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The Parliament of the Commonwealth of Australia

# **Exploring: Australia's Future**

— impediments to increasing investment in minerals and  
petroleum exploration in Australia

House of Representatives  
Standing Committee on Industry and Resources

21 August 2003  
Canberra

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### **Acknowledgment**

The Committee expresses its appreciation to Beach Petroleum Limited for its permission to use the photograph on the cover of this report.



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## Foreword

*“Who’d have thought geology could be so compelling” (book review of Krakatoa by Simon Winchester in Good Weekend 7 June 2003)*

This House of Representatives Standing Committee on Industry and Resources inquiry was about geology, or more descriptively, investment in Australia’s exploration geosciences leading to discovery. It was not about mining!

Resources exploration is about predicting where concentrations of valuable minerals or hydrocarbons may be located within the earth’s crust. A good deal of the resources exploration process involves abstract thinking - the construction of concepts. Exploration continues with observation, characterisation, the testing of ideas, and the screening and correlation of measurements. Good explorers dedicate themselves to unravelling the apparent vagaries of nature.

The discovery task is clearly not easy because there are many exploration programs that come to nothing. The risks are high, but the potential rewards can be huge. Good exploration ultimately is an exercise in risk reduction.

The Terms of Reference for this inquiry were received by the Committee in May 2002 and in the period since then, a balanced spread of submissions and witness evidence were received from Australia’s minerals and petroleum companies, government agencies, community groups, industry peak bodies, research institutions and individuals.

The Committee’s task was to investigate impediments to investment in minerals and petroleum exploration. Aggregate expenditure on resources exploration has been falling away since the mid 1990s and perhaps as a result, significant new discoveries are not being made.

In contrast, the minerals mining and the oil and gas production side of the resources industry, the downstream side, has been steaming along at full pace. However, the message was clear, in order to sustain the current significant levels of Australian resources industry output and resultant exports, there has to be a continuing feed of new discoveries into the production stream.

Whilst recognising the inevitable link between the resources exploration process and mining, and despite being plied with a lot of mining data, the Committee strictly limited its deliberations to the upstream (exploration) end of the resources continuum.

The Committee noted niches of despair in the resources exploration industry. Explorers said they just could not get on to the ground. If they eventually gained access, they found they had insufficient funds to test their sites adequately for the target mineral concentrations or petroleum accumulations.

There is no doubt that the exploration industry has been hit by the brutal realisation that it has experienced a paradigm shift in the way it must do things to have a chance of making new discoveries. Exploration ground rules have changed profoundly over the last decade or so; globalisation, Native Title, lack of investment funds, competition for speculative investment dollars; they have all played roles in reducing investment support for an industry portrayed by some as “old economy”, a tag roundly rejected by the Committee.

Governments too are facing significant change in their interactions with the resources industry. They are increasingly taking responsibility for the redressing of the exploration downturn by providing, *inter alia*, upgraded regional geoscientific datasets.

The thrust of the Committee’s recommendations has been to build industry recovery on good science through a collaborative approach with the Northern Territory, the States and the industry. The approach is directed at optimising technical research output and investment in the intellectual skills of the exploration geoscientists. There is not much point in perfecting issues of an administrative nature, like policy and legislation, if the technical challenges are not mastered and the science is not first class.

Exploration is a confidence thing for practitioners and investors alike.

As well as canvassing the issues included in the Terms of Reference, resources endowment and drawdown, industry structure, capital supply, land access and project approvals, data availability, Indigenous community relations and regional development, the inquiry also touched on geoscience R&D, professional education and what could be termed as the “discovery culture”.



One fundamental that emerged during the course of the inquiry was that if there are some world-class resources discoveries, or even just one, in a short space of time in Australia, the resultant exploration momentum generated would be such that the problem of insufficient investment flowing into the resources exploration industry would probably evaporate.

With solid long-term investment support, the industry's problems will substantially disappear.

My sincere thanks are directed to my Committee colleagues who have worked diligently to master the complexities of exploration geoscience. Together the Committee members have come up with recommendations of substance that, if implemented, can make a difference to Australia's resources exploration future.

The staff of the secretariat have been hugely supportive throughout the inquiry process and I express my appreciation to them too.

As a final word, my assessment is that the Committee, after wrestling with a diverse array of technical jargon during the course of the inquiry, found "geology to be surprisingly compelling".

**Geoff Prosser MP**  
**Chair**



## **Membership of the Committee**

**Chair**            The Hon Geoff Prosser, MP

**Deputy Chair**   The Hon Dick Adams, MP

**Members**        Mr Anthony Byrne, MP (to 21 October  
2002)

Mr Don Randall, MP

Mr Joel Fitzgibbon, MP (from 27 June  
2002)

Mr Alex Somlyay, MP (to 25 June 2002)

Mr Steve Gibbons, MP (to 24 June 2003)

Mr Cameron Thompson, MP

Mr Barry Haase, MP

Mr Ken Ticehurst, MP (additional member  
for this inquiry, from 19 August 2002)

Mr Michael Hatton, MP

Mr David Tollner, MP (from 25 June 2002)

The Hon Leo McLeay, MP (from 24 June  
2003)

Dr Mal Washer, MP

## **Committee Secretariat**

<b>Secretary</b>	Mr James Catchpole
<b>Inquiry Secretary</b>	Mr Fred Cook
<b>Consultant</b>	Mr John Cummins
<b>Research Officer</b>	Mr Alex Stock
<b>Administrative Officer</b>	Ms Maria Pappas



## **Terms of reference**

On 24 May 2002 the Minister for Industry, Tourism and Resources, the Hon Ian Macfarlane MP, referred the following inquiry to the committee.

That the committee inquire into and report on any impediments to increasing investment in mineral and petroleum exploration in Australia, including:

- An assessment of Australia's resource endowment and the rates at which it is being drawn down;
- The structure of the industry and role of small companies in resource exploration in Australia;
- Impediments to accessing capital, particularly by small companies;
- Access to land including Native Title and Cultural Heritage issues;
- Environmental and other approval processes, including across jurisdictions;
- Public provision of geoscientific data;
- Relationships with indigenous communities; and
- Contributions to regional development.



## List of abbreviations

3D Seismic	Three dimensional seismic imaging technology
ABARE	Australian Bureau of Agricultural and Resource Economics
ABS	Australian Bureau of Statistics
AGWA	Auditor General for Western Australia
AHC	<i>Australian Heritage Commission Act 1975</i>
AIG	Australian Institute of Geoscientists
ALRA	<i>Aboriginal Land Rights (Northern Territory) Act 1976</i>
AMEC	Association of Mining & Exploration Companies (Inc)
ANAO	Australian National Audit Office
APCRC	Australian Petroleum Cooperative Research Centre
APPEA	Australian Petroleum Production & Exploration Association Ltd
ASX	Australian Stock Exchange
ATO	Australian Taxation Office
BOE	Barrel of Oil Equivalent
CEO	Chief Executive Officer
CRC	Cooperative Research Centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DITR	Department of Industry, Tourism and Resources

EDR	Economic Demonstrated Resources
EEZ	Exclusive Economic Zone
EPA	Environment Protection Agency
EPBC	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
GA	Geoscience Australia
Heritage Protection Act	<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>
ILUA	Indigenous Land Use Agreement
IPA	Indigenous Protected Area
IPO	Initial Public Offering
IUCN	International Union for Conservation of Nature
JORC	Joint Ore Reserves Committee
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas
LTBR	Long Term Bond Rate
MCA	Minerals Council of Australia
mmbbl	million barrels
NNTT	National Native Title Tribunal
P(SL)A	<i>Petroleum (Submerged Lands) Act 1967</i>
PRRT	Petroleum Resource Rent Tax
R&D	Research and Development
SA	South Australia
SMS	Sydney Marine Sand Pty Ltd
UK	United Kingdom
US, USA	United States of America
WA	Western Australia



## List of recommendations

### 3 Corporate Structure, Capital Raising and Taxation

#### Recommendation 1

The Minister for Industry, Tourism and Resources facilitate meetings between appropriate industry representative bodies and the Australian Stock Exchange to develop quality control and risk assessment guidelines to assist minerals and petroleum exploration companies to assemble high quality Initial Public Offerings that can achieve market acceptance and support.

#### Recommendation 2

The Minister for Industry, Tourism and Resources in conjunction with the Treasurer investigate the introduction of a Flow-Through Share Scheme for companies conducting eligible minerals and petroleum exploration activities in Australia.

#### Recommendation 3

The Petroleum Resource Rent Tax be reviewed to investigate the options of:

- Raising the carry forward rate for un-deducted general project related expenditures from the long term bond rate plus five percentage points to a minimum of the long term bond rate plus ten percentage points;
- Allowing undeducted exploration expenditure incurred more than five years prior to the provision of a production licence to be compounded forward at the Long Term Bond Rate plus 15 percentage

points for the first five years and then, for the subsequent years, compounded forward at the Long Term Bond Rate; and

- Reducing the PRRT rate for petroleum production from newly discovered accumulations in waters of greater than 400 meters depth, and according to a production plan deemed by the Minister for Industry, Tourism and Resources to be in the national interest.

#### **Recommendation 4**

The administration of retention leases be reviewed to require:

- Work program technical details (excluding financial information), relating to retention leases issued to petroleum exploration companies under the *Petroleum (Submerged Lands) Act 1967*, be made public;
- Holders of retention leases under the *Petroleum (Submerged Lands) Act 1967* applying for re-issue of those retention leases, show cause why those retention leases should not be made contestable after expiry of the first five years of tenure, and any subsequent five years of tenure.

#### **Recommendation 5**

The Minister for Industry, Tourism and Resources and appropriate petroleum production and exploration peak bodies, review the feasibility of a “liquids identification” bounty scheme for junior exploration companies to encourage them to explore the margins of on-shore production basins for small accumulations of petroleum liquids.

## **4 Pre-Competitive Geoscience Data Acquisition**

#### **Recommendation 6**

The Minister for Industry, Tourism and Resources seek additional funds to enable Geoscience Australia to accelerate onshore pre-competitive data acquisition programs.

#### **Recommendation 7**

The Minister for Industry, Tourism and Resources seek the collaboration of the states and the Northern Territory through the Ministerial Council on Minerals and Petroleum Resources, to conduct an airborne gravity gradiometry survey of the Australian landmass.

#### **Recommendation 8**

The Minister for Industry, Tourism and Resources seek the collaboration of the states and the Northern Territory through the Ministerial Council



on Minerals and Petroleum Resources, to conduct a series of ground truthing drill programs to definitively test selected geophysical and geochemical anomalies to maximise the worth of existing geoscientific datasets.

**Recommendation 9**

The Minister for Industry, Tourism and Resources establish an advisory board charged with the oversight of the strategic direction, monitoring of performance and quality control of Geoscience Australia's pre-competitive programs. Such a board should, ideally, include Northern Territory and state government representatives as well as representatives from appropriate minerals sector and petroleum sector peak bodies.

## **5 Geoscience Research and Education**

**Recommendation 10**

The National Task Force proposed by the CSIRO Division of Exploration and Mining be supported financially and charged with the task of implementing the proposal entitled *Australia's Exploration Future* to provide (in its words) breakthrough concepts, knowledge methods and techniques for transfer to minerals explorers.

**Recommendation 11**

CSIRO Petroleum, through its membership of the Australian Petroleum Cooperative Research Centre, encourage research into cost-effective innovation of petroleum exploration technologies such as three dimensional seismic imaging technology, for onshore petroleum exploration.

**Recommendation 12**

The Department of Industry, Tourism and Resources in conjunction with the Department of Education, Science and Training discuss with appropriate peak bodies and professional associations to develop, in collaboration with universities, tertiary-level short courses to encourage excellence in minerals and petroleum exploration management culture, innovative operational approach and optimisation of the national geoscientific knowledge base.

## 6 Titles

### Recommendation 13

The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, collaborate to establish and implement nationally consistent resources exploration title management processes. Attention should be directed towards exploration title type, conditions, tenure, charges, reporting requirements and administration, with the view to having a nationally harmonised regime.

### Recommendation 14

The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to establish harmonised and efficient procedures for processing applications for offshore mining and exploration licences under the *Offshore Minerals Act 1994*.

### Recommendation 15

The Minister for Industry, Tourism and Resources establish a function in the Department of Industry, Tourism and Resources to take the lead role in coordinating and expediting the Commonwealth, Northern Territory and state (as appropriate) processes for the approval of onshore and particularly offshore petroleum exploration permits.

### Recommendation 16

The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to investigate the feasibility of introducing to all Australian jurisdictions, optional conjunctive exploration/production titles combined with uniform mandatory relinquishment requirements.

### Recommendation 17

The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to store all public domain geoscientific data (legacy and pre-competitive) in digital form in a national data repository.

## 7 Exploration and Native Title

### Recommendation 18

Income tax legislation be amended to allow one hundred percent immediate deductions for expenditure incurred in conducting negotiations required by the *Native Title Act 1993* or *Aboriginal Land Rights (Northern Territory) Act 1976*, whichever applies, for the purposes of permitting minerals and petroleum exploration to proceed.

### Recommendation 19

The Attorney-General and the Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with relevant state and Northern Territory Ministers, provide additional resources to Native Title representative bodies. The resources should be targeted and limited to support activities that facilitate negotiation processes.

### Recommendation 20

The Attorney-General, the Minister for Industry, Tourism and Resources and the National Native Title Tribunal liaise with state and the Northern Territory governments and the resources industry to promote the use and better understanding of the expedited procedures contained in sections 32 and 237 of the *Native Title Act 1993*, for low impact exploration.

### Recommendation 21

The Minister for Immigration and Multicultural and Indigenous Affairs implement a simplified and accelerated process for granting exploration licences on land granted under the *Aboriginal Land Rights (Northern Territory) Act 1976* with a view to reducing the economic transaction costs emanating from the existing provisions of the Land Rights Act.

### Recommendation 22

The Minister for Environment and Heritage consult with state and Northern Territory counterparts to formulate an action plan to review and amend the legislation governing the management and protection of Indigenous cultural heritage to ensure that it is consistent across all states and the Northern Territory.

### Recommendation 23

The Minister for Environment and Heritage ensure that the International Union for Conservation of Nature category related to multiple land use is the adopted conservation management option for Indigenous Protected Areas.

## 8 Environmental and Other Approval Regimes

### Recommendation 24

Environment Australia consult with the resources industry as a matter of urgency to finalise sufficiently detailed sectoral guidelines for mineral exploration activity – both terrestrial and offshore - contained in the *EPBC Act Administrative Guidelines on Significance*.

### Recommendation 25

The Minister for Environment and Heritage and the Minister for Industry, Tourism and Resources amend the environmental approval processes under the *Environmental Protection Biodiversity Conservation Act 1999* and the *Petroleum (Submerged Lands) Act 1967* (and associated regulations) to ensure the consistency and harmonisation of requirements.

### Recommendation 26

The Minister for Environment and Heritage and the Minister for Industry, Tourism and Resources harmonise Commonwealth, state and Northern Territory environmental and cultural heritage regulatory regimes as they affect the resources exploration (and production) industry.

## 9 Resources Exploration and the Community

### Recommendation 27

The Minister for Industry, Tourism and Resources bring together representatives of Indigenous communities and resources exploration interests to facilitate them developing a better appreciation of the sensitivities of all parties involved in negotiating land access for exploration purposes under the *Native Title Act 1993* and the *Aboriginal Land Rights (Northern Territory) Act 1976*.

### Recommendation 28

The Attorney-General and the Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with relevant state ministers, consider introducing transparent accountability processes and guidelines to encourage fair and reasonable compensation outcomes for access to land for exploration purposes in Indigenous Land Use Agreements under the *Native Title Act 1993*. Such accountability mechanisms should form a requirement for acceptance of any additional administrative funding provided to Native Title representative bodies.

The Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with the Northern Territory government, consider introducing transparent accountability processes and guidelines to encourage fair and reasonable compensation outcomes for access to land for exploration purposes in Part IV agreements under the *Aboriginal Land Rights (Northern Territory) Act 1976*.



## **Introduction**

- 1.1 The House of Representatives Standing Committee on Industry and Resources received its reference on 23 May 2002 from the Minister for Industry, Tourism and Resources, the Hon Ian Macfarlane MP, to inquire into resources exploration impediments (see page xii for the inquiry Terms of Reference).
- 1.2 The Committee adopted a broad interpretation of the Terms of Reference to embrace not only the issues specified in the Terms but other relevant issues that it deemed as being significant impediments, now or in the future, to the discovery of resources (minerals and petroleum) in Australia.

## **Interpretation of the Terms of Reference**

### **The Resources Industry**

- 1.3 The resources industry consists of the minerals sector and the petroleum sector. The minerals sector includes metallic, non-metallic and industrial minerals, gemstones, and certain energy minerals including coal and uranium. The petroleum sector includes crude oil, condensate, natural gas, sales gas, methane, liquefied petroleum gas (LPG), liquefied natural gas (LNG), ethane, and carbon dioxide.

### **Resources Exploration**

- 1.4 The Committee has adopted the Australian Bureau of Statistics (ABS) definition of resources exploration for the purposes of this inquiry:

[Resources exploration] activity involves searching for concentrations of naturally occurring solid, liquid or gaseous materials and includes new field wildcat and stratigraphical and extension/appraisal wells and mineral appraisals intended to delineate or greatly extend the limits of known deposits by geological, geophysical, geochemical, drilling or other methods. This includes drilling of boreholes, construction of shafts and adits primarily for exploration purposes but excludes activity of a developmental or production nature. Exploration for water is excluded.<sup>1</sup>

- 1.5 Exploration is undertaken in a series of steps to build or confirm predictions of where minerals deposits or petroleum accumulations might be. Exploration typically includes some or all of the following stages:
- researching, collating and reinterpreting existing geological data and undertaking preliminary conceptual studies;
  - acquiring an exploration title, by lodgement or bidding, and obtaining the appropriate Native Title, environmental and cultural heritage clearances;
  - undertaking geological, geochemical and geophysical surveying; and
  - drilling and logging cores or wells, bulk sampling and quality testing to determine the feasibility of full scale production.
- 1.6 Following successful exploration, development finance is arranged and production facilities are built. These latter steps are not exploration although the boundary between exploration and production can be blurred if, for instance, a pilot plant is built. In reality, successful exploration is part of a continuum of activity extending from ore discovery to product delivery.

### **Brownfields and Greenfields Exploration**

- 1.7 There are two kinds of resources exploration activity: “greenfields” and “brownfields”. These terms are widely used, generally understood but loosely defined and can mean different things in small or global companies.<sup>2</sup>
- 1.8 The terms greenfields exploration and brownfields exploration were coined by the petroleum exploration sector. In general terms greenfields
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1 Australian Bureau of Statistics, *Mineral and Petroleum Exploration Australia, March Quarter 2003, Catalogue # 8412.0*, p. 24. An adit is a horizontal opening.

2 Geoscience Australia, “Greenfields or Grassroots?: A Discussion Paper”, *Exhibit No. 53*.



petroleum exploration refers to work undertaken in remote locations that are unexplored or incompletely explored. It is high risk exploration, generally in frontier basins where hydrocarbons have not been previously recorded in drill holes.

- 1.9 In recent years the minerals sector has adopted the terms to differentiate high risk remote exploration activity from near-mine exploration activity. Brownfields exploration is that undertaken close to an operating mine with the objective of extending its operating life and taking advantage of the established infrastructure.<sup>3</sup>
- 1.10 In a variation on the theme, the South Australian Government described an exploration spectrum from pre-competitive exploration (high risk/low cost); to grassroots exploration; to advanced exploration; to brownfields exploration (low risk/high cost).<sup>4</sup>
- 1.11 The objective of discovering *new* resources and the assignment of a high *risk* rating are the common features linking the application of the greenfields term to both minerals and petroleum sectors. Greenfields exploration, thus, has the goal of establishing a new mine requiring new infrastructure, regardless of it being in an established mining field or in a remote location.
- 1.12 The Committee drew on these different definitions to formulate an activity based definition of greenfields exploration as:

Early stage or grassroots work embracing prospecting, geoscientific surveys, drilling, sample collection and testing, but excluding work of brownfields nature, pit and shaft sinking and bulk sampling.

## Conduct of the inquiry

- 1.13 The inquiry was advertised in national and regional newspapers in early June 2002. The Committee also wrote to over three hundred potentially interested parties seeking submissions and promoted the inquiry via the House of Representatives website.

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3 Adelaide Resources Limited, *Submission No. 114*, p. 1631; Bowler, John (Chair) (2002) *Ministerial inquiry into Greenfields Exploration in Western Australia*, p. 18, Western Australian Government.

4 South Australian Government, *Submission No. 118*, p. 1654.

- 1.14 One hundred and twenty submissions and fifty-nine exhibits were received and accepted by the Committee and, except for confidential items, are listed at Appendix A and Appendix B respectively. Ten public hearings were held across Australia and a list of the witnesses and organisations represented at these hearings is at Appendix C. In addition the Committee received several private briefings.
- 1.15 Inspections of an exploration project targeting nickel laterite mineralisation and a gold project were conducted in Kalgoorlie, Western Australia in October 2003.

### **Scope of the Inquiry**

- 1.16 The Terms of Reference required the Committee to investigate impediments to minerals and petroleum exploration and not to impediments to mining itself. Accordingly the Inquiry did not include such matters as mine development, ore production, ore beneficiation, product marketing and shipment.
- 1.17 Similarly, the Committee limited its consideration of major issues such as employment, infrastructure and economic activity, and education strictly to their relevance to the exploration function. For those few issues where there is no clear dividing line between the exploration and development functions, the Committee took a broader view rather than a narrower view.
- 1.18 The Committee notes that there are many technical distinctions between the science of the discovery of “mineral” deposits and “petroleum” accumulations, respectively. It also notes that exploration professionals generally specialise in one or other sector, but not both. The Committee is mindful that much of the specialist material in submissions and witness evidence tended to be sector-specific, and was not intended to reflect the situation across the resources industry generally.

### **Structure of the Report**

- 1.19 The Committee structured its report generally following the sequence of a routine resources exploration program. Throughout the report there are cross linkages to the items specified in the Terms of Reference as well as to additional issues that were raised in submissions and in evidence at public hearings. The report is structured as follows:

- Chapter 2 addresses Australia’s perceived resources endowment, the known inventory and the current draw-down trends;
- Chapter 3 addresses industry and corporate structure and taxation issues, corporate and individual taxation issues including depreciation regimes, capital raising schemes via the flow-through share approach and other mechanisms, and resource rent tax and resources royalties;
- Chapter 4 addresses pre-competitive geoscience data acquisition;
- Chapter 5 addresses geoscience research and education;
- Chapter 6 addresses the allocation and regulatory management of resources tenements principally concerning off-shore petroleum issues, and some state based tenement issues relating to onshore tenements.
- Chapter 7 discusses land access issues including Native Title and cultural heritage;
- Chapter 8 canvasses environment approvals issues including cross-jurisdictional matters; and
- Chapter 9 captures a number of lifestyle and community issues, including regional development, relationships with Indigenous communities and lifestyle dynamics affecting resources industry professionals.
- In Chapter 10 the Committee concludes that the exploration industry can have a bright future.

1.20 Any reference in this report to “state” governments implicitly includes the Northern Territory government.





## Inventory, Draw-down and Replenishment

### Introduction

- 2.1 Australia ranks as one of the world's leading mineral resources nations. It has the world's largest Economic Demonstrated Resources (EDR)<sup>1</sup> of mineral sands, nickel, tantalum, uranium and lead, zinc and cadmium. In addition, its EDR is in the top six worldwide for bauxite, bismuth, black coal, brown coal, cobalt, copper, gold, iron ore, lithium, manganese ore, rare earth oxides, silver and gem/near gem diamonds. In contrast, Australia's EDR of platinum group metals is extremely small and Australia lacks substantial resources of chromium.<sup>2</sup>
- 2.2 Australia's petroleum EDR are very small in global terms. Australia has only a fraction of a percent of the world's known oil reserves and a couple of percent of gas reserves. But the high level of oil self sufficiency it has enjoyed over the past 30 years, mainly from offshore production, has meant that Australia has been isolated from concern about security of oil supplies.<sup>3</sup>
- 2.3 Minerals exploration and mining contributes significantly to all aspects of the Australian economy. In 2001-02, Australian minerals and energy production was valued at \$53.3 million.<sup>4</sup> Minerals and energy exports

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1 The term Economic Demonstrated Resources (EDR) is defined by Geoscience Australia as resources for which profitable extraction or production under defined investment assumptions is possible. For EDR, tonnages and grades have been computed from samples of the resource taken from points spaced to provide assured resource continuity.

2 Geoscience Australia, *Submission No. 53*, p. 639.

3 Geoscience Australia, *Submission No. 53*, p. 660.

4 *Australian commodities vol 10 no 2 June quarter 2003*, p. 225.

represent 46 percent of Australian merchandise exports and 36 percent of total exports. Over the past 18 years, Australia's exports of minerals and petroleum have earned \$565 billion, some 50 percent higher than exports of the agricultural sector.<sup>5</sup>

- 2.4 Exploration is an essential part of the resources cycle, necessary to replace extracted reserves. The industry would be unsustainable were it not for the new deposit discoveries through successful exploration. Modern successful exploration involves high skill levels, advanced technology, innovation, and strong commitment and perseverance. It also requires considerable capital and involves major risk-taking by exploration companies. The reality is that very few exploration programs lead to discoveries of commercial resources.

## How Long Will it Last?

- 2.5 New resources projects now take between seven and ten years to proceed from discovery to production. There have been few significant new resources discoveries in Australia over the last five to eight years. The Australian Institute of Geoscientists stated that in another five years, a large proportion of mines currently in production will have closed, or be nearing the end of their operational lives. This will result in reduced exports, slower business activity, lower employment and fewer opportunities for economic and infrastructure development, particularly in regional Australia.<sup>6</sup>
- 2.6 The Australian Institute of Geoscientists advised that a recent list of minerals and energy projects published by the Australian Bureau of Agricultural and Resource Economics (ABARE) included only 12 new mining project commitments across Australia, and a further eight advanced projects. This level of project development falls far short of that needed to sustain mining's contribution to the Australian economy and will continue to decrease unless resources exploration in Australia is revitalised.<sup>7</sup>
- 2.7 According to the Queensland Mining Council, based on current technology, known reserves and current production rates, ten mines will close in Queensland by 2010, another five will be mined out by 2015, and all but one base metal mine will be mined out by 2015. Even assuming that

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5 Geoscience Australia, *Submission No. 53*, p. 631.

6 Australian Institute of Geoscientists, *Submission No. 22*, p. 158.

7 Australian Institute of Geoscientists, *Submission No. 22*, p. 158.

all known gold, silver, lead, zinc and copper projects already being evaluated proceed in the next five years, all will be mined out by about 2015.<sup>8</sup>

- 2.8 The Western Australian Government considers that the gold sector in Western Australia may shrink to only one quarter of its present size over the next 20 years unless inferred resources are successfully upgraded, new projects are commissioned, and new discoveries made. In addition, the Western Australian diamond industry is based on one mine (since the submission was lodged, the Ellendale diamond mine has commenced production, but the sentiment of the WA Government's comment is unchanged) and unless other large economic deposits can be found quickly, at the present rate of production, only an additional 13 years of mine life remain.<sup>9</sup>
- 2.9 The minerals industry in Tasmania relies on a small number of major operations, many of which have a limited reserve base. According to the Tasmanian Government, all but one of the six major mines have less than ten years of reserves and three had less than five years reserves.<sup>10</sup> The Tasmanian Minerals Council forecasts that the mining industry in Tasmania will end within 15 years unless new ore bodies are found quickly.<sup>11</sup>
- 2.10 The Northern Territory Minerals Council commented that more mines are closing than opening.<sup>12</sup>
- 2.11 The Victorian Minerals and Energy Council advised that the Bass Strait oil and gas resources are declining.<sup>13</sup>

## Mineral Resources

- 2.12 Over the three decades of systematic assessment, EDR for all major mineral commodities have, on average, either increased or been maintained despite substantial levels of production. None has decreased significantly. According to Geoscience Australia, much of the success in maintaining EDR can be attributed to the sustained exploration activity that Australia has enjoyed until recently, and to the highly prospective

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8 Queensland Mining Council, *Submission No. 60*, p. 780.

9 Government of Western Australia, *Submission No. 84*, p. 1281.

10 Tasmanian Government, *Submission No. 86*, p. 1381.

11 Tasmanian Minerals Council, *Submission No. 88*, p. 1393.

12 Northern Territory Minerals Council Inc., *Submission No. 87*, p. 1385.

13 Victorian Minerals and Energy Council, *Submission No. 63*, p. 859.

nature of the continent. The depletion of EDR by mining has also been offset by technical and economic changes that have allowed formerly sub-economic deposits to be reclassified as economic.<sup>14</sup>

2.13 The EDR to production ratios provide an indication of the time until economically recoverable resources are exhausted. Geoscience Australia provided EDR/production ratios as assessed at 5 year intervals since 1975 which are shown in the following table.

Table 2.1 Years of economic demonstrated resources at the production level for the year

Commodity	1975	1980	1985	1990	1995	2000
Coal	255	270	210	250	205	140
Bauxite	145	100	90	135	60	80
Iron Ore	180	155	175	135	125	80
Nickel	25	30	20	45	35	120
Copper	30	25	60	20	65	30
Zinc	40	45	30	20	40	25
Gold	10	20	15	10	15	15

(rounded to nearest 5 years)

Source Geoscience Australia, Submission No. 53, p. 643.

2.14 Geoscience Australia commented that it is clear from these figures that Australia has major resources of the bulk commodities: coal, bauxite, and iron ore. There are other substantial known resources for the bulk commodities that could become EDR given impetus to bring new mines on stream. However, the markedly lower EDR/production figure for iron ore in 2000 indicates how rapid changes can result from major increases in production, coupled with reassessment of resources. The situation for gold and some base metals (particularly zinc) is less secure.<sup>15</sup>

2.15 The Minerals Council of Australia (MCA) believes that the EDR/production ratio is only a partial indicator of the future viability of a particular commodity sector because the ratio can be influenced by:

- further discoveries of EDR;
- changes in production levels;
- upgrading or downgrading of resources through ongoing assessments of what are known in the JORC Code<sup>16</sup> as “modifying factors” (mining,

14 Geoscience Australia, *Submission No. 53*, p. 639.

15 Geoscience Australia, *Submission No. 53*, pp 642-3.

16 The Joint Ore Reserves Committee (JORC) consists of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia which



metallurgical, economic, marketing, legal, environment social and governmental factors); and

- upgrading of resources through ongoing assessments that results in an increasing level of geological knowledge or confidence.<sup>17</sup>

2.16 The EDR/production ratio is based on an overall assessment, rather than the current commercial objectives of the companies holding the resource. In MCA's view, they represent an overestimate (or at best, a maximum estimate) of the national resource inventory for a particular mineral commodity.

2.17 MCA considers that known resources of zinc, and particularly gold, are not sufficient to support current production levels beyond the medium-term. MCA notes that there are a number of reasons for not being complacent about the state of Australia's national resource inventory and Australia's future prospectivity without ongoing exploration, namely:

- discovery costs have increased and Australia is relatively "mature" in a minerals exploration sense with most of the accessible surface deposits already known; and
- the long lead times involved in bringing an operation into production.<sup>18</sup>

## Petroleum Resources

2.18 Australia's commercial reserves of crude oil are estimated to be 1213 million barrels (mmbbl), and of condensate to be 758 mmbbl (as at 1 January 2000), which is equivalent to about six years current consumption. Estimates of reserves that have not yet been declared commercially viable are 452 mmbbl and 1407 mmbbl respectively. While reserves of condensate are significant, their potential rate of production depends in part on the commercialisation of the associated gas resource. According to the Australian Petroleum Production and Exploration Association (APPEA), unless there are significant new discoveries, Australia will be importing 60 percent of its requirements by the year 2010.<sup>19</sup>

2.19 Geoscience Australia advised that crude oil reserves peaked in 1994, declined by 19 percent by the year 2000 and now stand at levels not

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prepares the JORC Code, which sets out minimum standards for reporting of exploration results.

17 Minerals Council of Australia, *Submission No. 81*, p. 1161.

18 Minerals Council of Australia, *Submission No. 81*, pp 1162-3.

19 Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 486.

encountered since the 1980's. It is clear that the rate of discovery of new oil reserves has not kept up with production. In the period 1990-1994, a total of 869 million barrels of crude oil was produced and 751 million barrels found. In the period 1995-1999, a total of 769 million barrels of crude oil was produced and 317 million barrels found.

- 2.20 Commercial reserves of crude oil have stayed constant or grown slightly over the last decade whilst total reserves have declined. The decline is due to a decrease in non-commercial reserves which have been declared commercial. However, reserves have not been replenished through exploration. This indicates that the new reserves, which can be brought into production in the near term, are limited.<sup>20</sup>
- 2.21 Gas resources have grown continuously over the period since 1965, and continue to grow rapidly. In recent years many super-giant gas fields (each greater than 3.5 trillion cubic feet) have been discovered. However, because of the remote offshore location of many of the largest discoveries, the growth in commercial reserves has been much less than the growth in non-commercial reserves.<sup>21</sup> To ensure that there are adequate gas supplies over the period to 2020, either more commercial gas will have to be found, or more reserves will need to be proved commercial and gas resources developed and transported to markets in time to meet growing demand.<sup>22</sup>
- 2.22 Geoscience Australia advised that Australia's natural gas has a current "life" estimated at 54 years, but past estimates have ranged between about 38 and 65 years. The consumption of crude oil and condensate in 1999 could be sustained by remaining EDR in 1999 for 11.8 years.<sup>23</sup>

## Minerals Exploration

- 2.23 Exploration is a high-risk activity. Greenfields exploration is extremely high risk. "Few [projects] succeed, most fail".<sup>24</sup> Expenditure on exploration is an ongoing and necessary expense of a minerals company as it costs, on average around \$US 50 million (but it can be up to \$US 200 million) to discover and assess the feasibility of a world-class ore body. This typically takes five to fifteen years to develop from initial discovery (depending *inter alia* on the size of the mine).<sup>25</sup>

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20 Geoscience Australia, *Submission No. 53*, p. 662.

21 Geoscience Australia, *Submission No. 53*, p. 662.

22 Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 488.

23 Geoscience Australia, *Submission No. 53*, p. 666.

24 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1576.

25 Minerals Council of Australia, *Submission No. 81*, p. 1165.

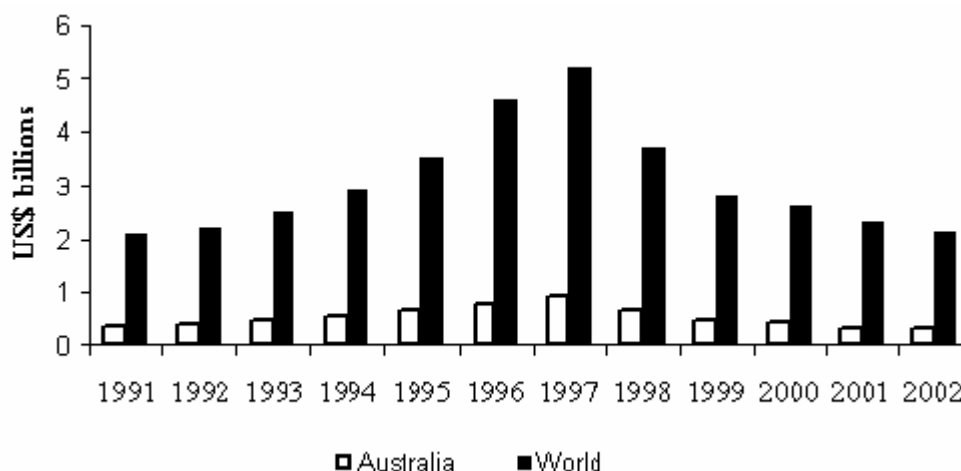
- 2.24 Gold has accounted for the major share of real mineral exploration expenditure over the past two decades. Gold exploration expenditure as a proportion of aggregate Australian mineral exploration expenditure was 51.7 percent in 2001-02, slightly below the average share of 57 percent in the 1990s but higher than the average share of 42 percent in the 1980s. The share of base metals and nickel fell to 20.7 percent in 2001-02, compared with an average of 23 percent in the 1990s and 1980s. Over the past two decades, the shares for mineral sands and iron ore have increased, while the shares for coal and uranium, diamonds and the other category have decreased.<sup>26</sup>
- 2.25 Exploration for minerals (non-petroleum) steadily increased between 1992-93 and 1996-97 (increasing by 83 percent during this period) but has fallen since then (by 44 percent between 1996-97 and 2001-02). A change in expenditure on exploration for gold has been the principal driver behind the overall exploration expenditure trends. Since 1996-97, mineral exploration expenditure in Australia has declined by 44 per cent to \$641 million in 2000-01, the lowest level since 1978-79. The outcome in 2001-02 is \$83 million lower than the 1991-92 trough and \$133 million lower than the 1985-86 trough.
- 2.26 According to MCA the recent downturn is largely due to reduced spending on exploration for gold and base metals, although exploration expenditure has also declined in recent years for coal and uranium, diamonds and iron ore.<sup>27</sup>
- 2.27 Global and Australian exploration budgets are shown in figure 2.1.

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26 Minerals Council of Australia, *Submission No. 81*, p. 1166; Australian Bureau of Statistics, *catalogue # 8412.0, March 2003*, p. 18.

27 Minerals Council of Australia, *Submission No. 81*, p. 1168.

Figure 2.1 Global Exploration Budgets 1991-2002



Sources *Geoscience Australia, Submission No. 53, p. 646 and updated data; Australian Bureau of Statistics, Catalogue #8412.0, March 2003, p. 18.*

2.28 The data show that the decline in minerals exploration in Australia is in line with the global pattern, which experienced a fall of around 45 percent between 1997 and 2002. Detailed Australian mineral exploration expenditure data shown in Table 2.2, confirm this pattern.

Table 2.2 Australian Mineral (state and national) and Petroleum (national) private expenditure data for 1994-95 to 2001-02

Period	NSW	Vic	Qld	SA	WA	Tas	NT	Aus	Aus
\$M	Min	Min	Min	Min	Min	Min	Min	Min	Pet
1994-95	79	31	176	21	496	15	76	893	682
1995-96	80	43	181	24	520	19	94	960	725
1996-97	94	52	161	35	692	26	89	1149	853
1997-98	88	43	133	45	660	21	76	1067	981
1998-99	66	37	94	42	523	12	65	838	868
1999-00	56	34	83	23	415	9	58	676	723
2000-01	57	33	83	30	424	9	48	683	1044
2001-02	48	34	93	32	381	4	49	641	884

Source *Australian Bureau of Statistics (cat # 8412.0, Mineral and Petroleum Exploration, years 1994-95 to 2001-02)*

## Petroleum Exploration

2.29 Petroleum exploration activity in Australia has fluctuated considerably over the last three decades. Overall, exploration and production are affected by a range of factors, including access to acreage, prospectivity, prices, rig and seismic mobilisation costs, geographic location, perceptions

- of risk/rewards (eg potential field sizes), international competition for funds and the fiscal regime.
- 2.30 As measured by the number of exploration wells drilled, petroleum exploration and development for onshore Australia has declined in recent years although there has been a pick up since the low of 2000. Exploration wells drilled offshore Australia have continued at a more consistent level but with some decline after the peak of 1998. While the recent improvement in exploration levels overall is encouraging, APPEA believes it is far from adequate in the face of the massive imminent decline in liquid fuels self-sufficiency. In addition, the drilling success rate associated with activities in Australia (particularly offshore) is generally regarded as being poor in relative terms compared with other countries.<sup>28</sup>
- 2.31 While the level of expenditure incurred for Australia's offshore areas has remained relatively static, there has been a noticeable and consistent reduction in the level spent onshore. There are a number of potential factors that have contributed to such a trend, but one concern that is consistently identified by junior exploration companies is their inability to attract capital as a result of the operation of the company tax system.<sup>29</sup>
- 2.32 Exploration investment in Australia has varied between \$723 million and \$1044 million annually over the last three years (see Table 2.2). This expenditure is largely a reflection of commitments made in the bidding rounds which may have been made several years earlier.
- 2.33 Between 1998 and 2000 Japanese companies ceased bidding on new acreage offered by the Commonwealth. This reluctance by some Japanese companies to acquire new acreage in Australia in part reflected changed priorities associated with the reorganisation of the "parent" national oil company. With the exception of the American explorers, however, a similar trend to minor involvement in bidding is also observed with other foreign companies. Expenditures attributed to junior Australian explorers have also declined though the fall is less pronounced than for the major companies.<sup>30</sup>
- 2.34 In recent years, junior explorers have been increasingly represented in exploration permits located in a variety of sedimentary basins. Acreage awarded to junior explorers has ranged from mature to immature and is generally located in shallow to mid-range water depths. High exploration costs and risks associated with frontier acreage militate against involvement of junior companies in these areas.

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28 Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 490.

29 Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 519.

30 Geoscience Australia, *Submission No. 53*, p. 670.

- 2.35 This increased reliance on junior Australian companies to commit funding to Australia's offshore exploration is a reflection of the global nature of the petroleum sector. With an international portfolio of acreage, the major companies have a greater ability to move exploration expenditures overseas in response to changing perceptions of prospectivity, while junior explorers frequently, but not exclusively, focus on exploration within Australia.<sup>31</sup>

## Decline in Minerals Exploration

- 2.36 Geoscience Australia and minerals sector representatives have stated that the fall in expenditure reflects the major structural changes that are taking place in the minerals sector, and a number of related factors.
- 2.37 Abundant supply and consequent low metal prices have squeezed profitability and resulted in poor returns on capital invested in mining. In recent years returns from mining have commonly been less than the cost of capital resulting in a loss of shareholder wealth.<sup>32</sup> The average return on shareholders funds during the period 1996-97 to 2000-01, was 5.3 percent. This compares to the average return on a 10-year Commonwealth Treasury bond (an essentially "risk-free" investment) of 6.3 per cent over the same period.<sup>33</sup>
- 2.38 Discovery costs have increased significantly, a reflection of poor discovery rates through the 1990s, particularly world-class deposits on which the sector is built. The obvious deposits in accessible places have been found, but the overall declines in real commodity prices constrain the chances of finding new economic mineralisation.<sup>34</sup>
- 2.39 Access to capital, particularly venture capital for junior exploration companies, has been increasingly difficult to obtain in recent years. There is a variety of reasons for this, particularly competition from biotechnology, communications and information technology stocks, the so-called "dot.com" boom of the late 1990s that, for a brief period at least, offered prospects of better investment returns and capital growth than investment in mineral exploration companies.
- 2.40 The globalisation of the minerals industry means that investment decisions are increasingly being made in overseas head offices and

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31 Geoscience Australia, *Submission No. 53*, p. 671.

32 Geoscience Australia, *Submission No. 53*, p. 646.

33 Minerals Council of Australia, *Submission No. 81*, p. 1169.

34 Geoscience Australia, *Submission No. 53*, p. 646.

Australian exploration projects are being ranked against competing projects in other countries.<sup>35</sup>

- 2.41 MCA asserts that while the impact of the economic circumstances facing the industry are undoubtedly fundamental, regulatory factors also deserve special attention. They may in some cases expose evidence of market failure or policy impediments that hamper efficiency in the level of mineral exploration expenditure in Australia and thus be amendable to policy interventions and/or corrections. Some of the major regulatory factors contributing to the significant fall in exploration expenditure that has taken place since 1996-97 include:
- Native Title legislation;
  - environmental legislation;
  - legislative, policy and decision-making developments related to protected areas;
  - cultural heritage legislation;
  - operating requirements for exploration activities relating to tenements, the environment and cultural heritage, and
  - fiscal arrangements.<sup>36</sup>
- 2.42 These aspects are discussed in later chapters of the report.

## Prospects for Australia's Minerals and Petroleum

- 2.43 In broad terms new mineral deposits continue to be found both in proven mineral mining districts and in new provinces. But the future of Australia as a major mining nation depends on the discovery of major deposits to sustain large, low cost mining operations.
- 2.44 Mineral production companies are under increasing pressure from their shareholders to increase profitability and thus dividends. One way is for them to reduce the risks and outlays on exploration. Accordingly, recent mineral exploration by the majors has increasingly focused upon near mine brownfields sites, which, if the exploration is successful certainly provide incremental increases in ore reserves, but generally fail to identify new mines.<sup>37</sup>

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35 Geoscience Australia, *Submission No. 53*, p. 648.

36 Minerals Council of Australia, *Submission No. 81*, p. 1143.

37 Australian Institute of Geoscientists, *Submission No. 22*, p. 159.

- 2.45 Rio Tinto Exploration advised that, from a major company perspective, it is usually less risky and more cost-effective to explore close to existing mining operations. Such brownfields exploration can add significant value through discovery of incremental resources. Near-mine mineral exploration therefore may postpone mine closures by some years, but will not contribute the new ore body discoveries needed to replace mineral production from the ultimately exhausted mines. The long-term sustainability of the mining industry depends upon discovery of large new high-quality resources through greenfields work.<sup>38</sup>
- 2.46 Data collected by the Western Australian Government show that, for instance, in that state the number of granted greenfields tenements declined by 43 percent over the four year 1997-2001. Greenfields tenements now represent only 7 percent of the granted tenements. Of those pending tenements, only 11.5 percent are in greenfields areas.<sup>39</sup> The Committee is aware that some upwards adjustment to the low proportion of greenfields tenements on issue may take place in due course as Native Title matters are resolved. In any event, the structural implications of even a temporary focus on brownfields exploration and the incentives to encourage further greenfields exploration, are discussed in greater detail in the next chapter.
- 2.47 Exploration activity has declined not because Australia is considered to be “fully explored”. New ideas and geoscientific theories continuously refocus attention on previously explored and even previously mined areas. Recent discoveries such as Newcrest’s Cadia Hill and Ridgeway mines in New South Wales and the extensive new reserves delineated at the Telfer Mine in Western Australia demonstrate the manner in which new ideas can contribute to the revitalisation of old mining fields.<sup>40</sup>
- 2.48 Many areas of Australia have received little or no exploration attention in the past. New geophysical technologies are, however, beginning to enable geoscientists to see beneath cover sequences, resulting in major discoveries including Olympic Dam in South Australia, and the Cannington and Ernest Henry mines in Queensland.<sup>41</sup> More giant ore-bodies undoubtedly exist in Australia, but are likely to be buried and hard to locate. Possible new geophysical technologies to see through the cover material are discussed in more detail in chapter four.
- 2.49 A substantial impediment to further exploration for natural gas is the lack of available gas markets — either domestically, or for Liquefied Natural
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38 Rio Tinto Exploration, *Submission No. 46*, p. 562.

39 Government of Western Australia, *Submission No. 84*, p. 1311.

40 Australian Institute of Geoscientists, *Submission No. 22*, p. 160.

41 Australian Institute of Geoscientists, *Submission No. 22*, p. 160.



Gas, exports. Australia has abundant discovered gas but the vast majority of it is remote from markets. Further exploration in gas-prone areas needs to be in those areas where the chance of also finding either gas-liquids or crude oil is relatively high.<sup>42</sup>

2.50 Japan Australia LNG (MMI) stated that there are few impediments to oil exploration in Australia that rival the generally very low chance of success for finding crude oil - especially without also being associated with large volumes of gas. The perceived limited remaining prospectivity for oil in currently developed areas should naturally turn the search for new oil resources to more frontier and/or deep-water areas, but which also carry additional cost and risk burdens.<sup>43</sup>

2.51 In all likelihood, future discoveries will be either:

- small oil discoveries that are more expensive to develop than those found to date;
- in new, frontier basins, remote from existing facilities and as a consequence more expensive to develop;
- in deepwater areas, in technology frontiers, and as a result more expensive to develop, or
- gas, with consequent dependence on markets to establish economic viability.<sup>44</sup>

2.52 Australia is an expensive place to explore for hydrocarbons. It is geographically remote from other oil and gas producing regions of the world, adding time to all aspects of the life cycle and making transportation of critical equipment costly. In addition, in some of the offshore areas weather and ocean conditions are harsh and unpredictable.

2.53 Because of its geology, Australian exploration success rates are among the lowest in world. A recent industry study found that offshore Australia ranked 46th in the world in exploration drilling success, with a commercial success rate of a little over 6 percent. This compares with other locations such as Malaysia with a commercial success rate above 50 percent and Angola with over 40 percent.<sup>45</sup>

2.54 The petroleum sector representatives argued that consideration of ways to increase exploration in Australia should take into account possible

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42 Japan Australia LNG (MMI), *Submission No. 7*, p. 33.

43 Japan Australia LNG (MMI), *Submission No. 7*, p. 33.

44 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 135.

45 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 135.

measures to improve Australia's global ranking as an investment destination for oil and gas development. ExxonMobil Australia stated that:

It should capitalise on Australia's economic and political stability by offering an attractive investment environment that acknowledges the risks and uncertainties for the whole of the sector rather than being focused on penalising the few successful explorers with a high tax environment<sup>46</sup>.

- 2.55 Overall, the levels of exploration activity will be determined primarily by world commodity prices. However, access to capital and taxation arrangements are likely to play key roles in Australia's minerals and petroleum industry's future. These matters are discussed in the following chapter.



## **Corporate Structure, Capital Raising and Taxation**

### **Corporate Structure**

#### **Majors and Juniors**

- 3.1 In general, the corporate entities that comprise the Australian resources industry fall into three size-categories. These are:
- major companies, generally global corporations with large production interests and substantial exploration budgets (majors);
  - middle ranking companies with smaller production interests and modest exploration budgets (mid-tier); and
  - small exploration companies and implicitly non-producers (juniors).<sup>1</sup>
- 3.2 The Committee noted that the generic terms majors and juniors are used in both petroleum and minerals sectors, but with slightly different definitions. The terms are used extensively throughout this and following chapters for both sectors using sector-specific definitions respectively.

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<sup>1</sup> Andrew Crooks, *Submission No. 80*, p. 1118; The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, pp 1076-77; Geoscience Australia, *Submission No. 53*, p. 644.

## Minerals and Petroleum

3.3 There are significant differences in the styles of minerals exploration programs and petroleum exploration programs. Exploration rights allocation, exploration expenditure magnitudes and patterns, corporate alliance, technology, and financing aspects tend to show sector-specific features; and in production royalty and taxation regimes are applied differently. Also, the global maturity of the two sectors varies. Hence, the discussions in this chapter on corporate structure, capital raising and taxation, are dealt with separately for the two sectors.

## Structural Change in the Minerals Sector

3.4 The Chamber of Minerals and Energy of Western Australia stated that the three minerals sector company size-categories could notionally be defined by market capitalisation as follows:

- majors - greater than \$1 billion;
- mid-tier - \$200 million to \$1 billion; and
- juniors - less than \$200 million.<sup>2</sup>

3.5 The Minerals Council of Australia pointed out some important qualifications to this fairly arbitrary classification:

- market capitalisation does not include unlisted companies;
- many junior exploration and production companies are owned or controlled by majors;<sup>3</sup> and
- although the numeric concentration is in the junior category, around 80 per cent of all exploration expenditure is spent by the majors.<sup>4</sup>

3.6 The Australian minerals exploration sector has experienced significant changes in its structure over the last decade, with rationalisation accelerating over the past five years, as a consequence of global consolidation of the resources industry.<sup>5</sup> The global majors have systematically absorbed many of the middle ranking minerals companies around the world including most of the mid-tier Australian exploration and mining companies, in a process known as globalisation. BHP Billiton

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2 The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, pp 1076-7.

3 Minerals Council of Australia, *Submission No. 81*, p. 1145.

4 Minerals Council of Australia, *Submission No. 81*, p. 1177.

5 Geoscience Australia, *Submission No. 53*, p. 644.

estimated that the total market value of the top five minerals companies as of February 2003 was 45 percent of the market value of the industry (US\$249 billion), almost double the percentage of the top five of 12 years ago.<sup>6</sup>

3.7 The Australian Geoscience Council Inc. submitted that “large companies preferred to grow through acquiring smaller companies”.<sup>7</sup> The resultant corporate representation in the Australian minerals exploration sector is presently:

- around twenty global majors and seven Australia-domiciled majors;
- two or three mid-tier companies; and
- several hundred juniors.

3.8 The resulting picture is of a highly polarised minerals exploration sector comprised of majors and juniors.

### Implications for Minerals Exploration

3.9 Certain fundamentals of corporate management have changed with the loss of resources company head-offices and associated decision-making functions to overseas locations.

3.10 A senior resources industry representative stated that an outcome of the globalisation of the minerals sector was that:

The perspective of a large global minerals company may well coincide with the national interest... but increasingly this will not always be the case. ... There is no over-riding imperative to explore in Australia, either rationally or emotionally; most corporate top leadership in the minerals sector neither resides in Australia, nor is Australian in origin nor is technical in discipline.<sup>8</sup>

3.11 Rio Tinto Exploration and others considered that, through large-scale mergers and acquisitions, a smaller number of major corporations were conducting exploration. In turn this led to diminution in the number of majors who could strategically partner juniors.<sup>9</sup>

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6 Macdonald, James, 2003, *BHP Billiton's Global Exploration Program*, presentation at Geoscience Australia, Canberra, 10 June 2003, (unpublished).

7 Australian Geoscience Council Inc., *Submission No. 49*, p. 601.

8 Dr Ian Gould, *Submission No. 38*, p. 468.

9 Rio Tinto Exploration, *Submission No. 46*, p. 562; City of Kalgoorlie-Boulder, *Submission No. 47*, p. 569.

- 3.12 Other consequences of sector rationalisation were the post-merger reduction in aggregate exploration budgets and the resultant retrenchment of professional staff.<sup>10</sup>
- 3.13 A typical example of post-merger budget reduction occurred when the US company Newmont Mining Corporation took over Australia's Normandy Mining in February 2002. The Committee was told by the South Australian Chamber of Mines and Energy Inc. that the combined pre-merger annual budget for the two companies was \$US 111 million. Post-merger the budget had dropped to \$US 73 million.<sup>11</sup>
- 3.14 Regarding the issue of retrenchment of exploration geoscientists and support staff, it was reported in June 2003 that MIM Holdings' 125 strong exploration unit was set to be disbanded on the company's takeover by the Swiss-based resources company Xstrata International.<sup>12</sup>
- 3.15 Global majors are more willing and able to cut exploration projects, terminate exploration strategies quickly, and withdraw exploration funds and personnel from Australia and divert them to other countries.<sup>13</sup>
- 3.16 Rio Tinto Exploration stated that major minerals companies largely control access to brownfields opportunities, whereas juniors are usually involved in greenfields exploration, or in the evaluation of small discoveries that did not meet the investment hurdles of the majors. Majors therefore played an important role in providing seed opportunities to juniors by passing-on to them mines or projects.<sup>14</sup>
- 3.17 Greenfields (high risk) exploration has declined significantly in recent years and companies are tending to direct the bulk of their efforts now at brownfields targets. Drilling contractor Drillex estimated that its drilling contracts book was currently running at 4:1 brownfields to greenfields, the reverse of the ratio five years ago.<sup>15</sup>
- 3.18 Deloitte Touche Tohmatsu argued that the focus on brownfields exploration arose from recent acquisitions of many Australian (mid-tier) producers by international resources companies:

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10 Australian Geoscience Council Inc., *Submission No. 49*, pp 601-2.

11 South Australian Chamber of Mines and Energy, *Transcript, 12 May 2003*, p. 452.

12 The Australian Financial Review, *Xstrata victory an anti-climax*, 25 June 2003, <http://afr.com/articles/2003/06/24/1056449242021.html>, accessed 2 September 2003.

13 Minerals Council of Australia, *Submission No. 81*, p. 1144.

14 Rio Tinto Exploration, *Submission No. 46*, p. 562.

15 Drillex, *Transcript, 31 October 2002*, p. 191.

a return on these investments will be expected in the short term by shareholders of these international mining companies.

There will be pressure to return a significant portion of profits as dividends to justify the cost of the investment. It is likely that exploration efforts by these companies will be restricted to regional focus of enhancing lifespan of existing production facilities and a focus will not be made on grassroots exploration.<sup>16</sup>

- 3.19 Brownfields exploration activity was a short-term risk-averse strategy that can generally only boost resources inventories incrementally. As Geoscience Australia observed, greenfields exploration is the lifeblood of the industry.<sup>17</sup> Similarly, a major company acknowledged that “without greenfields exploration, growth of the mining industry is ultimately limited”.<sup>18</sup> Alarming, not only has exploration activity declined as a whole in the last five years, but so too has the type of exploration that is most likely to lead to major new discoveries.

### The Potential of Juniors

- 3.20 Greenfields exploration is now increasingly likely to be undertaken by juniors, ensuring that Australian-owned companies will retain the responsibility for grassroots exploration and associated industry development.<sup>19</sup> The Commonwealth Bank and others consider juniors to be more efficient explorers who routinely record lower deposit discovery costs than majors.<sup>20</sup> The Chamber of Minerals and Energy of Western Australia advised that, in terms of exploration success, the juniors are responsible for two thirds of the gold discoveries since the 1960s and half of the base metals discoveries, despite spending about a fifth of the total expenditure on exploration<sup>21</sup>. A former CEO of WMC Resources stated

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16 Deloitte Touche Tohmatsu, *Submission No. 12*, pp 89-90.

17 Geoscience Australia, *Submission No. 53*, p. 645.

18 Rio Tinto Exploration, *Submission No. 46*, p. 563.

19 Deloitte Touche Tohmatsu, *Submission No. 12*, p. 90; Australian Geoscience Council Inc., *Submission No. 49*, p. 602.

20 Commonwealth Bank, *Submission No. 55*, p. 692.

21 The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, p. 1077; Abareconomics, *Tax incentive Options for Junior Exploration Companies*, abare, eReport 03.4, March 2003, p. 30.

during a panel discussion on SBS' *The Business Show* that, "bigness" did not necessarily solve the problems of the resources industry.<sup>22</sup>

3.21 Newmont Australia stated that:

the junior sector is critically important to us anyway. You need the diversity of thought, different ideas and different people working in different areas.<sup>23</sup>

3.22 However, an experienced exploration manager warned that future exploration programs aiming at major discoveries beneath thick cover on the Australian continent are likely to require high-cost sophisticated exploration technology, which only majors or very well resourced juniors could afford to undertake.<sup>24</sup>

3.23 The Committee accepts that future world-class deposit discoveries in Australia are likely to require large injections of exploration investment capital to overcome the technical challenges of locating bedrock deposits on the Australian continent, most of which is obscured by cover material. Raising the necessary capital may well be beyond the capabilities of juniors, even though they may be efficient explorers. The Committee's recommendations to improve access by juniors to capital are discussed later in this chapter. Recommendations to increase pre-competitive data acquisition which can be used by majors and juniors alike are examined in Chapter 4.

## Petroleum Sector Structure

3.24 The structure of the Australian petroleum exploration sector differs markedly from its minerals sector counterpart. This is a consequence of the global petroleum sector's relatively mature global structure and some fundamental operational and regulatory contrasts in the ways the two sectors do their business. As well as the maturity factor, the petroleum exploration sector is characterised by:

- extremely high exploration expenses ("with a single offshore exploration well typically costing \$8-10 million");
- on-shore and off-shore exploration project exclusivity;

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22 Hugh Morgan AC, *The Business Show*, SBS TV, 20 June 2003, <http://www.sbs.com.au/business/archive.php3?contentID=720&month=6&year=2003>, accessed 2 September 2003.

23 Newmont Mining, *Transcript*, 24 March 2003, p. 396.

24 John Anderson, *Submission No. 31*, p. 407.



- title allocation by program bidding;
  - profit-based royalty regimes;
  - single commodity (hydrocarbons) marketing and global geopolitical and market volatility; and
  - the prevalence of vertical integration into refining and retailing, at least by the majors.
- 3.25 Because of an overall long-term declining profitability of the global petroleum industry, there has been significant rationalisation over the last decade. Majors have merged to form even larger super-majors (such as: ChevronTexaco, ConocoPhillips, BPAmoco, ExxonMobil, TotalElfina). These mergers allow control of very large petroleum fields that can be profitable even at relatively low crude oil prices.
- 3.26 At the same time, successful medium sized petroleum companies have been the subject of hostile takeovers by majors. This corporate predation has depleted the global and Australian market of mid-tier petroleum exploration companies.
- 3.27 Petroleum exploration in Australia has the present structure.
- about ten global corporations and four Australia-domiciled majors;
  - six to ten mid-tier companies; and
  - a large number of junior explorers.<sup>25</sup>
- 3.28 Historically, the larger offshore petroleum discoveries were made by the majors without significant involvement by juniors. Offshore exploration is expensive, especially in deeper waters, and more technically challenging, and most juniors have traditionally not had the resources to undertake offshore exploration. Instead, they and mid-tier explorers have tended to explore onshore.<sup>26</sup> Approximately 10 per cent of Australian crude oil and 30 per cent of natural gas production now comes from onshore sources.<sup>27</sup>
- 3.29 However, as in the minerals sector, petroleum majors are becoming more risk averse in their Australian exploration. There is now less offshore exploration as the perception is that the chances of major new discoveries

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25 APPEA, *Submission No. 39*, p. 490; Woodside Energy Ltd, *Submission No. 44* p. 542.

26 Australian Petroleum Production and Exploration Association Limited, *Submission No. 39*, p. 490; Woodside Energy Limited, *Submission No. 44*, p. 542; Geoscience Australia, *Submission No. 53*, p. 672.

27 Geoscience Australia, *Submission No. 53*, p. 658.

are low. Instead, the majors are shifting resources to explore overseas in areas of greater perceived prospectivity. The offshore exploration gap is being filled to some extent by the resident major and mid-tier companies, but they too are turning their attention overseas.<sup>28</sup> Juniors continue to play a significant role in onshore greenfields exploration, accepting higher risks and trying new techniques. However, in an indication of how globalised the petroleum exploration sector has become, even some juniors are now exploring overseas as well as in Australia.<sup>29</sup>

- 3.30 A longstanding petroleum sector risk management strategy is the use of joint ventures. Exploration companies establish multi-company joint ventures involving majors and juniors, at the exploration tenement application or bidding stage. In these partnerships, a major usually holds a substantial or even a majority interest in the project with the remaining equity held by other companies including possibly one or more juniors. Generally their target parameters are different and hence the exploration activities of the two groups complement each other. Joint-ventures established at the high-cost exploration stage may also provide the equity mix necessary to fund development, in the event the joint-venture has an exploration success. A fairly typical joint-venture is the Cooper Basin partnership exploring petroleum tenements in South Australia and Queensland. It is made up of a major (Santos Ltd) owning about 60 per cent interest, a mid-tier company (Origin Energy Resources Ltd) owning a 13 per cent interest, and a number of majors and juniors holding the remaining 27 per cent interest.
- 3.31 Australian junior petroleum explorers now tend to operate in a symbiotic relationship with the majors rather than competing with them.
- 3.32 The Australian Petroleum Cooperative Research Centre and the Australian Petroleum Production and Exploration Association Limited (APPEA) both still stressed the importance of a strong junior sector to petroleum exploration in Australia. They argued that action to develop a more active junior sector would benefit petroleum exploration in Australia<sup>30</sup>. The Commonwealth Bank also submitted that there needs to be stimulation of juniors to fill the mid-tier gap.<sup>31</sup>

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28 Dr CM. Griffiths, *Submission No. 37*, p. 464; Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 490.

29 Australian Petroleum Production and Exploration Association, *Submission No. 39*, pp 490-91.

30 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30; Australian Petroleum Production and Exploration Association, *Submission No. 39*, p. 491.

31 Commonwealth Bank, *Submission No. 55*, p. 692.

## Strategic Response to Structural Change – Minerals and Petroleum Sectors

3.33 The most significant difference between the structure of the minerals and petroleum sectors is the greater degree of globalisation in the petroleum sector. Juniors in the petroleum sector seem more active at undertaking overseas work and also to operate to their own advantage more closely with the majors. Metex Resources acknowledged the influence of the petroleum sector on minerals in that:

...explorers are required to approach exploration for minerals with a similar frame of mind to drilling oil wells. Targets are deeper, require the acquisition of expensive and complex data sets, and are evaluated using expensive deeper drilling techniques.... This transition from an immature to mature exploration regime is reflected in the lack of significant discoveries in recent years.<sup>32</sup>

3.34 In both sectors there has been corporate polarisation with majors consolidating and buying out mid-tier companies while juniors remain in relatively large numbers. As a further generalisation, majors in both sectors have become more risk averse with a focus on brownfields exploration – in part responding to demands by investors that profits be reflected in dividends rather than being channelled into speculative exploration. As Deloitte Touche Tohmatsu identified succinctly:

Investors who support investing in exploration companies are not generally driven by the desire to seek new frontiers, but see an investment in a resources stock as a means to possibly make a quick profit.<sup>33</sup>

3.35 This partial retreat by majors has opened exploration niches for juniors, but also exposed their weaknesses - they tend to be efficient, but undercapitalised to handle high risk exploration.

3.36 The Committee sees exploration joint ventures as one of the key strategies by which juniors, in both the minerals and petroleum sectors, will survive in an already (petroleum) and increasingly (minerals) internationalised industry. From the juniors' perspectives, joint ventures will spread risk and place them in a position to take advantage of new (and expensive up-front) exploration technologies. In this way majors and juniors should also be able to complement their respective strengths by working together in longer term alliances.

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32 Metex Resources Limited, *Submission No. 14*, p. 115.

33 Deloitte Touche Tohmatsu, *Submission No. 12*, p. 75.

## Capital Raising

### Minerals Exploration Sector

- 3.37 There is little evidence that the majors have any great difficulty in obtaining capital, as their finance is generally sourced internally.<sup>34</sup> However, individual exploration projects faced internal competition for exploration capital in any major mining (exploration) company, and proposals to explore in Australia were weighed up against options to explore in other countries.<sup>35</sup>
- 3.38 Juniors, on the other hand, tend to source their funds from the speculative end of the equities market.<sup>36</sup> Because juniors typically do not generate regular cash flows they need to rely on external capital sources to provide funds for ongoing activities. It is difficult for juniors to raise funds on the equities markets. Many exploration companies have become moribund or have been wound-up. As AMEC described:
- Small explorers are driven by the imperative that they must do sufficient work, in terms of proving up prospective ground, to either underpin further fund raising, supplement float money, or to make their properties attractive to another company that may then joint venture with them. Larger corporations do not have the same short term need to perform, as their ongoing survival is not tied so closely to immediate performance.<sup>37</sup>
- 3.39 The perceived low probability of adequate return on investment in minerals exploration was the critical factor explaining the present scarcity of equity finance for minerals exploration. Historically, returns from mining and exploration have not matched those of most other asset classes. The Australian Stock Exchange (ASX) Mining Index was 60 per cent higher than it was in 1983 whereas the All Industrials index was 500 per cent higher than it was in 1983.<sup>38</sup>

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34 The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, p. 1078.

35 Rio Tinto Exploration, *Submission No. 46*, p. 563; Queensland Mining Council, *Submission No. 60*, p. 794.

36 The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, p. 1078; Deloitte Touche Tohmatsu, *Submission No. 12*, p. 75.

37 AMEC, *The Importance of Implementing a System of 'Flow Through' Shares as a Mineral Exploration Incentive, Briefing Paper, March 2003*, p. 7.

38 Reed Resources Limited, *Submission No. 98*, p. 1495.

- 3.40 Other reasons identified by witnesses to explain the scarcity of finance for junior minerals exploration companies included:
- capital markets which were particularly risk-averse at present;<sup>39</sup>
  - the high level of competition for funds from other speculative sectors, such as high-tech, dotcoms and biotechnology;<sup>40</sup>
  - exploration activities cannot be expected to generate positive cash flows for many years;<sup>41</sup> and
  - the problem that juniors' Initial Public Offerings (IPOs) were too small to attract institutional investors.<sup>42</sup>
- 3.41 Despite this, junior minerals companies can still raise finance. However, they must be opportunistic and offer quality tenement portfolios and superior management strategies to succeed in raising equity funding, even at a discount.<sup>43</sup> Windows of opportunity to raise funds from equity markets presented themselves intermittently to junior minerals explorers, usually following new minerals discoveries they or others had made. For example, some recent IPOs were successful arising out of the Olympic Dam style mineral deposit discovery at Prominent Hill (SA), in November 2001.<sup>44</sup>
- 3.42 Heron Resources' decisions to keep overheads low and spend 40 per cent of its annual budget on prospect drilling were well received by equities markets. The company told the Committee that:
- if you have a good story, a good company and good ground and targets, you can always raise money. Often it will be at discounted prices, but that is the way the business goes.<sup>45</sup>
- 3.43 The trend towards widespread investor risk aversion has been interpreted by some witnesses as the manifestation of a new operational paradigm. The consequences are that:

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39 Newmont Australia, *Submission No. 71*, p. 974.

40 The Chamber of Minerals and Energy of Western Australia, *Submission No. 78*, p. 1078.

41 Abareconomics, *Tax incentive Options for Junior Exploration Companies*, abare, eReport 03.4, March 2003, p. 20.

42 Geoscience Australia, *Submission No. 53*, p. 649.

43 Deloitte Touche Tohmatsu, *Submission No. 12*, p. 75.

44 Heron Resources Limited, *Transcript, 31 October 2002*, p. 201.

45 Heron Resources Limited, *Transcript, 31 October 2002*, pp 200-1.

- investors are seeking better paying asset classes;<sup>46</sup>
- institutions are investing in, and therefore influencing, public exploration companies that pay dividends and are pursuing low-risk strategies;
- the profits from mining are not being fed back into exploration;<sup>47</sup>
- fund managers are reluctant to invest in juniors because of lack of liquidity and sector representation, and lack of earnings;<sup>48</sup>
- resources sector representation has declined on the Australian Stock Exchange from 35 per cent in the 1980s to less than 10 per cent today;<sup>49</sup>

3.44 An eminent geologist proposed that, in order to build some sophistication into the assessment of investment risk, qualified analysts should routinely assess proposed exploration program proposals for risk. This would provide an objective basis for risk-sensitive investment decisions.<sup>50</sup> A mining analyst put forward a similar view, noting that capital markets managed by banks, stockbrokers and fund managers used a variety of risk management strategies including hedging to protect their investments. Substantial resources industry corporate losses have occurred in the recent past when risk management strategies were in the hands of inexperienced small company managers. To avoid this damage the mining analyst suggested that risk assessors be adequately resourced.<sup>51</sup>

### Initial Public Offerings (IPOs)

3.45 The problems experienced by some junior companies in raising exploration equity finance could probably be traced back to uncompetitive IPOs. Offshore investment options and competition from other speculative sectors, such as the information technology and biotechnology sectors, had meant that investors were now expecting better quality investment vehicles. Investors were showing little or no interest in average quality minerals offerings that might otherwise have succeeded a decade ago.

3.46 The Queensland Mining Council referred to the high cost of assembling a prospectus to raise equity capital through IPOs and expressed the view

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46 Reed Resources Limited, *Submission No. 98*, p. 1495.

47 Reed Resources Limited, *Submission No. 98*, p. 1495.

48 Andrew Crooks, *Submission No. 80*, p. 1119.

49 Lion Selection Group Limited, *Submission No. 8*, p. 40.

50 Eduard Eshuys, *Submission No. 32*, p. 433.

51 Andrew Crooks, *Submission No. 80*, p. 1123.

that prospectus costs generated by the ASX listing rules were excessive for the amount of capital raised.<sup>52</sup>

- 3.47 The Committee recognises the dilemma raised by any move to simplify the IPO procedures whilst still ensuring that the public is reasonably protected from risks associated with a speculative float. It also recognises that the cost of capital raising could become a deterrent to raising any capital in small tranches, thereby selectively militating against the juniors.
- 3.48 The Committee concludes that the prospectus cost issue required immediate attention and was of the view that the industry peak bodies and the Australian Stock Exchange should get together and jointly design a lower cost process. The committee argues that any simpler process could be the *quid pro quo* to match a commitment by junior companies to raising the standards of portfolio asset descriptive data and providing exploration risk assessments.
- 3.49 It is the Committee's view that exploration companies now going to the market for equity finance need to pay closer attention to the quality of their investment portfolios on offer. Rigour needs to be shown in the assembly of the tenement portfolio, technical expertise, exploration concepts and methodology. Greater levels of transparency in exploration budgeting need to be adopted. In short, companies would need to offer a more attractive investment product to the market, showing clearly how risk is managed and where sound exploration strategies were in place.

### Petroleum Exploration Sector

- 3.50 The Committee received little specific evidence on the difficulties faced by petroleum exploration companies in raising capital. As in the minerals sector, large petroleum majors tend to source exploration capital internally.
- 3.51 The Australian petroleum exploration and production sector – even more so than the minerals sector – is part of a wider globalised industry. As such, the sector competes with other countries for petroleum exploration budget allocations by the majors. The critical issue affecting exploration is the attractiveness of Australia as an investment destination rather than whether the funds can be raised here or not.

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52 Queensland Mining Council, *Submission No. 60*, p. 794.

- 3.52 As in the minerals sector, it is the lower profile junior petroleum exploration companies with no income stream which experience difficulty in raising capital on equity markets. However, in this case, the evidence suggests that this is primarily because large institutional investors favour the majors.<sup>53</sup>

### Capital Raising Assistance: Minerals and Petroleum Sectors

- 3.53 The Committee is concerned that juniors in both the minerals and petroleum sectors are finding it difficult to raise capital, particularly as these are the companies that are driving greenfields exploration. Policies aimed at helping juniors in the minerals sector especially, to raise capital are warranted.
- 3.54 The Committee is also of the view that companies, through their peak bodies, the ASX and professional associations, should design risk assessment standards to underpin risk analyses inserted in IPO documentation. This approach would aim to build the confidence of potential investors in the credibility of resources IPOs.

### Recommendation 1

- 3.55 **The Minister for Industry, Tourism and Resources facilitate meetings between appropriate industry representative bodies and the Australian Stock Exchange to develop quality control and risk assessment guidelines to assist minerals and petroleum exploration companies to assemble high quality Initial Public Offerings that can achieve market acceptance and support.**

### Impact of the Tax Structure on Exploration

- 3.56 One factor claimed to affect capital raising by majors in both the minerals and petroleum sectors is the international lack of competitiveness of Australia's taxation environment.<sup>54</sup> Given that profit margins are often

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53 Draper, J., 2003, APPEA says oil self-sufficiency a myth, *Queensland Government Mining Journal*, June 2003, Vol 103, No. 1211, pp 40-1.

54 Cotopaxi International Pty Ltd, *Submission No. 34*, p. 445; Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, pp 505-6; ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 137; BHP Billiton Petroleum Pty Ltd, *Submission No. 57*, p. 743.



- slim in both sectors, taxation imposts can significantly affect the project decisions of majors and their subsequent allocation of exploration funds.<sup>55</sup>
- 3.57 The company tax system makes it difficult for juniors in both the minerals and petroleum sectors to attract investment capital.<sup>56</sup> Junior exploration companies generate wealth (shareholder returns) by increasing asset values (tenements) rather than generating income streams. The tenements increase in value because the companies, hopefully, find deposits or accumulations on the tenements or at least increase their prospectivity.
- 3.58 However, without a taxable income, taxation asymmetry is created. The junior company will have no opportunity to deduct exploration and other expenses immediately, or perhaps ever.<sup>57</sup> In turn, this reduces the after tax net present value of projects which can lead to lower share prices. It can also discourage juniors from undertaking those exploration projects which might have had a positive net present value if only immediate deductions for exploration expenses had been allowed.
- 3.59 These problems do not affect large companies that have a taxable income stream. In this regard it is financially easier for large companies to conduct exploration, all else being equal, than it is for juniors to do so. It also means that exploration work that only juniors might consider worthwhile, is less likely to be undertaken.
- 3.60 Removal of this impediment to exploration by juniors requires a taxation structure that enables junior companies to obtain the full benefit of immediate deductibility of exploration and other exploration-related expenses.<sup>58</sup> This, in turn, should make junior exploration companies more attractive to the investment market and, thus allow easier access to capital (primarily through IPOs).
- 3.61 The present situation was described by APPEA as a highly distortionary disincentive to risk-taking.<sup>59</sup> A number of proposed solutions are discussed below.

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55 BHP Billiton Petroleum Pty Ltd, *Submission No. 57*, p. 743.

56 Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, pp 519-20.

57 *Income Tax Assessment Act 1997*, s. 40-730.

58 Abareconomics, *Tax incentive Options for Junior Exploration Companies*, abare, eReport 03.4, March 2003, p. 36.

59 Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, p. 516.

## Flow-Through Share Schemes

- 3.62 There was widespread support in submissions and statements by witnesses for the introduction of a flow-through share scheme to assist junior exploration companies in both the minerals and petroleum sectors to raise exploration capital.<sup>60</sup>
- 3.63 Flow-through shares are an alternative to ordinary shares as a means of raising external capital to finance exploration. The major difference is that under a flow-through share arrangement, the exploration company passes the tax deductions that it can't realise itself through to its investors where they can be realised immediately.<sup>61</sup> The best known example, known as the "Canadian Model" because of its use in Canada to stimulate investment in exploration provides, in essence, that:
- the company gives up the tax deduction that it would normally receive for qualifying exploration expenses;
  - the investor receives the tax deduction; and
  - the investor pays capital gains tax on the full value received on sale of the flow through shares (rather than just the actual capital gains).<sup>62</sup>
- 3.64 In other respects, a flow-through share is the same as an ordinary share. Under the Canadian scheme, any company engaged in exploration in Canada, not just juniors, may employ flow-through shares. In addition, the Canadian scheme only applies to defined qualifying exploration expenses and does not extend to wider exploration-related business expenses.
- 3.65 A flow-through share scheme for the exploration industry in Australia would provide broadly the same result as the existing Division 10B and 10BA tax concessions for the film industry. Under these concessions, deductions are granted to investors on the basis that they are conducting the business activity. Only exploration expenditure on Australian projects would qualify for flow-through benefits.
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60 City of Kalgoorlie-Boulder, *Submission No. 47*, p. 571; Queensland Mining Council, *Submission No. 60*, p. 794; Newmont Australia, *Submission No. 71*, p. 974; Chamber of Minerals and Energy of Western Australia, *Submission No. 78*, p. 1079; Deloitte Touche Tohmatsu, *Submission No. 12*, pp 83-4; Australian Petroleum Production and Exploration Association Ltd, *Submission No. 96*, pp 1491-2.

61 Abareconomics, *Tax incentive Options for Junior Exploration Companies*, p. 41; Association Of Mining And Exploration Companies Inc, *The Importance of Implementing a System of 'Flow Through' Shares as a Mineral Exploration Incentive*, p. 9.

62 Abareconomics, *Tax incentive Options for Junior Exploration Companies*, p. 41.

- 3.66 Some witnesses expressed reservations about flow-through schemes. Rio Tinto Exploration believed that “it is highly debateable whether such schemes actually promote effective exploration” – as distinct from speculation.<sup>63</sup> Other witnesses observed that the regulatory aspects of a flow through share scheme would need to be tight, to prevent any repeat of the misuse of the scheme that had occurred in Canada.
- 3.67 However, Deloitte Touche Tohmatsu sees that a primary benefit of a flow-through scheme is that it provides an incentive for majors (as distinct from speculators) to invest in exploration through subscribing to share issues by juniors.<sup>64</sup>
- 3.68 AMEC put forward the view that the Commonwealth introduce a flow-through share mechanism on a five year trial basis to see if such a scheme is cost-effective and ultimately leads to greater investment activity in junior exploration companies.<sup>65</sup>

### Tradeable Tax Credits

- 3.69 The Committee recognised that tradeable tax credits and tax rebates are alternative arrangements that redress the tax asymmetry that juniors experience.
- 3.70 The Minerals Council of Australia submitted that a system of trade in tax credits would directly address this market failure. Juniors would be able to sell “tax credits” to other companies with sufficient income tax liability to utilize those deductions. This method would permit immediate realisation of the tax benefits of exploration outlays.<sup>66</sup>

### Enhanced Tax Write-offs for Greenfields Exploration

- 3.71 The Minerals Council of Australia and The Chamber of Minerals and Energy of Western Australia urged that greenfields exploration be eligible for a 125 per cent tax deduction.<sup>67</sup> Similarly, Rio Tinto Exploration argued

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63 Rio Tinto Exploration, *Submission No. 46*, p. 563; Abareconomics, *Tax incentive Options for Junior Exploration Companies*, p. 48.

64 Deloitte Touche Tohmatsu, *Submission No. 12*, p. 84.

65 Association Of Mining And Exploration Companies Inc, *The Importance of Implementing a System of ‘Flow Through’ Shares as a Mineral Exploration Incentive*, p. 10.

66 Minerals Council of Australia, *Submission No. 81*, p. 1192-3; Minerals Council of Australia, *Transcript, 3 March 2003*, p. 273.

67 Minerals Council of Australia, *Submission No. 81*, p. 1194.

that an “enhanced tax write-off” against income of eligible greenfields exploration would encourage greenfields exploration by the majors.<sup>68</sup>

3.72 The Chamber of Minerals and Energy of Western Australia and the Minerals Council of Australia both argued that companies, by exploring, are enhancing geological information and making further exploration by other companies easier (“positive externalities”). This benefit is not recognised by the exploring company (as they do not capture the benefit) and thus some additional tax credit should be provided to overcome this market failure by ensuring that exploration occurs at optimal levels.<sup>69</sup>

3.73 In this regard, the Committee acknowledges that companies in general can deduct research and development expenditures at a concessional rate of 125 per cent. The argument is that exploration is the equivalent of research and development for the mining industry and, therefore, should be treated in a similar manner.

3.74 There is a case for a greater tax deduction rate for exploration activity. However, a disadvantage of this proposal is that it will only be effective for those companies engaging in exploration that generates income – something, as already noted, that juniors often do not.

### **Subsidies for Greenfields Drilling**

3.75 Another suggestion was that there be subsidies or a tax rebate for eligible greenfields drilling. Drilling is the definitive way in which deposits or accumulations are confirmed.<sup>70</sup> Deep drilling is expensive. If it were cheaper, there could be more testing. The catch is to devise a scheme that ensures that cheaper drilling does equate to less drilling and also to discourage frivolous drilling simply to obtain a subsidy.

3.76 The Australian Geoscience Council recommended that there be a subsidy rebate for the total costs of the first hole in each greenfields minerals drilling program for holes deeper than 300m. The subsidy would be capped - \$20,000 being the limit suggested by the Council.<sup>71</sup>

3.77 Such a scheme could be administered through the tax system or through state agencies.

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68 Rio Tinto Exploration, *Submission No. 46*, p. 563.

69 The Chamber of Minerals and Energy of Western Australia Inc., *Submission No. 78*, p. 1078.

70 Dale Sims, *Submission No. 58*, p. 754.

71 Australian Geoscience Council, *Submission No. 49*, p. 603.

## Taxation Structure for the Minerals Sector: An Assessment

- 3.78 The Committee is keen to identify impediments to exploration and suggest ways to ameliorate them. This includes identifying impediments caused by the taxation regime. However, the Committee believes that it should take a national approach when promoting taxation benefits for a particular industry. This approach will certainly be adopted by the Australian Taxation Office. For example, taxation changes to make exploration activity more attractive to speculative capital could simply draw the capital from other sectors, such as the tourism or biotechnology industries. The nation may or may not benefit, and it is beyond the Committee's capacity to make such assessments.
- 3.79 Furthermore, perceived taxation benefits should not drive what is otherwise fundamentally unviable exploration activity. "Any tax policy should provide an incentive for, and reward, success... rather than subsidise failure."<sup>72</sup> The Committee seeks to promote taxation changes that will assist high risk, but geologically sound exploration.
- 3.80 Despite these caveats, there is good argument that the introduction of a flow-through share scheme will stimulate greenfields exploration.
- 3.81 The Committee is keen to encourage juniors, in the minerals sector in particular, to enter exploration joint ventures with majors. A flow-through share scheme should not only help juniors raise capital, but also provide an incentive for majors to boost their indirect interest in greenfields exploration by acquiring equity in junior public exploration companies.
- 3.82 The flexibility introduced by this type of inter-company relationship could permit some of the disadvantages of more traditional joint venture partnerships between majors and juniors to be addressed more effectively. For example, in the event of project down-scaling the economic parameters of a joint-venture exploration project may be accommodated by both major and junior partners, through the flexibility that a flow-through scheme offers in terms of equity and tax effectiveness.
- 3.83 While a flow-through shares scheme would be of most benefit to juniors (as recipients) and majors (as investors) in the minerals sector, it could be of equal attractiveness to those in the petroleum sector. The attractiveness of a flow-through share scheme to the petroleum industry is discussed below.

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72 Rio Tinto Exploration, *Transcript*, 30 October 2002, p. 117.

**Recommendation 2**

- 3.84 **The Minister for Industry, Tourism and Resources in conjunction with the Treasurer investigate the introduction of a Flow-Through Share Scheme for companies conducting eligible minerals and petroleum exploration activities in Australia.**
- 3.85 Such a scheme could rely on the definitions of exploration contained in the *Income Tax Assessment Act 1997* and greenfields exploration presented in Chapter 1 of this report. There is no need to limit a scheme to a particular size of company.<sup>73</sup> By its very nature, a flow-through share scheme will appeal to juniors without an income stream and less so to large companies funding exploration through income sources.
- 3.86 A flow-through share scheme should provide sufficient taxation relief to assist scientifically sound greenfields exploration without there being a need to also provide a potentially distortionary 125 percent deduction for the associated expenses. While attractive to the large income producing companies, a 125 percent deduction scheme will be of little direct benefit to juniors without an income stream. Further, the Committee is not convinced that greenfields exploration activity is the equivalent of research and development and should therefore qualify for a 125 percent expenditure deduction. Such a deduction may be justifiable in the future, but not on the basis that exploration is research and development and only after the impact of a flow-through scheme on exploration activity and the taxation base had been established.

**Taxation Regime for Petroleum Exploration**

- 3.87 Submissions and evidence repeatedly asserted that taxation was one of the primary factors that affected the economic quality of petroleum development and production opportunities in different jurisdictions around the world.
- 3.88 Woodside Energy rated Australia as unattractive for high risk, deepwater or other frontier exploration and development of marginal fields (regardless of water depth) because of the current fiscal regime.<sup>74</sup> BHP Billiton Petroleum concurred by stating that in the global context, Australia is not an attractive exploration investment location especially for

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73 *Income Tax Assessment Act 1997*, s. 40-730.

74 Woodside Energy Ltd, *Submission No. 44*, p. 535.

frontier and deepwater exploration because the fiscal rewards are not commensurate with the high cost and risk.<sup>75</sup> APPEA noted that the Australian taxation framework accounted for 43 per cent of the total operational costs facing the petroleum industry and that because many prospective petroleum projects can be marginally economic, the impact of taxation imposts can have an important bearing on project decisions and the subsequent allocation of funds.<sup>76</sup>

- 3.89 The Commonwealth Bank stated that Australia is not attractive for international petroleum investment with a fiscal rank of 90 out of 162 fiscal regimes offered internationally.<sup>77</sup>
- 3.90 Many petroleum production projects operate on slim margins. Accordingly, taxation imposts can affect whether petroleum majors will allocate exploration funds to Australia or to other countries.<sup>78</sup>
- 3.91 However, even with the most globally competitive tax regime, companies will not explore a region if they think it has poor prospectivity.<sup>79</sup> Compelling strategies to enhance Australia's minerals and hydrocarbons prospectivity are presented in the following chapters of this report.

### Resource Rent Tax: PRRT

- 3.92 The petroleum industry is subject to the Petroleum Resource Rent Tax (PRRT), levied under the provisions of the *Petroleum Resource Rent Tax Assessment Act 1987* on offshore oil production. This is the Federal Government's primary petroleum taxation mechanism. The tax is assessed at 40 per cent of net amounts received from the sale of all petroleum or marketable petroleum products.
- 3.93 Deductible items include capital or operating costs that directly relate to the offshore petroleum project, including expenditure on exploration.<sup>80</sup>
- 3.94 Major petroleum exploration companies feel that Australia would be a more attractive investment destination if there were a per project barrel of

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75 BHPBilliton, *Submission No. 57*, p. 738.

76 Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, pp 505-6.

77 Commonwealth Bank of Australia, *Submission No. 55*, p. 693.

78 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 137; APPEA, *Submission No. 39*, pp 505-6; BHP Billiton Petroleum Pty Ltd, *Submission No. 57*, p. 743.

79 Western Australian Government, *Submission No. 84*, p. 1355.

80 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 137; Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, p. 508.

oil equivalent (BOE) production exemption from PRRT assessment for frontier and deepwater exploration. They also feel that investment would be encouraged by lowering or abolishing the PRRT tax rate for frontier and deepwater exploration<sup>81</sup>.

- 3.95 However, the Department of Industry, Tourism and Resources (DITR) argued that there is no need to change the PRRT regime to encourage deepwater exploration. Empirical evidence produced by DITR shows that the companies that have been exploring frontier and deepwater areas have been doing so for the last 15 years, and deepwater wells have increased in number in the last decade. DITR believes there is no need to change PRRT while the industry is exploring in these areas<sup>82</sup>.
- 3.96 DITR also argued that the PRRT should not be changed in order to allow incentives to be granted to petroleum companies in special cases. Although these measures would encourage the development of marginal areas, they would also undermine the integrity of the taxation framework. The current PRRT is transparent, allowing petroleum companies to accurately predict the tax impact of their projects. This reduces Australia's sovereign risk, making it a more attractive investment destination<sup>83</sup>.

### Specific Concerns with the PRRT

- 3.97 While the Committee recognises the need to maintain the integrity of the tax base, it is conscious that Australia also needs to have a globally competitive tax regime. APPEA has drawn attention to two elements of the PRRT in particular which it believes inhibit petroleum production and thus exploration. One issue of concern is that the carry forward rate for undeducted general project related expenditures on new projects has been reduced from the long term bond rate (LTBR) plus 15 percentage points down to the LTBR plus 5 percentage points. The impact, according to APPEA, is that there is a possibility of a tax liability being incurred before an economic return has been generated. The sector believes the rate should be increased to at least the long term bond rate plus 10 percentage points to more adequately account for the risks in the petroleum exploration and production sector.<sup>84</sup>

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81 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 137; Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, p. 508; Woodside Energy Ltd, *Submission No. 44*, pp 545-6; BHP Billiton Petroleum Pty Ltd, *Submission No. 57*, p. 749.

82 Department of Tourism, Industry and Resources, *Transcript, 20 March 2003*, pp 12-3.

83 Department of Tourism, Industry and Resources, *Transcript, 20 March 2003*, p. 15.

84 Australian Petroleum Production and Exploration Association, *Submission No. 39*, pp 509-11.



- 3.98 The other issue of concern about the PRRT is that deductions for prior exploration expenditure are currently compounded forward at LTBR plus 15 percentage points if the expenditure has been incurred within five years of the date on which information is provided to obtain a production licence. Exploration expenditure incurred more than five years earlier than this date is compounded forward at the significantly lower Gross Domestic Product factor rate. Some petroleum exploration projects, particularly in deepwater, have long lead times, and cannot be completed within five years. The five year time limit applied by the PRRT discourages investment in these projects. The impact is a “dramatic drop in the value of the eligible exploration deductions for companies without a production licence”.<sup>85</sup> This, in turn can discourage investments in deepwater areas, particularly if explorers do not have an existing production licence.
- 3.99 The Committee’s inquiry focuses on exploration rather than production. However, the Committee acknowledges that exploration will not occur if the existing tax regime makes offshore petroleum production in Australia internationally uncompetitive. Accordingly, the Committee makes the following recommendation to account for petroleum exploration risks and to encourage deep-water exploration.

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85 ExxonMobil Australia Pty Ltd, *Submission No. 18*, p. 137; Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, pp 508-9, 513; Woodside Energy Ltd, *Submission No. 44*, pp 545-6; BHP Billiton Petroleum Pty Ltd, *Submission No. 57*, p. 750.

### Recommendation 3

3.100 The Petroleum Resource Rent Tax be reviewed to investigate the options of:

- Raising the carry forward rate for un-deducted general project related expenditures from the long term bond rate plus five percentage points to a minimum of the long term bond rate plus ten percentage points;
- Allowing undeducted exploration expenditure incurred more than five years prior to the provision of a production licence to be compounded forward at the Long Term Bond Rate plus 15 percentage points for the first five years and then, for the subsequent years, compounded forward at the Long Term Bond Rate; and
- Reducing the PRRT rate for petroleum production from newly discovered accumulations in waters of greater than 400 meters depth, and according to a production plan deemed by the Minister for Industry, Tourism and Resources to be in the national interest.

3.101 However, there should be a concomitant obligation for greater accountability placed on exploration companies and the Committee recommends accordingly.

### Recommendation 4

3.102 The administration of retention leases be reviewed to require:

- Work program technical details (excluding financial information), relating to retention leases issued to petroleum exploration companies under the *Petroleum (Submerged Lands) Act 1967*, be made public;
- Holders of retention leases under the *Petroleum (Submerged Lands) Act 1967* applying for re-issue of those retention leases, show cause why those retention leases should not be made contestable after expiry of the first five years of tenure, and any subsequent five years of tenure.

## Resource Taxes: Royalties

- 3.103 The Federal Government applies royalties to the North West Shelf project area, an offshore area which for historic reasons is not subject to PRRT. The states apply royalties on the production of onshore petroleum under their jurisdictions. Royalties are generally assessed as a percentage of the wellhead value of oil and gas production. Deductions include part of the cost of production infrastructure, processing and transportation, but not costs associated with exploration<sup>86</sup>.
- 3.104 The petroleum sector accepts that the existing royalty and excise provisions are not a major impediment to onshore exploration and development activity. However, APPEA reminded governments of the impact that these imposts can have on the economics of marginal projects<sup>87</sup>.

## Company Tax

- 3.105 As in the minerals sector, junior exploration companies and companies that are yet to begin production with limited or no income streams are not in a position to take advantage of tax laws that presently allow for the immediate deductibility of exploration costs. Petroleum juniors advise that this is making them less attractive to capital markets and diminishing their ability to raise funds.<sup>88</sup>
- 3.106 APPEA noted that in the past there had been a number of schemes that allowed for the deductibility of petroleum exploration expenditures to be passed to shareholders – in effect, flow-through share schemes.<sup>89</sup> APPEA recommends a flow through share scheme, be introduced which could:
- realistically be expected to produce a significant boost to the overall petroleum exploration effort in Australia....<sup>90</sup>
- 3.107 The Committee has already advanced arguments, primarily in the context of the minerals sector, for a flow-through share scheme aimed at attracting additional investment in greenfields exploration. The arguments apply

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86 Australian Petroleum Production and Exploration Association, Submission No. 39, p. 514; Department of Tourism, Industry and Resources, *Transcript*, 20 March 2003, p. 10.

87 Australian Petroleum Production and Exploration Association, Submission No. 39, p. 515.

88 Australian Petroleum Production and Exploration Association, *Submission No. 96*, p. 1491; Agip Australia, Submission No. 28, pp 242-3; Strike Oil NL, *Submission No. 42*, p. 529.

89 Australian Petroleum Production and Exploration Association, *Submission No. 96*, p. 1491.

90 Australian Petroleum Production and Exploration Association, *Submission No. 96*, p. 1492.

equally for the petroleum sector and, accordingly, Recommendation 2 has been phrased to apply to both sectors.

- 3.108 These recommendations are particularly designed to stimulate greenfields exploration by juniors, but should also provide benefits for larger companies engaging in exploration in both the minerals and petroleum sectors.

### **Possible Petroleum Liquids Bounty**

- 3.109 The Committee has agreed that a strong junior sector is also vital for petroleum exploration in Australia, and that action to encourage a more operationally active junior sector would benefit petroleum exploration, particularly onshore exploration, in Australia.
- 3.110 The Committee noted the recent successes by Beach Petroleum and Stuart Petroleum in moving from junior explorers to producers in the Cooper Basin. This followed the freeing up of the South Australian Cooper Basin area for new exploration tenement applications by parties other than the Cooper Basin partners (the relinquishing parties). The Committee thought this model of junior explorers exploring small proximal closures leading to discovery and extraction of small petroleum liquids accumulations warranted support.
- 3.111 The introduction of liquids identification bounties to companies proving incremental additions to the Australian petroleum liquids EDR could make it worthwhile for petroleum exploration companies to explore small closures and the margins of producing basins by proximal infrastructure drilling, for small but valuable crude oil accumulations. The Committee makes the following recommendation for consideration by the Government and industry.

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### **Recommendation 5**

- 3.112 **The Minister for Industry, Tourism and Resources and appropriate petroleum production and exploration peak bodies, review the feasibility of a “liquids identification” bounty scheme for junior exploration companies to encourage them to explore the margins of on-shore production basins for small accumulations of petroleum liquids.**

## Pre-Competitive Geoscience Data Acquisition

### Basic data

- 4.1 A global leader in minerals exploration and mining observed that “collection and low-cost dissemination of geoscientific data by government agencies is critical for exploration success”.<sup>1</sup>
- 4.2 Pre-competitive geoscience data acquisition in Australia refers to the collection, collation and integration of basic geoscientific data by government agencies, essentially Geoscience Australia and the states’ geological surveys. These strategic regional geoscientific research programs are generally aimed at upgrading historic data sets and filling data gaps by acquiring, efficiently and economically, modern geoscientific data at geologic province scale.<sup>2</sup> Generally the government agencies assigned priority to upgrading datasets over areas considered to be prospective but under-explored.
- 4.3 The dearth of exploration activity in some regions was partly related to the reality that the bedrock of vast tracts of the Australian continent is hidden by a thick layer of rock debris.<sup>3</sup> This phenomenon prevents low-cost conventional exploration techniques being definitive. As a result, “only thirty percent of Australia’s rocks have been explored...”.<sup>4</sup>

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1 Rio Tinto Exploration, *Submission No. 46*, p. 564.

2 Australia’s Mineral Exploration, *Prime Minister’s Science, Engineering and Innovation Council, Seventh Meeting 28, June 2001*, p. 9.

3 Metex Resources Limited, *Submission No. 14*, p. 114.

4 Eduard Eshuys, *Submission No. 32*, p. 429.

- 4.4 The cover sequence (or regolith) problem was exacerbated by the geophysical data coverage of the continent being grossly incomplete. Only about half of the continent is covered by high resolution magnetic and radiometric data and the gravity data sets are only available at reconnaissance scale over most of the continent.<sup>5</sup>
- 4.5 The importance of focussing on upgrading data coverage of areas affected by cover sequences was stressed by Earthsearch Consulting which advised that “the as yet ‘undiscovered’ world-class ore deposits are most probably concealed by barren soils or barren cover rock sequences”.<sup>6</sup>
- 4.6 Evidence was received on the need for, and importance of, pre-competitive data collection. Most of this evidence referred to the collection of onshore rather than offshore data. Onshore data is of primary use to the minerals sector, while offshore data is of most benefit to the petroleum sector. Comments in this chapter principally refer to pre-competitive onshore data collection, but in most cases apply equally to the offshore context. Where appropriate, reference is made to specific offshore initiatives.

## History of Pre-Competitive Data Collection

- 4.7 The need for governments acquiring and providing pre-competitive geoscientific data has long been recognised. Basic pre-competitive regional mapping of the Australian continent by the states’ geological surveys has been continuous for more than 150 years. Government geological surveys in Queensland, for instance, commenced with Samuel Stutchbury’s lodgement of the first report by a government geologist, in October 1853.<sup>7</sup>
- 4.8 Modern “initiative-style” pre-competitive geoscientific data acquisition programs commenced only in the early 1990s with Minerals and Energy South Australia in 1992-93 beginning by conducting purpose-funded regional programs (“initiatives”) that were additional to core geological survey functions. The principal aim was to stimulate exploration by attracting new exploration investment to the respective state to target greenfields opportunities revealed through the interpretation of the new datasets. As an additional enticement to explorers, the government

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5 Australian Geoscience Council Inc., *Submission No. 49*, p. 606.

6 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1576.

7 *Queensland Government Mining Journal*, Volume 103, No. 1211, June 2003, p. 4.

agencies over time gradually reduced the data supply charges to cost-of-transfer and eventually free-of-charge, to interested parties.<sup>8</sup>

4.9 Since 1992-93, all the Australian states have established initiatives and some are now into their second and third generations. Initiatives have accelerated the data modernisation process. In total the states have expended and committed more than \$270 million of additional funding to major data acquisition programs over the period 1992-2005.<sup>9</sup>

4.10 Indicative historic and current commitments by state governments on pre-competitive geoscientific data acquisition initiatives include:

- \$23.5 million by South Australia from July 1992 to June 1996, and \$23.2 million from July 1998 to June 2002;<sup>10</sup>
- \$29.5 million over 12 years to 2005 by Victoria;<sup>11</sup>
- \$30 million over seven years for the “Exploration NSW” initiative by New South Wales;<sup>12</sup>
- a commitment by Queensland in its 2002-2003 budget to spend \$9.2 million over 4 years;<sup>13</sup>
- Tasmania provided \$1.5 million in the year to 30 June 2003 on data digital access and delivery;<sup>14</sup>
- Northern Territory is currently spending \$8.2 million on geoscientific databases;<sup>15</sup>
- Western Australia has spent \$24 million up to 2001-02 on pre-competitive petroleum data acquisition over frontier onshore sedimentary basins, and is continuing to spend at a rate of \$3.5 million per year for the foreseeable future.<sup>16</sup>

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8 Victorian Government, *Submission No. 91*, p. 1456.

9 Queensland Government, *Submission No. 77*, p. 1047.

10 Primary Industry and Resources, *South Australian Exploration Initiative, Introduction*, [http://www.pir.sa.gov.au/pages/minerals/initiatives/saei\\_intro.htm:sectID=200&tempID=7](http://www.pir.sa.gov.au/pages/minerals/initiatives/saei_intro.htm:sectID=200&tempID=7), accessed 2 September 2003; South Australian Department of Treasury and Finance, *Portfolio – Primary Industries and Resources, Output Class 1*, p. 2.5.

11 Victorian Government, *Submission No. 91*, p. 1456.

12 New South Wales Government, *Submission No. 85*, p. 1376.

13 Queensland Government, *Submission No. 77*, p. 1047.

14 Tasmanian Government, *Submission No 86*, p. 1383.

15 Northern Territory Government, *Submission No. 89*, p. 1420.

16 Western Australian Government, *Submission No. 84*, p. 1359.

## Types of Pre-Competitive Data Collected

- 4.11 Pre-competitive data acquisition techniques include airborne geophysical surveying (principally magnetics, radiometrics, digital elevation data, some airborne electromagnetics and airborne gravity gradiometry), ground gravity and geochemical surveying, regional mapping and bedrock drilling. For each state, the objective is to acquire comprehensive high resolution suites of data describing the bedrock geology for all significant geological provinces. Geoscience Australia acquires data nationally in collaboration with the respective state geological surveys under the National Geoscience Agreement which ensures work programs are complementary and avoid duplication.<sup>17</sup> The state geological surveys also collect data independently.
- 4.12 The pre-competitive geoscientific surveys do not focus on any particular commodity, deposit style or private company project area but seek to open up greenfields areas. Once collected the data sets are collated and integrated with any available legacy data by the public sector agency, and made available in packages to exploration companies at the cost of data transfer, or in digital form, free-of-charge.<sup>18</sup> Typically only a minor amount of data interpretation is undertaken by the public sector entity as this is preferred by private companies. The Victorian Minerals and Energy Council stated that these pre-competitive data packages provide the fundamental building blocks upon which industry geologists develop the exploration concepts that can lead to new mineral discoveries.<sup>19</sup>
- 4.13 As well as having a promotional function, pre-competitive geoscience data collection initiatives undertaken by the Commonwealth and the states act to correct a number of market failures. These include:
- positive externalities, whereby the geological knowledge of a new deposit may increase the probability and reduce the costs of the discovery of an analogue;
  - public provision of geoscientific data, which acts to redress any advantage to a “free rider” deriving from another explorer’s work;
  - public good, that underpins policy-making decisions;

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17 Geoscience Australia, *Submission No. 53*, p. 651.

18 Victorian Government, *Submission No. 91*, p. 1456.

19 Victorian Minerals and Energy Council, *Submission No. 63*, p. 868.



- reduction of risk and uncertainty right across the resources exploration industry, which may prevent exploration activity falling to inefficiently low levels;<sup>20</sup>
  - harmonising of the data at provincial and continental level; and
  - equality of access to information, and efficiency of data distribution.<sup>21</sup>
- 4.14 Government surveys are not constrained by tenement boundaries. Hence, it is possible for government-run programs to capture operational efficiencies and scale economies in the performance of pre-competitive regional work. Also, being independent of market competition, government agencies are able to broker broad applications of new exploration technologies,<sup>22</sup> concepts and methodologies without compromising companies' proprietary information.
- 4.15 Many resources industry submissions and witnesses concurred that the government geoscience agencies were highly competent (where excellence has been established<sup>23</sup>), and hence were logically best suited to undertake the pre-competitive geoscientific surveys most efficiently and expeditiously.

## Quality of Data Collected

- 4.16 On a global comparison basis, only relatively small Finland is supplying better quality data to exploration companies. Geoscience Australia commented that:
- Finland is a global quality best benchmark. But certainly the evidence that we have before us is that Australia is well covered with existing data — probably one of the best three countries would be my assessment....<sup>24</sup>
- 4.17 Newmont Australia (the Australian subsidiary of the world's largest gold miner) said in evidence that it uses the availability and quality of pre-competitive geoscience data in Australia as an argument to support its budget bids when competing against other projects around the world, at

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20 Minerals Council of Australia, *Submission No. 81*, p. 1163.

21 Geoscience Australia, *Submission No. 53*, p. 650.

22 NSW Department of Mineral Resources, *Submission No. 85*, p. 1379.

23 Eduard Eshuys, *Submission No. 32*, p. 434.

24 Geoscience Australia, *Transcript, 3 March 2003*, p. 282.

the company budget bidding process before management in Denver (USA).<sup>25</sup>

We need the data sets to get over that first hurdle [preconceptions] and say, “Here’s the geology, here are all the major elements... and this property is worth spending dollars on.” This is particularly in greenfields exploration....<sup>26</sup>

- 4.18 The Australian Petroleum Co-operative Research Centre submitted that most developed countries, and many developing countries, seek to provide ready access to pre-competitive data as a means of encouraging exploration. Less prospective countries (meaning Australia) need to level the playing field by offering high quality pre-competitive data. In this context, Geoscience Australia’s petroleum data are very highly regarded by the international petroleum sector:<sup>27</sup> Newmont Australia concurred that the quality of the pre-competitive data supplied by Geoscience Australia was first class. It also advised that the data “have been excellent” and that “[t]he stuff in Australia is as good as anything you would ever get anywhere in the world”.<sup>28</sup>
- 4.19 The states’ geological surveys are also major providers of high quality pre-competitive geoscientific data with special mention being made by some witnesses of the South Australian and the Northern Territory efforts.
- 4.20 There was strong support for increased investment by government agencies in pre-competitive data acquisition. An experienced geologist submitted also that the level of funding should be increased by at least 50 percent, to provide an incentive for high quality geoscientific research and attract talented researchers.<sup>29</sup>

## Benefits of Pre-Competitive Data

- 4.21 Public provision of pre-competitive geoscience data is generally seen as essential to the recovery of greenfields exploration in Australia. Specifically, the significant benefits of government-funded provision of high-resolution integrated modern geoscientific data included:

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25 Newmont Australia Limited, *Transcript*, 24 March 2003, p 393.

26 Newmont Australia Limited, *Transcript*, 24 March 2003, p. 394.

27 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 29.

28 Newmont Australia Limited, *Transcript*, 24 March 2003, p. 393.

29 Eduard Eshuys, *Submission No. 32*, p. 434.

- reduced risk associated with greenfields exploration;<sup>30</sup>
- reduced expensive re-acquisition of data;<sup>31</sup>
- catalysed research, remapping and refinement;<sup>32</sup>
- leveraged increased exploration spending;<sup>33</sup>
- expedited discovery of new resources deposits;<sup>34</sup>
- reduced duplication of surveying and hence decreased environmental impacts;<sup>35</sup>
- established sophisticated information systems to provide data delivery to the exploration industry; and
- maintained Australia's international competitive edge.<sup>36</sup>

4.22 The Committee notes concerns that the provision of free pre-competitive geoscience data may distort market decisions on where to explore, and hence may result in inefficiency of investment.<sup>37</sup> The Committee considers, however, that programs predicated on upgrading existing datasets to national uniformity and so rectify a market failure are unlikely to be distortionary. Further, the benefits flowing from the conduct of extensive pre-competitive data programs are likely to impact industry-wide.

## Impact on Exploration

4.23 The South Australian Government estimates that its investment in the acquisition of pre-competitive geoscientific data directly stimulated private exploration investment by a factor of 3-5 times the cost of providing core data.<sup>38</sup> There is evidence based on a variety of measures, of increased exploration activity in that state directly attributable to the

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30 Queensland Government, *Submission No. 77*, p. 1046.

31 South Australian Government, *Submission No. 70*, p. 969.

32 Victorian Minerals and Energy Council, *Submission No. 63*, p. 868.

33 Victorian Minerals and Energy Council, *Submission No. 63*, p. 869; South Australian Chamber of Minerals and Energy, *Submission No. 76*, p. 1023.

34 South Australian Government, *Submission No. 70*, p. 969.

35 South Australian Government, *Submission No. 70*, p. 969.

36 Minerals Council of Australia, *Submission No. 81*, p. 1163.

37 University of New South Wales, *Submission No. 11*, p. 53.

38 South Australian Government, *Submission No. 70*, p. 945.

release of certain initiative datasets that detailed aeromagnetic targets and the extent, under cover, of potential host rocks for a variety of minerals.<sup>39</sup>

- 4.24 The Queensland Government estimates that for every dollar spent on initiative work, explorers spent another \$15.<sup>40</sup> Geoscience Australia cites studies that each pre-competitive dollar generated on average \$5 of private exploration expenditure.<sup>41</sup>
- 4.25 The governments of competing countries for exploration investment are also undertaking pre-competitive geoscientific surveys. The Minerals Council of Australia advised that all major mineral nations provide public geoscience data as a means to maintain or stimulate exploration expenditure. Public provision of geoscience data is a key facet of the competitive edge of Australia's mineral industry.<sup>42</sup> The Western Australian Government warned that Australia is fast slipping behind other nations that also have good prospectivity (eg, Namibia, Brazil).<sup>43</sup> CSIRO Exploration and Mining stated that Australia had recently slid from first place to second behind Canada, on a ranking of preferred exploration destinations.<sup>44</sup>
- 4.26 The Committee agrees that Australia needs to respond to this international challenge, by increasing its level of pre-competitive surveying in order to consolidate its competitive advantage internationally as the preferred exploration investment destination. This can be done by directly improving explorers' perception of prospectivity. Further, increasing the efficiency of exploration activities may lead to funds being diverted into drilling.<sup>45</sup>
- 4.27 The continuation of pre-competitive geoscientific data acquisition programs is vital to the recovery and growth of resources exploration in Australia. Public sector spending on pre-competitive work significantly reduces the upstream investment risk associated with resources exploration over Australia's difficult exploration terrains, and hence encourages private exploration investment. The Committee recognises that, in order to maintain its competitiveness internationally, Australia

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39 South Australian Government, *Submission No. 118*, p. 1662

40 Queensland Government, *Submission No. 77*, p. 1046; Minerals Council of Australia, *Submission No. 81*, p. 1163

41 Geoscience Australia, *Submission No. 53*, p. 652

42 Minerals Council of Australia, *Submission No. 81*, p. 1163

43 Western Australian Government, *Submission No.*, p. 1355

44 CSIRO Exploration and Mining, *Transcript, 3 March 2003*, p. 308

45 Western Australian Government, *Submission No.*, p. 1356-7

needs to continue to offer investors improved quality pre-competitive geoscientific datasets.

- 4.28 The budget of Geoscience Australia has been progressively reduced over recent years and industry representatives strongly urge that there be a boost to the funding of Geoscience Australia.<sup>46</sup> The Committee notes that Geoscience Australia received a boost in the 2003-4 budget of \$61 million. However this is earmarked for offshore petroleum data acquisition and management, and additional funding is still required to affect a turnaround in the leveraging impact on the private sector of Geoscience Australia's minerals data programs.
- 4.29 The Committee is reluctant simply to recommend additional funds for an agency in times of public fiscal restraint. However, the Committee is convinced that it is essential that adequate funds be provided to enable Geoscience Australia to continue to gather pre-competitive geoscience data, as a mechanism for increasing exploration activity, and so ensure that Australia maintains its position as a major minerals producing nation. Accordingly, the Committee makes the following recommendation.

### **Recommendation 6**

- 4.30 **The Minister for Industry, Tourism and Resources seek additional funds to enable Geoscience Australia to accelerate onshore pre-competitive data acquisition programs.**
- 4.31 To capitalise on any further investment by the Commonwealth, the states should join the Commonwealth in boosting their pre-competitive programs in a co-ordinated national approach.

## **Initiatives to Improve Pre-competitive Data**

- 4.32 Conclusively, pre-competitive geoscientific data induces exploration investment by reducing the exploration risk to the private sector. The minerals sector and the petroleum sector have different needs for pre-competitive data to ensure their medium-term resource exploration success.

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46 Minerals Council of Australia, *Submission No. 81*, p. 1163; Eduard Eshuys, *Submission No. 32*, p. 434; NSW Department of Mineral Resources, *Submission No. 85*, p. 1379.

## Minerals Exploration Data

4.33 The Committee sought evidence as to the type of pre-competitive geoscience information that, if made available, had the best chance of significantly improving future minerals exploration success. Emphasis was placed on methods that would assist to develop an understanding of the geologic settings of undiscovered blind mineral deposits.<sup>47</sup> This requires superior resolution geoscientific data for the explorable zone down to a depth of some 1000 metres.<sup>48</sup>

## Gravity Gradiometry

4.34 In gravity surveys rock densities are measured. Gravity responses will vary from station to station over a region reflecting the variations in the rock densities of the underlying geology. Anomalous gravity responses may indicate the presence of valuable mineral deposits.

4.35 Currently most of Australia's gravity datasets are the result of land-based surveys carried out on a coarse 11 kilometre grid pattern,<sup>49</sup> or are highly detailed but cover very restricted zones.<sup>50</sup> Surveying a national gravity grid at better than two kilometre centres would provide a quantum step change in the understanding of the geological framework of the continent.<sup>51</sup>

4.36 BHP Billiton has developed the first high resolution airborne gravity gradiometry system called Falcon™. This technology can generate high resolution national gravity gradiometry datasets, amongst others, which allow targeting of a range of mineral deposit types or environments. This technology, or similar, if employed at optimal survey specifications based on a 400 m grid, has the potential to survey the Australian landmass to produce a national high resolution dataset in a time and cost-effective manner and without the need for any ground access or disturbance.

4.37 It will be necessary to significantly increase the quality and quantity of pre-competitive geoscientific data acquisition in order to trigger a resurgence of private sector greenfields exploration activity. Improved

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47 Northern Territory Government, *Submission No. 89*, p. 1419.

48 Northern Territory Government, *Submission No. 89*, p. 1419; NSW Department of Mineral Resources, *Submission No. 85*, p. 1379.

49 Government of South Australia, *Submission No. 119*, p. 1664.

50 Macdonald, James (2003) *BHP Billiton's Global Exploration Program*, Presentation at Geoscience Australia, Canberra 10 June 2003, BHP Billiton; Australian Geoscience Council, *Submission No. 49*, p. 606.

51 Government of South Australia, *Submission No. 119*, p. 1664.

pre-competitive geoscience information will help reduce the risks and costs of exploration, particularly for greenfields targets.

- 4.38 There will also be broader uses for the geoscience data acquired during pre-competitive geoscientific surveys. Airborne electromagnetics, magnetics, digital terrain model development (topography) and gravity gradiometry, will provide vital information in the understanding of other natural resources problems, especially dryland salinity.
- 4.39 The Committee recommends accordingly.

### Recommendation 7

- 4.40 **The Minister for Industry, Tourism and Resources seek the collaboration of the states and the Northern Territory through the Ministerial Council on Minerals and Petroleum Resources, to conduct an airborne gravity gradiometry survey of the Australian landmass.**

### Other Techniques

- 4.41 Earthsearch Consulting believes that ground truthing by drilling of selected geophysical anomalies located as a result of pre-competitive geophysical surveying is also a logical next step in a thorough pre-competitive geoscience data program.<sup>52</sup> This point was echoed by an experienced exploration geologist who submitted that “all the money spent on...developing geoscience datasets, [and] geophysical surveys... is wasted if the targets developed are not adequately tested by drilling”.<sup>53</sup>
- 4.42 There are also other data collection techniques, including deep seismic profiling surveys; high resolution airborne electromagnetic surveys; and systematic multi-element geochemical surveys (soil, stream, magnetic concentrate), geochronology and mineral system studies that have been proffered for inclusion in a suite of techniques for pre-competitive surveying.<sup>54</sup>
- 4.43 The Committee is not equipped to determine the most appropriate technical approaches or to ensure what information will be of most value to the resources exploration industry. However, the Committee believes that the Commonwealth should, at least, consider a modest series of

52 Earthsearch Consulting Pty Ltd, *Transcript*, 12 May 2003, p. 481.

53 Dale Sims, *Submission No. 58*, p. 754.

54 Queensland Government, *Submission No. 77*, p. 1047. See also: CSIRO Exploration and Mining, *Submission No. 102*, p. 1552; Heron Resources Limited, *Submission No. 95*, p. 1483; CSIRO Exploration and Mining, *Submission No. 102*, p. 1552; Northern Territory Government, *Submission No. 89*, p. 1420.

ground truthing programs to test selected geophysical and geochemical anomalies definitively, and recommends accordingly.

### **Recommendation 8**

- 4.44 The Minister for Industry, Tourism and Resources seek the collaboration of the states and the Northern Territory through the Ministerial Council on Minerals and Petroleum Resources, to conduct a series of ground truthing drill programs to definitively test selected geophysical and geochemical anomalies to maximise the worth of existing geoscientific datasets.**

## **Petroleum Exploration Data**

- 4.45 Australia's ability to meet its petroleum liquids demand from known resources is steadily declining. The recent petroleum sector focus has been principally on shallow water mature offshore areas that were unlikely to yield material quantities of hydrocarbons. According to BHP Billiton, any significant crude oil resources in Australia were likely to be in unexplored frontier and deepwater basins.<sup>55</sup> Not surprisingly, these are high-risk areas for explorers.
- 4.46 The Australian Petroleum Cooperative Research Centre (APCRC) noted that the limited number of Australian petroleum juniors (compared to Canada, the UK and the USA) are in urgent need of low-cost publicly available data in order for them to be able to develop innovative exploration concepts.<sup>56</sup>
- 4.47 The Committee is pleased to note that the Commonwealth announced in May 2003 that an extra \$61 million is to be allocated to Geoscience Australia over four years to provide pre-competitive geological and seismic data for offshore areas. Part of this funding will be allocated to geoscience data collection for greenfields or "frontier" areas.<sup>57</sup> The Committee believes this funding initiative reflects the importance of gathering pre-competitive geoscience data over Australia's offshore as well as onshore regions.

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55 BHP Billiton, *Submission No. 57*, p. 738.

56 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

57 Hon Ian Macfarlane MP, Media Release, 13 May 2003, *Major Investment in Offshore Oil Exploration*.



## Co-ordination of Pre-competitive Programs

- 4.48 The Committee has made a number of recommendations to boost pre-competitive geoscience data acquisition. To maximise the benefits flowing from those data it will require co-ordination between the Commonwealth (Geoscience Australia) and states, and also close liaison with the minerals and petroleum sectors.
- 4.49 The Australian Geoscience Council suggested that an advisory panel comprising resources industry personnel be established to advise on the broadened Geoscience Australia pre-competitive program direction.<sup>58</sup> The Minerals Council of Australia was more forthright, and, in its opinion:
- increased funding [to Geoscience Australia should] be conditional on formal consultation with the minerals industry to focus...on the areas of the Geoscience Australia work program that will provide the greatest direct benefit to the minerals exploration industry in Australia.<sup>59</sup>
- 4.50 The Committee supports the establishment of a co-ordination and liaison panel, particularly as it would strengthen relations between the resources industry and the government agencies. The Committee recommends accordingly.

### Recommendation 9

- 4.51 **The Minister for Industry, Tourism and Resources establish an advisory board charged with the oversight of the strategic direction, monitoring of performance and quality control of Geoscience Australia's pre-competitive programs. Such a board should, ideally, include Northern Territory and state government representatives as well as representatives from appropriate minerals sector and petroleum sector peak bodies.**



58 Australian Geoscience Council, *Submission No. 107*, p. 1573.

59 Minerals Council of Australia, *Submission No. 81*, p. 1164.



## Geoscience Research and Education

### The Exploration Challenge

- 5.1 “Modern mineral exploration is scientific inquiry and research. First there is the idea, the vision, or the intuitive thought, then the experiments follow”.<sup>1</sup> The testing of the idea for a deposit can employ some combination, and often repeated phases of a variety of geological, geophysical, geochemical and other methods.<sup>2</sup>
- 5.2 Those valuable resources concentrations that crop out or produce surface expressions, in the main, have already been discovered. “Basically all the easy ones have gone”.<sup>3</sup> The challenge now is to find concentrations of minerals and hydrocarbons that “are statistically forecast to be available but are undetected to date”, generally at greater depths and under cover.<sup>4</sup>
- 5.3 The task of finding new resources is becoming increasingly difficult. No major mineral deposit discoveries have been made since the early to mid 1990’s.<sup>5</sup> The CSIRO Division of Exploration and Mining advised that the next generation of explorers in Australia will:

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1 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

2 Minerals Council of Australia, *Submission No. 81*, p. 1142.

3 Economic Geology Research Unit, *Transcript, 7 March 2003*, p. 367.

4 John Anderson, *Submission No. 31*, p. 418.

5 John Anderson, *Submission No. 31*, p. 417; Dr David Mackenzie, *Submission No. 69*, p. 938; Queensland Mining Council, *Transcript, 7 March 2003*, p. 331.

need to have far better insight into what is beneath the regolith [surface material] before they invest the major sums involved with drilling.<sup>6</sup>

- 5.4 Seventy percent of the rocks forming the Australian continent that are prospective for large deposits are hidden beneath cover sequences that hide critical subsurface features.<sup>7</sup> One experienced geologist observed that:

We have over the last 35 years developed techniques which allow companies and organisations to look through that cover. We also have had, during that time, enormous developments as a result of research in the understanding of how these very large deposits form.

The consequence of that is that it is clear now that these giant deposits occur in very special places for very special reasons. It needs a very disciplined approach to have scientific teams... focusing on where those special places are and [the reasons why they are there].<sup>8</sup>

- 5.5 The scientific discipline of finding resources deposits, therefore, involves a number of inputs:

- **intellectual:** “Exploration success often comes as a result of very smart science or intellectual activity,<sup>9</sup> embracing superior scientific and technical skills;<sup>10</sup>
- **cultural:** “A poorly recognised cultural aspect of success present in [the great ore finding period post-World War II but] largely absent today, [is] hands-on leadership in the exploration industry and its beneficial effect in focussing, encouraging, mentoring and inspiring the professional ore finders on the ground”;<sup>11</sup>
- **technical:** “The future success of the petroleum industry in Australia will depend...on the maintenance of the technical edge relevant to the specific exploration and production problems encountered in Australia;<sup>12</sup> and

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6 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1547.

7 Eduard Eshuys, *Submission No. 32*, p. 432; CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1546.

8 Eduard Eshuys, *Transcript, 12 May 2003*, p. 473.

9 Eduard Eshuys, *Transcript, 12 May 2003*, p. 471.

10 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

11 Dr David Mackenzie, *Submission No. 69*, p. 937.

12 CSIRO Division of Petroleum Resources, *Transcript, 12 May 2003*, p. 464.

- **managerial:** “Exploration success [is] reliant on a chain of confidence...running from the directors to the field geologists, and from the field geologists to the directors”.<sup>13</sup>

5.6 This chapter addresses the role that conceptual R&D plays in resources exploration and future research direction settings, the issue of geoscientific education, and the character of a positive exploration mindset. These issues were not specified in the Terms of Reference for the inquiry. Nonetheless, the Committee notes the high level of concern expressed during the inquiry relating to research and education and believes that these matters amount to significant impediments to investment in resources exploration.

## Knowledge Needs

- 5.7 The Committee recognises the critical importance of conceptual thinking that must go into the process of establishing geoscientific targets. If the intellectual input to the exploration challenge lacks creativity and rigour, the probability of exploration success is reduced. More importantly, however, successful R&D of new exploration concepts and methods may ultimately lower ore body discovery costs and hence reduce exploration risk.<sup>14</sup>
- 5.8 It is clear to the Committee that any constraints placed on the flow of knowledge into the resources exploration process, by commission or omission, amount to a severe impediment to potential resources discovery.

## Research and Development

### Global Ranking

- 5.9 Australia is a world leader in the field of geoscientific research and the provision of geoscientific information.<sup>15</sup> Australia’s public sector geoscience research institutions are world-class and their research scientists are held in high esteem globally. CSIRO commented that “[t]oday, Australia’s fastest growing mineral export is knowledge”.<sup>16</sup>

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13 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

14 Eduard Eshuys, *Submission No. 32*, p. 429.

15 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1548.

16 CSIRO Division of Exploration and Mining, *Submission No. 72*, p. 984.

- 5.10 The level of Commonwealth government support for R&D is high in international terms.<sup>17</sup>

## Spending on Research and Development

- 5.11 The petroleum sector is a technology intensive industry, which has driven significant scientific advances and is a voracious consumer of new science and technology.<sup>18</sup>
- 5.12 Both private and public spending on the R&D of technologies and concepts to innovate resources exploration in Australia (rather than routine exploration itself), had declined to half what it was in the mid-1990s.<sup>19</sup> A senior minerals exploration manager believed the reason why corporate exploration and R&D always faced funding volatility was because companies “have learned quite quickly that you can make quite a big difference to your profitability by cutting your exploration right down—and your R&D... as well”<sup>20</sup>. Other witnesses pointed to the cuts to the budgets of the leading public sector R&D agencies in recent years, and considered such cuts limited the contribution those agencies could make to the industry.<sup>21</sup>
- 5.13 The CSIRO Division of Exploration and Mining explained that public sector agencies and universities:
- ...provide critical support to industry but have all been affected by declining revenue for Research and Development as exploration budgets decline and pressure increases to channel resources into short-term programs with immediate impact on industry at the expense of medium to longer term strategic initiatives.<sup>22</sup>
- 5.14 The increasingly complex exploration challenge faced by Australia to achieve future exploration successes, will be dependent on quantum changes in conceptual thinking drawing on higher levels of both short-term and long-term geoscientific research activity, geoscientific education and the adoption of a rigorous resources discovery culture; and a quantum change in funding.

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17 House of Representatives Standing Committee on Science and Innovation (2003), *Riding the Innovation Wave: The Case for Increasing Business Investment in R&D*, Commonwealth of Australia June 2003, p.21.

18 CSIRO Division of Petroleum Resources, *Transcript*, 12 May 2003, p. 464.

19 CSIRO Division of Exploration and Mining, *Submission No. 72*, p. 985.

20 Dr Ian Gould, *Transcript*, 12 May 2003, p. 441.

21 Victorian Minerals and Energy Council, *Submission No. 63*, p. 868.

22 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1548.

## Research and Development Providers

- 5.15 Public sector R&D is undertaken by a range of Commonwealth and state geoscientific research organisations, discretely and through Cooperative Research Centres (CRCs). Universities throughout Australia also have specialist geoscience research units. These organisations are listed in Appendix D. In addition, many resources industry corporations, especially the majors, have in-house research units or use AMIRA International, an industry association which manages collaborative research for its members in the global minerals sector.<sup>23</sup>
- 5.16 The Tasmanian Minerals Council saw the need for closer cooperation between universities and CRCs to invent and innovate better approaches or innovative technologies that could be handed on to explorers involved in the discovery of mineral deposits in Australia.<sup>24</sup>

## Impacts of Globalisation on R&D

- 5.17 In parallel with exploration spending, globalisation and associated consolidation has also led to declining exploration R&D spending. In Australia, R&D funding has declined by 60 percent over the three years to 2001. Anecdotal evidence suggests that the trend is continuing.<sup>25</sup>
- 5.18 One unfortunate downside of resources industry globalisation has been that corporate R&D units have tended to co-locate with their corporate head-offices.<sup>26</sup> Because the globalisation of Australia's resources industry entailed foreign majors acquiring leading Australian companies, many of the corporate geoscientific R&D facilities had been transferred to, or consolidated at foreign head-office locations and in the view of one senior minerals manager:
- We have seen far too many research organisations... fade from our landscape in the last 10 years.<sup>27</sup>
- 5.19 The CSIRO Division of Exploration and Mining (CSIRO) submitted that the current corporate dynamics in the resources industry generated a research dilemma. Multinationals that have the money to develop the technology are reducing their research effort because they prefer to

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23 <http://www.amira.com.au/> accessed 2 September 2003.

24 Tasmanian Minerals Council, *Submission No. 88*, p. 1389.

25 Davidson, Alex (2003) *Speech – PDAC 2003 International Convention*, Barrick Gold Corporation, Toronto, Canada.

26 Hugh Morgan AC, *The Business Show*, SBS TV, 20 June 2003, <http://www.sbs.com.au/business/archive.php3?contentID=720&month=6&year=2003>, accessed 2 September 2003.

27 Dr Ian Gould, *Transcript*, 12 May 2003, p. 443.

acquire resources rather than find them. However, those who wish to conduct innovative exploration cannot afford the initial research effort that might produce new techniques for application in the field by their exploration team aimed at breakthrough discoveries.<sup>28</sup>

- 5.20 CSIRO believes that Australia's response should be to promote the uniqueness of Australia's exploration and geological environment:

There are two ways to look at that; one is to educate the world to handling regolith types of environment and the other way is to make available a pool of people here [that] can go out and work for companies and understand the environment in Australia and how to explore here.<sup>29</sup>

- 5.21 The tendency of the large multinational petroleum operators to rely on and fund overseas research and development is seen as depriving local small operators of access to local competence. Strategic alliances between small companies and technology providers need to be encouraged. The Committee was advised that:

Dominance by multinationals is not healthy for the development of new exploration concepts and technology in Australia. The low rates of return available to multinational oil companies, and their successive mergers, has seen the market implode over the past decade. ExxonMobil has a limited exploration portfolio in Australia, Shell is showing signs of preferring NE Asian opportunities, Chevron is not expanding here, BPAmoco has no exploration activity, and Woodside is technologically supported for the time being by Shell, but this may not last much longer.<sup>30</sup>

- 5.22 The Committee concludes that globalisation of the resources industry has impacted fundamentally on the private sector structure and culture necessary to support minerals and petroleum R&D. Some R&D functions have been redistributed away from Australia. Despite this, Australia's innate strength in resources exploration R&D should continue to be driven by domestic requirements and local researchers.

## Research and Development Priority

- 5.23 A major impediment to further resources exploration success (greenfields petroleum and ore discoveries) was the low level of commitment to R&D by Australian business generally and by the Australian resources industry

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28 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1546.

29 CSIRO Division of Exploration and Mining, *Transcript, 3 March 2003*, p. 312.

30 Cedric Griffiths, *Submission No. 37*, p. 465



specifically.<sup>31</sup> Inadequate R&D is seen as a barrier to future exploration success particularly at a time when the task of finding new commercial resources is becoming increasingly more difficult because of cover sequences, and water depth.

- 5.24 The national research priorities announced by the Prime Minister in late 2002 included deep earth resources.<sup>32</sup> The Committee endorses this priority adding that adequate and appropriate geoscientific research was a vital precursor to the earliest component of the actual exploration carried out in the field.
- 5.25 CSIRO considers that current funding levels for national priority strategic R&D projects is probably only sufficient for the delivery of incremental gains in the medium-term. The magnitude of the problem, of declining minerals reserves can only be tackled through a “whole of Australia” combined financial and intellectual effort.<sup>33</sup>

## Research Directions

- 5.26 CSIRO has developed a plan entitled *Australia's Exploration Future*, to regain Australia's leadership in exploration. The plan involved drawing together a consortium of experts from the leading geoscience and mining related organisations to deal with the problem of the decline in exploration investment.<sup>34</sup>
- 5.27 The plan's proponents believed that the initiative could develop or produce signatures of targeted ore systems; a multi-dimensional digital map of Australia's geology and resources; conventional geochemical maps and deep sensing geochemistry; and techniques for exploration under transported cover as well as deep rock sampling.
- 5.28 The Tasmanian Minerals Council believed that any geoscience research plan should contain the following elements:
- a co-operative network of universities and CRCs to work on state-based mineral discovery techniques;
  - each state to follow a similar approach; and
  - research to target the respective state's geologic framework.<sup>35</sup>

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31 Australian Petroleum Cooperative Research Centre, *Transcripts*, p. 75.

32 Prime Minister of Australian, *Research Priorities for Australia's Future Prosperity*, Media Release, 5 December 2002.

33 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1545.

34 CSIRO Exploration and Mining, *Regaining Australia's Global Leadership in Exploration: Australia's Exploration Future*, 2003. *Submission No. 102*, p. 1548.

35 Tasmanian Minerals Council, *Submission No. 88*, p. 1389.

## Research and Development: An Assessment

- 5.29 The Committee supports the CSIRO initiative encapsulated in *Australia's Exploration Future* to address Australia's declining exploration activity. This initiative meets the requirements of seeing through the regolith that covers much of continental Australia. It is expected to cost \$60 million per annum over 3-5 years with one third directed at new concepts and technology development and the remainder to testing.<sup>36</sup>
- 5.30 The Committee also acknowledges that there are a number of private and publicly funded research centres that have the capacity to achieve a much greater breadth and depth of geoscientific research.<sup>37</sup> In addition to accessing Commonwealth grant programs designed specifically to encourage company R&D<sup>38</sup>, these research centres may require increased funding to provide an incentive to initiate high quality geoscientific research and to attract talented researchers.
- 5.31 Geoscientific research should also have a national focus for maximum impact, although the states should host their fair share of projects. The Committee makes the following recommendation.

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### Recommendation 10

- 5.32 **The National Task Force proposed by the CSIRO Division of Exploration and Mining be supported financially and charged with the task of implementing the proposal entitled *Australia's Exploration Future* to provide (in its words) breakthrough concepts, knowledge methods and techniques for transfer to minerals explorers.**

### 3D Seismic: A Case Study

- 5.33 CSIRO's Division of Petroleum Resources described the onshore use of three dimensional seismic surveying (3D seismic) as an example of an emerging exploration technology with great potential. 3D seismic is currently used with great success for identifying offshore petroleum accumulations.<sup>39</sup> More research needs to be done, however, to optimise 3D seismic for onshore petroleum exploration and lower its costs. If this occurs, then the new technique is expected to have the same significant

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36 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1548.

37 Eduard Eshuys, *Submission No. 32*, p. 434

38 House of Representatives Standing Committee on Science and Innovation (2003), *Riding the Innovation Wave: The Case for Increasing Business Investment in R&D*, Commonwealth of Australia June 2003, p.29-35.

39 CSIRO Division of Petroleum Resources, *Transcript, 12 May 2003*, p. 466; International Association of Geophysical Contractors (IAGC), *Submission No. 120*, p. 1675.

impact onshore as it has had on offshore petroleum exploration. Accordingly, the Committee recommends.

### **Recommendation 11**

- 5.34 **CSIRO Petroleum, through its membership of the Australian Petroleum Cooperative Research Centre, encourage research into cost-effective innovation of petroleum exploration technologies such as three dimensional seismic imaging technology, for onshore petroleum exploration.**

## **Geoscientific Education**

- 5.35 The top Australian university Earth Sciences departments have produced and are still producing some of the best exploration geoscientists in the world.<sup>40</sup> However, the closure of geology schools and diminishing interest in the sciences generally and the geoscience discipline in particular, will seriously limit the numbers of geoscience professionals available to carry out the necessary resources exploration functions in the future.
- 5.36 The Economic Geology Research Unit from James Cook University warned that undergraduate geoscience student numbers are likely to reduce and postgraduate student numbers are also falling.<sup>41</sup> The Unit further believed that the average quality of the earth science graduates has declined.<sup>42</sup>
- 5.37 The perceived highly volatile resources industry career paths and currently poor job prospects in the resources industry are the major causes for the decline.
- 5.38 Some rationalisation of tertiary geosciences schools has taken place. The Committee considers that a network of geosciences schools across Australia should remain viable through the current exploration downturn and be in a position to expand with the recovery of the resources industry, and the likely increase in student interest in geosciences courses. The Committee recognises and supports the peak bodies' and professional associations' longstanding stakeholdings in tertiary education, and notes studies such as the Minerals Council of Australia's 1998 discussion Paper,

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40 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

41 Economic Geology Research Unit, *Submission No. 35*, p. 455.

42 Economic Geology Research Unit, *Transcript, 7 March 2003*, p. 367.

*Back from the Brink* which addressed reshaping minerals tertiary education.<sup>43</sup>

- 5.39 The issue of falling enrolments in geoscience courses at universities, however, is a sub-set of the broader issue of declining interest in studying the hard sciences. Some educators believed that greater effort needed to be exerted to upgrade the quality of geoscience teaching at secondary schools, through teacher training and curriculum review.<sup>44</sup> Others considered that high schools should focus more on teaching “the fundamentals of science – chemistry, physics and mathematics”.<sup>45</sup> Then:

...you have to create an environment out there where people in universities, doing the hard sciences early on in their university, see the job opportunities, see the salaries which are being offered. There will not be any problem about attracting them to geology in second year and third year, and then geology at doctorate level.<sup>46</sup>

- 5.40 The Committee concludes that, in the present environment, any attention to teaching should best be directed at improving geoscience education at tertiary level. The Committee agrees that a thorough grounding at secondary school in the core science subjects would serve interested students well for when they reached university and considered taking geosciences studies. Informing high school students of resources industry career opportunities was a responsibility best handled by the geoscience professional associations and the industry peak bodies which already had the infrastructure to continue this role.

## Exploration Culture

- 5.41 A number of submissions and witnesses advised that geoscientists needed to possess, in addition to formal education qualifications, an inquiring exploration culture to enhance their chances of participating in resources discovery. In a landmark 1976 paper, Dr Leo J Miller identified that successful geoscientists needed to be physically fit, creative, intelligent, optimistic, persistent, non-meek and non-humble, and adventurous.<sup>47</sup> Others said that commitment and perseverance were essentials to making

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43 Minerals Council of Australia, *Back from the Brink*, MCA, Canberra, 1988.

44 Economic Geology Research Unit, *Submission No. 35*, p. 456.

45 Earthsearch Consulting Pty Ltd, *Transcript, 12 May 2003*, p. 479; Cotopaxi International Pty Ltd, *Submission No. 34*, p. 446.

46 Earthsearch Consulting Pty Ltd, *Transcript, 12 May 2003*, pp 470-80.

47 Miller, Leo J. (1976), ‘Corporations, Ore Discovery and the Geologist’, *Economic Geology*, Vol. 71, 1976, Mount Pleasant, Mich., pp 836-847.

discoveries<sup>48</sup> and that explorers should be entrepreneurial professionals with economic motivation who are dedicated to discovering economic mineral deposits.<sup>49</sup>

- 5.42 An experienced consulting geologist submitted that successful explorationists are few and far between:

Exploration is at a low ebb and it has few local champions... and it has a serious cultural dysfunction between the leadership and the troops.

The few explorationists now in senior positions are usually remote from the action.... The largest companies are increasingly directed from overseas headquarters – a further removal from the front line.

We can not roll back the reality of globalisation and mining company mergers. They are driven by short term benefits such as economies of scale. Exploration, by contrast, is a long term exercise in which quality counts for more than quantity. Successful exploration teams are dedicated, consistent, persistent, flexible and innovative.<sup>50</sup>

- 5.43 The Committee concludes that the attributes of a successful exploration culture need to be nurtured in the Australian geoscientific community so that internationally competitive Australian professionals can drive successful exploration in Australia and overseas. Accordingly, the Committee makes the following recommendation.

#### **Recommendation 12**

- 5.44 **The Department of Industry, Tourism and Resources in conjunction with the Department of Education, Science and Training discuss with appropriate peak bodies and professional associations to develop, in collaboration with universities, tertiary-level short courses to encourage excellence in minerals and petroleum exploration management culture, innovative operational approach and optimisation of the national geoscientific knowledge base.**



48 Geoscience Australia, *Submission No. 53*, p. 645.

49 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

50 Dr David Mackenzie, *Submission No. 69*, pp 938-9.



## Titles

### Rights

- 6.1 In Australia, almost all earth resources are Crown-owned.<sup>1</sup> The statutory rights to onshore resources and resources in coastal waters to the three nautical mile limit fall within the jurisdiction of the host state. The Commonwealth Government controls the resources beneath the territorial sea which extends beyond the three nautical mile limit<sup>2</sup> and out to twelve nautical miles. Resources on the continental shelf beyond the twelve nautical mile limit and out to the limits of the Exclusive Economic Zone (EEZ), plus areas that can be claimed under “Law of the Sea”, are controlled by the Commonwealth but may be subject to international treaties. Some historic remnant land titles with attaching sub-surface resources ownership still exist in some states, but the areas involved are insignificant in the context of the present inquiry.
- 6.2 The rights to explore Crown resources in a specified area (“tenement”) are documented in a lease or license (“title”) issued by a regulatory agency. Resources title confers on the holder certain responsibilities including reporting requirements, performance outcome thresholds and environmental standards and conditions.<sup>3</sup>

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1 e.g. Northern Territory Government, *Minerals (Acquisition) Act (1984)*, s. 3; South Australian Government, *Mining Act (1971)*, s. 16; Government of Western Australia, *Mining Act (1978)*, s. 9.

2 Northern Territory Government, *Transcript, 9 October 2003*, p. 10.

3 e.g. Northern Territory Government, *Mining Act (2003)*, Part IV; South Australian Government, *Mining Act (1971)*, Part 5; Government of Western Australia, *Mining Act (1978)*, s. 57.

- 6.3 The establishment and allocation of petroleum and mineral rights is a key role for regulatory agencies.<sup>4</sup>

## Applications

- 6.4 All Australian states have a suite of exploration titles, each designed for a particular purpose and each with a standard range of qualifying criteria and operating conditions. However, the exploration title styles and conditions vary in detail quite significantly from state to state.
- 6.5 Companies wishing to explore for earth resources must first make application to the state government regulatory agency for an appropriate exploration title. In general, two types of application filtering process are used:
- program bidding; and
  - priority of lodgement.
- 6.6 Petroleum tenements are usually allocated through a bidding process and minerals tenements employ the priority of lodgement approach.
- 6.7 The lack of consistency in title styles, tenure, and conditions placed on titles between the states creates much uncertainty with regard to regulatory compliance. This in turn has led to increased regulatory costs on private explorers. Gross overregulation and inefficiencies in processing exploration tenement applications and attendant delays in approvals processes leading to the grant of title may deter exploration investment.<sup>5</sup> Discussion on delays in the issue of tenements relating to Native Title matters is covered in Chapter 7, and if linked to environmental matters, in Chapter 8.

## Minerals Titles

### Process

- 6.8 Under the priority of lodgement system, titles are issued on the basis of priority of receipt by the issuing authority, of valid applications over vacant ground. In almost all cases this is the method used to determine the allocation of minerals licenses.
- 6.9 Some states offer *ad hoc* rights relating to “boutique” or artisan-scale resources exploration, but still within the overall priority system.
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4 South Australian Government, *Submission No. 70*, p. 964.

5 Japan Australia LNG (MIMI) Pty Ltd, *Submission No. 7*, p. 34; Victorian Minerals and Energy Council, *Submission No. 63*, p. 866.



- 6.10 The Amalgamated Prospectors and Leaseholders Association of Western Australia, for example, pointed out that there is a non-conflicting arrangement in Western Australia whereby prospectors can apply for permits over areas within existing exploration licenses held by other parties to metal detect for gold nuggets. There is a requirement attaching to the permit for the prospector to report back on the amount and location of any gold nuggets detected on the permit area.<sup>6</sup> The Committee is impressed by the degree of co-operation between two groups with demonstrably complementary exploratory interests, and understands that the arrangement is working well.
- 6.11 Similarly, the Lightning Ridge Miners Association submitted that, in partnership with the regulatory agency, its industry had developed a title system to suit the evolving needs of the [opal] industry, with local and immediate needs administered in a positive manner.<sup>7</sup> Notwithstanding, industry structure and marketing were identified as the opal producers' major challenges.

### Problems with Title Applications

- 6.12 Explorers experience problems relating to agencies' management of their title applications, leading to preventable costs and delays caused by:
- **difficult and lengthy documentation:** "The form that you put in for an exploration tenement can be anything up to 30 pages long. ... It is an involved process that is very difficult";<sup>8</sup>
  - **procedural excesses:** "...I notice huge changes in the time requirements for fringe issues not directly associated with exploration which come directly from government... Solution is to get government departments to be flexible...";<sup>9</sup>
  - **over regulation:** "The State Government is... applying statutory measures for such forefront issues as safety performance. ... extended shifts and drug and alcohol testing present challenges for exploration in remote locations.";<sup>10</sup>
  - **high expenditure requirements:** "...minimum expenditure requirements should be lowered for the first 2 years...";<sup>11</sup> and

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6 Amalgamate Prospectors and Leaseholders Association of Western Australia, *Transcript*, 31 October 2003, p. 226.

7 Lightning Ridge Miners Association Ltd, *Submission No. 15*, p. 121.

8 Ken Harvey, *Transcript*, 7 March 2003, p. 380.

9 David Watkins, *Submission No. 2*, p. 2.

10 John Anderson, *Submission No. 31*, pp 417-8.

11 Fergus O'Brien, *Submission No. 3*, p. 7

- **lack of transparency in title conditions:** leverage being applied to waive conditions (royalty holidays) for special one off deals as governments try to attract exploration<sup>12</sup>.

### Applications and Lodgements: An Assessment

- 6.13 The Committee recognises the need for resources title criteria to be simple, transparent and consistent nationally, as a significant step towards assisting investors, especially foreign companies, become involved in Australian resources exploration. Delays and costs of title issue to applicants, should, as a result, be reduced.
- 6.14 The Committee notes that state agencies are now offering electronic lodgement of title applications. This was seen as a sound step towards achieving simplicity and saving process time.
- 6.15 The Committee agrees that it is necessary for states to offer a range of title styles to fit the varied requirements of the exploration companies and individuals. However, the Committee feels that there is considerable scope for the various regulatory agencies to harmonise titles' criteria, conditions and currency across the states and recommends accordingly.

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### Recommendation 13

- 6.16 **The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, collaborate to establish and implement nationally consistent resources exploration title management processes. Attention should be directed towards exploration title type, conditions, tenure, charges, reporting requirements and administration, with the view to having a nationally harmonised regime.**

### Inter-Jurisdictional Delays: Offshore Minerals Exploration

- 6.17 Sydney Marine Sand (SMS) submitted that it had experienced a problem in relation to its application for minerals title over near offshore marine aggregate deposits.<sup>13</sup> Applications to explore for offshore minerals (as distinct from offshore petroleum) are jointly administered by the Commonwealth and the relevant state – in this case New South Wales – under the auspices of the Commonwealth's *Offshore Minerals Act 1994*. This Act deals with two related matters:

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12 Department of Industry, Tourism and Resources, *Transcript, 20 March 2003*, p. 15.

13 Sydney Marine Sand Pty Ltd, *Submission No. 117*, p. 1650.

- setting up a licensing system for mining and exploration in particular offshore areas; and
  - the application of state laws to those offshore areas so far as those laws concern mining and exploration activities.
- 6.18 The Act establishes a Designated Authority which is constituted by the State Minister responsible for the coastline off which an offshore mineral exploration licence is lodged (in this case, the New South Wales Department of Mineral Resources). The Act also establishes a Joint Authority which is constituted by the responsible state minister and the Commonwealth Minister for Industry, Tourism and Resources. For Sydney Marine Sand's application, the Joint Authority was the Department of Industry Tourism and Resources (DITR) and the NSW Department of Mineral Resources. Offshore mining applications are lodged with the Designated Authority and then approved by the Joint Authority.
- 6.19 SMS claims that it took the Joint Authority "nearly 2 years to process the application and refer the [Mineral Exploration Licence] to the respective ministers" and that:
- Neither department appears to have good working knowledge of the Act. Neither demonstrates a good understanding of their obligations with regards to determining the application.... We have not encountered one member of staff empowered to oversee the application process to ensure that both departments did what was required within a reasonable timeframe. ... SMS has witnessed much inter-departmental blaming (of the other) for the prolonged delays.<sup>14</sup>
- 6.20 The Committee is of the view that both DITR and state agencies need to ensure that harmonised and efficient procedures exist for licence applications made under the Offshore Minerals Act and recommends accordingly.

#### **Recommendation 14**

- 6.21 **The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to establish harmonised and efficient procedures for processing applications for offshore mining and exploration licences under the *Offshore Minerals Act 1994*.**

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14 Sydney Marine Sand Pty Ltd, *Submission No. 117*, pp 1650-1.

## Acreage bidding in the Petroleum Sector

### Process

- 6.22 Offshore petroleum acreage release and work program bidding campaigns are managed by the Commonwealth Government. The acreage release process involves four steps:
- acreage that is going to be released is chosen by DITR, focussing on areas of genuine interest to junior, mid-tier and major companies;<sup>15</sup>
  - data packs are assembled by DITR to accompany the release areas;
  - companies have 6-18 months to assess the acreage;
  - DITR assesses the bids and decides on successful bidders.<sup>16</sup>
- 6.23 Onshore petroleum acreage release and work program bidding programs basically follow the same process, but are managed by the respective state government agency.
- 6.24 Cash bidding, last used by the Commonwealth Government in 1993, is an alternative bidding process to allocate acreage. Current policy is not to use cash bidding because the work program bidding system is believed to encourage exploration by ensuring dollars are not diverted away from exploration budgets.<sup>17</sup>

### Problems with Acreage Bidding

- 6.25 APPEA is concerned that certain components of the approvals process for offshore petroleum tenements amount to an investment disincentive, especially:
- the costs associated with the complexity and duplication of approvals processes; and
  - the uncertainty resulting from policy risk in approvals processes.<sup>18</sup>
- 6.26 Agip Australia was scathing about the awarding of Commonwealth acreage, saying that “[t]he time taken to offer exploration acreage in Australia following bid submission is nothing short of Worlds worst practice”.<sup>19</sup>

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15 Department of Industry, Tourism and Resources, *Submission No. 112*, p. 1603.

16 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 497.

17 Department of Industry, Tourism and Resources, *Submission No. 112*, p. 1606.

18 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 495.

19 Agip Australia Limited, *Submission No. 28*, p. 243.

- 6.27 APPEA advised that, at present there are three pieces of legislation relevant to the approvals process.

...there is the *Petroleum (Submerged Lands) Act* [1967], which covers licensing, approvals and conditions both for exploration and operations. Separate to that, located in a different department and with a different minister, is the *Environment Protection and Biodiversity Conservation Act* [1999]. One of the six triggers under that act is the marine environment. Ninety percent of Australia's petroleum production takes place in the marine environment. ... Separate to that... is the *Native Title Act* [1994] which rests in another government agency.<sup>20</sup>

- 6.28 APPEA conceded, however, that it would not be possible for the three pieces of legislation to be administered by one agency. In APPEA's view:

The shorter you make that process, the more consistency you have in it, the more transparency you have in it, the faster you will get to the stage where action starts to happen. That makes it easier to get investment funds into the industry.<sup>21</sup>

- 6.29 However, with the approvals process running in sequence, it may take three to five years before there is any cash flow, by which time investors may direct funds elsewhere.

- 6.30 APPEA also identified the compilation of government data packs to accompany acreage releases could also generate significant delays in the process.<sup>22</sup> Woodside Energy observed that the release cycle could take two years, and over that long time the exploration momentum and priorities may have moved elsewhere.<sup>23</sup>

- 6.31 Woodside Energy further advised that authorised work program rigidity applying to offshore acreage prevented work commitments being moved to other permit years or to other permits as technical understanding matures or operational conditions change.<sup>24</sup>

### **Acreage Bidding: An Assessment**

- 6.32 APPEA suggested that acreage release approvals processes should operate in a coordinated and timely fashion:

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20 Australian Petroleum Production and Exploration Association Inc, *Transcript, 21 October 2002*, p. 62.

21 Australian Petroleum Production and Exploration Association Inc, *Transcript, 21 October 2002*, p. 63.

22 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 497

23 Woodside Energy Ltd, *Submission No. 44*, p. 541.

24 Woodside Energy Ltd, *Submission No. 44*, p. 541.

- processes need to run in parallel, be consistent between jurisdictions, and standard activities need to be extracted from approvals processes if they meet pre-determined criteria;
  - processes need to minimise risk of unforeseen factors; and
  - decision-making needs to be transparent and capricious decision-making needs to be minimised.<sup>25</sup>
- 6.33 APPEA advised that new acreage bidding information packages need to be more comprehensive and expanded to include all available data on environmental values and management processes, all available data on proven and claimed Native Title and approval processes (and applicable negotiation methods for onshore acreage) and proven or claimed Cultural Heritage sites.<sup>26</sup>
- 6.34 APPEA also stressed the need for consistency and streamlining in approvals processes between state and Commonwealth jurisdictions.<sup>27</sup> Agip Australia considered that state agencies should not be involved in any review of bids.<sup>28</sup> ChevronTexaco saw merit in post-award approvals processes involving agencies and stakeholders mapping out schedules, time lines and decision points that would cut delay.<sup>29</sup>
- 6.35 The Committee concludes that the process of offshore petroleum permit issue was un-coordinated. Rectification of the problem can be achieved through closer liaison between DITR; Environment Australia and, where appropriate, state government and Native Title agencies. The Committee recommends accordingly.

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### **Recommendation 15**

- 6.36 **The Minister for Industry, Tourism and Resources establish a function in the Department of Industry, Tourism and Resources to take the lead role in coordinating and expediting the Commonwealth, Northern Territory and state (as appropriate) processes for the approval of onshore and particularly offshore petroleum exploration permits.**
- 6.37 The Committee also encourages endeavours by DITR to ensure that acreage release documentation includes information on all environmental and cultural liens over areas to be released.

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25 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 495.

26 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 498.

27 Australian Petroleum Production and Exploration Association Inc, *Submission No. 39*, p. 503.

28 Agip Australia Limited, *Submission No. 28*, p. 243.

29 ChevronTexaco Australia Pty Ltd, *Submission No. 36*, p. 458.

## Tenement Turnover

6.38 Several witnesses referred to the need to ensure tenement turnover regularly takes place. The South Australian Government commented that:

Access to land for both petroleum and mineral exploration can be negatively impacted by companies holding large, long term tenements, possibly not doing much exploratory work, and preventing access to new players with new ideas and money.<sup>30</sup>

6.39 Many resources discoveries are made by explorers who apply new ideas and add to existing data generated by earlier companies who have worked the area. Frequently it is not until after a succession of seven or eight explorers have surveyed a particular area unsuccessfully and often repetitively, that a discovery is made.<sup>31</sup> It is important, therefore, that prospective areas are not held on to by companies doing very little or nothing at all, but are relinquished for others to look at.

6.40 The South Australian Government advised that it is necessary for regulatory agencies to have an effective regulatory framework in place that facilitates open and fair competition for petroleum and mineral rights and for providing security of title to such rights.<sup>32</sup> In line with this approach the South Australian *Petroleum Act 2000* is considered leading edge in land access philosophy especially regarding acreage availability and acreage management. Title currency and area have been reduced, bidding made mandatory and penalties specified. Measures to encourage minerals tenement turnover include increasing expenditure requirements in the latter years of a license.<sup>33</sup>

6.41 The Minerals Council of Australia, (MCA) on the other hand, saw the compulsory relinquishment of exploration tenures over the life of a lease is seen as an unnecessary restriction to the effective operation of exploration projects. The MCA considered that:

Any legislative requirement for compulsory relinquishment of exploration tenements should incorporate necessary flexibility for exploration operations, even if there is a deferral to the minister for a judgement.<sup>34</sup>

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30 South Australian Government, *Submission No. 70*, p. 964.

31 Eduard Eshuys, *Submission No. 32*, p. 433; Eduard Eshuys, *Transcript, 12 May 2003*, pp 472-3.

32 South Australian Government, *Submission No. 70*, p. 964.

33 South Australian Government, *Submission No. 70*, p. 964.

34 Minerals Council of Australia, *Transcripts, 3 March 2003*, p. 272.

## Tenement Warehousing

- 6.42 The Minerals Council of Australia stated that there is also an insidious side to the broader issue of tenement turnover, amounting to uncompetitive behaviour called warehousing.<sup>35</sup>
- 6.43 Warehousing refers to a practice whereby companies may apply for areas far in excess of what they can handle and then they exploit cheaply the application stage of a tenement granting process to hold the areas, to the exclusion of others who may be interested in making application. Companies involved in warehousing exploit the hold-ups relating to Native Title, by locking-up areas under application preventing other potential interested parties applying. The warehousing ruse may also extend to companies holding granted licenses without working them.
- 6.44 One minerals explorer stated that:
- I think warehousing is a problem because what has happened with Native Title and the access issues is that ground has become valuable and not ideas. People have been pegging knowing that they can sit on it. It is a game that is played by everybody. It is an impediment to exploration because if you have a good idea about an area, you will go and negotiate the access, but if it is stagnant under applications then nothing is going to move.<sup>36</sup>
- 6.45 The Northern Territory Minerals Council stated that most companies had a need to turn land over, but that does not mean that land can be turned over quickly in the current situation. Only when the license is granted does the tenement life clock start to tick.<sup>37</sup>
- 6.46 The Northern Territory Government is monitoring tenement turnover and seeking to devise policies to encourage greater land turnover.
- 6.47 The MCA supports legislation intended to avoid warehousing and the locking up of exploration land.<sup>38</sup>
- 6.48 The Committee concludes that the issue of companies “hanging on to titles or applications” had probably always existed for a number of valid precautionary reasons including enhancing joint-venturing opportunities. However warehousing had escalated as a market response to the added layer of Native Title negotiations on top of the approvals process, and was detrimental to collective regional exploration activity.
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35 Minerals Council of Australia, *Submission No. 81*, p. 1185.

36 John Anderson, *Transcript, 7 March 2003*, p. 390.

37 Northern Territory Minerals Council (Inc), *Transcripts, 9 October 2002*, p. 22.

38 Minerals Council of Australia, *Transcripts, 3 March 2003*, p. 272.



## Disjunctive and Conjunctive Titles

- 6.49 Resources titles may be “disjunctive” or “conjunctive”. A disjunctive title means that that an exploration license confers no automatic right to a production title in the event that resources development goes ahead. Conjunctive titles incorporate exploration and production approvals in the same agreement.
- 6.50 There are advantages and disadvantages with the two types of titles. Conjunctive titles confer certainty that successful exploration can proceed to production without renegotiation.<sup>39</sup> On the other hand, if the conditions of the exploration license at the time of issue have to accommodate a potential automatic production approval, then the process of issue of the exploration title is slowed in almost all instances unnecessarily, because very few exploration titles generate a production proposal.
- 6.51 However, there is a lack of consistency between the states over whether resources exploration and production titles are conjunctive or disjunctive.
- 6.52 Issues such as title application and approval inefficiencies; lax tenement turnover policies; and warehousing cumulatively amount to unnecessary disincentives that may deter investors from pursuing major investment in Australian resources exploration. There needs to be a co-ordinated response by all governments to design a consistent set of modern national title policies that meet the needs of the current resources exploration climate. The Committee concurs with the South Australian Government’s view that the optimal position should be a sensitive balance between enabling fair competition for rights whilst providing security of title, and recommends accordingly.

### Recommendation 16

- 6.53 **The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to investigate the feasibility of introducing to all Australian jurisdictions, optional conjunctive exploration/production titles combined with uniform mandatory relinquishment requirements.**

## Legacy Data

- 6.54 Regulatory compliance monitoring is undertaken by states to ensure that exploration licence conditions are met, especially those relating to

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39 Ian McDonald, *Submission No. 4*, pp 16-7; Northern Territory Government, *Submission No. 89*, p. 1410.

lodgement of technical data and adherence to environment conditions. Technical data collected throughout an exploration program by private companies are required to be lodged periodically with the license issuing agency. These data are stored by the government agency and made available in the public domain where they are known as legacy data.

- 6.55 There is now a huge volume of legacy data collected by both private companies exploring and by governments doing pre-competitive work. This information can lead to breakthroughs in deposit geology because it enhances the ability of geologists to identify and delineate areas for exploration drilling, accurately and can reduce the time and cost of exploration for smaller companies. The availability of legacy data can also increase the value of Australia as a target for exploration investment.
- 6.56 According to a resource industry representative, state agencies are struggling to keep legacy data up to date.<sup>40</sup> Others point out that data lodged with state agencies are generally only available from the respective state, prompting comments for the information to be held under a federal mantle.<sup>41</sup>
- 6.57 The Committee's view is that there should be a national repository for all geoscientific data that are in the public domain, to enable efficient retrieval and interrogation by exploration companies for geoscientific exploration research and program planning purposes. All historic data should be available to exploration companies in digital format stored nationally. A consistent digital form of lodgement across all states and the Commonwealth should be devised and implemented for the lodgement of all future data.
- 6.58 The Committee sees good sense in this proposition and, accordingly, makes the following recommendation.

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### **Recommendation 17**

- 6.59 **The Minister for Industry, Tourism and Resources, through the Ministerial Council on Minerals and Petroleum Resources, work with the Northern Territory and state ministers to store all public domain geoscientific data (legacy and pre-competitive) in digital form in a national data repository.**



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40 John Anderson, *Transcript*, 7 March 2003, p. 385.

41 Dr Ian Gould, *Transcripts*, 12 May 2003, p. 439.

## Exploration and Native Title

### Legislation

#### *Native Title Act 1993*

- 7.1 In 1992 the High Court held that Native Title was capable of being recognised by common law provided that connection to the land has been maintained by Native Title holders since European settlement and Native Title had not been extinguished by the grant of tenure which was inconsistent with Native Title (Mabo decision). The *Native Title Act 1993* (“Native Title Act”) was passed in response to the Mabo decision.
- 7.2 The source and content of Native Title are found in the traditional laws and customs observed and practised by the Indigenous community claiming Native Title. It is an existing legal right to lands and waters in Australia and offshore. Native Title rights and interests are not rights that are granted by government and cannot be withheld or withdrawn by Parliament or the Crown because they are not “granted”, although they can be extinguished by an act of government.
- 7.3 The Native Title Act, among other things, sets out procedures for future acts which affect Native Title.<sup>1</sup> This includes a special right to negotiate for holders and registered claimants of Native Title in relation to the grant of exploration leases and mining tenements. If the right to negotiate

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1 “Future Acts” are proposed activities or developments that might affect Native Title by extinguishing it or creating interests that are inconsistent with the existence or exercise of Native Title.

provisions are followed, then Governments may validly do the future acts covered by them. There is no veto given to Indigenous people.

- 7.4 Consistent with the reasoning of recent High Court decisions and the provisions of the Native Title Act, mining rights prevail over Native Title rights and interests. The Native Title Act provides that, if a “mining” lease was issued, activities permitted by the lease can be carried out regardless of the existence of Native Title. The existence of Native Title interests cannot prevent the carrying on of such activities validly.

### ***Aboriginal Land Rights (Northern Territory) Act 1976***

- 7.5 Certain areas of the Northern Territory are subject to the provisions of the *Aboriginal Land Rights (Northern Territory) Act 1976* (“the Land Rights Act”) instead of the *Native Title Act 1993*.
- 7.6 The Land Rights Act conveys inalienable freehold title over certain land in the Northern Territory to its traditional Aboriginal owners and provides for the management of that land. Just over half of the Northern Territory landmass and 80 percent of its coastline has been granted to traditional Aboriginal owners under the Land Rights Act.<sup>2</sup>
- 7.7 A significant feature of the Act is that it gives traditional Aboriginal owners the right to withhold consent (“veto”) to exploration (and consequently “mining” activities) on Aboriginal land in all but cases of national interest<sup>3</sup>. A 1987 amendment to the Land Rights Act requires that exploration agreements be conjunctive, thereby removing the ‘second veto’ that could block mining once an exploration licence had been granted.<sup>4</sup>
- 7.8 The Land Rights Act establishes land councils to administer the Act. Two of the major functions of the land councils are to represent the views and interests of traditional Aboriginal owners and their communities, and to protect the interests of traditional Aboriginal owners and other Aboriginals interested in Aboriginal land.<sup>5</sup>
- 7.9 The Minerals Council of Australia states that the land council structure is cumbersome and causes significant delays in the processing of applications for exploration licences. It proposes allowing Regional Councils to ratify the decisions of traditional owners in relation to

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2 Northern Territory Minerals Council Inc., *Submission No. 87*, p. 1386.

3 *Aboriginal Land Rights (Northern Territory) Act 1976*, s. 40(a).

4 *Aboriginal Land Rights (Northern Territory) Amendment Act (No. 3) 1987*, ss. 46(12), (13).

5 *Aboriginal Land Rights (Northern Territory) Act 1976*, ss. 23(1), (2).

exploration submissions.<sup>6</sup> Newcrest Mining suggests that assistance be provided to land councils to help them to resolve difficult claims speedily.<sup>7</sup>

- 7.10 The Northern Territory Minerals Council states that the Land Rights Act is responsible for a considerable decline in exploration and subsequent development of ore bodies in the Northern Territory. It claims that:

No new mines have opened up on Aboriginal freehold land, with the exception of the approval of subsequent deposits in the Tanami region, since the inception of the *Aboriginal Land Rights Act (NT) 1976*.<sup>8</sup>

- 7.11 The Central Land Council and Northern Land Council reject this claim, stating that several new mines have resulted from exploration carried out under exploration licences granted under the Land Rights Act. It states that:

The “no new mines” claim has a certain superficial plausibility due to the fact that a number of these new mines use processing facilities which existed at the time of discovery. However, without the ore from mines discovered on exploration licences granted under the [*Aboriginal Land Rights (Northern Territory) Act 1976*] these facilities would have been junked 15 years ago, when the original finds ran out.<sup>9</sup>

- 7.12 The Committee does not wish to enter a debate about the extent of mining activity in the Northern Territory, but notes the concerns about processing delays for exploration licences arising out of application of the Land Rights Act. The chapter now turns to reviewing similar concerns in the context of the Native Title Act before making recommendations for both Acts.

## Native Title: Impact on Exploration

- 7.13 Concerns by the minerals and petroleum sectors about Native Title principally relate to the process of determining claims and the granting of

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6 Minerals Council of Australia, *Submission No. 81*, p. 1181.

7 Newcrest Mining Limited, *Submission No. 26*, p. 232.

8 Northern Territory Minerals Council Inc., *Submission No. 87*, pp 1385-6.

9 Central Land Council and Northern Land Council, *Submission No. 62*, p. 821.

approvals, rather than to the principles underlying land access negotiations.<sup>10</sup>

- 7.14 The lack of process efficiency is considered by the resources industry to lie at the heart of costly delays in accessing land, and the absence of a co-ordinated approach by key regulatory agencies introduces unnecessary complications and delays to the exploration process. AMEC, for instance, believes that the Native Title Act has not worked since its enactment in 1993 but AMEC remains committed to:

making the [Native Title] Act work and in so doing ensuring the industry's ability to access land for mineral development, while simultaneously delivering economic and social benefits to Native Title claimants and holders.<sup>11</sup>

- 7.15 In fact, the Aboriginal Torres Strait Islander Social Justice Commissioner, while not necessarily accepting that there are fundamental problems in the approvals process, conceded that:

The fact that the Act imposes extra requirements in granting exploration rights, and that grants cannot be made as "easily" as they could before 1994, should be unremarkable.<sup>12</sup>

- 7.16 The Minerals Council of Australia argues that the extreme uncertainty generated by the Native Title Act has prompted many majors to reassess investment policy with respect to their Australian operations.<sup>13</sup> It was claimed that as a result of the Native Title legislation, the processing and granting of tenements that have Native Title implications has come to a virtual standstill in some Australian jurisdictions.<sup>14</sup>

## Backlog of Tenement Applications

- 7.17 Of particular and immediate concern is the backlog of tenement applications with Native Title implications, particularly in Western Australia and Queensland. In Western Australia in June 2002, there were approximately 11,200 mineral title applications required approval – of which some 6,000 awaited consideration under the Native Title Act.<sup>15</sup> In

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10 Newmont Australia Limited, *Submission No. 71*, p. 973.

11 Association of Mining and Exploration Companies, *Submission No. 30*, p. 260.

12 Human Rights and Equal Opportunity Commission, *Submission No. 17*, p. 128.

13 Minerals Council of Australia, *Submission No. 81*, p. 1180.

14 Australian Gold Council, *Submission No. 64*, p. 893.

15 Auditor General for Western Australia, Performance Examination: *Level Pegging: Managing Mineral Titles in Western Australia*, Report No. 1, 2002, p. 26. Approximately 2,000 of the backlog of applications had not, at that time, been referred under the Native Title Act.

November 2002 in Queensland there was a backlog of some 800 mining exploration permits awaiting Native Title clearance.<sup>16</sup> In the Northern Territory, no new mines have opened up on Aboriginal freehold land, with the exception of the approval of subsequent deposits in the Tanami region, since the inception of the Land Rights Act. Exploration licence applications have been vetoed, and more than half of the original applications remain outstanding.<sup>17</sup>

- 7.18 While the resources industry argued that Native Title is a major cause for exploration downturn, the backlog of mining applications is the result of a complex mix of local, regional and national economic, political and legal factors.<sup>18</sup>
- 7.19 Many of the claims about the adverse impacts of Native Title legislation on exploration investment were disputed. In the Northern Territory, for instance, witnesses argued that there was no statistical evidence that Native Title is impeding mineral exploration and pointed to new mines established since the introduction of the Land Rights Act.<sup>19</sup> In Western Australia, the Auditor-General found that while Native Title lengthened the time to obtain a minerals lease, significant delays also occurred in application processing by the Mining Registrar and by applicants themselves not responding to requests for information.<sup>20</sup>
- 7.20 A paper published by the National Institute of Economic and Industry Research concluded that the Native Title legislation had not prevented a high level of mining activity in the years 1993 to date. The paper also concluded that brownfields exploration was unrelated to Native Title and that Native Title was but one of many factors (and then only minor) contributing to decisions to invest overseas.<sup>21</sup>

## Native Title: An Initial Assessment

- 7.21 AMEC considered that no single existing impediment was significant enough on its own to seriously affect mineral investment. However,

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16 Premier, the Hon Peter Beattie MP, *Government Reforms to Improve Native Title Laws, Media Statement*, 28 November 2002.

17 Department of Immigration and Multicultural and Indigenous Affairs, *Submission No. 66*, pp 920-1.

18 Attorney-General's Department, *Submission No. 73*, p. 1000.

19 Central Land Council and Northern Land Council, *Submission No. 62*, pp 821-2.

20 Auditor General for Western Australia, *Performance Examination: Level Pegging: Managing Mineral Titles in Western Australia*, Report No. 1, 2002, pp 23-27.

21 Ian Manning, *The impact of Native Title and the right to negotiate on mining and mineral exploration in Australia*, National Institute of Economic and Industry Research, 1997.

collectively, these impediments are considered to be a major disincentive to companies seeking to access Australia as a destination for mineral investment and for companies already operating in Australia.<sup>22</sup>

- 7.22 The Committee accepts there are multiple factors which affect resources exploration investment in Australia. It is also clear that the costly delays and complex processes of Native Title assessment make Native Title one of those factors.<sup>23</sup> In addition to lengthening the time to obtain a tenement, Native Title has raised complex legal issues for exploration companies, thus creating greater uncertainty about land access.
- 7.23 The Committee also agrees with the Parliamentary Joint Committee on Native Title and the Aboriginal and Torres Strait Islander Land Fund that it is critical that equitable decisions on the rights of access to and use of land are delivered quickly, cheaply and with certainty for all involved. Where a process becomes too costly, it can exclude parties. Equally, when decision-making processes are too slow, or do not provide certain outcomes, it can stifle important land use decisions.<sup>24</sup>
- 7.24 On balance, the Committee believes that the Native Title processes probably cause the resources industry to choose not to seek exploration licences, rather than prevent them from doing so.
- 7.25 Timeliness and cost appear to be two main concerns running through the evidence provided to the Committee. Initiatives to assist Native Title holders and claimants to negotiate with the exploration industry, and thus speed up the processes, are discussed later in this chapter. In terms of cost, the Committee thinks it appropriate to recognise the imposts on the exploration industry that have arisen out of passage of the Native Title Act. Accordingly, the Committee makes the following recommendation.

### **Recommendation 18**

- 7.26 **Income tax legislation be amended to allow one hundred percent immediate deductions for expenditure incurred in conducting negotiations required by the *Native Title Act 1993* or *Aboriginal Land Rights (Northern Territory) Act 1976*, whichever applies, for the purposes of permitting minerals and petroleum exploration to proceed.**

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22 Association of Mining and Exploration Companies, *Transcript*, 30 October 2002, p. 135.

23 Auditor General for Western Australia, *Level Pegging: Managing Mineral Titles in Western Australia*, p. 5.

24 Parliamentary Joint Committee on Native Title and the Aboriginal and Torres Strait Islander Land Fund, *Nineteenth Report: Second Interim Report for the s.206(d) Inquiry - Indigenous Land Use Agreements*, September 2001, p. 140.



## Indigenous Land Use Agreements

### What is an ILUA?

7.27 The Indigenous Land Use Agreements (ILUA) system was developed after broad consultation, and it enjoyed widespread support at the time of its introduction in 1998. ILUAs are:

voluntary agreements about the use of an area of land made between one or more Native Title groups and others (such as miners). A registered ILUA is legally binding on the people who are party to the agreement and all Native Title holders for that area.<sup>25</sup>

7.28 ILUAs are seen as another practical, quicker and more cost-effective means of resolving competing land uses or future acts in the Native Title context at a local level such as exploration. ILUAs can also be negotiated without entering into the usual Native Title processes and without involvement of the Courts.

7.29 According to the Attorney-General's Department, the resources industry has taken advantage of the flexibility and certainty provided by ILUAs to negotiate innovative agreements. For instance, exploration companies have entered into broad "framework" agreements that are structured to avoid the multiple negotiation of similar issues in relation to each new project or activity in an area which may affect Native Title.

### State Wide ILUAs

7.30 Attempts to negotiate state-wide ILUAs by state governments, to address backlogs of exploration permits also represent growing recognition of the potential usefulness of ILUAs, "but experience to date shows that these negotiations are complex".<sup>26</sup> Generic ILUAs are or have been negotiated in Queensland, South Australia and Western Australia.

7.31 South Australia has achieved successful outcomes by implementing a two-fold strategy consisting of state legislation and ILUAs. Over 1 000 tenements have been granted under the state legislation. The state currently has no backlog of granting mineral exploration licences. The Government is facilitating a petroleum agreement relating to the Cooper

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25 National Native Title Tribunal, *Glossary of Native Title terms*, <http://www.nntt.gov.au>, accessed 2 September 2003.

26 Attorney-General's Department, *Submission No. 73*, p. 999.

Basin agreement and hopes it will be used as a template for future negotiations in the State and elsewhere.<sup>27</sup>

- 7.32 To try and reduce the burden on Native Title parties and to expedite matters for the resources industry, South Australia has commenced negotiation with key stakeholders of a state-wide Indigenous Land Use Agreement initiative.
- 7.33 A key aspect of the negotiations is a minerals exploration template. As proposed, this would be a generic agreement for exploration that any explorer could utilise, as Native Title parties would have agreed “up-front” to its basic terms. The generic agreement would give Native Title claimants practical recognition of Native Title rights, so they can achieve benefits and carry out their cultural and heritage obligations relating to land. It would offer explorers quick, affordable, certain and predictable access to land for exploration purposes. It would also enable the South Australian Government to provide a stable and predictable climate for economic development and to strike a fair and reasonable balance between the rights and obligations of all groups.
- 7.34 The State believes that if successful, the state-wide ILUA initiative will significantly expedite minerals exploration, whilst protecting Indigenous heritage and giving Native Title claimants full protection as well as a number of other benefits.
- 7.35 The Queensland Government has also developed a model statewide ILUA, and is hopeful that this, together with regional agreements, will provide the basis for eliminating Queensland’s exploration and mining tenement application backlog by the end of 2003.<sup>28</sup> As of March 2003, 12 Queensland Native Title groups had adopted the ILUA template as their preferred method of negotiating land access agreements with resources companies.<sup>29</sup>
- 7.36 The Queensland Mining Council, however, considers that for greenfields exploration, the cost and delays of the generic ILUA conditions are greater than could reasonably be expected to be funded. The Council has been advised by its members that they will not seek exploration permits pursuant to the model ILUA because of the precedent set for excessive

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27 Government of South Australia, *Submission No. 70*, pp 950, 958.

28 Queensland Government, *Submission No. 77*, p. 1045.

29 Minister for Natural Resources and Mines, Hon Stephen Robertson MP, *ILUAs a Boost for North Queensland Mining, Media Statement*, 4 March 2003.

implementation costs and delays, anti-commercial terms, and unacceptable risks of litigation.<sup>30</sup>

## Multiple Claims

7.37 The resources industry claims that in many instances exploration licences are covered by overlapping Native Title claims which require the explorer or mining company to conduct negotiations with two or more claimant groups. This can result in a company having to conduct two or more sets of negotiations, with the resultant increase in negotiation, time and cost. Newcrest Mining considers that in most cases the claimant groups do not agree on a range of issues which results in delays (and cost blow outs) to land access or permit approvals.<sup>31</sup>

7.38 Newcrest Mining also commented that:

The Federal Court essentially deals with most of their issues and we see many examples of Federal Court hearings where groups are told to go away and sort out an overlapping claim and it just takes forever to do it and, in fact, they do not even bother to get around to doing it.

One of the biggest issues I see is that the representative body, which is responsible for resolving their problems, does not have the money or the time or the expertise to get it done.<sup>32</sup>

7.39 The right to negotiate is only available to registered Native Title claimants or bodies that now have to pass the new and more stringent registration test. The Attorney-General's Department believes that this ensures that those negotiating with developers have a credible claim, thereby removing the ambit and unprepared claims which were clogging the National Native Title Tribunal, causing uncertainty for State, Territory and local governments, and delaying many resource developments. According to the Department, the registration test has led to the merging of a number of existing Native Title claims, making it easier for those in the industry who deal with Native Title parties.<sup>33</sup>

7.40 Despite the assertions of the Attorney-General's Department, the effectiveness of the new registration test appears to have been limited. Rio Tinto Exploration advises that the interpretation adopted by the National

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30 Queensland Mining Council, *Submission No. 60*, p. 789.

31 Newcrest Mining Ltd, *Submission No. 26*, p. 232.

32 Newcrest Mining Limited, *Transcript, 24 March 2003*, p 399.

33 Attorney-General's Department, *Submission No. 73*, p. 997.

Native Title Tribunal has largely negated the intention of the amendment, and many overlapping claims remain registered. There is no incentive for competing Native Title claimants to resolve disputes if they can achieve registration of their application.<sup>34</sup>

- 7.41 AMEC also disputes the Attorney-General's Department's claims and argues that the amendments to registration requirements have delivered very little tangible benefit to the industry. This is due to a growing number of Native Title claimants amalgamating their claims merely to ensure formal registration by the Tribunal and therefore access to the right to negotiate. Following registration, many claimants who are party to amalgamated claims simply revert to individual negotiations with mineral developers, rather than undertake negotiations as an amalgamated group.<sup>35</sup>

## Funding for Native Title Representative Bodies

- 7.42 Rio Tinto Ltd considers that the individual representative bodies are a fundamental component of the Native Title system and that the most significant restraint on their effectiveness is their inadequate funding.<sup>36</sup> Newmont Australia considers that land councils are chronically under-resourced both in terms of funds and expertise.<sup>37</sup>
- 7.43 The pivotal role of native title representative bodies in negotiations is well recognised. The Aboriginal and Torres Strait Islander Social Justice Commissioner (“Social Justice Commissioner”) observed that it was widely accepted that it is easier for explorers to work through Native Title representative bodies to promote exploration. The Attorney-General's Department also noted that:

There are very few people who work in Native Title—whether it is the local government, pastoralists or the [resources] industry—and who have to participate in negotiations or are respondents to courts who do not think that having an efficient and effective

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34 Rio Tinto Ltd, Joint Committee On Native Title and the Aboriginal and Torres Strait Islander Land Fund, Inquiry into the Effectiveness of the National Native Title Tribunal, *Submission No. 17*, p. 10.

35 Association of Mining and Exploration Companies, *Submission No. 30*, p. 295.

36 Rio Tinto Limited, Joint Committee On Native Title and the Aboriginal and Torres Strait Islander Land Fund, Inquiry into the Effectiveness of the National Native Title Tribunal, *Submission No. 17*, p. 5.

37 Newmont Australia Limited, *Submission No. 71*, p. 974.

representative body system is a very important means of ensuring that the Native Title processes are working properly.<sup>38</sup>

- 7.44 The Social Justice Commissioner also advised that the range and quantity of the responsibilities of Indigenous representative bodies had increased. Major companies are now directly funding the use of consultants or other staff in an attempt to speed up the processing of applications and heritage surveys. Rio Tinto is commonly approached by representative bodies seeking funding as a precondition to the negotiation of agreements on the basis that there is insufficient funding for negotiations to occur. If the demands are not met, the likelihood of an agreement is remote.<sup>39</sup> Newmont considers that this is a far from satisfactory position leading to inconsistent application of a procedure and of more concern, creating the potential for perceived lack of independence in the work which results from these arrangements.<sup>40</sup>
- 7.45 The Queensland Government advised that currently, land councils do not have the resources to fund indigenous stakeholders' attendance at meetings to undertake resources-related negotiations. At the same time, Juniors do not have the financial resources to pay travel allowances to Indigenous stakeholders. As a result, important meetings cannot be held and applicable resources tenements cannot be granted.<sup>41</sup>
- 7.46 Similarly, the Government of Western Australian considers that the Commonwealth should ensure that adequate resources are provided to Native Title representative bodies as well as to the National Native Title Tribunal.<sup>42</sup>
- 7.47 However, others, including the Western Australian Government, questioned whether additional expenditure would end up with individual representative bodies where it was most needed,:

The issue really is that there has been an increase in funding to the Native Title system but that money has gone to the National Native Title Tribunal, the Federal Court and the Attorney-General's Department. Between 1995 and the present, that money

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38 Attorney-General's Department, *Transcript*, 24 March 2003, p. 415.

39 Rio Tinto Limited, Joint Committee On Native Title and the Aboriginal and Torres Strait Islander Land Fund, Inquiry into the Effectiveness of the National Native Title Tribunal, *Submission No. 17*, p. 18.

40 Newmont Australia Limited, *Submission No. 71*, p. 974.

41 Queensland Government, *Submission No. 77*, p. 1045.

42 Government of Western Australia, *Submission No. 84*, p. 1345.

has not actually found its way into the rep[resentative] body system.<sup>43</sup>

- 7.48 The key is to ensure that any additional funding is received by the individual representative bodies – where the funding is most needed.
- 7.49 Rio Tinto Ltd also considers that the effectiveness of the bodies would be improved by the provision of operational funding to enable them to access the technical administrative and logistical assistance to deal with Native Title matters within their region.
- 7.50 The Committee considers that it is appropriate that indigenous representative bodies should receive additional funding to expedite Native Title processes. However, any additional funds should be earmarked for expenditure on Native Title negotiations only. The funds should not be able to be directed to other functions that may be carried out by the representative bodies. Accordingly, the Committee makes the following recommendation.

### **Recommendation 19**

- 7.51 **The Attorney-General and the Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with relevant state and Northern Territory Ministers, provide additional resources to Native Title representative bodies. The resources should be targeted and limited to support activities that facilitate negotiation processes.**
- 7.52 The accountability of this additional resourcing by the Attorney-General and the Minister for Immigration and Multicultural and Indigenous Affairs is addressed in Recommendation 28.
- 7.53 The Committee is heartened to note that Native Title representative bodies are now required to table annual reports in the Commonwealth Parliament – which will assist them to maintain a rigorous accountability regime.

### **Expedited Procedures: Native Title**

- 7.54 Section 32 of the Native Title Act allows state and territory governments to use “expedited procedures” to allow for future acts that might have minimal impact on Native Title. If these procedures are used and no objection is lodged, the future act can be done without the normal negotiations required by the Native Title Act with the registered Native

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43 Government of Western Australia, *Transcript, 30 October 2003*, p. 165.

Title parties.<sup>44</sup> In the context of this inquiry, state governments can grant tenements for low impact exploration using the expedited procedure. Native Title claimants who want to be involved in negotiations can put in an objection application to the expedited granting of a tenement and a negotiation process must begin. Nearly 70 percent of expedited procedure applications proceed without objections by Native Title groups, allowing the relevant tenements to be granted within six months.<sup>45</sup>

- 7.55 However, expedited procedures principally have been used only by the Western Australian and to a lesser extent, Northern Territory governments. From 1 July 2003, the Queensland Government, however, started using the expedited procedures for exploration permits, although in combination with a template set of Native Title protection conditions designed to reduce the number of objections to the use of the expedited procedure.<sup>46</sup>
- 7.56 The Committee believes that expedited procedures could be used more broadly, particularly by companies involved in preliminary and low impact exploration activities. Of concern is the observation by the Strategic Leaders Group for the Mineral Exploration Action Agenda that there is an apparent lack of understanding by the exploration industry of the expedited procedures and the sorts of tenements and activity to which they could apply.<sup>47</sup> Accordingly, the Committee makes the following recommendation:

### **Recommendation 20**

- 7.57 **The Attorney-General, the Minister for Industry, Tourism and Resources and the National Native Title Tribunal liaise with state and the Northern Territory governments and the resources industry to promote the use and better understanding of the expedited procedures contained in sections 32 and 237 of the *Native Title Act 1993*, for low impact exploration.**

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44 National Native Title Tribunal, *Objections to the expedited procedure (fast-tracking)*, <http://www.nntt.gov.au>, accessed September 2003.

45 Human Rights and Equal Opportunity Commission, *Submission, No. 17*, p. 128.

46 Minister for Natural Resources and Mines, Hon Stephen Robertson MP, *Native Title Protection Guarantees Faster Mining Permits, Media Statement*, 16 June 2003.

47 Strategic Leaders Group for the Mineral Exploration Action Agenda (2003), *Mineral Exploration in Australia*, Commonwealth of Australia, July 2003, pp. 12-13.

## Simplified Procedures: Land Rights

- 7.58 As already mentioned, the Committee is concerned at the amount of time expended by companies in obtaining exploration licences in the Northern Territory over land subject to the provisions of the *Aboriginal Land Rights (Northern Territory) Act 1976*.
- 7.59 The Committee considers that these delays amount to a significant deterrent to minerals and petroleum explorers. There is a need to address negotiation time frames and associated costs. The Committee recommends accordingly.

### Recommendation 21

- 7.60 The Minister for Immigration and Multicultural and Indigenous Affairs implement a simplified and accelerated process for granting exploration licences on land granted under the *Aboriginal Land Rights (Northern Territory) Act 1976* with a view to reducing the economic transaction costs emanating from the existing provisions of the Land Rights Act.**

## A Complex but Maturing Process

- 7.61 As a senior officer of Native Title Division of the Attorney-General's Department observed:
- the arrangements under the [Native Title] act are extraordinarily complex. When that is combined with the arrangements that are available under state legislation, it is very easy to become confused about what arrangements apply in which states.<sup>48</sup>
- 7.62 The Native Title Act enables the states to enact their own legislation in relation to mining and relevant compulsory acquisitions in certain circumstances, enabling state governments to integrate Native Title procedures into their own land management systems. These provisions provide states with the opportunity to implement Native Title processes which are relevant to conditions at the local level.
- 7.63 The procedures faced by explorers in a particular state will depend on which of the legislative options a state chooses. Even if operating under the Commonwealth Act, there are still options on the form of procedures that will apply. That operation may, in turn, depend on the attitude of Native Title parties and representative bodies in that jurisdiction and

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48 Attorney-General's Department, *Transcript, 24 March 2003*, p. 405.



whether any model or template agreements are in place that can be used to assist in negotiation.

7.64 The bewildering intricacy of options faced by explorers and decision makers across different jurisdictions is illustrated by the approaches of just three states:

- South Australia applies its own version of an expedited procedure to mineral exploration but not to petroleum;
- New South Wales has its own legislation for low-impact petroleum and minerals exploration, which has been approved by the Attorney-General. Explorers need an access agreement, but only when entering Native Title land. Opal miners at Lightning Ridge are excluded completely from any Native Title processes under a determination made by the Attorney-General;
- The Queensland government chooses not to use that option of excluding opal mining from Native Title processes; and
- Victoria does not require holders of exploration permits to deal with Native Title unless they access land in which Native Title may exist, in which case the right to negotiate applies.<sup>49</sup>

7.65 The Native Title approaches followed in the determination of access for exploration is an evolving and maturing process. The investment by states and representative bodies in the negotiation of template or framework agreements are increasingly proving their worth. The Attorney-General's Department advised that:

The savings available to parties in both time and resources by the adoption and adaptation of off-the-shelf agreements is beginning to become apparent. Obviously it requires a fair investment of time and resources to get those template agreements agreed, but it is from them that the benefits start to flow.<sup>50</sup>

7.66 The Social Justice Commissioner stated that long term solutions would not be found in a return to the practices of the past. Recognition of Indigenous Australian's relationship with the land provides a structure for the interaction and increased relations between explorers and Indigenous communities. The Commissioner saw signs of a maturing of the process and a maturing of the relationships.<sup>51</sup>

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49 Attorney-General's Department, *Transcript*, 24 March 2003, p. 406.

50 Attorney-General's Department, *Transcript*, 24 March 2003, p. 407.

51 Aboriginal and Torres Strait Islander Social Justice Commissioner, *Transcript*, 19 June 2003, p. 2.

7.67 The Committee was presented with no single solution to the complexities, delays and costs faced by parties involved in negotiating access agreements. There is evidence that positive outcomes are being achieved as part of a slow and evolving process, but not necessarily as a result of applying a single model. As a senior officer from the Native Title Division of the Attorney-General's Department commented:

it is also taking some time for the [resources] industry and the representative bodies to come to a situation where they can negotiate in a fairly positive manner. That is coming about just through the building up of relationships, through the building up of goodwill and through the clarification of the law as the High Court and the Federal Court determine more Native Title applications. I do not think there is a silver bullet. I do not know that any of the submissions have identified any silver bullets.<sup>52</sup>

## Cultural Heritage Assessments

7.68 Heritage issues are now seen as of greater concern to some resources explorers than Native Title. According to AMEC, Indigenous heritage, while an important matter in its own right, is also assuming increasing importance in terms of its relevance in Native Title claims, as a means of demonstrating "connection to the claimed land". Most resources exploration companies however agree and accept that Indigenous cultural heritage must be preserved and that the mining industry has an important part to play in both the identification and protection of that cultural heritage.<sup>53</sup>

7.69 It is important to note that the issues relating to heritage assessments are primarily the responsibilities of the states. The Attorney-General's Department observed that "heritage is a good example of one of the myriad issues that is not caused by Native Title."<sup>54</sup>

7.70 The views of Newcrest Mining are typical of the comments made in submissions. Newcrest's concerns are that the law and its regulations regarding protection of cultural heritage sites are applied strictly to minerals and petroleum companies, but not to other land users. In some cases Aboriginal claimants are requiring full and comprehensive surveys

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52 Attorney-General's Department, *Transcript, 24 March 2003*, pp 408-9.

53 Association of Mining and Exploration Companies, *Submission No. 30*, p. 304.

54 Attorney-General's Department, *Transcript, 24 March 2003*, p. 409.

for low impact exploration activity before they will agree to exploration licences being approved.<sup>55</sup>

7.71 In the event that there are two or more claimant groups (overlapping claims) there can be disagreement on who can carry out the survey work. Most claimants require that cultural heritage clearance work be carried out for each separately defined work program rather than be carried out on an area clearance basis. This requirement involves significantly increased cost due to having to bring back claimants and/or archaeologists for each individual phase of a work program, rather than carry out a clearance for the whole area in one campaign.

7.72 Numerous examples were given of frustrations and delays relating to heritage surveys. The experiences of one company are typical:

we have had to undertake three heritage surveys representing separate groups over that single tenement...granted about three years ago. The costs are something like \$100 000 per annum to hold that ground. We have completed one survey and still have two to go before we can even access the ground for exploration.<sup>56</sup>

7.73 In another example the company advised that the process:

took 1½ years and about \$60 000 plus to actually do the surveys and access the ground. Having done that, it took us \$30,000 and eight days to do the exploration.<sup>57</sup>

7.74 The Australian Association of Consulting Archaeologists believes that the regulatory heritage authorities in most states are under-resourced or under-skilled to deal with and expedite the more complex heritage considerations. The Association considers that delays to resources exploration access are often due to poorly structured work programs, incomplete survey protocols and insufficient direction from heritage regulators as to the required outcomes from cultural heritage assessment and mediation.<sup>58</sup>

## Reform of Heritage Protection Procedures

7.75 Newmont Australia stated that at present, each land council has quite different standards about what is required for a heritage survey. It believed that the Commonwealth Government should establish a standard

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55 Newcrest Mining Ltd, *Submission No. 26*, pp 231-2.

56 Newmont Australia Ltd, *Transcript, 24 March 2003*, p. 392.

57 Newmont Australia Ltd, *Transcript, 24 March 2003*, p. 392.

58 Australian Association of Consulting Archaeologists Inc., *Submission No. 43*, p. 531.

for the process and content of heritage surveys (a template) which would reduce the time and expense involved in their conduct. Newmont Australia requested the development of a protocol or standard “as to what a heritage survey is and how it should be undertaken, with some time frames in terms of how quickly it can be done”<sup>59</sup>.

- 7.76 AMEC argued that while a once-off procedure on a given piece of land may be reasonable, once-only surveys should be enforced and those data collected should be stored for future use by an independent authority.

## Different State Procedures

- 7.77 States are addressing aspects of heritage in a number of ways including the establishment of data bases on cultural and archaeological sites. A key element of reforms in Western Australia, for example, will be the development of standardised heritage survey protocols that can be applied to exploration activities on titles granted under the expedited procedure.<sup>60</sup>
- 7.78 In South Australia, the current practice is that minerals exploration companies apply to the Aboriginal Heritage Sites Register for information about the location of sites on their tenements. However the current scheme does not identify appropriate custodians, can not provide a timely, efficient and cost-effective procedure for allowing exploration and does not provide certainty about compliance with various State laws. The Government is considering the creation of a new independent statutory authority, similar to the arrangements in place in the Northern Territory.
- 7.79 The Northern Territory Aboriginal Areas Protection Authority has the function of site protection, under the *Northern Territory Aboriginal Sacred Sites Act 1989*.
- 7.80 Outcomes include “minimised opportunity for socially divisive controversies over the existence of sacred sites and hence lower potential for harm to relations between Aboriginal custodians and the wider Territory population”<sup>61</sup>. There is also an increased level of certainty when identifying the constraints (if any) arising from the existence of sacred sites on land use proposals. A major mining and exploration company stated that:

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59 Newmont Australia Ltd, *Transcript*, 24 March 2003, p. 392.

60 Government of Western Australia, *Submission No. 84*, p. 1344.

61 Aboriginal Areas Protection Authority web site, *Objectives*, <http://www.nt.gov.au/aapa/text/objectives.htm>, accessed 2 September 2003.

One of the high points would be that there exists already the Aboriginal sacred site protection authority in the Territory. In the past we have found the anthropological services provided by that authority to be very professional, effective and fair to both parties. They have allowed us to get on with the job. We would appreciate that or a similar service operating where we are trying to get into at the moment.<sup>62</sup>

- 7.81 The Committee considers that the Northern Territory Aboriginal Protection Areas Authority is a model which should be examined by all states as one means of addressing the problems that clearly exist at the state level. The Committee also considers that it is essential that Governments examine the feasibility of establishing national standards for the conduct and content of heritage surveys including the time frames in which they should be completed. Accordingly, the Committee makes the following recommendation.

#### **Recommendation 22**

- 7.82 **The Minister for Environment and Heritage consult with state and Northern Territory counterparts to formulate an action plan to review and amend the legislation governing the management and protection of Indigenous cultural heritage to ensure that it is consistent across all states and the Northern Territory.**
- 7.83 The Committee suggests, in a later chapter, measures that if adopted will ensure that there is no duplication between Commonwealth and state heritage assessment procedures.

## **Indigenous Protected Areas**

- 7.84 The Indigenous Protected Areas (IPA) program is part of the Commonwealth's National Reserve System program, an initiative under the Natural Heritage Trust. Indigenous owners can voluntarily declare their land, or land in which they have an interest through leasehold, reserves and determined Native Title, as an IPA for the purpose of promoting biodiversity and cultural resource conservation on these lands. The land is then managed in accord with internationally recognised

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62 Rio Tinto Exploration Pty Ltd, *Transcript*, 30 October 2002, p 120.

protected area International Union for Conservation of Nature (IUCN) conservation standards.<sup>63</sup>

- 7.85 The Western Australian Government and a number of industry associations expressed concern that, although the establishment of IPA's is a Commonwealth policy and is not governed by any legislation, the perception of the wider community may view the IPA declaration as being like a national park with restricted or no access. One of the requirements of the creation of an IPA requires a control on land-use activities that may affect the natural or cultural values. This management approach may result in restricting access for exploration.<sup>64</sup>
- 7.86 Further, the declaration of IPA's with management conservation categories under IUCN standards may be determined as a strict nature reserve or national park rather than a managed resources protected area, which provides for multiple use, including the possibility of exploration and production.<sup>65</sup> The Committee agrees and recommends accordingly.

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### **Recommendation 23**

- 7.87 **The Minister for Environment and Heritage ensure that the International Union for Conservation of Nature category related to multiple land use is the adopted conservation management option for Indigenous Protected Areas.**



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63 Government of Western Australia, *Submission No. 84*, p. 1347.

64 Government of Western Australia, *Submission No. 84*, p. 1347.

65 Government of Western Australia, *Submission No. 84*, p. 1347.

## Environmental and Other Approval Regimes

### Introduction

- 8.1 Most resources exploration companies consider that sound natural resource conservation and environment protection practices are an integral part of industry operations. In meeting the needs of the Australian community, the industry generally recognises that it must operate safely and responsibly to protect and maintain the natural environment. Environmental compliance is now a fundamental aspect of exploration activities.
- 8.2 Access to land for exploration and development is critical to the present and future operations of the Australian minerals industry. Industry groups consider that while access to land and resources is critical, the timeframe within which any decisions are made, and ultimately access is granted, are also significant.
- 8.3 There is considerable concern over potential time delays, duplication of assessment requirements, largely the result of the overlap of Commonwealth and state legislation. While the introduction of the *Environment Protection and Biodiversity Conservation Act 1999* is welcomed by some sectors of the industry, others see it as contributing to the potential for duplication of environmental process, longer project approval timeframes and increased industry compliance costs.
- 8.4 The Committee examined three pieces of Commonwealth environmental and heritage legislation which have the greatest relevance to the exploration industry. These acts are:
- the *Environment Protection and Biodiversity Conservation Act 1999*;

- the *Australian Heritage Commission Act 1975*; and
- the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*.

## ***Environment Protection and Biodiversity Conservation Act 1999***

- 8.5 The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the major environmental legislative mechanism available to the Commonwealth. Under the EPBC Act, the Commonwealth focuses on matters of national significance and no longer becomes involved in matters that are state responsibilities. The EPBC Act provides for up-front decisions on whether or not the Commonwealth will be involved in environmental assessment and approval of a project. It also provides legislated timeframes within which Commonwealth decisions must be made.<sup>1</sup>
- 8.6 The EPBC Act's objects are broad and include the protection of matters of national environmental significance, the promotion of ecologically sustainable development, the conservation of biodiversity and cooperative approaches to the protection and management of the environment. Under the EPBC Act, Commonwealth involvement in the environmental assessment and approval process is triggered only by projects or activities that are likely to have a significant impact on matters of national environmental significance. Such matters cover, among other things:
- the Commonwealth marine environment (generally outside 3 nautical miles from the coast);
  - World Heritage properties;
  - Ramsar wetlands of international importance; and
  - nationally threatened species and ecological communities.
- 8.7 If an action such as exploration, or more likely production, is expected to have a significant impact on the environment, it must be referred to the Minister for the Environment and Heritage for a decision on whether it will require approval under the EPBC Act. An impact is defined broadly to include social, economic and cultural impacts on the environment. If the Minister decides that an action will require approval, an environmental assessment of the action must be carried out. After this step the Minister will decide whether to approve the action, and what conditions if any, to

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1 Environment Australia, *Submission No. 74*, p. 1006.



impose. The Act similarly applies to actions by the Commonwealth, as well as actions in relation to Commonwealth land.

- 8.8 Environment Australia advised that in practice, few minerals or petroleum exploration projects require approval under the EPBC Act. In the EPBC Act's first two years of operation a total of 51 mineral and petroleum exploration projects have been considered. Forty-five of these were considered to have no significant impact so did not require assessment and approval. Fourteen did not require assessment or approval as they were conducted in a particular manner that avoided an adverse impact on the matters protected. Only one referral required assessment and approval.<sup>2</sup>

## Bilateral Agreements with the States

- 8.9 A key objective of the EPBC Act is to promote a cooperative approach between the Commonwealth and state governments by using bilateral agreements to protect and manage the environment. Under the agreements, the Commonwealth accredits state environmental assessment processes and systems. This allows the Commonwealth to delegate to the states the responsibility for conducting environmental assessment and, in more limited circumstances, the responsibility for granting environmental approval under the EPBC Act.
- 8.10 Bilateral agreements are now in place with Tasmania, Western Australia and the Northern Territory and pending with the other jurisdictions (other than South Australia). South Australia is currently monitoring impacts of the legislation on industry, particularly costs associated with the preparation of referrals and any delays to project schedules.<sup>3</sup>
- 8.11 Environment Australia considers that bilateral agreements make the assessment processes easier because they ensure that:

where there is a controlled action under the EPBC Act and it is done under the bilateral agreement, there will only be one assessment process. Companies will go to a state or territory environment agency, run through the assessment process, and then at the end of the day that report will go to the state or [T]erritory minister and to the Commonwealth minister for consideration. There is no duplication of activity at all.<sup>4</sup>

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2 Environment Australia, *Submission No. 74*, p. 1006.

3 Government of South Australia, *Submission No. 70*, p. 944.

4 Environment Australia, *Transcript, 11 November 2002*, p. 261.

- 8.12 The EPBC Act was originally viewed by the resources industry as an unnecessary overlay on existing state environmental management processes.<sup>5</sup> The Committee believes that much of the initial criticism of the Act arose before the bilateral agreements had been entered into with the states.
- 8.13 While the industry still has reservations concerning the operation of the EPBC Act, they have accepted that some Commonwealth involvement is now part of the approval processes. A survey of petroleum exploration and development companies showed that, in 2000, 100 per cent of small companies and 92 per cent of large companies saw the EPBC Act as a cause of operational uncertainty. The Australian Petroleum Production and Exploration Association (APPEA), which conducted the survey, advised that this situation has improved as more administrative and regulatory arrangements for the Act have been disseminated.<sup>6</sup>
- 8.14 Some change in attitude to the EPBC Act is illustrated by the comments of a representative of AMEC, who stated that initially there had been difficulties with administrative arrangements and procedures in Western Australia but that the signing of a bilateral agreement:
- is welcome as it provides some framework now for the Commonwealth and the state to try and streamline the processes; instead of an explorer or a mineral developer having to satisfy two processes, there will be greater cooperation between the two.<sup>7</sup>
- 8.15 While the EPBC Act has only been in operation for a relatively short time, the Committee is satisfied that proponents will no longer be subject to more than one assessment process.

## Issues of “Significant Impact”

- 8.16 Different guidelines have been prepared to assist different industry sectors determine whether actions by them are likely to have a “significant impact” on a matter of national environmental significance and so require referral to the Commonwealth Environment Minister. Those guidelines for the exploration industry provide detailed guidance on whether and in what circumstances exploration – both terrestrial and offshore - is likely to

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5 Association of Mining and Exploration Companies, *Submission No. 30*, p. 365; Government of South Australia, *Submission No. 70*, p. 964.

6 Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, p. 496.

7 Australian Petroleum Production and Exploration Association Ltd, *Transcript, 30 October 2002*, p. 137.

have a significant impact on a matter of national environmental significance.<sup>8</sup> More detailed guidelines are also available to cover the impact on cetaceans of offshore seismic exploration.<sup>9</sup>

- 8.17 AMEC notes that the term “significant impact”, although used extensively in relation to matters of national environmental significance, is not defined in the EPBC Act. AMEC is concerned that the lack of a definition, potentially allows the Commonwealth to expand its involvement in state environmental approval processes. The concomitant danger is increased investor sovereign risk levels, promote developer uncertainty, increase compliance costs and lengthen project timeframes.<sup>10</sup>
- 8.18 In April 2003, the Australian National Audit Office (ANAO) conducted a performance audit of the operation of the EPBC Act, including compliance. The ANAO noted that a number of “stakeholders” were confused to a degree about the concept of “significance” and had commented that the guidelines were not specific enough to industry sectors or particular circumstances to allow a decision to be made on whether an action was likely to have a “significant impact”. The ANAO concluded that the large number of projects which were referred, but were determined not to be environmentally significant, combined with the concerns of “stakeholders”, suggests that more specific guidance to assist proponents was needed.<sup>11</sup>
- 8.19 AMEC's experience supports these findings. The Association observed that while some projects would be large offshore exploration programs, which may require referral:

A lot of advice given to smaller explorers is: when in doubt, refer it. Many of these have been for very small exploration programs which have involved very low levels of ground surface disturbance; therefore, the point of referral having to go through

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8 Environment Australia web site, *EPBC Administrative Guidelines on Significance*, <http://www.ea.gov.au/epbc/assessmentsapprovals/guidelines/index.html>, accessed 2 September 2003.

9 Environment Australia web site, *Guidelines on the Application of the Environment Protection and Biodiversity Conservation Act to Interactions Between Offshore Seismic Operations and Larger Cetaceans*, <http://www.ea.gov.au/epbc/assessmentsapprovals/guidelines/seismic/index.html>, accessed 2 September 2003.

10 Association of Mining and Exploration Companies, *Submission No. 30*, p. 309.

11 Australian National Audit Office (ANAO), *Referrals, Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999*, Audit Report No 38, 2002-2003, p. 39.

that extra red tape, with delays being caused while there has been a response on those referrals, can be seen as being unwarranted.<sup>12</sup>

- 8.20 In order to improve the consistency and quality of referrals made under the EPBC Act, the ANAO recommended, among other things, that the sector guidelines provide more specific information so as to allow an initial decision on whether or not a project is “environmentally significant”.<sup>13</sup> Environment Australia agreed to this recommendation.<sup>14</sup> The Committee is also pleased to note that Environment Australia is conducting a formal review of the guidelines. The Committee sees this as an important commitment by Environment Australia and, accordingly, makes the following recommendation.

#### **Recommendation 24**

- 8.21 **Environment Australia consult with the resources industry as a matter of urgency to finalise sufficiently detailed sectoral guidelines for mineral exploration activity – both terrestrial and offshore - contained in the *EPBC Act Administrative Guidelines on Significance*.**
- 8.22 The Committee also notes that Environment Australia has set up an “Industry Link” page on its website to bring together information sources, references and contacts at all levels of government for industry sectors dealing with environmental approval processes. At the time of printing, this website was a pilot study and only providing advice for the farming industry.<sup>15</sup> The Committee hopes that “Industry Links” will also be extended for the resources exploration industry.

#### **Offshore Exploration**

- 8.23 Exploration activities in Commonwealth waters are controlled by the *Petroleum (Submerged Lands) Act 1967* (P(SL)A). The associated Petroleum (Submerged Lands) (Management of Environment) Regulations 1999 require an approved environmental plan to be in place before a petroleum activity, including exploration, can commence.<sup>16</sup> This environmental plan is required whether or not the Environment Minister also needs to give approval under the EPBC Act.

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12 Association of Mining and Exploration Companies, *Transcript*, 30 October 2002, p 137.

13 ANAO, *Referrals, Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999*, pp 36-40, 46.

14 ANAO, *Referrals, Assessments and Approvals under the Environment Protection and Biodiversity Conservation Act 1999*, p. 24.

15 Environment Australia web site, *Industry and the EPBC Act - Information and relevant links*, <http://www.ea.gov.au/epbc/industrylinks/>, accessed 2 September 2003.

16 *Petroleum (Submerged Lands) (Management of Environment) Regulations 1999*, Division 2.1.

- 8.24 Environment Australia and the Department of Industry, Tourism and Resources endeavour to harmonise the environmental approval processes required by the P(SL)A and EPBC Act. However, both Woodside Energy and ExxonMobil comment on the duplication of effort caused by meeting the requirements of the two Acts and urged that a single assessment process for environmental approvals be implemented.<sup>17</sup>
- 8.25 Aside from the duplication, Woodside Energy also comments on the delays in gaining approval for actions under the EPBC (including gaining a cetacean interference permit). The company notes that environmental approvals can be gained in “a significantly shorter time frame” under the P(SL)A than they can under the EPBC Act.<sup>18</sup> The time delays can be critical for companies trying to plan exploration activities and make use of windows of opportunity provided by the availability of rigs and vessels:
- Because of the long lead time for granting formal environmental approvals, proponents are often required to submit documentation before a detailed basis of design has been prepared, drill targets known, (seismic) survey design finalised and before the preferred concept, vessel or drilling rig has been selected. Once approvals have then [been] granted, it is then very difficult for the proponent to change aspects of the scope or design, without risking further assessment and schedule or financial risk.<sup>19</sup>
- 8.26 The Committee considers that there should be a single assessment process, or at least complementary process for achieving environmental approvals under both the EPBC and P(SL)A. Accordingly, the Committee makes the following recommendation.

### **Recommendation 25**

- 8.27 **The Minister for Environment and Heritage and the Minister for Industry, Tourism and Resources amend the environmental approval processes under the *Environmental Protection Biodiversity Conservation Act 1999* and the *Petroleum (Submerged Lands) Act 1967* (and associated regulations) to ensure the consistency and harmonisation of requirements.**

17 Woodside Energy, *Submission No. 44*, p. 547; ExxonMobil Australia, *Submission No. 18*, p. 136.

18 Woodside Energy, *Submission No. 44*, p. 547.

19 Woodside Energy, *Submission No. 44*, p. 547.

## ***Australian Heritage Commission Act 1975***

- 8.28 Under the *Australian Heritage Commission Act 1975*, (AHC Act) places of cultural significance, including sites, areas and buildings, are entered onto the Register of the National Estate.
- 8.29 Practice shows that exploration companies have been able to meet any heritage protection requirements on those rare occasions when exploration activity has been affected by the provisions of the AHC Act.<sup>20</sup>
- 8.30 At the time of this report's adoption there are two bills before Parliament to revoke the Australian Heritage Commission Act. These are the Australian Heritage Council Bill 2002 and the Australian Heritage Council (Consequential and Transitional Provisions) Bill 2002. The effect of these bills will be to establish a National Heritage List comprising places of outstanding value. Places on the list will be provided with protection under the EPBC Act as being of national environmental significance.
- 8.31 The Minerals Council of Australia noted that many Australian jurisdictions are currently reviewing their cultural heritage legislation. The Council asserts that it is critical that the State and Commonwealth Governments work together to ensure that there is no overlap or duplication of assessment requirement for exploration applications with regard to cultural heritage.<sup>21</sup> The Committee agrees and believes that this is a matter that might be included in discussions by the Ministerial Council on Mineral and Petroleum Resources, although matters will depend on the passage of the two bills through Parliament.

## ***Aboriginal and Torres Strait Islander Heritage Protection Act 1984***

- 8.32 The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Heritage Protection Act) aims to preserve and protect from injury or desecration areas and objects in Australia or in Australian waters that are of particular significance to Indigenous people. Since the Act was passed there have been a total of 38 resources exploration applications over 19 places (several applications can apply over one place). The Act is only invoked when an Indigenous person or someone representing an

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20 Environment Australia, *Submission No. 74*, p. 1014.

21 Minerals Council Australia, *Submission No. 81*, p. 1183.

- Indigenous person makes an application for protection where there is a place which is threatened.<sup>22</sup>
- 8.33 No Minister has made a declaration to stop or hinder resources exploration under the Heritage Protection Act.<sup>23</sup>
- 8.34 AMEC asserts that some individuals who have failed to prevent progress of a project using a state Act have resorted to using the Heritage Protection Act to create delays. While to date only isolated occasions have arisen, the Association believes there needs to be a review of the interfaces between the Commonwealth legislation and state Acts to ensure that duplication of process and conflict requirements are removed.<sup>24</sup>
- 8.35 At the time of its appearance before the Committee, Environment Australia was not aware of any of these duplicate assessments which involved Commonwealth agencies, but conceded some may be occurring under State processes. Environment Australia observed that:
- There is not a lot we can do in relation to state and territory legislation, but we can make our own legislation as transparent as possible.... If there is a Commonwealth involvement in an issue and the state is also involved, we can use a bilateral agreement to streamline that. But when the states are doing their own thing... under their own legislation, really there is nothing we can do about that.<sup>25</sup>
- 8.36 The *Aboriginal and Torres Strait Islander Heritage Protection Bill* 1998 was intended to amend the Aboriginal and Torres Strait Islander Heritage Protection Act. The Bill intended to provide for Commonwealth accreditation of state regimes for Indigenous heritage protection, according to a set of national standards. Where the Commonwealth accredits a state regime, access to the Commonwealth Act would be subject to a “national interest” test. The Bill failed to pass the Senate, but will be reintroduced into the Commonwealth Parliament.<sup>26</sup>
- 8.37 Should such an amendment be made to the Heritage Protection Act, it could clarify the respective roles of the Commonwealth and the states and ensure that duplication and overlap are diminished.

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22 Environment Australia, *Submission No. 74*, p. 1014.

23 Environment Australia, *Submission No. 74*, p. 1014.

24 Association of Mining and Exploration Companies, *Submission No. 30*, p. 317.

25 Environment Australia, *Transcript, 11 November 2002*, p. 266.

26 Australian Heritage Commission web site, *Annual Report 2001-02, Chapter 4, The Condition of the National Estate*, <http://www.ahc.gov.au/infores/publications/generalpubs/annual-report2002/chapter4.html>, accessed 2 September 2003.

- 8.38 The Committee is aware that there were a number of clauses in the Aboriginal and Torres Strait Islander Heritage Protection Bill 1998 that were controversial and beyond the scope of this inquiry. However, the Committee strongly encourages the Commonwealth and states to ensure that their legislative and administrative arrangements for protecting Indigenous heritage are consistent and harmonised.

## Co-ordinated Environmental and Heritage Assessment Processes

- 8.39 In a competitive global economy, a commercial advantage may be gained by ensuring regulatory consistency between a country's national, state or local jurisdictions. Exploration companies, industry associations and various levels of government pointed to considerable disparity between state-based resources industry regulatory regimes within Australia.
- 8.40 Modern resources explorers claim they are environmentally responsible and that early stage exploration is largely a non-intrusive activity. Environmental compliance is now a fundamental aspect of companies' exploration activities and most have adopted processes and procedures that enable exploration to proceed relatively impact-free. APPEA argued that standard industry activities, carried out in accordance with appropriate guidelines, should be exempt from the requirement to seek specific approvals.<sup>27</sup>
- 8.41 In some jurisdictions, the bulk of the environmental assessments generally relate to production activities and only to a very minor extent to exploration activities, as in the Northern Territory for example:
- There is a standard set of environmental conditions which we place on an exploration licence to ensure that the company behaves in a sensible manner, does not pollute the ground and so on. Compared with [production] activity they are minor.<sup>28</sup>
- 8.42 However, the MCA saw environmental legislation as being increasingly used as *de facto* decision making processes that have the potential to significantly restrict or prohibit the granting of access to land.<sup>29</sup> The Victorian Minerals and Energy Council saw the industry exposed to a

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27 Australian Petroleum Production and Exploration Association Ltd, *Submission No. 39*, p. 479.

28 Northern Territory Government, *Transcript, 9 October 2002*, p. 10.

29 Minerals Council Australia, *Submission No. 81*, p. 1146.



fragmented bureaucracy that pursued a wide variety of agendas including “outright anti-development behaviours”.<sup>30</sup>

8.43 As the Committee has already indicated at several points in this chapter, it is sympathetic to calls for greater inter-agency cooperation and harmonised approvals processes. Potentially, arrangements could include:

- “one window into government” for petroleum and minerals explorers to deal with state agencies, local government, Commonwealth Government and community consultation;
- common approvals and regulation practices for all exploration (and production) industries; and
- approval processes that involve guaranteed time frames and deadlines.

8.44 The Queensland Government believes that the Ministerial Council on Mineral and Petroleum Resources is the appropriate body to address the need for reform. The Council's objectives include:

- progressing constructive and compatible changes to the basic legislative and policy framework for the sustainable development of minerals and petroleum resources; and
- improving co-ordination and, where appropriate, the consistency of policy regimes.<sup>31</sup>

8.45 It is clear to the Committee that the need for rigorous environmental performance is well accepted by the resources industry. Most resources companies have in place comprehensive environmental management systems and are well placed to meet legislative demands. Nonetheless, in a globally competitive environment, the costs in time and money of navigating inconsistent or duplicated environmental and cultural heritage regimes within a national jurisdiction may help tip the balance in favour of exploration investment in another country. Accordingly, the Committee concludes this chapter by making the following recommendation.

#### **Recommendation 26**

8.46 **The Minister for Environment and Heritage and the Minister for Industry, Tourism and Resources harmonise Commonwealth, state and Northern Territory environmental and cultural heritage regulatory regimes as they affect the resources exploration (and production) industry.**

30 Victorian Minerals and Energy Council, *Submission No. 63*, p. 866.

31 Queensland Government, *Submission No. 77*, p. 1048.



## Resources Exploration and the Community

### Impact on the Community

- 9.1 Resources exploration is scientific research and experimentation carried out by geoscientists. The structure of the exploration business has experienced a “sea-change”<sup>1</sup> over the last decade, in part reflecting the decline in private exploration expenditure since 1996-97. Modern resources exploration is becoming increasingly reliant on sophisticated data acquisition technology and digital analysis to make discoveries.
- 9.2 Globalisation of the resources industry has meant that the majors have reduced their exposure to greenfields projects and trimmed their large exploration teams. Responsibility for greenfields exploration has now devolved to junior companies. Typically juniors operate in small highly mobile hunting bands of around three to seven people.<sup>2</sup> Work programs generated by juniors usually employ similar-sized teams of contractors.
- 9.3 These structural adjustments are now being felt at community level through a significant reduction in the number of exploration personnel still in the business. The Australian Institute of Geoscientists (AIG) submitted that:

In 1996 there were 5600 geoscientists employed in Australia. Today AIG estimates that there are 2600, a fall of more than 50 percent in six years. ... The exploration industry has also become increasingly reliant on short term contract professional labour....<sup>3</sup>

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1 Metex Resources Ltd, *Transcript, 30 October 2002*, p. 128.

2 David Mackenzie, *Submission No. 69*, p. 938.

3 Australian Institute of Geoscientists, *Submission No. 22*, p. 161.

- 9.4 However, Australia's total private exploration outlay still stands at over \$1.5 billion annually<sup>4</sup>, hence that level of expenditure still has the potential to impact on certain regional economies in a significant way. AMEC submitted the inverse argument that "more than \$400 [million] has been removed from these regional economies and centres. The effects in many areas are reduced incomes for local merchants, reduced employment opportunities and a flow of people to bigger centres, as a result".<sup>5</sup>
- 9.5 Resources development and production were identified by many witnesses as significant drivers of regional economies.<sup>6</sup> Particular reference was made to development, transportation and community infrastructure and the services supplied to large capital projects as evidence of the economic activity generated by the resources industry.<sup>7</sup>
- 9.6 The Committee's Terms of Reference relate to the exploration phase of the resources industry only, and not the impacts of development or production. Therefore the Committee did not examine the often claimed<sup>8</sup> employment, social and economic benefits that minerals and petroleum development has delivered to the regions. However, this chapter examines exploration in the context of explorers' cultural awareness and the employment opportunities, compensation and economic benefits that can arise from exploration.

## Awareness of Indigenous Culture

- 9.7 Over the last decade or so the resources industry has made significant efforts to develop improved relationships with Indigenous communities in the areas within which it operates. Rio Tinto Exploration explained that exploration in the 1960's was not undertaken very sensitively and:
- [t]hat has impacted on people's psyches, and people have got very long memories. ... It is surprising that we have as many people as we do actually inviting us in, given the history.<sup>9</sup>
- 9.8 The Minerals Council of Australia stated that the [resources] industry has now recognised that it is "a little light on in its social science and core competencies", and that:

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4 Australian Bureau of Statistics (#8412.0).

5 Association of Mining and Exploration Companies (Inc), *Submission No. 30*, p. 282.

6 Australian Gold Council, *Submission No. 64*, pp. 896-7.

7 Australian Gold Council, *Submission No. 64*, pp. 896-7.

8 Association of Mining and Exploration Companies (Inc), *Submission No. 30*, p. 282.

9 Rio Tinto Exploration, *Transcript, 30 October 2003*, p. 124.

There are very few companies that have the real expertise to undertake a social impact assessment, know what it means and then know how to apply it. If you go back 10 years, environmental impact statements were in the same sort of league. The development of the skills in mining companies to work through environmental protection and rehabilitation are profoundly impressive. The same attitude is progressing with not just the rhetoric but also the application in developing core competencies within companies in terms of the social sciences for social impact assessments.<sup>10</sup>

- 9.9 The Central and Northern Land councils acknowledged the efforts by the resources industry to engender good relationships with Indigenous people. The councils advised that there has been a change of culture across the industry, leading to a broad acceptance of the rights and interests that Indigenous people have in their land and in cultural preservation.<sup>11</sup>
- 9.10 Increasingly, resources companies are now employing specialist staff whose role it is to make contact with the relevant claimants, land councils, or landowners. Newcrest Mining advised that some of the factors that can result in a positive relationship include:
- identifying the correct people to talk to;
  - ensuring they are empowered to represent their community or people;
  - explaining the exploration activity fully and in a manner which all the participants can understand;
  - making sure that the Indigenous people have an [exploration company] contact person to whom they can talk; and
  - managing the community expectations from what will probably be a short term exploration program and then no further activity in the area by the company.<sup>12</sup>
- 9.11 The committee concluded that an information and education process aimed at elevating and expediting the understandings of sensitivities and commercial realities, held respectively by each side of the land access issue, was warranted, and accordingly recommends as follows.

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10 Minerals Council of Australia, *Transcript*, 3 March 2003, p. 277.

11 Central Land Council and Northern Land Council, *Submission No. 62*, p. 815.

12 Newcrest Mining Ltd, *Submission No. 26*, p. 235.

**Recommendation 27**

- 9.12 **The Minister for Industry, Tourism and Resources bring together representatives of Indigenous communities and resources exploration interests to facilitate them developing a better appreciation of the sensitivities of all parties involved in negotiating land access for exploration purposes under the *Native Title Act 1993* and the *Aboriginal Land Rights (Northern Territory) Act 1976*.**

**Employment Opportunities**

- 9.13 While the impact of resources operations can be the most significant contributor to a region's economy, the resources exploration phase generally makes a relatively minor contribution to a region and therefore to individual communities. Because minerals exploration tends to be carried out by small mobile teams that use specialists and technologies not generally available in regions, minimal use is made of regional services including transport and freight services, accommodation, supplies and occasional labour.
- 9.14 The exploration phase of a project frequently employs few people on-site, notwithstanding major exploration budgets relating to the project being spent on services off-site. The experience of Origin Energy, for example, is typical of exploration companies. The company stated that it sometimes employs small numbers of people from the local community, in particular Indigenous groups and would employ more if opportunities arose. However in only a few cases does their activity provide an opportunity for local employment. The company explained that:
- This is an issue we run into with not only [N]ative [T]itle claimants but also other landowners when we are building a gas pipeline for example. Basically, we are just going to stuff them around. They are not going to get any direct benefit. We will go away again and they will have a gas pipe under their ground.<sup>13</sup>
- 9.15 Local people should have a cost advantage for work locally, however they generally lack the skills useful in exploration. Recent agreements (relating to production, rather than exploration) include provision of jobs with

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13 Origin Energy Ltd, *Transcript*, 7 March 2003, p. 351.

terms and conditions to better fit Indigenous culture, and provision for Indigenous enterprises to contract on a commercial basis.<sup>14</sup>

- 9.16 Many companies aim to localise employment as much as possible, but, as the Placer Dome representative from the Queensland Mining Council commented:

Part of the problem is that a number of the jobs in the [resources] industry are highly skilled and even the semi-skilled ones are in high-risk activities. You are coming from a low base rate in many instances in terms of education, which we have to lift very quickly.<sup>15</sup>

- 9.17 A representative from the Northern Land Council, for instance, did not accept that mining would necessarily contribute to the advancement of Indigenous communities but observed that:

When we consult Aboriginal people in the bush, the prospect of economic involvement is regularly expressed as something they would like to participate in. ...their ability to participate is sadly limited by educational and sometimes health issues, but people do wish to participate.<sup>16</sup>

- 9.18 However, that there is a significant amount of “in kind” infrastructure provided to Indigenous communities by resources exploration companies including the establishment of water bores, and the roads and airstrips developed by exploration companies have provided greatly improved access for many remote communities.<sup>17</sup>

- 9.19 A senior minerals exploration consultant presented a forward looking view on the benefits of exploration (as distinct from production) to Indigenous Australians.

[E]xploration... carries with it the hopes and aspirations of a new generation of Australians. ... If one limits the opportunities for exploration and its discovery offspring, then one is severely limiting the future opportunities for significant portions of Indigenous Australia.<sup>18</sup>

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14 Ian Manning, *The impact of native title and the right to negotiate on mining and mineral exploration in Australia*, National Institute of Economic and Industry Research, 1997.

15 Queensland Mining Council, *Transcript*, 7 March 2003, p. 327.

16 Northern Land Council, *Transcript*, 9 October 2002, p. 43.

17 Western Australian Government, *Submission No. 84*, p. 1348.

18 GM Derrick and Associates, Pty Ltd, *Submission No. 25*, p. 217.

- 9.20 Accordingly, the Committee encourages industry peak bodies and their member companies, to provide scholarships for indigenous people to enable them to undertake geoscientific studies at tertiary institutions.

## Compensation and Expectations

- 9.21 The Queensland Minerals Council stated that ILUAs often include negotiated employment and training opportunities for Indigenous people. Difficulties arise when people confuse exploration with mining as:

In a lot of cases, exploration is just going on the ground, walking it, in the first instance. It is low impact. In the [N]ative [T]itle process it is treated the same as actual mining, but we cannot offer large amounts of employment, investment and all the rest of it because there isn't any.<sup>19</sup>

- 9.22 The Chamber of Minerals and Energy of Western Australian observed that many of the issues which often figure prominently in the negotiation of project agreements with resources exploration companies, are the responsibility of local, state and the Commonwealth governments, rather than companies. These issues include education, health and infrastructure development which should be provided by governments.<sup>20</sup>
- 9.23 AMEC commented that compensation for access to land was in the hands of the resources company and would be governed by the commercial ability of a project to carry costs. "If the costs of compensation are too great, the mining company will walk away"<sup>21</sup>. However, there is a concern in sections of the resources exploration industry that it (the industry) is seen by some community representatives as a soft target when it comes to negotiating exploration access.<sup>22</sup>
- 9.24 Several Members of the Committee have anecdotal knowledge of the unrealistic expectations that can build up prior to and during Native Title compensation negotiations. Both sides can become disillusioned if the expectations for compensation demands are considered too high or if commercial timetables cannot be met.<sup>23</sup> The risk is that such disillusionment can lead to the deterioration in the long term viability of

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19 Queensland Mining Council, *Transcript*, 7 March 2003, p. 330.

20 Chamber of Minerals and Energy of Western Australia, *Submission No. 78*, p. 1086.

21 Association of Mining and Exploration Companies Inc., *Submission No. 30*, p. 297.

22 Association of Mining and Exploration Companies Inc., *Submission No. 30*, p. 297.

23 Wade, R, & Lombardi, L., *Indigenous Land Use Agreements: their Role and Scope*, Native Title Forum, 1-3 August 2001, Brisbane, p. 6.



relationships – something vital if exploration efforts are to lead to production.

- 9.25 Origin Energy advised that there has been no judicial guidance in any court or tribunal in Australia or anywhere in the world as to what value of compensation can be placed on Native Title rights and interests.<sup>24</sup> Members of the Committee heard informally of examples where it was claimed that inappropriate or unfair compensation demands were made before agreement for access for exploration was given.
- 9.26 One company explained that there are, in place, very workable heritage, archaeological and environmental procedures and protocols that are widely held to be acceptable. When Native Title groups are represented by the representative bodies, things work very smoothly but:
- As soon as the smaller clans with overlapping leases use unofficial people for representation, there are snags to getting exploration ground access. Once again, it is usually just money that solves these problems. It is not as if they are actual physical, cultural or ethnographic issues; it is just money.<sup>25</sup>
- 9.27 Amalgamated Prospectors and Leaseholders Association of Western Australia told of deals being “done behind closed doors” which parties will not disclose, but it was in their interest “to go along with the show and be seen to be proactive, where really it is costing them money”.<sup>26</sup>
- 9.28 While these may be isolated incidents, the Committee is disturbed that practices that represent little better than blackmail can be seen as acceptable procedures for achieving results in ILUAs, even if they may be of benefit to both the minerals explorers and the Indigenous communities.
- 9.29 The perception that exploration companies are wealthy enough to be able to make large compensation payments, and perhaps supply infrastructure free-of-charge, tends to encourage leverage to be applied by some members of the community on resources explorers.
- 9.30 The Committee believes that the industry and the Native Title holders and claimants would welcome a system which provides formalised parameters within which fair compensation outcomes can be negotiated. Hence, as well as developing a formalised information and education facility to address sensitivities and commercial aspects of land access negotiations (see Recommendation 27, above), the Committee believes that the

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24 Origin Energy Ltd, *Transcript*, 7 March 2003, p. 345.

25 Heron Resources Ltd, *Transcript*, 31 October 2002, p. 203.

26 Amalgamated Prospectors and Leaseholders Association of Western Australia, *Transcript*, 31 October 2003, p. 224.

compensation process must be made more transparent and open. Accordingly, the Committee makes the following recommendation.

### **Recommendation 28**

- 9.31 **The Attorney-General and the Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with relevant state ministers, consider introducing transparent accountability processes and guidelines to encourage fair and reasonable compensation outcomes for access to land for exploration purposes in Indigenous Land Use Agreements under the *Native Title Act 1993*. Such accountability mechanisms should form a requirement for acceptance of any additional administrative funding provided to Native Title representative bodies.**

**The Minister for Immigration and Multicultural and Indigenous Affairs, in consultation with the Northern Territory government, consider introducing transparent accountability processes and guidelines to encourage fair and reasonable compensation outcomes for access to land for exploration purposes in Part IV agreements under the *Aboriginal Land Rights (Northern Territory) Act 1976*.**

## **Regional Infrastructure**

- 9.32 The lack of regional infrastructure particularly transport infrastructure can, to an extent, impede onshore resources exploration progress. However, petroleum exploration, particularly offshore petroleum programs, needs more substantial seaboard infrastructure to support activity, although this infrastructure need not be in Australia.
- 9.33 However, given the high level of mobility of modern exploration teams, the short duration of most exploration program phases, and the preference by employers and employees alike to commute (fly-in fly-out) to projects, little community infrastructure needs to be developed for company personnel, except perhaps at a home base. There is some minor inconvenience to explorers if basic infrastructure is absent in remote locations, but not to the extent of requiring major public investment.
- 9.34 Regional centres can benefit to an extent from exploration activity, with Kalgoorlie being one of the best examples. As Deloitte Touche Tohmatsu submitted:

Traditionally strong economic regional contributors to Australia such as Kalgoorlie etc rely heavily on exploration activity to

generate revenue to provide the economic activity required to sustain regional towns.... Mining operations provide strong economic value but the exploration industry provides the balance of the economic equation that allows communities such as Kalgoorlie to develop as a strong infrastructure region with significant local investment by local business people.<sup>27</sup>

- 9.35 In summary, the Committee concludes that a lack of regional development in remote areas can inhibit exploration but not to a significant extent given the highly mobile “fly in-fly out” nature of modern exploration practices.
- 9.36 Conversely, the Committee feels that public investment in regional infrastructure in an attempt to encourage exploration would be risky. Certainly, regional infrastructure investment can benefit mining production activity, as in the north west of Western Australia, western Tasmania and the Mount Isa region.<sup>28</sup> However, mining comes after exploration and the Committee sees little evidence that regional investment will directly assist exploration.

## Geoscience Professionals

- 9.37 The Australasian Institute of Mining and Metallurgy expressed its concerns for the social wellbeing and career prospects of resources industry professional employees. A recent study funded by the Commonwealth Department of Education, Training and Youth Affairs returned several principal findings relating to the sobering challenges facing the resources industry. The study concluded, among other things, that traditional professional staff competencies are becoming less relevant and that it will be difficult to find staff of the required capabilities.<sup>29</sup>
- 9.38 At a recent forum organised by The Australasian Institute of Mining and Metallurgy, the views of young professionals’ on remote location employment and its impact on their careers and lives, was canvassed and the Institute concluded that:

There is a large number of challenges for the industry to address, if the downward trend in geoscience education is to be reversed, the appeal of the industry to new graduates improved, the take-up of

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27 Deloitte Touche Tohmatsu, *Submission No. 12*, p. 81.

28 CS Energy Ltd, *Submission, No. 94*, p. 1470.

29 The Australasian Institute of Mining and Metallurgy, *Submission No. 50*, p. 612.

graduates increased, and the retention/job satisfaction rates of industry professional employees strengthened.<sup>30</sup>

9.39 The Institute identified the following as some of the challenges facing the profession:

- countering the poor image that the mining industry has;
- developing graduate programs to keep geoscientists interested in pursuing a career in the resources industry, and which map out career paths for new graduates entering the industry;
- involving the industry in promoting geoscience careers at universities; and
- encouraging young geoscientists to expand their employment prospects with dual/multidiscipline qualifications.<sup>31</sup>

9.40 The Committee concludes that the resources exploration industry is feeling under siege. The Committee feels that the exploration industry needs to promote itself and its impressive technical work that employs innovative technology, to the community more than it has in the past. Part of this promotion should be to encourage young people to consider a career in the geosciences. The Committee believes that the industry exposure and scholarship initiatives by the peak bodies and professional associations targeting secondary students, at the point when students start making their first career decisions, are commendable.

9.41 Accordingly, the Committee encourages the industry peak bodies and professional associations, in their development of strategies to promote geoscience career options at the secondary education level, to target superior science students particularly with regional backgrounds.



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30 The Australasian Institute of Mining and Metallurgy (2003), *Career Options for New Geoscience Professionals*, *The AusIMM Bulletin* (in press).

31 The Australasian Institute of Mining and Metallurgy (2003), *Career Options for New Geoscience Professionals*, *The AusIMM Bulletin* (in press).

## **A Sound Base for the Future**

- 10.1 Any inquiry into an industry currently facing difficulties is bound to concentrate on the negative aspects of the industry and the problems as the inquiry panel sees them.
- 10.2 During the course of its inquiry into resources exploration impediments, the Committee did identify some fundamental issues besetting the Australian resources industry that it believes require responses and, in some cases, quick responses. Indeed, the Committee found some of the problems facing the industry to be global in nature and, hence, the nation's ability to influence them limited.
- 10.3 However, the Committee believes that the Australian resources industry has a fundamentally sound future. Almost all resources commodities demanded by modern society are represented in the nation's resources inventory albeit for some, the current drawdown rate is exceeding the replenishment rate. Nonetheless, the prospects for discovery of new resources of those commodities in "short" supply and the discovery of the few that aren't presently represented in the inventory, are reasonable. The Committee's optimism arises because vast tracts of territory out to Australia's continental margin remain under-explored due to the depth of cover sequences for minerals and the depth of water for petroleum.
- 10.4 Australia has a recent history of exploration successes that went against the exploratory trends of their day – Bass Strait petroleum, Kalgoorlie nickel sulphides, Olympic Dam copper/uranium/gold, Cannington lead/silver. They resulted from good exploration and are outcomes that demonstrate that the pool of geoscientists working in Australia are capable of world-class resources discoveries.

- 10.5 The Committee recognises that technology will play an important role in future resources discoveries and there is evidence that the nation's geoscientific researchers are meeting the challenges. Essentially the intellectual and technological tasks of finding more world-class deposits and accumulations are being tackled competently such that credible deposit concepts and incremental research and development breakthroughs are materialising regularly.
- 10.6 Diligence and perseverance by the nation's educators in combination with the financial support of the community are also sound bases to generate the higher level knowledge base that converts top science students into successful ore-finders.
- 10.7 The Committee recognised that the industry is facing structural challenges. In the Committee's view these challenges are manageable. The minerals and petroleum sectors are globalising and the trend is likely to continue, particularly in the minerals sector. There was enough evidence presented to the Committee to suggest that successful exploration companies are those that see Australia as an active participant in, rather than a victim of, an international exploration market.
- 10.8 Similarly, successful exploration companies are accepting that Native Title is here to stay and must be worked with. The resources industry has signalled that it has embraced the equity concept but is lamenting the cumbersome process of resolution of the land access issues. The Committee believes that Native Title processes are maturing as precedents are established and useful template agreements crafted. Similarly, the Committee is confident that the resolution of land access negotiations and Indigenous heritage issues will accelerate as explorers and Native Title holders and claimants become more used to negotiating with each other.
- 10.9 To its credit the resources industry continues to match statutory and self-imposed environmental standards.
- 10.10 Australia is fortunate to possess a sound resources base, stable economic and political systems, an excellent pool of exploration and research geoscientists and experienced and successful explorers prepared to pass on to their successors how to find world-class deposits. Explorers also have governments in Australia that seek exploration and resources production growth, and a broader community that generally recognises the importance of the resources industry.
- 10.11 The Committee believes that if the industry embraces a "can do" attitude, then investors' funds will flow in. The inquiry recommendations will certainly assist the minerals and petroleum exploration sectors, albeit

following some structural and operational refinements, to engage a bright economic future.

Geoff Prosser MP

Chairman

21 August 2003









## **Appendix A – List of Submissions**

1. (CONFIDENTIAL)
2. Mr David Watkins
3. O'Brien Geological Services
4. Mr Ian McDonald
5. ACM Laing & Associates Consultant Geologists
6. Australian Petroleum Cooperative Research Centre
7. Japan Australia LNG (MIMI) Pty. Limited
8. Lion Selection Group Limited
9. Featherstone Geological Consultants
10. Mr Colin Brooks and Mr Lindsay Curtis
11. University of New South Wales
12. Deloitte Touche Tohmatsu
13. District Council of Coober Pedy
14. Metex Resources Limited
15. Lightning Ridge Miners' Association Limited
16. Charters Towers Gold Mines Limited
17. Human Rights & Equal Opportunity Commission; Aboriginal & Torres Strait Islander Social Justice Commissioner
18. ExxonMobil Australia Pty. Limited
19. Alex Taube Geologist Pty. Limited

20. Geo Discovery Group Pty. Limited
21. Queensland Geological Services Pty. Limited
22. The Australian Institute of Geoscientists
23. Australian Finegrain Marble Pty. Limited
24. Hetherington Exploration & Mining Title Services Pty. Limited
25. GM Derrick & Associates Pty. Limited
26. Newcrest Mining Limited
27. Mr R J Morrison
28. Agip Australia Limited
29. Exploration Management Services Pty. Limited
30. Association of Mining & Exploration Companies (Inc)
31. Mr John Anderson
32. Mr Eduard Eshuys
33. Lantana Exploration Pty. Limited and others
34. Cotopaxi International Pty. Limited
35. Economic Geology Research Unit, James Cook University
36. ChevronTexaco Australia Pty. Limited
37. Dr Cedric Griffiths
38. Dr Ian Gould
39. Australian Petroleum Production & Exploration Association Limited
40. (CONFIDENTIAL)
41. Australian Stock Exchange
42. Strike Oil NL
43. Australian Association of Consulting Archaeologists Inc.
44. Woodside Energy Limited
45. Australian Society of Exploration Geophysicists
46. Rio Tinto Exploration Australia
47. City of Kalgoorlie-Boulder
48. Southern Cross Resources Australia Pty. Limited

49. Australian Geoscience Council Inc.
50. The Australasian Institute of Mining & Metallurgy
51. Queensland Boulder Opal Association
52. Drillex
53. Geoscience Australia
54. Australian Conservation Foundation
55. Commonwealth Bank of Australia
56. National Native Title Tribunal
57. BHP Billiton Petroleum Pty. Limited
58. Mr Dale Sims
59. Greenpeace Australia Pacific
60. Queensland Mining Council
61. (CONFIDENTIAL)
62. Central Land Council & Northern Land Council
63. Victorian Minerals & Energy Council
64. The Australian Gold Council
65. Tiger International Resources Inc.
66. Department of Immigration & Multicultural & Indigenous Affairs;  
Office of Aboriginal & Torres Strait Islander Affairs
67. (CONFIDENTIAL)
68. BHP Billiton Limited – Minerals
69. Dr David Mackenzie
70. Government of South Australia
71. Newmont Australia Limited
72. CSIRO Exploration & Mining, and CSIRO Petroleum Resources
73. Attorney-General's Department
74. Environment Australia
75. (CONFIDENTIAL)
76. South Australian Chamber of Mines & Energy

77. Queensland Government
78. The Chamber of Minerals & Energy of Western Australia Inc.
79. (CONFIDENTIAL)
80. Mr Andrew Crooks
81. Minerals Council of Australia
82. Origin Energy Limited
83. Australian Jewellery & Gemstone Industry Council Inc.
84. Government of Western Australia
85. New South Wales Government
86. Tasmanian Government
87. Northern Territory Minerals Council Inc.
88. Tasmanian Minerals Council
89. Northern Territory Government
90. Bendigo Mining NL
91. Victorian Government
92. Kimberly Diamond Company NL
93. Giants Reef Mining Limited
94. CS Energy Limited
95. Heron Resources Limited
96. Australian Petroleum Production & Exploration Association Limited
97. Australian Petroleum Production & Exploration Association Limited
98. Reed Resources Limited
99. Heathgate Resources Pty. Limited
100. Australian Petroleum Production & Exploration Association Limited
101. Minconindo Pty. Limited
102. CSIRO Exploration and Mining
103. Glengarry Resources Limited
104. GM Derrick & Associates Pty. Limited
105. Mr R J Morrison

106. CS Energy Limited
107. Australian Geoscience Council Inc.
108. Earthsearch Consulting Pty. Limited
109. Mr David Watkins
110. Mr R J Morrison
111. University of New South Wales
112. Department of Industry, Tourism and Resources
113. Mr Denis Rafty
114. Adelaide Resources Limited
115. National Native Title Tribunal
116. Mr Rex Motton
117. Sydney Marine Sand Pty Limited
118. Government of South Australia
119. Government of South Australia
120. The International Association of Geophysical Contractors, Austral  
Chapter







## **Appendix B – List of Exhibits**

1. The Human Rights and Equal Opportunity Commission  
*Native Title Report*
2. Greenpeace Australia Pacific  
*Response to the Supplementary Report for the Environmental Impact Statement for Stage 2 of the Stuart Oil Shale Project*
3. Greenpeace Australia Pacific  
*Fossil Fuels and Climate Protection: The Carbon Logic*
4. Victorian Minerals & Energy Council  
*Guide to Private Landowners Regarding Exploration and Mining on Private Land*
5. Victorian Minerals & Energy Council  
*Building Relationships: Working with the Indigenous People of Victoria*
6. South Australian Chamber of Mines and Energy  
*South Australian Government response to the Resources Task Force Report*
7. Queensland Government  
*Queensland's Mining Industries: Creating Wealth for the Community, the State, and the Nation*
8. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the Brisbane-Moreton Region*
9. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the Southern Region*
10. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the Wide Bay-Burnett Region*

11. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the Northern Region*
12. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the Central Region*
13. Queensland Government  
*Queensland's Mining Industries: Economic Significance of Mining and Mineral Processing to the North-West Region*
14. Government of South Australia  
*Minerals and Petroleum South Australia 2002*
15. Government of South Australia  
*Deed pursuant to Section 31 of the Native Title Act 1993*
16. Government of South Australia  
*South Australian Government response to the Resources Task Force Report*
17. The Chamber of Minerals and Energy of Western Australia Inc  
*Review of the Native Title Claim Process in Western Australia, Report to the Government of Western Australia*
18. The Chamber of Minerals and Energy of Western Australia Inc  
*[Comments on] Wand Review Final Report*
19. The Chamber of Minerals and Energy of Western Australia Inc  
*Technical Taskforce on Mineral Tenements and Land Title Applications Final Report*
20. The Chamber of Minerals and Energy of Western Australia Inc  
*[Comments on] Technical Taskforce Final Report*
21. The Chamber of Minerals and Energy of Western Australia Inc  
*Review of the Project Development Approvals System*
22. The Chamber of Minerals and Energy of Western Australia Inc  
*[Comments on] Review of the Project Development Approvals System*
23. (CONFIDENTIAL)
24. The Chamber of Minerals and Energy of Western Australia Inc  
*Securing the Future of the Mineral Industry in Western Australia*
25. Minerals Council of Australia  
*Australia's Mines and Major Mineral Deposits*



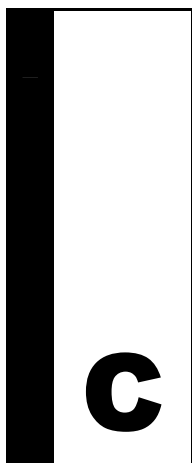
26. Government of Western Australia  
*Review of the Native Title Claim Process in Western Australia, Report to the Government of Western Australia*
27. Government of Western Australia  
*Technical Taskforce on Mineral Tenements and Land Title Applications Final Report*
28. Government of Western Australia  
*Review of the Project Development Approvals System Final Report*
29. Government of Western Australia  
*Task Force to Review the Programs and Funding of Geological Survey of Western Australia, Report*
30. Northern Territory Government  
*Aboriginal Mining & Enterprise Taskforce 2000/01 Annual Report*
31. Central Land Council  
*List of production areas with numbers*
32. Northern Land Council  
*Northern Land Council Annual Report 2001-2002, pp. 37 – 42*
33. Government of Western Australia  
*Focus on the Future - The Western Australian State Sustainability Strategy*
34. Amalgamated Prospectors and Leaseholders Association of WA Inc  
*APLA submission to the Ministerial Inquiry into Strategies to Increase Resources Exploration in WA*
35. CSIRO Exploration and Mining  
*Economic time bomb as easy mineral discoveries end*
36. Lion Selection Group Limited  
*Presentation notes by Mr Robin Widdup*
37. Heron Resources Limited, Mr Ian Buchhorn  
*Goongarrie Field Trip October 2002*
38. Mr Ian Buchhorn  
*Heron Resources Limited Annual Report 2002*
39. Woodside Energy Ltd – Mr Duncan Clegg  
*Fiscal Measures for Increasing Petroleum Exploration and Development in Australia*
40. Environment Australia, Mr Gerard Early  
*Guidelines on the application of the EPGC Act to offshore seismic operations, October 2001 provided by Environment Australia*

41. BHP Billiton Limited, Mr Tom Whiting  
*Images of the BHP Billiton presentation to the Perth hearings*
42. Geoscience Australia, Dr Neil Williams  
*Magnetic Anomaly Map of Queensland*
43. Australian Gold Council, Ms Tamara Gorrie  
*Proposal to amend the income tax provisions to encourage exploration*
44. Origin Energy Mr Tony Wood  
*Origin energy: Delivering the goods*
45. Department of Industry, Tourism and Resources  
*Global Petroleum Title Data*
46. Australian Conservation Foundation, Ms Saronjini Krishnapillai  
*Oceans Eleven*
47. National Native Title Tribunal, Mr Christopher Sumner AM  
*Supplementary Submission to the Parliamentary joint Committee on Native Title and the Aboriginal and Torres Strait Islander Land Fund*
48. Earthsearch Consulting Pty Ltd, Mr Roy Woodall AO  
*Executive Summary of paper by MacKenzie and Doggett*
49. Department of Industry, Tourism and Resources  
*Guidance Notes for Applicants - Release of Offshore Petroleum Exploration Areas Australia 2003*
50. Department of Industry, Tourism and Resources  
*Flow Through Shares-Current Operation*
51. Mr R.J Morrison  
*Promotional Material Making Minerals Groove calendar 2003; Video; Bookmark Did you Know*
52. Metex Resources Ltd , Mr Ian Walker  
*Flow through Shares-Canadian Experience*
53. Geoscience Australia, Dr Neil Williams  
*Greenfields or Grassroots?: A Discussion Paper*
54. Mr Rex Motton  
*The Nature and Potential of an Over-the-Counter Share Market in Australia by David Spain*
55. Human Rights and Equal Opportunity Commission, Dr William Jonas AM, Aboriginal & Torres Strait Islander Social Justice Commissioner  
*Development and Indigenous Land: A Human Rights Approach*

56. South Australian Government, Hon Paul Holloway MLC  
*Minerals Exploration Template Indigenous Land use Agreement*
57. Human Rights and Equal Opportunity Commission, Dr William Jonas AM,  
Aboriginal & Torres Strait Islander Social Justice Commissioner  
*Nisga'a Final Agreement*
58. Department of Industry, Tourism and Resources  
*Mineral Exploration in Australia*
59. (CONFIDENTIAL)







## **Appendix C – Witnesses Appearing at Public Hearings**

Darwin, Wednesday 09 October 2002

### **Northern Territory Government**

Mr Robert Adams, Director, Mining Services, Department of Business, Industry and Resource Development

Mr Neil Westbury, Director, Office of Indigenous Policy, Department of Chief Minister

Mr Jeremy Whitfield, A/Director, Titles, Department of Business, Industry and Resource Development

### **Central Land Council**

Mr David Ross, Director

Mr David Avery, Manager, Legal Services

Mr Rodger Barnes, Manager, Mining

### **Giants Reef Mining Limited**

Mr Nick Byrne, Executive Director and Co-Founder

**Northern Land Council**

Mr Norman Fry, Chief Executive

Ms Katy Haire, Senior Policy Officer

Mr Ron Levy, Principal Legal Adviser

**Northern Territory Minerals Council (Inc.)**

Ms Kezia Purick, Chief Executive Officer

Mr Jeff Wilkie, Manager Aboriginal Relations, Rio Tinto Exploration Pty. Limited

Dr Ron Matthews, Manager Exploration, Cameco Australia

**Canberra, Monday 21 October 2002**

**Australian Petroleum Production and Exploration Association**

Mr Barry Jones, Executive Director

Mr Anthony Haydock, Director, Energy Markets and Resource Access

Mr Noel Mullen, Director, Commercial

**Australian Petroleum Cooperative Research Centre**

Dr Peter Cook, Executive Director

**Department of Immigration and Multicultural and Indigenous Affairs**

Mr John van Beurden, Assistant Secretary, Land, Legal and Economic Development Branch, Office of Aboriginal and Torres Strait Islander Affairs

Mr Brian Stacey, Manager, Land and Development, Aboriginal and Torres Strait Islander Commission

**Perth, Wednesday 30 October 2002****Woodside Energy Limited**

Mr Duncan Clegg, General Manager, Development

Mr Steven Gerhardy, Commonwealth Approvals Coordinator

Dr Agu Kantsler, Director, New Ventures

Mr Greg Oliver, Senior Environment Adviser

Mr Frank Tudor, Marketing and Commercial Services Manager

**ChevronTexaco Australia Pty. Limited**

Mr Colin Beckett, General Manager, Venture Gas

Mr James Pearson, External Affairs Manager

**Australian Stock Exchange**

Mr Brendan O'Hara, State Manager, Western Australia

Mr Mark Ceglinski, Partner, Taxation, Ernst and Young

Mr Paul Fry, Partner, Ernst and Young

**Rio Tinto Exploration Pty. Limited**

Mr Eric Finlayson, Exploration Director

Mr Ian Ledlie, Exploration Manager

Mr Iain Clementson, Principal Geologist

Mr Chris Dawe, Manager, Human Resources and Community Relations

**Association of Mining and Exploration Companies (Inc.)**

Mr George Savell, Chief Executive Officer

Mr Douglas Koontz, Executive Councillor

**State One Stockbroking Limited**

Mr Alan Hill, Managing Director

**Western Australian Government**

Ms Anne De Soyza, Chief Executive Officer, Office of Native Title, Department of Premier and Cabinet

Mr James Kendal, General Manager, Strategic Planning, Department of Mineral and Petroleum Resources

Dr Michael Donaldson, Acting Director, Geological Survey of Western Australia, Department of Mineral and Petroleum Resources

Mr Neil Fong, Acting Assistant Director, Heritage and Culture, Department of Indigenous Affairs

Mr Bruce Layman, Acting Assistant Director, Economic and Revenue Policy Department of Treasury and Finance

Mr Alexander Scherini, Assistant Director, Intergovernmental Relations, Department of Treasury and Finance

**BHP Billiton Petroleum Pty. Limited**

Mr Geoff King, Vice President, Exploration Australia-Asia

Mr Neil Sutherland, Commercial Manager, Exploration Australia-Asia

Mr John Vine, Global Manager, Tax Affairs



**Chamber of Minerals and Energy of Western Australia Inc.**

Mr Tim Shanahan, Chief Executive

Dr Keith Watkins, Chairman, Exploration Council

Mr Ian Neuss, Deputy Chairman, Exploration Council

**Metex Resources Limited**

Mr Ian Walker, Managing Director

**Kalgoorlie, Thursday 31 October 2002****City of Kalgoorlie-Boulder**

Mr Graham Thomson, Councillor

**Heron Resources Limited**

Mr Ian Buchhorn, Managing Director

Mr David Crook, Exploration Manager

**Drillex**

Mr Sheldon Burt, Chief Executive Officer

**Amalgamated Prospectors and Leaseholders Association of Western Australia**

Mr William O'Donnell, President and Native Title Facilitator, East Goldfields Branch

Mr Scott Wilson, Immediate Past President

**Reed Resources Limited**

Mr David Reed, Executive Chairman

**Canberra, Monday 11 November 2002**

**CSIRO Division of Exploration and Mining**

Professor Neil Phillips, Chief, Division of Exploration and Mining

Mr Keith Bashford, Manager, Marketing and Communications

**Environment Australia**

Mr Gerard Early, First Assistant Secretary, Approvals & Legislation Division

Mr Malcolm Forbes, Assistant Secretary, Environment Assessment & Approvals Branch

Dr Barry Reville, Assistant Secretary, Heritage Assessment Branch

Mr Tim Kahn, Director, Mining and Industrial Section, Environment Assessment & Approvals Branch

**University of New South Wales**

Dr Ian Lavering, Adjunct Professor and Course Coordinator in Energy Management, Master of Business & Technology Program

**Lion Selection Group Limited**

Mr Robin Widdup, Managing Director

**Canberra, Monday 03 March 2003****Minerals Council of Australia**

Mr Mitchell Hooke, Chief Executive

Mr Damian Dwyer, Assistant Director, Economics and Commerce

Mr Michael Bissell, Senior Policy Officer

**CSIRO Division of Exploration and Mining**

Professor Neil Phillips, Chief, Division of Exploration and Mining

Mr Keith Bashford, Manager, Marketing and Communications

**Australian Geoscience Council Inc.**

Dr David Denham, President

Mr Don Larkin, Secretary and Treasurer

**Australian Gold Council**

Ms Tamara Gorrie, Chief Executive Officer

Mr Ian Levy, Member

Mr Gary Stafford, Director

**Geoscience Australia**

Dr Neil Williams, Chief Executive Officer

Dr Trevor Powell, Chief, Petroleum and Marine Division and Deputy Chief

Dr Christopher Pigram, Chief, Minerals and Geohazards Division

**Brisbane, Friday 07 March 2003**

**Queensland Mining Council**

Mr Rodney Dawney, Member, Queensland Mining Council Exploration Committee; Exploration Geologist, Australian Mineral Exploration Consultations Geoscience

Mr Michael Johnston, Member, Queensland Mining Council Exploration Committee; Manager Exploration, Placer Dome Asia Pacific

Mr Ian Wallace, Member, Queensland Mining Council Exploration Committee; Administration and Commercial Manager BHP Billiton Minerals

**CS Energy Limited**

Mr Peter Boys, Chief Finance Officer

Mr Glenn Risson, Manager Business Development

**Queensland Government**

Dr Geoffrey Dickie, Executive Director, Native Title Services (Mining and Exploration), Department of Natural Resources and Mines

Dr Cecil Murray, Geoscience Manager, Geological Survey, Natural Resource Sciences, Department of Natural Resources and Mines

**G.M. Derrick and Associates Pty. Limited**

Dr Geoffrey Derrick, Director

**Terra Search Pty. Limited**

Mr Kenneth Harvey, shareholder in Terra Search; Technical Director and Exploration Manager, Diatreme Resources Limited

**Geo Discovery Group Pty Ltd**

Mr Neil McLean, General Manager

**Origin Energy Ltd**

Mr Tony Wood, General Manager, Public and Government Affairs

Mr James Minchinton, Corporate Lawyer

**James Cook University**

Professor Nick Oliver, Professor of Economic Geology and Director, Economic Geology Research Unit, School of Earth Sciences

**Queensland Geological Services Pty Limited**

Mr Barry Saunders, Managing Director

**Appearing in a private capacity**

Mr John Anderson

Mr Jim Morrison

**Canberra, Monday 24 March 2003****Newmont Australia Limited**

Mr Kevin Lines, Geological and Mining Analyst

**Newcrest Mining Limited**

Dr Raymond McLeod, General Manager, Exploration—Australia

Mr David Boyd, Manager, Indigenous Relations and Land Access

**Attorney-General's Department**

Ms Philippa Horner, First Assistant Secretary, Native Title Division

**Greenpeace Australia Pacific**

Dr Frances MacGuire, Climate Campaign Team Leader

Mr Shane Rattenbury, Political Liaison Officer

**Australian Conservation Foundation**

Mr Wayne Smith, National Liaison Officer

**Adelaide, Monday 12 May 2003**

**CSIRO Division of Petroleum Resources**

Dr Cedric Griffiths, Group Leader, Predictive Geoscience

Dr David Whitford, Manager, Research and Development

**National Native Title Tribunal**

The Hon. Christopher Sumner AM, Deputy President

**South Australian Chamber of Mines and Energy**

Mr Phillip Sutherland, Chief Executive

Mr Keith Yates, Executive Chairman, Adelaide Resources Limited

**Earthsearch Consulting Pty Limited**

Mr Roy Woodall AO, Director

**Appearing in a private capacity**

Mr Eduard Eshuys

Dr Ian Gould

**Canberra, Monday 26 May 2003**

**Government of South Australia**

Dr David Blight Executive Director, Minerals, Petroleum and Energy Division,  
Primary Industries and Resources South Australia

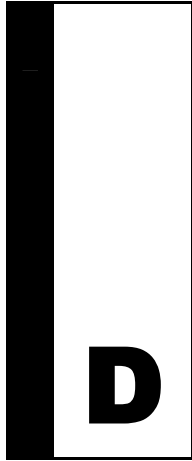
**Tasmanian Government**

Dr Anthony Brown, Director of Mines and State Chief Geologist, Mineral  
Resources Tasmania Department of Infrastructure, Energy and Resources









## Appendix D – Resources R&D Institutions

Leading public sector Research and Development (R&D) organisations and academic institutions in Australia responsible for exploration geoscience R&D include:

- Geoscience Australia, Australia’s national geoscience research and information agency;<sup>1</sup>
- CSIRO Division of Exploration and Mining;<sup>2</sup>
- CSIRO Division of Petroleum Resources, the largest R&D supplier to Australia’s petroleum sector;<sup>3</sup>
- Co-operative Research Centre for Landscape Environments and Mineral Exploration;
- Predictive Mineral Discovery Co-operative Research Centre;<sup>4</sup>
- Australian Petroleum Co-operative Research Centre;<sup>5</sup>
- Geological Surveys of all states and the Northern Territory;<sup>6</sup>

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1 Geoscience Australia, *Submission No. 53*, p. 631; Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

2 CSIRO Division of Exploration and Mining, *Submission No. 102*, p. 1549.

3 CSIRO Division of Petroleum Resources, *Submission No. 72*, p. 978; Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

4 Victorian Minerals and Energy Council, *Submission No. 63*, p. 869.

5 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

6 Eduard Eshuys, *Submission No. 32*, p. 434.

- University-based specialist geoscience research units:
  - ⇒ The National Centre for Petroleum Geology and Geophysics, Adelaide University;<sup>7</sup>
  - ⇒ The University of Tasmania (ARC Special Research Centre for Ore Deposit Research) (minerals);<sup>8</sup>
  - ⇒ James Cook University (Economic Geology Research Unit) (minerals);<sup>9</sup>
  - ⇒ University of Western Australia (The Centre for Global Metallogeny);<sup>10</sup>
  - ⇒ University of New South Wales (School of Petroleum Engineering) (petroleum);<sup>11</sup>
  - ⇒ Research School of Earth Sciences – Australian National University (minerals);
  - ⇒ Curtin University – Department of Geophysics.<sup>12</sup>



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7 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

8 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

9 Economic Geology Research Unit, *Submission No. 35*, p. 449; John Anderson, *Transcript, 7 March 2003*, p. 384.

10 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.

11 Australian Petroleum Cooperative Research Centre, *Submission No. 6*, p. 30.

12 Earthsearch Consulting Pty Ltd, *Submission No. 108*, p. 1575.