be very little reliable information about it at this stage. The presence of the disease in the fish populations in the Park should certainly be investigated carefully. However, there appears to be no evidence at the moment of any causal connection with the activities of commercial fishers.

19. The impact of commercial fishing on crocodiles is difficult to determine with any accuracy but the Committee believes the situation to be less serious now than it was in the late 1970s when Professor Messel observed high rates of crocodile mortality resulting from fishing nets. The use of the lighter monofilament nets, together with the substantial reduction in the number of licensed operators, seem to be the main reasons for this changed situation. Nevertheless, as the Northern Territory Fishing Industry Council itself acknowledged, some crocodiles continue to be drowned in nets despite the best efforts of fishers to prevent this. This situation is unlikely to alter as long as commercial fishing continues, and it clearly runs counter to the basic national park objective of ensuring protection for native fauna.

20. The impact of commercial fishing on fish stocks is also difficult to assess with accuracy. ANPWS highlights the major decline in catch per unit effort since 1972 in the Alligator Rivers region, as documented in the Barramundi Task Force report. (Catch is measured in whole weight and effort is measured in

hundred metre net days). The Northern Territory Government and the NTFIC on the other hand see the Task Force report as supporting their own position that, given the substantial reductions in fishing effort, commercial fishing in the Kakadu region (and in the Northern Territory in general) is now being held at a level which ensures that over-exploitation does not occur. The Northern Territory Department of Ports and Fisheries referred to its long-term research and monitoring program in support of this position. Perhaps the only common ground between the Territory government and the ANPWS in this context is that both acknowledge the growing impact on the fishery of recreational anglers, and both see a need to investigate this more closely.

21. Whether or not commercial fishing is taking place at a sustainable level however, it is clearly removing large quantities of fish from the river systems of the Park. The commercial catch in the Kakadu area over the period 1981 to 1985 has ranged between 145.06 and 57.46 tonnes of barramundi, in addition to substantial quantities of threadfin salmon. This, together with the incidental drowning of saltwater crocodiles, clearly amounts to a substantial assault on the aquatic fauna of the Park. It is a situation which sits uneasily with the generally accepted concept of a national park as an area in which exploitation of natural resources is prohibited, and where fauna and flora are protected. The principles enunciated in the National Conservation Strategy, to which the Northern Territory government referred, do not affect this situation in the Committee's view. The Strategy certainly argues that policies relating to resource development and conservation should be interdependent, as the Northern Territory pointed out. As indicated in Chapter Three however, the Committee sees this principle as applying to land use policies generally rather than to national parks in particular. Where the latter are concerned, a much stronger emphasis on conservation is normally considered to be appropriate and the exploitation of natural resources is strongly discouraged. As mentioned in Chapter Two, the IUCN lists

fishing as one of the forms of exploitation of natural resources which should be prohibited in national parks. The World Heritage listing of part of the Park, including much of the Wildman and Alligator River systems, also implies very high standards of resource preservation.

22. The Committee recognises the apparent inconsistency in supporting the phasing out of commercial fishing and not opposing the continuation of recreational fishing. As noted in Chapter Two, recreational fishing also removes substantial quantities of fish from the river systems of the Park. Given the increasing numbers of visitors and the reduced number of commercial fishers, the total recreational catch may now in fact be considerably in excess of the commercial take. This is demonstrated by the fact that 50 per cent of recreational fishing in the Northern Territory takes place within the Park, and recreational fishers were responsible for 58 per cent of the total barramundi catch. Recreational anglers also tend to catch a wider variety of fish species, which may add to their ecological impact. It might of course be argued that commercial fishing can more readily be described as 'exploitation' of Park resources since it is carried out for commercial gain and not simply as a recreational activity. The consequences for the aquatic fauna are however the same in both cases. Both commercial and recreational fishing amount essentially to 'hunting' of fauna and for that reason are difficult to reconcile with national park aims. As indicated in Chapter Two, the Committee has accepted that recreational fishing plays an important role in tourism in the Park region and has not proposed the closure of the Park to amateur anglers (although that position is linked to a recommendation that further research be carried out which may entail partial closures.) Unlike recreational fishing however, commercial operations are not linked with other activities within the Park and cannot be supported on such grounds. The Committee believes the current policy of a progressive phase-out is correct and should be implemented.

Recommendation

The Committee recommends that the policy of phasing out commercial fishing in Kakadu National Park be implemented according to the timetable presented in the second Kakadu National Park Plan of Management.

23. The Northern Territory Government submitted that if this is to occur there should be adequate compensation for the licensed operators affected. The basis of this argument is that although commercial fishing in the Territory's coastal waters is currently at a level below the maximum sustainable yield, the six to nine licensees displaced from the Kakadu area could not be absorbed into the remainder of the fishery without placing excessive pressure on fish stocks in other areas. Since barramundi fishing boats are purpose-built and are unsuitable for the open sea, there is no possibility of transferring to deep sea fishing. The Territory Government argues therefore that if any fishers are excluded from the Park area, they should be compensated at a level which will enable their complete removal from fishing in Territory waters. Appropriate compensation, the Territory submits, would be 'at least the same level as received by those who surrender entitlements under the present net buy-back scheme together with a component relevant to the vessel and equipment involved.'³¹ The Committee accepts the logic of this argument and believes that claims for compensation at this level should be considered. If this is not done and the operators remain in the industry, the phasing out of commercial fishing in the Kakadu area could possibly jeopardise fish stocks elsewhere in the Territory. A policy motivated by a concern for conservation could then result in adverse effects on aquatic fauna in other areas.

Recommendation

The Committee recommends that commercial fishers displaced from the Park be offered compensation by the Commonwealth for their total removal from fishing activities in Northern Territory waters. The compensation should be at a level received by those who surrender entitlements under the present net buy-back scheme, together with a component relevant to the vessel and equipment involved.

CRABS

24. Mud crabs in the Northern Territory are primarily harvested by the use of pots. Crabbing occurs in all of the mangrove areas along the coastline, with the majority of the catch being taken in places close to the larger population centres. Like commercial fishing, the crab industry is also subject to management measures. No more than 55 operators are licensed, each with a permit for a maximum of 60 pots. Crabs less than a minimum size must be returned to the water.

25. In line with the policy of phasing out commercial fishing, the current plan of management prohibits the use of crab pots unless a permit has been obtained from ANPWS. In practice this means that the Park has been closed to crabbing.

26. The Northern Territory Government and the Northern Territory Fishing Industry Council argued that this measure is unnecessary. The Territory's submission claimed that crab resources in the Territory cannot be regarded as 'at risk' under present management arrangements and that, like fish, crab resources in the Park should continue to be managed as an integral part of the overall Territory situation. The Council expressed similar views and drew attention to restrictions introduced since 1985 which limit the number of operators in the industry, the number of crab pots which can be used, and the size

of crabs taken. The submission argued that measures such as these ensure the long-term protection of the crab population.

27. The Committee's views on this matter parallel its approach to commercial fishing for barramundi and threadfin salmon. The commercial harvesting of crabs within the Park amounts to an exploitation of part of the area's ecological resources and as such is in conflict with national park aims as they are normally understood. The prohibition of crabbing in the Park seems therefore to be the appropriate course of action.

Recommendation

The Committee recommends that the Kakadu National Park remain closed to commercial crabbing operations.

1. Evidence p. 2297
2. Evidence p. 2284
3. Australian National Parks and Wildlife Service (ANPWS) 1986
Kakadu National Park Plan of Management, ANPWS p. 30
4. ANPWS ibid p. 26
5. Evidence p. 2199
6. Evidence p. 1517
7. Department of Ports and Fisheries Northern Territory 1985
Report of Barramundi Task Force p. 3.6
8. Department of Ports and Fisheries, Northern Territory op. cit.
p. 3.6
9. Letter from Mr J Dillon, Department of Ports and Fisheries,
Northern Territory to Mr P Roberts, National Resources
Committee dated 14 July 1986. Attachment p.1
10. ibid p. 2
11. Evidence p. 2290
12. Evidence p. 2290
13. Evidence p. 2286
14. Evidence p. 2286
15. Evidence p. 2290
16. Letter from Mr J F Dillon op. cit.
17. Evidence p. 2487
18. Evidence p. 2442
19. Evidence p. 2487 and 2488
20. Department of Ports and Fisheries op cit p. 5.4
21. ibid p. 5.9
22. ibid 2.4
23. Evidence p. 2286
24. Evidence p. 2292
25. Evidence p. 2286
26. Evidence p. 2293
27. ANPWS op cit p. 26
28. Evidence p. 2300, 2301
29. Evidence p. 2202
30. Evidence p. 2441
31. Evidence p. 2443

CHAPTER SIX

OTHER ISSUES

1. Earlier parts of this report have dealt with the management of the major activities affecting the Park. This section presents a brief discussion of the management issues for other factors: viz the scientific resource, crocodiles, introduced species and fire.

THE SCIENTIFIC RESOURCE

2. The great diversity of the Park in species, habitat, climate, soil and geomorphology, requires informed and flexible management, scientific monitoring and research.¹ However, quite apart from the research needed for effective management, the Park also offers scientists a unique opportunity to contribute to the study of various fields. CSIRO, for example, contended that Kakadu was an important area for the investigation of tropical ecology and that studies conducted there could establish leadership in this field.²

3. The Park plan of management acknowledges that research is an essential element of Park management. In particular, research which provides information relevant to Park management is to be encouraged, with ANPWS providing funding where appropriate. Research would also be funded by other Government sources. Research programs are to be undertaken only after consultation with Aboriginal people and have to be conducted in such a way that there are no detrimental effects on the status of species, the enjoyment of the Park by other users, the lifestyle of Aboriginal people, or on Aboriginal sites and other areas.³ A

permit from the Director of ANPWS is required for research under regulation 7B of the National Parks and Wildlife Regulations.

4. Research and surveys in the region have covered subject matters such as fragile habitats, flora and fauna, mineralogy, fire, water (hydrology), urban studies and studies relating to Aboriginal languages and lifestyle as affected by uranium mining and tourism. A more detailed list of studies and surveys is included in the plan of management⁴.

5. A number of organisations have carried out research or survey work in the Park, including CSIRO, the Office of the Supervising Scientist, ANPWS, universities, mining and other private companies, the Northern Territory Museum of Arts and Sciences, the National Botanic Gardens and the Australian Institute of Aboriginal Studies. ANPWS conducts 'in-house' research programs using its own staff and also funds research programs conducted by personnel from organisations such as those listed above and the Queensland Conservation Council.⁵

6. The CSIRO Division of Wildlife and Rangelands Research, the principal research body active in Kakadu⁶, has carried out research at Kapalga, an area in the Park of about 670 square kilometres which was set aside for use by CSIRO for 15 years in 1976. In the same year it was also declared a wildlife protection area. Kapalga is held by CSIRO as a 'permissive tenancy'⁷. CSIRO has about 25 staff working at Kapalga and about 50 staff working in Darwin.⁸ Recent years have shown a marked increase in the number of scientists working at Kapalga and, according to CSIRO, this will assist greatly in the future documentation and understanding of ecosystems and their management in the wet-dry tropics of Australia.⁹ More than 35 CSIRO scientific publications on the subjects of work undertaken at Kapalga are now available¹⁰

7. Studies and surveys undertaken by CSIRO at Kapalga include:

- . Kakadu Fauna Survey;
- . weeds in KNP;
- . vegetation map of KNP;
- . woody plants at Kapalga;
- . joint research with ANPWS on feral buffalo at Kapalga;
- . land use potential of the Gimbat and Goodparla pastoral leases; and
- . survey of fish and crustaceans in the East Alligator estuary.

8. The determination of the physical, biological, and social carrying capacity of the Park is essential for effective management. CSIRO research has contributed substantially to these endeavours. Research into the effects of mining on vegetation and weeds, indigenous and feral animals, fire and pollution has made a valuable contribution in this area.¹¹ For example, one conclusion reached has been that fragile areas could be at risk if tourism is intensified. Erosion, weed intrusion, increased frequency of fire and disturbance of reptiles and frogs are some of the possible consequences.¹² CSIRO considers further research necessary to assist with effective management.¹³

9. The other major organisation carrying out research in the Park is the Office of the Supervising Scientist (OSS). The Supervising Scientist has a statutory research role in the protection of the environment, in the Alligator Rivers Region, from the effects of uranium mining operations. Specific issues for investigation include:

- . water management;
- . tailings management;
- . occupational hygiene;

- . environment monitoring; and
- . rehabilitation.

10. The Supervising Scientist reports to the Minister and through him to the Parliament on the work undertaken in the region.¹⁴ The scientific work of the Office is carried out by the Alligator Rivers Region Research Institute, which has laboratories in Jabiru.

11. The work of the Office of the Supervising Scientist, although primarily directed to the environmental impact of uranium mining operations in the region, has other benefits. For example, its research will assist with measures for the protection of the Park under article 5 of the Convention for the Protection of World Cultural and National Heritage in relation to:

- . knowledge of Australian tropical freshwater systems;
- . design of long-lived earth and rock-filled structures (geomorphology research); and
- . uranium mining elsewhere and mining of other materials.¹⁵

12. Rehabilitation is an essential part of a mining program in the region. Ranger is required each year to submit a national Plan of Rehabilitation to the Commonwealth Minister for Primary Industries and Energy. This provides a basis for estimating the cost of rehabilitation of the mine site, should mining operations cease¹⁶. Longer term plans for rehabilitation, especially those for the use of the mine pit for final disposal of tailings, remain under review.¹⁷ Rehabilitation and decommissioning proposals for Nabarlek are continuing to be developed by Queensland Mines Limited.¹⁸

13. Research results are clearly necessary for the day to day management of the Park and for developing baseline data against which the impact of any proposed changes in management practice can be assessed. The Committee believes in addition that environmental impact assessments should be necessary before any decision is taken about a major development in the Park.

14. Scientific research should play a major role in any such assessment, particularly where it relates to tourism and/or mining. Identification of rare and endangered species and work in the social field are also important. Scientific research has an important impact on the management of the Park and the management of mining in the region. For example, the Kakadu Fauna Survey Final Report prepared by CSIRO contained a number of recommendations relating to fauna, flora, fire and visitors to the Park. The report identified rare and endangered species, introduced species and urged elimination of the latter. It also advocated the supply of watering sites and the preservation of fragile habitats.¹⁹

CROCODILES

Introduction

15. Both the saltwater estuarine crocodile (Crocodylus porosus), and the freshwater crocodile (Crocodylus johnstoni), are present in the Park. The freshwater species lives in permanent bodies of freshwater and in the upper reaches of rivers which persist during the dry season as discontinuous chains of waterholes or billabongs. The estuarine crocodile lives in the tidal wetlands. The two species overlap where estuarine crocodiles occur in freshwater environments. To a lesser extent, the freshwater crocodile is recorded in saline tidal regions of rivers.²⁰

16. Crocodiles and their eggs are a traditional food source for Aborigines. Because of their aggressive nature, 'problem' crocodiles have been hunted and killed to prevent attack. Some flood plains tend to be avoided because of the crocodile danger to humans.

17. It has been suggested that crocodiles are threatened in the following ways:

- . crocodiles drown in fish nets in rivers and billabongs;
- . crocodiles may be killed for their hides as both species are commercially valuable; and
- . crocodile nests, eggs and habitats may be trampled, eaten or otherwise damaged by introduced species, e.g. water buffalo and feral pigs, and native species, e.g. goanna.²¹

So far there has been no suggestion that the crocodile population has been affected by pollution from mining. Dr H. Messel said that he had taken 'careful note of Magela Creek' as he considered it to be an area that might show early signs of pollution. From his studies he claimed there was 'no evidence whatever that they [the crocodiles] have been affected'.²²

Protection

18. Crocodiles are an important component of the region's ecosystems. As carnivores they regulate the abundance of other animals and so help to maintain the natural balance and conserve the character of the waters they inhabit. However, in the past crocodiles have been hunted for their skins. Initially the large, saltwater crocodile was most popular with hunters. However, as numbers declined, hunters took larger numbers of the freshwater crocodile. As it became clear that crocodile numbers were

becoming seriously depleted in Australia, protective legislation was enacted. Crocodile numbers are now increasing.²³ In relation to saltwater crocodiles CSIRO have stated that 'the Australian population is probably now the best in the world'.²⁴

19. At the 16th session of the General Assembly of the International Union for the Conservation of Nature and Natural Resources (IUCN) in Madrid in 1984, the crocodile specialist group expressed its support of the Australian proposal to the Convention in Trade of Endangered Species (CITES) to transfer the Australian population of saltwater crocodiles from Appendix I to Appendix II of CITES. This allows it to be used in commercial trade and farming activities.²⁵ This support was tempered with concern 'at the continuing commercial netting for barramundi fish (Lates calcifer) in the estuaries of Kakadu National Park, to the detriment of C. porosus which are an important part of the park ecosystems'.²⁶ The IUCN further requested the 'Australian Management Authority', in conjunction with the Northern Territory Government, to correct the situation as soon as possible. The IUCN also accepted certain assurances given by Australian Government representatives concerning other aspects of crocodile protection and management.

20. Professor Messel stated that the implication behind the support of the International Union for the Conservation of Nature and Natural Resources (IUCN) for the Australian Convention in Trade of Endangered Species proposal was the acceptance by the IUCN that the 'Australian Government has given an undertaking to phase out barramundi net fishing in the tidal waterways of Kakadu National Park'.²⁷ Professor Messel acknowledged that the resolution was not legally binding on the Australian Government. He claimed that the undertaking of the Australian Government in relation to this matter was given by 'Gough Letts, Harry Butler and the people representing the Conservation Commission of the Northern Territory (and) ... also ... by Derrick Ovington ... the official representative of the Australian Government'.²⁸ However,

failure by the Australian Government to implement the recommendations in the resolution would break faith with the IUCN, according to Professor Messel.

Crocodile numbers

21. Professor Messel surveyed the saltwater crocodile population in the Alligator Rivers region in 1977, 1978, 1979, with a final resurvey in 1984.²⁹ He claims that the inventories showed generally that both the crocodile and barramundi resources were depleting. In his view, one of the significant causes for the losses of the larger more valuable crocodiles was drowning in commercial fishermen's nets, both legally and illegally set.

22. Professor Messel estimated in 1978 that at least 100 saltwater crocodiles were drowned annually.³⁰ In his survey of the West Alligator River, in October 1978, he found 16 nets in tandem in 16 km of the river.³¹ This, he claims, would put great pressure on the crocodile population as, since the survey boat had difficulty navigating the river, the crocodiles would have little chance of doing so. In the 1978 and 1979 surveys, Professor Messel's survey team found nets strung illegally, that is, completely across rivers.

23. Professor Messel was very critical of barramundi poaching, which appeared to be unchecked, and wondered whether 'such individuals' (presumably fishers) could be trusted to manage the 'remaining remnants of the barramundi resource' and whether such individuals should be allowed 'to further reduce the highly endangered C. porosus population?'.³²

Current numbers

24. Changes in populations of saltwater crocodiles in the East and South Alligator Rivers and associated freshwater swamps are being monitored by ANPWS. Additionally, a pilot survey using

radio-telemetry has commenced to investigate the movements of crocodiles which have been relocated (because of their problem behaviour towards people). It is thought that crocodiles exhibit homing and territorial behaviour.

25. The 1986 plan of management states that 'the number of Estuarine Crocodiles is increasing even though some animals are drowned in commercial barramundi nets set in the mouths of rivers'.³³

26. The Northern Territory Fishing Industry Council (NTFIC) agrees that numbers are increasing and that numbers of larger crocodiles are increasing. In their submission the NTFIC claims that commercial fishers sometimes get to know the local crocodiles individually, that some crocodiles become 'tame', follow fishers from net to net and, in some cases, come to a 'call'. Commercial fishers protect crocodiles from 'weekend cowboys'. About one per cent of all crocodiles in a river may be killed by drowning after being caught in nets.³⁴ The new monofilament nets are much easier for a crocodile to break and escape.

27. Under current Northern Territory fishing regulations, no more than 50 per cent of a river can be blocked off by nets. Current surveys show that only small crocodiles, about 2 metres long, are caught in nets. The Northern Territory Fishing Industry Council claims that in 1985, 32 crocodiles were caught in the Kakadu area (160 in the whole of the Northern Territory).

28. Mr Kemp of the Council said he had figures which showed a 10.8 per cent per annum increase in the crocodile population generally, with a 22.5 per cent increase in the South Alligator River.

Impacts

(i) Environmental

29. As mentioned earlier, crocodiles are an important part of the ecosystem of the region. Destruction of the crocodile resource would result in considerable changes within the entire region. As crocodiles are now a protected species, this is unlikely to happen.

(ii) Aborigines

30. Crocodiles and their eggs are a food source for Aboriginal communities living in the Park. ANPWS estimate that Aborigines would take considerably fewer than 10 nests and 10 crocodiles annually.³⁵

(iii) Tourism

31. As aggressive, large, native animals, crocodiles have a certain attraction for tourists. Attacks by crocodiles on humans frequently generate world-wide media attention, in a sense providing free advertising for the region. ANPWS provide warnings of the dangers of crocodiles in strategic places. Information on the danger from crocodiles is printed on the Park visitor map and in a brochure about crocodiles. The Committee believes that no further warnings, e.g. in the form of fines, are necessary and that individuals should be responsible for their own safety in known crocodile inhabited waters.

32. Professor Messel suggested that saltwater crocodiles 'in large numbers could easily and quickly become one of the most outstanding and spectacular tourist attractions in the Park.'³⁶ Some tourist activities already emphasise the increasing

availability of crocodiles. The Committee agrees that the increasing numbers of crocodiles enhance the tourist interest of the Park.

INTRODUCED SPECIES

33. The Park has a number of introduced animals and plants. Some of these have caused, or have the potential to cause, considerable environmental damage. The two most important feral animals are water buffalo and pig. The feral cat is widely spread, but in smaller numbers and the cane toad, which is prevalent in other parts of northern Australia, has not yet appeared in the Park. Around 70 species of exotic plants have been identified, mainly near settlement sites, but only a few of these are causing concern. The most important of these is Mimosa pigra.

Water Buffalo

34. Asian water buffalo first became feral in northern Australia in the late 1820s, after having been introduced as a source of fresh meat and as draught animals for early settlements. They spread rapidly and had established themselves throughout the Alligator Rivers Region between the visits of Leichardt (1847) and Carrington (1885-86).³⁷ Beginning in the 1880s a buffalo harvesting industry developed and until World War II the main basis of the pastoral industry in the region was the hunting of buffaloes for their hides. When the price for hides fell, attention was given to the production of meat, first for pet food, later for human consumption. At first mobile abattoirs were used but in 1973 hygiene and inspection requirements led to the establishment of an export standard abattoir at Mudginberri.³⁸

35. In June 1978, pursuant to the recommendation of the Ranger Uranium Environment Inquiry, the Commonwealth Government acquired the Mudginberri and Munmalary pastoral leases from Northern Pastoral Services Ltd, which continued its operations under an arrangement with the Commonwealth Government. The main activity of the company was the processing of buffalo meat for overseas markets and the Company augmented buffalo available from its former lease by tendering for removal of feral buffalo from other land in the area.³⁹ In June 1982 an agreement was signed between the Commonwealth and Buffalo United Farmers Pty Ltd to conduct the abattoir and associated activities in the pastoral leases of Mudginberri and Munmarlary.⁴⁰ This is the basis on which the abattoir continues to operate.

36. In 1979 it was estimated that buffalo numbers ranged from between 150 000 to 200 000 throughout the Northern Territory.⁴¹ Some indication of the numbers that have existed in the Park region is given by the fact that 'in the eight years prior to proclamation (of the Park) some 24000 buffalo were removed from Woolwonga by contract operations and several thousand despatched by staff'.⁴² In its 1986-87 Annual Report, ANPWS estimated that 35 000 buffalo had been removed from the Park since its declaration in 1979. In 1985-86 it was estimated that there were 2 700 buffalo in Stage 1 of the Park, 12 100 in Stage 2 and 14 300 in the Stage 3 region.⁴³

37. The presence of large numbers of buffalo foraging on the vegetation in a manner different from that of native animals has had a significant environmental impact. This has been studied by the CSIRO research station at Kapalga, in Stage 2 of the Park, by establishing controlled zones free of buffalo. The effects are many: channelling and gullying of entrenched buffalo trails and the development of wallows has breached the levees of tidal rivers and creeks, resulting in salt water incursions that have destroyed native vegetation; wallowing and feeding activities of buffalo in billabongs breaks down the banks and maintains fine

mud in suspension, inhibiting the growth of aquatic vegetation; pastures are denuded when buffalo congregate and this disturbance creates habitat suitable for exotic weeds, which are themselves spread by the buffalo.⁴⁴ Moreover, as discussed in Chapter 3 of this report, buffalo have the potential to damage mine tailings dams by trampling up and down the sides of the impoundments.⁴⁵

38. There is no doubt that the buffalo have caused considerable environmental damage, but, fortunately, the control and eradication of buffalo can lead to significant environmental improvement.⁴⁶ The ANPWS 1986-87 Annual Report refers to many areas that were barren in 1979 being now green with vegetation as buffalo numbers have been reduced, and the research at Kapalga shows marked improvements in the buffalo free zones. The flood plain vegetation is in better condition and more profuse, and the number of magpie geese has also increased where the buffalo have been removed.⁴⁷

39. The environmental damage caused by buffalo is a sufficient reason in itself to remove buffalo from the Park, but there is an additional reason for control. This is that feral buffalo can serve as a reservoir of exotic bovine diseases and that these could be transmitted to cattle. The national Bovine Tuberculosis and Brucellosis Eradication and Control (BTEC) program requires the reduction and control of buffalo numbers, including eradication of all signs of these cattle diseases, from Australia by 1996. Failure to achieve this objective will seriously affect the beef export industry. ANPWS has received formal notice under the Northern Territory Stock Diseases Act that Stages 1 and 2 of the Park have to be destocked of all cattle and buffalo by 31 December 1988. The Stage 3 region has to be cleared by 31 December 1989.

40. Under the Park plan of management tenders based on a royalty system have been let to catchers to work in the Park. These people catch the animals or shoot them for human

consumption or pet meat. A study of the costs of buffalo eradication has shown that about 90 percent of the population can be removed at no net cost because of the returns from the commercial buffalo catchers. However, it becomes very expensive to remove the last one to two percent.⁴⁸ The use of commercial buffalo catchers and the need for the eradication campaign has provided a justification for the continuation of the Mudginberri abattoir operation within the Park. However, with the removal of the buffalo and the increasing need to bring animals from areas such as Arnhem Land into the Park to maintain the operation, the presence of an abattoir within a World Heritage listed area became an increasing anomaly. During the course of its inquiry the Committee developed the view that the operation of the abattoir should be phased out gradually as the need for a local abattoir decreased. The Committee notes that this has happened, with the abattoir being officially closed on 10 September 1988 because the reduced supply of buffalo meant that it was no longer financially viable.

41. While a commercial tender process provides a means of controlling buffalo populations when these are at a high density or in relatively accessible areas, it is not a complete solution. As populations are reduced or confined to less accessible areas other methods become necessary, and buffalo are shot to waste, from the ground or from helicopters, by Park staff.

42. The Committee recognises the need for the removal of buffalo from the Park to meet BTEC objectives and supports the approach adopted by ANPWS. However, it also recognises that the complete removal of buffalo would disadvantage some groups, particularly the traditional Aboriginal owners. The Gagudju people voluntarily approved and assisted in the removal of most

of the original buffalo to achieve environmental rehabilitation objectives. They did this without seeking any financial compensation. However, the animals now being exterminated from Stages 1 and 2 of the Park 'have a dispersed distribution' and do not 'place an unacceptable impact on the Kakadu environment'. The Gagudju Association told the Committee that:

total eradication of cattle and buffalo from Stage I and II of the Park will not only place an economic burden on the local aboriginal population but will deprive them of a now traditional fresh food source. Buffalo meat to many Gagudju people is not only a cheap readily available beef, but a sought after fresh food preferred by many to cattle beef.⁴⁹

43. In addition to the wish of the Aboriginal people to maintain a source of fresh killed meat, the buffalo also appeal to tourists. The Big Buffalo tourist Centre on the outskirts of Darwin, the buffalo symbol used by a variety of Government Departments, the buffalo head used by the Automobile Association of the Northern Territory and various other uses of the buffalo symbol testify to the degree to which the buffalo has become integrated into the Northern Territory psyche.

44. One means of maintaining a supply of buffalo for Aboriginal land owners and catering to the tourist interest in buffalo would be to maintain a disease free herd within the Park. The Kakadu Fauna Survey, for example, recommended that a:

dedicated zone of high water buffalo density of wetland-margin-monsoon forest-woodland-open forest be defined and fenced. This would not only cater to tourists but contribute to enhanced habitat diversity of the Park as a whole.⁵⁰

45. The Committee also understands that a proposal is being prepared for a buffalo park involving tourist accommodation to be developed on the edge of Stage 3 of the Park. The Committee

believes that either or both of these proposals could be supported to meet the needs of both the Aboriginal land owners and the tourist industry.

Recommendation

The Committee recommends:

- (i) that, as a matter of urgency, ANPWS work with the Gagudju Association to consider the feasibility of establishing a disease free herd of buffalo in a controlled area within the Park to meet Aboriginal needs for field killed meat. This recommendation should be read in conjunction with (ii). Should the proposal contained in (ii) proceed, it may be possible to put into place arrangements that will accommodate the matters referred to above; and
- (ii) that the proposal for a buffalo park adjacent to the boundaries of Stage 3 of Kakadu National Park be investigated and, subject to necessary environmental safeguards, that it be supported.

Pigs

46. Pigs are found near waterholes which provide year round access to water. Although they can cause considerable environmental damage, pigs are much harder to control than buffalo. The pig population is restricted to fairly small areas, but, in suitable conditions, pigs have a rapid breeding rate. Moreover, they are known to carry certain diseases such as tuberculosis and potentially foot and mouth.

47. Although pigs are omniverous, most of their food gathering is through rooting. The environmental damage caused by this behaviour is unsightly, disturbs the soil and increases the chances of the human population catching a pig-carried soil-related disease. Rooting disturbs root structures and damages plants, fruits, shoots, tubers and regrowth in rainforests. Pigs may also spread weeds.

48. In the first Park plan of management, the theory was advanced that the pig population might increase as the buffalo population decreased. Although no specific pig eradication program has been introduced, pigs have been shot by staff during vehicle patrols or during buffalo control work by helicopter. Additionally, they are eliminated from areas suffering a high level of pig damage when staff resources permit. It is agreed that further research into pigs in the Park would be useful. ANPWS have advised that as buffalo numbers decline, greater emphasis will be given to pig control.⁵¹

49. Although the Conservation Commission of the Northern Territory advocates commercial use being made of feral animals, no specific proposals concerning feral pigs were put to the Committee.⁵² In its submission, the Department of Arts, Heritage and the Environment stated that the de-stocking of Gimbat and Goodparla pastoral leases and the imposing of Park management in them would enable improved control of feral pigs.⁵³

50. The Committee believes that because of the threat of foot and mouth disease being introduced to northern Australia through pigs, greater efforts be applied to reducing feral pig numbers as soon as possible.

Other Animals

51. A number of other introduced species e.g. horses and cattle, are also found in the Park, but they appear to cause less concern largely because their numbers are low.

Hunting

52. The Hunters Union of the Northern Territory (HUNT), submitted to the Committee that recreational hunting of wildlife was very popular in Australia and should be permitted in the Park. The Union pointed out that between May 1980 and May 1985, 20 593 shooters licenses were issued in the Northern Territory, and that a high proportion of the population was involved in recreational shooting.⁵⁴ HUNT suggested that allowing recreational hunting of buffalo, pigs and waterfowl would:

- . increase the tourist potential of the Park for Australia and overseas tourists;
- . assist in Park management in terms of control of feral animals especially in low density areas;
- . create revenue from the issue of permits or trophy fees; and
- . return to local residents traditional hunting areas and therefore improve relations between ANPWS and Territory residents.⁵⁵

53. The Hunters Union suggested that controls as applicable to deer hunting in Tasmania could be applied in the Park and emphasised that recreational hunting, a legitimate and local recreational activity, would help considerably with feral animal control. Dr Landsberg of CSIRO similarly said that:

[a]s a purely personal opinion and recognising the risks associated with this sort of thing in parks, I would have thought that there would be quite a lot of possibilities for

allowing shooters into the Park under licence with possibly some sort of supervision by rangers to shoot for example pigs ... The answer is to let in competent people who behave themselves.⁵⁶

The Committee is aware that illegal shooting does occur and that there are serious problems with feral animals, particularly in Stage 3. The Committee believes however, that hunting is at odds with the idea of a national park, and supports the current prohibition of recreational shooting in the Park (which does not apply to leased shooting range areas near Jabiru for pistol, rifle, gun and archery activities). Feral animal control should not be treated as a recreational activity.

Recommendation

The Committee recommends that, with the exception of fishing, recreational hunting within the Park continue to be banned.

Plants

54. ANPWS has identified about 70 species of exotic plants, most of which grow near sites of settlement. Certain weeds are causing concern with Mimosa pigra emerging as a major problem within and outside the Park. A number of other species are also causing concern. Weeds are inevitably spread by visitors, residents and miners.

55. The Park administration is applying various direct control measures, ranging from biological (weevil) control, buffalo control, and the washing down of vehicles, to hand pulling of weeds.⁵⁷ It is obviously difficult to control weeds and this will be an ongoing task for Park staff. The Committee urges all persons travelling through the Park to be aware of the threat of weeds to the environment and to undertake such procedures as would reduce their spread.

FIRE

56. The management of fire within the Park can have considerable impact on, or is affected by tourism, mining, flora and fauna management, and general Park management. A description of traditional and proposed fire management practices is provided in the current plan of management.⁵⁸

57. Apart from fires which are 'planned' under a management plan, much of the Park is affected frequently by fires lit by careless individual Park users and, more rarely, lightning strikes. Aborigines who live in the Park are also involved in the setting of fires around outstations and in areas used extensively for hunting and gathering.

58. There have been, of course, major alterations to the environment through deliberate burning procedures by traditional owners. The early dry and early wet season burns which result in low intensity fires, were adopted by the Aborigines to maximise their food gathering possibilities. This maximised the production of fruit, flowers and other resources, important to both the Aborigines and a variety of animals.

59. Park management observes normal fire bans as imposed by the Northern Territory Bushfire Council during period of high winds and/or high fuel load in the dry season. In addition, ANPWS regulations provide for conditions under which fires may be lit and penalties are imposed for improper use of fire.

60. ANPWS and CSIRO differ in their approach to fire management, although both agree that more research is needed. CSIRO recommends the deliberate implementation of a variety of fire programs, noting specifically that 'parts of the Park should be maintained under early, mid and late fire season, biennial, triennial, perennial and no fire regime'. Further, CSIRO

recommends that the 'scorched earth' policy along the roads be discontinued and that a 'substantial public education program' is necessary.⁵⁹ However, these are to be regarded as interim measures until the necessary research has devised 'specific biotic objectives'.

61. Although ANPWS see some virtue in having a diversity of burning practices in the Park, they are attempting to re-establish traditional Aboriginal patterns of burning, in accord with vegetation type and status.⁶⁰ ANPWS and CSIRO are working together on different fire programs to determine the most appropriate for the Park.⁶¹

1. Evidence p. 1905
2. Transcript of informal discussions between CSIRO and the Committee dated 2 October 1986 p. 27
3. Australian National Parks and Wildlife Service (ANPWS) 1986 Kakadu National Park Plan of Management ANPWS p. 84
4. ibid p. 107 and 109
5. ibid p. 107 and 109
6. Evidence p. 1909
7. Evidence p. 1910
8. Transcript of informal discussions op cit p. 18
9. Evidence p. 1910
10. Evidence p. 1910
11. Evidence p. 1929
12. Evidence pp. 1930-1931
13. Evidence p. 1906
14. Supervising Scientist for the Alligator Rivers Region, Annual Report 1986-1987 AGPS p. 10
15. Evidence p. 650
16. Supervising Scientist for the Alligator Rivers Region op cit p. 49
17. ibid p. 50
18. ibid p. 61
19. Division of Wildlife and Rangelands Research, CSIRO. Kakadu Fauna Survey. Final Report
20. ANPWS op cit p. 128
21. ibid p. 129
22. Evidence p. 632
23. ANPWS pamphlet Crocodiles in Kakadu National Park NT
24. Evidence p. 1918
25. Evidence p. 621
26. Evidence p. 615
27. Evidence p. 627
28. Evidence p. 628
29. Evidence p. 617
30. Evidence p. 609
31. Evidence p. 606
32. Evidence p. 611
33. ANPWS op cit p. 26
34. Evidence p. 2286
35. ANPWS op cit p. 26
36. Evidence p. 613
37. Division of Wildlife and Rangelands Research, CSIRO. Kakadu Fauna Survey Final Report Vol.3., Ch. 14 p. 601
38. Ranger Uranium Environment Inquiry p. 181
39. ANPWS 1980 Kakadu National Park Plan of Management p. 200
40. ibid p. 64
41. ibid p. 147
42. Evidence p. 2492
43. Evidence p. 1775
44. ANPWS 1980 op cit pp. 148-150
45. Evidence p. 1500
46. Evidence p. 1912
47. Evidence p. 1912
48. Evidence p. 1981
49. Gagudju Association 1988. Letter of 9 February
50. Division of Wildlife and Rangelands Research, CSIRO Kakadu Fauna Survey Final Report Vol 4, p. 880

51. Letter from Professor J D Ovington, Director ANPWS to Ms E Mountain, Senate National Resources Committee, dated 5 December 1986 p. 6
52. Evidence p. 1268
53. Evidence p. 1712
54. Evidence p. 720
55. Evidence p. 714
56. Evidence p. 1981
57. Letter from Professor J D Ovington op cit p. 2
58. ANPWS 1980 op cit p. 37
59. Evidence p. 1960
60. Evidence p. 2210
61. Evidence p. 2210

CHAPTER SEVEN

MANAGEMENT CO-ORDINATION AND CONSULTATION

INTRODUCTION

1. The earlier chapters of this report have described how the Kakadu National Park region has abundant and diverse physical, biological and cultural resources, and is recognised as being of outstanding environmental importance, even on a world scale. In part because it is so rich in natural resources, the region has a recognised potential for several land-use objectives. These include the use of the region for mining, tourism, recreation, fishing and research activities; the conservation of its wildlife and the preservation of its diverse habitats and rich array of natural and cultural features, including sacred sites; and the need to maintain the choices for Aborigines about the way in which they live in the region.

2. The possibility of conflict between these management objectives means that the development of management policies and strategies is inevitably complex, requiring the resolution of difficult issues and the bringing together of competing interests. It is not just a question of accepting some activities and banning others, either completely or from certain places or at defined times. Even when activities can be geographically segregated, as by the banning of mining within the Park, their impact may be felt outside the area in which they are taking place. Moreover, many of the habitats in the region are said to be fragile and, while they may tolerate a certain level of one kind of activity, may suffer damage if the level or intensity of the same activity increases.

3. The problem is compounded by the number of groups having an interest in the area and wanting a say in its future. These include not only the Commonwealth and Northern Territory Governments and their agencies, but also the traditional land owners, all the residents of the region, conservation groups, and commercial interests such as the mining companies and the tourist operators.

4. The primary role in the management and control of the region is played by the Australian National Parks and Wildlife Service, the Director of which is responsible for the management of Kakadu National Park and for the preparation of the plan of management. Other Commonwealth bodies playing a role are the Office of the Supervising Scientist and the Kakadu Conservation Zone Advisory Committee (COZAC).

AUSTRALIAN NATIONAL PARKS AND WILDLIFE SERVICE

5. The Australian National Parks and Wildlife Service has been responsible for the administration of the Park since its proclamation in 1979. Management of the Park is according to a plan of management, the preparation of which requires extensive consultation. The National Parks and Wildlife Conservation Act requires the Director to give notice of the preparation of a plan of management for the Park and invite interested persons to make submissions. Representations are also received after the draft plan has been published.

6. In preparing the second plan of management ANPWS received 26 representations in response to the original notice. It also consulted with committees such as the Kakadu Interest Group Advisory Committee (see below) and a Consultative Committee of traditional Aboriginal owners, as well as informally with other groups and individuals. Seminars on 'Tourism and Jabiru' and 'Tourism Development at Kakadu National Park' also provided opportunities for public discussion. Seventy four representations

were received after the draft plan was published and when the revised plan was submitted to the Minister for his consideration, these were also included.¹

7. Despite these procedures the Northern Territory Government felt that it had not been given a proper role in the development of the plan of management. The Committee was told that in 1984, well in advance of the time the first plan of management was to expire:

the Northern Territory Government provided a fairly comprehensive contribution to the Australian National Parks and Wildlife Service about the deficiencies of the plan of management and what was needed. ... One of the most important points we made ... [is] that Kakadu is part of the Northern Territory and we have a vital and legitimate interest in what happens there ... we believed that the proper role for the Northern Territory authorities was meaningful participation and involvement in the development of the next plan of management, not just consultation in the sense of being forwarded a draft and asked to comment, which comment may or may not be taken into account, but actual participation in the process of determining what that plan of management should comprehend and how it should be developed. That request ... was denied totally. It was ignored and at no stages were we ever invited to do that.²

8. The Northern Territory Government was asked whether ANPWS had taken any notice of their representations; Mr Roodenrys, Deputy Secretary of the Department of the Chief Minister, replied that '[r]egrettably, we did not even get an acknowledgement of the submission. We cannot perceive any significant change in the plan, let alone any change we may have influenced'.³

9. Another group expressing dissatisfaction with the consultation mechanisms with ANPWS was the Darwin Tourist Promotion Association. The Association described consultation as

being 'badly lacking' and suggested that because the tourist industry is a large user of the Park 'it should have input into the management of the Park on a broad basis'. The Association took the view that this had not been allowed for at all in the plan of management.⁴

10. In contrast, the Northern Land Council believed that 'Aboriginal people have participated greatly in the plan of management and that the plan addresses issues of concern in relation to Aboriginal people - the need to protect areas, the impact of tourism and the wish of some Aboriginal people to be involved in management'.⁵ Jawoyn people had shown their satisfaction with the ANPWS management by indicating their preparedness to lease back to ANPWS the Gimbat/Goodparla areas should their land claim prove successful.⁶ They also indicated their desire to participate in the management of the area.

11. The need for Aboriginal participation in the development of the plan of management is clearly recognised in the National Parks and Wildlife Conservation Act 1975, which makes special provision for the Northern Land Council to be involved in the development of the plan of management. It is also recognised in the plan of management itself which states that:

Park management must be sensitive and responsive to the interests of the Aboriginal residents and recognise the importance of their traditional relationships with the land ... Park management must reflect the wishes of the traditional Aboriginal owners and be structured to allow maximum participation by Aboriginal people and to encourage them to take a leading role in management. Large areas of the Park are Aboriginal land ...⁷

12. A Consultative Committee of traditional Aboriginal owners was established to provide advice during the preparation of the plan and ongoing liaison takes place with the Gagudju Association. In addition, the senior traditional owners

permanently employed on the Park staff as cultural advisers also contribute to management matters.⁸ However, while these mechanisms are seen as useful, the Gagudju Association informed the Committee that:

[u]nder the Plan of Management the Director is only required to consult with Traditional Owners but we wish to have direct input in decisions on the management of the Park.⁹

13. While the process of preparing the plan of management is an important consultation mechanism, it is not the only one. The plan of management itself notes that local interest groups can provide valuable input into the administration of the Park and refers to the Kakadu Interest Groups Advisory Committee. Established in 1983 the Committee includes representatives of the following organisations:

Ranger Uranium Mines Pty. Ltd.
Gunbalanya Council Inc.
Gagudju Association Inc.
Jabiru Town Council
Northern Territory Museum of Arts and Sciences
Darwin Laboratories, CSIRO
Amateur Fishermen's Association of the
Northern Territory
Darwin Tourist Promotion Association
Northern Territory Association of Four Wheel
Drive Club Inc.
Australian Conservation Foundation.

Rotational membership is envisaged to enable other interest groups to participate at a later date.¹⁰

14. The first plan of management also provided for an 'Advisory Committee on policy matters' composed of representatives of the Northern Land Council and the Commonwealth and the Northern Territory Governments.¹¹ No mention of this Committee is made in the second plan of management.

15. The Northern Territory Government believed that neither of these Committees had been satisfactory. It commented that the status of the Kakadu Interest Groups Advisory Committee was 'obscure',¹² and that it meets rarely and 'has no discernible influence on Park administration'.¹³ The policy committee:

was given the dual task of advising on policy as well as the implementation of the decisions arising from the Review of Commonwealth Functions. The main points of the decisions referred to were that the Australian National Parks and Wildlife Service (ANPWS), whilst maintaining its policy functions and control of essential Commonwealth interests in the Park, would scale down its general activities and delegate responsibility for operations to the Territory. This decision, however, has not been implemented.¹⁴

16. As well as its specific criticisms of these Committees, the Northern Territory Government also claimed that there had been a number of instances where plans with important ramifications for the Territory had been developed without consultation. It gave the outline plan for tourism development in the Park as the most recent instance of this.¹⁵ It is the 'strongly held view' of the Northern Territory Government 'that things are still left far too much on the basis of the discretion of one man, the Director of the National Parks and Wildlife Service'.¹⁶

17. The Committee has gained the clear impression that the consultative mechanisms used in the management of the Park can be improved. Meetings of the Kakadu Interest Groups Advisory Committee are convened by the ANPWS and there have been six since the Advisory Committee was formed in 1984. The contribution made by the Kakadu Interest Groups Advisory Committee seems to be minimal and a more formal structure seems necessary to ensure that the groups having a major interest in the area are able to participate, not just in the development of the plan of management, but in its implementation.

18. The Park plan of management notes that the National Parks and Wildlife Conservation Act 1975 provides for the establishment of a Board, subject to the agreement of the Minister and the Northern Land Council, and that a Board would include representatives of the traditional Aboriginal owners and take on agreed management responsibilities for some of the processes identified in the plan.¹⁷ The Jawoyn people have indicated that if their Stage 3 land claim is successful and they lease back the land to ANPWS, they would prefer an administrative arrangement involving a Board of Management with an Aboriginal majority.¹⁸ The Gagudju Association 'is keen to see the establishment of the Board as soon as possible'.¹⁹ Support for a Board of Management also comes from the Darwin Tourist Promotion Association, which sees the Board as including 'user groups and suitable interested persons',²⁰ and from the Northern Territory Government which believes that:

the opportunity exists for the Board to be a vehicle for accommodating the interest of government and industry as well as of traditional Aboriginal owners.²¹

The Committee strongly supports the establishment of a Board of Management for the Park. The Board should have a majority of traditional owners but include representation from a broad range of interest groups including the Northern Territory Government. The Board should be responsible, among other things, for the development of the next plan of management and could, if necessary, have special advisory bodies with clearly established composition, functions and responsibilities reporting to it. One such advisory body might, for example, be responsible for the development of the tourist strategy mentioned in the recommendation associated with paragraph 91 of Chapter Two of this report.

Recommendation

The Committee recommends that, as a matter of urgency, a Board be created to manage Kakadu National Park.

19. While a Board would go some way to solving some of the problems identified by the Committee it might not be sufficient in itself, without other administrative changes. One matter drawn to the attention of the Committee by the Gagudju Association was that almost no delegation to Park staff exists for the expenditure of money and that all matters have to be referred to Canberra for decision. This is said to cause delays which frustrate both local staff and traditional owners.²² This is clearly an unsatisfactory situation and the Committee believes that ANPWS should review the level of its financial delegations in order to ensure that day to day management of the Park is not being hindered by unnecessary bureaucratic delay.

Recommendation

The Committee recommends that when a Board of Management is established for Kakadu National Park there be a review of administrative practices, and particularly of financial delegations, to ensure that the management of the Park can be accomplished in an efficient and effective manner

OFFICE OF THE SUPERVISING SCIENTIST

Uranium Mining

20. The Office of the Supervising Scientist for the Alligator Rivers Region was established under the Environment Protection (Alligator Rivers Region) Act 1978 to protect the environment in the Alligator Rivers Region from the effect of uranium mining. Kakadu National Park lies entirely in the region, of which it comprises almost two thirds the total area.

21. The Office oversees and assists in the development of environment protection arrangements relating to uranium mining operations in the Region. It also advises the Government on the adequacy of environment protection measures and carries out specific, mission-oriented research. However, the Supervising Scientist has no powers to license or regulate the mining operations, and has no powers to enforce compliance with requirements and conditions. This is because:

[f]ollowing the passage of the Northern Territory (Self-Government) Act in 1978 (in which the Commonwealth retained ownership of prescribed substances, including uranium) an agreement between the two governments - and the subsequent introduction of the NT Uranium Mining (Environment Control) Act incorporating the Commonwealth's Environmental Requirements - provided for uranium mining operations in the Alligator Rivers Region to be regulated as far as possible under the laws of the Northern Territory. Working arrangements between the Northern Territory and the Supervising Scientist were endorsed by both Governments in 1979.²³

22. Under the arrangements agreed between the two Governments, the Northern Territory supervising authorities are responsible for day to day regulation of the uranium mining and milling activities. Moreover:

the Supervising Scientist does not monitor the activities of the mining companies to demonstrate that the mining companies are complying with the law. The mining companies themselves are required to do that. The Supervising Scientist does not verify the monitoring that is carried out by the companies to ensure that the monitoring is acceptable ... That verification activity is carried out by the supervising authority which exists in the Northern Territory Government, essentially the Department of Mines and Energy.²⁴

23. The Supervising Scientist has supervisory, co-ordination and research roles in the protection of the environment from the effects of uranium mining in the Region, but no regulatory role. The working arrangements require that there must be adequate consultation between the Northern Territory authorities and the Office of the Supervising Scientist before any authorisation is issued. However, the Northern Territory may issue an authorisation even if the Supervising Scientist disagrees with it.²⁵ If a disagreement were to exist between the Supervising Scientist and the Northern Territory Authorities, the Supervising Scientist would report his concerns to his Minister who would, if he wished, report the matter to the action Minister in the Commonwealth. The action minister 'if he felt strongly about it, would take the matter up with his counterpart in the Northern Territory'.²⁶ There has never been an occasion when the Northern Territory authorities have recommended that something be done which the Supervising Scientist felt necessary to report to his Minister. Nevertheless, it seems to the Committee that the regulatory framework is complex, and could lead to confusion.

24. Dr R. J. Wasson is of a similar opinion and told the Committee that in his view:

somebody has to cut through what I perceive to be a regulatory nightmare that has developed around Ranger ... I would think that a lot of the problems Ranger has faced has to do with regulations cutting across one another and not knowing who is the final authority. I would think that if the Office of the Supervising Scientist could, after due consideration, be given that responsibility it would be an excellent way of cutting through a lot of these problems. I would not necessarily think that OSS has all of the expertise it would need to do that because it would need to have expertise in mining ... It has virtually no engineering expertise. It has no mining engineering expertise to my knowledge.²⁷

25. Possible duplication and overlap in the activities of the Office of the Supervising Scientist (OSS) and the Northern Territory supervising authorities was considered when the OSS was established. Mr Fry, the Supervising Scientist, informed the Committee that considerable effort went into defining their respective roles and that a review conducted by OSS and the Northern Territory Co-ordinator-General in March 1982, and subsequent reviews, concluded that:

[g]iven the legislated functions of the Supervising Scientist and the existing institutional arrangements, the extent of any real duplication and overlap is believed to be minimal and necessary.²⁸

26. Even if duplication between the Northern Territory and Commonwealth authorities is slight, the regulatory environment is complex. The Supervising Scientist told the Committee that his role 'with no direct regulatory component or powers of enforcement' is not easy to perform and that the 'assignment of a direct regulatory role, and associated powers to the Supervising Scientist' would remove some of the perceived inefficiencies and 'possibly much debate'. Mr Fry cautioned, however, such a move would be opposed by the Northern Territory Government, which sees the presence of a Commonwealth supervising agency 'as a derogation from self-government and a reflection upon its credibility and competence'. He also pointed out that:

the questionable appropriateness and potential conflict of interests inherent in an environmental protection body like OSS directly regulating mining operations would present its own difficulties, including possible credibility problems and additional costs associated with resource provision to establish (replicate) a regulatory infrastructure just for the Alligator Rivers Region.²⁹

27. The Committee believes that a prerequisite of any regulatory framework will be the need to ensure effective liaison between Ranger and the Office of the Supervising Scientist. It is a matter of some concern therefore that problems appear to exist in this area and that the information flow between the two organisations needs to be improved. Ranger told the Committee that it 'has made every effort to co-operate with the authorities and has established a very effective reporting system with the NT Department of Mines and Energy'.³⁰ However, the 'overseeing, co-ordinating and reporting responsibilities of the Office of the Supervising Scientist have been of concern to Ranger for some time'.³¹ In contrast, Mr Fry informed the Committee that:

[r]elations with Ranger have deteriorated significantly in recent times due, I believe, to a concerted campaign by Energy Resources of Australia to discredit the Office and have it abolished. The immediate cause of this is the raising of the levy on uranium exports from the Region ... I am increasingly concerned at the reluctance of Ranger to provide detailed information ... Ranger's growing reluctance to co-operate and keep OSS informed is making it difficult for me to co-ordinate activities and indeed to avoid the very duplication of effort and inefficiencies ERA and Ranger complain about.³²

28. Quite apart from the complexity of the regulatory framework and problems of liaison with Ranger, other criticisms have been made of the Office of the Supervising Scientist. Ranger, for example, stated that '[d]uplication of responsibilities, personnel and reports flowing to and from a Sydney Office have inevitably resulted in gross inefficiencies'.³³ The Committee is aware that the division of Office of the Supervising Scientist responsibilities between Sydney and the Northern Territory is a cause of concern to several groups. These concerns relate not just to the possible duplication of effort, but also to the fact that decision making is located away from the mining operations themselves. Mr Fry

informed the Committee that there is 'virtually no duplication of the work being performed at Jabiru'.³⁴ He also told the Committee that the principal decision-making staff of the Office of the Supervising Scientist, except for the Director of the Alligator Rivers Region Research Institute, are all located in Sydney. The group is required to consult or advise a wide group of individuals and organisations variously located in the Northern Territory, Canberra, Sydney and Melbourne. For this reason he said 'it is obvious that no one operating location is ideal for all purposes'.³⁵

29. Mr Fry provided to the Committee a detailed analysis of the costs of relocating the Sydney Office to the Northern Territory, examining a number of possible options. In addition to providing information on the costs involved, the paper provided information on the non-financial costs and benefits of possible relocation options.³⁶ The conclusion of the paper is that the costs of relocating the Sydney office to the most practicable Northern Territory location mix (Jabiru/Darwin) would be between \$2.8 million and \$4 million as a one-off cost and between \$106 000 and \$161 000 in additional operating costs. The paper also shows that:

no appreciable staff savings or operational advantages would accrue from such a relocation which raises other factors likely to impair the Office's efficiency and credibility over and beyond any relocation transition period.³⁷

30. It is clear to the Committee that serious difficulties exist with respect to the existing arrangements for regulating and supervising uranium mining activities in the Kakadu National Park region. In particular, it appears that there have been breakdowns in effective communication between the parties involved. Although, on the evidence available to it, the

Committee is not able to establish a firm perspective on the detailed causes of this situation, it regards the location of decision making officers of the Office of the Supervising Scientist in Sydney as a contributing factor.

31. The Committee is aware that proposals have been made to locate the Office of the Supervising Scientist at the Northern Territory University College, so that its work could form part of a School of Nuclear Sciences. This is seen as a means of strengthening the University College.

32. If such a proposal were accepted it would clearly result in very significant changes in the structure, functions, operations and relationships of the Office and the Committee has not yet had an opportunity to identify these or assess their significance. It is apparent, however, that the location of the Office of the Supervising Scientist in a school of nuclear science would have implications for its responsibilities in relation to the mining of minerals other than uranium.

33. The Committee is strongly of the view that action is necessary to ensure that the national environmental safeguards for uranium mining in the Park region are being met. This requires a strengthening of the Office of the Supervising Scientist and will require a review of the administrative agreements between the Northern Territory and Commonwealth Governments. Moreover, changes in the Office are inevitable given the greater responsibilities that flow from the possibility that exploration and mining activity in the Conservation Zone might increase. The necessary strengthening of the Office will be difficult to achieve while uncertainty exists about possible changes to its organisational location and the extension of its role way beyond its present functions. For this reason the Committee believes consideration should be given to the future role of the Office of the Supervising Scientist. This should examine recent proposals for changes to its status and location,

take into account the increased responsibilities of the Office resulting from mineral activity in the Conservation Zone and pay particular attention to the need to ensure effective communication between the Office and the mining companies operating in its area of responsibility. In this respect the Committee questions the efficiency and desirability of continuing to maintain the Sydney office of the OSS.

Recommendation

The Committee recommends that the Government:

- (i) urgently consider locating all operations of the OSS in the Northern Territory; and
- (ii) carefully examine increased responsibilities for the OSS and its strengthening as appropriate, to take account of the issues discussed in the preceding paragraphs.

Co-ordinating Committee for the Alligator Rivers Region

34. The Supervising Scientist chairs the Co-ordinating Committee for the Alligator Rivers Region, which was established by the Environment Protection (Alligator Rivers Region) Act 1978. The purpose of this Committee is to facilitate the co-ordination of the work of the various parties involved in protecting the environment of the Alligator Rivers Region from the effects of uranium mining in the region.³⁸ In particular:

the Committee provides a forum and a mechanism whereby members might communicate, consult, consider and reach understanding and agreements on the protection of the environment. The Committee is empowered to provide advice and recommendations to the Supervising Scientist.³⁹

35. The Director of the Australian National Parks and Wildlife Service is a member of the Co-ordinating Committee. Other members include a representative of the Northern Land Council, representatives of relevant Commonwealth Government departments and a representative of the Northern Territory Government. The mining industry is also represented. In recent years Committee membership has been broadened to include a representative of the Northern Territory uranium mine-site unions and a member drawn from the environmentalist and anti-uranium movement.⁴⁰ The Committee believes that when a Board of Management is established for Kakadu National Park, the Chairman of the Board should also become a member of the Co-ordinating Committee.

Recommendation

The Committee recommends that when a Board of Management is established for Kakadu National Park, the Chairman of the Board should take up a position on the Co-ordinating Committee for the Alligator Rivers Region, in addition to that occupied by the Director of ANPWS.

36. The Co-ordinating Committee receives periodic reports from the Northern Territory supervising authorities on their surveillance of environmental monitoring in the region and from ANPWS and the Office of the Supervising Scientist on their monitoring and research programs. In addition, the mining companies are required to report immediately all infringements and unusual events to the Northern Territory Department of Mines and Energy, and simultaneously to the Office of the Supervising Scientist. The regulatory and administrative arrangements relating to the notification and reporting procedures for unplanned events at the uranium mines in the region have been revised from time to time and were last considered by the Co-ordinating Committee in June 1987. Ranger Uranium Mines commented on their own very effective reporting system with the

NT Department of Mines and Energy and said that the 'Co-ordinating Committee for the Alligator Rivers Region has for years unsuccessfully attempted to establish an agreed reporting system'.⁴¹

37. The Supervising Scientist informed the Committee that he is increasingly concerned at the reluctance of Ranger to provide detailed information to the Co-ordinating Committee. He suggested that, because of the broadening of membership referred to above, the mining companies are now 'less willing to try to make the Committee work'.⁴² One factor in the reluctance to table information is that Committee proceedings are not confidential, members being asked only to accede to a voluntary code of conduct. This question of information flow is one that we have recommended be taken up in the review of the role of the Office of the Supervising Scientist recommended earlier in this chapter.

38. Another area of disagreement among members of the Co-ordinating Committee has been the extent to which it can discuss worker health and safety. The Minister agreed to union representation on the basis that it provided a means of ensuring that worker health and safety was given due consideration in the control of mining operations.⁴³ The Committee endorses that approach.

39. While problems appear to exist with the Co-ordinating Committee we support the view of the Supervising Scientist that:

[g]iven the multiplicity of agencies involved in the environment protection arrangement in the Alligator Rivers Region there is strong argument for the continuation of the Co-ordinating Committee as it provides the only formal mechanism for round-table discussions and information exchange on the environmental effects of uranium mining operations in the Region. This need would still exist if the regulatory role were given to the OSS.⁴⁴

Conservation Zone

40. In 1987 the Environment Protection (Alligator Rivers Region) Act was amended to confer on the Supervising Scientist responsibilities associated with general (non-uranium) mining activities in part of the Region declared as a Conservation Zone. The responsibilities of the Supervising Scientist in the Conservation Zone are purely supervisory and research. There is no regulatory role and, in contrast to the role of the Supervising Scientist in relation to uranium mining, there is no co-ordination role. The co-ordination role for the Conservation Zone is taken by the Conservation Zone Advisory Committee.

41. The costs of running the Office of the Supervising Scientist have been partially offset by an export duty on uranium concentrate produced from the Alligator Rivers Region. This duty was increased from 80¢ to \$1.02 per kilogram as from 15 September 1987, and it recovers approximately 75 per cent of the annual cost of the uranium-related monitoring and research activities of the Office of the Supervising Scientist.⁴⁵ This partial cost recovery is based on the recognition that some of the work carried out by the Office has value outside the immediate region. The Committee supports this mechanism of funding and believes that the additional resources that will be required if the Office of the Supervising Scientist is to play an effective role in the Conservation Zone should be funded by mining companies active in the Conservation Zone, whether in exploration or mining. The Supervising Scientist is already establishing field and accommodation facilities near Coronation Hill in order to provide sufficient oversight of the BHP Joint Venture operations as is necessary to advise the Minister on the adequacy of the environment protection measures applying in the Zone. As exploration activities increase and should mining begin, it may be necessary for an OSS office to be located continuously in the Zone.⁴⁶

Recommendation

The Committee recommends that a levy be placed on all exploration and mining activity in the Conservation Zone in order to maintain an overall cost-recovery similar to present levels for the costs associated with the additional responsibilities given to the Office of the Supervising Scientist as a result of the declaration of the Conservation Zone.

CONSERVATION ZONE ADVISORY COMMITTEE

42. The Government has decided that Management of the Conservation Zone should be guided by an Advisory Committee consisting of representatives of the Ministers for Primary Industries and Energy and the Arts, Sport, the Environment, Tourism and Territories (including the Australian National Parks and Wildlife Service) with other interests being co-opted as required. As a result the Kakadu Conservation Zone Advisory Committee (COZAC) was established in April 1987 to advise Ministers on management of the Conservation Zone, including the conduct of the exploration and resource assessment program, and to oversee the day-to-day administration of the exploration scheme.

43. The Committee

- . provides advice to Ministers to resolve any apparent conflict between conservation objectives and the effective conduct of the exploration and resource assessment program;
- . advises on the substance of regulations to be applied under the National Parks and Wildlife Conservation Act;
- . advises the Director of National Parks and Wildlife on management policy in the Conservation Zone;

- . establishes conditions to ensure that exploration is conducted in an effective manner consistent with sound conservation practices; and
- . oversees the day-to-day administration of the exploration scheme and related monitoring by the Northern Territory Department of Mines and Energy.

44. Membership of COZAC consists of one representative from each of the Department of Primary Industries and Energy and the Department of the Arts, Sport, the Environment, Tourism and Territories and the Director of ANPWS or his representative. Other Commonwealth departments or agencies which will be invited to participate where matters of relevance to them are discussed include the Department of Aboriginal Affairs, the Department of Administrative Services, the Bureau of Mineral Resources, and the Office of the Supervising Scientist.

45. The Northern Territory Government will be invited to nominate representatives to attend all or part of meetings as relevant, recognising that attendance would not be appropriate when specific advice is being prepared for Commonwealth Ministers.

46. The Committee believes that, when the Board of Management for the Park is established, COZAC should advise the Chairman of the Board of Management on management policy in the Conservation Zone, rather than the Director of ANPWS.

Recommendation

The Committee recommends that when a Board of Management is established for Kakadu National Park the terms of reference of the Conservation Zone Advisory Committee should be changed so that the Committee provides advice to the Board of Management.

J R Black
Chairman

1. Australian National Parks and Wildlife Service (ANPWS) 1986. Kakadu National Park Plan of Management, p. 2
2. Evidence pp. 1249-1251
3. Evidence p. 2621
4. Evidence p. 2313
5. Evidence pp. 1012-13
6. Evidence p. 1005
7. ANPWS 1986 op cit p. 10
8. ANPWS 1986 op cit p. 12
9. Letter from Mr M Alderson of the Gagudju Association to Secretary of the Committee dated 9 February 1988
10. ANPWS op cit p. 92
11. ANPWS 1980 Kakadu National Park Plan of Management p. 331
12. Evidence p. 1186
13. Evidence p. 2458
14. Evidence p. 1186
15. Evidence p. 1187
16. Evidence p. 2622
17. ANPWS 1986 op cit p. 12
18. Evidence p. 1005
19. Letter from Mr M Alderson op cit
20. Evidence p. 2312
21. Evidence p. 2452
22. Letter from Mr M Alderson op cit
23. Evidence p. 648
24. Evidence p. 654
25. Evidence p. 684
26. Evidence p. 669
27. Evidence p. 1508
28. Office of the Supervising Scientist (OSS) 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts. p. 3
29. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts. p. 2
30. Letter from Dr T Gardner, Ranger Uranium Mines Pty Ltd, to Committee Chairman, dated 24 February 1988, p. 2
31. ibid p. 2
32. OSS 29 April 1988 Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts p. 6
33. Letter from Dr T Gardner, Ranger Uranium Mines Pty Ltd, to Committee Chairman, dated 24 February 1988, p. 2
34. OSS 29 April 1988 Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts op. cit. p. 4
35. OSS 29 April 1988 Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts op. cit. p. 4
36. OSS 29 April 1988. Staffing, Present Costs, Travel and Costs of Relocation

37. OSS 29 May 1988. Response by the Office of the Supervising Scientist op. cit. p.5.
38. Supervising Scientist for the Alligator Rivers Region Annual Report 1986-87 p. 69
39. ibid p. 69
40. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts p. 8.
41. Letter from Dr T Gardner op. cit. p. 2
42. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts. p. 7
43. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing committee on Environment, Recreation and the Arts p. 7
44. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts p. 9
45. House of Representatives, Hansard, 17 February 1988 p. 141
46. OSS 29 April 1988. Response by the Office of the Supervising Scientist to Concerns Raised About its Operations with the Senate Standing Committee on Environment, Recreation and the Arts. p. 6.

DISSENTING REPORT

Senator Noel Crichton-Browne

Senator Julian McGauran

Senator John Panizza

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CHAPTER ONE

INTRODUCTION

PARAGRAPH 7 - ADDITION

The deleterious effects of (white) contact with the Aboriginal population referred to were the contractions of diseases from them to which Aborigines were susceptible and to which they had no natural immunity.

PARAGRAPH 6 - ADDITION

Refer to our dissenting paragraph 42 in Chapter Six.

PARAGRAPH 8 - ADDITION

The decline in numbers of Aborigines living and working on the Gimbat Pastoral Lease during the 1960s and 1970s was symptomatic of the dramatic Australia-wide decline of Aborigines working in the pastoral industry, induced by changed wages and conditions within the industry.

It would be deficient not to recognize also the on-going attraction which white communities held for Aborigines and the movement towards them which continued to take place.

It is in our view, misleading, to imply that the fact that there were no Aborigines at Gimbat Pastoral Lease in 1979 had anything to do with mining in the 1950s.

PARAGRAPH 13 - ADDITION

As outlined in paragraphs 58 and 59, Chapter Three, four States and the Northern Territory provide for mining or petroleum extraction within national parks under certain legislative procedures.

Both Western Australia and the Northern Territory, in their submissions to the Committee, advocated a policy of multiple land use for the Kakadu Region.

CHAPTER 2

TOURISM

PARAGRAPH 1 - ADDITION

As the majority report reveals in paragraph 40, according to the Northern Territory Tourist Commission, 33 per cent of tourists express regret and disappointment that they did not have contact with Aborigines in the Territory. The 1984 Tourist Development Priorities Plan found that most segments of the tourist market were expecting more contact with Aboriginal lifestyle and culture. On the other hand, a travel survey conducted in 1982 found that only one per cent of those interviewed, which included overseas, interstate and local visitors, were specially attracted to the Northern Territory to see Aborigines or Aboriginal paintings. This group expressed virtually no interest in Aboriginal culture.

PARAGRAPH 2 - DISSENT

One of the most notable features of the Kakadu National Park is the great variety, in a relatively small area, of land forms, vegetation and animal life. Each of the main subregions, the plateau, lowlands, flood plains and tidal flats, ... is quite unlike the others, and there is considerable variation within them. The climate increases the diversity - large areas, most notably the flood plains and lowlands, take on a quite different appearance when the wet season follows the months without rain.¹

This variety is further contrasted by areas of great natural beauty and thousands of hectares of monotonous scenery of a type common to vast areas of Northern Australia.

THE PLATEAU

This is a massive sandstone formation, nearly 2,000 years old. It once covered a much larger area but erosion over the millennia has caused its escarpment to retreat gradually in a south-easterly direction to its present position, leaving some outliers.

Much of the plateau is made up of bare rock or thin soils with a scanty cover of spinifex and shrubs. There are also areas of deep sandy soil supporting tall forests of eucalypts, and rugged areas in which grows an interesting type of rain forest, thought to be a relic of a past climatic era.²

The plateau contains some spectacularly scenic areas, with rock pools, deep gorges and waterfalls. Many of its sandstone cliffs and caves have been used by Aborigines as galleries for their paintings.

THE LOWLANDS

The retreat of the plateau with erosion uncovered some ancient rock formations which now outcrop or underlie the soils of much of the lowlands. The major uranium deposits so far discovered in the Region are associated with two of these, known as the Koolpin and Cahill (or Koolpin Equivalent) Formations The present land surface has been formed by erosion, deposition of eroded materials and other processes including widespread leaching to form laterite.

The lowlands are somewhat monotonous scenically. Most parts are undulating and there are low hills and ridges. Most of the soils are sandy or loamy, and are highly susceptible to erosion if disturbed. A few have a cover of gravel or rocks which protects them from erosion. The lowland vegetation is mostly open eucalypt forest or woodland, or scrub. Tall grasses, reaching heights of two metres or more in the wet season, are the main ground cover over large areas. Fire passes through much of the lowlands each dry season and most of the vegetation is adapted to regular burning.

THE FLOOD PLAINS

These were probably formed by material deposited in river estuaries which then emerged from the water as a result of a rise in the land surface or a drop in sea level. Heavy clay covers most of these plains and deep cracks form when it dries out after the floods retreat.

Small variations in surface height result in considerable variety in the flood plain vegetation. The highest parts, flooded for shorter periods each year than lower areas, are covered with sedges and grasses. The lowest parts, most of which are at the edges of the plains, are permanently inundated. Many support paperbark forest. Between these two are swampy areas where a variety of aquatic plants, including sedges, reeds, waterlilies, large and small algae, wild rice and other grasses, grow profusely in the wet season.

The flood plains have much more scenic value in both the wet and dry seasons. In the wet season the vast expanses of water and the lush growth and variety of the vegetation are notable features. In the dry season vast numbers of birds congregate around the remaining wet areas. More than 120 species, mostly water, sea and wading birds, have been recorded.

THE TIDAL FLATS

These consist of marine clays and muds and some low beach ridges with coarse sandy soils. Most parts are regularly inundated by sea water. Their vegetation is mostly sedge and salt-tolerant, fleshy samphire, but there are also areas of mangroves and a rare and interesting type of semi-deciduous forest grows in some parts which are not inundated.³

PARAGRAPH 4 - ADDITION

Some species are very rare. Many are found only in Northern Australia and some only in Arnhem Land. Few species, if any, are restricted to the Region but some subspecies or forms may be.

PARAGRAPH 8 - DISSENT

We do not share the view of the majority report that the plant life throughout the region has considerable scenic value. While indeed the water-lilies on the flood plains, referred to in the majority report, are beautiful, many thousands of hectares of the lowlands, for instance, are, as described in our dissenting paragraph 2, 'monotonous scenically'.

The main vegetation communities in the region were set out in the Ranger Uranium Environmental Inquiry Second Report, 1977 AGPS, Table 5, page 52 as follows:

The Main Vegetation Communities in the Region

- Plateau Sandstone scrub - mixed, with many legumes and myrtaceous species.
Sandstone woodland - eucalypt woodland with sandstone scrub understorey.
Sandstone rain forest - dominated by a newly recorded myrtaceous tree species, but often mixed with other non-eucalypts. Occupies a total of about 500 square kilometres in patches. Thought to be a relic community.
- Lowlands Woodlands - variable, mostly but not always eucalypt dominant, mixed, open or dwarf; tall grasses and scattered shrubs.
Tall open forests - mostly eucalypt dominant, but with small areas of mixed open forest dominated by non-eucalypts; tall grasses, scattered shrubs and low trees.
Savannah and grasslands - eucalypts, with irregular patches of non-eucalypt trees and areas of annual or perennial grasses.
Mixed scrub - mostly non-eucalypt, pandanus scrub and leguminous-myrtaceous scrub.
- Flood Plain Sedgeland - dominated by a number of sedge species with varying proportions of grass.
Herbaceous swamp vegetation - numerous aquatic herbaceous and grass species, unstable and in patchy mixtures according to flood depth etc, susceptible to buffalo damage.
Paperbark forest - occurs in depressions and along lowland freshwater river channels. Patchy and fragmented.

Tidal Flats Mangrove scrub - extends as scattered occurrences along the coast and for short distances up East Alligator River, Cooper Creek and South Alligator River, West Alligator River and Wildman River. Samphire (fleshy, salt-tolerant plants) - with sedges and grasses, occupying flats along the coast and parts of the estuaries.

Streams and water bodies Mixed communities along stream channels - various assemblages of species, particularly luxuriant and important ecologically near springs and streams emerging from the escarpment, notably along Baroalba Creek.

PARAGRAPH 41 - DISSENT

While, of course, it is recognised that Aborigines are not scattered evenly throughout the Park and that, by and large, they live in a number of communities, it ought to be remembered that there are only 277 Aborigines living in a vast region of 19 804 square kilometres (1 980 400 hectares), being 71.49 square kilometers (7149 hectares) for each adult Aborigine living in the Park.

Notwithstanding an increase in annual tourism of 147 500 people between 1981/82 and 1987, representatives of the Department of Aboriginal Affairs indicated that they were satisfied with the current arrangements which, in their view, assisted Aboriginal people in establishing the sort of lifestyle they want in particular locations within the region.⁴

Provision is made for the ANPWS to restrict entry to certain land to protect the privacy of Aboriginal communities and to prevent public access to other designated areas. Road access to Aboriginal living areas is limited to persons having business there and to those invited by residents.⁵ Several locations of particular importance to Aboriginal residents, such as burial grounds and ceremonial areas, have also been the subject of formal closures.⁶

Evidence by the Australian Conservation Foundation (ACF)⁷ spoke of the Aborigines' very real fears of widespread tourism and argued that Aboriginal traditional owners fear a rapidly expanding tourist industry more than mining because of tourism's 'permanent' and growing scale.

We are unable to find evidence of that fear and it is contrary to information gathered by us from the Gagudju Association which makes up the majority of the Aboriginal population within the Park.

The ACF's evidence also stands in contrast to the Gagudju Association's purchase of the Coinda Motel and its recent construction of a large motel in Jabiru, both built to accommodate growing tourist numbers.

PARAGRAPH 47 - DISSENT

Refer to our dissenting paragraph 18 in Chapter Seven.

PARAGRAPH 51 - ADDITION

Add to recommendation

- (ia) That the ANPWS, as an on-going program, demonstrate due diligence and commitment to the opening up of further archaeological and art sites.

PARAGRAPH 53 - ADDITION

The growing traffic of various Commonwealth and Territory Departmental 4-wheel drive vehicles travelling both on and off made - roads provides an increasing risk of weed dispersal.

PARAGRAPH 67 - DISSENT

To express a sympathy with the views expressed by the ACF and Dr J. Baker of the World Wildlife Fund of Australia is to embrace a philosophy of Park use to which we do not subscribe.

It is not our view that recreational fishing ought to be banned from the Kakadu National Park for reasons other than the risk to fish stocks within the Park and the depletion of fish schools available for passive viewing by Park visitors.

Clearly, the present ANPWS decision to close certain areas has been made without adequate research and information.

Recommendation

That ANPWS should, as a matter of urgency, carry out a study of the fish populations of the Park with a view to determining the impact on them of various levels of recreational fishing. If, in order to complete the study, it is absolutely necessary to close areas of the Park to fishing, this should be done.

PARAGRAPH 68 - ADDITION

The ANPWS can mitigate against the risk of fires by ensuring that adequate and suitable fireplaces are provided.

PARAGRAPH 69 - ADDITION

As has been observed with rock art, increasing numbers of visitors to the Park are, in part, a safeguard against unobserved vandalism and the presence of other tourists tends to discourage such acts.

PARAGRAPH 71 - ADDITION

We do not support the ACF's approach of indiscriminately seeking to declare large sections as wilderness areas. We are not able, at this time, to judge whether the current boundaries and zones are appropriate, however, we are of the view that, wherever possible, Australia's environment ought to be available for all Australians, not just healthy hikers.

PARAGRAPH 74 - ADDITION

We assume the mining industry is not arguing for mining within the Park if the negative impacts of tourism are to be accepted, but rather, that the mining industry's comments were intended to encourage the injection of some intellectual rigour into the debate in light of strong opposition in some quarters to mining but no corresponding comment on tourism.

PARAGRAPH 85 - DISSENT

We oppose, in isolation, the introduction of fees at Kakadu National Park. We support, as a general rule, the user pays principle, however, we understand the Committee's recommendation for user fees to be a mechanism of controlling Park visitor numbers.

We are not of the view that there is an over-crowding of the Park, but we judge there to be a significant lack of adequate and appropriate facilities and infrastructure to accommodate the needs and comfort of Park visitors which ought to, as a matter of urgency, be rectified. For instance, there is no sensible explanation for there being no second caravan park in the Coinda/Yellow Waters area.

Clearly, the majority report is of the view that present visitor numbers must be controlled so as to 'help ensure as many people as possible are able to see the Park without overloading the facilities that are available'. That is, presumably, an acceptance that present facilities are adequate. We do not support that view.

Recommendation

That ANPWS, as a matter of urgency, upgrades the infrastructure presently available within the Park to provide at least for current Park visitor numbers, and promptly acts to put into place the Committee's recommendation of paragraph 91.

1. Ranger Uranium Environmental Enquiry, second report AGPS, p. 49.
2. Ranger Uranium Environmental Enquiry, Second Report AGPS, p. 49.
3. Ranger Uranium Environmental Enquiry, Second REport, 1977, AGPS, pp. 49-50.
4. Majority report, Chapter 2, paragraph 36.
5. Majority report, Chapter 2, paragraph 36.
6. Majority report, Chapter 2, paragraph 36.
7. Majority report, Chapter 2, paragraph 38.

CHAPTER THREE

MINERAL RESOURCES

PARAGRAPH 14 - ADDITION

During 1974 Geopeko pegged approximately 400 mineral leases in an area now contained within the boundaries of Kakadu National Park, Stage 2. Fourteen of these leases which did not designate uranium as a mineral being sought were approved in October/November, 1974.

In February, 1978 the Administrator of the Northern Territory was requested by the then Prime Minister, Malcolm Fraser, not to approve further leases pending the resolution of Aboriginal interests and the future Park's status.

On 24th April, 1978 Mr Fraser said:

[t]he Government introduced amending legislation into the Parliament on 10th April, 1978 which will provide a legislative basis for exploration, development and mining activities in the Stage II Area.

No part of the Stage II area will be incorporated into the Kakadu National Park until the mineral potential of that area has been assessed.

The question of excision of any potential mining areas from that area to be later declared as part of the Kakadu National Park is not so urgent as to require an early decision, but will be considered at such time as the mineral resources of the area have been assessed and declaration as part of the Kakadu National Park is imminent ...

On 5 April, 1979, Stage 1 of Kakadu National Park was proclaimed as a Park pursuant to the National Parks and Wildlife Conservation Act 1975. On 2 April 1980 a plan of management came into operation for the period until 31 December 1985. Under Clause 56 it set out a comprehensive description of mining operations for the recovery of

minerals as was required of plans of management under the Act.¹

Senator John Carrick, then Minister for National Development and Energy, stated on 4 June 1981, inter alia:

[w]ith respect to the Stage II area, the Government announced that the area would be proclaimed at a later time, but beforehand exploration would be permitted under strictly controlled conditions. Prior to incorporating the area in the Kakadu National Park, the Government will declare the area as a conservation zone, and a tightly controlled exploration programme under the Commonwealth's supervision will be allowed to proceed to identify the resources of the area, and to enable appropriate action to be taken.

Between 1974 and 1983 successive Federal Governments requested Geopeko to refrain from active exploration upon its leases until the same issues about which Mr Fraser wrote to the Northern Territory Administrator were resolved.

Stage 2 of Kakadu National Park was proclaimed on 28 February 1984 by which time ten years had passed since the granting of Geopeko's leases and, to this time, they had been prevented from either properly exploring or mining upon them. Geopeko had effectively been subject to a ten year moratorium.

On 20 February 1985, the declaration of Stage 2 was revoked and the area was proclaimed an extension of Stage 1.

In March of 1986 Mr Cohen, the then Minister for Arts, Heritage and Environment, proposed to the Prime Minister that Kakadu Stage 2 be submitted for World Heritage listing. This prompted the Department of Resources and Energy to write to the Minister, Senator Evans, on 13 June 1986:

BMR view the Kakadu region as probably the least explored of the world's great mineral provinces and ranking as one of the regions of highest potential for further significant discoveries with only moderate exploration effort.

On 15 May, Geopeko, amongst other mining companies, wrote to Senator Evans expressing a view that the plan of management should include provisions for mining similar to those contained in the first plan of management. The Company's concern was raised by a discussion paper for the plan dated 21 February 1986, which made no provision for mining operations.

On 11 June 1986, the draft plan of management to replace the first plan of management and which covered Stages 1 and 2, was referred for public comment.

On 18 July, the Department of Resources and Energy had written to the Director of ANPWS expressing concern that there had not been suitable or appropriate consultation with either the Northern Territory Government or the Department of Resources and Energy. The Department expressed the view that the Commonwealth should demonstrate the merits of a balanced multiple land use policy in meeting what are often viewed as competing interests in areas of conservation significance.

The Department went on to say it believed the plan, as proposed, failed to take advantage of this opportunity and stated that the BMR had identified the Kakadu Region as one of the most promising areas of mineralisation in the world. There was no recognition of this in the plan, nor any discussion or attempt to resolve the land management questions involved:

[w]e believe the approach adopted at pages 112 and 113 of the plan dealing with operations for the recovery of minerals is superficial in its discussion of this issue and that, by adopting a combatant position, it is unlikely to lead to any successful long term resolution of these undoubtedly difficult issues.

In this context we have difficulty rationalising the key management objective spelt out at page 26 to develop an inventory of all renewable and non-renewable resources in the Park (an objective with which we are in strong agreement) with an

approach intended to prevent prospecting and exploration. We believe development of a resource inventory is an important objective in helping to resolve the land use conflicts ...

The Department concluded by saying:

the plan should at least keep open the options for mineral exploration and development in the park. In our view, provisions similar to those in the first Plan would be adequate for this purpose and we would wish to see these reinstated.

On 8 September 1986, Senator Evans wrote to Geopeko:

[m]y Department has provided comments on the proposed Plan to the Director, National Parks and Wildlife which seek inclusion in the Plan of provisions for operations for the recovery of minerals similar to those in the first plan. Such an approach is necessary to give effect to the Plan's key management objective of developing an inventory of all renewable and non-renewable resources in the Park.

You can be assured that I am following this issue carefully with the long term objective of establishing a multiple land use policy for the region which balances the interests of the mining industry with those of other land users.

On 16 September 1986, Mr Barry Cohen, when writing to Mr Coulter, the then Northern Territory Minister for Mines and Energy, in referring to the incorporation of Stage 2 into Kakadu National Park, said, inter alia:

[a]malgamation of the two areas simply provided administrative advantages, allowing the whole park to be operated under the name 'Kakadu National Park' and under one plan of management.... Conditions applying to any operations for the recovery of minerals were unchanged by the amalgamation of the two areas.

This statement was made recognising the first plan of management provided under Clause 56, as described earlier, a comprehensive description of mining operations for the recovery of minerals.

However, on the very same day Mr Cohen and Senator Evans issued a joint statement announcing that:

[t]he revised terms of the Plan of Management for Stages 1 and 11 to be submitted to Parliament will be along the lines of the draft Plan publicly circulated by the Director of Australian National Parks and Wildlife Service. The provisions in question differ from the previous Plan, now expired, which enabled exploration and mining to take place outside the pre-existing leases with the approval of the Governor General.

The statement confirmed that immediate steps would be taken to nominate Stage 2 of the Park for inclusion in the World Heritage List. The Gimbat and Goodparla pastoral leases were to be included in the Park and the further extension of the Park would be subject to arrangements which would ensure that a full assessment of the resource potential of the area would take place.

The logic given for excluding Stage 2 from mining and including Stage 3 was that Stage 2 was highly prospective for uranium mining, which the Government intended not to allow but Stage 3 was highly prospective for other minerals for which the Government would allow mining.

This claim was made notwithstanding Geopeko's letter to Senator Evans of 5 May which said, inter alia:

[t]here have been ore-grade intersections at Ranger 4, Ranger 68 and Ranger 34; the last is a copper-silver prospect deserving of substantial exploration.

These are located in Stage 2.

In the same correspondence to Mr Barry Coulter, Mr Cohen stated, in relation to the possible inclusion of Kakadu Stage 2 on the World heritage List, that:

procedures for nominating possible future Australian sites for World Heritage Listing were agreed at the July, 1984 meeting of the Council of Nature Conservation Ministers (CONCOM) and included, inter alia, a commitment by the Commonwealth to full consultation with State and Territory governments. Should the Commonwealth decide to pursue World Heritage Listing of the former Stage II area, your

Government will be consulted in accordance with the CONCOM Agreement prior to any approach being made to the World Heritage Secretariat in Paris.

As noted in this Chapter, on the same day (16 September) Mr Cohen, in conjunction with Senator Evans, announced that the Government also agreed that immediate steps should be taken to nominate Stage 2 of the Park for inclusion on the World Heritage List. Mr Coulter received his correspondence from Mr Cohen assuring him of consultation on 19 September.

The new plan, which was proclaimed on 14 November 1986, varied significantly from the first in as much as it did not set out a prescription for mining but simply referred to part of section 8B and section 10(2) of The National Parks and Wildlife Conservation Act 1975. No provision was made for mineral exploration outside pre-existing claims and mining upon them was subject to approval by the Governor-General in accordance with the plan of management relating to that Park or reserve - an approval which would not, of course, be forthcoming given Mr Hawke's letter of 12 November.

The plan was clearly designed to not only prohibit future new exploration but to minimize the impact of current exploration upon the Park.

Inasmuch as companies such as Geopeko had made application for mining leases some years earlier under the 1939 Commonwealth ordinances and, then, subsequent to Northern Territory self-government in 1978, applied for these claims as areas under the 1980 Northern Territory Mining Act, they assumed these were allowable mining in the new plan of management.

The first indication that both these lease applications, and the leases already granted some 12 years earlier, were to be, for all intentions and purposes, expropriated, was on 12 November 1986 when the Prime Minister wrote to Gerpeko stating:

I should make it clear that the Government will not

allow mining of any sort in the areas comprising Stages 1 and 2 of Kakadu National park. Nor will the Government permit any new mineral exploration in those areas. You will be aware that the Government has decided to proceed with the listing of Stage 2 under the World Heritage Convention.

While I recognise that Geopeko has a number of pre-existing mineral leases within Stage 2 that are protected under the National Parks and Wildlife Conservation Act, I reaffirm that no mineral exploration will be permitted outside these areas and that the Government will not countenance any mining in Stages 1 and 2 ...

The nonsense of this letter is that Mr Hawke was saying exploration could take place only on the pre-existing mineral leases but, even then, mining would not be allowed to proceed. What point is exploration if it is not to be followed by mining?

On 20 November, Geopeko sought an injunction in the Federal Court against the World Heritage Listing.

The Government appealed to the High Court which upheld the Federal Court injunction.

In response, next day the Federal Government introduced the National Parks and Wildlife Amendment Bill which prohibited exploration and mining within Stages 1 and 2 including that upon pre-existing mineral leases. In the case of Geopeko it affected leases that had been granted twelve years earlier and about which successive ministers had given continuing assurances. The latest being from Mr Cohen less than two months before the Prime Minister's statement of 14 November.

The legislation expressly provided that compensation would not be paid to the owners of the affected mining leases and applications.

The legislation was passed in March 1987.

Running parallel to this situation, Geopeko applied in 1971

for mining tenements which straddled the contiguous boundaries of Stages 1 and 2. The Government asked that these applications be withdrawn and that they be re-applied for under the new proposed Northern Territory Parks Act.

Dr Rex Patterson, then Minister for the Northern Territory, wrote in the following terms on 21 December 1975:

I refer to your applications for renewal of Exploration Licences Nos 219 and 220. These applications relate to areas that extend into the area proposed as a national park in the Alligator Rivers region.

It is the intention of the Government, at the February 1974 sittings of the Northern Territory Legislative Council, to introduce new legislation providing for the creation of national parks in the Northern Territory, and for the issue of rights under that legislation to allow prospecting to be carried out within those national parks under suitable conditions.

I am authorised by the Government to assure you that, if your applications for renewal of licences are approved only in respect of areas outside the boundary of the proposed park, you will, upon commencement of the new legislation, be issued with fresh licences under that legislation in respect of the areas within the park boundary to which your current renewal applications relate.

Please be assured that my officers will be available to discuss any matter of concern to you.

The legislation referred to was never introduced and the tenements withdrawn in good faith at the request of the Government, were lost.

We have set out the history and sequence of events and their nuances in some considerable detail, first so that they may be properly understood and second in the hope that something may be learnt from them.

It is stark evidence of twelve years of Government mismanagement, broken commitments and ultimately arrogant disregard not only for the rights of property ownership but for the recognition of and respect for its own legislation.

Ultimately a World Heritage Listing for an Australian Park was paramount to Australian property ownership within the Park.

If Australia is to attract high levels of either domestic or foreign capital in a high risk industry such as natural resource development, it has to demonstrate that its laws and regulatory processes are based upon the fundamental principles of certainty and consistency; that laws will be enacted prospectively not retrospectively.

The essential criteria necessary, without which foreign investment will not be attracted, are a stable political system a predictable legal system and a reliable economy.

Conduct of the type demonstrated in Kakadu is not reassuring to investors looking for certainty and reliability.

The natural resources abundant in Australia are not unique and if we are to maintain our attraction to investors it will be with the stability and certainty that we have offered in the past.

The effect of twelve years of policy failure in the Kakadu region has meant the loss to Australia of many billions of dollars which has variously been estimated at between \$35 billion and \$70 billion. The Northern Territory Government in their submission stated:

[t]he submission by the mining companies on how much national wealth has already been lost should be sobering. We believe that the figure is over \$700 million at Koongarra alone.²

MIM in its submission, when referring to the Kakadu region stated:

[m]oreover if the development of the mines discovered as a result of this exploration was approved, export earnings around \$1,000 million annually would not be an unrealistic expectation. These figures are based on uranium developments only and take no account of

possible gold, base metal or other developments which would improve the position even further.³

In relation to the estimated value of minerals within the Park, the submission by the Department of Resources and Energy stated:

[t]he success rate in the very short period during which Kakadu was open to explorers was staggering and probably represents the lowest cost per tonne of ore found in the history of exploration in Australia, at least in modern decades.⁴

Referring to Pancontinental Mining's estimate of the gross value of the minerals at Jabiluka, including gold, to be in excess of \$20,000 million, the Department stated:

[a]dditionally, knowledge of the gold resource in the Jabiluka orebody is incomplete. Some 11 tonnes of contained gold are indicated, but the total amount could be significantly higher. A preliminary resource estimate for gold at Coronation Hill is of the same order of magnitude to that at Jabiluka. Again the ultimate resource could be several times greater.⁵

Other mineral commodities which are known to occur in Kakadu and of which knowledge is poor include copper, lead, zinc, silver, nickel, cobalt, tin, tungsten, iron.

The discovery of the gold-platinoid-uranium association at Coronation Hill in the South Alligator Valley provides an entirely new exploration perspective.

On present knowledge, the inground uranium value of Ranger, Jabiluka and Koongarra is in the order of \$34 billion (1 billion = 10^9). It is entirely feasible to predict that twice this amount of economically extractable uranium is undiscovered in Kakadu.

Additionally, the ore reserve at the known deposits are not completely blocked out and potential for considerable additions exists. A total estimate of million tonnes of contained U_3O_8 in ore is not unrealistic. At current exchange rates this represents \$100 billion of in-ground value.

A reasonable estimate of the loss of export earnings through delays to development of the known uranium resources within Kakadu is \$5 billion.⁶

However, as the preceding paragraphs demonstrate, successive commitments to a proper inventory of resources in the region

have not been fulfilled.

Present Government policy of no exploration within Stages 1 and 2 together with two thirds of Stage 3 excludes an inventory and future Government decisions will dictate to what extent a full inventory is undertaken within the Conservation Zone of Stage 3.

It is simply not possible for informed and objective debate to be conducted when the extent of competing considerations is not available.

If it were possible to demonstrate that the rewards for resource development within the Kakadu region were by any measure very poor and the effect of their exploitation would lead to large scale irreparable damage to the Park, then a proper case could be made out to exclude such activities. However, if it could be shown that, with proper management, resource development would produce wealth for Australia with little or no damage to the environment, then a compelling argument is to be had for such exploitation. The current Government policy excludes such determinations in all but the Conservation Zone.

Judgments upon the type and size of development of Australia's resources must of necessity be skewed with so many factors unknown.

It is quite irresponsible and improper for any Government to attempt to develop policy on mining, tourism or any other land use without having assembled the relevant and imperative information. However, what can be asked is whether Australia can afford to forgo many billions of dollars of natural wealth because that wealth is located in an area around which a national park has been declared.

PARAGRAPH 49 - DISSENT

We recommend that permission be given for the Jabiluka and Koongarra mines to go into production. To put aside a recommendation would be to fail in many respects to address the central questions which the Senate directed the Standing Committee on National Resources and, subsequently, the Environment, Recreation and The Arts Committee to consider and report upon:

- (a) the nature of the resources available for exploitation; and
- (b) the impact of utilisation of these resources, particularly mining and tourism.

Many of the submissions and much of the evidence has been directed towards such a determination.

In discussing the issue the majority report states:

the Committee believes that any decision made by the Government to allow mining should, as a necessary but not sufficient condition, require the companies involved to meet stringent guidelines.⁷

To the extent that the Committee lists criteria for approval, they have, without exception, been met or are capable of quickly being met by both projects.

At an earlier point in its deliberations, when contemplating the same issue, the majority report states, [a] wide range of matters would need to be considered in making such recommendations.'⁸ However, it then fails to specify a conclusive list of matters.

To fail to make a definitive decision on such a critical issue on the basis that it ought to be left for the Government to decide upon, is in our view for the Committee

to fulfil less than its charge.

Presumably the Senate, in charging the Committee with its relevant terms of reference, intended that such deliberations and determinations be addressed in an environment stripped of Government considerations.

It is not without significance to note that both projects were deliberately excluded from Kakadu National Park and, as the majority report confirms in respect to Koongarra:

[a]n environmental impact statement for the project was prepared in 1979 and in February 1981 the Minister advised that there were no environmental objections to approval being given for the project.⁹

The Company was able, in the words of the majority report, to confirm that:

[f]ollowing the preparation of the environment impact statement for the project, it had been informed in September 1981 that the then Minister for Environment, Housing and Community Development had advised that there was no environmental objections to approval being given to the project. Environmental requirements for the project have been endorsed by the Commonwealth, the Northern Territory, the Northern Land Council and the Company. Draft applications filed in 1982 and 1983 under the Uranium Mining (Environment Control) Act 1978 to mine and construct a uranium mill facility were approved, among others, by the Commonwealth Departments of Environment, ANWPS, the Australian Radiation Laboratory, the Office of the Supervising Scientist, the Northern Land Council and the Northern Territory Conservation Commission.¹⁰

Total government revenue from sources directly connected to the project is estimated at \$175 million. Payment to Aboriginal interests will amount to \$256 million.¹¹

The status of the Jabiluka project is as follows:

All conditions and requirements of the Federal and Northern Territory Governments have been met. An agreement has been entered into with the Northern Land Council and approved by

the Minister for Aboriginal Affairs. A mineral lease was issued by the Northern Territory Government on 12 August 1982 on the advice of the then Minister for Resources and Energy administering section 41 of the Atomic Energy Act (Cth).

The following payments have, or will be, paid to the Aboriginal community:

FINANCIAL IMPLICATIONS (ESTIMATES) FOR A PROJECT TO PRODUCE 1500 TONNES U3O8 PLUS 25000 - 30000 OZ'S OF GOLD PER ANNUM

PAYMENTS TO ABORIGINES

\$A millions

Initial Investment

Cash payments to Northern Lands Council during construction (in addition to \$1.8 million already paid)	8.2
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Recurrent Payments to Aboriginal Organisations and Groups

Aboriginal Benefit Trust Account	2.8 p.a.
Northern Land Council Royalty type payment	2.0 p.a.
Total Recurrent to Aboriginal Community	4.8 p.a.

From the early 1970s until Prime Minister Hawke's statement of 14 November 1986 that mining would not be allowed in either Stages 1 or 2, the public policy of successive Governments had been to obtain a full resource inventory and to allow mining in all stages of the Park. From 1980 mining was to be subject to appropriate conditions as set down in the first plan of management and reconfirmed by the Minister for Arts, Heritage and Environment as late as 16 September 1986.

On the basis of the wide range of submissions presented to the Committee and the many witnesses who appeared before it, there was no evidence submitted which offered intellectually or technically compelling reasons for further delays in the granting of approval for the Koongarra or Jabiluka projects.

Recommendation

We recommend that mining at Koongarra and Jabiluka be approved immediately.

PARAGRAPHS 59 & 60 - DISSENT

New South Wales, Queensland, Western Australia, Tasmania and the Northern Territory all allow mining or petroleum extraction within national parks under certain legislative procedures.

It is not our view that exploration and mining are activities which are intrinsically or necessarily difficult to reconcile with the concept of a national park.

With respect to the Kakadu National Park, the Commonwealth Government overcame the problem by simply deleting Ranger and Koongarra from Stage 1 of the Park, deleting Jabiluka from Stage 2 of the Park and deleting a 2252 square kilometre Conservation Zone which contains BHP's Coronation Hill project, from Stage 3.

The Conservation Zone represents one-third of proposed Stage 3 (33.48 per cent).

Ranger, Koongarra, Jabiluka and Coronation Hill all contain proven ore bodies and the Conservation Zone is identified as offering excellent prospects for further major ore bodies.

The decision to exclude these areas from the Park was based not on their aesthetic, environmental or ecological merit but purely on the known real or potential mineral and metal value contained within them. These areas have no less outstanding cultural and ecological value than the areas immediately adjacent to them which have been included in the Park.

This point is highlighted by the fact that the Commonwealth Government proposes following the five year exploration period for the Conservation Zone, in which areas may be set aside for mining projects, wherever they may be, to incorporate the balance of the Zone into the Park.

Inasmuch as the areas proposed to be set aside for mining cannot yet be known, no merit test can be applied.

The dilemma of mining within National Parks, that is, multiple land use, has thus far been overcome in Kakadu by the method of continuing to draw the Park boundaries around known or potential mines.

That does not overcome the problem of future mining activity in the Park in areas in which there may well be less 'national park merit'.

We see no difference between excluding areas from a park because of a decision to exploit their resources or exploiting them as part of the Park. If integrity is to be maintained in determining what areas are worthy of inclusion within the Park boundaries, it is intellectually dishonest to exclude certain areas which would otherwise be included because of the resource potential and then to claim the integrity of the Park has not been compromised.

We judge that the integrity of competing national interests can only be maintained by a policy of balanced and sensitive multiple land use within national parks.

To that extent we are in accord with the views expressed to the Committee by the Western Australian and Northern Territory Governments.

The Western Australian Government stated in Submission No 43 that:

[t]he community makes a wide range of demands for both resource development and utilisation as well as natural resource preservation and the maintenance of environmental quality. These demands can frequently be inconsistent with one another and lead to conflict. The resolution of competing demands for resources can be achieved through intelligent and integrated management of the land, so that the benefits to the community as a whole are maximised.

Land-use planning and natural-resource management are dynamic ongoing activities, and therefore land-use policy must be sufficiently flexible to accommodate changing circumstances, whilst remaining sufficiently positive to provide effective control over contemporary land uses.

Land use decisions can only be made effectively when a full inventory of the land and its resources is available. In most cases in Australia, the knowledge of mineral and petroleum resources in areas which have been declared as National Parks is minimal. While it is accepted that there will be specific areas and locations within National Parks that will need to be preserved and protected, this should not prevent the adequate assessment of the mineral or petroleum resources of National Parks. Access to land in National Parks for the purpose of resource exploration should be available where it is demonstrated that such access will not endanger the biological integrity or scenic values of the area.

Whether or not a mineral or petroleum resource located within a National Park should be developed needs to be decided on the basis of the impact such development would have on the park's other resources and the benefits development would provide to the community in general.

Mining, unlike other industries, must be located at the site of the mineralization, however, there is usually some flexibility in the manner in which a mineral deposit is developed both in the way it is mined and in the choice of treatment and processing facilities. With carefully planned mining and modern rehabilitation procedures it is possible to greatly reduce adverse impacts and to limit them both in space and time so that there is no threat to the integrity of the surrounding area.

It can therefore be argued that mineral and petroleum resource exploration, and carefully planned, managed, and controlled resource developments are not incompatible with [the] concept of National Parks as areas of natural environment for public enjoyment and conservation.

The Northern Territory submission stated in part:

For an area of land as vast as the Kakadu National Park region there is no sensible alternative to the concept of multiple land use. There must be an element of accommodation and compromise on both sides. Mining and tourism interest (sic) can prosper without in any way detracting from the natural values of the region or causing detrimental impact on the environment.¹²

In conclusion we quote Senator Gareth Evans who lent support to our view when, as Minister for Resources and Energy, he said of Stage 3:

... subject to appropriate protection there ought to be no intrinsic rational reason why a multiple land use regime should not be established for national parks, which already accommodate a variety of different land uses anyway, such as tourism and so on, and in some cases agriculture. Therefore, there ought to be in principle no objection to a wider ranging multiple land use regime.¹³

Indeed, the Minister then described much of the area as 'clapped out buffalo country'.¹⁴

Recommendation

We recommend the adoption of a policy of balanced and sensitive multiple land use within Kakadu National Park.

PARAGRAPH 61 - DISSENT

The problem which confronts Australia is that an enormous area of some 13,073 km² has indiscriminately been set aside for inclusion on the World Heritage List without, in our view, proper discernment or regard to the varying values of the area. The very boundaries of Stages 1 and 2 themselves give a sense of blanket application. We do not share the view that Australia's international reputation would suffer through multiple land use in Kakadu National Park any more than it has through its exclusion of certain areas. It would, of course, have been better had such an enormous area not been offered for inclusion on the World Heritage List.

Australia's reputation did not suffer when the Federal Government deleted discreet parts of the region from the Park to allow present or future uranium mining to take place. Had the areas contained within the mineral leases of Ranger, Koongarra or Jabiluka been of no commercial mining value, they would now be part of Kakadu National Park and judged by the Government worthy of inclusion on the World Heritage List.

PARAGRAPH 62 - DISSENT

The fact that tributories of the East Alligator River, including Magela Creek, flow through the Ranger project area and parts of Stage 2, before joining the East Alligator River in the northern section of Stage 1, does not constitute a further reason why mineral activities should be discouraged within the Park Region as stated in the majority report.

The Ranger Mine has been subject to nearly 1000 inquiries and reports including 150 into the tailings dam.

Geopeko has asserted that:

[w]e know of no publication in which the impact of Ranger One on Park values has been shown to be more than that produced by the presence of a town and its associated population.¹⁵

The Office of the Supervising Scientist which is responsible for environmental standards at Ranger has a staff in excess of 80, of whom 53 are based in the region, and has so far spent around \$42.5 million fulfilling its responsibilities.

As the majority report states, Ranger Uranium Mines Pty Ltd also claims that "the mine has not had any adverse impact on the surrounding Park", pointing out that the successive annual reports of the Supervising Scientist for the Alligator Rivers Region "contain no reference to any

untoward effects on the environment" from the minor infringements of the mine's authority to operate which have been reported since commencement.' 16

These factors give technical and environmental support for mining within the Park region as defined in this report, to the extent that mining has been perceived by some as a threat to the ecology through the interconnecting rivers system.

PARAGRAPH 68 - DISSENT

We are of the view that the environmental consequences of mineral exploration in the Park can be predicted with some accuracy. The Northern Territory Department of Mines & Energy has, in their submission, set out clearly the various on-ground steps involved in exploration.

We do not believe there is evidence to suggest that there exists the potential for significant damage.

Mining companies, particularly in more recent times, have shown themselves to be highly responsible. When one talks of inevitable damage it is important to maintain relevant perspectives.

PARAGRAPH 70 - DISSENT

Senator Crichton-Browne did not have the opportunity to visit sites other than the Myall Lakes district of New South Wales, however his observations stand in stark contrast to those of the only other member of the Committee who visited the region. Senator Crichton-Browne found the rehabilitation and re-forestation so effective as to have considerable difficulty initially in identifying where it commenced and where it finished.

Aesthetic judgments are, by necessity, subjective, however,

to the extent it was possible to discern a difference, Senator Crichton-Browne considers much of the rehabilitation and re-forestation area that he examined in keeping with such work elsewhere - more attractive and more substantial than the original vegetation.

PARAGRAPH 71 - ADDITION

In response to Dr R. J. Wasson who claims that even the "best engineered impoundment structure will fail under extreme weather conditions" with devastating consequences for the environment',¹⁷ Mr Anson from the Department of Resources and Energy said in evidence:

Senator Crichton-Browne:

Yesterday we heard evidence that suggested the tailings dam at Ranger was fraught with all the inevitable risks of man's ingenuity, that the walls had the potential to finally succumb, and that that would cause flooding in Magela Creek and on to the flood plains. Is that inevitable?

Mr Anson:

I do not think that is inevitable at all. Certainly none of the information that we have suggests that that sort of thing can happen. The Commonwealth has an assessor who assesses on an annual basis rehabilitation costs at Ranger, and he does a full examination of that project. What you are suggesting has not been made evident to the Department at all.¹⁸

The Supervising Scientist further commented on the 'Integrity of [the] Ranger Tailings Dam under Extreme Climatic Conditions' by stating in a minute dated 25 August 1986:

1. I understand that at the hearings of the Senate Standing Committee on National Resources enquiring into Resources of the Kakadu region, a question was asked, seeking information on the design of the Ranger tailings dam relating to its capacity to accept extreme rainfall conditions.
2. All aspects of the design and construction of the dam are to rigorous and conservative standards. Regulatory supervision criteria require periodic raises in the height of the

dam wall such that the possibility of any overtopping of the dam in either the most extreme wet season or extreme weather conditions is negligibly small.

3. The nature of the dam, a ring dyke with its crest level well above the surrounding country and no contributory catchment, ensures that the only uncontrolled input, as rainfall, is limited to the height of that rainfall, which can be accommodated within the dam under the most extreme conditions.

For further comment on dam construction and specification refer to our addition to Paragraph 91.

PARAGRAPH 74 - ADDITION

The risks referred to by Dr J. Landsberg and Professor P. Werner which include risk of erosion resulting from the construction of access roads, weed dispersal and increased fire risk, will only be eliminated by banning use of the Park to human beings, not simply by banning mining.

PARAGRAPHS 75 & 76 - DISSENT

These paragraphs overstate the issues involved. While they should not be dismissed or understated, this section is not complete without acknowledging the stringent environmental conditions upon which Ranger, Koongarra and Jabiluka have been approved.

No responsible evidence has been presented to the Committee which demonstrates damage to the environment by the Ranger Mine of the type hypothesised in paragraphs 75 and 76.

Much continues to be made of the danger, particularly to the ecosystem, through the entry of contaminants into creeks and rivers by spillage and seepage.

While recognising the imperative of vigilance and on-going

research, we refer to our dissenting paragraph 62 of this chapter.

The majority report continues to labour what is unknown of the effect on the Park of mining and that the environment at risk includes the downstream portion of the catchment which would be impossible to repair. Clearly, there is still much to be learnt but, decisions and actions taken in respect to mining operations are undertaken on the basis of what is known and, conduct is within the guidelines of what is safe for the environment.

The following is evidence given by the Supervising Scientist:

Senator Crichton- Browne:

From what I have gathered today you are saying that uranium mining managed properly with the stringent guidelines presently laid down is not incompatible with the Kakadu National Park and its environment.

Mr Fry:

Again, I suppose the short answer to that is yes if all you are concerned about is to ensure that those elements of the environment which are at most risk, particularly the aquatic biota the flora and fauna, are adequately protected. I believe we can protect them and man, of course, too.¹⁹

Mr Fry:

In my opinion, one of the most potentially serious environment impacts on the park is from the infestation by exotic weeds. They are hideous and potentially much more damaging to the park, I believe, than anything that a properly controlled mining operation could do.²⁰

Chairman:

How would you compare the relative environmental impacts of Ranger and Nabarlek?

At another point Mr Fry said:

Outside the immediately disturbed area - outside the restrictive lease zones, I suppose - the impact of both operations is virtually the same. It is zero.²¹

The Department of Resources and Energy, as it was then

known, said in their submission to the inquiry:

[t]he environmental arrangements in place at Ranger have been successful in protecting the Kakadu National Park from damage. Extensive monitoring in the areas surrounding the restricted release zone has not detected any adverse effect on the environment of the Park.²²

On the balance of the evidence before the Committee, we do not believe the view can be sustained that uranium mining in the Kakadu Region presents a real risk to the environment.

While contemplating the effect of the imposition of mining site areas upon the Park, we ought to reflect upon the relative sizes of mining sites to the Park.

In the case of Koongarra for instance, the area of disturbed ground is expected to be 4km² of sparse grassland which will provide a non discounted ten years total revenue of \$1.76 billion of export revenue from a total Park area of slightly less than 0.2% of the park.

Jabiluka, which will disturb a lesser area than 4km² will provide an estimated gross value in excess of \$20 000 million.

The area of Ranger Mine, which has a gross value in excess of \$11 billion represents only 0.02% of the proposed total area of Kakadu.

The Department of Resources and Energy states:

[i]t is quite realistic to state that less than 1% in toto would ever be affected by mining. Additionally, in circumstances of carefully controlled exploration and with market forces prevailing, all ore bodies would never be found simultaneously and hence would never be mined simultaneously. Also, rehabilitation could proceed in concert with ordinary mining. Mining would be

aggregated or concentrated in small, discrete areas within the belts of favourable rocks and very few anomalies located at the exploration stage would progress to become mines. Economic reasons would rapidly separate the wheat from the chaff in the natural progression of exploration activities.²³

PARAGRAPH 77 - ADDITION

The following are some other reports which have also resulted from studies concerning the Ranger Mine:

Bywater J, Hicks W, Lucas P, Stockwell D, Trace Metal Levels in Bush Foods Eaten by Aboriginal People in the Alligator Rivers Region in "Environmental Protection in the Alligator Rivers Region", Vol II, 1983;

McNally P, Bywater J, McKay T, Mussel Collection and Sample Preparation Procedures, a Report to working group on radium in mussels in Alligator Rivers Region, Department of Mines and Energy, Darwin, July 1983;

Bywater J, Bird Use of Artificial Water Bodies at a Uranium Mine, Australian Mining Industry Council Environmental Workshop, September 1983;

Kavasnicka J, McKay T, McNally P, Allison H, Bywater J, Pre-mining Variation of Alpha Activity Intake in Shells of Freshwater Mussels, Australian Radiation Protection Society, 9th Annual Conference, Darwin, July 1984;

Dames & Moore, Land Application of Stored Water - Ranger Project Area, Jabiru East, NT, prepared for Ranger Uranium Mines Pty Ltd, Job No 08029-003-73, June 1984;

Peter J Burgess and Associates, Magela Creek Trial Land Application Sump - Materials Investigation and Design, Prepared for Ranger Uranium Mines Pty Ltd, October 1984;

Dames & Moore, Stage Two Land Application, Magela Area, Jabiru East, NT, Environmental Impact Assessment, August 1985;

Bywater J, Biological Screening of Mine Waste Water at Ranger Uranium Mines Pty Ltd, Australian Mining Industry Council Environmental Workshop, 1988;

Milnes A, Fazey P, Bywater J, Lane A, Further Data on Elemental Compositions of Leaves of Trees in the Ranger Project Area, NT, 1988.

PARAGRAPH 80 - ADDITION

What the majority report is saying is that the Movement Against Uranium Mining (MAUM) claim is based on the wrong premise and that the water to which their submission refers comes, not from the Restricted Release Zone, but from Retention Pond No 4 which the Supervising Scientist says 'has not been the subject of any environmental concern'.

PARAGRAPH 82 - ADDITION

The observations of the Office of the Supervising Scientist (OSS) are not intended to conclude that the quality of the water was in itself responsible for the occurrences which may well have been consistent with simply adding water into a stream under pressure at a slightly different temperature. The water discharging through the plume beyond the mixing zone was high quality drinking water.

The OSS did not again do the same test during a further water release from Retention Pond No 4 in 1986/87 because

circumstances and conditions have not again prevailed which would allow for similar testing using that technique.

In as much as the quality of the water is controlled, OSS is satisfied scientifically that, beyond the mixing zone, there will be no effect upon the biota.

To put the debate on water release into some sort of perspective, it ought to be understood that the quality of water contained in RP 4 is, under normal circumstances, close to drinking water standards, but that is not to say it would always have no effect in an undiluted form upon some aquatic life. Of course, by the time it leaves the mixing pond it is greatly diluted to the levels referred to previously.

It should also be noted that, by definition, other natural waters in the region, for example, rainfall and the creeks, are toxic at times. This results from the nature of tropical vegetation.

PARAGRAPH 83 - DISSENT

The evidence to which the majority report refers is presumably that given by the MAUM which, when referring to Aborigines, claims 'one of their basic dietary resources is freshwater mussels. In May 1983, mussels at Mudginberri showed high concentration of radium 226 and Aborigines ceased to eat them'.²⁴

Mr Wratten from MAUM, when asked about the environmental effects of Ranger, went on to say:

{w}e mentioned the radioactive radium 226 in the mussels at Mudginberri. It would affect the food supply, obviously. It has been an area in which the Aborigines have hunted, in which they have had a good food supply for thousands of years ...²⁵

If freshwater mussels are one of the Aborigines' basic

dietary resources, then that ought to be a matter of some concern.

The buffalo eradication program has significantly reduced freshwater mussel occurrences.

In some cases, where buffalo have been eradicated, aquatic plants have regenerated and now cover billabongs which previously had been open bodies of water. The effect of these plants is to reduce the dissolved oxygen in the water to levels which are not conducive to mussels.

The radium levels found in the mussels at Mudginberri were no different to that which can be expected to be found in other areas of the Kakadu region. Given that the Kakadu National Park is a major uranium province, it is inevitable that mussels in the area will have high radium counts.

One could reasonably expect radium levels in mussels in the creek system above Ranger to be similar to those found in the Magela Creek below the Ranger Mine.

It is a flight of fancy to imagine that radium levels found in mussels at Mudginberri in 1983 were due to the mining operations at Ranger.

The OSS has done conclusive studies which demonstrate that the radium content in mussels found at Mudginberri in 1983 is normal for the region and totally unrelated to mining activities at Ranger. The research work and findings were made public some years ago. We question the reason for the MAUM continuing to make such claims.

It needs to be understood that the water to which this section refers is from Retention Pond 4 which contains rain water that has run off waste rock dumps.

The definition of waste, or material which is not milled such as overburden, is material which contains less than

0.23 per cent of uranium.

In relation to the purity of the water in Retention Pond 4, we refer to our comments on paragraph 82.

We believe the monitoring program which took place in the 1984/85 wet season should be repeated if the Supervising Scientist is not satisfied that the procedure has no adverse effect other than the short term effect upon which he has reported.

On-going laboratory tests using Ranger water in respect to these results are being undertaken. The OSS is developing biological monitoring procedures which include fish and invertebrates other than mussels.

Recommendation

We do not support the recommendation on the basis of the evidence given in paragraph 82 or the hearsay in paragraph 83; however, we recommend that, as a matter of course, the Office of the Supervising Scientist continue to monitor the effects of all water releases from Retention Pond 4 at the Ranger Uranium Mine.

PARAGRAPHS 84 & 85 - ADDITION

The Technical Working Group, of which Ranger is a member, recommended to the Commonwealth that Ranger increase the holding capacity of Retention Pond 2. This it has done by deepening it in one part.

The perceived difficulties which Ranger had in earlier years with excess water in the Restricted Release Zone (RRZ) has now, in large part, been overcome. As the report of the Department of Resources and Energy said in its submission:

[i]n the Department's view the arrangements established in 1978 to protect the environment from

the effects of mining have been successful. Current concern in regard to Ranger arises from perceptions that large quantities of water contaminated by mining and extraction processes are being, or may be, released in the Magela flood plain. No such water has been released and no authority to make such a release has been sought or given. In fact the present large water holdings on site arise because all water entering the restricted release zone, including rain, is being held until all parties are satisfied as to the quality and effectiveness of proposed water management measures in protecting the environment.²⁶

The problem has been overcome to the extent that:

1. Retention Pond 2 has been enlarged to accommodate an additional 350 000 cubic metres of water.
2. New procedures no longer require settled solids to be under a cover of two metres of water.
3. A sprinkler irrigation system has been operational and is subject to continued testing and monitoring.

In 1987, Ranger sought approval for the release of water from Retention Pond No 2 so as to trigger the initiation of a procedures and practices system.

Unless Ranger receives a 'one in ten' year rainfall, it will not need to consider the release of water from the RRZ.

Due to a further recent dry wet the company has established a bore field in the event that it is required to pump water into the zone to keep the plant going.

The sprinkler irrigation is planned for use in the dry season so as to ensure that the mine has the maximum carrying capacity for the wet season.

The release through the Magela Creek could take place if necessary in the wet season.

In a joint statement issued on 31 March 1987, the Minister for Resources and Energy, Senator Gareth Evans, and the Minister for the Arts, Heritage and Environment, Mr Cohen, stated:

[t]he Technical Working Group (TWG), comprising representatives from the Office of the Supervising Scientist, the Northern Territory Government and the Ranger Uranium Mine, was set up in 1985 to report upon the Best Practical Technology (BPT) for the management of the mine's accumulations of run-off water (not tailings or process water, which is separately contained).

Three options for the management of Ranger run-off water were considered in detail by the TWG. These involved, subject in each case to a full chemical and biological control regime, probabilities of release of:

'2 years in 5' (involving no additional storage);
'1 year in 10' (involving the deepening of RP2); and
'1 year in 50' (involving the construction, over the next two years of a new 30-40 ha storage pond).

Each option envisages the release of water from Retention Pond 2.

The Technical Working Group identified the '2 years in 5' option as the Best Practical Technology (subject to social considerations) and also endorsed as scientifically and technically sound, although in its view unnecessary, the '1 year in 10' option.

The Government, after considering, not only scientific and technical issues but also the social factors which are a necessary component of BPT (Best Practical Technology), approved the '1 year in 10' option, at least in the first instance.

In other words, both the Government and the TWG acknowledge as scientifically and technically sound the release of water contained in Retention Pond 2 within the RRZ.

We believe OSS and the Northern Territory Department of Minerals and Energy are capable of providing Ranger with a program which would provide for the safe release of water from Retention Pond No 2 into the Magela Creek.

We understand that Ranger, the OSS and the Department of Minerals and Energy are satisfied beyond doubt that under appropriate controls the discharge of water from Retention Pond No 2 provides no risk or hazard to the creek system or the environment of the region.

The degree of dilution will, of course, be influenced by the quality of the water at the relevant time in the retention pond; however, as the majority report states, Mr Nicholls of Ranger Uranium Mines Pty Ltd told the Committee that:

[w]e believe that the release of this water would have no adverse impact whatever on the Magela Creek system and its biota, and hence on human users of the creek's resources. The water in RP2, if diluted seven times, would meet current National Health and Medical Research Council standards for all contaminants. The minimum proposed dilution factor for release is 70:1, a factor of ten higher, and when we would actually want to release it there could be a further factor of ten higher, that is 700:1.²⁷

What Mr Nicholls is saying is that water from Retention Pond No 2, when diluted seven times, is drinking water for human beings under the current National Health and Medical Research Council standards. In fact, the typical composition of RP 2 water undiluted meets Australian drinking water standards with the exception of two or three elements.

The argument is put that Magela Creek water is more pure than drinking water and so Mr Nicholls goes on to say that the water would not be diluted seven times but the proposed minimum is to be 70 times and upward to 700 times.

As the majority report states, however, Mr Moore of MAUM argued that '... to suggest that that sort of release can take place without endangering people who drink the water downstream ... and whose food supplies are effected by the water, is just implausible.'²⁸

The evidence of Ranger Uranium Mines Pty Ltd is capable of standing alone and Mr Moore of the Movement Against Uranium Mining gave the Committee no evidence to substantiate his claim.

One draws the conclusion from the colourful and emotional way in which some propositions are put in respect to uranium mining within Kakadu National Park, that the threat to the Park is not mining per se but that uranium mining offers some more sinister and cataclysmic threat of disaster to the region. That of course is nonsense. While radium and radon gas are valid concerns which must be systematically monitored, the real issue of discussion comes from toxic elements or contaminants. The toxic by-products to be found in the waste of gold, or lead, copper and zinc mining for example may be much more lethal if not managed properly than the elements to be found in a uranium mine tailings pond.

It is worthy of note that, of the matters raised as potential concern in the majority report, none is unique to uranium mining and all are common to all mining operations.

PARAGRAPHS 86-88

The majority report leads one to conclude that the spray irrigation system is a new and untested concept.

While it is claimed by Professor Ovington of ANPWS that very little if any research had been done on the effects of putting large quantities of water day after day on an area which has an ecologically monsoonal type of climate, it ought not be forgotten that Queensland Mines Ltd (QML) have been testing and using such a system for a number of years with the approval of OSS who have been monitoring the results provided by QML as part of the General Authorisation to conduct the spray irrigation project.

The water being used for spray irrigation testing at

Queensland Mines Ltd is a mixture of treated process water and rain water.

We understand that the high level of salinity (ammonium sulphate) in the water has adversely affected vegetation in the immediate area and the irrigation process has recently been suspended. The affected growth is now beginning to regenerate.

It should also be remembered that waste water disposal by irrigation in monsoonal areas has been practised for around 20 years by tanning companies and sewage works.

The water being used for this irrigation at Ranger is from Retention Pond 2 although the testing has now ceased through lack of water.

The typical composition of Retention Pond 2 water meets Australian drinking water standards with the exception of two or three elements. That again is not to say it is always compatible with all aquatic life.

The fact that OSS did not begin its CSIRO irrigation research project for a full twelve months after the operation began reflects no doubt the level of comfort that OSS has with the program.

Our understanding is that OSS is studying the long term, rather than the short term, effects of such a system and is satisfied that the short term effects of such a disposal method at Ranger are of no danger to the environment.

The following information is provided by Ranger:

[Irrigation of excess effluent water is a well-researched method of treating effluent before release to the environment. In Australia, it is commonly used at tanneries, abattoirs, intensive animal production, and refineries such as the Yubulu copper refinery at Townsville. Generally, animals are grazed on pastures in an irrigation water treatment system.

References to its use:

- (i) A Review of the Total Containment/Process Water Irrigation Scheme at Copper Refineries Pty Ltd Townsville and its Effect on Pasture Health and Quality, by S L Waller in AMIC Environmental Workshop Proceedings, 1987;
- (ii) Handbook of Land Transport Systems for Industrial and Municipal Wastes by Reed and Crites, Noys Publications, 1984;
- (iii) Soils in Waste Treatment Utilisation. Vols I and II by Fuller and Warrick, CRC Press, 1985;
- (iv) Land Treatment of Hazardous Wastes by Parr, Marsh and Kla, Noys Data Publications, 1983;
- (v) Nabarlek irrigating tailings water diluted with runoff water since 1985.

Ranger engaged Dames and Moore, a world wide environmental consulting firm, to work with Ranger's Environmental Department in July/August, 1985. The trials began with a 1.7 hectare pilot project which in April 1986 was increased in size to 20 hectares and subsequently the project was extended to its present size of 35 hectares in June 1986.

Ranger advises that the spray irrigation research undertaken by the Company and Dames and Moore to date is:

1. Soil Survey - to identify major soil types.
2. Infiltrometer Tests - to determine rate of infiltration and corresponding application rate which guarantees there would be no run off.
3. Base Line Studies - to determine soil physical and chemical characteristics, e.g. -
 - cation exchange capacity
 - cation and anion concentrations
 - heavy metal
 - soil structure
 - soil texture
 - underlying shallow geology

bulk density
reduction/oxidation reactions
background radiometric characteristics.

The research indicates that, given the relatively low solute concentrations in the applied water, the soil assimilative capacity (or the solute attenuation rate) of the soil should remain at high levels indefinitely.

If for any reason it were necessary the soil can be transferred to the tailings dam.

PARAGRAPH 89 - ADDITION

We can find no credible evidence which supports the MAUM claim.

PARAGRAPH 90 - ADDITION

We can find no evidence to support the claim by MAUM that there had been growing seepage of contaminated water caused by rising groundwater.

Monitoring of the tailings dam is conducted on a standard and regular basis by Ranger with the Northern Territory Department of Mines and Energy undertaking check monitoring as is normal procedure.

It is not an established function of the OSS to undertake monitoring or checking. Seepage from the tailings dam is considerably less than was anticipated by the approving authorities to Ranger at the time of the granting of the approval for the design and construction of the dam.

The dam is functioning well above design parameters.

The current estimate data collected from the tailings dam

monitoring sites is that seepage is 8 cubic metres per day (although a figure of 50 cubic metres per day is generally used as the upper parameter) or 6540 cubic metres per year (18 250 cubic metres per year). The estimate, provided to, and accepted by, the Ranger Uranium Environmental Inquiry, was 300 000 cubic metres per year. These figures represent the overall total estimates of seepage from the tailings dam into the regional ground water.²⁹

PARAGRAPH 91 - ADDITION

For reasons explained at paragraphs 37 and 39 of Chapter Six, an eradication program is currently being undertaken to remove the buffaloes to which Dr Wasson refers from Kakadu National Park. When one talks about such risks it is important to understand the dimensions of the tailings dam.

The tailings dam has four metres of freeboard and walls which are twenty metres high at the highest point. The width at the top of the walls is sufficient to allow two large vehicles to pass side by side - a challenge, we would have thought, for any buffalo.

Tailings dam construction specifications

1. Contingency conditions are allowed for in freeboard design based on a 1:10,000 year event so that adequate storage volume exists and civil engineering construction of the dam could cope with a 1:10,000 climatic event.
2. Safety of the dam structure during abnormal climatic conditions and seismic occurrences, both during the life of the mine and after, for an indeterminable period which could be in excess of 10,000 years is part of the design specifications.

Recommendation

Monitoring of all facets of the tailings dam should continue.

PARAGRAPH 92 - DISSENT

Under section 41 of the Atomic Energy Act 1953, after 10 years from the date of the issue of the authority to mine (that is, January 1989), Ranger is able to make application to have the condition that all tailings be removed to the pit varied. It is reasonable to assume such an application for variation will be made.

If after this period, but before cessation of mining on the project area, 'the Supervising Scientist reports that he is satisfied that, by dealing with the tailings in the manner outlined in the report, the environment will be no less well protected than by depositing or transferring the tailings to the mine pits and, following receipt of such report, the Minister for [Arts, Sport, the Environment, Tourism and Territories], the Council and the Joint Venturers agree that the tailings should be dealt with in the manner outlined in the report, all tailings shall be dealt with in the manner outlined in the report.'³⁰

Recommendation

At the cessation of mining at Ranger, if the environment will be no less well protected by varying the original condition to deposit tailings in the mine pit, a variation should be allowed.

PARAGRAPH 95 - ADDITION

We believe to claim that the '...safe, long-term storage of tailings, the degree of seepage from the tailings dam, the consequences of spray irrigation, the effects of possible releases of excess water from within the restricted release

zone and the effects of water release from outside the restricted release zone ...' and the impact of Jabiru, are all 'potential sources of concern,' very much overstates the position and casts a misleading impression upon the safety of the Ranger Uranium Mine and the surrounding environment.

They are matters that should be, and are, subject to normal regular monitoring.

As has been stated by the Office of the Supervising Scientist (OSS) and others in evidence, the mining of uranium by Ranger, in compliance with the current stringent conditions, offers no risk or danger to the environment.

The issues raised in this paragraph have all been discussed in our minority report in detail and to describe them as potential sources of concern is for us to fly in the face of the technical and scientific evidence.

PARAGRAPH 95 - RECOMMENDATION

ADD:

Subject to the release of the information not being of a commercial detriment to Ranger Mines.

PARAGRAPH 98

Refer to paragraph 49 dissent. Dr Wasson's claims on dam construction are dealt with in paragraphs 72 and 91.

PARAGRAPH 108 - DISSENT

Payments required on an annual basis to be paid into a rehabilitation trust fund is an inefficient use of resources which should more properly be applied in a constructive and productive way.

The object of the proposal should be to ensure that resources are secure for the rehabilitation of the project area upon the cessation of mining, while maximising the use of capital.

The most efficient method of satisfying both criteria is to commit the Coronation Joint Venture Partners to providing the appropriate authorities with bank-backed guarantees, which will provide the same security without freezing investment capital badly needed in a high risk, high capital cost industry.

The effect of providing annual payments into a trust account is to place an unnecessary burden upon Australian taxpayers and company shareholders.

We support the standard procedure for such mining projects which requires a full and detailed rehabilitation plan to be submitted and approved before mining is allowed by the Coronation Hill Joint Venture Partners at Coronation Hill. ANPWS, the Office of the Supervising Scientist and the Northern Territory Department of Mines and Energy should be fully involved in the preparation and approval of the rehabilitation plan. Similar arrangements should be in place for any further mining or exploration activity in the Conservation Zone.

Recommendation

That the standard procedure for such mining projects which require a full and detailed rehabilitation plan to be submitted and approved before mining is allowed by the Coronation Hill Joint Venture Partners be supported.

That the Coronation Hill Joint Venture partners provide the appropriate authorities with bank-backed guarantees for the purpose of covering the cost of rehabilitation work.

PARAGRAPH 109 - DISSENT

To the extent we are satisfied that contaminated water can be discharged under rigorous and stringent conditions, we believe this clause and recommendation should refer to unauthorised discharge of contaminated water. Almost all water discharged into the mixing pond is to some degree slightly contaminated. The crucial point is to what degree it is so diluted as to make it compatible with the water system, the biota and the balance of the environment.

Recommendation

That in examining the Environmental Impact Assessment being prepared by the Coronation Hill Joint Venture in relation to the proposed mine at Coronation Hill, the Government should pay special attention to all factors which might cause unauthorised discharge of contaminated water from the mine site, either during or after the operational life of the mine.

PARAGRAPH 113 - DISSENT

To the extent that this clause may give the impression of support for large areas of highly prospective areas being granted for exploration on the grounds of environmental convenience, we dissent.

We have no doubt that adequate incentives and safeguards can be built into the grant of exploration leases to ensure the diligent observation by them of mining companies. The risk of losing a highly prized prospect through failure to comply will be compelling enough. We believe normal criteria for the granting of tenements ought to apply with the caveat that if there are compelling environmental considerations which common sense would dictate, vary to some degree the size of grants or boundaries, then so be it. However, environmental expediency should not be a ruling consideration.

Expressions such as, 'in order to reduce to the minimum possible the environmental impact of exploration activity', have in the past been used as a guise to discourage mining and exploration and subsequently to have it disqualified.

We refer the reader to 11.6.3 of the Kakadu National Park Plan of Management under the heading 'Operations for the Recovery of Minerals - Management Prescriptions' which read, inter alia, '...where mineral leases exist in the Park, the primary objective will be to limit the impact of mining operations on the Park.' Subsequently mining was prohibited on exploration leases which had previously been granted, presumably on the claim of limiting the impact of mining operations.

Recommendation

That in order to reduce to the 'minimum possible' the environmental impact of exploration activity in the Conservation Zone, strict environmental guidelines and safeguards, which are compatible with exploration and mining, developed in conjunction with the Northern Territory Department of Mines and Energy, ANPWS and the Office of the Supervising Scientist should be strictly enforced.

PARAGRAPH 114 - DISSENT

We believe it can be stressed sufficiently that the Conservation Zone is an integral part of one of the major river catchments. We believe to overstate the position is to give it a weight which is unrelated to the real significance. A proliferation of mining operations within the Zone need not and will not, under stringent conditions of the type in force at Ranger and relevant to Koongarra and Jabiluka, pose as the majority report suggests, a serious threat to the Park in either the short or long term.

The fact that, as stated by the majority report, 'the Zone itself, with mining areas excised, is to be incorporated into the Park after the expiry of the period set aside for exploration', is a statement in itself of its significance.³

The Committee's call that 'any infrastructure required for the exploration activity should be planned in such a way as to facilitate the use of the area as a national park' requires a subjective assessment which on earlier Committee criteria could disqualify meaningful exploration.³²

If the words of Recommendation (i) as proposed by the majority report were to be interpreted by some who have given evidence before the Committee, the recommendation would be capable of denying any exploration or mining within the Zone.

We are well satisfied that, given the expertise, knowledge, experience and ability of the approving bodies and their agencies, there is no place for phrases such as, 'potential to cause environmental damage' or 'which might result in damage to areas of the Park.'

Recommendation

That any proposal for mining activity in the Conservation Zone should be examined very carefully and that approval should not be given if the proposal will cause unacceptable damage within the catchment area of the South Alligator River and which will result in unacceptable damage to areas of the Park.

That any infrastructure permitted for exploration or mining activity should be planned in consultation with the appropriate authorities and in such a way as to facilitate, as far as practicable, the later use of the area as a National Park.

PARAGRAPHS 116 - 119

As at the time of writing, \$2,000 was paid annually to each adult member of the Gagudju Association with an identical amount being paid into a trust account for each minor. Through accumulation and interest, lump sum payments of \$12,000 are now being paid to some children upon turning 18.

As at 30 June 1987, \$65 million had been paid from Ranger to Aboriginal interests since the commencement of production in 1981.

The Department of Aboriginal Affairs stated that the Association receives approximately \$3.2 million in royalty equivalents per year, or an amount equivalent to slightly more than \$15200 per adult member of the Association per annum.

To 4 August 1988, the Gagudju Association has received royalty payments totalling \$21 284 424.

The Gagudju Association presently employs approximately 35 to 40 people of whom approximately 75 per cent are white (a number of whom occupy unskilled positions). There are approximately 100 employable Aborigines who live in the Park with approximately 40 unemployed and on Social Security benefits. All normal social welfare benefits are payable to members of the Association.

The two hotels in which the Gagudju Association hold a very significant interest (Cooinda Hotel-Motel: 100% and the Jabiru Motel: a joint venture with Industrial Equity Limited) employ approximately 100 people of whom five are of Aboriginal descent.

It is of some concern that of the many millions of dollars which have been paid to the Association in the past six years, only approximately ten jobs are being occupied by employees of Aboriginal descent.

Our understanding is that there is a continuous shortage of suitable Aboriginal labour within the Park with a number of agencies competing for those Aborigines who offer themselves for work. Within the definition of suitable Aboriginal labour, we refer to those who seek work.

This situation should be seen in the context of stringent Aboriginal employment conditions imposed upon mining companies' projects within the region and subsequent paragraphs of the majority report. We refer to our addition at paragraph 128.

PARAGRAPH 126 - ADDITION

We find the evidence of the Department of Aboriginal Affairs factually incorrect and one can only speculate as to whose views it reflects.

Mr Stan Tipiloura, a full-blooded Aborigine and the member for Arafura, which contains the Koongarra and Jabiluka uranium prospects, has said as recently as June this year (1988) that his Aboriginal constituents were totally in favour of a change to the three mine uranium policy and felt they were being discriminated against:

[p]eople there can't understand why traditional Aboriginal landholders can benefit financially from the Mines at Ranger and Nabarlek while they are being excluded.³³

The Chairman of the Northern Land Council, Mr Galarrwuy Yunupingu, stated he has not changed his view that the traditional Aboriginal owners of the land, granted under the Land Rights Act, should decide for themselves whether to accept development or reject it:

[t]he NLC campaigned for the opening of the Koongarra and Jabiluka mines on behalf of these [Aboriginal] landowners in 1984 and our position remains the same.³⁴

On 1 June a delegation of Northern Territory Aboriginal landowners went to Parliament House to persuade the ALP to allow operations to start at the Koongarra mine in which the landowners are joint venturers.

Mr George Hunt, a traditional owner and the oldest member of the delegation, urged that the mine go ahead saying he has seen many friends die waiting for a decision. Mr Hunt is regarded as the most senior traditional owner.

The Department of Aboriginal Affairs evidence is given in the face of two agreements from the traditional owners at Koongarra in 1985, from the Northern Lands Council in 1986 and from the Federal Minister for Aboriginal Affairs on 3 June 1987.

Revenue from the project payable to Aboriginal interests will amount to \$256 million.³⁵

PARAGRAPH 128 - ADDITION

We set out below the list of conditions applying to the Aboriginal community which is the subject of agreement between the Jabiluka Joint Venturers and the Northern Land Council.

In the Agreement between the Jabiluka Joint Venturers and the Northern Land Council, Pancontinental is required to provide employment, training and business opportunities to Aboriginals including the following:

- * encourage and maximise Aboriginal employment;
- * employ at least an agreed number of Aboriginals;
- * report to a monitoring committee;
- * arrange training (trade and general education and tertiary education scholarships);
- * provide work experience for young Aboriginals;
- * prepare each year for the Northern Land Council a detailed employment and contract plan;
- * adjust working hours and leave entitlements to suit the cultural requirements of Aboriginals;
- * prepare a business opportunity plan each year for the Northern Land Council;
- * give a 5% preference in purchasing goods or utilising services provided by Aboriginal

businesses to help foster business opportunities.

With reference to the lump sum payments and royalty type payments that will flow to the Aboriginal Community the agreement with the Northern Land Council calls for those moneys flowing to the Aboriginal Community to be used for:

- * Aboriginal business;
- * Aboriginal housing;
- * Protection of Aboriginal culture;
- * Educational scholarships;
- * Recreation and sporting facilities;
- * The study of the utilisation of Aboriginal land and land aspirations of Aboriginal people;
- * Community amenities, communications and outstations;
- * Basic utilities and transportation;
- * Purchase of land;
- * Aboriginal health insurance and hospital scheme;
- * Funding of an Aboriginal Parks and Wildlife Service in the Northern Territory, tourism facilities;
- * Investment fund to provide for capital and income during and upon expiration of mining."

PARAGRAPH 132 - DISSENT

We consider this section in two parts: first we address the principle of retrospective acquisition and second the practical implications of the application of the Committee's recommendations.

We are opposed to the principle of providing a retrospective benefit to Aboriginal land claimants in a land title in which they had no prior proprietary interest at the time of its granting to a third party.

Due to amendments to the Aboriginal Land Rights (NT) Act passed in 1987, the position within the Conservation Zone in respect to agreements between Aborigines and mining companies is that:

- (i) if an Aboriginal land grant is made prior to the granting of a mining lease to the Coronation Hill Joint Venture partners, a terms and conditions

agreement must be negotiated, with a mechanism for arbitration provided. There is some doubt as to that obligation if the Aboriginal land grant is made subsequent to the granting of a mining lease to the Joint Venture; however it is our view no such obligation apparently exists.

- (ii) outside the Coronation Hill Joint Venture area, but within the Conservation Zone, a teams and conditions agreement must be entered into before mining, whether or not the exploration licence is granted prior to a land grant. When mining leases are granted prior to a land grant they will be subject to the same provisions, however, the circumstance is unlikely to arise.

Recommendations by the majority report calling for royalty payments or other financial benefits to be provided by the holders of mining tenements to Aboriginal groups who have lodged land claims, to us distorts the principle of prior rights of ownership and of Crown land.

Mining tenements either in the form of exploration or mining licences within the Conservation Zone are granted within the terms of the Lands Acquisition Act/Mining Act 1939 (previously the Mining Ordinance 1939) upon Crown land. At the time of granting, there is no prior ownership or rights held by another party. To suggest that at a later date a benefit lies with an Aboriginal group is to prescribe an interest in the land which did not exist at the time of the granting of the mining tenement to the mining company.

In the case of the Coronation Hill Joint Venture, at the time of granting of the mining tenements to the consortium, the land was not for the purpose of Aboriginal land claims, unalienated Crown land within the meaning of the Aboriginal Land Rights (NT) Act 1976. However, of course, it was Crown land within the meaning of the Mining Ordinance/Act.

The practical effects of the application of the recommendation

Expressions such as 'consult' and 'consider' are by their nature subjective and in seeking the grant of applications for exploration and mining permits, it is not unreasonable that the obligations and requirements for approval be clear and unambiguous. Such a recommendation would depend upon the subjective judgement of at least three parties.

Prior to the hearing of the land claim applications by the Land Claims Commissioner there is no determination as to which group are the traditional owners.

Naturally, in some circumstances, the claimant traditional owners are more obvious than in others.

In the case of the Conservation Zone the anthropological Section of the Northern Land Council is still studying the land claim in an endeavour to establish which group should claim ownership.

Mining companies will be put in an intolerable position if they are compelled to demonstrate that consultation has taken place with all or any groups within the area who may later be found to be the traditional owners.

Ultimately, to show that a mining company has consulted and that the Aborigines' views have been taken into account will require evidence of some form of agreement.

Given the extraordinarily long and delicate process that exploration and mining agreements, in whatever tentative form, take, it could well be some years before such an arrangement is concluded. In the case of the Conservation Zone, it could have the effect of disqualifying extensive exploration.

It ought not be forgotten that with land within the

Conservation Zone but outside the Coronation Hill Joint Venture area upon which a claim has been granted, the mining company is required to negotiate with the appropriate Land Council; however, with agreements entered into prior to grant, the agreement is to be with the traditional owners and must, upon grant, be approved by the Northern Land Council and the Minister for Aboriginal Affairs. The effect is to require new agreements upon the grant of the land claim.

In the case of the Coronation Hill Joint Venture area, similar circumstances apply with the exception of Ministerial approval. The effort required in the majority Committee recommendation may well be wasted upon grant. Regardless, any negotiation without the Northern Land Council would be pointless, thus adding another party to the negotiations. If the claim fails, the agreement required of so many parties comes to nought.

Our final concern with the proposal is that mining companies may find themselves being required to provide financial benefits to an Aboriginal group, notwithstanding that their claim has failed, to ensure an agreement in the event of a grant. The prospects of financial blackmail are enormous. It is a most unsatisfactory and undesirable proposal, fraught with unsavoury connotations.

The end result would be that companies will be required to make large cash advances to Aboriginal communities irrespective of the outcome of the land claims. It is most inappropriate that the mere lodging of a land claim, irrespective of its merit, brings with it automatic financial rewards and corresponding financial commitments to mining companies whose exploration may prove barren.

Such an arrangement could quickly bring the system of Aboriginal land claims into disrepute at a time when there is mistrust and concern about the current method of registering areas of Aboriginal significance.

Financial and co-operative arrangements with potential Aboriginal land claimants are best left on an informal basis as exists for instance between the Coronation Hill Joint Venture and the Jawoyn group. It is not in the interests of mining companies to ignore the concerns or considerations of land claim applicants.

PARAGRAPH 134

Refer to our paragraph 128 addition as an indication of the type of employment agreements mining companies enter into with Aborigines.

PARAGRAPH 135 - DISSENT

We dissent to the extent that the Committee states it recognises the serious nature of the potential chemical pollutants involved in mining in the upper catchment of the South Alligator river at Gimbat. We have set our reasons for dissenting from such expressions in other dissenting paragraphs.

PARAGRAPH 138 - DISSENT

We can find no evidence to support the majority committee statement that Coronation Hill was recorded as a sacred site in a land claim lodged by the Jawoyn. Our reading of the claim is that Coronation Hill was shown as a 'named' site in the land claim book.

The main points are not in our view as the majority report claims, 'relatively straight forward.'

We are not satisfied, on the evidence received by the Committee at Barunga from the Jawoyn people on the 9 March 1987, that the Aboriginal custodians made an oral request to an Aboriginal Sacred Sites Authority field officer on the

18th September, 1985 for registration of the site.

On the evidence provided at Barunga by Nipper Brown and Sandy Barraway, we cannot conclude that the tribal custodians have knowledge of signing a request for registration of the Coronation Hill site on 27 September 1985.

PARAGRAPH 139 - ADDITION

As the majority report states, Coronation Hill Joint Venture commenced exploration work at Coronation Hill in 1984. On 17 September 1985, when presumably the activities at Coronation Hill had come to their attention, the Northern Land Council communicated with the Joint Venture inquiring as to 'what was going on' at Coronation Hill.

The Joint Venture outlined their program and on 18 September Mr David Cooper of the Aboriginal Sacred Sites Protection Authority in company with Nipper Brown, Larry Ah-Lin, and Sandy Barraway was found by an employee of the Joint Venture lost on the main Coronation Hill road.

The Aboriginal Sacred Sites Authority stated in evidence, as reported in the majority report 'on 18 September, 1985' Aboriginal custodians made an oral request to an Aboriginal Sacred Sites Authority field officer for registration of the site, and a formal, written request signed by four custodians was subsequently made on the 27 September 1985. A few days later, the Aboriginal Sacred Sites Authority determined the boundaries of the site and formally registered it.

The Aboriginal Sacred Sites Authority state that they had no communication with the Northern Land Council prior to the application for registration of Coronation Hill.

PARAGRAPH 140 - DISSENT

To claim, as the majority report does, that 'Mr Davis formed the impression in the course of this visit that the area was a genuine 'Bula' site, and that Coronation Hill had no sacred significance and was nothing more than a "named locality"' is to misplace the facts. That was the stated view of the Senior Custodians who accompanied him.

Mr Davis states he was asked by Sandy Barraway and Nipper Brown, two senior Jawoyn custodians, to take them to Sleisbeck to see a major Bula site - a Bulalak - which they had identified from photographs taken by Arndt and reproduced in a 1962 edition of Oceania and accompanied by one of his articles. According to Davis, previously Brown and Barraway had been led to believe by the others (not Aborigines) the major Bula to be located elsewhere, in fact, on Coronation Hill, a confusion caused by a period of loss in living memory, not only of the major Bula, but of other sites of significance to the Jawoyn group.

Mr Davis was also accompanied to Sleisbeck by Nipper Brown, Sandy Barraway, Roy Anderson, Queenie Brown, Willy Byer, Rebecca Byer, Rita Anderson and Phyllis Wynjorroc, most of whom are very senior members of the Jawoyn group.

The following is part of the transcript of a conversation which was recorded on video by Mr Davies at Sleisbeck and which was incorporated into Hansard during the Committee hearing at Darwin. Present were Sandy Barraway, Nipper Brown and Roy Anderson.

Stephen Davis:

That Sacred Sites Authority, you ever brought them up here... to Bulaluk (overhang with bones at Sleisbeck)?

Sandy Barraway:

No.

Stephen Davis:

All right. Maybe they don't know where it is then!

Nipper Brown:

Yeah.

Sandy Barraway:

It out of the way.

Stephen Davis:
Yeah, right. Yeah.

Sandy Barraway:
David Cooper don't know about this place.

Nipper Brown:
No.

Stephen Davis:
David Cooper doesn't know eh?

Sandy Barraway:
No.

Nipper Brown:
No.

Stephen Davis:
What about Bob Ellis (Director, Aboriginal Sacred Sites Authority)?

Sandy Barraway:
Even Bob Ellis don't know nothing.

Stephen Davis went on to ask:
Well what do you reckon now, now that you know this place and you can look after it properly? What do you reckon about that Coronation Hill. Is that really it the biggest Bula place like this?

Sandy Barraway:
No, just this one - Ilangalung. You know that little boy one? That's the only one, business, you know where they had ceremony before, sacred site. Where you look that big hill.

Stephen Davis:
Big Sunday?

Sandy Barraway:
Yeah. that's the one place, the only one. That's where he (Bula) came along from there.

Stephen Davis:
So that's not really a Bula place, Coronation Hill, he just came down past that area. Round passed that way ... down the valley.

Nipper Brown:
Yeah.

Sandy Barraway:
Yeah.

Stephen Davis:
He just came around past that way down the valley?

Nipper Brown:
Yeah.

Sandy Barraway:
Yeah.

Stephen Davis:
To Illangalung?

Stephen Davis:
You were saying the other day now its alright to mine that (Coronation Hill). People have got to understand that that's not the real Bula place, this one is.

Sandy Barraway:
This one real one and that Ilangalung.

Stephen Davis:

This one and the back of Big Sunday, Ilangalung, they're important places but this is the main for Bula. This is where you have the ceremonies and this is where he finished up too, like Ilangalung ...

Stephen Davis went on to ask Sandy Barraway:

... What about Coronation Hill?

Sandy Barraway:

Coronation Hill nothing. He just came passed through there just come along there.

Stephen Davis:

Nothing. He just came passed there.

Nipper Brown:

Yeah, that right. Nothing there.

During this conversation they were looking at a mud map and discussing what was and was not significant.

Stephen Davis:

You were saying earlier you want this place (Ngardluk, Sleisbeck) registered, this one protected and Ilangalung is OK now?

Sandy Barraway:

OK now and this one (Sleisbeck) we want him.

Sandy Barraway:

That sign there (sacred site sign). Three place they got sign ... not this one ... another three nothing (no signs on another three sites).

Stephen Davis:

Another three nothing. But you don't want that Coronation Hill registered?

Sandy Barraway:

No, we don't want him.

Stephen Davis:

That's all right.

Sandy Barraway:

That's all right. they can work.

Stephen Davis:

That's all right, it's open for work, it's not a sacred site.

Sandy Barraway:

They can drill it.

Stephen Davis:

They can drill it. And after that, what about if they find a lot of gold there and they want to mine it. If they want to go ahead with that mining, what are you going to say when they say "We want to mine that then?"

Sandy Barraway:

We tell him "Yeah, you can go ahead. If more gold, then you can go there."

Stephen Davis:

That's OK if they find gold they can mine it and if they find more around about they can even mine that?

Sandy Barraway:
That's what we told em Stephen.
We told they can go ... can find gold they been go in there. All young fellas gonna work there.

Nipper Brown:
All them boy, young boy, been gonna work there now.

Sandy Barraway:
All the time school men you know. They read and write, ... they'll be work there. Some fella officer (office worker) some fella been ... they been come Thursday.

Stephen Davis:
You men, you're the senior men to look after this?

Sandy Barraway:
Yeah. All can come round myself sometime.

Stephen Davis:
Your father Buwudpuwudmany, he was looking after this and you got that responsibility from him?

Sandy Barraway:
Yeah.

Stephen Davis:
Nipper, you came to this place for Bulaluk ceremony when you were young man, eh, about 1940, that was the last time you were here.

Nipper Brown:
Yeah.

Stephen Davis:
Any other men still alive who came here for ceremony that you know of: Any other Jawoyn men?

Sandy Barraway:
All dead.

Stephen Davis:
All dead now.

Sandy Barraway:
That's why we want to teach him, this young fella (referring to Roy Anderson). Well now we got this young fella Roy, if I die he can look after 'im, we got to try to keep 'im, look after 'im (referring to the site).

Stephen Davis:
Roy Anderson, he's Nipper's son.

Nipper Brown:
Mmm.

Stephen Davis:
Right.

It has been necessary again to reproduce long sections of the transcript but it is important in the context of Davis' claim of the significance of Sleisbeck and in understanding the confusion into which he claims the Senior Custodians had proceeded when apparently told Coronation Hill was a

Bula, but with which they could not relate their past understanding of it.

As we were told in evidence at Barunga by the same witnesses, Coronation Hill had never in the past even been considered a sacred site.

We do not believe it was, as the majority report says, Mr Davis who 'formed the impression in the course of the visit that this area was a genuine 'Bula' site, and that Coronation Hill had no sacred significance and was nothing more than a 'named locality'.³⁶

Mr Davis had apparently become convinced some time earlier that Sleisbeck was an important Bula site because he had the custodians, who saw the photographs, confirm it before the visit.

In the evidence presented the senior Jawoyn custodians visited the site, and stated to Mr Davis that it was an important Bula site. In so doing they dismissed Coronation Hill, in their words, as 'nothing' which the mining company was free to mine and upon which their boys would work.

We agree with the majority report that 'this evidence seemed to cast some doubt on the validity of the original decision to include Coronation hill within a registered sacred site'³

PARAGRAPH 141

Senator Crichton-Browne was advised by the Aboriginal Sacred Sites Authority that the Sleisbeck sacred site was registered on the request of Dr Merlan, however, we are unable to find any evidence that Dr Merlan, the relevant custodians or staff of the Authority visited the Sleisbeck overhang prior to the registration. Obviously registration was undertaken on Dr Merlan's sayso. According to Davis' evidence the custodians had not been to the overhang prior to his visit early in July of 1986. However both Merlan and

Barraway had been to the rock art in the area and Barraway had been told of the site at the overhang.

PARAGRAPH 142 - DISSENT

As the majority Committee report states:

... evidence given to the Committee by the Sacred Sites Authority indicates that three of the Senior Custodians, Peter Jatbula, Shorty Jalong and Willy Martin, considered Coronation Hill to be a sacred site.

We would have thought, for the sake of consistency, that the Sacred Sites Authority, which alleges Nipper Brown and Sandy Barraway are signatories to the registration application, would have claimed that those two gentlemen also consider Coronation Hill a sacred site.

Evidence was given at Barunga which leads to doubt as to whether the four Jawoyn Custodians, whose names appear on the request for registration as a sacred site, actually did so request. Those whose names appear on the written form are Sandy Barraway, Peter Jatbula, Nipper Brown and Frank Dalak.

The significance of the Aboriginal Sacred Sites Authority evidence is that it is claimed that Brown and Barraway signed the registration application but, in its evidence, the Authority do not name Brown and Barraway as claiming Coronation Hill to be a sacred site.

In respect to that matter Senator Crichton-Browne asked Nipper Brown:

Nipper Brown, do you remember ever asking the Aboriginal Sacred Sites Protection Authority to register Coronation Hill as a sacred site?

Nipper Brown:

No.

Senator Crichton-Browne:

Did you ever want Coronation Hill for a sacred site?

Nipper Brown:

No, never. There is nothing there.

Senator Crichton-Browne:

There is nothing at Coronation Hill?

Nipper Brown:

Nothing. It is free.

Senator Crichton-Browne:

You never signed any piece of paper saying: "Make Coronation Hill a sacred site"?

Nipper Brown:

No.

Senator Crichton-Browne:

Mr Barraway, have you ever signed anything asking for Coronation Hill to be made a sacred site?

Mr Barraway:

No, I have never.

Senator Crichton-Browne:

Have you ever thought of Coronation Hill as a sacred site?

Mr Barraway:

No.

Subsequently the Chairperson, Senator Zakharov, asked Mr Fordimail, one of the two who believed Coronation Hill had a sacred significance:

Raymond, do you know who requested the registration of the sacred site? Who asked for the registration of the sacred site on Coronation Hill?

Mr Fordimail:

I do not know. They could have a list of names that applied for that registration of the sacred site.

Senator Devlin then pressed the matter further:

Some one must know the names.

Mr David Edward Cooper, Research Officer of the Aboriginal Sacred Sites Protection Authority, responded:

The names that are on the request are Sandy Barraway, Peter Jatbula, Nipper Brown and Frank Dalak. Frank is not here. They are the names that appear on the request.

There appears, on the face of the evidence provided to the Committee by senior custodians and members of the Jawoyn Tribe, to be very real doubt as to the spiritual significance of Coronation Hill.

At a private meeting of the Senate Committee held at Barunga on 9 March 1987 there was divided opinion amongst the witnesses. Mr Peter Jatbula and Mr Ray Fordimail were of the view that Coronation Hill was a Bula site and the seven other Senior Custodians and senior Jawoyn people were of a

contrary view.

During proceedings the following exchanges took place between Senator Crichton-Browne and Nipper Brown, recognized as the Senior Elder amongst those present.

Senator Crichton-Browne:

There is no Bula on Coronation Hill?

Nipper Brown:

Nothing.

Senator Crichton-Browne:

So the Coronation Hill area is not a sacred site area?

Nipper Brown:

Nothing. It is free.

Senator Crichton-Browne:

Did some people make a mistake and think Coronation Hill was a sacred site?

Nipper Brown:

It is free.

Senator Crichton-Browne:

Are you happy for BHP to explore on Coronation Hill?

Nipper Brown:

We are all happy if they go ahead and explore for gold or anything like that.

Senator Crichton-Browne:

Is there a senior elder amongst the men here today? Who is the senior man?

Nipper Brown:

I am.

Senator Crichton-Browne:

You are the chief?

Nipper Brown:

Yes.

Senator Crichton-Browne:

Do you agree with Ms Wynjorroc and Ms Flora that there is no Bula on Coronation Hill?

Nipper Brown:

No. No Bula.

Senator Crichton-Browne:

There is no Bula, no sacred sites, nothing at all?

Nipper Brown:

No.

Senator Crichton-Browne:

So mining on Coronation Hill would not hurt Aboriginal sites?

Nipper Brown:

It can go ahead.

Senator Crichton-Browne:

Is that one, Coronation Hill, okay?

Nipper Brown:

Yes.

A further exchange between two women witnesses:

Senator Crichton-Browne:
Would you be happy for there to be mining on
Coronation Hill?

Ms Wynjorroc:

Yes.

Ms Flora:

Yes.

Ms Wynjorroc:

It is okay on that land. We do not like it on other
sites.

Senator Crichton-Browne:

Being a Bula place you do not like it. So Coronation
Hill is okay for mining.

Ms Wynjorroc:

Yes.

Senator Crichton-Browne (referring to Coronation Hill):

There were no sacred sites, no burial sites, no areas
of significance, nothing special at all?

Ms Wynjorroc:

Nothing.

Ms Flora:

No.

Ms Wynjorroc:

There is just the one Bula place now.

Senator Crichton-Browne:

Where is that?

Ms Wynjorroc:

Up this way.

Senator Crichton-Browne:

Sleisbeck - that is the big one. It is the big one,
the important one?

Ms Wynjorroc:

Yes, very important.

Senator Crichton-Browne:

But not on Coronation Hill?

Ms Wynjorroc:

No.

Sandy Barraway in response to Senator Crichton-Browne's
question about Coronation Hill:

No. On Coronation Hill there is nothing. If they
want to mine in that place, they can go ahead.

We have no reason to doubt the evidence given by Nipper
Brown and Sandy Barraway, two senior Jawoyn custodians or
that of the senior Jawoyn women.

PARAGRAPH 143 - DISSENT

At the private meeting held in Canberra on Wednesday, 18 May
of this year (1988) and, referred to in the majority report

at Paragraph 142 of Chapter Three, it was said that the Jawoyns at Coronation Hill had agreed to give up their jobs if the senior custodians requested them to do so. This had not happened because the Jawoyn workers from Coronation Hill had not yet turned up for a meeting with the custodians.

The Jawoyn to attend the Canberra meeting were Peter Jatbula and Raymond Fordimail accompanied by Mr David Cooper of the Aboriginal Sacred Sites Authority and Mr Michael Dodson of the Northern Land Council.

At a meeting held at Barunga on 15 August this year (1988) from which all non-Aborigines were invited to withdraw, the Jawoyn people affirmed their approval for their men to continue to work on Coronation Hill. Hardly the decision of Aborigines who do not want mining because of desecration of an area of significance.

The meeting was attended by approximately 70 Jawoyn including the Senior Custodians. That decision was in contradiction to the claim of Mr Jatbula and Mr Fordimail who accompanied Mr Cooper to Canberra.

As at 13 September 1988, nine Jawoyn people work with the Coronation Hill Joint Venture Project, a further 58 have signed work applications and an additional 17 other prospective employees have visited the site since April.

We are advised there are presently 40 Jawoyn people living on site.

It is claimed by the Aboriginal Sacred Sites Authority that a report written by Mr Cooper of the Authority has been adopted by the Jawoyn custodians who, it is claimed, consider it inappropriate to conduct exploration or mining activities within that part of the Conservation Zone lying within the 'sickness country.' As is pointed out by the majority report, this covers the whole of Coronation Hill and almost the whole of the Conservation Zone.

We refer to evidence given to the Committee by the Jawoyn elders at Barunga on 9 March 1987 in prosecution of a contrary view and, in so doing, we refer in part to the Barunga meeting of 15 August at which the tribal custodians gave their approval to Jawoyns working upon the Coronation Hill Joint Venture project at Coronation Hill and El Sherana, in spite of Mr Fordimail and Mr Jatbula's assertions when attending the Canberra meeting in company with Mr David Cooper.

The following is further evidence given to the Committee at Barunga by the Jawoyn people on the 9th March, 1987.

Chairman:

Are the Jawoyn people happy with the situation at present where BHP has a permit for exploration?

Mr Fordimail:

Yes.

Senator Crichton-Browne:

Have the Jawoyn people always been happy with their negotiations with BHP?

Mr Byer:

Yes.

Senator Crichton-Browne:

They have not had any trouble with BHP?

Mr Byer:

Yes.

Senator Crichton-Browne:

They have never been pressured or rushed by BHP to sign any agreements?

Mr Byer:

Everything has been all right.

In subsequent evidence Senator Townley again raised the question of mining.

Senator Townley:

I ask the Jawoyn people whether they would like to see mining go ahead, provided they get some benefits from BHP, or whether they would rather see the whole place never touched for mining?

Mr Fordimail:

I imagine that in the first place they were talking about getting some money back from the mining companies.

Senator Townley:

So you would like to see mining if you could get some money back?

Mr Fordimail:

Yes.

Later, the Chairman asked:

Are the Jawoyn people happy with the situation at present where BHP has a permit for exploration?

Mr Fordimail:

Yes.

Senator Crichton-Browne:

Have the Jawoyn people always been happy with their negotiations with BHP?

Mr Byer:

Yes.

Senator Crichton-Browne:

They have never been pressured or rushed by BHP to sign any agreements?

Mr Byer:

Everything has been all right. (p.68).

PARAGRAPH 144 - DISSENT

We do not acknowledge that three of the senior custodians have declared that Coronation Hill is a sacred site. The only Jawoyn witnesses to give evidence to the Committee who expressed such a view were Peter Jatbula and Raymond Fordimail.

The majority report comments that it '... is also aware of the view that permission for mining exploration may have been granted on a sequential basis with the custodians not fully aware of the likely extent of interference with the sites.'³⁸

That claim is made by Mr Cooper of the Aboriginal Sacred Sites Authority. At the private meeting held in Parliament House, Canberra, on 18 May 1988, Mr Cooper stated that the granting of permission had been a sequential process involving a number of meetings, with BHP asking for permission to do a little more at each.

It was a claim Mr Cooper had previously made in his written report of August 1987 which was allegedly adopted by the Jawoyn people.

In response, on 29 October 1987 in correspondence to Senator Graham Richardson, Minister for Environment and the Arts,

BHP commented:

David Cooper, in the report, says that our incremental requests for permission to explore have caused concern and problems. However, from the time Coronation Hill was first registered as a sacred site in October, 1985 we have consulted closely with the ASSPA on the best way to request permission from the custodians for continuing work. It was on ASSPA advice that an incremental approach was adopted. They felt that this would give the custodians time to assimilate a complex project, avoid the possibility of misunderstandings and reduce possible pressures on the custodians and the Jawoyn community. The custodians have been in agreement with this approach and on several occasions have requested an adjournment to discuss more fully the matters under consideration.

Mr Cooper's assertion is very much contradicted by the evidence given to the Committee at Barunga by the Jawoyn people on the 9th March, 1987.

Senator Devlin asked:

If the Jawoyn people are prepared to let exploration go on, knowing full well that there is gold, platinum and everything else at Coronation Hill, are you saying you would not be happy for these to be mined after the completion of the exploration:

Mr Fordimail:

We are quite happy with the way BHP has been doing it because it has agreed to employ the Jawoyn people.

Senator Townley:

So you would most probably be happy if you could get a suitable agreement with the people who might do the mining?

Mr Fordimail:

Yes.

Later, the Chairperson asked:

Have the BHP people said that you would get money if mining went ahead?

Mr McDonald:

They showed us what they were doing at Groote Eylandt. We went to Groote Eylandt and had a look around at what BHP does with them there. They showed us around there and the Aboriginal people were happy with what BHP had done with them. When we came back we had a meeting about that with the Jawoyn mob and they said that if there is mining like that it is all right.

We are advised by BHP that the Jawoyn people in inspecting the Groote Eylandt mining operation saw exploration

activity, mining activity, the town layout and rehabilitation on the island. They observed blasting, quarrying and all the normal functions of a mining operation. BHP state that they also went to some trouble to explain to the Jawoyn people the difference in the size of the projects and the method of open cut mining.

It is difficult to conclude that Jawoyn custodians, having visited Groote Eylandt and observed mining operations, could have been labouring under the misapprehension that Mr Cooper ascribes to them, particularly given the quite precise and unequivocal statement of Mr McDonald.

What Mr Cooper claims Jawoyn people say is contradicted by the evidence that this Committee has received from the Jawoyn people and the outcome of 15 August 1988 Barunga meeting. Even Mr Cooper's written and verbal explanations for the Jawoyn people allowing exploration and mining is contradicted by the evidence.

If one reflects upon the evidence given to the Committee, it is difficult to conclude that the submissions made by the Aboriginal Sacred Sites Authority or the report of August last year, prepared by Mr Cooper, reflect the views of the Jawoyn community.

We find it difficult to reconcile that Mr Cooper can write a report claiming that the Jawoyn people do not want mining on Coronation Hill, attend a meeting of the Senate Committee in Canberra restating that claim and, within three months the Jawoyn Community, at a meeting at which whites are requested to withdraw, give approval for their people to work on the mining site. A considerable number of Jawoyn people, other than Jawoyn workers, are now living at the Coronation Hill Joint Venture site.

The evidence we have received does not lead us to believe that Coronation Hill is a site of major significance to Aboriginal people or that it ever has been. For us to find

otherwise would fly in the face of overwhelming and categorical evidence. The fact that the majority of the Senior Custodians who gave evidence do not believe it is important to them, the fact that they have agreed to allow mining and that, more recently, the Jawoyn people have given their blessing to their people to work on the exploration site with another seventy seeking employment, does not persuade us the Jawoyns think the site is sacred or important.

PARAGRAPH 146 - DISSENT

We find no merit in the recommendation. The practical effect will be to allow non-Aborigines to interfere and seek to overturn Aboriginal decisions.

Responsibility for agreeing or disagreeing with mining and notifying the Aboriginal Sacred Sites Authority of their decision is a function of the Aboriginal groups which they must exercise with diligence and deliberation. The rights which these groups assume in such matters attract a corresponding degree of responsibility. For the Committee to seek to provide a mechanism to accommodate less than proper and due rigour in the discipline of its determinations can only weaken the ultimate responsibility of the Aboriginal community.

PARAGRAPH 147 - DISSENT

Our understanding is that, as a result of events flowing from Coronation Hill, particularly as they relate to the Aboriginal Sacred Sites Authority, the Chief Minister of the Northern Territory Government in August 1986 established a Sacred Sites Protection Review Committee to consider the future operations of the Sacred Sites Act.

The terms of reference at that Committee, chaired by Mr Brian Martin, QC, the then Solicitor General, were:

To inquire into, report upon and make recommendations in respect of:

- (a) The philosophy and policy regarding laws designed to appropriately protect areas which are sacred or otherwise of significance to Aborigines.
- (b) The laws and effect of the laws of the Northern Territory of Australia relating to the protection of, and prevention of the desecration of, sites in the Northern Territory of Australia that are sacred to Aborigines or otherwise of significance according to Aboriginal tradition, including sites on Aboriginal land within the meaning of the Aboriginal Land Rights (Northern Territory) Act and, in particular -
 - . laws regulating or authorising the entry of persons on those sites;
 - . shall examine the procedures and practices adopted by the Aboriginal Sacred Sites Protection Authority and may inquire into the circumstances surrounding the registration of any particular site or sites as sacred sites in the register established and maintained by the Authority under the provisions of the Aboriginal Sacred Sites Act;
 - . investigate why use has not been made of the provisions of the Aboriginal Sacred Sites Act for the declaration of a place as a sacred site by the Administrator;
 - . consider whether or not the composition of the Authority is appropriate to its functions.³⁹

The Committee has now reported and we understand the Northern Territory Government is presently considering the drafting of legislation as a result of its inquiry.

We believe the inquiry has highlighted the need to amend the Northern Territory Aboriginal Sacred Sites Act and Administrative procedures.

We note the Attorney General's tabling statement of 25 August 1988 wherein he states that, 'Mr Speaker,

unfortunately the Authority continues not to comply with the Act.'It is clear all is not well. To the extent that the Northern Territory Aboriginal Sacred Sites Protection Authority impinges upon the terms of this inquiry, it is obvious that there is urgent need for amendments to the Aboriginal Sacred Sites Act.

The first matter of a legislative nature to confront the writers of the dissenting report is the definition of a sacred site and the second is the process of preserving the site.

Under section 3 of the Aboriginal Sacred Sites Act the definition of a sacred site'.. is a site that is sacred to Aborigines or is otherwise of significance according to Aboriginal tradition...'

Clearly that definition allows for ambit claims of very wide dimension. An area that is significant simply as a meeting place is capable of being set aside as a sacred site.

One would perhaps have less concern for such a wide definition if there were to be an appropriate mechanism for examining and reviewing these applications. In practice there is not.

The Aboriginal Sacred Sites Act does provide that Aboriginal custodians may request the Authority to take steps to have the sacred site declared a sacred site. The Authority may, if it thinks fit, apply to the Administrator to have a sacred site declared a sacred site for the purposes of the Act.

The Administrator shall cause an investigation to be carried out to ascertain -

- (a) the importance of the site to Aboriginal tradition;
- (b) whether the owners, if any, of the land containing the site object to the taking of steps to protect

- the site;
- (c) the story of the site according to Aboriginal tradition; and
 - (d) any other matters concerning the site as the Authority thinks relevant.⁴⁰

Those provisions provide checks and balances upon the wide scope of the sacred sites definition. However, notwithstanding approximately 4 000 sacred sites registered, there has not been a declaration, although I am advised by the Authority that one application for declaration has now been made.

The procedure applied thus far is found in sections 24 and 25, where the Authority shall examine and evaluate a site referred to it by an Aborigine as a sacred site. If the Authority is satisfied that the site is a sacred site the Authority shall record the site and all its particulars in the Register of the Aboriginal Sacred Sites.

The Act is silent on whether the applications should be in writing;

The application, accompanied by an anthropological report, is then submitted to the Board of the Aboriginal Sacred Sites Authority for registration of the site.

It is our view that for the sake of the integrity of the sites and to provide balanced considerations in making determinations, a process of declaration should be axiomatic upon registration or that a trigger mechanism be instituted. We have some sympathy with the view that such a process will, using present procedures, cause considerable and inconvenient delays, however, we doubt it is beyond the wit of man to accommodate such difficulties.

At the end of the day it is imperative that there be a mechanism in place which ensures decisions are capable of being made as to the importance of particular sites to

Aboriginal tradition and the steps, if any, that should be taken to protect the site, bearing in mind the considerations set out in section 26 of the present Act.

It is inappropriate, for instance, that such considerations should be reduced to financial bargaining between custodians and mining companies.

It appears that the Aboriginal Sacred Sites Authority accepts both oral and written applications from Aborigines and has in the past at least accepted applications from non-Aboriginals.

Applications and registrations from non-Aborigines are presumably in breach of the Act and, by any measure, applications initiated by other than Aborigines are in breach of the spirit of the Act.

It is not, in our view, appropriate that oral applications be accepted or acted upon unless the site is in apparent danger of immediate damage and in those circumstances the oral applications should be followed promptly in writing. We believe under normal circumstances applications should only be lodged in writing by the custodians seeking the declaraton or registration with their signature or mark witnessed.

The Aboriginal Sacred Sites Act appears to provide opportunities for a considerable conflict of interests by anthropologists. Theoretically, under the present practice and procedures, it is possible for an anthropologist to initiate an application for the registration of a sacred site, be engaged by the Authority to provide a submission to the Board which supports the application and subsequently to be employed by a Land Council to provide supporting evidence in respect to that site in pursuit of a land claim.

Alternatively it is possible for an anthropologist to be engaged by a Land Council to prepare a register of sites in

support of a land claim, identify sites, initiate their registration and then provide supporting evidence to the Aboriginal Sacred Sites Authority Board in support of the application.

While we do not suggest anything improper we view it as an unsatisfactory practice to allow the same anthropologist to provide corroborating evidence at each stage of a claim. We believe that if these sites are to retain their integrity there is a need for independent assessment. We also question whether it is appropriate in every circumstance for anthropologists to initiate site registrations or declarations by encouragement or on behalf of custodians.

We refer to the category of site which is protected for the purpose of preserving the intrinsic and spiritual relationship between Aborigines and land, not the setting aside of areas of historic significance to which there is no contemporary or living relationship. To that extent it is for the custodians, not the anthropologists, to demonstrate and establish their contemporary links which are part of a personal and living experience.

The setting aside of areas of historical significance is quite another matter. The considerations which must be weighed in the deliberation and determination of their preservation and of other potential competing interests are quite different.

The preservation of sacred sites and the setting aside from ordinary use by other Australians, of large tracts of land for the protection and preservation of areas of spiritual significance can only be achieved by the goodwill and understanding of the majority of Australians.

If the integrity of claims on these areas is placed in doubt, so will be their future.

Recommendation

We recommend that the Northern Territory Government move quickly to amend the Aboriginal Sacred Sites Act to:

- (i) clarify the role of the Aboriginal Sacred Sites Protection Authority;
- (ii) introduce an automatic system of site declarations;
- (iii) provide only for written, witnessed applications except where the site is in apparent danger of immediate damage;
- (iv) in the circumstances of (iii), an oral application to be accepted subject to prompt written application following.

1. Australian National Parks and Wildlife Service (ANPWS) 1980 Plan of Management p. 380
2. Evidence p. 2605
3. MIM Holdings Limited, submission No 25, p. 6
4. Evidence p. 2599
5. Evidence p. 2600
6. Evidence pp. 02601-2
7. Majority report, Chapter 3, paragraph 49.
8. [Ibid]
9. Majority report, Chapter 3, paragraph 97.
10. Majority report, Chapter 3, paragraph 97.
11. Majority report, Chapter 3, paragraph 48.
12. Evidence p. 2469.
13. Hansard, Senate Estimates Committee E, 18.9.86.
14. The Age 17.9.86.
15. Majority report, Chapter 3, paragraph 94.
16. Majority report, Chapter 3, paragraph 94.
17. Majority report, Chapter 3, paragraph 72.
18. Evidence, p. 1673.
19. Evidence p. 691
20. Evidence p. 684
21. Evidence p. 689
22. Evidence, p. 1656.
23. Evidence pp. 2602-3
24. Evidence p. 70
25. Evidence, p. 95
26. Evidence, p. 1649.
27. Majority report, Chapter 3, paragraph 85.
28. Majority report, Chapter 3, paragraph 85.
29. Ranger Uranium Mines, Septebmer 1988, Decommissioning Collections, paragraph 4.2
30. Clause 29 (b), Ranger Uranium Project - Authority under section 41.
31. Majority report, Chapter 3, paragraph 114.
32. Majority report, Chapter 3, paragraph 114.
33. The Australian 1.6.88.
34. The Australian 1.6.88.
35. Majority report, Chapter 3, paragraph 48.
36. Majority report, Chapter 3, paragraph 140.
37. Majority report, Chapter 3, paragraph
38. Majority report, Chapter 3, paragraph 144.
39. Serial Report of the Aboriginal Sacred Sites Review Committee, Mr Manzie, Attorney General, Attachment A - Tabling Speech of 25.8.88.
40. Aboriginal Sacred Sites Act (1978) s. 26(3)

CHAPTER FOUR

JABIRU

PARAGRAPH 19 - DISSENT

We do not believe development of tourism in Jabiru will create a problem for the privacy of Aborigines. This is a view which, we believe, is shared by the overwhelming majority of Aborigines who live in the Park and evidenced by their application, approval and construction of a new motel within the Jabiru township. The motel will officially be opened on 24th October 1988 and is jointly owned by the Gagudju Association (72 per cent) and Industrial Equity Ltd (28 per cent).

We are unable to reflect upon the Committee's view that appropriate licensing laws, as they affect Aborigines, and Aboriginal housing will require careful consideration, because we do not understand the meaning.

Recommendation

That, in monitoring the planning and future development of Jabiru and, in considering the effect of future development on Aborigines, the relevant Northern Territory Government authorities, in consultation with ANPWS, the Jabiru Town Council and the Gagudju Association, should seek to ensure that there are no unreasonable adverse consequences.

PARAGRAPH 22 - DISSENT

The prohibition or restrictions are to protect the Park and its wildlife. It would be outrageous to suggest that animals in the hands of one group of people are harmless but, in the hands of another, are treated as hazardous. We believe the enforcement of animal restrictions or

prohibitions should be uniform and even-handed.

Recommendation

That there be uniformity of laws and their application for all people with respect to the keeping of pets.

PARAGRAPH 24 - ADDITION

There is, as the majority report states, 'no evidence of environmental problems caused by any of the town services' and, to make references to dirt tracks causing a run-off into the river system which carries millions of tonnes of water each year, is a reflection of the absurd level of microscopic analysis which has lost all sense of proportion in pursuit of identifying pollution in 19 804 km² (1 980 400 ha) of Park.

PARAGRAPH 28 - ADDITION

The ACF went on to say that 'it was like having a shop in the middle of a golf course.'

The dearth of intellectually compelling evidence in respect to the damage which Jabiru has, or is doing, to the Park is reflected in the Committee's inclusion of evidence reported in paragraphs 27 and 28.

With notable exceptions, the golden thread which has run through the submissions and evidence of those who are opposed to mining in particular but, to human activities the Park in general which require infrastructure, has been a philosophic prejudice divorced from intellectual rigour and integrity.

PARAGRAPH 32 - DISSENT

To require all developments, particularly in Jabiru, to be subject to environmental evaluation would be a bureaucratic nightmare. It should be restricted to major developments.

Recommendation

That, in the future, major developments in Jabiru, and in other parts of Kakadu National Park, be subject to an environmental evaluation.

PARAGRAPH 35 - ADDITION

In recognizing that the Gagudju Association, who represent the majority of Aborigines in the Park, are in favour of tourism and tourist development within the Park, it is not without significance to record the evidence of the ACF, the Department of Aboriginal Affairs, the Northern Land Council, the Aboriginal Sacred Site Protection Authority (ASSPA) and others all of whom, purporting to speak on behalf of Aboriginal people, talked of the serious and detrimental effects that visitors to the Park were having upon Aboriginal communities, their sacred sites and their traditional lifestyle.

PARAGRAPH 37 - DISSENT

Kakadu National Park (Stages 1 & 2) comprises 13 073 square kilometres (1 307 300 hectares). We have absolutely no hesitation in asserting that amongst those 13 073 square kilometres can be found the few square kilometres required for a settlement to provide the limited infrastructure necessary to accommodate the needs of tourists, particularly given the thousands of hectares of monotonous sparse and low scrub country referred to in the Park description.

Paragraphs 35, 36 and 37 dwell on the implications of Jabiru now and in the future upon the Aboriginal community and seem, in some respects, to ignore the obvious views and judgment of the Aboriginal people.

Suggestions that another town in the Park would not be appropriate, in part because of the implications for Aborigines, are, in our view, not only decidedly inappropriate but also quite wrong.

We do not support separate development.

Recommendation

That, in the event it is necessary that further settlements be built for the purpose of accommodating the needs of tourists in the Kakadu region, the settlements be not excluded from the Park.

That any proposal for a tourist development should be subject to a stringent environmental impact study, taking into account all relevant considerations.

PARAGRAPH 39 - ADDITION

Given amendments to the Income Tax Assessment Act 1936 and industrial relations considerations it is unlikely that future mining projects will be accompanied by a conventional town. The trend recently has been for mining projects to operate on a 'fly in, fly out' basis.

CHAPTER FIVE

COMMERCIAL FISHING

PARAGRAPH 22 - DISSENT

The majority report decision is based on a particular view of the concept of a national park which excludes any exploitation of the natural resources.

Inasmuch as we believe that national parks are not only for the pleasure and enjoyment of mankind, but also for his benefit, we cannot support such a recommendation which denies multiple land use to which we referred in Chapter Three at paragraphs 58 and 59.

Our view is that commercial fishing ought to be allowed in the Park provided it does not endanger fish stocks. We do not presume to judge what limits ought properly to be placed on the industry, however, it should also be considered in the light of competing interests from amateur fishermen and the availability of fish schools for passive viewing by Park visitors.

We tie our recommendation to those set out at paragraphs 58 and 59 of Chapter Three.

Recommendation

That commercial fishing be allowed in Kakadu National Park subject to appropriate and proper regulation.

That in determining the allowable extent of the catch, appropriate consideration be given, not only to fish stocks, but also to amateur fishermen and the interests of tourists who may wish to observe schools of fish within the Park.

PARAGRAPH 27 - DISSENT

We dissent for reasons referred to in paragraph 22.

CHAPTER 6

OTHER ISSUES

PARAGRAPH 37 - DISSENT

It is quite inconceivable that buffalo have the potential to damage mine tailings dams by trampling up and down the sides of the impoundments.

As described in Chapter Three, tailings dams have banks as high as 20 metres and, in the case of Ranger, a width which allowed the construction of a road upon the top capable of accommodating two heavy vehicles passing side by side.

PARAGRAPHS 42-45 - DISSENT

The majority report, in claiming that 'the animals now being exterminated from Stages 1 and 2 of the Park "have a dispersed distribution" and do not "place an unacceptable impact on the Kakadu environment"', seems to have accepted, on face value, the evidence of the Gagudju Association.

The inescapable fact is that, wherever buffalo exist within Kakadu National Park, they do harm to the environment.

Introduced hard-hoofed animals are incompatible with the Australian vegetation in general and the Kakadu National Park ecosystem in particular.

To the extent that we support multiple land use, in each case weighing and measuring whether the impact on the Kakadu region is acceptable, we support the recommendations; however, it should be understood that the claim made by the Gagudju Association that total eradication would place an economic burden on the local Aboriginal population, is made against a background of royalty payments of \$21.3 million being paid to the 210 adult members and 108 children of the Gagudju Association since 1981.

The cost of maintaining a limited herd of buffalo within Kakadu National Park will not be achieved without very considerable expense. Not only will there be considerable cost in maintaining set numbers but, it will require the manipulation of their behaviour. To minimize environmental damage, particularly to the ecosystem, will also require careful farming as distinct from uncontrolled grazing.

We believe that, if the Gagudju people want a buffalo herd maintained as a food source, they should expect to bear the cost.

Recommendation

The majority report recommends:

- (i) that, as a matter of urgency, ANPWS work with the Gagudju Association to consider the feasibility of establishing a disease free herd of buffalo in a controlled area within the Park to meet Aboriginal needs for field killed meat. This recommendation should be read in conjunction with (ii). Should the proposal contained in (ii) proceed, it may be possible to put into place arrangements that will accommodate the matters referred to above; and
- (ii) that the proposal for a buffalo park adjacent to the boundaries of Stage 3 of Kakadu National Park be investigated and, subject to necessary environmental safeguards, that it be supported.

We add to this recommendation:

- (iii) that the cost of such an undertaking be borne by the Gagudju Association.

PARAGRAPH 52 - DISSENT

We find difficulty in the inconsistency of allowing feral animals to create very considerable damage to the Park and, in the case of buffalo, make special provision for their maintenance, while stating that hunting of such animals is at odds with the idea of a national park.

We support the concept of allowing shooters into the Park under licence and suitable safety and environmental conditions, both because of the recreational merit and the contribution it will make to maintaining and improving the environment in general and, ecosystem of the Park in particular.

Recommendation

That recreational hunting within the Park be allowed under licence and subject to appropriate safety and environmental provisions.

PARAGRAPH 61

One has to be concerned at the fundamental difference in approach to fire management and it is a matter which should be resolved quickly.

Recommendation

That an immediate examination be made by the Minister for the Arts, Sport, the Environment, Tourism and Territories and the Minister for Science, Customs and Small Business of the alternate approaches to fire management being pursued by ANPWS and the CSIRO with a view to early resolution of the proper approach.

CHAPTER 7

MANAGEMENT CO-ORDINATION AND CONSULTATION

PARAGRAPH 18 - DISSENT

It is quite wrong for traditional owners to lease that part of the Park which is the subject of an Aboriginal land grant to ANPWS and then demand a majority of traditional owners on the Board of Management of the Park.

Ninety-three per cent of Stage 2 of Kakadu National Park is not Aboriginal land and no claim has been granted on Stage 3. The Aboriginal community has no greater claim to Board management responsibilities over those areas than have other interest groups. It can properly be argued that they have no claim, but that interest groups, such as the mining and tourist industries, do. Kakadu National Park should be managed for all Australians.

Recommendation

That a Board be created to manage Kakadu National Park with representation from a broad range of interest groups, including particularly the Northern Territory Government.

PARAGRAPH 33 - DISSENT

We do not believe it is either appropriate or necessary to strengthen the Office of the Supervising Scientist (OSS). No evidence was received by the Committee which suggested or implied that action was necessary to ensure that the National Environment Safeguards for uranium mining in the Park region are being met. We support a review of the administrative agreements between the Northern Territory and Commonwealth Governments with a view to ensuring that the functions of the OSS are limited to developing research program and standards, practices and procedures relating to the effect of mining operations in the region.

Any proposals to extend the powers and responsibilities of the OSS as recommended by the majority report must be contrary to the principles of devolution of responsibility and cannot logically be sustained in the Northern Territory so long as the OSS plays no part in the Olympic Dam operations of South Australia. To extend the powers of the OSS within the Northern Territory, particularly to supervisory and administrative matters, is to reflect adversely upon the competence and integrity of the Northern Territory Government.

Our understanding is that the Northern Territory Department of Mines and Energy has conducted its responsibilities with efficiency and competence. The Committee has received no criticism of the Department in evidence. In our view, the area of responsibility of the OSS of the greatest consequence, for both the environment and uranium mining, is that of research and it is the thread of activity which runs through, in the greater part, the functions of the Supervising Scientist who, in his submission to the Committee, set out his functions as:

- * to collect and assess information relating to the effects on the environment of uranium mining operations in the Region;
- * to arrange and undertake research through the Alligator Rivers Region Research Institute which he manages, and promote and co-ordinate research generally within the Region;
- * to develop and promote standards, practices and procedures of environmental importance from the effects of uranium mining operations in the Region;
- * to develop and promote measures for the protection and restoration of the environment from the effects of uranium mining operations in the region;
- * to co-ordinate and supervise the implementation of relevant laws including Environmental Requirements and other 'prescribed instruments' issued under those laws; and
- * to advise the Minister on the above matters and to report to the Minister and through him to the Parliament on the above matters annually, and additionally as the Minister or the Supervising Scientist thinks fit.¹

This submission of the Supervising Scientist in addressing his research program stated:

the research program has been designed to address the potential hazards presented by a uranium mining operation, taking into account the sensitivity of the various components of the environment that are likely to be subject to impact. The main aims of the program are to:

- * establish a baseline environmental data against which to measure the impact of uranium mining activities;
- * develop techniques to monitor the effects of uranium mining operations;
- * develop an understanding of the processes by which dispersion and transport of contaminants may take place from the mine sites to the surrounding environment;
- * develop models to predict the likely impact of the introduction of contaminants on the ecosystem;
- * assist in the development and determination of operational standards and measures for the protection and restoration of the environment; and
- * provide scientific advice on whether uranium mining operations are being carried out in a way that minimises environmental damage.

The research programme is currently divided into 6 major areas - Aquatic Biology, Terrestrial Ecology, Chemistry, Environmental Radioactivity, Geomorphology and Environmental Modelling. Some research on occupational health and safety is also undertaken within the Office of the Supervising Scientist.²

It is in the realm of research that Energy Resources of Australia Ltd has been most critical of the Office of Supervising Scientist:

Ranger's chief objection to the OSS research performance is the apparent lack of any priority given to collecting information that might be useful to the mining companies.

Ranger is of the view that more emphasis should have been given to applied research - scientific activity which will have relevance to environmental protection of the ongoing operation.

Two examples of important management practices which were not researched by the OSS are detailed below:

Spray irrigation

Concern about spray irrigation has been twofold.

1. Spray irrigation was recognised by the Fox Inquiry as potentially a useful water management practice. Yet when excess water was causing problems the authorisation of spray irrigation trials was delayed for a year.
2. While many aspects of irrigation could have been researched early on in the site adaptation of this practice, the OSS only became involved in research toward the end of the development program, despite considerable efforts by Ranger, its consultants, Queensland Mines Pty Ltd, and the NT Department of Mines and Energy. The OSS recently embarked on a \$400 000 irrigation research program well after the adoption of the practice on an operational scale, and has been criticised for the direction of that research.

Sub-aerial tailings

Another example of OSS lack of input concerns the tailings management. Efficient tailings management was an area of major concern in the early stages of the operation. Ranger was pressing to convert to a more efficient sub-aerial (semi-dry) system.

Ranger's view was that a sub-aerial tailings trial was unnecessary because Queensland Mines used the technique and it was a widely established practice around the world. Nevertheless Ranger was forced to conduct a trial and has never been given an adequate answer as to why the OSS Research Institute did not conduct this expensive (\$150,000) trial given the concern it expressed at conversion of the system without a trial. The trial proved of no value in the subsequent conversion to sub-aerial tailings management.³

Ranger went on to state:

Another observation that Ranger would like to make with reference to OSS research, is that by far the most work has been on fish and mussels. However, when Ranger wants to do something with the information, the response from the OSS has not been encouraging. We agree that often it is tempting to take the academically safe course of collecting information ad infinitum, but Ranger, trying to run a mine in a competitive world industry, needs relevant information on which to make timely decisions.

An example of OSS disregard for this principle is demonstrated by the response to a letter sent by Ranger to the Office of the Supervising Scientist on September 22, 1986. It reads:

'To facilitate the planning of a release of RP2 water we seek a response from your scientists on the likely impact on fish and mussel population, of following scenarios:

RP2 water is released during the late wet season for a 14 day period. Dilution has been derived from pre-screening tests with Cladoceran and fish larvae.

1. Fish avoidance occurs during this release, one or a number of species move to the opposite side of the mixing zone, however, there is no net difference in upstream/downstream movement away from the mixing zone.
2. Fish movement stops during the release season.
3. Mussel reproductive suppression occurs in the mixing zone during the release.
4. Mussel recruitment to the mixing zone does not occur for the remaining part of the wet season.
5. Mussel reproductive suppression from the release point to Mudginberri Billabong during the release and subsequent to the release larvae production remains out of phase to mussels upstream of the release point for the rest of the wet season.
6. Mussel recruitment from the release point to Mudginberri Billabong does not occur for the remaining part of the wet season.
7. All larval recruitment that has occurred prior to the release is subsequently destroyed by the release.

In your reponse could you please include an explanation of your methodology for partitioning the effects of the release from natural variations, the effect of the absence of a size class of mussels in the mixing zone on the Magela ecosystem, and some assessment of the above scenarios as an acceptable environmental impact?'

Ranger has never received a reply to this letter - let alone any useful information, discussion, collaboration, co-operation or offer to supervise or oversee the work. Considering the huge resources that have been allocated by OSS to the study of the aquatic ecosystem this situation is very disappointing.

Ranger questions whether the OSS data is collected in a form that can be used to assess impact.

In a paper to an Environmental Workshop an OSS scientist said:

'Mining company personnel concerned with the planning

of water budgets within their respective project areas are keen to obtain details of safe levels of contaminants for release waters. This places considerable pressure on biological research groups to produce numerical limits for water budget planners to work on. Even though this pressure produces a valid research motivation, it should be kept in perspective and not be allowed to cause hasty recommendations based on few hard data. It is not unreasonable considering the time taken to complete such studies to ask mining companies to wait for a period of possibly years for recommendations'.⁴

Ranger makes the following comments in relation to an outline of the work of the OSS given in its Annual Report for 1986-87:

Biological monitoring

Ranger agrees with the direction of some of this work but is critical of the progress. No techniques or procedures for assessing or detecting impact of the mining or processing operations have been developed by OSS and adopted by Ranger.

This division still has not published anything on the monitoring of Ranger's release of Retention Pond 4 water in 1984-85. The scientists concerned are becoming involved in Coronation Hill but as yet, have not developed a useful method of monitoring a water release from Ranger.

Radiation

This group, which includes an involvement by the CSIRO, is looking at the radiological implications of irrigation. Ranger believes the standards for rehabilitation should have been established by now.

Environmental Modelling

The annual report lists a large array of models. Ranger's advice on two of the models given in the 1986/87 Annual Research Report is that they are too basic to be of value and that the data required for them to be of relevance either does not exist or is virtually impossible to collect.

A 1987 request for data in order to construct models is an example of the inefficiency of the Sydney office of the OSS. Ranger was asked to provide information/data on a weekly basis in order to construct a model. Ranger, at a cost in time of several hours a week, collected, collated, checked and sent the information to Sydney on a regular basis. Two Sydney officers have now informed Ranger that there is no model. Some of the information the OSS is researching for the model is widely available in commercial packages.

Environmental Chemistry

The chemistry program appears to concentrate on the potential effects of a catastrophe. Ranger is of the opinion that OSS environmental chemistry research could be of more use if it concentrated on sources of potential pollution. There is no emphasis on groundwater chemistry, such as the migration of solutes (apart from land application consultancy). There is no emphasis on long term process eg solid state speciation of radionuclides and heavy metals in the tailings after rehabilitation either above ground or in the mine pit.

Plant Ecology

Apart from the general ecological aspects of the vegetation studies, this group lists part of its program as the rehabilitation and revegetation of disturbed mine site areas. The plant ecology section has been going for at least four years. The OSS officers in this section have always been going to get involved in research into rehabilitation and revegetation of the disturbed mine sites, but they have not yet commenced programs.

Geomorphology

This is probably the most relevant section of OSS in terms of site rehabilitation. Ranger believes that far more emphasis should have been given to this work.

Hydrogeochemistry Research

Ranger considers that in the light of current legal requirements to return the tailings to the pit, some emphasis should be placed on the geochemical aspects of this mode of tailings disposal. The OSS annual report for 1986/87 proposes some hydrogeological work to be done and refers to the Annual Research Summary. This lists a series of projects which indicates that the OSS recognises the lack of information in this critical area.

The OSS appears to have no research relating to the in-situ rehabilitation of the tailings dam, to weathering products of waste or potential capping material. A decision is expected to be made on the fate of the tailings dam in December 1989 and is essential from an economic point of view.

Although the geomorphic aspects of above ground tailings deposits (in situ rehabilitation) are being investigated - little or nothing is being undertaken on the chemistry of the potential impact on groundwater quality.

Hydrogeology

Ranger is not aware of any useful information which has been generated by the OSS in this area.

The understanding of the hydrogeology and of solute transport away from Ranger is very important to be able to ascertain the potential long term impact on the environment.

Work that Ranger considers the OSS should be involved in includes:

1. Study of water management practices and the development of techniques to decrease the potential impact.
2. Techniques of water release to reduce potential impact.
3. Rates and mechanism of movement of solutes from the water holding bodies and their potential for environmental impact.
4. Techniques to reduce the rate of solute movement from the water holding bodies.
5. Requirements for in-situ rehabilitation of tailings dam:
 - * Mechanisms of solute transport from the tailings dam.
 - * Methods of moisture reduction in tailings to allow capping with rock.
6. Water movement through rock dumps and solute leaching.
7. Surface runoff from rock dumps and tailings dam's final surface and its impact on rates of erosion.
8. Final rehabilitation configuration - especially hydrology. An input to the shape, height and erosion control structure.

Consultants

It is clear that much of the output of the OSS is generated by consultants. Ranger questions the efficiency of a research organisation of some 72 people, with two operating mines to look after, that makes so much use of consultants. The effective use and proper direction of consultants should allow the engagement of expert groups to expeditiously achieve specific research goals and permit significant reductions in OSS personnel. This would be in keeping with the original concept envisaged by Fox (RUEI) and facilitate restructuring of the existing organisation.⁵

At this time of the Committee's inquiry, it is not possible to

make a judgment on the merits of Ranger's claim, however, the matters Ranger raises are of sufficient width and seriousness as to justify a full and thorough investigation.

Clearly, duplication does take place between the OSS and the Northern Territory Department of Mines and Energy.

We understand that the OSS on occasions flies people from Sydney to double check the work of the Northern Territory Department of Mines and Energy in its monitoring of Ranger's radiation protection program.

We recommend that the Northern Territory Department of Mines and Energy have regulatory, surveillance and monitoring responsibilities.

Recommendation

That:

- (i) the Northern Territory Department of Mines and Energy have regulatory, surveillance and monitoring responsibilities for uranium mining in the Northern Territory;
- (ii) the functions and staff of the Office of the Supervising Scientist be abolished and its functions given to the Australian Nuclear Science and Technology Organisation (ANSTO) and the University College of the Northern Territory;
- (iii) the Australian Science and Technology Council (ASTEC) examine the claims made by Energy Resources of Australia Ltd of the failures and inadequacies of research conducted by OSS; and
- (iv) in the event the Commonwealth Government does not accept Recommendation (ii), it urgently locate all operations of the OSS in the Northern Territory.

NOTE:

We record that, in our personal communications with the OSS in both Sydney and Darwin, we have found the officers with whom we have dealt to be efficient, helpful and competent.

PARAGRAPHS 34 & 35 - DISSENT

Clearly, the majority report views the Co-ordinating Committee for the Alligator Rivers Region as a general clearing house for the discussion of ideas and the exchange of views. Its charter, in our view, envisages and provides for a technical working group and, we support the proposition that the membership of the Committee is inappropriate. We recommend that the Committee be restructured to include only those persons who have a technical competence and statutory responsibility within the Kakadu Region relevant to the functions of the Co-ordinating Committee as defined in the Environmental Protection (Alligator Rivers Region) Act 1978.

The Act defines the functions of the Co-ordinating Committee as:

- a) to consider programs for research into, and programs for the collection and assessment of information relating to, the effects on the environment in the Alligator Rivers Region of uranium mining operations in the Region;
- b) to keep under review programs and the carrying out of programs referred to in paragraph (a);
- c) to make recommendations to the Supervising Scientist with respect to programs referred to in paragraph (a);
- d) to consider and keep under review:
 - (i) standards, practices and procedures in relation to mining operations in the Region for the protection of, or in so far as those standards, practices and procedures affect, the environment in the Region; and
 - (ii) measures for the protection and restoration of the environment of the Region from the effects of uranium mining operations in the Region;

e) to keep under review:

- (i) requirements of or having effect under prescribed instruments in relation to uranium mining operation in the Region in so far as these requirements relate to any matter affecting the environment in the Region; and
 - (ii) the implementation of these requirements;
- f) to make recommendations to the Supervising Scientist with respect to matters referred to in paragraphs (d) and (e);
- g) to perform such other functions, in relation to uranium mining operations in the Region, as are conferred on it by or under a prescribed instrument; and
- h) to do anything incidental or conclusive to the performance of any of the foregoing functions.

We can think of no justification for having Ms L. Allen as a member other than for blatant Party politicking.

We have to assume her appointment was made on the basis of her membership of the Northern Territory Environment Centre which, as Ranger points out, is opposed to:

- . the mining and milling, transportation and export of Australian uranium, and demands
- . the closure and rehabilitation of all existing uranium mines.⁶

Ranger claims that:

[i]f the Co-ordinating Committee is a public forum for general discussion of wider issues, there are many other parties with interests in the subject who could be represented. Organisations such as the Australian Mining Industry Council and the Chamber of Mines are two, for example, with greater scope for more useful contributions than some of the current membership.⁷

Ranger's criticisms of the functioning and achievements of the Committee ought to be the subject of a thorough examination.

Recommendation

That the Co-ordinating Committee for the Alligator Rivers Region be restructured to include only those who have a technical competence and relevant statutory responsibility in the Kakadu Region and that the Committee fulfill, as a technical working group, the functions under its charter for which it was created.

PARAGRAPH 38 - DISSENT

There ought to be a proper forum for an employee representative to contribute to discussions on worker health and safety with mining companies and appropriate government authorities; however, we do not view the Co-ordinating Committee as the appropriate body.

Senator N. A. Crichton-Brown

Senator J. J. McGauran

Senator J. H. Panizza

1. Evidence p. 644.
2. Evidence pp. 650-651.
3. Submission by Energy Resources of Australia Ltd on the operation of the Office of the Supervising Scientist, July 1988, pp. 29-30.
4. Submission by Energy Resources of Australia Ltd, on the operation of the Office of the Supervising Scientist, July 1988, pp. 32-33.
5. Submission, Energy Resources of Australia Ltd on the Operation of the Office of the Supervising Scientist, July 1988, pp. 34-36.
6. Submission, Energy Resources of Australia Ltd on the operation of the Office of the Supervising Scientist, July 1988, p. 40.
7. Submission, Energy Resources of Australia Ltd, July 1988, p. 40.

APPENDIX 1

The following individuals and organisations made written submissions to the Committee:

Submission Number

1. Professor H. Messel, University of Sydney, New South Wales
2. Dr John Lea, University of Sydney, New South Wales
3. Mr D. McLaughlin, Moil, Northern Territory
4. Stockdale Prospecting Limited, South Yarra, Victoria
5. Hunters Union of the Northern Territory Incorporated, Wagaman, Northern Territory
6. Mr W.A. Wabeke, Collingwood, Victoria
7. Mr Keith Presnell, Howard Springs, Northern Territory
8. The Environment Centre Northern Territory Incorporated, Darwin, Northern Territory
9. National Trust of Australia, Darwin, Northern Territory
10. Mr Andrew L.L. Browne, Kenmore, Queensland
11. Bridge Oil Limited, Sydney, New South Wales
12. Bureau of the Northern Land Council, Darwin, Northern Territory
13. BHP Minerals Limited, Melbourne, Victoria
14. Victorian National Parks Association Incorporated, Melbourne, Victoria

15. Ms Wendy McMurdo, Berowra, New South Wales
16. World Wildlife Fund Australia, Sydney, New South Wales
17. Miss Lindy Davies, Glenunga, South Australia
18. Peko-Wallsend Limited, Sydney, New South Wales
19. Mr Peter Simpson, Nakara, Northern Territory
20. Northern Territory Chamber of Mines Incorporated, Darwin, Northern Territory
21. Australian Council of National Trust, Canberra, Australian Capital Territory
22. Mr J.A. Earthrowl, Darwin, Northern Territory
23. Uranerz Australian Proprietary Limited, Subiaco, Western Australia
24. Eupene Exploration Enterprises, Darwin, Northern Territory
25. MIM Holdings Limited, Brisbane, Queensland
26. Geopeko, Gordon, New South Wales
27. Commonwealth Department of Health, Woden, Australian Capital Territory
28. Denison Australia Proprietary Limited, North Sydney, New South Wales
29. Mr David Foster, Phillip Institute of Technology, Bundoora, Victoria
30. Supervising Scientist, Alligator Rivers Region, Bondi Junction, New South Wales
31. Jabiru Town Council, Jabiru, Northern Territory
32. Pancontinental Mining Limited, Sydney, New South Wales
33. Aboriginal Sacred Site Authority, Darwin, Northern Territory
34. Movement Against Uranium Mining, Melbourne, Victoria

35. Chief Minister, Darwin, Northern Territory
36. Friends of the Earth, Newtown, New South Wales
37. Australian National Parks and Wildlife Service,
Turner, Australian Capital Territory
38. Australian Conservation Foundation, Hawthorn,
Victoria
39. Electrolytic Zinc Company of Australia Limited,
Melbourne, Victoria
40. Mr Arnold Dix, Monash University, Clayton, Victoria
41. Friends of the Earth, Collingwood, Victoria
42. Ranger Uranium Mines Proprietary Limited, Jabiru,
Northern Territory
43. The Hon. Brian Burke MLA, Premier, Western
Australia
44. Kunwinjku Association, Darwin, Northern Territory
45. Department of Sport, Recreation and Tourism,
Canberra, Australian Capital Territory
46. CSR Limited, Minerals Exploration and Development,
Glenside, South Australia
47. Department of Aboriginal Affairs, Canberra,
Australian Capital Territory
48. Dr R.J. Wasson, Lyons, Australian Capital Territory
49. Department of Resources and Energy, Canberra,
Australian Capital Territory
50. Department of Arts, Heritage and Environment,
Canberra, Australian Capital Territory
51. Movement Against Uranium Mining, Haymarket, New
South Wales
52. Mr Peter D. Jones, Perth, Western Australia
53. Sir K. St. George & Mrs Rita P. St. George, Pine
Creek, Northern Territory
54. Mr R. Wilson, Fanny Bay, Northern Territory

55. Northern Territory Fishing Industry Council,
Darwin, Northern Territory
56. Mr Helmut Schimmel, Gimbat Station, Northern
Territory
57. Amateur Fishermens Association Northern Territory
Incorporated, Casuarina, Northern Territory
58. W.J. & E.E. Fisher Proprietary Limited, Darwin,
Northern Territory
59. Senator B.F. Kilgariff, Senator for the Northern
Territory, Darwin, Northern Territory
60. Darwin Bushwalking Club Incorporated, Darwin,
Northern Territory
61. Forcepower, Winnellie, Northern Territory
62. Australian Heritage Commission, Canberra,
Australian Capital Territory
63. Commonwealth Scientific and Industrial Research
Organization, Canberra, Australian Capital
Territory
64. Master Builders' Association of the Northern
Territory, Darwin, Northern Territory
65. Darwin Tourist Promotion Association, Darwin,
Northern Territory
66. Northern Territory Confederation of Industry and
Commerce, Darwin, Northern Territory
67. Australian Mining Industry Council, Canberra,
Australian Capital Territory
68. Royal Institute of Parks and Recreation, Canberra,
Australian Capital Territory
69. Mr David Cooper, Aboriginal Sacred Sites Authority,
Northern Territory
70. Mr Mick Alderson, Chairman, Gagudju Association
Inc, Winnellie, Northern Territory
71. Jawoyn Aborigines c/- BHP exploration site,
Coronation Hill, Northern Territory

APPENDIX 2

Individuals and organisations who appeared as witnesses before the Committee

Date of Hearing	Individuals/ Organisations	Represented By
25 March 1986 (Melbourne)	Electrolytic Zinc Co. of Australasia Ltd., Melbourne Victoria (Submission No. 39)	Mr C.O. Haslam, General Manager, Mineral Resources
	Geopeko, Gordon, N.S.W. (Submission No. 26)	Mr G.H. Sherrington, Manager, Special Projects
	Movement Against Uranium Mining Melbourne, Victoria (Submission No. 34)	Mr G. Wratten & Mr G. Foard, Members of the Steering Committee
	Mr A.E. Dix, Monash University, Clayton, Victoria (Submission No. 40)	
	Friends of the Earth, Collingwood, Victoria (Submission No. 41)	Mr R. Charles, Honorary Research Officer
	Mr W.A. Wabeke, Collingwood, Victoria (Submission No. 6)	

Date of Hearing	Individuals/ Organisations	Represented By
25 March 1986 (cont.)	Mr D. Foster, Phillip Institute of Technology, Bundoora, Victoria (Submission No. 29)	Mr D.A. Brunt, Regional Manager, Minerals Exploration and Development Group
26 March 1986 (Melbourne)	Coronation Hill Joint Venture, Melbourne, Victoria (Submission No. 13)	Dr C.E. Palethorpe, Manager Exploration, BHP Minerals Ltd. Mr J.A. Linke, Manager, Gold Operations, BHP Minerals Ltd. Mr P.M. Rush, Senior Co-ordinating Geologist, BHP Minerals Ltd. Mr H. Jones, Environmental Superintendent, BHP Minerals Ltd. Mr C.O. Haslam, General Manager, Mineral Resources, Electrolytic Zinc Co. of Australasia Ltd.
	Stockdale Prospecting Ltd., South Yarra, Victoria (Submission No. 4)	Mr K.J. Stracke, Exploration Manager Mr D.G. Coleman, Administration Manager

Date of Hearing	Individuals/ Organisations	Represented By
13 May 1986 (Sydney)	Peko-Wallsend Ltd., Sydney N.S.W. (Submission No. 18)	Mr D.J. Barnett, Group Counsel Mr G.H. Sherrington, Manager, Special Projects, Geopeko Division
	Friends of the Earth, Newtown, N.S.W. (Submission No. 36)	Mr R.W. Rands, Treasurer Ms A.E. Horsler, Member
	MIM Holdings Ltd., Brisbane Queensland (Submission No. 25)	Mr A.D. Munt, Regional Manager Exploration
	Pancontinental Mining Ltd., Sydney, N.S.W. (Submission No. 32)	Mr C.W. Duchatel, Director and General Manager, Operations Division Mr N. Bowra, Manager, Project Management Services
	Movement Against Uranium Mining, Haymarket, N.S.W. (Submission No.51)	Mr C. Moore, Co-ordinator Mr S. Broadbent, Co-ordinator
	Denison Australian Pty Ltd., North Sydney, N.S.W. (Submission No. 28)	Mr K.A. Torpey, Managing Director Mr C. Sorentino, Manager
	Dr R.B. Zehner, University of Sydney, N.S.W. (Submission No. 2)	

Date of Hearing	Individuals/ Organisations	Represented By
14 May 1986 (Sydney)	<p>Professor H. Messel, C.B.E., Head, School of Physics, University of Sydney, N.S.W. (Submission No. 1)</p> <p>Supervising Scientist for the Alligator Rivers Region, Bondi Junction, N.S.W. (Submission No. 30)</p>	<p>Mr R.M. Fry, Supervising Scientist Mr M. Carter, Principal Health Physicist and Acting Branch Head Dr A. Johnston, Principal Research Scientist</p>
22 May 1986 (Darwin)	<p>National Trust of Australia (N.T.), Darwin, N.T. (Submission No. 9)</p> <p>Hunters Union of the Northern Territory Inc., Winnellie N.T. (Submission No. 5)</p> <p>Jabiru Town Council, Jabiru, N.T. (Submission No. 31)</p> <p>Ranger Uranium Mines Pty Ltd., Jabiru, N.T. (Submission No. 42)</p>	<p>Dr I.M. Cook, President</p> <p>Mr G.R. Sawyer, President</p> <p>Mr R.G. Nitschke, Elected Councillor Mr S.C. Bennett, Town Clerk</p> <p>Mr L.T. Nicholls, Manager, Planning Mr J. Leggate, Manager, Environment Mr M.J. Danielson, Senior Geologist</p>

Date of Hearing	Individuals/ Organisations	Represented By
22 May 1986 (cont.)	Aboriginal Sacred Sites Authority, Darwin, N.T. (Submission No. 33)	Mr R.W. Ellis, Director Mr D.E. Cooper, Research Officer
	Kunwinjku Trading Association Inc., Darwin, N.T. (Submission No. 44)	Mr V.H. Brown, Manager, Administration Mr R.D. Buckle, Manager, Road Contracts
	The Environment Centre Northern Territory Inc. (Submission No. 8)	Miss L.G. Allen, Co-ordinator Miss R.I.Y. McKeown, Member
	Northern Territory Chamber of Mines Inc., Darwin, N.T. (Submission No. 20)	Mr R.L. Adams, President Mr P.M. Rush, Member
	Bureau of the Northern Land Council, Darwin, N.T. (Submission No. 12)	Mr R.S. Riley, Executive Officer for the Southern Area Mr S. Brennan, Manager, Land Management Branch
	W.J. & E.E. Fisher Pty Ltd., Darwin, N.T. (Submission No. 58)	Mr W.J. Fisher, Principal Consultant
	Mr H.H. Schimmel, Gimbat Station, Darwin, N.T. (Submission No. 56)	

Date of Hearing	Individuals/ Organisations	Represented By
22 May 1986 (cont.)	Amateur Fishermens Association Northern Territory Inc., Casuarina, N.T. (Submission No. 57)	Mr A. Julius, Committee Member
23 May 1986 (Darwin)	Northern Territory Government, Darwin, N.T. (Submission No. 35)	Mr A.G. Morris, Secretary, Department of the Chief Minister Mr W.A. Thomas, Chairman, and Director of Conservation, Conservation Commission of the N.T. Mr A.J. Hosking, Acting Director, N.T. Geological Survey, Department of Mines and Energy
	Mr M.K. Presnell, Howard Springs, N.T. (Submission No. 7)	
	Mr D. McLaughlin, Moil, N.T. (Submission No. 3)	
	Eupene Exploration Enterprises, Darwin, N.T. (Submission No. 24)	Mr G.S. Eupene

Date of Hearing	Individuals/ Organisations	Represented By
14 August 1986 (Canberra)	Kratos Exploration Pty Ltd., Bridge Oil Ltd., Sydney, N.S.W (Submission No. 11)	Mr J.R. Stewart, Managing Director
	Department of Sport, Recreation and Tourism, Canberra, A.C.T. (Submission No. 45)	Mr K.J. Nielson, Assistant Secretary, Facilities and Projects Branch Mr P.A. Bellchambers, Acting Director, Infrastructure Section
	World Wildlife Fund Australia, Sydney, N.S.W. (Submission No. 16)	Dr J.T. Baker, Chairman, Scientific Advisory Committee
	Department of Health, Woden, A.C.T. (Submission No. 27)	Dr G.J. Murphy, Assistant Secretary, Food and Environmental Protection Branch
	Australian Conservation Foundation, Hawthorn, Victoria (Submission No. 38)	Dr K.W. Bentley, Acting Director, Food and Environment Protection Branch
	Dr R.J. Wasson, Lyons, A.C.T. (Submission No. 48)	Dr J.G. Mosley, Director

Date of Hearing	Individuals/ Organisations	Represented By
14 August 1986 (cont.)	Australian Heritage Commission, Canberra, A.C.T., (Submission No. 62)	Mr D.C. Griffiths, Director Dr J.M. Flood, Assistant Director Technical, Cultural Environment Dr W. Nicholls, Assistant Director
15 August 1986 (Canberra)	Department of Aboriginal Affairs, Canberra, A.C.T. (Submission No. 47)	Mr W.J. Gray, Acting Deputy Secretary Mr R.J. Beadman, Acting First Assistant Secretary, Heritage Division Mr R.J. Hebblewhite, Assistant Director, Heritage Division (N.T.)
	Department of Resources and Energy, Canberra, A.C.T. (Submission No. 49)	Mr J.C. Kerr, Acting Assistant Secretary Mr D.W. Truman, Acting Assistant Secretary, Coal and Minerals Division Mr C. Anson, Principal Executive Officer Mr L. Ranford, First Assistant Director, Bureau of Mineral Resources Mr R.S. Needham, Geologist, Petrology and Geochemistry Division, Bureau of Mineral Resources

Date of Hearing	Individuals/ Organisations	Represented By
15 August 1986 (cont.)	Department of Arts, Heritage and Environment, Canberra, A.C.T. (Submission No. 50)	Mr K.E. Thompson, First Assistant Secretary, Conservation and Environment Assessment Division Mr R.J. Pegler, Director, Land Section Mr R.J. McArthur, Assistant Secretary, Heritage Branch
3 October 1986 (Canberra)	Australian National Parks and Wildlife Service, Turner, A.C.T. (Submission No. 37)	Professor J.D. Ovington, Director Mr M.A. Hill, Assistant Director
	CSIRO, Canberra, A.C.T. (Submission No. 63)	Dr J.J. Landsberg, Acting Director, Institute of Biological Resources Professor P. Werner, Director, Tropical Ecosystems Research Centre Dr R. Schodde, Principal Research Scientist, Wildlife and Rangelands Research
	Australian National Parks and Wildlife Service, Turner, A.C.T. (Submission No.37)	Professor J.D. Ovington, Director Mr M.A. Hill, Assistant Director, Park Planning and Management Mr D.A. Gillespie, Assistant Director, Northern Operations

Date of Hearing	Individuals/ Organisations	Represented By
29 October 1986 (Darwin)	Northern Territory Confederation of Industry and Commerce Inc., Darwin, N.T. (Submission No. 66)	Mr R.F. Crowe, Executive Director
	Northern Territory Fishing Industry Council, Darwin, N.T. (Submission No. 55)	Mr D.S. Dunstan, Executive Officer Mr P. Mundy, Chairman, N.T. Commercial Fishermen's Association Mr A.E. Kemp, Chairman
	Darwin Tourist Promotion Association, Darwin, N.T. (Submission No. 65)	Mr T.H. Winter, Chairman, Sub-Committee
	Bureau for the Northern Land Council, Darwin, N.T. (Submission No. 12)	Mr J.L. Ah Kit, Director Mr S. Brennan, Manager, Land Management Section Mr J.L. Christophersen, Deputy Chairman
	Aboriginal Sacred Sites Authority, Darwin, N.T. (Submission No. 33)	Mr R.W. Ellis, Director Mr D.G. Ritchie, Senior Anthropologist
	Australian National Parks and Wildlife Service, Turner, A.C.T. (Submission No. 37)	Ms H. Sullivan, Project Officer

Date of Hearing	Individuals/ Organisations	Represented By
29 October 1986 (cont.)	Northern Territory Government, Darwin, N.T. (Submission No. 35)	Mr R.F. Roodenrys, Deputy Secretary, Department of the Chief Minister Mr I. Campbell, Deputy Secretary, Department of Mines and Energy Mr A.J. Hosking, Assistant Director N.T. Geological Survey, Department of Mines and Energy Mr R.A. Watters, Director, Alligator Rivers Region Unit, Department of Mines and Energy Mr S.L. Davis, Consultant Antropologist
1 June 1987 (Canberra)	Coronation Hill Joint Venture (Submissions 13 and 13A)	Mr W. Hewitt, Project Manager Mr W. Grant, Senior Environmental Engineer
	Dr. K. Palmer, Australian Institute of Aboriginal Affairs	

