COMMITTEE ON EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

DECEMBER 1986

COMMITTEE ON EXPLORATION AND MINING
in
NATIONAL PARKS AND NATURE RESERVES

Report to the Hon Ministers for
Conservation and Land Management, and the Environment
and
Minerals and Energy

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

INTRODUCTION

The Committee has completed its report on 'Exploration and Mining in National Parks and Nature Reserves' in accordance with its terms of reference.

The Committee was required to report on:

1. Appropriate Government policy concerning exploration and mining activities in national parks and nature reserves.

2. Whether existing provisions of the Mining Act and Regulations governing conservation and rehabilitation in national parks and nature reserves are adequate to control environmental aspects of exploration and mining activities.

3. Procedures to be followed in reviewing exploration and mining proposals in national parks and nature reserves and in setting and enforcing appropriate environmental conditions.

4. Means of authorizing access to national parks and nature reserves in order to mark out tenements.

5. Whether exploration in national parks and nature reserves without holding a tenement should be allowed, and if so under what conditions.

As part of this exercise the Committee called for submissions from the public, community and industry organizations representing conservation and mining interests, and Government agencies. Eighty three responses in the form of submissions and information were received from around Australia, representing a broad spectrum of the community interested in the issues involved. The responses were very helpful to the Committee in assisting it to crystallise its ideas and proposals.

The issue of exploration and mining in national parks and nature reserves is one engendering a polarity of views between those who believe that such activities should not be permitted, and those that believe they should be allowed, at least on occasions.

The Committee is of the view that these differences are unlikely to be completely resolved. It believes that this polarity has, however, been compounded by the lack of clarity over such things as policy objectives, the extent to which mining might be permitted, the size and quality of the conservation estate, and deficiences in the procedures followed in evaluating exploration and mining proposals.

THE COMPATABILITY OF EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

The question of the compatability of exploration and mining within a national park or nature reserve is one of the major issues that the Committee has had to address. The Committee viewed compatability in terms of the ability of the two landuses to coexist within a national park or nature reserve without unduly compromising their respective objectives.
It is the view of the Committee that:

- minerals are a natural resource and part of the natural environment, and knowledge of the location of such resources is of value to the State and nation. The geological characteristics may also be relevant to the interpretation and management of national parks and nature reserves;

- productive mining as a landuse is inconsistent with the international definitions of national parks and nature reserves; however in the context of some national parks and nature reserves limited exploration and mining activity may not unduly compromise the conservation objectives of the reserve;

- in some instances minerals within national parks and nature reserves will be of such significance for it to be in the public interest to mine them; and

- in the context of national parks and nature reserves particularly, there is a need to continue to improve techniques to minimise the impact of exploration on the environment and to further improve rehabilitation techniques.

COMPETITION BETWEEN CONSERVATION AND MINING LANDUSES

In formulating its proposals the Committee has recognised that available land area constitutes one of the primary resources for both conservation and the mining industry.

By its very nature the effective conservation of outstanding and representative examples of the flora, fauna and physical environment of Western Australia requires a considerable land area. The mining industry also regards land, available for exploration, as its primary resource and argues strongly against the closing of land to exploration. The industry presently has access to explore for minerals throughout most of the State, subject to a variety of approval requirements.
The Committee considers that:

- the national park and nature reserve estate constitutes a small portion of the total land resource open to exploration and mining. It does, nonetheless, include some areas of significant mineral prospectivity;

- it is not possible to achieve a fully representative reserve system without it including areas of mineral prospectivity; and

- a relatively small proportion of existing parks and nature reserves are considered to be highly prospective.

POLICY ON EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

If Government were to adopt a policy that simply excluded exploration and mining from all national parks and nature reserves, then it is likely that declaration of any new areas would be delayed or prevented, and the goal of achieving a fully representative reserve system would not be attained. Given the incomplete state of implementation of the Environmental Protection Authority Red Book recommendations, and the existence of other

areas of high conservation value that are not yet reserved, the Committee considered this approach to be counterproductive.

The Committee has recognised that knowledge of the geology of national parks and nature reserves is a legitimate part of the resource inventory and is likely to be of benefit to reserve interpretation and management. The gathering of such knowledge via processes involving no ground disturbance or only an insignificant level of disturbance or other environmental impacts,is referred to in this report as a geoscientific survey; the term exploration is used for mineral prospecting that has the potential to cause significant ground disturbance.

The Committee has proposed that geoscientific survey should be permitted by permit, without requiring the granting of an exploration licence.

The Committee has proposed that national parks and A class nature reserves should be closed to ground disturbing exploration and mining unless, following a specific review, it is considered that exploration licences may be granted in relation to a specific park or reserve or part thereof. The most important areas from a conservation viewpoint within the national park/nature reserve system should remain closed to exploration and mining. The rights of existing tenement holders in national parks and nature reserves should remain.

BOUNDARY RATIONALIZATION

The Committee notes that in Western Australia a number of national parks and nature reserves have arbitrary boundaries. As a result the conservation value of these reserves may be far from optimal and their management severely compromised.

In these circumstances there may be substantial advantages in a rationalization of boundaries, to achieve an equally or more representative and manageable reserve system and avoid areas known to be highly prospective for minerals. Such action may constitute sensible land and resource management practice. The Committee notes however, that for such a process to be publicly acceptable, there would have to be an unequivocal commitment by Government that the rationalization process will not lead to any decrease in the total area reserved and that the values of the existing national parks

and nature reserve in the State would be preserved. Thus if the avoidance of a prospective area would result in the loss of conservation values not replaceable by the reservation of an alternative area, then the boundary rationalization should not proceed.

PROCEDURES FOR REVIEWING EXPLORATION PROPOSALS OVER NATIONAL PARKS AND NATURE RESERVES

The Committee considers that there are advantages in adopting procedures which recognise that mineral exploration proceeds through several phases of activity; that relatively few exploration proposals proceed to the later phases of intensive exploration; and that significant environmental impacts are likely only in the later phases of exploration.

It has also proposed that in relation to exploration licences, the phases of exploration should be recognised and separately approved, with emphasis placed on assessing those phases that have the potential to cause significant environmental impact.

REVIEW OF MINING PROPOSALS

The Committee acknowledges the Government's position in amending the Mining Act 1978, to require that the approval of both Houses of Parliament be obtained before mining can be undertaken in any national park or A-class nature reserve in Western Australia. The Committee has proposed that if mining is approved, the mine area should be excised from the national park or nature reserve. Such areas should be vested in the National Parks and Nature Conservation Authority, in accordance with Section 5(g) of the Conservation and Land Management Act 1984, so that that agency retains responsibility for these areas, as a safeguard for the adjoining national park or nature reserve land.

RECOMMENDATIONS

TERM OF REFERENCE 1 - Appropriate Government policy concerning exploration and mining activities in national parks and nature reserves.

RECOMMENDATION 1

The Committee recommends that geoscientific survey work should be permitted without holding an exploration licence in national parks and A class nature reserves under permit issued by the Minister for Conservation and Land Management. Before issuing a permit the Minister should seek the views of the National Parks and Nature Conservation Authority, Department of Conservation and Land Management, and Mines Department. The Minister may attach appropriate conditions to such a permit or, in exceptional circumstances, refuse to issue a permit. Appropriate reports on the results of the survey should be prepared for the Department of Conservation and Land Management and Mines Department.

RECOMMENDATION 2

The Committee recommends that exploration licences should not be granted over a national park or A class nature reserve unless that park or reserve has individually either been declared open for the granting of exploration licences or reclassified as provided for in Recommendation 4. The Committee further recommends that areas of the highest biological or landscape value should not be declared open for the granting of exploration licences.

RECOMMENDATION 3

The Committee recommends that if the Mines Department believes that a particular national park or A class nature reserve or part thereof is of sufficient prospectivity, then they should submit to the Environmental Protection Authority a proposal to open the area for the granting of exploration licences. A program of non-destructive research should then be carried out with the objective of compiling an inventory of the biological, landscape and geological resources of the area. This program should be co-ordinated by an interdepartmental committee, convened by the Department of Conservation and Environment and including representatives of the Department of Conservation and Land Management, and Mines Department. Such a committee would assess the results of the research and report to the Environmental Protection Authority, which would then recommend to Government. Where a company has lodged a tenement application over such a closed area, it should be required to meet the cost of the necessary research.

RECOMMENDATION 4

The Committee recommends that in reporting to Government the Environmental Protection Authority would recommed:

. that the area in question not be declared open for the granting of exploration licences if it is considered to be of the highest biological or landscape value; or

. that the area in question be declared open for the granting of exploration licences subject to appropriate conditions but remain part of the national park or nature reserve if it is considered to be of intermediate biological and landscape value; or

. that the area in question be removed from the national park and A class nature reserve system if it is considered to be of low biological and landscape value.

RECOMMENDATION 5

The Committee recommends that the following matters be taken into account by the Environmental Protection Authority, when assessing whether or not to recommend that a national park A class nature reserve or part thereof be declared open for the granting of exploration licences:

. the presence of rare or endangered species of fauna and flora, communities or habitats;

. the presence of areas of outstanding scenic or landscape value;

. the presence of significant wilderness or important wetlands;

. the presence of sites of archaeological, cultural, historic, or scientific value, or a geological monument;

. the importance of the area in terms of its role in protecting representative ecosystems; and

. the particular importance of islands to nature conservation.

RECOMMENDATION 6

The Committee recommends that mining leases should not be granted over national parks or A class nature reserves unless the area concerned has previously been declared open for the granting of exploration licences or the mining lease application covers an area subject to a pre-existing exploration licence or prospecting licence.

RECOMMENDATION 7

The Committee recommends that geoscientific survey work should be permitted in B and C class nature reserves under permit issued by the Executive Director of the Department of Conservation and Land Management after consultation with the Mines Department. The Executive Director may attach appropriate conditions to such a permit or, in exceptional circumstances, refuse to issue a permit. Appropriate reports on the results of the survey should be prepared for the Department of Conservation and Land Management and Mines Department.

RECOMMENDATION 8

The Committee recommends that ground-disturbing exploration and productive mining activities in B and C class nature reserves be regulated and controlled on a case-by-case basis.

RECOMMENDATION 9

The Committee recommends that inventories of the biological, landscape and geological resources of B and C class nature reserves be compiled as resources permit. The corresponding research could be coordinated by the interdepartmental committee referred to in Recommendation 3.

RECOMMENDATION 10

The Committee recommends that areas proposed for reservation as national parks or natures reserves and fully approved by Government be treated

administratively as if they are so reserved.

RECOMMENDATION 11

The Committee recommends that the Government initiate a public review of the national park and nature reserve boundaries, with a view to rationalization. This process should have as its primary objective the setting of ecologically sensible and manageable boundaries while maintaining the values and area of the reserve system. A secondary objective would be to avoid areas of high prospectivity wherever this can be accomplished without prejudice to the primary objective.

The Committee further recommends that the review proposed be undertaken by the Department of Conservation and Land Management in liaison with the Mines Department and Department of Conservation and Environment. The review could be carried out as part of the preparation by the Department of Conservation and Land Management of a management plan for each park or reserve.

TERM OF REFERENCE 2 - Whether existing provisions of the Mining Act and Regulations governing conservation and rehabilitation in national parks and nature reserves are adequate to control environmental aspects of exploration and mining activities.

RECOMMENDATION 12

The Committee recommends that insofar as it relates to national parks and nature reserves the Mining Act 1978 be amended to:

- require that exploration licences and mining leases are only granted subject to the condition that damage to the surface of the land and anything on the surface of the land (eg flora and fauna) is prevented or minimized and repaired; and

- enable the Minister for Mines to impose additional environmental conditions at any time.

TERM OF REFERENCE 3 - Procedures to be followed in reviewing exploration and mining proposals in national parks and nature reserves and in setting and enforcing appropriate environmental conditions.

RECOMMENDATION 13

The Committee recommends that applications for exploration licences over national parks and nature reserves and the assessment of exploration programs should be processed according to the procedures illustrated in figure 5.

RECOMMENDATION 14

The Committee recommends that applications for mining leases over national parks and nature reserves and the assessment of mining proposals should be processed according to the procedures illustrated in figure 6.

RECOMMENDATION 15

The Committee recommends that reports should be prepared by the holders of mining tenements over national parks and nature reserves at appropriate intervals describing the environmental management of their activities. Such reports should be forwarded to the Mines Department, Department of Conservation and Land Management and (when appropriate) the Department of Conservation and Environment.

RECOMMENDATION 16

The Committee recommends that:

. tenement holders over national parks and nature reserves be required, when necessary, to lodge bonds as a security against breach of environmental conditions; and

. Government allocate sufficient resources to enable adequate inspection and enforcement of the adherance to such conditions.

RECOMMENDATION 17

The Committee recommends that a technical committee be established as a matter of urgency to formulate guidelines for the assessment of exploration and mining proposals in national parks and nature reserves. The committee should consist of representatives from the Mines Department, Department of Conservation and Land Management and Department of Conservation and Environment, and be convened by the last named Department.

TERM OF REFERENCE 4 - Means of authorising access to national parks and nature reserves in order to mark out tenements.

AND

TERM OF REFERENCE 5 - Whether exploration in national parks and nature reserves without holding a tenement should be allowed, and if so under what conditions.

RECOMMENDATION 18

The Committee recommends that access to national parks and nature reserves for exploration and mining activities including access for the purpose of marking out a tenement should occur under only three circumstances:

. as authorized by a geoscientific survey permit; or

. in accordance with the terms and conditions of an exploration licence; or

. in accordance with the terms and conditions of a mining lease.

1. INTRODUCTION

In October 1985 the Government established a committee to receive submissions and make recommendations on the matter of exploration and mining activities in national parks and nature reserves. The Committee was established as part of an three-part response by Government to public concern regarding a proposal to establish a alluvial gold mine in the Hamersley Range National Park. The other two responses were, firstly to commence the preparation of a management plan for the Hamersley Range National Park, and secondly to amend the Mining Act 1978 to extend throughout the State the provisions now applying in the South-West Land Division and the Shire of Esperance and Ravensthorpe. In preparing this report, the Committee has developed its recommendations on the basis that this amendment is adopted.

The Committee on Exploration and Mining in National Parks and Nature Reserves consists of:

Dr John Bailey (Chairman)	Member of the Environmental Protection Authority
Mr Chris Haynes	Director of National Parks, Department of Conservation and Land Management
Dr Phil Playford	Director of the Geological Survey, Mines Department.

The Committee first met on the 22 November 1985, and its terms of reference were approved in February 1986. The agreed terms of reference are as below:

The Committee is to report on:

1. Appropriate Government policy concerning exploration and mining activities in national parks and nature reserves.

2. Whether existing provisions of the Mining Act and Regulations governing conservation and rehabilitation in national parks and nature reserves are adequate to control environmental aspects of exploration and mining activities.

3. Procedures to be followed in reviewing exploration and mining proposals in national parks and nature reserves and in setting and enforcing appropriate environmental conditions.

4. Means of authorising access to national parks and nature reserves in order to mark out tenements.

5. Whether exploration in national parks and nature reserves without holding a tenement should be allowed, and if so under what conditions.

Submissions relating to these terms of reference from interested members of the public, Government departments, and conservation and mining organisations were called for on 22 February 1986.

The terms of reference can be seen to relate on the one hand to activities covered by the Mining Act 1978 and on the other hand to national parks and nature reserves. Thus the exploration for and the development of petroleum resources are not included, nor are exploration for and mining of minerals in areas of conservation value other than national parks and nature reserves. Conservation areas excluded from consideration include conservation of flora and fauna and landscape management priority areas in State Forest. Also excluded are areas reserved for the conservation of flora and fauna that are either unvested or vested in local authorities; such areas are known as nature reserves only if they are vested in the National Parks and Nature Conservation Authority (NPNCA).

The Committee's considerations and recommendations have therefore been confined to exploration and mining activities subject to the Mining Act 1978. However, we believe that the principles behind our recommendations should also be considered by Government for application to the petroleum industry with respect to national parks and nature reserves. Moreover, our

recommendations only apply to national parks and nature reserves (including marine parks and marine nature reserves) that are vested in the NPNCA. However, the Committee also sees some merit in Government considering the application of the principles behind our recommendations to other areas of conservation value.

2. BACKGROUND

2.1 NATIONAL PARKS AND NATURE RESERVES IN WESTERN AUSTRALIA

2.1.1 THE ROLE AND VALUES OF CONSERVATION RESERVES

National parks and nature reserves are two categories of what can broadly be described as conservation reserves. The World Conservation Strategy (International Union for the Conservation of Nature and Natural Resources (IUCN) 1980) defines conservation as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations". Implicit in this objective of 'maintaining the potential for meeting future needs", is the maintenance of the earth's natural diversity. Conservation reserves are therefore areas of land and water that are set aside for the protection of nature and natural resources, thus ensuring that natural diversity is maintained.

Conservation reserves fulfil several roles including: (1) the protection of an appropriate range of ecosystems representative of the different types of ecosystems present in the State; (2) the protection of any unique ecosystem; and (3) the protection of significant landforms. In so doing, the diversity and integrity of plant and animal communities within natural ecosystems is conserved for present and future use, and the genetic diversity of species on which their continuing evolution depends is safeguarded. This utilitarian concept of conservation reflects an interest in preventing the extinction of species and argues the benefit of maintaining genetic diversity to agriculture, fishing, forestry and medicine. Conservation reserves also perform other incidental functions, as in the case of reserves preventing dune encroachment or protecting the yield and quality of water catchments.

In addition to the above which might generally be described as ecological arguments, the development of a conservation reserve system is also based on the following philosophical or ethical arguments. Natural areas and the species they protect are of great aesthetic value, providing a source of inspiration and pleasure for people. The recreational and tourism activity that is based on the natural environment is not only of great social and emotional benefit but it is also of increasing economic benefit to our

State. Conservation reserves, therefore, in addition to conserving representative environments, have the role of protecting and maintaining environments of outstanding scenic or landscape value. Related to this benefit is the concept of wilderness which is gaining support within the community. Many people have a desire to retain areas that are accessible to the public but where it is possible to experience the natural environment without obvious evidence of any technological impact.

Conservation reserves also perform important scientific and educational functions. They provide significant opportunities for teaching in relation to nature and the environment, and cater for scientific research and environmental monitoring by acting as benchmarks against which the impacts of technological man on the environment can be measured.

These areas can also contribute to the protection of historical and cultural assets of the State by conserving features of significance related to earlier habitation and Aboriginal people.

The immensity of the responsibility for conserving natural areas through reservation in this State is evident when the following facts are considered:

- the State has one third of Australia's land area, and also one third of its coastline;

- Western Australia has some 3 400 islands, many of which are of crucial importance for the preservation of terrestrial species that have disappeared from the mainland;

- Western Australia has the second highest number of biophysical regions of all States;

- the most recent assessment shows that some 45% of the rare and threatened species of flora in Australia are from this State; and

- there is an exceptionally high degree of endemism in the State's wildlife; 2 472 or 61.8% of floral species in the southwest are endemic.

2.1.2 DESIRABLE FEATURES OF A RESERVE SYSTEM

As indicated, one of the primary functions of conservation reserves is to ensure that a representative sample of every significant habitat and community within the State is acquired and protected through reservation. Representativeness is also required at the biogeographical level. Reservation is justified to ensure that the essential features of every major biogeographical region are sampled and included in the conservation estate.

Aesthetic and scientific considerations demand that the sample include areas of geomorphic diversity, including representative samples of coastline, river systems and geological features.

Of further consideration is the need for reserves to conserve key areas in the lifecycle of migratory animals, notably wading bird species, when reservation of any particular area would not be adequate to ensure their survival. These reserves should include areas such as breeding grounds or areas where animals congregate. Australia as a signatory nation to several international treaties has clear responsibilities in this regard.

Related to representativesness is the issue of size. Size is the most important determinant of the effectiveness of a conservation reserve. The larger a reserve the more diverse the plant and animal communities that it can support.

The general principle is that the size of the reserve should be sufficient to ensure that the ecosystems, plant or animal species being conserved are self-sustaining. The genetic effects of small population sizes as a result of inadequate reservation are well understood. The consequence is that of extreme sensitivity to normal environmental variables and of eventual decline and degeneration to extinction. Obviously the size of a reserve is dependent upon the specific purpose of reservation and the characteristics of the land involved, and there is therefore a need for precise information on habitats and population dynamics when determining areas required for reservation.

Reserves should also be large enough to enable them to withstand the deleterious effects of surrounding land uses. Where public access is encouraged or facilitated, reserves should also be large enough to withstand the impacts of human use without any degradation of the resource.

Again, the principle is that the larger a reserve, the greater is the potential for regeneration or rehabilitation following any major impact that may occur, such as wildfire. In simple terms a larger reserve is always more desirable from a conservation viewpoint than a smaller one.

Related to the issue of size is that of compactness. It is desirable that the ratio of boundary length to reserve area should be low enough to minimise the negative impacts of surrounding land uses. These "edge effects" include negative impacts such as fire, invasion of weeds and feral animals, poisons, fertilisers, and changed drainage patterns. Reserve management is also more effective as far as the impact of public access is concerned when reserves are "compact". A further consideration is the existence of alienated enclaves within reserves which can seriously jeopardize reserve management.

2.1.3 RESERVE CATEGORIES

There is an internationally recognised categorisation of conservation reserves (IUCN 1978). The eight categories are as follows:

I Scientific reserve/strict nature reserve;

II National park;

III Natural monument;

IV Nature conservation reserve/managed nature reserve/wildlife sanctuary;

V Cultural landscape/heritage landscape;

VI Resource reserve;

VII Natural biotic area/anthropological reserve; and

VIII Multiple use management area/managed resource area.

For the purposes of this report three of these IUCN categories are specifically relevant: Category II national park; Category I scientific reserve/strict nature reserve, and Category IV nature conservation reserve/managed nature reserve/wildlife sanctuary.

The international criteria for selection and management of national parks includes the following (IUCN, 1978):

"National parks are relatively large land or water areas which contain representative samples of major natural regions, features or scenery of national or international signficance where plant and animal species, geomorphological sites, and habitats are of special scientific, educational, and recreational interest. They contain one or several entire ecosystems that are not materially altered by human exploitation and occupation. The highest competent authority of the country has taken steps to prevent or eliminate as soon as possible exploitation or occupation in the area and to enforce effectively the respect of ecological, geomorphological, or aesthetic features which have led to its establishement".

This international definition is consistent with the statement of the Fourth Ministerial Conference on National Parks in Australia in 1970, when all states were represented in establishing an Australia-wide definition. An analysis of both statements supports the conclusion that there are the following desirable components to national parks:

. large area;

. relatively unspoilt by human use;

. protected from exploitation; and

. available for public use.

Size is an important consideration in defining a national park. Some definitions make statements regarding size which are subjective such as a "relatively large" area.

Although it is difficult to set a precise standard for size, it is clear that a national park should be large enough to sustain public use, and of a configuration which enables it to withstand pressures of surrounding land uses. By implication it should therefore be large enough to contain a diversity of natural features and be self-sustaining as far as natural systems are concerned.

There is a common misperception that a specific feature, such as a scenic landmark or rare habitat is all that needs to be reserved and managed as national park. It is clear from the foregoing that it is desirable that the land systems in which such a feature is placed should be reserved to enable the feature to be adequately managed and protected.

Ecological criteria such as those which follow are of importance in determining the suitability of an area for reservation as national park:

- the degree to which the area represents its surrounding region (ie representativeness);
- diversity of ecosystem types contained in the area;
- the naturalness of the area; and
- its effectiveness as a conservation unit (ie size, shape and location with repect to other land use activities, and degree of protection).

National parks are differentiated from other conservation reserves, nature reserves in particular, in that in addition to having the objective of conserving the natural environment, it is intended that they cater for public use and appreciation. Recent studies in Australia (Ulph et al., 1980) have demonstrated the economic benefit to regional and state economies of

national parks through both employment creation and revenue generation in the area of tourism. The importance of the contribution of national parks and nature reserves in providing an attraction for tourists is often overlooked.

As indicated earlier, there are two categories of nature reserves within the system established by the IUCN. The management objectives for strict nature reserves are:

"to protect nature (communities and species) and maintain natural processes in an undisturbed state in order to have ecologically represenative examples of the natural environment available for scientific study, environmental monitoring, education, and for the maintenance of genetic resources in a dynamic and evolutionary state. Research activities need to be planned and undertaken carefully to minimise disturbance".

In the case of managed nature reserves the management objectives are:

"to assure the natural conditions necessary to protect nationally signficant species, groups of species, biotic communities, or physical features of the environment where these require specific human manipulation for their perpetuation. Scientific research, environmental monitoring, and educational use are the primary activities associated with this category".

In the Western Australian context both IUCN categories are relevant, as they represent definitional points at either end of a continuum. Where nature reserves are self-sustaining, natural processes are allowed to take place without human intervention or impact. However, there are also many situations in which management action is necessary to ensure that the objective of reservation is achieved.

Nature reserves are extremely variable in size, ranging from less than a hectare to many thousands of hectares. Many are less than adequate in terms of size and representativeness because the desire to conserve was preceded by exploitative activities. This means that in areas such as the wheatbelt and pastoral zone there are only small fragments of land in natural condition and they are of great importance to conservation.

Nature reserves are differentiated from national parks in that the level of public access is generally restricted.

2.1.4 STATUTORY DEFINITIONS OF NATIONAL PARKS AND NATURE RESERVES

The term national park is defined differently in various Acts.

The Land Act 1933 defines them by giving the title national park as a purpose of reservation.

The majority of such reserves were vested in the National Parks Authority and following the proclamation of the Conservation and Land Management (CALM) Act 1984, were vested in the NPNCA. However, this is not always the case for there are some reserves reserved for the purpose of national park which are vested in local authorities. The situation is further complicated by the fact that there are significant reserves which are in total, or form part of, what are known as national parks but are not reserved specifically for that purpose.

The CALM Act 1984 simply defines national parks as land that is vested in the NPNCA for that purpose. The Government is amending the Mining Act to make it consistent with this definition.

Nature reserves were previously defined by the Wildlife Conservation Act 1950 as any land reserved under the Land Act 1933 for conservation of flora and fauna.

There are over 1 100 such reserves. However, the CALM Act 1984 subsumed that definition and under that Act now defines them as land vested solely or jointly in the NPNCA for the conservation of flora or fauna or both.

However, under these arrangements there are now approximately 350 reserves with the purpose of conservation of flora and fauna, which are either unvested or vested in other than the NPNCA and are therefore technically not nature reserves under the CALM Act.

2.1.5 THE SYSTEM OF NATIONAL PARKS AND NATURE RESERVES IN WESTERN AUSTRALIA

There are a total of 53 national parks vested in the NPNCA with a total land area of approximately 4.5 million hectares. National parks range in size from 56 hectares to 1.5 million hectares. They are widely distributed (see map 1) but tend to be smaller and less consolidated in the South West Land Division.

There are about 750 nature reserves. The total land area of nature reserves is 9.9 million hectares. Again they are widely distributed with the largest number being in the South West Land Division; however the larger sized reserves are in the more remote areas of the State.

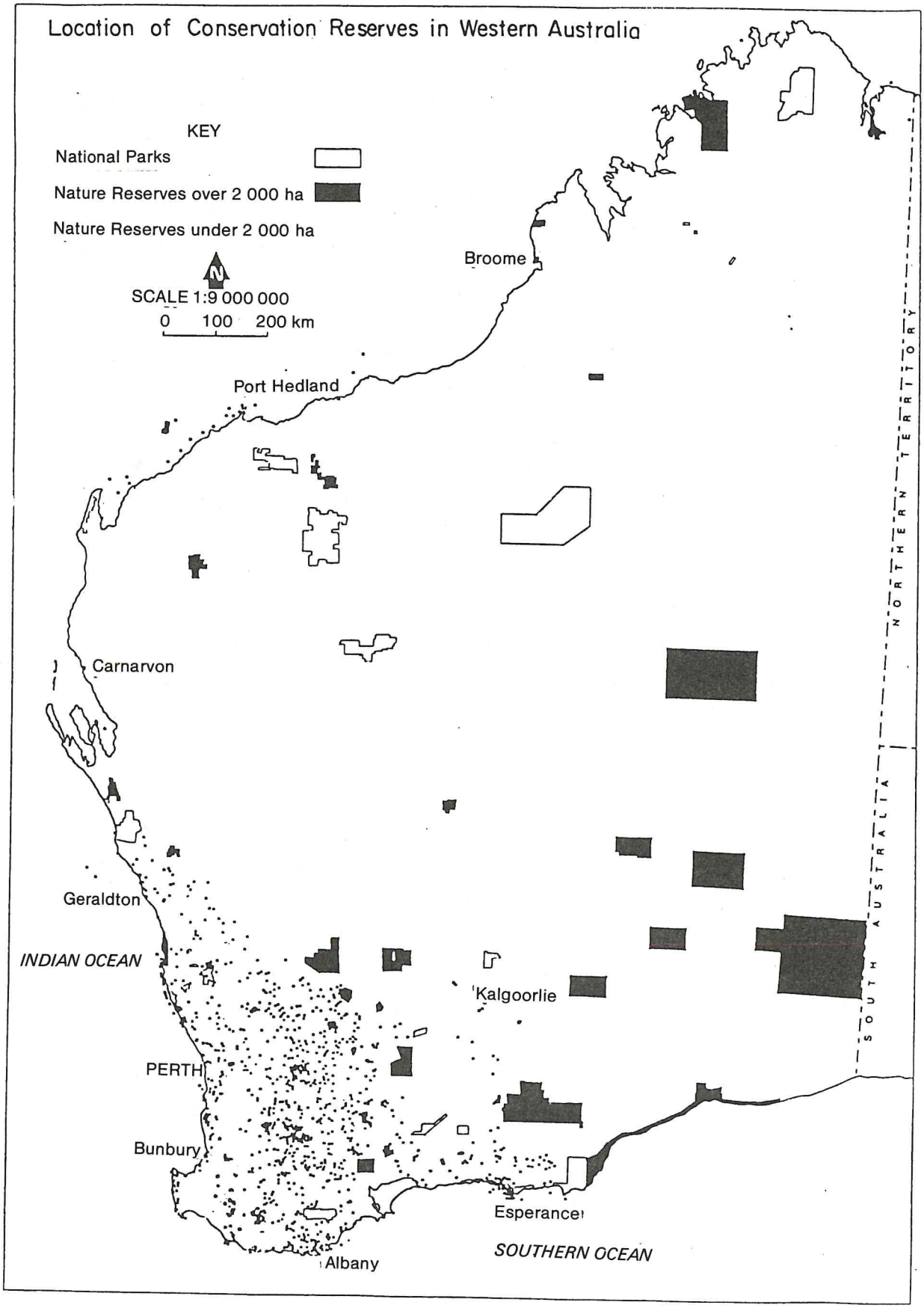
Although both national parks and nature reserves have been created over many years, the most significant attempt to create a comprehensive conservation reserve system occurred with the establishment of the Conservation Through Reserves Committee.

2.1.6 ENVIRONMENTAL PROTECTION AUTHORITY RECOMMENDATIONS FOR CONSERVATION RESERVES - A BACKGROUND

A brief historical background on the development of a representative system of conservation reserves in Western Australia is given here, to provide a perspective on the process of investigation and review which led to the development and progressive implementation of these recommendations.

The Western Australian Sub-Committee of the Australian Academy of Science Committee produced a report in 1962 entitled "National Parks and Nature Reserves in Western Australia". This report developed the rationale for a comprehensive conservation reserve system.

In December 1971 the Environmental Protection Authority (EPA) was established to, among other things "consider and initiate the means of enhancing the quality of the environment" (Environmental Protection Act 1971).



Map 1. Location of National Parks and Nature Reserves in Western Australia

The Environmental Protection Authority following the direction of the Academy of Science Report recognised that the established of an adequate conservation reserves system would be an important mechanism for achieving this objective. Accordingly it established a Conservation Through Reserves Committee (CTRC), which met for the first time on 15 February 1972.

To provide a framework for its consideration of reserve needs, the CTRC divided the State into 12 regions, or systems, each representing as nearly as possible a natural demographic entity.

In identifying reserve needs the CTRC established two main guidelines:

(a) to recommend adequate reserves to secure the conservation of representative biological and geomorphic types occurring in Western Australia, as well as features of special scientific significance;

and

(b) to recommend adequate areas of national parks (additional to those in (a) above, where necessary), to meet projected population growth, distribution, and mobility.

The report of the CTRC, titled 'Conservation Reserves for Western Australia - Report of the Conservation Through Reserves Committee to the Environmental Protection Authority (1974)' covered all systems but System 6 (the Darling Range) and System 7 (the Kimberley) and became known as the Green Book.

System 7 was given special attention, largely due to its remoteness and associated deficiencies in available information and was subsequently the subject of a separate Green Book, released in 1977.

System 6, because of the complexities resulting from the much closer subdivision of land and the range of interacting factors generated by the 77% of the State's population living in this system, was treated slightly differently. A System 6 Committee, supported by six specialist committees representing commercial and productive users, local government, urban and recreational planners and the tourist industry, was established by the EPA.

The Committee's report titled "The System 6 Study Report to the Environmental Protection Authority" and known as the System 6 Green Book, was released in 1981.

In each case the EPA sought public comments on the Green Books from the private and public sectors of the community. The Authority considered each of the CTRC and System 6 Committee recommendations along with all public and private submissions and other available information in the preparation of its reports to Government. These reports (of which there were four released in 1975, 1976, 1981 and 1983) were entitled 'Conservation Reserves for Western Australia - As Recommended by the Environmental Protection Authority', and became known as the Red Books.

The Red Book recommendations were, as indicated previously, an attempt within limits imposed by existing land use constraints and knowledge, to develop a system of reserves (primarily national parks and nature reserves) which would be representative of the range of biophysical environments present in Western Australia.

Given the constraints imposed by pre-existing land uses and disturbance, it is very difficult to actually achieve a representative reserve system. To approach this goal the proposed reserve system needs to be fully implemented. Even then, environments that are inadequately represented in the system will continue to be identified as our knowledge of the Western Australian environment becomes more complete.

2.1.7 STATUS OF IMPLEMENTATION OF PROPOSED CONSERVATION RESERVES

To date some 65% of the Red Book recommendations are considered to have been implemented (excluding the System 6 recommendations, Status Report DCE Bulletin No 131). This leaves a significant 35% yet to be fully implemented, indicating that the State does not yet have a fully representative system of reserves.

Of the recommendations not yet implemented, a number are well advanced toward implementation, others are awaiting land exchange, pastoral leases to expire, resolution of Aboriginal interests, or biological surveys before they can be progressed. A substantial proportion of the other outstanding

recommendations have not been implemented because of mineral resource issues that remain unresolved. Significantly all outstanding recommendations in System 7, the Kimberley region, come into this category. However, the issue is by no means confined to the Kimberley region.

It is also to be noted that the CTRC recommendations were formulated some years ago and the information on which they were based has been superseded. There is therefore need for a detailed review of the recommendations in the light of more recent knowledge. This is illustrated by the fact that there have been some additional national parks proposed which were not recommended by the CTRC, a prime example being the Bungle Bungle National Park in System 7.

2.2 EXPLORATION AND MINING INDUSTRY IN WA

2.2.1 THE VALUE OF THE MINING INDUSTRY IN WA

Mining in Western Australia probably commenced at least 40 000 years ago when the Aborigines first arrived here and began quarrying stone for use as tools and weapons, and ochre for decorative use. The largest known mining excavation by the Aborigines was at Wilgie Mia near Cue, where a large cavern was excavated over many thousands of years to obtain red ochre.

The mining industry in colonial Western Australia had its beginnings in the Murchison River area north of Geraldton. Lead was found by the explorer A C Gregory in the river bed in 1848, just 19 years after the colony was first founded, and production began from the Geraldine Mine at this site in 1850.

However, it was the discovery of gold at Halls Creek in 1885 that really fired people's imagination. Even though the Halls Creek gold rush was short-lived, it was responsible for gold prospectors searching throughout the State, leading to rich gold discoveries in the Pilbara, Murchison, and Southern Cross districts over the next 5 years. Then came the huge discoveries at Coolgardie and Kalgoorlie in 1892-93, the news of which spread around the world, causing a rush of immigrants from both overseas and the eastern colonies of Australia.

Gold production fell steeply from 1903 to 1930, but there was a sharp revival during the depression, when many of the unemployed moved to the fields to try their luck. However, the spectacular rise in mineral production from the mid 1960s dwarfed anything seen before. This was associated primarily with the development of huge iron-ore deposits in the Pilbara, and also with rich finds of bauxite, nickel, and petroleum. These developments again brought about a steep increase in population, expansion of Perth and its suburbs, and much material wealth to the populace.

Gold dominated mining in Western Australia for more than 70 years until the mid 1960s. The only significant mineral production other than gold up to the 1960s was coal from Collie, production beginning there in 1898. The Rough Range oil discovery at the end of 1953 was the most exciting event in exploration since Kalgoorlie was found in 1893, and it heralded the modern phase of exploration in this State. A year later, large mineral-sand deposits were found near the south-west coast at Capel, and this was followed in successive years by the commencement of bauxite mining in the Darling Range and the discovery of the State's first commercial oilfield, at Barrow Island. With these discoveries, the modern mineral industry was firmly established.

Figure 1 shows the way in which the pre-1966 mineral production has been dwarfed by the very large increases since then. The main turning point occurred in 1966, with the commencement of production from the giant iron-ore deposits of the Pilbara, and the discovery of both the Kambalda nickel deposits and the Dongara gasfield. Figure 1 shows that the value of production of the major mineral commodities, led by iron ore, has increased dramatically since then. The early 1970s also saw sustained growth in the production of nickel, alumina, and heavy-mineral sands. Exploration activity was further stimulated by discoveries of major gas reserves on the North West Shelf in 1970-73, uranium at Yeelirrie in 1973, and diamonds at Ellendale and Argyle in the late 1970s.

Primary production from mining and agriculture has long been the mainstay of the Western Australian economy and especially of its exports (figure 2 and 3). In 1960 the value of agricultural production was about 7 times that of

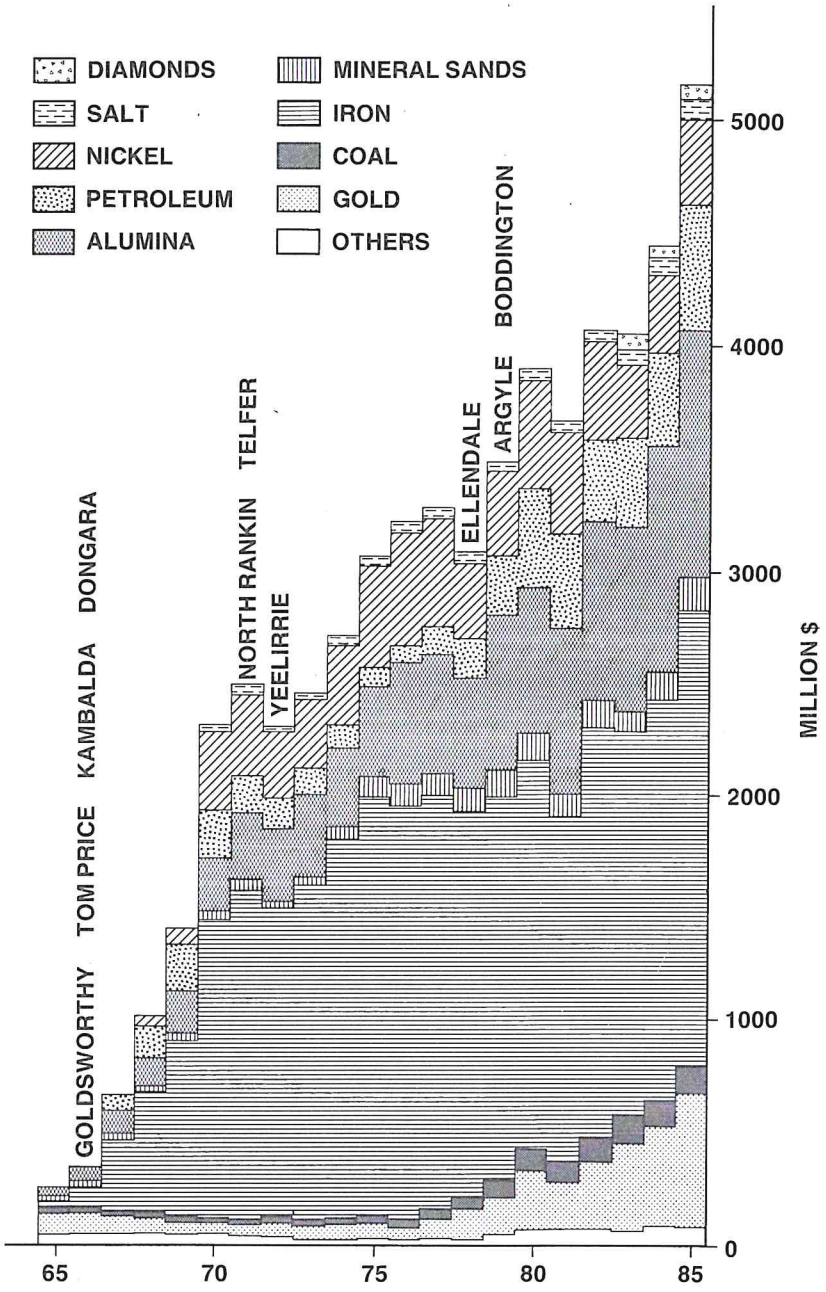


Figure 1. Mineral production value in Western Australia, adjusted to 1985 dollars, and principal turning points in the industry, 1965-1985.

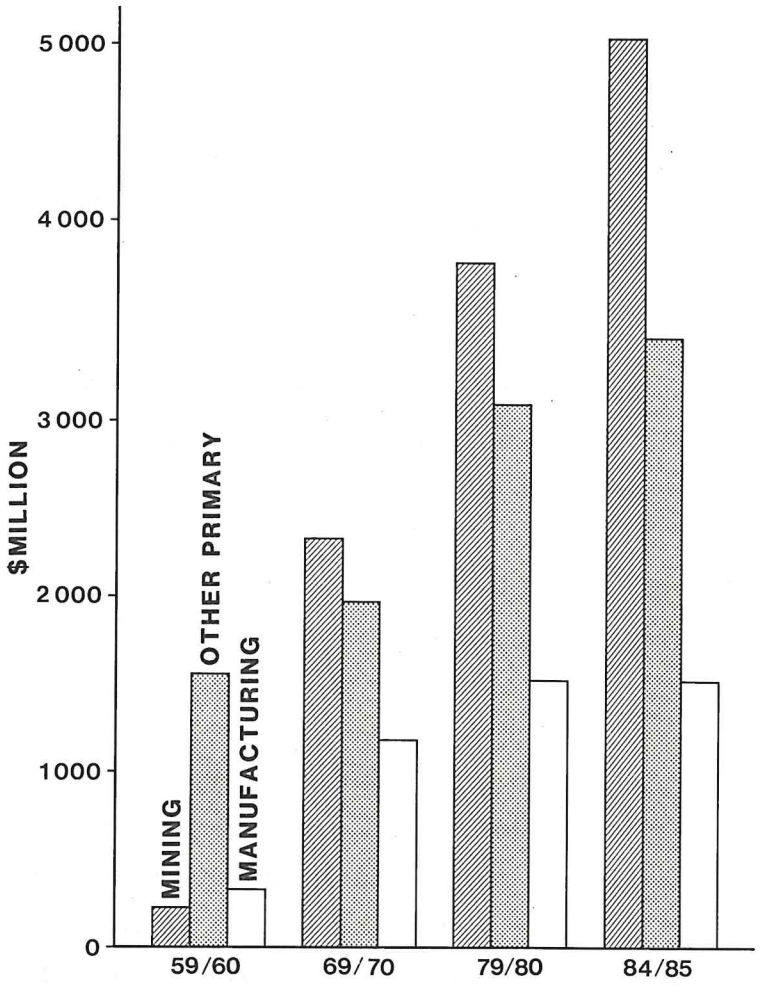


Figure 2. Production value of principal commodities, Western Australia, adjusted to 1985 dollars.

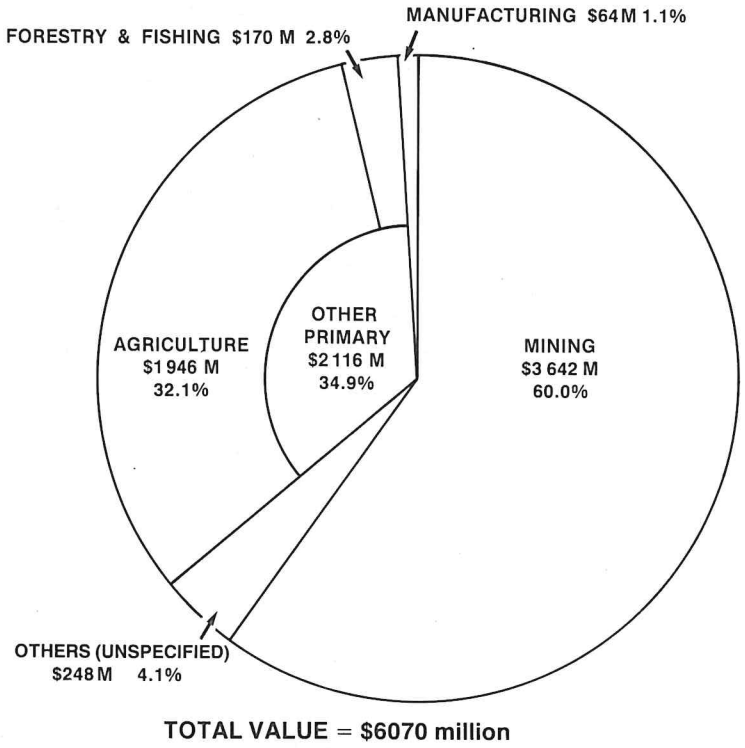


Figure 3. Comparative overseas exports, 1984/85, Western Australia.

mining. Today the gross value of mining is ahead of that of agriculture, and with the steep increase expected in mineral production, income from mining is likely to further outstrip agriculture during the second half of the 1980s.

The value of mineral production in Western Australia in 1985 as reported to the Mines Department was $5 170 million, and the quantities and values of individual commodities are shown in table 1.

Mining currently (1984/85) contributes 60% of the State's exports (figure 3). This is followed by other primary industry at 34.9% and manufacturing at 1.1%.

Mining is a capital- rather than labour-intensive industry. Enormous capital investment is needed for development, but only a small workforce is required once construction is completed. Approximately 28 500 people are directly employed in mining in this State, constituting 4.4% (1985) of the work force. This is the highest proportion of the population of any State engaged in mining. However, although employment in mining is growing steadily, it must be accepted that this industry will never be a major direct employer of labour. The principal value of the mining industry lies with other factors such as the generation of export income and the stimulation of the other industries, resulting in a multiplier effect on employment.

It is estimated (Department of Mines, 1986) that every 100 mining jobs generate a further 180 jobs elsewhere in the community. Furthermore, it is estimated (Department of Resources Development, 1980) that every $1 of mineral sales leads to revenue of between $0.30 and $0.60 in other sectors of industry. The benefits of secondary processing are illustrated by the much higher multiplier effect in the bauxite-alumina industry, which is estimated to be 4.9. In other words, for every 100 persons engaged in bauxite mining and alumina refining there are 390 jobs generated elsewhere.

Mining, as Western Australia's largest industry in terms of monetary value, is clearly of major importance to the State economy. It has been primarily responsible for the very large economic expansion of the last 20 years, during which period Western Australia's development has been well ahead of

Table 1. Showing production and value of principal minerals in Western Australia, 1985

MINERALS	PRODUCTION	VALUE $ million
Iron ore	88 670 739 t	2 030.00
Alumina	5 419 623 t	1 098.15
Gold	41 196 kg	605.62
Petroleum — oil	1 207 875 kL	318.72
— gas	2 226 409 10^3m^3	229.95
Nickel (conc.)	483 207 t	379.14
Heavy minerals	1 718 842 t	150.01
Coal	3 785 977 t	119.53
Salt	4 804 185 t	95.92
Diamonds	7 070 062 carats	64.37
Zinc (conc.)	51 977 t	14.82
(by product)	3 813.5 t	4.15
Copper (conc.)	33 743 t	6.97
Cobalt	508 t	9.63
Tin	458 t	9.22
Silver	33 609 /5 kg	8.78
Gypsum	451 765 t	5.31
Tantalite	108 t	4.48
Platinoids	571 kg	3.79
Others		11.41
	TOTAL	5 169.97

that of other Australian States. Growth in employment in the period 1971 to 1983 was nearly twice the national average, and similarly the growth of population and Gross State Production in WA were above those in other States. Although this State still has only 9% of Australia's population, the strength of our mining industry is such that in 1984/85 the State accounted for 22% of the country's mining production and 28.4% of its mineral exports.

2.2.2 MINERAL EXPLORATION

A strong and vigorous exploration industry is essential to the future well-being of the mining industry. As resources are mined, new deposits must be found and proved up to enable production to continue and markets to be supplied.

As technology develops new products or processes, different minerals are required and new orebodies to supply these minerals need to be found. Areas that were previously explored for one particular commodity may well need to be explored again for some newly required mineral. Thus, many areas explored for nickel in the early 1970s are now being re-explored for gold.

In other cases the technology used to explore for particular types of mineral improves, and previously explored areas may need to be re-assessed using the improved methods.

Mineral exploration is a highly skilled, demanding, high-risk business. The average cost of finding an economic deposit in Australia over the past 10 years is about $90 million. For the explorer spending the money, if success is not achieved, almost all the investment is lost. Mineral deposits are few in number and hard to find. As a general rule, of every 1 000 exploration prospects reviewed, 100 require detailed exploration, 10 are drilled, and one becomes a mine.

Western Australia has for many years attracted the largest share of the expenditure on mineral and petroleum exploration in Australia, as illustrated for minerals in figure 4. This is because the State is believed to have the best overall prospects for future mineral and petroleum discoveries, and successive State Governments, through the Mines Department, have adopted progressive policies designed to give maximum encouragement to explorers.

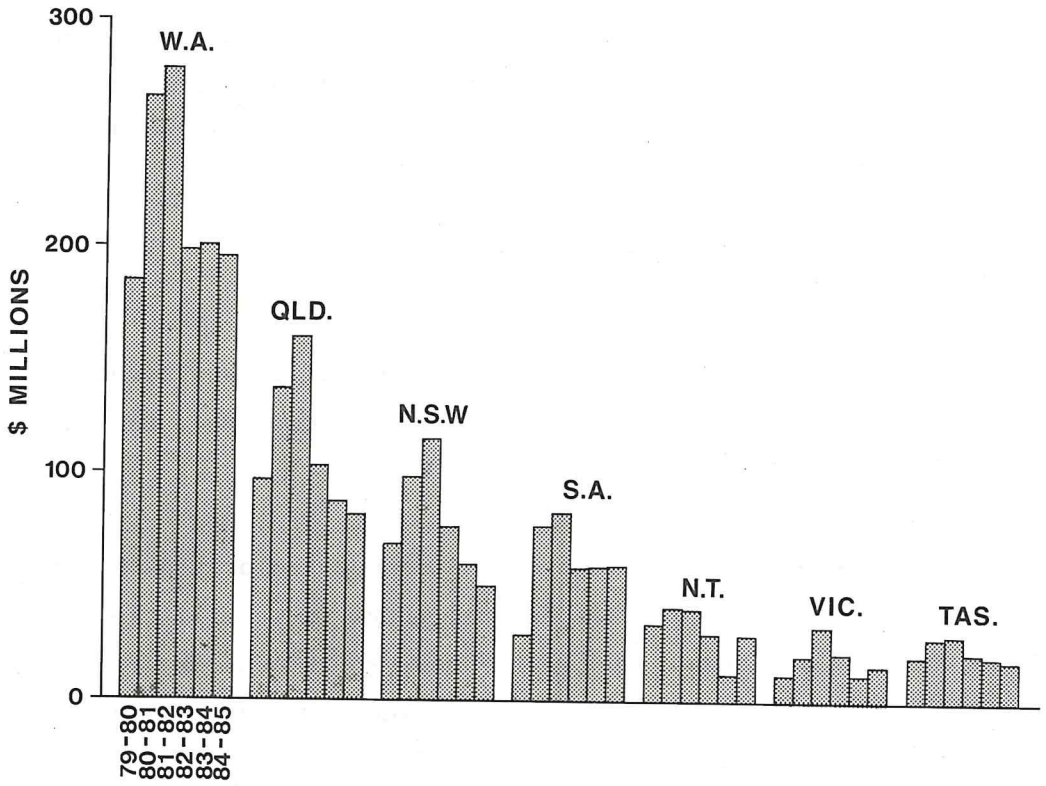


Figure 4. Mineral exploration expenditure in Australia, adjusted to 1985 dollar values.

Exploration expenditure (excluding petroleum exploration) for 1984/85 in WA was $188.7 million. This expenditure is of particular significance to the State's economy as much of it is spent on goods and services in the more remote areas of the State where there are few alternative economic activities.

As at June 1986, an area of 17 million ha in WA was subject to exploration tenements, representing 5% of the State. However, only 356 000 ha was subject to mining leases, representing 0.14%.

These figures clearly demonstrate the differences in the requirements for exploration and mining. Exploration companies initially need access to large areas, which are progressively reduced as more detailed data are obtained about any mineral resources that may be present.

2.2.3 PHASES OF EXPLORATION

Mineral exploration can be divided into a number of phases according to the area of land involved, the exploration techniques employed, and the level of disturbance caused to the environment.

In the initial phase (often called reconnaissance exploration but referred to as geoscientific survey in this report) there is very little if any impact on the land surface or the biota; however, access is often required to very large areas or even entire regions. The procedures used include remote sensing, geological mapping, geophysical surveys and geochemical sampling. The impacts that do occur are limited to the collection of small rock or soil samples and the effects of the form of access used (i.e. foot, vehicle, or helicopter).

The results of this work are then used to identify target areas for more intensive exploration. This phase of exploration, often called the follow-up phase, involves more detailed mapping, sampling, and geophysics over the target areas. Some areas may then be tested further by drilling or trenching if initial results warrant it. It is at this stage that significant ground

disturbance can occur as a result of the need for access tracks and drill pads. The use of heavy vehicles and earth-moving equipment for this type of exploration can also result in damage to the vegetation and soil. The number of people involved increases and contractors are often employed. Unless they are well briefed and adequately supervised, there can be added impacts resulting from indirect activities such as fires, incorrect rubbish disposal, and in some cases illegal activities such as shooting and vandalism.

The final stage of exploration is the proving-up phase, in which additional data on the extent and nature of the mineralization are obtained. These data are needed to enable mine planning and feasibility studies to be undertaken. The nature of the particular orebody will control the extent and type of work required. In general terms, detailed closely spaced drilling, test pitting, bulk-sample collection, and perhaps trial mining will be required. Although the impacts on the land surface can be major, at this stage they will be limited to very small specific areas, and will only occur on the rare occasions that exploration is successful.

2.2.4 ENVIRONMENTAL IMPACTS OF MINING

The environmental impacts of mining operations are variable, and depend upon a number of factors, some of which are discussed below. It is, however, possible to minimise many of the impacts through sensitive and careful mine planning and design, strict environmental management, and post-mining rehabilitation. Mining is generally only a relatively short term land use, and the mined areas can in some cases be returned to their former use with only minor changes to topography and vegetation.

The disturbance caused by actual mining will vary according to the site, nature and location of the orebody. Underground mines can result in very little surface disturbance. On the other hand, the development of near-surface deposits can result in considerable disturbance and necessitate the removal of all vegetation and soil. However, such mining operations can also be undertaken in a progressive manner, with the mined areas being recontoured and rehabilitated.

With properly planned rehabilitation, it is usually possible to re-establish much of the pre-existing ecosystem; however, in many environments it will take considerable time for the plant and animal communities to return to a situation that is close to the pre-mining condition.

The development of large deposits by open-cut techniques is by far the most disruptive form of mining, as it can result in very large open pits with associated waste rock dumps. It is generally not economically viable to refill such pits at the completion of mining, and there are often very few opportunities for progressive rehabilitation. Such mines can, however, still be rehabilitated to the extent of shaping of waste dumps and pit areas to blend with the surrounding topography. The establishment of an indigenous vegetation cover on the reshaped areas can provide protection against erosion and may, with time result in the mined area developing an ecosystem similar to that present before mining.

Mining projects also cause impacts as a result of the infrastructure needed to support the mining operation.

Facilities such as roads, railways, townsites and treatment plants can often result in greater areas of disturbance than the mine itself. However, there is a degree of flexibility in the location of infrastructure that is not possible with the mine itself.

In the case of mineral-resource development on conservation reserves, it should normally be possible to locate towns and processing facilities outside the reserve in question, while transport corridors can be located in areas of least biological or scenic value. Areas used for infrastructure within the reserve may be rehabilitated at the completion of the project or, if suitable reused, as access, accommodation, or recreation facilities for park visitors.

Mining developments can also result in additional indirect impacts on conservation reserves through the increased population of the mine workforce and their families. These indirect impacts include a wide range of concerns

common to all parks and reserves subject to human recreational usage. They can occur even when the mining development is outside the park or reserve. However, it is possible to control such adverse impacts through increased reserve management.

Although there have been no such developments to date in Western Australian conservation reserves, any developer could be expected to assist with the management of the reserve by adequately briefing its workforce and providing infrastructure and financial support.

3. EXISTING EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

3.1 MINING LEGISLATION IN WESTERN AUSTRALIA

In Western Australia, as in other Australian states, mineral ownership is vested in the Crown, apart from the rights to minerals (excluding precious metals) on freehold land alienated before 1899, which are retained by the landholder. Mining and exploration were originally controlled under a number of acts, but it was found during the 1890s gold-rush that these were no longer appropriate, and consequently a comprehensive Mining Act was passed in 1904, based largely on the equivalent Victorian legislation. This Act served the State well until the major expansion in mining and mineral exploration during the late 1960s and 70s, when it become apparent that a new act, more atuned to the modern mining industry, was needed. This led to enactment of the Mining Act 1978, proclaimed in 1982. An inquiry into operation of this Act was conducted in 1983, and this led to the drafting of some legislative amendments which were enacted in January 1986.

The basic precept of the Mining Act 1978 is that of Crown ownership of minerals. The Act seeks to encourage the discovery and development of the State's mineral resources by awarding the rights to explore and mine minerals to individuals or companies. Such awards are conditional on meeting specific work-expenditure requirements and reporting the results. There are time limits on the period for which areas can be held, and a clear distinction is made between exploration and production tenements.

The Mining Act includes a number of provisions relating to environmental matters, including rehabilitation, that apply to each type of tenement irrespective of the basic land tenure over which the mining tenement has been granted. These provisions can be summarised as follows:

. Prospecting Licence

The Minister or Warden may prescribe conditions on the licence under Section 46. In addition, this section provides for the filling in or making safe, of all holes, pits, trenches and other disturbances if they in the opinion of the State Mining Engineer endanger the safety of any person or animal;

. Exploration Licence

Under Section 57(1) the Minister may grant a licence on such terms and conditions as he may determine.

Section 63(1)(b) regulates for the filling in or making safe of all holes, pits, trenches and other disturbances if they in the opinion of the State Mining Engineer endanger the safety of any person or animal;

. Mining Lease

The Minister may grant a mining lease on such terms and conditions as he considers reasonable, including conditions to protect the environment and rehabilitate mined areas.

Furthermore, under Section 84 of the Act, the Minister may also impose any reasonable conditions at any time "for the purpose of preventing or reducing, or making good, injury to the surface of the land". In other words, rehabilitation conditions may be added throughout the life of a mine to meet changing circumstances and conditions, and in particular to take advantage of updated knowledge and experience.

In addition, condition 10 included in every instrument of lease requires the lessee to cause all holes, pits, trenches and other disturbances to the surface of the land made whilst mining and which, in the opinion of the State Mining Engineer, are likely to endanger the safety of any person or animal, to be filled in or otherwise made safe;

. General Purpose Lease

The provisions of Section 84 apply; and

. Miscellaneous Licence

Section 91(2) permits the Warden to impose terms and conditions when issuing the licence.

In addition to these basic provisions, the Mining Act also establishes procedures for the granting of conditional tenements on particular classes of land in Western Australia.

The Mining Act provides that land set aside as public reserves, including national parks and nature reserves, is open for mining, including exploration, subject to certain provisions.

Division 2 of the Act sets out particular classes of reserve land and the procedures that apply to the application for the possible granting of mining tenements upon such land. In general, the Act provides that before a tenement is granted, either the concurrence or recommendation of the Minister with legislative responsibility for any reserve land involved is required. Ministerial concurrence is required in the case of A-class reserves and national parks in the South-West Land Division and the Shires of Esperance and Ravensthorpe, state forests, and timber reserves. In the case of mining and general purposes leases in these national parks and A-Class reserves, Parliamentary approval is required before the leases can be granted.

For other conservation reserves, the recommendation of the Minister for Conservation and Land Management is required before the Minister for Mines can approve mining. However, the Government is in the process of amending the Act so that the procedure applying in the South West of the State with respect to national parks and A-class nature reserves will apply throughout the State.

In practice, these procedures permit the authority in whom the reserve land is vested to have specific conditions applied to any mining tenement granted on the reserve. Such conditions can include restrictions or prohibitions on the type and manner of exploration or mining activity, as well as detailed environmental and rehabilitation requirements.

In addition to the specific conditions that may be recommended, the Act also provides under Section 26 for conditions to be imposed in respect to mining tenements on reserve land to ensure that "injury to the surface of the land" is made good, if necessary for the costs of such work to be recovered from the tenement holder, and for the lodging of securities with respect to operations on public reserves. The power of forfeiture for non-compliance with any of the covenants or conditions, and for the imposition of fines for breaches of the Act, are also included.

Resource development projects that have complex interactions with a range of statutes or involve considerable infrastructure requirements and which may include secondary processing, are usually developed under the umbrella of special State agreement acts. These acts facilitate the development and operation of the projects, as well as providing integrated State control procedures.

The acts spell out the entitlements and obligations of both the developers and the State, and can override existing State statutes such as the Mining Act and CALM Act.

3.2 EXISTING EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

3.2.1 EXPLORATION

There are presently some 1.2 million ha of national parks and nature reserves covered by 137 exploration titles (and a small number of prospecting licences). This represents 7.0% of the total area of exploration tenements and 8.3% of the total area of national parks and nature reserves in Western Australia, involving 18 reserves.

These tenements have been granted over many years and therefore the conditions applied to them vary according to the policy at the time they were granted. The conditions applied to the most recently granted exploration tenements in a national park are as follows:

". All costeans and other disturbances to the surface of the land made as a result of exploration activities being left in a safe condition; and if directed by the District Mining Engineer, being back filled within 12 months of the licence being relinquished.

. All waste materials, rubbish, abandoned equipment and temporary buildings being removed from the licence prior to or at the termination of operations.

. Compliance with the provisions of the Aboriginal Heritage Act, 1972 to ensure that no action is taken which is likely to interfere with or damage any Aboriginal site.

- The licensee refraining from establishing any camp, fuelling depot or similar on the licence area unless the site and access have received prior approval of the Regional Manager, Department of Conservation and Land Management (Regional Manager).

- The licensee submitting a written proposal for rehabilitation of proposed work to the Director General of Mines (Director General) and the Executive Director, Department of Conservation and Land Management (Executive Director) and receiving approval thereto prior to the construction of any track or disturbance of any ground.

- The licensee rehabilitating camp sites to the satisfaction of the Executive Director and the Director General.

- The licensee giving advance notice of the cessation of exploration activities to the Regional Manager and Director General and if requested arranging for an inspection by the Regional Manager or his nominee.

- The Executive Director, The Director General and their servants, agents or nominees having the right at all reasonable times to enter upon the licence area to inspect the work being carried out thereon.

- All exploration sites being kept free from any rubbish and being left in a clean and tidy state and where it is inappropriate to remove garbage this should be adequately buried away from water courses and the natural surface reasonably restored.

- No soap, detergent or other foaming agents being used in any water course or rockhole nor any rubbish or other polluting material being deposited in any water course or rockhole.

- No interference with vegetation along the margins of any water course or rock pool.

- Firearms not being used in the National Park.

- Domestic animals not being taken into the National Park.

. Strict fire control being observed, with no fires apart from camp cooking fires.

. The licensee complying with and ensuring that all persons operating in the licence area are aware and comply with the provisions of :

(i) the Conservation and Land Management Act, 1985 and the Regulations thereunder; and

(ii) the Bush Fires Act, 1959 and the Regulations thereunder; and

(iii) the Wildlife Conservation Act, 1950 as Amended and the Regulations thereunder; and

(iv) the Aboriginal Heritage Act, 1972 and the Regulations thereunder.

. Such further conditions for protection of the environment and rehabilitation of the land as the Minister for Minerals and Energy may from time to time impose."

At present the task of ensuring that these conditions are complied with, rests jointly with the staff of the Mines Department and CALM. The presently limited staff resources available in many regions make adequate supervision very difficult. The Mines Department is currently recruiting environmental management staff and will be more capable of sharing some of the responsibility for adequate supervision with CALM staff in the near future.

3.2.2 MINING OPERATIONS

At present there are only three mining operations active within national parks and three on nature reserves. There are, however, additional mining leases on such areas, where mining operations have not yet been approved.

Of the three operations in national parks, all pre-dated the creation of the park in question, and all are small-scale limestone quarries. There are two in the Neeribup National Park, one of which is due to close in 18 months, and one in the D'Entrecasteaux National Park.

The operations in nature reserves consist of small gypsum-mining operations on two nature reserves in the wheatbelt, and one major mineral-sand-mining operation partly in a nature reserve at Eneabba.

TABLE 3

SUMMARY OF PUBLIC SUBMISSIONS

TERM OF REFERENCE 1 — APPROPRIATE GOVERNMENT POLICY ON EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

SUBMISSION NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	TOTAL
Mining prohibited in national parks and nature reserves				●	●	●		●	●	●	●		●	●	●		●	●	●	●			●				●			●	●		●	●	●		●	●		●				●			●	●				●			●			●	●	●	●						●			●	●			36
Mining restricted to proposals of national/strategic importance																●																●														●																				●						●		5
Multiple land use – parks open except for some exclusions		●					●														●			●	●	●			●										●		●	●							●	●	●			●		●	●					●	●		●									19
Exploration prohibited in national parks and nature reserves					●	●			●	●	●		●	●	●		●	●	●				●				●			●	●			●						●				●								●			●			●	●	●	●									●	●			26
Exploration restricted (allow proposals of major significance)																●																														●											●									●	●					●		5
Exploration permitted except for some exclusions		●					●														●			●	●				●										●		●	●							●	●				●		●	●					●	●		●									18
Each tenement application should be considered on its merits																						●						●																			●										●																●	5
Compensate company if mining proposals disallowed																										●																												●											●									3
Provision for appeal by applicant against a decision																								●	●														●			●	●																															5
Protection of discoverer's rights																										●																									●			●																				3
Apply rent/bond/lease system to compensate the community for lost amenity and ensure restoration																												●											●			●				●																		●	●									6

TERM OF REFERENCE 2 — THE ADEQUACY OF EXISTING PROVISIONS OF THE MINING ACT TO CONTROL ENVIRONMENTAL ASPECTS OF EXPLORATION AND MINING

SUBMISSION NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	TOTAL
Existing provisions are adequate																						●				●										●					●	●							●		●			●		●							●		●									11
South West Land Division provisions – Extend throughout state																																														●																												1
– Do not extend																																									●									●					●								●		●									5
Existing provisions inadequately enforced		●	●																	●								●																										●											●									6
Existing provisions are – Too restrictive																																									●																																	1
– Too loose				●																																																										●												2
Exclude prospecting licences from national parks/nature reserves																																																								●																		1

TERM OF REFERENCE 3 — PROCEDURES FOR REVIEWING EXPLORATION AND MINING PROGRAMS IN NATIONAL PARKS AND NATURE RESERVES

SUBMISSION NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	TOTAL
Need for single administrating department – Mines Department		●																				●		●	●				●										●		●	●								●				●											●									11
– Other (DRD/CALM)																												●																					●													●												3
Phased review of exploration required																										●														●													●												●									4
Provision for appeal against environmental conditions imposed on mining																						●		●	●				●										●															●																				6

TERM OF REFERENCE 4 — MEANS OF AUTHORISING ACCESS TO NATIONAL PARKS AND NATURE RESERVES TO MARK OUT TENEMENTS

SUBMISSION NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	TOTAL
Marking out Exploration Licences – Not required																																									●																						●		●									3
– By non-destructive means only																																										●												●																				2
Marking out Prospecting Licences – Should be prohibited																																																	●					●		●																		3
Marking out Mining Leases – Not required/prohibit																																																	●							●																		2
– Only on conversion of EL-ML																																																		●				●		●							●											4
Marking out tenements generally – Not required																												●																												●									●									3
– Only under national park regs		●																																								●																																2
– By non-destructive means only		●																																								●														●																		3

TERM OF REFERENCE 5 — EXPLORATION IN NATIONAL PARKS AND NATURE RESERVES WITHOUT MINERAL TENEMENT

SUBMISSION NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	TOTAL
Exploration without tenement should be prohibited																						●						●																																					●									3
Exploration should be permitted – For non-destructive exploration																																										●								●				●		●							●											5
– By prior agreement with vestee																																																	●																									1
Exploration by Miner's Right – Should be permitted																																									●																																	1
– Should be prohibited																																																																	●									1

4. SUMMARY OF PUBLIC SUBMISSIONS

4.1 INTRODUCTION

The Committee received 73 submissions in response to its request for comment on issues relating to its terms of reference. A further 10 responses, primarily from interstate Government agencies, provided information on the situation in other states. These latter responses were regarded as sources of information rather than submissions arguing a point of view and as such are not recorded on table 3 which presents a summary of the submissions. table 2 provides a breakdown of the responses according to their origin.

Table 2. Origin of responses

RESPONSES	WESTERN AUSTRALIA	INTERSTATE	TOTAL
Conservation Groups	15	9	24
Mining Industry	14	5	19
Government Agencies	11 - 1*	9*	21
Private	19	-	19
Totals	60	23	83

*Information only

It can be seen from the table that there is an approximately even spread of responses from conservation groups, mining industry sources, Government agencies and private individuals. Though there was a pleasing number of responses from interstate; as would be expected responses originating from within Western Australia outnumbered those from interstate, by approximately 3:1. Interstate responses were received from every Australian state and the Northern Territory. A list of respondents is presented in appendix 1.

While the majority of submissions adopted clear positions with respect to the first term of reference, addressing appropriate Government policy, far fewer chose to address the other terms of reference. The effect of this is clearly illustrated in the matrix which summarises the responses, (Table 3). In large part this effect is a reflection of the limited relevance of the subsequent terms of reference to the authors of submissions adopting an uncompromising 'no mining' stand. As a result the responses addressing terms of reference 2 to 5 are predominantly sourced from the mining industry.

Several submissions were also received from companies and the industry group representing petroleum explorers. The issue of petroleum exploration and production, though it clearly has close parallels with mining is the subject of another Act, the Petroleum Act 1967, and is outside the Committee's terms of reference.

4.2 APPROPRIATE GOVERNMENT POLICY CONCERNING EXPLORATION AND MINING ACTIVITIES IN NATIONAL PARKS AND NATURE RESERVES

Few submissions failed to directly address the issue of appropriate Government policy. Of the 73 submissions 36 expressed strong opposition to any form of mining in national parks and nature reserves.

Submissions from conservation groups and private individuals overwhelmingly opposed the concept of mining in national parks and nature reserves. The incompatibility of mining in national parks and nature reserves is held to be so apparent to many conservation groups that they chose to present their position without supporting argument. Many of the larger conservation groups including several from interstate did present considered, argued submissions in support of their position.

Apart from stressing the inherent incompatibility of exploration and mining in national parks and nature reserves these submissions argued that:

- mining is an exploitative industry;

- despite improvements in rehabilitation techniques the ecosystems of a mined area cannot be restored to pre-mine condition;

- there are large areas accessible to mining in the state and a small area in the conservation reserve system;

- national parks and nature reserves represent the heritage of present and future generations;

- mining in national parks and nature reserves is inconsistent with public perceptions;

- once declared, national parks and nature reserves should remain sacrosanct; and

- regulations and environmental conditions have in the past been ignored and will continue to be disregarded.

Several submissions, while strongly of the opinion that mining in principle should not occur in national parks and nature reserves, recognised that in some circumstances the value of the mining option may override the conservation importance of the reserve. It was also recognised by a few submissions that Governments might be reluctant to create new national parks if a strict no mining policy is adopted. For these reasons these submissions adopted the position that exploration and mining where it involves commodities of national or strategic significance may be permitted under strict conditions.

While presumably the great majority of authors of submissions opposing mining in conservation reserves also oppose exploration in these reserves, a number did not address exploration and so have not been scored as expressing an opinion on this issue.

Nineteen submissions favoured mining and eighteen favoured exploration in national parks and nature reserves. None of these submissions, which predominantly originated from the mining industry, advocated unfettered mining operations. Indeed they universally accepted that constraints should exist. Many recognised that the significance of some areas from a scientific and/or wilderness perspective was such that these restrictions would effectively amount to the exclusion of exploration and mining from these areas.

Several submissions espoused the concept of the multiple use of national parks and nature reserves and claimed that exploration and mining are acceptable in conservation reserves managed in accordance with this concept. Most mining industry submissions considered that it is important that the nation be aware of the total sum of the nation's assets so that it is in a position to make the best planning decisions. Indeed it is acknowledged in some submissions that the need for an inventory of national assets is not confined to mineral potential but in fact may involve re-defining or upgrading the status of particularly important areas in national parks and nature reserves.

Other policy issues raised by a few submissions included:

- the importance that each tenement application should be treated on its merits;

- that the principle of discoverer's rights should be protected;

- that compensation should be paid to the company concerned if the Government disallowed an application to mine; and

- that the policy should include provision for an appeal by an applicant against a decision (not to grant a tenement).

Several submissions from a cross section of backgrounds raised and supported the concept of a resource rent/bond, or a lease system to compensate the community for loss of access to a part of the public estate.

4.3 WHETHER EXISTING PROVISIONS OF THE MINING ACT AND REGULATIONS GOVERNING CONSERVATION AND REHABILITATION IN NATIONAL PARKS AND NATURE RESERVES ARE ADEQUATE TO CONTROL ENVIRONMENTAL ASPECTS OF EXPLORATION AND MINING ACTIVITIES

Twenty submissions responded to this term of reference, the majority of these were from the mining industry. Most respondents considered that the existing provisions of the Mining Act 1978 are adequate and could provide the necessary control of environmental aspects of exploration and mining. A number of these submissions, however, considered that the provisions are

inadequately enforced and that greater emphasis should be placed on ensuring compliance with environmental conditions and regulations. This was recognized as a failing by industry and conservation-minded submissions alike.

A few submissions commented specifically on the Government's announced intention to extend the Mining Act provisions relating to national parks and A-class nature reserves in the South-West Land Division and Shires of Esperance and Ravensthorpe. Of such submissions, most considered that the provisions are too restrictive and should not be extended to other parts of the State.

One submission also referred to the provisions relating to prospecting licences, proposing that the Mining Act 1978 be amended to prevent the application of prospecting licences over national parks and nature reserves. This issue was also raised in relation to the fourth term of reference.

4.4 PROCEDURES TO BE FOLLOWED IN REVIEWING EXPLORATION AND MINING PROPOSALS IN NATIONAL PARKS AND NATURE RESERVES AND IN SETTING AND ENFORCING APPROPRIATE ENVIRONMENTAL CONDITIONS

Eighteen submissions provided some response to this term of reference. Three major issues were raised in these submissions.

Most proposed that the administration of review procedures should be the responsiblity of a single Government department. It was generally accepted that all relevant departments would need to have input, but that the procedures should ensure that this was coordinated through a single department. The great majority of these submissions considered that the Mines Department is the appropriate agency to assume this role; two suggested the Department of Resources Development and one suggested the Department of Conservation and Land Management.

Several submissions, representing both mining and conservation interests, proposed that a phased procedure be adopted for reviewing applications for mining tenements over national parks and nature reserves. The proposals were for either a review at certain phases of the exploration process, or a review after a certain time interval (every 2 years was suggested by one

submission). Some submissions distinguished between non-environmentally damaging geoscientific survey and mapping work, and more intensive ground-disturbing exploration, and sought the application of different procedures to distinguish between these phases of the exploration process.

A number of submissions considered that some form of appeal provision should be available to mining companies, so as to enable a review of environmental conditions imposed on a tenement that the company finds unacceptable. Appeals to the Minister for Minerals and Energy or a Magistrate Court were suggested.

4.5 MEANS OF AUTHORISING ACCESS TO NATIONAL PARKS AND NATURE RESERVES IN ORDER TO MARK OUT TENEMENTS

Only 10 submissions specifically addressed this term of reference, several of which appeared to appreciate that in marking out tenements there exists the potential to unnecessarily damage the environment, none favoured unfettered rights to mark out tenements.

Several submissions suggested prohibiting the marking out of prospecting licences. One of these favoured excluding prospecting licences from application to national park and nature reserve areas.

Submissions addressing the marking out of mining leases suggested that, either that it should not be required, or it should only be required in the case of the conversion of an exploration licence to a mining lease.

4.6 WHETHER EXPLORATION IN NATIONAL PARKS AND NATURE RESERVES WITHOUT HOLDING A TENEMENT SHOULD BE ALLOWED, AND IF SO UNDER WHAT CONDITIONS

This issue was addressed by eleven submissions, all representative of mining interests.

Several submissions argued against the concept of exploration without tenement, either on the basis of existing requirements of the Mining Act 1978, or because of concern for potential environmental and other implications. One major mining company specifically stated that exploration without a tenement could not be effectively regulated and on this basis argued that it should not be permitted.

By contrast just over half the submissions considered that there is a place for exploration without holding a tenement. One submission favoured exploration in national parks and nature reserves under a miner's right.

All submissions supporting the concept of exploration without a tenement recognized explicitly that it should only be permitted for non-destructive exploration. One submission suggested that such exploration should be undertaken under a permit issued by the vested authority, in a manner similar to that which applies to Aboriginal reserves in Western Australia. Another suggested a permit issued by the Mines Department, having regard to any conditions recommended by interested authorities.

One submission accepted that exploration requiring some degree of disturbance would require a licence or permit, setting out limitations, and that there would need to be an obligation on the applicant to abide by conditions and rectify or recompense the vested authority for any loss of amenity.

5. DISCUSSION OF KEY ISSUES

5.1 INTRODUCTION AND IDENTIFICATION OF KEY ISSUES

In addressing its terms of reference there are a number of important issues that the Committee needs to consider in order to develop practical and effective recommendations. A discussion of these issues at this stage of the report serves two purposes:

- it provides additional background to the principles and practicalities associated with the question of exploration and mining in national parks and nature reserves; and

- it allows a presentation of the arguments for and against exploration and mining access to these reserves, from which the Committee's position can be determined and its recommendations developed.

The key issues, which are discussed in the remainder of this chapter, relate principally to the development and implications of policy and hence to the first term of reference, but are not necessarily confined to any single term of reference.

The key issues addressed are:

- the compatability of exploration and mining in national parks and nature reserves;
- the competition between conservation and mining land uses;
- establishment of a representative conservation reserve system; and
- present practices and procedures.

5.2 THE COMPATIBILITY OF EXPLORATION AND MINING IN NATIONAL PARKS AND NATURE RESERVES

The question of the compatibility of exploration and mining with the objectives of the national parks and nature reserves is one of the basic

issues that govern much of the Committee's report and its recommendations. Compatability in this context refers to the ability of conservation and exploration/mining land uses to coexist within a national park or nature reserve without unduly compromising their respective objectives.

As might be expected, submissions to the Committee adopted divergent positions with respect to the compatability of exploration and mining with conservation in national parks and nature reserves (see Chapter 4).

From a consideration of the most relevant and accepted definitions of national parks and nature reserves, addressed in Section 3.1, the question which must be asked is whether exploration and mining activity in these reserves is contrary to the objectives of the reserves.

The great majority of submissions from individuals and groups outside the mining industry agreed that exploration and mining were not compatible with the purposes of national parks and reserves. These submissions reflected the position that national parks and nature reserves have been set aside by society to serve a conservation function and should not be open to exploitative land uses such as mining, under any circumstances. This argument constitutes one of the central principles advocated by most conservationists and conservation groups in Australia and elsewhere. It stems directly from the definitions of national parks and nature reserves discussed earlier in Chapter 2; and is consistent with the provisions of the CALM Act 1984 relating to the management of these reserves.

A recent survey of Western Australian public opinion on national parks, and a range of issues relating to their usage and management, by Jakob-Hoff (1986) for the Conservation Council of Western Australia, asked (as one of a number of questions) respondents to:

"Indicate whether you think each of the following activities should be allowed in all, some or no Western Australian National Parks".

"Mining" and "Exploration for minerals etc" were two of twenty activities listed under this question. The responses to these activities recorded by the survey are shown in Table 4.

Table 4. Extract from Jakob-Hoff Survey

Question — Should the following activities be allowed in all, some or no Western Australian National Parks				
Activity	Response — Proportion of Respondents (%)			
	All Parks	Some Parks	No Parks	No Response
Mining	0	8	87	5
Exploration for Minerals etc.	2	11	83	4

Even allowing for the vagaries of such surveys, the result would seem to suggest that the position adopted by conservationists on this issue may also have wide support among the Western Australian population.

However, it should also be noted that a national survey of public attitudes to mining in Kakadu National Park in the Northern Territory, commissioned by the Australian Mining Industry Council (1986) produced substantially different results.

This survey asked two questions. The questions and results of responses from Western Australia and the nation as a whole are shown by Table 5.

Table 5. AMIC Survey

Questions	Responses	Proportion of Responses %	
		National %	Western Australia %
Provided areas of scenic and other significance were not disturbed, would you be in favour or against the mining under stringent environmental conditions of any large deposits of gold, platinum or other minerals found in Kakadu National Park?	In favour	59.5	57.4
	Against	33.1	26.6
	Neither/ Don't Know	7.4	16.0
Are you in favour or against carefully controlled exploration in Kakadu National Park in the Northern Territory to establish its mineral potential?	In favour	44.3	37.0
	Against	41.0	39.1
	Neither/ Don't Know	14.7	23.9

The responses to these questions, though not as clear cut as those of the Jakob-Hoff survey, show that a majority of respondents favour mining in Kakadu National Park while approximately even numbers support or oppose exploration in the park.

The divergent responses to these surveys point to the caution that needs to be exercised in interpreting the results of public opinion surveys.

The degree of opposition to mining in conservation reserves is a reflection of the extent to which mining is perceived to conflict with the purpose and intent of these reserves. The mining industry is based on the exploitation of non-renewable natural resources and usually involves the loss, at least temporarily, of the existing biotic environment, and extensive modification of the physical environment in the area of the mine site and associated infrastructure.

The extent to which a mining operation may compromise the integrity of a national park or nature reserve is of course highly variable. The major determinants will be the size and character of the reserve environment and the size, type, and location of the mine. At one extreme a single mine may completely destroy a small reserve, as indeed did occur when the conservation function of one small nature reserve was lost through mining for gravel by a local Government authority. Such an impact may be particularly severe if the reserve is isolated from other areas of natural vegetation. At the other extreme, a mine may have little or no effect on the ability of a very extensive reserve to serve its objectives, particularly if the mining operation is short lived, rehabilitation is of a high order, and the reserve is continguous with similar environments outside its boundaries. In effect the degree of impact imposed by a mine on a reserve will vary on a case-by-case basis in the continuum between the above extremes.

It is worth noting that, while the mining industry argues that mining involves only a temporary land use, after which it may be returned to other uses, many mines are extant for a substantial proportion of a human lifetime. While not permanent, such a time-frame may be considered by many to be more than temporary in the normal sense of the word. Moreover, amongst conservationists there is little faith in the ability of mining companies to revegetate mine sites in national parks and nature reserves back to the previous condition of the reserve. Clearly in many instances the mining operation, by its very nature, will change the natural landform in a manner

which will not be amenable to complete rehabilitation. There are however a number of examples where mined areas have been successfully rehabilitated to near their former condition and have been incorporated into national parks and reserves in eastern Australia.

While the industry states correctly that it accesses only a very small proportion of conservation reserves in Western Australia, it can be argued that the impact of mining is not limited to the area of direct occupation, but extends to include a potentially much larger area taking in associated infrastructure corridors and the area within which the mine workings intrude into the viewshed. Environmentally conscious mine management and the requirements of environmental conditions have greatly improved the methods of handling mine tailings, and preventing the pollution of water courses draining mine areas, however there is still concern with some mining operations regarding the potential for pollution emanating from mine workings.

In addition to these direct impacts on the environment, a range of possible indirect impacts associated with the establishment and operation of a mine exist, including the potential to introduce and/or spread weed species. The potential to spread Phytophthora cinnamomi is also a major concern in south-western Australia. However, as with the management of possible adverse impacts from recreational visitors it is also possible to prevent or limit adverse indirect mining impacts.

The establishment of a mine in a remote location will also increase the human population living and working in the area, often very substantially, to the extent that a new town and associated infrastructure may be required to support the mine. Even in the event that the townsite does not impinge directly on the reserve, the recreational pressures stemming from the increased population may have a substantial impact on the environment in the region. However, the management of most mines operating in remote or sensitive environments develop environmental education programmes to induct new employees, and adopt strict codes of practice to minimise impact on the environment, both from work practices and recreational activity.

The Committee is aware that through meeting environmental safeguards and conditions exploration and mining proposals can also contribute to both our understanding and management of natural ecosystems. Mining developments are preceeded by environmental assessment studies that provide important base-line data on the area of the development. Many larger mining projects have ongoing environmental monitoring programs that contribute important data on seasonal and other variations.

There is increasingly a requirement that exploration companies wishing to explore in poorly studied conservation areas undertake biological studies before any ground disturbance. This not only enables rare or sensitive ecosystems to be avoided it also generates knowledge about the area that is of use to reserve management.

Perhaps the most emotive aspect of exploration and mining in national parks and nature reserves relates to its impact on wilderness values. The concept of wilderness, even more than that of national park and nature reserve, is not encompassed by a single universally accepted or applicable definition. As discussed by Stankey (1980) "wilderness is a symbolic concept to which we, as a society, assign value and importance".

The national and international controversy generated by the Tasmanian Government's proposal to dam the Franklin River is evidence of the level of public support for the protection of that are perceived to be of particular importance.

Many of the larger national parks and nature reserves in Western Australia include significant wilderness areas. The intrusion of mining or exploration activity into a national park or nature reserve valued as a wilderness area is likely to provoke a strong outcry from concerned members of the conservation-minded public.

Indeed, some submissions to the Committee from the mining industry recognised that the importance of wilderness areas may be such that exploration and mining may be prohibited in these areas.

As an exploitative industry which involves the extraction of material from and/or below the surface of the earth, and, in most cases, involves the removal of vegetation and soil at least temporarily from the minesite and associated infrastructure areas, it might appear that mining is inevitably incompatible with the objectives of conservation reserves. The mining industry, however, argues that this is not necessarily the case.

Most of the submissions to the Committee from mining industry groups and companies, and a series of position papers prepared by mining industry groups in Australia in recent years (Australian Mining Industry Council, 1981; Chamber of Mines, 1984; Australian Mining Industry Council, 1986) all argue for access to national parks and nature reserves for exploration and mining.

The arguments used in support of this position are based a multiple-land-use approach to the management of conservation reserves which would not automatically exclude other land uses. The reference to the desirability of multiple land use, in the National Conservation Strategy for Australia, is often referred to in support of this position. The National Conservation Strategy (1984) in part seeks to ensure that land which is suitable for many sustainable uses is used in a manner which retains as far as possible, the greatest number of options for future use, though this is not a reference directed at national parks and nature reserves.

In the context of multiple-land-use, it is argued that mining is only a temporary land use and that rehabilitation of mined-out areas is an integral part of mine planning, allowing rehabilitated areas to be returned to a condition suitable for other uses. The fact that in some cases rehabilitated mine areas have been incorporated into national parks is also argued to support the case that mining need have little long-term impact on conservation areas.

In advocating a policy of multiple use of conservation reserves, which would not preclude exploration and mining, the industry generally supports the concept of zoning conservation reserves according to their particular characteristics and conservation values and uses. The degree of restriction on exploration and mining would, it is suggested, be determined by the zoning criteria. A number of mining industry reports, and submissions, to the Committee accepted that;

"In some areas of outstanding scientific, historical, archaeological or scenic importance restrictions (on mining activity) may amount to an effective prohibition" (Australian Mining Industry Council, 1986).

The industry does not consider exploration activity to be a land-use as such, but rather a process which is essential to the continuing existence of the mining industry. The argument for continued access to conservation reserves for mineral exploration is encapsulated in the following quote from a paper by Jones (1984):

"This request for maximum access to land for exploration is made with the full recognition that Government will determine if there are to be overriding reasons for denying the ultimate exploitation of a mineral resource once that resource has been located. However such a decision can only consciously be made after the resource has been detected. It is irresponsible land-use planning and very poor stewardship of resources to deny exploration activities on the grounds there is a possibility of an ore body being discovered in a place where it may not ultimately be exploitable".

There is considerable merit in this argument, as it is important that a thorough knowledge of the resources of the State and nation are built up and maintained to enable effective planning. This is equally true in respect of management planning for a national park or nature reserve. The geology of a national park or nature reserve is as much a part of its environment and natural resources as the flora, fauna and landscape. Moreover, the underlying geology will commonly have a major role in determining the topography, soil conditions, and hence vegetation characteristics and other habitat parameters present within a reserve. The stability and behaviour of the soils under various use pressures may also be influenced by their geological origin.

For all these reasons it is often as relevant to obtain a thorough understanding of the geology of a conservation reserve, as it is to research the flora and fauna of the reserve.

In the above context, it should also be recognised that there are several phases of exploration in locating and quantifying a potential orebody, before mining may even be considered. The early phases of exploration may yield valuable management information on the reserve while causing little or no impact on the environment. In many cases exploration may not proceed beyond mapping the geology from surface features, aerial photography, satellite images, and other remote-sensing techniques.

In general, however, it appears that the community does not readily distinguish between exploration and mining. Rather exploration is perceived to be simply the first component of a process which will ultimately lead to mining.

The industry also argues, with justification, that technological developments and improved, more environmentally aware attitudes, and improved rehabilitation techniques have in recent years progressively reduced the environmental impacts associated with exploration activity. The key element in this improvement is the sensitivity of the individual company and its employees to their environmental responsibilities. Most companies, particularly when dealing with reserve areas, are aware of and prepared to adopt the necessary measures and techniques to reduce the environmental impact of their operations. Industry bodies, recognising that access may only continue to be granted if the exploration is conducted in an environmentally sound manner, have promoted and encouraged companies to adopt improved environmental standards. While it is still true that not all companies can be relied upon to maintain adequate standards, companies working tenements in national parks and nature reserves are increasingly operating in a responsible manner.

This is an encouraging trend, and it needs to be acknowledged as such. However, continuing work is needed to continue to improve techniques which minimize the environmental impact of exploration, and to improve rehabilitation methods.

In concluding, it is the view of the Committee that:

- minerals are a natural resource and part of the natural environment,and knowledge of the location of such resources is of value to the State and nation. A knowledge of the geological characteristics may also be relevant to the interpretation and management of national parks and nature reserves;

- productive mining as a landuse is inconsistent with the international definitions of national parks and nature reserves; however, in the context of some national parks and nature reserves, limited exploration and mining activity may not unduly compromise the conservation objectives of the reserve;

- in some instances minerals within national parks and nature reserves will be of such significance for it to be in the public interest to mine them; and

- in the context of national parks and nature reserves particularly, there is a need to continue to improve techniques to minimise the impact of exploration on the environment and to further improve rehabilitation techniques.

5.3 COMPETITION BETWEEN CONSERVATION AND MINING LAND USES

The mining industry regards access to land for exploration as vital to the continuation of the industry, for without exploration there can be no mining. For this reason the industry argues strongly against the closing of land to exploration, considering this to be sterilizing potential mineral resources. It is further argued that the mineral prospectivity of an area cannot be determined with finality because, with the development of new geological concepts, new exploration and mining methods, and changing economic conditions, areas that are not currently considered prospective may become so in the future. The massive Roxby Downs copper, uranium, and gold deposit in South Australia is often cited as an example of an orebody being discovered in an area not previously considered to be particularly prospective, following the development of new geological concepts and exploration techniques.

For the above reasons the mining industry and Department of Mines on occasions argue against the implementation of particular reserve recommendations where they relate to land that is considered to be prospective for minerals, and where the reserve creation could inhibit or prevent exploration.

To determine the potential effect on the mining industry of applying restrictions on exploration and mining in conservation reserves, it is useful to consider the proportion of the State accessible to exploration, relative to that contained within the conservation reserve estate.

The Mining Act 1978 gives the mining industry access to explore for minerals throughout most of the State of Western Australia, subject to a variety of conditions. Vacant Crown land and pastoral leases, which together make up about 81% of the State, are freely available for exploration tenements. In these areas exclusive access to a defined area of land, through a prospecting licence or exploration licence, can in most instances be granted.

The remaining 19% of the State mainly comprises privately owned land, Crown land reserved for various public purposes, including conservation reserves, and land leased from the Crown for purposes other than pastoral use. Consistent with the status of these lands and/or their more intensive level of development, applications for mineral tenements are subjected to more restrictive approval procedures and conditions.

Of this 19%, the conservation reserve estate presently represents 5.6% of the land area of Western Australia, of which national parks comprise 1.8% and nature reserves 3.8%. In the event that exploration is totally precluded from these areas, it would reduce the area available for exploration in the State by less than 7% of that otherwise available.

A number of submissions from mining companies state that the industry needs access to minerals wherever they occur, because it is inherently constrained by the incidence of mineralization, and often does not have the opportunity to shift to alternative orebodies in less significant environments.

There is justification in this argument, however, it does not apply universally. There are instances when the resource involved is not scarce, and alternative sites in less sensitive environments may well be available, and other things being equal, should be developed in preference to resources in a conservation reserve.

It should also be noted, that the converse argument similarly applies. A number of conservation reserves have been declared with the primary objective of conserving rare or outstanding features of the biotic or physical environment and they cannot be moved without defeating their objectives. The location of these reserves is inherently constrained by the site of the rare species or features.

It is unfortunate, but not particularly unusual, for environments of high physical or biotic diversity to coincide with areas that are also prospective for minerals. This situation occurs because environments of particular conservation significance are often associated with the topographic and habitat diversity associated with mountain ranges or other rock outcrops. These provide the rock exposures that are most readily prospective for minerals. By contrast much of Western Australian is covered by superficial layers of sand and laterite. While techniques for exploring the rocks beneath such deposits are improving, the main emphasis in exploration is still placed in areas of rock outcrop, where exploration techniques are more definitive and successful. It is likely that as exploration techniques for probing beneath superficial layersare refined the emphasis may in future shift away from the outcrop areas.

5.4 ESTABLISHMENT OF A REPRESENTATIVE CONSERVATION RESERVE SYSTEM

5.4.1 STATUS OF IMPLEMENTATION OF PROPOSED CONSERVATION RESERVES

The Committee considers that:

- the national park and nature reserve estate constitutes a small portion of the total land resource open to exploration and mining, it does, nonetheless, include areas of significant mineral prospectivity;

- it is not possible to achieve a fully representative reserve system without it including areas of mineral prospectivity; and

- a relatively small proportion of existing national parks and nature reserves are considered to be highly prospective.

The implementation of a number of recommendations for additional conservation reserves that until recently have been regarded as well advanced have been delayed. These are recommendations that relate to areas known to be prospective for minerals, but for which a Cabinet endorsed agreement was reached between the EPA and Director General of Mines. This agreement would allow the implementation of these reserves, on the basis that the proposed reserve be declared a C-class reserve instead of A-class, and that mineral exploration under agreed conditions be permitted. The classifications of these reserves would be reviewed at an appropriate time in the future.

In a very real sense the Government policy adopted in relation to exploration and mining in national parks and nature reserves, following consideration of this Report, is likely to determine the future of reserve recommendations over areas which are prospective.

Presented simply the choice may be said to be one of either:

- achieving a high standard of security for reserves and excluding exploration and mining activity (in accordance with IUCN criteria), accepting that many of the as yet unimplemented recommendations and new proposals would not be implemented, and that existing B and C-class reserves are unlikely to be upgraded to A-class Status; or

- implementing reserve recommendations and thus achieving a more representative reserve system but on the basis that, subject to appropriate agreed conditions, exploration and mining may be permitted.

In practice other options may exist such as rationalizing the proposed reserve boundaries to exclude prospective areas.

5.4.2 THE POTENTIAL FOR RATIONALIZING RESERVE BOUNDARIES - ADVANTAGES AND DISADVANTAGES

In addressing the potential for rationalizing national park and nature reserve boundaries it is helpful again to return to the principles of national parks and nature reserves. The relevant criteria for these reserves, notably those of the IUCN (1978) stress the importance of security of tenure.

To fulfil their intended purpose these reserves are required to stand in perpetuity, to be sacrosanct. This is an important component of the national park/nature reserve concept, which was frequently stressed in submissions opposed to exploration and mining in national parks and nature reserves.

The advantages of amending the boundaries of a proposed reserve to exclude a highly prospective area and to avoid future conflicts may be accepted, if it does not involve the loss of conservation value from the proposed reserve. However, the possibility of substantially amending the boundaries of an established national park or nature reserve for this purpose would appear to conflict markedly with the important concept of security of these reserves.

It is worth noting, however, that in Western Australia a number of national parks and nature reserves have entirely arbitrary boundaries. In most instances these reserve boundaries were determined by pre-existing cadastral boundaries which typically bear no relationship to natural features that may constitute manageable boundaries, or to natural ecological boundaries. As a result the conservation value of these reserves may be far from optimal and their management severely compromised.

In these circumstances there may be substantial advantages in a rationalization of the boundaries of a reserve, to achieve an equally or more representative and manageable reserve and avoid areas known to be highly prospective. Such action may constitute sensible land and resource management practice. It is unlikely that this solution will always be possible or practical, notably where the prospective area is also the focus of conservation or tourist interest in the reserve, or where the prospective area is not localized.

As most of the national parks and nature reserves which could potentially benefit from boundary rationalization are located in pastoral areas it is relevant to note that the proposed new pastoral land tenure system (Pastoral Land Tenure Study Report, 1986) if, adopted, may more readily permit rationalization of boundaries than was the case in the past.

It should also be recognised that the rationalization of boundaries referred to above does not relate to the concept that national park (or nature reserve) boundaries could be rationalized by reducing the area back to a so-called 'core area' localized around a feature of tourist or conservation interest and relinquishing what is perceived to be 'buffer area'. Such a proposal would negate one of the main functions of these reserves: that of conserving functioning ecosystems. Large size is recognised as one of the major determinants of the long-term ecological viability of a reserve.

5.5 PRESENT PRACTICES AND PROCEDURES

This Report has already noted that exploration and mining may currently be allowed in national parks and nature reserves in Western Australia, under the provisions of the Mining Act 1978. Under the recently passed amendments, the approval of both Houses of Parliament would be required before a mining lease may be granted in any national park or A-class nature reserve in the State. However, mining may be authorised in B or C-class nature reserves with the agreement of the Minister for Mines who is required to obtain the recommendations of the Minister for Conservation and Land Management, but is not obliged the accept the recommendations. However, in practice any disagreement between the Ministers would be taken to Cabinet for decision.

It should be noted that the Environmental Protection Authority (EPA) can become involved in the process of reviewing applications for mining tenements at any stage. The EPA would normally require an environmental impact assessment of any proposal to mine in a national park or nature reserve. The EPA assessment report would provide advice and recommendations to Government in relation to the likely environmental impacts of the project and whether or not they are considered acceptable.

The procedures currently followed in considering applications for mineral tenements in national parks and nature reserves are coordinated by the Department of Mines. The main procedural features are as follows:

- the procedures distiguishes between exploration and mining, which require separate approvals;

- the procedure does not inherently recognise distinct phases within the exploration process. This has meant that applications for exploration licences have generally been considered on a once only basis and approved or rejected on the basis of the limited information available, at a time when even the company involved is unlikely to have prepared detailed exploration plans. Not only has this prevented the development of exploration conditions tailored to suit the specific environment and exploration programme, but it has also constrained the assessment of impacts likely to be associated with the programme. However, this deficiency has recently been recognised and conditions applied to the most recently granted tenements require the separate approval of sequential phases of exploration programmes on conservation reserve areas; and

- under the present procedures each application is considered individually on a more-or-less ad hoc basis. No attempt has been made to develop a classification of national parks and nature reserves to identify reserves or parts thereof that may be closed, or accessible, to exploration and mining. Most industry-based submissions to the Committee recognised that some areas are of such significance that they should be closed to exploration and mining.

6. CONSIDERATION OF TERMS OF REFERENCE AND RECOMMENDATIONS

6.1 APPROPRIATE GOVERNMENT POLICY CONCERNING EXPLORATION AND MINING ACTIVITIES IN NATIONAL PARKS AND NATURE RESERVES

6.1.1 OPENING REMARKS

The issue of exploration and mining in national parks and nature reserves is one engendering some polarity of views, between those who believe that such activities should not be permitted and those who believe that they should, at least on occasions. This has caused difficulties for successive governments. The Committee recognises that compromise by its nature may both satisfy and dissatisfy and that people holding strong views from either perspective will not be pleased with any compromise. The Committee is also of the view that a great deal of frustration and polarisation in the community over this issue has arisen because of lack of clarity over such things as objectives, the extent to which mining might be permitted, the value and quality of the conservation estate, and the procedures followed in evaluating exploration or mining proposals. The Committee set itself the objective of recommending ways of lessening rather than resolving the conflict.

It is generally agreed that national parks and nature reserves require a publicly demonstrable, high level of security of tenure and purpose. This measure of security is best obtained by the adoption by Government of an appropriate policy implemented by legislative and other means.

While not wishing to imply that individual cases of exploration or mining in national parks and nature reserves are not of importance of themselves, the concerns of the community are heightened by their fear that precedents will be set and the entire park and reserve estate will be placed in jeopardy.

If the policy of Government was simply to exclude exploration and mining from all national parks and nature reserves, then it is likely that the declaration of any new areas will be delayed or even prevented because of concerns regarding access. It could be claimed that such an effect is acceptable on the grounds that the conservation reserve system is already

close to completion and hence there are few areas remaining the reservation of which could be put at risk. Given the status of implementation of the Environmental Protection Authority Red Book recommendations (Environmental Protection Authority, 1975, 1976, 1980, 1983), and the existence of other areas of high conservation value which are not yet reserved the Committee does not share such a view.

Alternatively, it could be argued that there is little point in reserving any new national parks or nature reserves because without additional resources being made available they would remain unmanaged. However, the Committee believes that such reservations should not be inhibited by the finite capacity of the Government to manage land under its control. Even if no resources can be made available for additional conservation reserves, the act of establishing a national park or nature reserve provides a level of protection considerably greater than would otherwise exist. This occurs through the application of statutory and administrative controls that are not necessarily dependent on a management presence in the field. Furthermore the knowledge that an area is reserved is likely to militate against inappropriate behaviour by members of the general community.

A flexible approach to the question of exploration and mining in national parks and nature reserves should enable the creation of new conservation areas to occur more readily. Such an approach should not lead to unacceptable environmental impacts, provided adequate controls are in place and are effectively enforced. It is also essential that broad-scale, ground-disturbing exploration and productive mining does not result across the entire park and reserve system. The objective of a flexible approach is to ensure that those areas of the highest biological or landscape value both currently reserved and those not yet reserved are given complete protection from ground-disturbing exploration and productive mining while permitting such activities in less important areas.

In the preceding chapter the Committee expressed the view that "productive mining as a landuse is inconsistent with the international definitions of national parks and nature reserves". Thus a starting point for a policy of flexibility should be that a national park or nature reserve should be safe

from ground-disturbing exploration and productive mining until the acceptability of such activities has been established. The Committee has also concluded that "in some instances minerals within national parks and nature reserves will be of such significance for it to be in the public interest to mine them". If this is so then it is also necessary for exploration to occur in order to locate and provide the knowledge required to assess the significance of any mineral resource.

Thus the national park and nature reserve system could be divided into two broad groups. The first group would contain parks and reserves of such high conservation value that all ground-disturbing exploration and productive mining are prohibited. The second group which contains the remaining parks and reserves could be available to mineral exploitation if, after an assessment of their biological, landscape and mineral resources, it is decided that exploitation may occur. One mechanism of achieving this division would be to reclassify all national parks and nature reserves into one or other group. Such a process would be very time-consuming and would generate considerable public opposition due to a fear that our national park system would be lessened in such a reclassification. The Committee has therefore recommended an alternative approach which it is hoped avoids such problems.

In Chapter 5 the Committee expressed the view that knowledge of the geology of national parks and nature reserves is a legitimate part of the resource inventory. The gathering of such knowledge could be regarded as involving exploration activities, though of a kind involving no, or only an insignificant level of environmental impact. In preparing its recommendations the Committee has therefore distinguished three phases or levels of activity:

. geoscientific surveys (or reconnaisance exploration) - including only those activities which involve no, or only an insignificant level of, ground disturbance or other environmental impacts. Thus geological mapping and the use of a geological hammer fall within this phase, as do remote-sensing techniques, some geophysical surveys and geochemical surveys involving limited grab and stream sediment sampling;

- ground-disturbing exploration - this phase includes activities such as drilling and the consequent construction of access tracks and drill pads, and other activities that involve destruction of vegetation; and

- productive mining.

6.1.2 NATIONAL PARKS AND A-CLASS NATURE RESERVES

The most important conservation reserves are generally, though not universally, either national parks or A-class nature reserves. Some B and C-class nature reserves are of similar importance and, in addition, some national parks and A-class nature reserves may be inappropriately categorised. However, it is likely that most of the areas from which ground-disturbing exploration and productive mining should be excluded are presently either national parks or A-class nature reserves, and our recommendations have been framed accordingly.

RECOMMENDATION 1

The Committee recommends that geoscientific survey work should be permitted without holding an exploration licence in national parks and A-class nature reserves under permit issued by the Minister for Conservation and Land Management. Before issuing a permit the Minister should seek the views of the National Parks and Nature Conservation Authority, Department of Conservation and Land Management, and Mines Department. The Minister may attach appropriate conditions to such a permit or, in exceptional circumstances, refuse to issue a permit. Appropriate reports on the results of the survey should be prepared for the Department of Conservation and Land Management and Mines Department.

RECOMMENDATION 2

The Committee recommends that exploration licences should not be granted over a national park or A-class nature reserve unless that park or reserve has individually either been declared open for the granting of exploration licences or reclassified as provided for in Recommendation 4. The Committee further recommends that areas of the highest biological or landscape value should not be declared open for the granting of exploration licences.

The opening of a park or reserve should not be read as de-facto approval for the granting of exploration licences. However, it is reasonable to assume that applications for exploration licences could be more readily processed given the existence of the resource inventory (see below) and that opposition to the granting of the tenement may be less than would otherwise have occurred.

Recommendation 2 requires that the Mining Act 1978 be amended so as to prohibit the granting of an exploration licence over a national park or A-class nature reserve unless the area concerned has been declared open. This would indicate to the mining industry those areas over which tenements cannot currently be granted and areas where applications may be successful. In the former case the mining company concerned may choose to approach the Mines Department to put forward a proposal to open the area in accordance with Recommendation 3.

In implementing this recommendation the Committee accepts that the rights of pre-existing tenement holders must be recognized. Thus pre-existing tenements (ie exploration licences, prospecting licences, or mining leases, granted prior to the acceptance and implementation of the Committee's recommendations) would continue for their normal term even if the national park or A-class nature reserve has not been declared open.

RECOMMENDATION 3

The Committee recommends that if the Mines Department believes that a particular national park or A-class nature reserve or part thereof is of sufficient prospectivity, then they should submit to the Environmental Protection Authority a proposal to open the area for the granting of exploration licences. A program of non-destructive research should then be carried out with the objective of compiling an inventory of the biological, landscape and geological resources of the area. This program should be co-ordinated by an interdepartmental committee, convened by the Department of Conservation and Environment and including representatives of the Department of Conservation and Land Management, and Mines Department. Such a committee would assess the results of the research and report to the Environmental Protection Authority, which would then recommend to Government. Where a

company has lodged a tenement application over such a closed area, it should be required to meet the cost of the necessary research.

RECOMMENDATION 4

The Committee recommends that in reporting to Government the Environmental Protection Authority would recommend:

- that the area in question not be declared open for the granting of exploration licences if it is considered to be of the highest biological or landscape value; or

- that the area in question be declared open for the granting of exploration licences subject to appropriate conditions but remain part of the national park or nature reserve if it is considered to be of intermediate biological and landscape value; or

- that the area in question be removed from the national park and A-class nature reserve system if it is considered to be of low biological and landscape value.

RECOMMENDATION 5

The Committee recommends that the following matters be taken into account by the Environmental Protection Authority, when assessing whether or not to recommend that a national park or A-class nature reserve or part thereof be declared open for the granting of exploration licences:

- the presence of rare or endangered species of fauna or flora, communities or habitats;

- the presence of areas of outstanding scenic or landscape value;

- the presence of significant wilderness or important wetlands;

- the presence of sites of archaeological, cultural, historic, or scientific value, or geological monuments;

- **the importance of the area in terms of its role in protecting representative ecosystems; and**

- **the particular importance of islands to nature conservation.**

Turning to the question of the granting of mining leases; in general applications for such leases are made by the holders of prospecting or exploration licences. Thus in the case of national parks and A-class nature reserves there are only two situations in which a mining lease might be applied for; firstly if the area concerned has been opened for the granting of exploration licences and a licence is subsequently granted, and secondly, if the prospecting or exploration licence is a pre-existing tenement.

RECOMMENDATION 6

The Committee recommends that mining leases should not be granted over national parks or A-class nature reserves unless the area concerned has previously been declared open for the granting of exploration licences or the mining lease application covers an area subject to a pre-existing exploration licence or prospecting licence.

It should be pointed out that the approach taken in the above recommendations of opening areas for the granting of exploration licences is similar to that contained in Section 275 of the Mining Act 1904.

The results of the research program referred to in Recommendation 3 would not only be the basis for deciding whether or not to open an area, but would also be of importance in both the management of the reserve and in providing a framework within which to assess any exploration program or mining proposal should the reserve be declared open.

It is to be anticipated that as time progresses the quality of the national park and A-class nature reserve system will progressively improve due to the implementation of Recommendation 3. This will occur because of the Environmental Protection Authority may recommend the removal of areas of low

conservation value. Thus such areas will be slowly removed from the system. On the other hand the addition of areas of high conservation value should be facilitated if the Government adopts the recommendations contained herein. The Committee believes that opposition to the creation of new national parks and A-class nature reserves should be lessened by the establishment of the procedure whereby an area may be declared open for the granting of exploration licences.

6.1.3 B AND C-CLASS NATURE RESERVES

Nature reserves of B and C-class are often less important than national parks and A-class nature reserves. The question of B or C-class nature reserves that are of greater significance, and therefore ought to be otherwise classified, will be returned to later. In the less important reserves ground-disturbing exploration and productive mining activities, if subject to appropriate environmental safeguards, are likely to be acceptable.

RECOMMENDATION 7

The Committee recommends that geoscientific survey work should be permitted in B and C-class nature reserves under permit issued by the Executive Director of the Department of Conservation and Land Management after consultation with the Mines Department. The Executive Director may attach appropriate conditions to such a permit or, in exceptional circumstances, refuse to issue a permit. Appropriate reports on the results of the survey should be prepared for the Department of Conservation and Land Management and Mines Department.

RECOMMENDATION 8

The Committee recommends that ground-disturbing exploration and productive mining activities in B and C-class nature reserves be regulated and controlled on a case-by-case basis.

A comprehensive inventory of resources of B and C-class nature reserves is as important as it is for national parks and A-class nature reserves. Such knowledge is not only of use in assessing exploration programs and mining proposals but also in managing the reserves themselves.

RECOMMENDATION 9

The Committee recommends that inventories of the biological, landscape and geological resources of B and C-class nature reserves be compiled as resources permit. The corresponding research could be coordinated by the interdepartmental committee referred to in Recommenation 3.

The Committee is aware that the National Parks and Nature Conservation Authority has considered the possibility of recommending the creation of additional categories of conservation reserve. It is likely that one such category will be designed to accommodate areas that are of insufficient importance to receive national park status, but are otherwise intended to fulfil a similar conservation and recreation function. If such a category is accepted by Government, then reserves in this category should be treated as B and C-class nature reserves as far as the Committee's recommendations are concerned.

6.1.4 PROPOSED NATIONAL PARKS AND NATURE RESERVES

As was discussed earlier, some 35% of the Red Book recommendations are not yet fully implemented. It can also be anticipated that other proposals for national parks and nature reserves may arise from time to time. While awaiting implementation it is possible that activities may occur in such areas that impede or even prevent the intent of the recommendations or proposals from being realized. The Committee is of the view that during this period some measure of interim protection would be desirable.

RECOMMENDATION 10

The Committee recommends that areas proposed for reservation as national parks or nature reserves and fully approved by Government be treated administratively as if they are so reserved.

6.1.5 BOUNDARY RATIONALIZATION

The issue of boundary rationalization was raised in Chapter 5. In that Chapter it was suggested that boundary rationalization could result in a more manageable system of national parks and nature reserves by locating the boundaries according to ecological criteria. This process could also result in the avoidance of highly prospective areas while at the same time maintain or even enhance the quality of the system. For such a process to be publicly acceptable, however, there would have to be an unequivocal commitment by Government that the values of the existing national parks and nature reserves would be preserved. Thus if the avoidance of a prospective area would result in the loss of conservation values not replaceable by the reservation of an alternative area, then the boundary rationalization should not proceed. This need not of course lead to sterilization of the mineral resource given the option of declaring an area open for the granting of exploration licences (in the case of national parks and A-class nature reserves) and the procedures considered in Section 6.3.

Although the conservation value of national parks and nature reserves is not directly related to their area such a relationship is perceived to exist by the general community. As a result it would seem appropriate for the Government to give a commitment that the rationalization process will not lead to any decrease in the total area reserved in the State.

RECOMMENDATION 11

The Committee recommends that the Government initiate a public review of national park and nature reserve boundaries, with a view to rationalization. This process should have as its primary objective the setting of ecologically sensible and manageable boundaries while maintaining the values and area of the reserve system. A secondary objective would be to avoid areas of high prospectivity wherever this can be accomplished without prejudice to the primary objective.

The Committee further recommends that the review proposed be undertaken by the Department of Conservation and Land Management in liaison with the Mines

Department and Department of Conservation and Environment. The review could be carried out as part of the preparation by the Department of Conservation and Land Management of a management plan for each park or reserve.

The Committee is aware that the Department of Conservation and Land Management is considering undertaking a review of land vested in the National Parks and Nature Conservation Authority. This review is pending the Authority's deliberations on new reserve categories and Government consideration of any proposals. It would appear wise to carry out the review referred to in Recommendation 11 at the same time. Thus the review process would consider the question of boundary rationalization and also the question of whether each park and reserve is appropriately categorized (eg national park or nature reserve) and classified (A, B or C-class).

The review would of necessity be a long-term undertaking and could lead to reserves being both increased in size and status (eg a C-class nature reserve could become an A-class reserve) and decreased. This process thus complements the intent of Recommendation 4 which provides for the Environmental Protection Authority recommending that a national park or A-class nature reserve be otherwise categorized or classified or even returned to vacant Crown Land.

6.2 WHETHER EXISTING PROVISIONS OF THE MINING ACT AND REGULATIONS GOVERNING CONSERVATION AND REHABILITATION IN NATIONAL PARKS AND NATURE RESERVES ARE ADEQUATE TO CONTROL ENVIRONMENTAL ASPECTS OF EXPLORATION AND MINING ACTIVITIES.

The range of views expressed in submissions to the Committee concerned with the second term of reference have been summarized in Chapter 4. In brief there is a general belief expressed by mining interests that exploration and mining activities in national parks and nature reserves are adequately regulated. However this view is not shared by the conservation movement. All comments made in the submissions have been considered by the Committee. These considerations have led the Committee to identify a number of specific deficiencies in the current provisions of the Mining Act 1978.

In particular there appear to be a number of inadequacies in the provisions of the Mining Act as they relate to the imposition of environmental

conditions on the holders of exploration licences and mining leases. These inadequacies concern the following matters:

- environmental conditions attached to exploration licences refer only to damage to the surface of the land and do not include damage to flora and fauna;

- the imposition of environmental conditions is not required in the case of mining leases (although they are imposed nevertheless); and

- the power of the Minister for Mines to impose environmental conditions at any time is restricted to mining leases.

RECOMMENDATION 12

The Committee recommends that insofar as it relates to national parks and nature reserves the Mining Act 1978 be amended to:

- **require that exploration licences and mining leases are only granted subject to the condition that damage to the surface of the land and anything on the surface of the land (eg flora and fauna) is prevented or minimized and repaired; and**

- **enable the Minister for Mines to impose additional environmental conditions at any time.**

As well as the above the Committee has identified a number of ways of improving the processing of tenement applications particularly when they encroach on national parks and nature reserves. In the next section recommendations have been made which if implemented should effect these improvements.

6.3 PROCEDURES TO BE FOLLOWED IN REVIEWING EXPLORATION AND MINING PROPOSALS IN NATIONAL PARKS AND NATURE RESERVES AND IN SETTING AND ENFORCING APPROPRIATE ENVIRONMENTAL CONDITIONS

6.3.1 OPENING REMARKS

In Section 6.1 it was acknowledged that exploration and mining activities may be approved in national parks and nature reserves. For those national parks and A-class nature reserves declared as land open for the granting of exploration licences, and for all B and C-class nature reserves, exploration and mining proposals should be judged on their individual merits. It is important that the statutory and administrative procedures involved are clearly laid down so that all interested parties are aware of what is entailed. Thus a company proposing to undertake an exploration program or to commence productive mining would be able to take such procedures into account in their forward planning. The existence of regulatory procedures which provide for the assessment of individual proposals, the setting of conditions to safeguard the environment and the enforcement of such conditions should allay the public concern that the parks and reserves be adequately protected.

It would seem appropriate for the broad framework of procedures to be included within legislation, while the details can be established at the administrative level. At various stages during the review of an exploration or mining proposal, decisions will need to be made. If these decisions are reached entirely in an ad hoc manner considerable uncertainty will be generated as to the likely outcome. It would then be difficult for the mining company involved to assess and take into account the risk of an unfavourable decision. Similarly, it would not be possible for the general community to have confidence in such procedures. The preferred alternative is for guidelines to be established to aid the decision-making process. These guidelines should be designed to ensure that the advantages and disadvantages of permitting an exploration program to proceed or a mine to be developed are adequately and explicitly considered.

6.3.2 PROCEDURES FOR REVIEWING EXPLORATION PROPOSALS

The existing procedures for reviewing exploration proposals in national parks and nature reserves were discussed earlier in this report, in Section 5.5.1. In considering procedures for reviewing exploration proposals, the Committee has recognised a number of deficiencies in the present system. The procedural changes which result from the Committee's deliberations are illustrated in flow chart form in figure 5.

RECOMMENDATION 13

The Committee recommends that applications for exploration licences over national parks and nature reserves and the assessment of exploration programs should be processed according to the procedures illustrated in figure 5.

Exploration is now generally permitted in national parks and nature reserves. In Section 6.1 addressing policy issues, the Committee recommended that national parks and A-class nature reserves should be closed to further ground-disturbing exploration until, following a review, individual reserves or parts thereof are declared open; and that further ground-disturbing exploration should not be permitted in extremely important reserves or parts of reserves.

Consistent with these recommendations the procedures proposed here would prevent the Minister for Mines approving an application for an exploration licence if it relates to an area in a national park or an A-class nature reserve that has not been declared open for the granting of exploration licences.

This facility will improve the efficiency of the assessment process by removing the need to fully assess every application. Similarly it will assist exploration companies by enabling them to readily identify and avoid areas for which exploration licences will not be granted.

In the case of national parks and A-class nature reserves that have been declared open and B and C-class nature reserves, the Minister for Mines would be permitted to grant exploration licences.

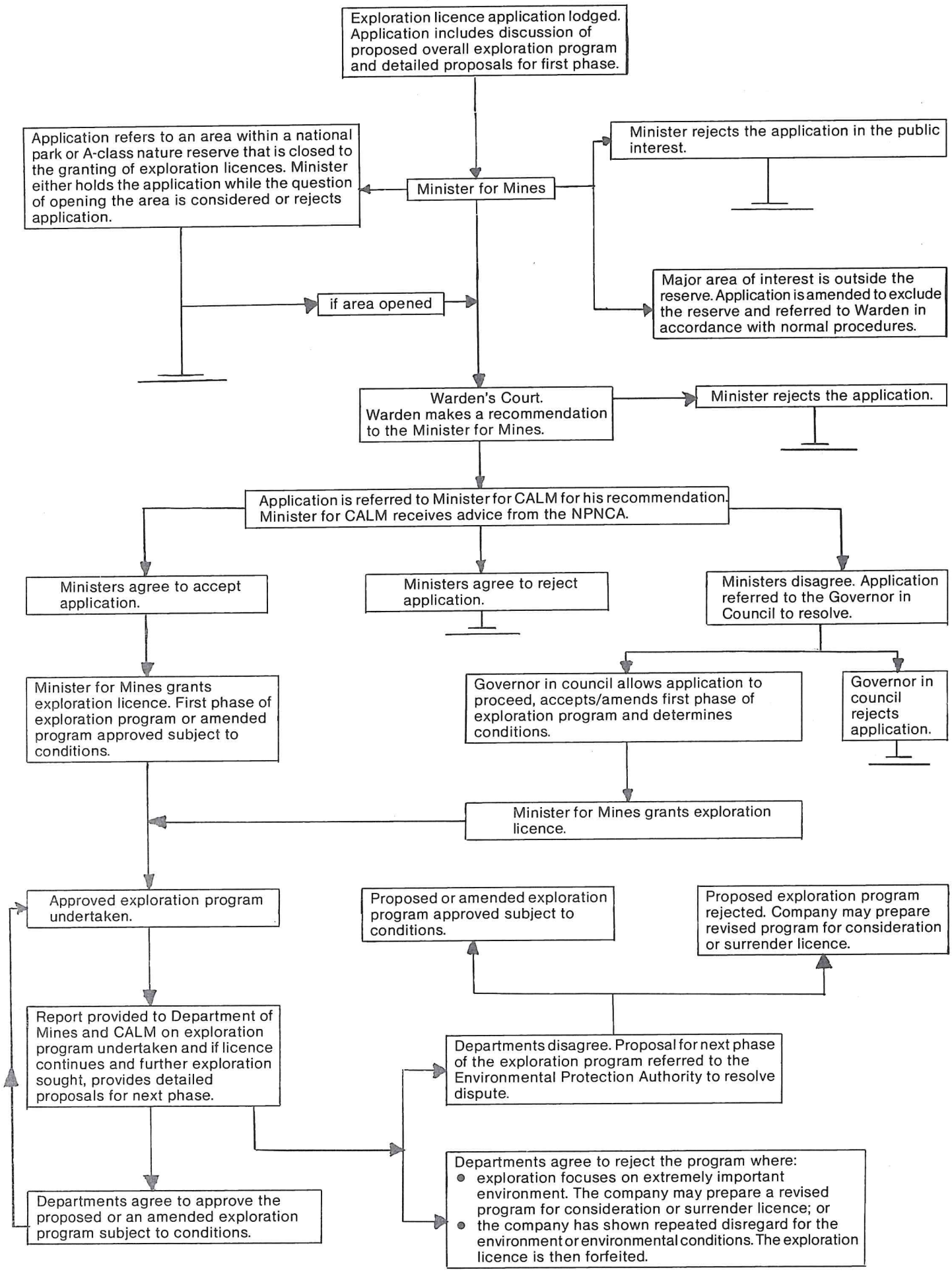


Figure 5. Procedure for reviewing exploration licence applications and exploration programs over national parks and nature reserves

The present situation is one in which the Minister for Mines is the only decision-making authority for the granting of exploration licences on some occasions, but in other circumstances the Minister for Conservation and Land Management has, in effect, a power of veto. The Committee has recommended an alternative approach (see figure 5) in which the same procedure applies on all occasions; ie exploration licence applications are referred to the Governor in Council for resolution in the event that the Ministers for Conservation and Land Management and Mines fail to agree on the acceptability of the application.

Thus, as far as the processing of exploration licences is concerned, there would no longer be a distinction between national parks, A-class nature reserves and B and C-class nature reserves; other than that consequent upon the need to declare a park or A-class reserve open before an exploration licence may be granted. This should act to lessen the opposition to the creation of national parks and A-class reserves in comparison with the creation B and C-class nature reserves.

Section 6.1 also addressed the need to review the first phase of the exploration process, characterised by geological mapping and other non-destructive activities, which is not catered for under the present assessment procedure. The Committee has recognized that it would be inappropriate to require that a mineral tenement be held before these activities could be undertaken. Nonetheless it believes that the Department of Conservation and Land Management should be aware of and have some feedback from those wishing to undertake this form of research on reserves under its control. Recommendations 1 and 7 in Section 6.1, address this issue and propose a permit system to achieve this aim.

The earliest phase of exploration consists primarily of geological mapping and may entail the collection of rock samples. This phase of exploration is environmentally benign and provides information on the geology and geological history of the reserve which may be of value in reserve management. Typically only one in ten exploration prospects proceed beyond this phase to a detailed exploration phase and fewer still to the phase of

defining the ore body and proving up reserves. The latter phases of exploration have progressively greater potential for causing environmental damage to the reserve involved.

The procedure for reviewing exploration proposals usually adopted at present does not recognize these phases of exploration. Many of the procedural deficiencies with the system stem from this factor.

The emphasis placed on assessing exploration proposals on a once-off basis at the time of application for an exploration licence, which typically occurs prior to the detailed exploration phase, is a manifestation of the failure of the present system to recognise these phases of exploration.

By concentrating the assessment effort at an early stage in the exploration process, when the nature and extent of the exploration program cannot be fully formulated, even by the company concerned, the environmental conditions applied are of necessity framed in rather general terms. The implication of this is that the environmental conditions may not be effective and/or may apply inappropriate restrictions on the exploration.

Present procedures also require that assessment effort is put into all licence applications, even though relatively few exploration programs may proceed to the point where significant environmental damage is possible. The inefficiencies that flow from this restrict the effort that can be put into assessing individual exploration proposals, or the concentration of effort on proposals which proceed to a proving-up phase where most significant impacts are likely.

To overcome the above deficiencies the Committee has proposed several major amendments to the procedures for reviewing exploration licences. These amendments are intended to facilitate progressive assessment of exploration programs, as they proceed through subsequent phases of exploration. It is envisaged that several advantages will flow from this:

. it will enable the assessment of each phase of the exploration program to occur at the time when the company is approaching this phase and has a

detailed knowledge of the intended program. This will enable the application of more precise environmental conditions tailored to suit the particular environment and exploration program involved. In so doing it should reduce the environmental impact of exploration, and result in conditions that are more clearly applicable to the exploration work being proposed and hence more understandable and likely to be accepted by the contractors who must comply with them;

- importantly this procedure will also enable greater effort to be selectively applied to those relatively few exploration programs that proceed to the phase of exploration where there is the potential for significant environmental damage; and

- furthermore, the progressive review process will enable closer control over exploration in those instances where, during the course of the exploration program, the focus of attention may shift to extremely important and or fragile environments. In this manner specific conditions can be considered to minimise impact, or if appropriate, the company can be informed that exploration in a certain area is not acceptable. Through such a process environmental impact on the site may be avoided and the company involved will receive an early indication of the likelihood of being able to exploit the resource, thereby avoiding the loss of time and funds involved in exploration for a potential resource that it may not be allowed to exploit.

In summary, the application for an exploration licence should be accompanied by a discussion of the proposed overall exploration program, and detailed proposals for the first phase of exploration. The granting of an exploration licence should convey approval to conduct only the first phase of exploration proposed. When approaching the end of this phase the company should provide details of the exploration undertaken, together with detailed proposals for the next phase for approval.

Following the granting of an exploration licence, the review of subsequent phases of exploration should be the responsibility of an interdepartmental review body, comprising officers of the Mines Department and Department of

Conservation and Land Management. Subject to the agreement of both parties, decisions to approve the proposed program (on an amended version thereof) or to reject a program should be taken at departmental level. In the event that agreement is not reached the matter should be referred to the Environmental Protection Authority for resolution.

6.3.3 PROCEDURES FOR REVIEWING MINING LEASE APPLICATIONS

Further to the recommended procedures for reviewing applications for exploration licences, the Committee has proposed a number of amendments to the procedures for reviewing applications for mining leases in national parks and nature reserves. Such applications over national parks and A-class nature reserves would generally only be received if the area concerned has previously been declared open for the granting of exploration licences.

RECOMMENDATION 14

The Committee recommends that applications for mining leases over national parks and nature reserves and the assessment of mining proposals should be processed according to the procedures illustrated in figure 6.

Working through the recommended procedures, the first of the proposed amendments encountered is intended to overcome the problem often resulting from companies seeking mining leases before they have developed detailed mining proposals. In many respects this is akin to the problems of assessing an exploration proposal at the time of application. As with exploration licences the Committee has sought to provide sufficient flexibility to enable assessment of the likely environmental impacts to be postponed until such time as the company is preparing to mine and has the necessary detailed information available to enable effective assessment.

It is often the case that a mining lease is sought solely to maintain the interest of the leaseholder in the area's mineral resources, and to provide the leaseholder with a secure claim over such resources. A firm proposal to commence productive mining may be many years away and be dependent upon

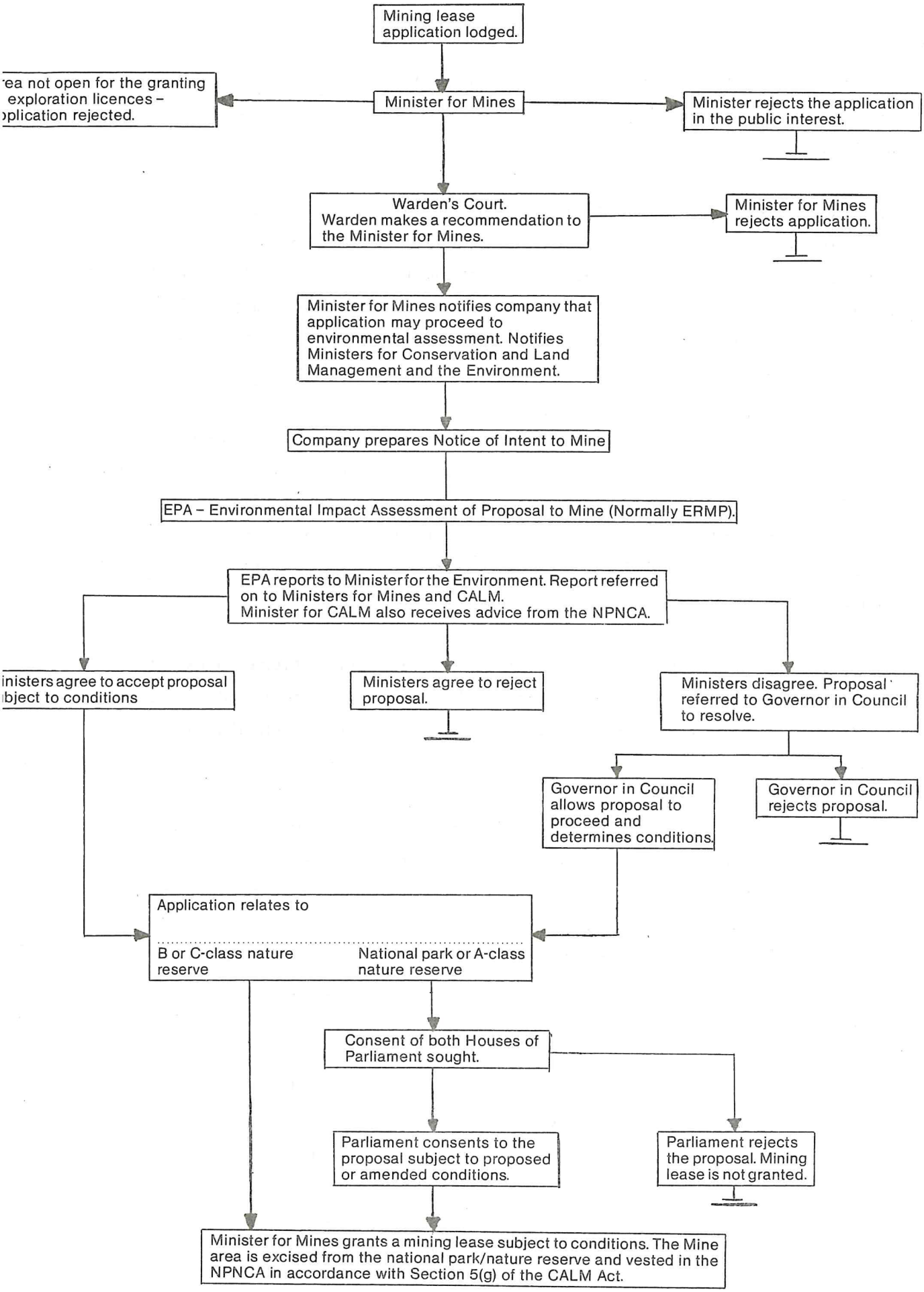


Figure 6. Procedure for reviewing mining lease applications over national parks and nature reserves

external factors such as fluctuations in commodity prices. In such cases it is not possible to assess the impacts of mining at the time the lease is applied for.

The inescapable conclusion from the above argument is that the consideration of applications for mining leases and assessment of the environmental impacts of proposed activities should be undertaken separately. However, the danger would then arise that the Government, by granting a mining lease, would be locked into approving subsequent mining proposals or paying compensation.

To avoid this situation the Committee has recommended that a mining lease application, once the technicalities of Warden's Court hearings have been concluded, be held over and not processed further until a firm proposal to mine is submitted to the Mines Department in the form of a Notice of Intent. This process would uphold the rights of the applicant for the lease, but would convey no powers.

In accordance with the environmental significance of national parks and nature reserves the Committee believes that the existing procedures are deficient in not expressly including provision for environmental impact assessment.

The Committee is of the view that all mining proposals which relate to areas designated as national parks or nature reserves should be referred to the Environmental Protection Authority for environmental impact assessment.

The referral, in the form of the Notice of Intent, should be treated as an application to change the landuse of the area affected by the mining proposal.

Once the Environmental Protection Authority has reported, if the Ministers for Conservation and Land Management, the Environment, and Minerals and Energy agree that the mining proposal can proceed then:

. in the case of a national park or A-class nature reserve, the approval of both Houses of Parliament to grant the mining lease is sought, and if gained the lease is granted; or

- in the case of a B or C-class nature reserve the mining lease is granted.

If agreement is not reached by the Ministers then, as in the case of applications for exploration licences, the matter is referred to the Governor in Council for resolution.

Thus the only distinction remaining between national parks, A-class nature reserves, and B and C-class nature reserves (other than the question of whether a national park or A-class nature reserve is open for the granting of exploration licences) is that Parliamentary approval is required for the granting of a mining lease in the first two cases.

Should a mining lease on a national park or nature reserve be granted, subject to agreed environmental conditions, then recognizing that its use will not be consistent with the function of the reserve, the mine area should be excised. The area should then be vested in the National Parks and Nature Conservation Authority, in accordance with Section 5(g) of the Conservation and Land Management Act 1984.

6.3.4 GENERAL RECOMMENDATIONS

A number of general recommendations can be made that apply to both exploration licences and mining leases. If the environmental conditions attached to mining tenements are to be effective in ensuring that associated impacts are adequately controlled, then a reporting mechanism is required. This mechanism should involve the mining company regularly reporting to the Mines Department, Department of Conservation and Land Management and Department of Conservation and Environment. It is envisaged that the last-named Department would only receive regular reports for mining leases. In the case of exploration licences reporting would be necessary only if the Environmental Protection Authority had become involved in assessing an exploration program (see Section 6.3.2).

RECOMMENDATION 15

The Committee recommends that reports should be prepared by the holders of mining tenements over national parks and nature reserves at appropriate intervals describing the environmental management of their activities. Such reports should be forwarded to the Mines Department, Department of Conservation and Land Management and (when appropriate) the Department of Conservation and Environment.

It is clearly important that environmental conditions on mining tenements be adequately enforced. This can occur both through requiring tenement holders to lodge bonds where this is considered necessary as a security against breach of environmental conditions and through more active inspection and enforcement by Government.

RECOMMENDATION 16

The Committee recommends that:

- **tenement holders over national parks and nature reserves be required, when necessary, to lodge bonds as a security against breach of environmental conditions; and**

- **Government allocate sufficient resources to enable adequate inspection and enforcement of the adherance to such conditions.**

In Section 6.3.1 the need for guidelines to aid the decision-making process for proposed exploration and mining activities was raised. The Committee believes that the development of such guidelines should be undertaken as a matter of urgency by a technical committee with representation provided for the Mines Department, Department of Conservation and Land Management and Department of Conservation and Environment. The guidelines should ensure that the advantages and disadvantages of the proposed activities are considered; thus a weighing-up process is contemplated.

RECOMMENDATION 17

The Committee recommends that a technical committee be established as a matter of urgency to formulate guidelines for the assessment of exploration and mining proposals in national parks and nature reserves. The committee should consist of representatives from the Mines Department, Department of Conservation and Land Management and Department of Conservation and Environment, and be convened by the last named Department.

6.4 MEANS OF AUTHORISING ACCESS TO NATIONAL PARKS AND NATURE RESERVES IN ORDER TO MARK OUT TENEMENTS

AND

WHETHER EXPLORATION IN NATIONAL PARKS AND NATURE RESERVES WITHOUT HOLDING A TENEMENT SHOULD BE ALLOWED, AND IF SO UNDER WHAT CONDITIONS

Bearing in mind that exploration and mining activities must be strictly regulated whenever they occur in national parks and nature reserves, it is important that access be controlled to such areas in order to mark out tenements and for exploration generally.

RECOMMENDATION 18

The Committee recommends that access to national parks and nature reserves for exploration and mining activities including access for the purpose of marking out a tenement should occur under only three circumstances:

- **as authorized by a geoscientific survey permit; or**
- **in accordance with the terms and conditions of an exploration licence, or**
- **in accordance with the terms and conditions of a mining lease.**

Thus, the only situation in which marking out is necessary is when a mining lease is to be applied for, which generally occurs when an exploration licence holder wishes to convert part of a tenement to a mining lease. Access for this purpose can be provided under the authority of the exploration licence.

Furthermore, exploration without holding a tenement can only occur under a permit to undertake geoscientific research and the only activities permitted are those which have no, or only minimal, environmental impact. Such activities were distinguished from ground-disturbing exploration in section 6.1.1.

One consequence of Recommendation 18 is that prospecting licences would no longer be granted over national parks and nature reserves.

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APPENDIX I ORIGIN OF SUBMISSIONS AND RESPONSES PROVIDING INFORMATION

(Listed in alphabetical order)

Mr R Anderson	Nollamara 6061
Mr C Arnold	Darlington 6070
Associated Minerals Consolidated Ltd	Nedlands 6009
Association of Mining and Exploration Companies (Inc)	Belmont 6104
Australian Conservation Foundation	Hawthorn 3122
Australian Institute of Landscape Architects (WA)	West Perth 6005
Australian Petroleum Exploration Assoc - Environmental Affairs Committee	Perth 6000
BHP Minerals Ltd	Melbourne 3001
Bond Corporation Pty Ltd, Petroleum Div	Perth 6001
Busselton Naturalists Club	Capel 6271
W H Butler	Perth 6001
CRA Limited	Melbourne 3001
Cairns and Far North Environment Centre	Cairns 4870
Campaign to Save Native Forests (WA)	Perth 6001
Cape Naturaliste Association	Dunsborough 6280
Central West Regional Development Advisory Committee	Perth 6000
The Chamber of Mines of Western Australia (Inc)	Perth 6000
Mr J B Clark	Paraburdoo 6754
Confederation of Western Australian Industry	Perth 6001
Conservation Commission of the Northern Territory	Alice Springs 5750
Conservation Council of South Australia	Adelaide 5000
Conservation Council of WA Inc	Perth 6000
Conservation Farming Society	Manjimup 6258
Department of Conservation, Forests and Lands - National Parks Service (Vic)	East Melbourne 3002
Mrs M Cooper	Mt Barker 6324
The Country Shires Council Assoc of WA	Perth 6000
Endeavour Resources Ltd	West Perth 6005
The Environment Centre NT Inc	Darwin 5794

Department of Environment and Planning (SA)	Adelaide 5001
Fitzgerald River National Park Association	Ravensthorpe 6346
Friends of Neerabup National Park	Padbury 6025
Goldfields Exploration Exploration Pty Ltd	Cloverdale 6105
Goldsworthy Mining Ltd	Perth 6000
Great Southern Regional Development Advisory Committee	Albany 6330
Mr S Hewett	Nannup 6275
Mr R Humphries	Cottesloe 6011
IUCN Australian Committee	
Irwin District Conservation Trust	Dongara 6525
Professor P Jennings	Murdoch 6150
Ms N Keys	Cottesloe 6011
Kimberley Regional Development Advisory Committee	Kununurra 6743
I and P Lantzke	Wembley Downs 6019
Mr A A Lewis MLC	Parliament House, Perth 6000
W G Martininck and Associates Pty Ltd	Perth 6000
N McLaren	Subiaco 6008
J D McLoughlin	Mt Lawley 6050
Department of Mineral Resources (NSW)	Sydney 2001
Department of Mines, Tasmania	Rodney Park, Tasmania 7018
Department of Mines and Energy, (SA)	Eastwood 5063
National Parks and Nature Conservation Authority	Como 6152
National Trust of Australia (WA)	Perth 6000
The Nature Conservation Council of NSW	Surrey Hills 2010
Northern Territory Department of Mines and Energy	Darwin 5790
Northern Territory National Parks Assoc	Alice Springs 5750
Pacific Copper Limited	Sydney 2000
Peel Preservation Group Inc	Falcon 6210
Queensland Department of Mines	Brisbane 4001
Queensland National Parks and Wildlife Service	North Quay 4000
Quinns Rock Environmental Research Group	Quinns Rocks 6030
Mr J Renshaw	Melville 6156
Department of Resources Development	Perth 6001

G R Ryan and Associates Pty Ltd	Subiaco 6008
Royal Society of Western Australia	Nedlands 6009
Mr B Schur	Mosman Park 6012
Southern Metro Regional Wetlands Conservation Society	Kardinya 6163
State Energy Commission	Perth 6001
State Planning Commission	Perth 6000
Stockdale Prospecting Ltd	South Yarra 3141
Mr J Stokes	Cunderdin 6407
Tasmanian Conservation Trust (Inc)	Hobart 7001
Mr R and Mrs H Taylor	Hopetown 6348
Mr W Thomas, MLA	Cannington 6107
The Tree Society	Mt Lawley 6050
WA Naturalists Club (Inc)	Nedlands 6009
Water Authority of Western Australia	Leederville 6007
Western Australian Petroleum Pty Ltd	Perth 6001
Western Australian Tourism Commission	Perth 6001
Western Australian Wildflower Society - Armdale - Kelmscott Branch	Kelmscott 6111
Western Mining Corporation Ltd	Belmont 6104
Westralian Sands Ltd	Capel 6271
The Wilderness Society NSW	Sydney 2000
Windsor Resources NL	Perth 6000
Worsley Alumina Pty Ltd	Collie 6225