

Australian Geoscience Council Inc.

The Council of Earth Science Societies in Australia



7 Landsborough Street
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Standing Committee on Industry and Resources
Inquiry into resources exploration impediments
Parliament House
Canberra 2000

Email: ir.reps@aph.gov.au

Dear Committee Secretary

**Submission by Australian Geoscience Council to the Inquiry into resources
exploration impediments**

I have pleasure to attach the Australian Geoscience Council's submission to the Parliamentary Inquiry into resources exploration impediments. Please do not hesitate to contact me if clarification is required on any of the issues we have raised.

Yours sincerely

David Denham
President



Submission by Australian Geoscience Council to the Inquiry into resources exploration impediments

Introduction

This submission is put forward by the Australian Geoscience Council, a consortium of nine geoscience societies, which has a combined membership of more than 7500 professional geoscientists. Our members work in diverse fields, embracing earth resource exploration (minerals, coal, oil and gas), environmental monitoring and remediation, geotechnical investigations, hydrogeology including groundwater management, teaching, and strategic and applied research.

We are therefore vitally concerned with the health of the resource industries in Australia, because of their vital contribution to the wealth of the nation. The mineral and petroleum industries are the main export earners for Australia; minerals and energy underpin our wealth creation, and our future prosperity will depend on these industries remaining healthy, innovative and competitive.

In this context we will address the Terms of Reference of the Inquiry and make recommendations on what we believe should be done to ensure that our resource industries remain effective and efficient.

- **Assessment of Australia's resource endowment and the rates at which it is being drawn down.**

We do not intend to argue in any detail on the importance of Australia's resource industries to our wealth and well-being. Suffice it to say that these industries provide export earnings of over \$50 billion per year, which is more than either the farming or manufacturing industries. They also provide flow-on benefits to governments in the way of royalties and taxes amounting to several billion dollars annually, as well as jobs in regional areas outside the main population centres.

Exploration is the lifeblood of the minerals and petroleum resource industries; without exploration these industries cannot be sustained.

In the context of Australia's resource endowment there is not an immediate problem with our iron ore and coal resources but our petroleum and mineral resources are not in good shape.

Petroleum

Australia's estimated crude oil reserves peaked in 1995 and have declined consistently since then (see Figure 1).

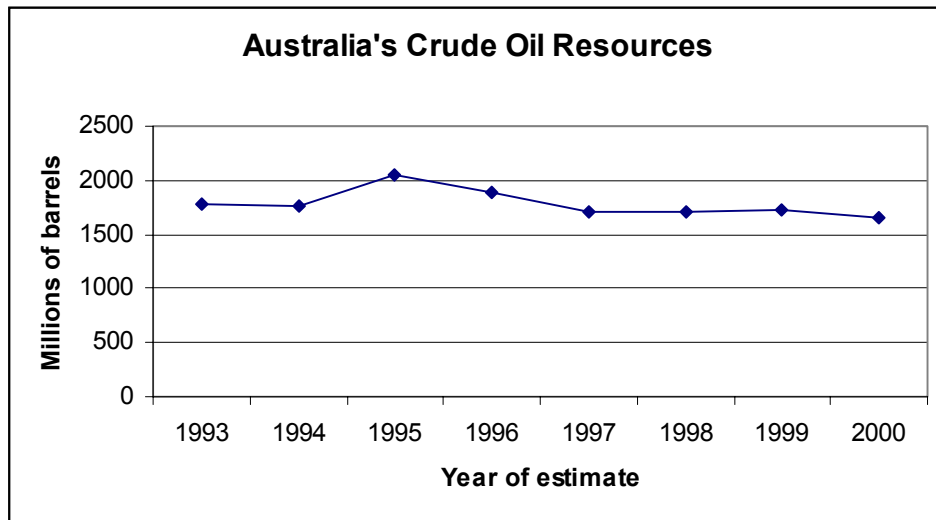


Fig. 1. Australia's crude oil resources based on estimates published by Geoscience Australia (Powell, 2002).

This is reflected in annual production rates and forecasts for the future. In fact, self-sufficiency in liquid petroleum products is expected to decline from an average of about 85% over the past decade to less than 40% by 2010 (Akehurst, 2002).

It is noteworthy that a 1% increase in oil imports is equivalent to \$100 million per year in the Balance of Payments. This means that unless more oil is discovered we will need an additional \$4.5 billion to fund our imports in 2010 (Hobbs, 2002).

The situation is therefore critical. Steps are taken immediately to increase discovery rates for liquid petroleum resources, while at the same time developing conservation strategies to reduce our consumption rates and research programs leading to more efficient extraction procedures.

We therefore recommend that:

- 1. The Commonwealth Government double its present investment of \$8.5 million per year to acquire and analyse geoscience data in offshore areas, in an effort to find new prospects and encourage more oil exploration.***

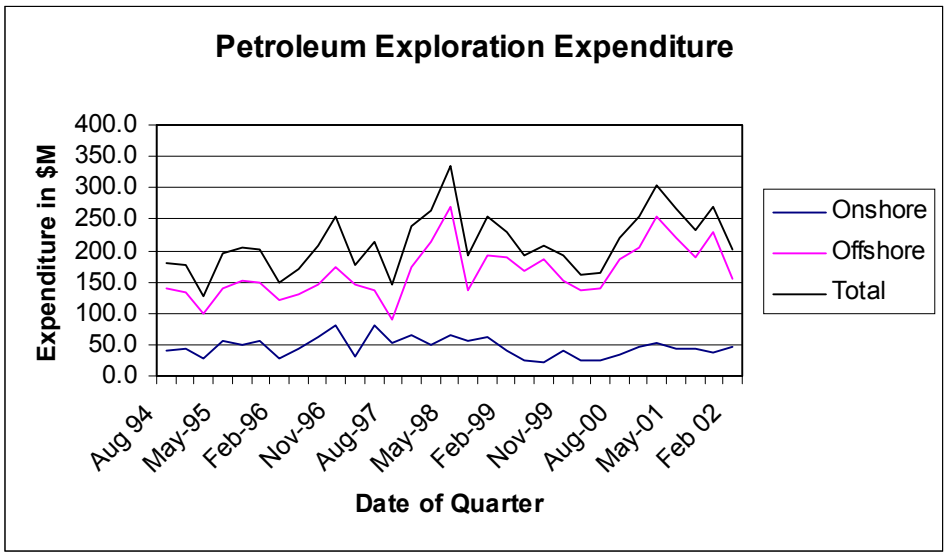


Fig. 2. Petroleum exploration expenditure from 1994-2002, from Australian Bureau of Statistics estimates (not corrected for inflation).

The current levels of exploration investment have increased slightly from 1994 (see Figure 2) but the long-term trends do not reflect the urgency in the situation. For example the February 2002 numbers are only 12% higher than those for August 1994, somewhat less than the inflation rate over the same period. We need to be more active in encouraging increased investment in exploration.

Minerals

The minerals side of the resource sector is experiencing a very serious downturn in exploration investment.

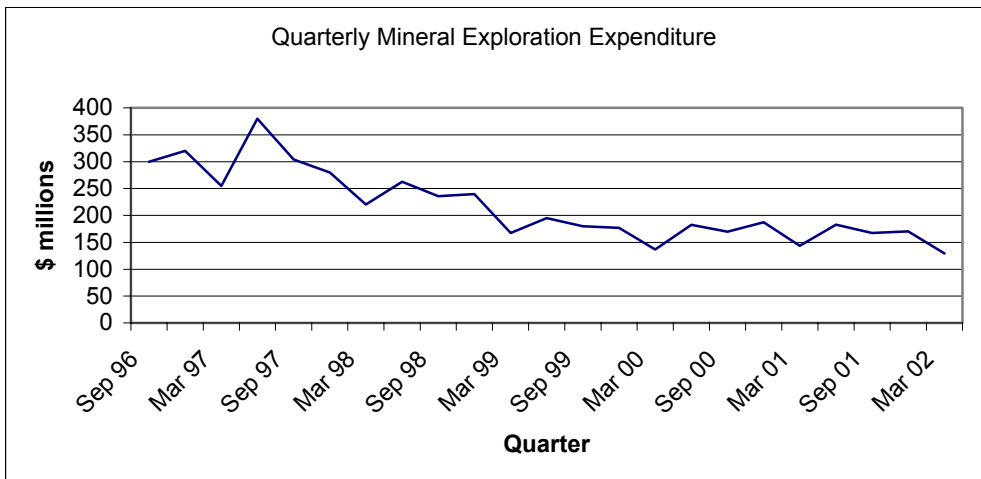


Fig. 3. Quarterly mineral exploration expenditure from 1996 to 2002 (compiled from ABS publications).

Figure 3 shows the raw expenditure numbers provided by the ABS from September 1996 through March 2002. Perhaps the most serious consequence of this trend has been the decline in Australia's gold production, as few new deposits have been found.

Figures released earlier this year indicated an output of 66 tonnes for the first quarter of 2002. This indicates that the five-year decline in output is continuing.

Gold is Australia's third largest single export after coal and crude oil. In 1997 the annual gold production was 314 tonnes (worth about \$5.9 billion at current rates and prices). If the present trend continues, production for 2002 is likely to drop to about 265 tonnes. This would be equivalent to a loss of about \$1 billion in export earnings over the 1997 figures.

Boosting exploration activity to find more gold can best rectify this deterioration in our balance of payments. Over the past five years exploration for gold has declined from \$728M in 1996/97 to \$370M in 2000/01, and this trend is continuing.

We recommend that the Commonwealth Government do three things:

2. *Implement a Whole of Government Action Agenda on Mineral Exploration, particularly to consider what can be done to improve equitable land access procedures for exploration and attract capital back into mineral exploration,*
3. *Provide Geoscience Australia with additional resources to obtain pre-competitive geoscience information over under-explored 'Greenfield' areas, and undertake focused research on gold formation processes, and*
4. *Ensure that research in finding better ways to explore for petroleum and mineral resources is included as a priority sector in the current research priorities analysis.*

We will discuss these recommendations later when the remaining Terms of Reference are addressed.

- **The Structure of the industry and role of small companies in resource exploration in Australia, and**
- **Impediments to accessing capital, particularly by small companies.**

In Australia, there has been a huge restructuring in the resource sector, with the larger companies such as BHP Billiton and Rio Tinto preferring to grow through acquiring smaller companies rather than going out and developing new resources themselves. In 1993 for example the exploration budget for CRA (now part of Rio Tinto) was \$150M in Australia and overseas, but managed from Australia. In 1999 it was \$13M. At least 100 people were retrenched and a special purpose building in Melbourne, which used to hold 100 people now holds no Rio Tinto staff. The Sydney office closed in the late 1990's and the headquarters was moved from Melbourne to London.

From mid-1997 to the end of 1998 BHP cut its exploration budget by about 40% and this was followed by extensive retrenchments. Since the recent merger with Billiton the Head of the Petroleum Division has moved to London.

Apart from the overall reduction in exploration across the board, the following major companies have been taken over in the last four years and their exploration budgets have consequently vanished: Aberfoyle Resources, AurionGold, North, RGC, Acacia, Ashton, Plutonic, Normandy, North Flinders, Tanami, Mt Leyshon, Savage Resources and Ross Mining.

As a result, not only has exploration activity declined significantly in the last five years, but most of the mineral exploration is now being undertaken by the smaller companies. The government should ensure that these smaller players at the cutting edge are properly consulted when policies are being developed. It is no longer sufficient just to consult with the few large institutions. One possible mechanism for providing input would be through a Program Advisory Board for Geoscience Australia.

At present one of the dominant impediments to mineral exploration in Australia is the absence of risk capital, particularly by the smaller companies. Exploration requires funds and money is very scarce in 2002. The basic task of prospecting employs significant technology, unlike the early days where signs of ore were apparent to the skilled observer in outcrop.

The modern prospector employs analytical techniques extensively to recognise geochemical patterns in trace element and pathfinder elements, and to identify cryptic lithochemical signatures. So he has a good bill from the assay lab as well as his costs for food and fuel. He contracts petrological studies of the microscopic textures of gossans and other possible residues of weathered out mineralisation, and interprets the ancient geologic setting of the original formations to relate ore deposit models to his chosen target area. Costs for this work may range from \$25,000 to \$50,000

The extensive cover over much of Australia means that the exploration drill rig provides the essential samples for such assessment by analysis and microscope. And broad areas must be covered to improve the chance of achieving some encouragement. In many regions, Rotary Air Blast (RAB) drilling is the only way to reach the rocks, which are the potential hosts to ore. A RAB program may cost \$50,000 to \$100,000 depending on how many holes are planned.

Regional geophysical maps provided at low cost by state and federal governments are a source of very valuable inference of structure and rock type, and the explorer benefits directly from this useful assistance. Follow-up geophysical surveying is often an early stage of the targeting approach. This may entail low-level airborne coverage, essentially replicating the existing regional coverage but at much lower elevation and at much closer data spacing both to give much improved resolution of subtle geological features. The cost is typically ~\$8/line km and can easily amount to \$100 000. Alternatively,

complementary geophysical tools such as gravity or induced polarisation may be used in an effort to “see through” the extensive covering layers of sediment. Costs may be \$20,000 to \$75,000.

Finally the only real “discovery method” these days is a full scale drilling rig, and this is the most costly activity. A three-hole program to 200 m depth may be \$150,000 to \$250,000 depending on sample method.

Therefore even a small exploration effort over a modest area will entail a significant expenditure, which is beyond the capacity of either an individual or a small syndicate to fund from personal reserves. The solution in the past thirty or so years has been to acquire “seed capital” from investors who realise at the outset that they may never see a return on these funds but who can be persuaded that they could see a substantial multiplication of the investment because the exploration team is particularly skilful and expert in the nominated target style of ore.

5. We recommend, as part of the Whole of Government Action Agenda (R2), that a range of options be assessed to improve the financial environment to increase investment in exploration particularly for the smaller companies.

Some of the possible options are listed below. These, and any other proposals, would have to be worked through by governments and industry:

Incentives for exploration in greenfield areas, where new data are collected and processed. These could be in the form of a subsidy if the data are made available in the public domain, or as additional tax concessions.

A subsidy of the total cost of the first hole in each greenfield drilling program for holes deeper than 300 m and capped at say \$20 000.

Full (100%) offset of costs of new data against future production royalties should be standardised nationally.

A simple tax-deduction system be introduced that would allow investors the ability to claim tax losses, resulting from mineral exploration deductions against other income. Recognition of exploration as a valid research and development activity in Greenfield areas.

- **Access to land including Native Title and Cultural Heritage issues, and**
- **Relationships with indigenous communities**

The Australian Geoscience Council supports the principle of Native Title. We recognise that Aboriginal heritage, culture and land custodianship must be protected, with appropriate wealth sharing at the mining/production stage, when the new wealth is generated. However, the present arrangements inhibit exploration by the very complexity

of the processes in place. It appears that large amounts of money are being spent on legal advice, and the aboriginal communities appear to receive little or no benefits.

Only the largest mining companies can now afford the time and expense to gain access to land. However, as stated above, companies like BHP Billiton and Rio Tinto prefer to grow through the acquisition of smaller companies. Several of these have decided to shift their exploration focus away from Australia to other countries where it is easier to explore. With the exploration activity currently running at close to half the level it was at the start of 1997 a simplification of 'Land Access' procedures would be a positive step to encourage an increased investment in exploration.

The AGC believes that the way forward is to work for a nationally uniform system of education, information and communication processes with Aboriginal landowners and custodians as an integral part of Reconciliation with a particular emphasis upon Aboriginal economic advancement at the community level.

We see the need for:

- An upgraded Education-Information Communication Process (EICP) between Aboriginal landowners and those wishing to access land,
- Integration of Aboriginal local (community) and regional (ATSIC) government into the EICP,
- Minimisation of legal and anthropological costs in the EICP, especially in the early stages of exploration,
- Optimisation of Aboriginal control and management of EICP,
- National standardisation and progressive accumulation of maps, registers and databases for Aboriginal sacred sites and significant areas and progressive incorporation of same in State/Territory cadastres, involving once-only clearance processes,
- Special initiatives by the Australian exploration industry to help upgrade water supplies in remote Aboriginal communities (per a conjunctive commitment to drill at least one waterbore in each drilling program on Aboriginal land, if landowners so request),
- Significantly expanded commitments to Aboriginal education, training and employment by explorers per tripartite industry-government-Aboriginal steering groups (with particular emphases upon Geoscience courses at TAFE and Higher Education levels relevant to Aboriginal needs and on the job training), and,
- Endorsement of Aboriginal economic development generally and of small business enterprises specifically at the community level which are catalysed by relationships with explorers and which have a nexus with geoscience via exploration, mining, tourism, aquaculture, horticulture, arts and crafts, land management/rehabilitation, essential services (e.g. roads, water supplies) etc.

The Native Title Act is not an impediment if the exploration acreage is freehold, or if it is Crown Land where there is a clear association of a particular group with the land. In the first case, there is no need to deal with indigenous people, apart from protection of sacred sites. In the second case, an ILUA provides a mechanism. The rules of ILUAs are well known and the key criteria are that you are dealing with the correct persons (otherwise the ILUA is not valid) and that the respective parties can agree (because there is no method of redress or appeal, if later on the parties find that they cannot agree).

For the situation where an ILUA may be appropriate, there may be two useful changes to be implemented. Firstly the indigenous community should warrant that they are in fact the correct people to deal with, and if it turns out that this is in error, then the ILUA remains in effect so that exploration proceeds without hindrance while the indigenous community works out a new form of ILUA. Secondly, there should be a provision for renegotiation of the terms under an external tribunal, in the event of the original agreement reverting to disagreement.

One of the more difficult cases under the Native Title Act is where the exploration area has been subject to farm development for 50 to 100 years, and where the indigenous people have been totally or substantially replaced by an agricultural community. There is little chance of achieving an ILUA because of the uncertainty as to who are the correct persons with whom to negotiate. In this case the “Right to Negotiate” is the best route, which allows set time periods for claimants to come forward and provides for an external tribunal to deliver an arbitrated outcome. While this is a slow process, at least it is manageable.

The limitations of the ILUAs and the slow time frame of the “Right to Negotiate” process are both impediments to exploration and these issues should be tackled as soon as possible.

6. ***We recommend, as part of the Whole of Government Action Agenda (R2), the Government convenes a series of meetings with stakeholders aimed at simplifying the complex processes currently involved with land access for mineral and petroleum exploration.***

• **Environmental and other approval processes, including jurisdictions**

The AGC does not have a problem with appropriate environmental approvals for mineral and petroleum exploration or the development of mines as a result of exploration. With modern techniques most exploration methods cause no damage to the environment, and mine sites should not be approved for development unless they can be shown to meet appropriate guidelines.

• **Public provision of geoscientific data**

The geoscientific data sets available from Geoscience Australia (GA) and State and Territory Geological Surveys form a big plus for Australia in the competition to attract global investment funds. These data sets, which are in the public domain and are

available at cost of transfer, or available via the Internet, are crucial in the process of selecting areas attractive for exploration.

- 7. *The AGC recommends that steps be taken immediately by all of the State and Territory Governments to provide effective, on-line access to all geological and geophysical data sets, as well as open-file company reports, drill hole, and land tenure information.***

Some States have gone a long way down this route, but more needs to be done.

In the search for mineral deposits, the basic geophysical and geochemical data sets and the geological maps are crucial for site selection. The aim should be to cover the whole continent with high-resolution geophysical data sets (magnetics, radiometrics, gravity and topography) so that it is possible to “see through” the non-prospective regolith or surface weathered layer to map the more prospective rocks beneath. At present only about half 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.

- 8. *The AGC recommends that the Commonwealth should take the lead to develop a ten-year plan to complete the high-resolution geophysical coverage of the continent and increase its investment to Geoscience Australia to kick-start the program.***

The States and Territories can only work piecemeal within their own boundaries, and most of their programs rely on well-established techniques. They cannot and do not provide by themselves the major research facilities needed to tackle continent-wide problems, which cover state boundaries. This is clearly the Commonwealth’s role through GA. We need strong programs to improve the national geoscience data sets and also to undertake research programs that will hopefully lead to new concepts and ideas on how to find new resources. After all we have only scratched the surface and most of the continent hidden beneath the regolith has not been explored.

The AGC also recommends that the Commonwealth takes the lead in funding the large national geoscience research facilities, which cannot be handled at State and Territory level. Given the importance of the geosciences in maintaining our export earnings we believe the Commonwealth should show a greater commitment to national investments in geoscience R & D.

At present GA does not have a formal mechanism for linking its stakeholders and clients into the program development and delivery stages.

- 9. *The AGC recommends that a Geoscience Australia Program Advisory Board be established to rectify this situation.***

The Board should comprise members representing stakeholders and customers, and should provide GA with information on the requirements of industry, the research

community and society in general, so that its programs are aligned optimally with its clients needs.

- **Contributions to regional development**

Most mines make significant contributions to regional development. For example the iron ore mines in the Pilbara, the gold mines in the Eastern Goldfields (WA) and even developments like the Cadia gold mine near Orange have all made significant contributions to the regional infrastructure and facilities. Mines like Century in Queensland have provided jobs to indigenous Australians and in general these developments should be encouraged.

We do not see this issue as a major impediment to exploration investment.

References

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