COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON INDUSTRY AND RESOURCES

Reference: Resources exploration impediments

MONDAY, 3 MARCH 2003

CANBERRA

BY AUTHORITY OF THE HOUSE OF REPRESENTATIVES

INTERNET

The Proof and Official Hansard transcripts of Senate committee hearings, some House of Representatives committee hearings and some joint committee hearings are available on the Internet. Some House of Representatives committees and some joint committees make available only Official Hansard transcripts.

The Internet address is: **http://www.aph.gov.au/hansard**

To search the parliamentary database, go to: **http://search.aph.gov.au**

HOUSE OF REPRESENTATIVES

STANDING COMMITTEE ON INDUSTRY AND RESOURCES

Monday, 3 March 2003

Members: Mr Prosser *(Chair)*, Mr Byrne *(Deputy Chair)*, Mr Adams, Mr Fitzgibbon, Mr Gibbons, Mr Haase, Mr Hatton, Mr Randall, Mr Cameron Thompson, Mr Ticehurst, Mr Tollner and Dr Washer

Members in attendance: Mr Adams, Mr Fitzgibbon, Mr Haase, Mr Prosser, Mr Cameron Thompson, Mr Ticehurst, Mr Tollner and Dr Washer

Terms of reference for the inquiry:

To 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 geo-scientific data;
- Relationships with indigenous communities; and
- Contribution to regional development.

WITNESSES

Committee met at 10.00 a.m.

BISSELL, Mr Michael John, Senior Policy Officer, Minerals Council of Australia

DWYER, Mr Damian Michael, Assistant Director, Economics and Commerce, Minerals Council of Australia

HOOKE, Mr Mitchell Harry, Chief Executive, Minerals Council of Australia

CHAIR—I declare open this sixth public hearing of the House of Representatives Standing Committee on Industry and Resources inquiry into the impediments to investment in resources exploration in Australia. I welcome everyone here today. The witnesses appearing before the committee today are from the Minerals Council of Australia, Geoscience Australia, the Australian Gold Council, the Australian Geoscience Council and CSIRO, the Division of Exploration and Mining.

I remind witnesses appearing before the committee today that the evidence you give at this public hearing is considered to be part of the proceedings of the parliament. Therefore, I remind you that any attempt to mislead the committee is a very serious matter and could amount to a contempt of the parliament. I welcome representatives from the Minerals Council of Australia. I invite you to make a short opening statement before we proceed to questions.

Mr Hooke—Thank you, Chairman and members. We are delighted to have the opportunity to appear before you. This is a critical matter in terms of the Australian minerals exploration industry and the continued vitalisation of the national resource inventory. You are well aware of the Minerals Council of Australia. It is the peak national organisation representing the Australian minerals industry—that is, the explorers, producers and processors of minerals products. Our membership—the companies we represent—produces in the order of 85 per cent of Australia's minerals output and a slightly higher percentage of exports.

I am sure we do not need to underscore the economic and social significance of this industry to Australia. It is vital for the wellbeing of remote and regional Australia and, indeed, the socioeconomic welfare of all Australians. And well it might, for this country, this industry, is well endowed with inherent comparative advantages in minerals production. We have an abundance of natural resources in oil, gas and minerals, we have skilled people and we are innovative and technologically advanced, which all add up to minerals, metals and energy, profits and jobs.

There are three key take-home messages that we would like to leave you with today. Firstly, comparative advantage in natural geological wealth does not necessarily or automatically equate to competitive strength in an increasingly globalised industry and a highly competitive and dynamic market, where Australia, like other countries, needs to continuously justify its assets as a strategic location for investment in the exploration, production and processing of minerals. Secondly, there is no homogeneity in the circumstances of the national resource inventory across mineral types. For some, the known resource levels, particularly gold and base metals, are critically low. For others, particularly coal, iron ore and bauxite, that is not so.

There are a number of reasons not to be complacent. Principally among them are, firstly, that exploration expenditure is down and projected to continue to fall by a further 31 per cent in 2002-03; secondly, that R&D expenditure is foreshadowed to fall 23 per cent on 2001-02, which

is even more significant when you couple that with the decrease in exploration expenditure; and, thirdly, that there is a significant raft of regulatory impediments and requirements to land access.

The third key take-home message is that we propose a suite of arrangements to remedy many of the impediments to further exploration, to accommodate the differing circumstances of companies, minerals products and regions. The measures that we propose in our submission are founded in solid economic principles of market failure and what we consider to be justified government intervention for demonstrable correction of such market failures.

The national resource inventory is impressive by global standards. We have the world's largest economic demonstrated resources, for which profitable extraction or production is possible, of lead, mineral sands, nickel, tantalum, uranium and zinc. In addition, our level of EDR—shorthand for economic demonstrated resources—is in the top six worldwide for bauxite, black coal, brown coal, cobalt, copper, gold, iron ore, lithium, manganese ore, rare earth oxides and gem/near-gem diamonds. Yet Australia's EDR of the platinum group metals are extremely small. In addition, we lack substantial resources of chromium. We are a major producer and exporter of over 20 mineral commodities and we are among the top three producers of 10 of the most valued mineral commodities, including gold, diamond, zinc, tantalum, nickel, silver, lead and copper.

To put this in relative temporal terms, mining is extracting and utilising what is known as a finite asset, although only in business activity terms, particularly for metals. Their unique recycling properties mean that they are potentially an infinite asset in resource terms. Geoscience Australia, a body which we thoroughly support and recommend be increasingly funded, assesses that, over the period since 1975, EDR for all major mineral commodities have on average either increased or been maintained, despite substantial levels of production. However, in contrast, resources of base metals, especially zinc and gold, are significantly lower, indicating that known resources are not sufficient to support current production levels beyond the medium term. Clearly, major new discoveries of these commodities are required to sustain production on a long-term basis.

Moreover, any tendency to just look at existing resources for existing mines does not take into account the long lead times involved in bringing an operation into production, the fact that discoveries are becoming harder and harder to find, and the relative differences in reserves' positions. For example, a goldmine may only have a mine reserve position of five to 10 years compared with an iron ore mine with in the order of upwards of 30 years. As I said, there are a number of reasons not to be complacent about the state of Australia's national resource inventory and Australia's future prospectivity without ongoing successful exploration.

Minerals exploration expenditure in Australia has significantly declined since 1996-97. A number of factors contribute to the decline. They can be characterised as economic and regulatory and consistent with a global trend, but again, as I said earlier, there is no homogeneity. Gold and base metals stand out. While the impact of the economic circumstances facing the industry are undoubtedly fundamental, we have focused special attention on the regulatory factors in our submission to you, where we think there is evidence of market failure and where policy impediments need to be corrected if minerals exploration in Australia is to be vitalised.

The economic circumstances facing the industry, contributing to a significant fall in the exploration agenda, are canvassed in our submission. The major regulatory factors contributing to the significant fall centre on access to land and the granting of mineral exploration and mining tenements. They are native title legislation, environmental legislation, protected areas legislation and multiple land use policies, cultural heritage legislation, licence and operating requirements for exploration activities relating to tenements, the environment and cultural heritage and fiscal arrangements, including the taxation treatment of exploration expenditure as well as security deposits and financial assurance.

As I indicated, it is important to note that any analysis of exploration expenditure trends in Australia is put within the context of global exploration experiences. We go into some detail in our submission. We also explore the structural changes in recent years with current exploration expenditure and talk about later stage exploration being more expensive.

A key point within the context of our submission is that, commensurate with a lot of the restructuring and consolidation in the industry—mergers and acquisitions—the industry has shifted its exploration strategies to involve junior exploration companies. This is important. You should recognise—and I am sure you do—that 80 per cent of exploration expenditure in Australia comes from the major production companies. However, it is the utilisation of the junior exploration sector which is significant. Therefore, special attention needs to be paid to policy impediments or market failures affecting this sector. You need to consider that within the context of their strategic significance beyond their individual economic importance to what I call 'the leverage factor'.

We made detailed recommendations in our submission in each of the areas of the regulatory impediments. I will touch briefly on the key points, if I may. Access to land for exploration and development is clearly critical to the present and future operations of the minerals industry and, in turn, the prospective benefits to all stakeholders. While access is critical, the time frame within which decisions for access are made is also critical. In the interests of all stakeholders, decision-making processes in relation to land access need to be timely, transparent and provide certainty.

I am sure I do not need to tell this inquiry that the common law recognition of the rights and interests of Australia's Indigenous peoples has created profound uncertainty and difficulty for the Australian minerals industry. As a result of the native title legislation, the process of the granting of tenements with native title implications has come to a virtual standstill in most Australian jurisdictions, notwithstanding a palpable shift in attitude to recognising native title rights and working towards mutually beneficial agreements to the benefit of all stakeholders.

Similar to the native title legislation, the Aboriginal Land Rights (Northern Territory) Act establishes an unduly complex legislative framework that all stakeholders agree is simply not delivering the intended or required outcomes. Of particular concern is the cumbersome nature of the Land Council structure which is causing significant delays in the processing of applications for exploration licences—again, to the ultimate detriment of the players. Our submission contains some detailed recommendations, but there are no silver bullet solutions.

Environmental legislation is increasingly being used as a de facto decision-making process. It has the potential to significantly restrict or prohibit the granting of mineral exploration and mining tenements. We consider that there ought to be clear differentiation between the purpose

of granting a tenement, which is to provide land access, and the purpose of granting an environmental authority, which is to set conditions, preferably non-prescriptive but rather outcomes based that require activity to be carried out in accordance with certain standards.

In terms of multiple land use in protected areas, there is an implication abroad that exploration and mining in protected areas are mutually exclusive. We reject that. We consider that they ought to be dealt with on a case by case basis. There is no automatic mutual exclusion. We consider the impact of exploration and/or mining development should be considered within the context of technologies available at the time as well as the ecological, cultural or landscape values of the area. We have gone into some detail in our submission. We do not accept the presumption of incompatibility.

The increasing complexity of cultural heritage legislation in Australia, both Indigenous and non-Indigenous, has the potential to be a significant impediment. Many of our companies consider the potential for approval processes and assessment requirements under the relevant cultural heritage legislation to be a bigger issue for land access than native title legislation. We are cognisant that many states are amending their legislation; hence, we underscore the word 'potential'.

We consider that, in order to address some of the anomalies and complexities in the cultural heritage legislation, the inconsistent manner and the number of unqualified persons who are carrying out cultural heritage surveys ought to be addressed. We suggest that there be the development of guidelines in consultation with stakeholders and accredited courses, as appropriate, to provide the necessary direction and required level of expertise. There is a line there, but I will not go there.

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. Any legislative requirement for compulsory relinquishment of exploration tenements should incorporate necessary flexibility for exploration operations, even if that is a deferral to the minister for a judgment. We support the intent of that legislation, which is to avoid warehousing and locking it all up.

Finally—and I am trying to cover a vast subject to get to the key points—the treatment of exploration expenditure for tax purposes is also a critical fiscal parameter. It obviously impacts on an investor's estimate of the expected project value prior to the exploration stage in terms of reduced tax liability. Following extensive discussions with the Minerals Council—long before my time—the new uniform capital allowance regime, which came into effect on 1 July 2001, essentially retained the immediate deductibility for expenditure on exploration for minerals obtainable by mining operations—a good outcome. The immediate deductibility of exploration expenditure acknowledges that such expenditure is an ongoing and necessary expense. Notwithstanding this, our submission identifies a number of tax related market failures that impede access to venture capital for junior exploration companies. Again, I underscore the significance of the leverage factor of the junior exploration companies that can also distort exploration expenditure.

One of the reform options widely canvassed publicly, as well as in this place, is the re-introduction into Australia of flow-through shares. This proposal provides a flow-through of the exploration deduction to the entity that subscribes capital to the explorer. You are well aware

that a similar arrangement to this has existed in Canada for some time—many decades, in fact. The essence of that arrangement is that it provides for the explorer to forgo an exploration deduction and transfer it to an investor. The outcome of such a fiscal arrangement is that the after-tax cost of the equity investment is reduced, thereby encouraging the investment community to increase their investment in exploration companies. It is particularly important to the junior exploration companies within the context of their leverage operations in the scheme of things.

Under the current taxation arrangements, eligible minerals exploration expenditure is deductible against income earned in the same financial year by the mineral company. Again, for junior exploration companies that do not have adequate taxable income in a given year, the company that incurred the expenditures may carry exploration deductions forward in nominal terms. Obviously, this tax credit can be utilised when the junior exploration company earns income; however, better still would be to provide for the immediate deductibility of that exploration expenditure to address what we consider to be a non-neutral treatment of eligible deductions. A system of trade in these tax credits is desirable. Under such an arrangement, junior exploration companies are able to sell tax credits to other companies with sufficient company income tax to utilise those deductions. Such an approach, of course, enables junior exploration companies to gain—or, at least, potentially gain—immediate access to those deductions.

The last point in terms of the ongoing tax reform process is that we consider a significant black hole of expenditure remains relating to certain native title costs. We are very encouraged by the Treasurer's public statement to address black hole expenditure. We consider that a range of native title costs incurred in the process of minerals exploration in Australia are not currently deductible as a legitimate business expense—and they ought to be. That is a summary of our submission. Although it was not brief, it was to the point. My colleagues—who are experts in their area—and I are very happy to field any questions.

CHAIR—You mentioned in your submission and in your address that the greatest number of exploration companies lies in the mid range of junior ranks and that 80 per cent of the expenditure is sourced from the majors. You further went on to mention the merger and acquisitions and the link between majors and juniors. Which of the two groupings should be targeted in order to lift expenditure?

Mr Hooke—Both.

CHAIR—Is there that much money around?

Mr Hooke—I do not know whether 'targeting' is the right word. What we have tried to do in our submission is to recommend a suite of arrangements, to correct both regulatory impediments and fiscal arrangements, whereby we can remedy or correct some of the anomalies and impediments, thereby allowing companies to make commercial decisions. The incentives to invest will depend on the nature of the company's business. If some of those majors are focused on iron ore, bauxite or coal, they are hardly likely to be setting out on a fairly rigorous and vigorous process of investment. But if you are a gold company, or even have some of the base metals, that is certainly where your effort will lie in terms of encouraging investment and expenditure. Our approach is not necessarily to target but to address the failures to provide the

opportunity for the market to work. That is why we have honed in on correcting some of the anomalies.

Mr HAASE—The current gold price has been favourable and many in Kalgoorlie are starting to get excited about it. It has not been reflected in share prices and the gold index. My other concern is that perhaps the attention to the push for flow-through shares similar to the Canadian model may wane if the gold price is maintained and exploration is automatically encouraged. Do you have comments on that? I would like to know specifically why you think there is such a time lag in movement in gold shares and whether or not this current pricing will affect exploration expenditure.

Mr Hooke—Damian might like to comment on the lag between gold price and share prices, given his experience in working with the JORC code and the stock market. I find the market across the board pretty hard to read at the moment. I suspect that has a lot more to do with the uncertainty of global economic growth and security fears. I do not know that I have anything useful to add. I have no insight other than that kind of speculation.

The comment you make about whether there will be any wane in the push for flow-through shares is a good point. It depends on whether or not the gold industry—or anybody for that matter—considers that this is a peak in gold prices and if it is consistent with the longer term, which we would suggest it is not and, therefore, if there is going to be a correction in the marketplace, whether or not the incentives for investors to be attracted to gold exploration are somewhat diminished.

We ought to look to the longer term in addressing all of these issues we have put on the table. We have put down a suite of arrangements because they affect companies differentially—which is the point I was trying to make before in terms of your earlier question, Mr Chairman—and, therefore, the push for those sorts of arrangements ought to be maintained, irrespective of fluctuations in the market price. Damian, do you have any comments?

Mr Dwyer—Only to add that the relationship between commodity prices and investment expenditure broadly, including explorations, obviously is a quite strong one. In our submission we pointed to the range of factors that impact on decision making. Obviously the gold price is a key influence. As to the relationship between the gold price and share prices we have seen recently for gold companies, that is a complicated answer. I am not sure I can go into much detail here, other than to say that there are factors other than the price that would have an influence on that.

You have seen the difference in gold price and relative valuations for companies between Australia and South Africa, the UK and the United States; the influence that exchange rates have in those sorts of areas. Price obviously has an influence but it is an overlay on a range of other factors that may have something to do with the sorts of trends you have seen.

Mr Hooke—Including production forecasts.

Mr CAMERON THOMPSON—In your submission you recommend broadening the definition of ‘research and development’ to include greenfields. How do you propose to distinguish between the greenfields and the brownfields for tax purposes? Are there any other examples around the world where this approach is taken?

Mr Hooke—Good question.

Mr Dwyer—What we have done is sought to raise the issue in recognition of the arguments that have been raised in a number of submissions to the inquiry about the similarities, for want of a better word, between research and development—broadly defined—and the importance of exploration to the industry. As Mr Hooke mentioned, we have sought to put that as a market failure argument that we like to couch our policy recommendations into. We have tried to point to the characteristics of exploration for the industry that might show the need for a tax deduction along R&D lines. We then focused in on where positive externalities in exploration expenditure might be strongest. The feeling is that is in the greenfields area.

Getting into how you might then go from that, which I characterise as being at the higher level, into operationalising such a tax arrangement is something we need to look at very carefully. We have not done that in our submission today but, as with this and some of the other recommendations we made in this area, we would certainly recommend that it be done very carefully. It is something that has been looked at in part through some of the other activities of the council and people involved in this issue.

Mr TICEHURST—Are you aware that there is another house committee on science and innovation looking at the effectiveness of government R&D programs? Some of the things that have come out of that committee relate to definitions of R&D but say that we probably need to define 'research', 'development' and 'commercialisation' as another aspect. This probably would run hand in hand with what you are doing here. It is probably worth while catching up with some of those submissions.

Mr Hooke—I take your counsel, thank you. I have been around this argument a long time. I understand the definitions of basic, strategic, applied near market research commercialisation et cetera. In general terms there are not too many companies in Australia which have the capacity to fund fundamental basic and applied research. The mining sector is one of the few exceptions. This is an industry that is responsible for some 60 per cent of the software in mining companies around the world for simulation of production processing.

I appreciate that it is different to the issue that you are raising but in the context of how, where and what is to be granted tax concessions under research and development, commercialisation or development or demonstration extension—whatever you like—is an issue that has plagued politicians who have been responsible for some time for determining what those arrangements ought to be. We have put this up on the table. If some of the other arrangements get a guernsey, particularly some of the tax credits arrangements and the system of trade in tax credits, one could argue that to have a similar deduction through R&D might be double dipping. We would need to look at that again within the suite of arrangements that are put on the table.

Mr CAMERON THOMPSON—In Darwin we heard from the Northern Land Council, which seemed pretty cynical of any benefits from mining to Indigenous people. To paraphrase—and I do not think this is doing an injustice—they really saw very little benefit in terms of jobs and economic wealth in allowing mining companies onto their land. What do you and your member mining companies think can be done to change that attitude?

Mr Hooke—Listening, sitting and down discussing, working through the process of understanding what their cultural issues are—their disposition to be involved as a vigorous part of a host community in the mining operations. It is not only taking equity in the proceeds of the mining operation but also being involved in what is commonly now referred to as backward linkages; that is, being part of the supply of goods and services to the mining operation but, first and foremost, recognising and respecting the rights of the Indigenous land-holders, particularly their cultural perspectives.

Mr Bissell—That is a surprising comment from the Northern Land Council. They do very well with the operations in Arnhem Land. They receive approximately $10 million per annum through the royalties program. That is dealt with through various funds, management regimes and community development. Other Indigenous community/mining company relations that are happening up there include the YNOTS Program, associated with the company that looks at training-specific employment not just within the sector but externally. It is an accredited course at the Northern Territory University. The accreditation allows them to take that anywhere around the country. As well as the more basic courses, it also gets into the engineering aspects. In Arnhem Land, they have good relationships and are working cooperatively, but they have fundamental concerns about where that relationship is going and a few things like that. That is probably where some of those comments from the council come from. If you look at the suite of arrangements they have it is hard to accept that point in totality.

Mr CAMERON THOMPSON—Nevertheless, if that is the perception, can mining companies do more to create jobs and/or economic wealth in Aboriginal communities, even at the exploration stage? Their comments were particularly pointed about exploration, because they see absolutely no employment coming to them directly through exploration.

Mr Bissell—They are certainly looking, in the longer term, to transfer those skills. The skills that are necessary for exploration are very specific. There is not a lot of direct training in relation to exploration. At the moment that is limited, but it is certainly something the industry is looking to address, as with opportunities through mining for the future.

Mr Hooke—You are right, there is not as great an opportunity, but one leads to the other. If you do not have exploration, you do not have mining.

Mr CAMERON THOMPSON—This seems to be a problem you have to get across to them. You were talking about putting more rigour into the process of cultural surveys and things like that, of creating some sort of system to determine what sorts of skills are needed for cultural surveys et cetera. Is that really the path you need to go down, if this is the concern of the Aboriginal communities?

Mr Hooke—All of these are a composite of the whole. None of them are silver bullet solutions. Firstly, you need exploration to get to mining and, secondly, you want to involve your Indigenous host communities—since you are talking about Indigenous host communities, but host communities generally—as best you can in the operations of the mine. There is no greater defence of a mining operation than those whose livelihood depends upon it and are satisfied that many of the environmental and social stewardship responsibilities that mining companies are at the forefront of recognising are in fact given more than just lip service; they hit the deck running.

One of the areas that the mining industry itself has identified as a little light on is its social science and core competencies. 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. That will cover the suite of issues you raised—the cultural issues, the land use issues, the impact of the mining operation, what can be offset in technology advances—which are really quite extraordinary—and what arrangements need to be entered into or provided for in terms of rehabilitation.

The other matter this committee ought to take heed of, because it has hit me quite profoundly, is that there has been a marked shift in the way in which companies are seeking to preserve local communities beyond the value or the closure of the mine—and that includes Indigenous host communities.

Dr WASHER—Native title has always come up as an issue, literally every time we sit down. Can you walk me simply through what happens on the ground? Say I am a mining company and I decide I want to explore an area that has native title claim over it. How do I progress? Do I go to the regional land council and negotiate with them? Can you walk me through this step by step and explain where it falls down. What happens? Flesh it out. When you read the legal claptrap on this, you have to be a confused lawyer to understand it and I am neither confused, nor a lawyer. Can you explain step by step how it works?

Mr Hooke—I might broaden it, in terms of not just that but also—

Dr WASHER—And then the hurdles and barriers.

Mr Hooke—the process and the negotiated agreements as well. I might ask Michael to do that.

Mr Bissell—The application goes in for a tenement. It gets notified that that is a future act under the Native Title Act. There are notifications to the general area through the relevant press et cetera and through the relevant bodies. That will be picked up by the native title rep body in the area. It trips the future act provisions and the right to negotiate provisions. They go into a negotiation process, looking to establish a land access agreement. There are certain defined time lines in the Native Title Act within which that has to be completed. There are provisions to extend those. If that does not happen, it will usually go to arbitration. Separate to that negotiation process, there is also the process for Indigenous land use agreements, though they are effectively the same thing. They are achieving an agreement.

Mr Hooke—Which are binding in law once they are agreed.

Mr Bissell—Which are binding agreements. That is the straight-up process. If they get the access agreement, they go on and get their other requirements for environmental approval. If they need a cultural heritage clearance and those sorts of things, that should be happening at the same time.

Dr WASHER—That is for exploration?

Mr Bissell—And for mining. It would be the same process.

Dr WASHER—The barriers at the moment, though, are that the agreements fall down in that people do not comprehend for some reason the value of this to one another. The agreements just do not take place and then most of them wind up in arbitration, do they? What is stated here is that the bulk of this does not work. It is saying that this is a basket case, right?

Mr Bissell—Yes.

Dr WASHER—Where is the basket? Where is the big problem? What is going wrong and why is this arbitration not working?

Mr Bissell—The arbitration is very time consuming and costly. There is a low registration test for a native title claim, which is not commensurate with the proof of claim once the process goes along. That was very much fleshed out in the recent High Court decision on the Yorta Yorta case. There is an incompatibility between registration for a claim—proving connection—as against going through the step by step process that is required. That allows for many native title representatives, Indigenous communities et cetera, to register. There are approximately 560 claims around the country at the moment, the majority affecting WA and Queensland. That pretty much means that any application for a mineral tenement, whether it be exploration lease or whatever, in those states trips native title. It is the open-ended nature of the negotiation and agreement making process, apart from tripping into arbitration, that is the problem.

Previously, without native title, you would go through and meet your normal requirements under the exploration tenement process. You might have to do a cultural heritage clearance. You get your application and away you go and explore. With that agreement-making process, particularly if it goes to arbitration, you might be looking at 10 years before you are even considering getting an application approved. The basket is in the process of getting agreement, because if you simply do not want agreement—you are quite happy to play along—on top of that you then have an arbitration process that may be many years. For example, under the Aboriginal Land Rights Act in the Northern Territory, the two councils—the Northern and Central Land Councils—only meet twice a year. They have to get together to decide in relation to an application. If it takes them three or four meetings to discuss the pros and cons of an application, you have two years right there. The costs associated with getting that access and conducting that agreement are substantial and they usually rest with the company.

Dr WASHER—And not deductible.

Mr Bissell—They are not deductible at the present. That is something the industry is pursuing.

Mr Hooke—The bottom line to all this is that the legislative process is complex and unwieldy. The streamlining or the effectiveness of the agreement-making process depends on the goodwill intent of the two parties. Either party, it seems, has a power of veto over that process. Arbitration, as a last resort, can also be time consuming. The structure of identifying who are the legitimate parties to the negotiations is pretty tortuous and not as exacting as it might be. The processes of arbitration are much the same. The involvement of the land councils

is tortuous and complex and time consuming, all of which means we have a complex and unwieldy process.

As to Mr Thompson's question, a lot of this hinges on the shift in attitudes. Certainly the mineral sector has come a long way. The Indigenous community is coming a long way. People are focusing on the goodwill and intent because the processes have a lot of problems. Again, there are no silver bullet solutions. Land access is one issue. The time to get in there is another.

CHAIR—We are out of time. I thank you for your submission.

[10.42 a.m.]

PIGRAM, Dr Christopher John, Chief, Minerals and Geohazards Division, Geoscience Australia

POWELL, Dr Trevor George, Chief, Petroleum and Marine Division and Deputy Chief, Geoscience Australia

WILLIAMS, Dr Neil, Chief Executive Officer, Geoscience Australia

CHAIR—I now welcome representatives from Geoscience Australia. I invite you to make a short opening statement before we proceed to questions.

Dr Williams—Thank you, Mr Chairman. Geoscience Australia appreciates this opportunity to talk to you. I will be brief. The submission we made last July contains a vast amount of factual material relating to the resource exploration impediments. What I propose to do is simply highlight some of the important changes that have taken place since that submission was put together.

Firstly, in the minerals area, I have to report that, in the calendar year 2002, Australia lost its premier position as the world's leading destination for exploration expenditure in minerals. We were overtaken in 2002 by Canada which is now attracting 18.3 per cent of the global pie. Australia is No. 2 at 17.6 per cent.

The next point is that, as you will be aware, the Minister for Industry, Tourism and Resources, Mr Macfarlane, has set up a mineral exploration action agenda. I have become a member of the strategic leaders group which is driving that agenda. It is an industry-driven process. I was appointed to chair a working group looking into access to geoscience information, precompetitive information. I have been holding a number of hearings with industry explorers and by far the largest point those explorers make is that they are really reinforcing the comments many of them made in submissions to this committee about the absolute importance of fundamental geoscience datasets for underpinning their investment.

As part of that process we have conducted an audit against industry standards. I would like to report that 53 per cent of the country is covered to a standard they consider okay for modern exploration. That is for airmag. For gravity surveys only 21 per cent of the continent is covered to a standard they now consider necessary and similarly for geological mapping, where only 34 per cent of the country is mapped to a modern standard. The problem is worst in the three big states which happen to also be the ones particularly attractive for exploration, being Western Australia, Northern Territory and Queensland.

With the chairman's permission I can show you an airborne mag map that Geoscience Australia released last week at a conference for exploration geophysics, which illustrates for Queensland the problem of this coverage. It is the case of a picture being worth a thousand words, so with your permission.

CHAIR—Please proceed.

Dr Williams—That is the obligatory map. When members of the committee study that map they will see that all of Queensland is brightly coloured, indicating that there is airmag coverage. I just draw the committee's attention to the little areas within the imagery: there is a lot of detail and it is surrounded by a lot of blurry imagery. This illustrates the problem of high-quality modern day versus the old one-mile line spacing imagery the old BMR did. It is a brilliant example of how, when you go through the states in the Northern Territory, the coverage is by no means complete. A lot of the very prospective areas do not have the fundamental coverage of the modern level. I commend that to you.

The last point I want to make about minerals is to comment on the capital raisings. The problem is easing somewhat. A total of $104 million was raised in 25 initial public offerings, or IPOs, on the Australian Stock Exchange in 2002 for mineral exploration. The average size of those IPOs was $4.2 million. This compares with 14 IPOs in 2001, which sought $53 million for an average of $3.8 million. There is a slight easing of capital raising there.

Turning now to petroleum, just to add to our submission, the situation with production to reserves ratio, which was around 11 in the submission, has now deteriorated considerably down to five, which means that our indigenous supplies of liquid crude oil resources are certainly deteriorating. That raises questions of petroleum security and the like. The great potential within Australia for oil and petroleum exploration is in offshore areas. New reserves are likely to be discovered in what we call frontier areas—those are areas where there is little known about submarine basins.

I draw the committee's attention to paragraph 10.4.3 of our submission which comments on the Ceduna Basin, which is a large pile of sediments off the South Australian side of the Great Australian Bight. This is a basin of some 60,000 square kilometres. The area of that basin is larger than the oil and gas producing areas on the North West Shelf. It is a huge area. Within the Ceduna Basin there are only two drill holes that have ever been drilled looking for petroleum.

Through the work that Dr Powell and his division undertook we were able to generate enough precompetitive information to excite the industry to the potential of that great untested area. A consortium led by Woodside has taken up a number of licences within the Ceduna Basin and has just committed to drilling a deepwater hole. One drill hole will cost the consortium $50 million-odd, of which Woodside's share is $20 million.

That is an example of the very high risk of the exploration and also of the leverage that precompetitive geoscience information provides to triggering that exploration. There are some six other frontier-like basins, or basins around the Australian margin, that we have yet to look at. That is on our forward program. With those amendments to our submission, I will hand over.

CHAIR—Would you comment on whether the availability of data gratis to private companies distorts their exploration investment decisions?

Dr Williams—I do not think it does. The explorer typically develops a range of targets and concepts on the basis of various geological exploration models; how it develops those models is for the industry to decide. Typically it will look to identify a commodity—be it gold, copper or nickel, in the case of minerals—and then decide on the best place to search. Generally, its search is guided by what is publicly available. I do not think having data that is freely available

distorts that process; to the contrary, if the data does not exist then it does not make investments over areas that potentially might be very prospective.

CHAIR—Is it true that the major oil companies no longer, in the main, carry their own exploration section but outsource that? There are two major companies in the world that carry out that work and, on that basis, is data our opportunity to find perhaps major discoveries?

Dr Williams—Oil companies?

CHAIR—Oil.

Dr Powell—There has been a tendency amongst larger companies to outsource increasing amounts of work, but I do not think that they outsource the ideas generation process. They will outsource much of the seismic acquisition. Of course, the drill ships are all outsourced, but the decision making process, about where they want to explore, is very much an in-house consideration; however, they may draw information from a wide range of contractors.

Mr HAASE—I am interested in the level of data that Australia provides from a geoscience perspective compared with overseas countries. You have mentioned the fact that we have slipped as far as destination of choice is concerned. I keep hearing that you ought to be funded to carry out more research and to provide more data to explorers. Where is the justification for that on the basis of where you stand on the provision of facility in Australia and the similar service provided by overseas governments?

Dr Williams—Let me begin to answer that question, then I might ask Dr Pigram to add to that. As part of the mineral exploration action agenda process, we are in fact compiling data as we speak on benchmarking the Australian coverage versus other major competitors. We are clearly up there with the leaders—the leaders being ourselves and Canada. Next week, Dr Pigram and some colleagues will be attending a global exploration gabfest that is held every year in Canada called PDAC, the Prospectors and Developers Association of Canada, which has become the main global forum for wooing investment. We will use that forum to gain the latest information we can.

In the public hearings that I have chaired around the country, the country that apparently leads the world in comprehensive coverage is Finland. Finland is, by Australian and Canadian standards, a small country and it does have an active exploration and mining industry. 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, but I will reserve judgment until we see the latest figures that we will, hopefully, receive in a few weeks.

I believe that the challenge for Australia is, as you will see from the map of Queensland in front of us, the known mineral provinces, where there is outcropping geology and where the big mines currently exist. I am looking at the Mount Isa inlier to the west. On that image, the Mount Isa inlier is covered with an incredibly complicated high-quality degree of coverage. The problem we face is Australia is that the chances of continuing to find major Mount Isas, Centuries or deposits of that ilk sticking out of the ground are becoming more and more remote, as prospectors since the 1850s have scoured the country.

The remaining prospective ground in Australia is increasingly undercover—the so-called regolith, which is the red sand and weathered rock that you are very familiar with in your own electorate. The challenge is for exploring undercover. We believe that, geologically, there is no reason why those undercover areas are any less prospective for hosting major mineral deposits than the outcropping areas, so it is the character of the coverage that is beginning to change. A lot of the comments we received from industry in our hearings is that, recognising that the new generation mineral deposits will be undercover, the uniquely Australian challenge is to have data sets that are able to be used by the exploration industry to target buried mineralisation; hence, the airborne magnetic data and gravity data are regarded as fundamental. Beyond that there is emerging a range of new tools, which some of you have seen before in a presentation that was made to the Prime Minister's Science, Engineering and Innovation Council in 2001.

While we compete globally, we have to answer the Australian side nationally. The unique national issue for Australia is that those areas where the new deposits are likely to be found require a different kind of data acquisition for a precompetitive area to entice industry in and allow it to make investment decisions.

Mr HAASE—Finally, how does Finland rate with international explorers?

Dr Williams—If I look at my global chart, Finland gets buried under 'other'.

Mr HAASE—So we do not really know.

Dr Williams—No, we do not. It is fairly minor. Canada is now the biggest; Australia is next; all of Latin America together as a continent is 25.9 per cent; the USA is 7.2 per cent; South-East Asia/Pacific is 4.9 per cent and then 'other' is lumped in at 11.4 per cent. Finland is attractive for a particular type of base metal deposit, but it does not have as vast a diversity of geological environments as the larger countries, such as Australia, Canada, the United States, South America and Africa.

Mr TICEHURST—Is there adequate resourcing in terms of skills and funding for the geoscience research agencies in Australia?

Dr Williams—You will appreciate that, as CEO of a government agency, that is an interesting question for me to answer. I was asked that recently in Senate estimates. I said that a person in my position would always welcome more funding, of course. However, we operate within a government where priorities have to be set, and my job is, with the allocation we get, to produce the most efficient and effective program for that money.

Certainly in the range of submissions you have received in this committee and that we have received in our discussions with industry through the exploration action agenda, there is a feeling that the expenditure on public sector data within Australia—that is Commonwealth, states and the Territory—has fallen. That is certainly worrying industry, given that there are large areas of prospective terrains that are not covered to anywhere near a modern standard.

Mr CAMERON THOMPSON—Figure 12 in your submission shows the exploration maturity of Australian basins. This is oil producing, I presume. Apart from area D, which I presume is what you are talking about with the Great Australian Bight, there are others down south of Tasmania—which is area C—and the Lord Howe Rise. Then there is that interesting bit

up there off the Great Barrier Reef. Are they really marginal in terms of the difficulty of exploring in those areas? Has any work been done in each of those? You have talked about the bight, but what about the others?

Dr Powell—These are the target areas for future oil provinces. Some of these are logistically quite difficult to operate in; for example, the Lord Howe Rise. We are getting an increasing number of inquiries about our knowledge of the geology of the Lord Howe Rise and we are doing a stocktake of our state of knowledge of those areas. Yes, there has been work done by us. Yes, in the case of western Tasmania, there has been some acreage put on the market for investment and there has been some level of exploration. The big challenge always is trying to demonstrate that there are hydrocarbons present. When you do not know, it is hard to justify a large scale exploration program. The challenge for us in the precompetitive game is to try to get some evidence that hydrocarbons actually occur in those areas. Our work program is directed at that.

Mr CAMERON THOMPSON—Those areas are still really an unknown, then.

Dr Powell—To the level at which you would like to bring them to maturity for acreage release, that is correct.

Mr CAMERON THOMPSON—The hurdle is really, as you said, $50 million to do just one well.

Dr Powell—In the case of the Great Australian Bight, that basin exists in 1,200 metres-plus of water. Of course, the technology that enables you to drill in those depths has only come on the world market in the last 10 years. The present campaign of deepwater exploration drilling is the first such drilling that has occurred in Australia. As technology has matured, some of these remoter areas are opening up for exploration. The geology is very poorly known and the task is to encourage companies to commit some level of expenditure to test their luck.

Mr CAMERON THOMPSON—Shale oil in Queensland is a related area.

Dr Powell—Yes.

Mr CAMERON THOMPSON—Are advances being made in the science behind getting that productive, and are you people engaged in that process?

Dr Powell—No, we are not engaged in the science of production. It is basically an engineering problem. How you get the oil out is well known; it is a question of making it economically, environmentally and socially acceptable.

Mr CAMERON THOMPSON—But you are not engaged in that?

Dr Powell—No, we are not engaged in that. It is basically a chemical engineering problem rather than a geoscience problem.

Dr Williams—Dr Pigram has some other information on the overseas availabilities.

Dr Pigram—Neil covered the topic very well but I was just going to make one other point, Mr Haase. Our competitors are becoming increasingly more sophisticated. As they become more stable politically and get their financial regimes settled and companies feel more comfortable about being there, they too are providing precompetitive information to assist the explorers. We are being approached by countries like India and Iran to help them upgrade their geological survey to do that kind of thing. I reassure you that at this point we have said no to them. We are not going to give our competitors that kind of free kick. But they are copying our approach; hence the competition in a global sense is increasing all the time. We need to stay on the front foot and put out the best data and the best quality and take some of the new techniques that are available and apply those to make this country attractive for investment purposes.

Mr HAASE—You are still pushing the 'we could do with some dough' argument. All right.

Dr WASHER—That is very perceptive. The maps submitted are the electromagnetic type flyover maps done by airborne electromagnetic surveys, are they?

Dr Williams—These are straight magnetic maps, what the geophysicists call potential field data. It is data where you just record the actual magnetism of the rock. The electromagnetic map method induces its own secondary magnetic effect, so it is an active system. It is not just passively measuring the field.

Dr Pigram—This is very conventional methodology that has been used for many years. The application of electromagnetic technology in this country, in the way it is now, is a sophisticated new technology that is quite expensive.

Dr WASHER—And airborne gravity radiometry is held by BHP Billiton. Do you have access to that? Do they share information, or is it just on the Falcon system?

Dr Pigram—Nominally we would have access to it but the way BHP Billiton are making that available really precludes a government agency such as ours from using it. The caveat they put on it is that they want first access to the information and have a moratorium before it is released to the public. We do not believe that is an appropriate use of public funds. If we collect that kind of data, it should be immediately made available to all players.

The other concern we have in relation to it is that the processing technology and the technology itself is proprietary. We have to take what they deliver; we do not have the opportunity to understand and analyse the way in which the data is collected. It is really, from our perspective, a black box—a very good one, it would seem, but we are not able to verify that. We have issues around being able to do that.

If that technology was available in the conventional service provider manner that the aeromagnetic data and the airborne electromagnetic data is, we would be happy to utilise it and try and make it available as precompetitive information. The caveats BHP have on it are understandable because they spent a huge amount of money developing the methodology. But they really preclude the government-funded agencies from using it in this precompetitive mode.

Dr WASHER—They literally have a patent over this technology, have they?

Dr Pigram—Indeed.

Dr WASHER—Do you use any other methods like gamma radiation technology?

Dr Williams—Yes, we do. The airborne magnetic systems that typically fly these kinds of survey also collect, at the same time from the same aircraft, radiometric data for the naturally occurring elements potassium, thorium and uranium. It is extremely valuable for documenting the chemistry and character of the top 30-odd centimetres of the earth's surface but really is not of such value for deep exploration as the gravity and magnetic data.

On the issue of airborne gravity, it is an area that is actively being researched right around the mineral exploration world now and other systems are emerging that may challenge the Falcon system of BHP Billiton. We are maintaining a close watching brief on those developments. Should there be a system that could be used in a public sector precompetitive mode, we will certainly be looking at it. In the case of Falcon, to trial the system a little more through a cooperative research centre of which we are a core party—the Predictive Minerals Discoveries CRC—there is a plan to fly a trial Falcon survey in the Broken Hill district at slightly more than local scale. This will give all the partners in that CRC an insight into how we may be able to use those sorts of technologies in the future for exploration.

CHAIR—There being no further questions, I thank you for your presentation here this morning. Mr Thompson moves that the committee accept the magnetic map of Queensland tabled by Geoscience Australia as exhibit No. 42. There being no objection, it is so ordered.

[11.13 a.m.]

GORRIE, Ms Tamara Carolyn, Chief Executive Officer, Australian Gold Council

LEVY, Mr Ian, Member, Australian Gold Council

STAFFORD, Mr Gary, Director, Australian Gold Council

CHAIR—Welcome. I invite you to make a short opening statement before we proceed to questions.

Ms Gorrie—Mr Chairman and committee members: the Australian Gold Council appreciates the opportunity to meet with you today and expand on our August 2002 submission to the committee on its inquiry into resources exploration impediments.

The Australian Gold Council was established in 1998, a year after the Reserve Bank of Australia sold two-thirds, or 167 tonnes, of Australia's gold reserve. The sale was a strong and alarming signal not only to Australia's gold producers and explorers but, more importantly, the investment community, given Australia's ranking as the world's third largest gold producer. The damage done to the gold industry's reputation by this sale made the industry realise it needed to form a strong representative group to ensure its common interests were pursued.

The council represents the Australian gold industry within Australia and offshore. It has 130 member companies, which include gold producers, representing 95 per cent of Australian gold production; explorers; and gold industry service supply providers. The council's brief is gold focused and includes a number of key objectives, one of which is to increase investment and investment awareness in the sector generally and to encourage investment in gold exploration.

Australian gold exploration expenditure has dropped by over 50 per cent since its 1997 peak of $736 million. In 2001, gold exploration expenditure totalled only $365 million, while the 2002 figure is expected to be even lower, at approximately $350 million. Clearly, the gold exploration sector is in crisis. The impact that five years of plummeting exploration expenditure has had on the gold industry is demonstrated by the dearth of major gold discoveries and mine development during this period. This has in turn prompted recent ABARE forecasts of declining gold production over the next five years. ABARE's forecasts are being proved accurate. In 2000, Australian gold production was 299 tonnes. In 2001 it had slipped to 295 tonnes and in 2002 is expected to total only 286 tonnes.

If not addressed as a matter of urgency, the gold exploration crisis described will place in real jeopardy the industry's significant contribution to the nation, including over $5 billion per annum in export income and tens of thousands of Australian jobs, over 90 per cent of which are located in regional Australia. Gold's recent rally and the likelihood of a $US300-plus gold price for the foreseeable future, on the back of escalating geopolitical uncertainty, volatile equity markets and a declining US dollar, will not, the council believes, be sufficient to address what has been an alarmingly steep and continued decline in gold exploration expenditure.

The crisis described is compounded by the fact that capital markets have changed significantly in recent years. The globalisation of equity markets, which has seen the stockbroking industry dramatically downsize its research capability and adopt a blatantly risk-averse position, when coupled with a stricter regulatory environment in Australia, now means that brokers are not prepared to take the corporate risk required to support the exploration sector. This is evidenced by the negligible impact a rise in gold price has had on gold exploration companies' share prices to date, as investors move to risk-averse investments.

Gold exploration is the industry's small business arm, its research and development sector, yet exploration is specifically excluded from the definition of R&D in the Income Tax Assessment Act. Government policy states that, while exploration may involve high risk, it does not involve technical risk and, on that basis, government policy excludes exploration as an R&D activity. The council argues that this is a bewildering application of semantics and most purveyors of the science of geology would disagree with this strange assertion. The council contends that the exploration sector's role in ensuring the industry's future growth and development demands it be treated as such by the government and afforded the special tax treatment made available to other industry research and development sectors.

In addition, the demonstrated and growing success of the Canadian flow-through share scheme, which provides taxation incentives for exploration investment, is, the council believes, the most effective means possible of reviving the Australian gold exploration industry in the time frame required and guarding against future exploration declines of this magnitude and duration.

The council, in conjunction with the Association of Mining and Exploration Companies, AMEC, has commissioned accountants Ernst and Young to develop a proposal to amend the Australian income tax provisions to encourage exploration activities in Australia. The proposal recommends flow-through of the exploration deduction to the entity that subscribes capital to the explorer—as is the case in Canada—and is now being tendered for the committee's information as appendix A. The council also tenders for the committee's review an overview of the Australian gold exploration industry, including current impediments to industry growth and how these can be most effectively addressed. The overview summarises the arguments made in the council's August 2002 submission to the committee and is marked as appendix B.

In conclusion, the council urges the committee to recommend to government the implementation of taxation incentives for exploration investment based on the Ernst and Young proposal. It is going to be the most decisive step it can take in helping to ensure the continued growth, development and contribution of the Australian gold industry. Thank you very much.

CHAIR—Thank you. In your view, more precompetitive data acquisition programs need to be generated by state and Commonwealth government agencies. You identify the West Australian survey and Geoscience Australia particularly as needing to do more. In what area specifically should they be doing more work?

Ms Gorrie—In answer to that question, you are taking it from our submission, the submission was qualified by the fact that our brief, being very gold focused, has tended to address taxation incentives and venture capital raising in the sector. We have deliberately steered away from an in-depth analysis of geoscience provision, for example, as noted in the

submission, on the basis that other industry groups, including the Minerals Council of Australia and state minerals councils, are more than amply addressing those topics.

In terms of what can further be done, I am not sure, Gary, whether you can answer that from a Queensland perspective or, alternatively, Ian from the New South Wales sector's perspective.

Mr Levy—In New South Wales we had a massive boost to the gold industry quite a few years ago, when the New South Wales government embarked on a geophysical survey of the state that was very effective. It was to roll back the cover that was concealing many of these ore bodies. Since then, the New South Wales gold industry has grown quite significantly. No other activity has occurred since then. These are examples of what can be done, but we are not experts in that field.

Mr HAASE—Continuing along the lines of the provision of geoscience data, what ought the role of a publicly funded service be in providing specific detail to gold explorers? Should it be a user pays arrangement or should it simply be freely available? We have been talking to Geoscience Australia this morning and they are keen to provide greater facilities with greater public funding. What do you believe is the good mix of data provision, and at what cost? How do you feel about that? I need to know also how Gympie Gold's value adding is going to their 'in vein' cufflinks, tiepins and so forth.

Mr Levy—I didn't bring any samples!

Mr Stafford—I can provide a comment from a personal perspective and not on behalf of the Australian Gold Council. I would like to qualify that.

Mr HAASE—All information is valuable.

Mr Stafford—I was recently a director of the Queensland Mining Council and I am still a member of the junior committee that runs under the council. I know that several of our members have worked very closely with the department in Queensland in terms of trying to persuade the department to ensure that data is provided in a digital form, such that companies can do their own interpretation of where deposits are, as long as they know what the geology is and have the digital data from which to make their own interpretations. In Queensland there has been at times a push to do programs of research to try and sell packages to industry which were not always taken up. As long as there is good data there, companies will form their own views. We are all independently minded and a good database is essential; it is absolutely essential to have a very good database. I would think that is really a requirement of state governments to ensure that it occurs. If there could be more uniformity across Australia, that would be a huge benefit.

Mr HAASE—You are referring to the medium more than the accuracy of the data. The comment has been made, I am sure, that there is insufficient data. Your comments have not been about the medium in which it is available. I would like a better idea about what more could be done and, if more is to be done with regard to mapping and better quality mapping, who ought to pay? Should there be any contribution from industry?

Mr Stafford—I also think there should be better data. The provision of data, as much as anything, is important. I really would not want to comment on the technical detail of it. It is not my area.

Mr Levy—The quality of the science is crucial, as you raised, because we are talking about very basic fundamental infrastructure for the whole mining industry, not just exploration. It is like talking about the quality of railway lines and roads for industry in general. This is the basic fundamental infrastructure that can allow industries—several industries—to grow, and to target one specific industry is always a difficult question when you are trying to decide user pays. In the current system, users do pay when there is a specific individual benefit to that user. We do it through joint, collaborative research, much of which is then passed on to government bodies to apply more widely. There is a symbiotic relationship already there and that is very healthy.

Mr HAASE—We were talking earlier about the nature of BHP Billiton's surveys and the fact that that is not accessible for the general public and industry generally.

Mr Levy—It will not be long before an equivalent system is developed. It is a very competitive market and all you can do is give accolades to BHP for having the initiative to develop it. Most of these geophysical systems are disseminated sooner or later, because we are a very science-driven industry. The mining industry, particularly in management, would be dominated by tertiary qualified people who are very competent.

Mr HAASE—You would expect improvements and you would not expect any great change in the principle of user pays?

Mr Levy—It will always change. It will be a naturally evolving system. I am not particularly qualified to predict how it is going to go.

Mr HAASE—You do not have a policy whereby your industry says, 'If we made some direct contribution, we could quite definitely get a better data set, and that would be worth that contribution.' That is not one of your strategies at this stage.

Ms Gorrie—Certainly not as part of policy, no.

Mr TICEHURST—What are the main uses for gold? There was a time when countries held gold standards to support currency and maybe in this day and age that has lost some sort of relevance. How effective is the marketing of the Gold Council in the sense of creating either new applications or increasing consumption of gold?

Ms Gorrie—The biggest statistic is that 80 per cent of gold used annually—not produced but used—goes into jewellery manufacture. On that basis, the World Gold Council—not the Australian Gold Council—which is significantly more resourced than the Australian Gold Council, commits a serious amount of resource to marketing gold as a jewellery product, but also marketing gold as an investment. In terms of its resource allocation, it is pretty much an even split these days between gold marketing from a jewellery perspective and the investment side of things.

From the AGC's perspective, we act where possible in affiliation with the Gold Council in the Australian marketplace only. Certainly, we try to do all that we can within Australia to promote investment in the gold sector—whether that be gold equities, bullion, derivative products et cetera—and also gold purchases as a jewellery item. Given our resource limitations, we try wherever possible to collaborate with the broader efforts of the World Gold Council as they apply to Australia.

Mr CAMERON THOMPSON—You were talking about your concern over the drop in gold production. Could you break that down on a state by state basis? You made some comment here that Queensland might completely stop production by 2016. Out of your total, are there more alarming drops in some states than others? What is the reason?

Mr Levy—The dominant gold producer in the last 20 or 30 years has been Western Australia. It has been affected most by the cutback in exploration. Queensland was a very major producer of gold as well—the second biggest state—but it is facing a fairly bleak future. The cutback in gold production would come from those two states. New South Wales is holding its own and South Australia is hoping for some increased gold production, as is Victoria.

Mr CAMERON THOMPSON—The Queensland thing is basically down to native title management?

Mr Levy—It would be too simplistic to just say that. Some of those resources ran out before exploration was able to find replacements. Queensland is a prolific gold-producing geology. All of Australia is very heavily endowed with gold. We have natural world advantages, more so than any other industry we have in this country. We are incredibly well endowed with gold in our geology. We just need to allow that critical component of exploration to get started. It has to start immediately.

Mr Stafford—I will give you one example where a mine has just shut down in Queensland. Kidston and Mount Leyshon were megaproducers at about 150,000 to 200,000 ounces each per annum. Talking to Placer, when they closed down Kidston in the last couple of years, some of their surveys showed that they were one of the biggest contributors to the economy of Cairns, believe it or not, at the same sort of level as you would think that tourism would be. It was like hidden data. It was not data that the general public recognised. They always recognised Cairns as being a tourist destination, not being particularly affected by gold production, but Kidston was a big contributor to the economy there.

It is also fair to say that we do not have in Queensland the Yilgarn Craton, for example, where most of the major gold production in Australia comes from in Western Australia. The geology is such that you need more risk capital to buy more discoveries. To be perfectly frank, my company, which has a very good tenement in Queensland which is 100 per cent freehold, cannot raise finance for exploration on that tenement, much as we would like to. We find it easier to raise exploration funds for activities offshore where we have defined deposits. The money we raise is going offshore.

Ms Gorrie—Certainly in terms of the native title issue, clearly it has compounded the exploration problems, but from Queensland's perspective and based on discussions I have had with board members, including Gary, the key reason for the downturn is lack of access to risk capital. That being the major problem, issues like land access and native title specifically have compounded what has been the primary reason—that explorers cannot raise the money to get out on to the ground.

Mr Stafford—It would also be fair to say that with native title you now need a certain amount of money in the tin to even start the process of negotiation. Although it may seem equitable in terms of the right to negotiate process, I think the opposite is true. The more money that was in the tin of exploration companies the more deals that could be done, or that would be

done in all probability, to get the thing moving, because junior companies are a very pragmatic lot.

Mr CAMERON THOMPSON—I started out by asking what was the difference between the states. We seem to be saying that Queensland has more of a problem. If it is lack of capital, I would have thought that would be an Australia-wide thing. What is it that sets Queensland apart? What make its problem worse?

Mr Stafford—From an exploration perspective, people would see Western Australia as having more targets for defining resources. There are more partly defined resources where companies can come on and drill around. Would you agree with that, Ian, in terms of Yilgarn Craton? If you have the right address, the right tenements—and that is part of the task, getting the right address—then you can raise money. In Queensland it is just a harder ask. You often find that the more recent discoveries in Queensland, like Vera Nancy for example, were the result of a lot of patient blind exploration drilling. I am sure there are more discoveries to be had in that way, but it requires the finance to do it. Queensland is just a different exploration prospect than, say, the Yilgarn Craton in Western Australia. It is partly geology.

Mr Levy—In our appendix B we try to summarise all the issues on one page. We do note that in our belief the three impediments are interlinked to some extent and we must not get away from that. We have tried to emphasise that to you. The fundamental control is the lack of venture capital.

Mr FITZGIBBON—Some time ago one of the big issues in the gold sector was the selling down by nation states of their gold stocks. Does that remain as an issue? Do you have a view about that situation?

Ms Gorrie—The World Gold Council did successfully negotiate with the key central banks what they are calling the Washington agreement, which significantly limits the amount of gold that can be sold by central banks. That agreement, however, expires in 2004. The World Gold Council are again in heavy discussions with the various central banks on its extension beyond 2004. As we speak today, my understanding is that the World Gold Council is fairly confident they can maintain certainly the core of that agreement going beyond 2004. If that is the case, it will certainly take the pressure off the industry from a central bank sale perspective.

Mr FITZGIBBON—So potentially it remains an issue in terms of exploration investment.

Ms Gorrie—Yes, it does. It is the perception as much as anything else.

Mr Levy—The one positive thing that came out of that selling by reserve banks was that the market absorbed that huge amount of gold without any problem. Of all the mineral sectors, gold is the one that has no market constraints. Throughout its entire 2,000 or 3,000 year history of marketing you have always been able to sell gold because it so widely accepted. If you can turn on a stimulus to this industry, the industry can sell its product. We are not market constrained.

Mr FITZGIBBON—Of course, Australia was amongst the significant sellers, wasn't it, at the time?

Ms Gorrie—Yes. My opening comments made the point that in 1997 the Australian government sold two-thirds of the reserve.

Mr Stafford—Although in terms of what Ken said about it still being a store of value, judging from Japan's buying of gold as well recently, it indicates that there are not many alternatives as a store of value. There is still only one Fort Knox in terms of commodities. There is not a Fort Knox for other commodities that I am aware of.

Ms Gorrie—In relation to your question, while some of the more established European central banks have been trying to sell gold and have sold gold, other Central American and Asian nations have actively been purchasing gold on the basis that it is your ultimate safe haven asset to have in times of economic stress and fear. That is being evidenced by a far more intense focus, certainly this year and beginning last year, on gold as an investment.

Mr FITZGIBBON—With respect to your proposal on taxation, we have seen a number of these proposals on flow-through shares. It appears to me that what is always missing is an impact on the budget bottom line. Are you claiming that it is no more than a timing difference and the impact is insignificant?

Mr Stafford—We understand that ABARE have been looking at that particular issue. The industry did commission ABARE to do a report last year. I am sitting on the strategic leaders group, so I am seeing the drafts now of the ABARE report coming through, and it addresses that issue.

Mr FITZGIBBON—When do you expect that final report?

Mr Stafford—I think in the next few weeks.

Mr FITZGIBBON—That will be a public document, won't it?

Mr Stafford—Yes, it is for the department of industry.

Ms Gorrie—Again, I am not wanting to generalise, but certainly our argument has been that whatever revenue is forgone in the short term will be multiplied tenfold in the longer term if we are successful in finding any more deposits.

Mr FITZGIBBON—Is ABARE doing any such modelling with respect to their inquiry?

Mr Stafford—The cost to the Treasury?

Mr FITZGIBBON—In factoring in that additional investment expected as a result of—

Ms Gorrie—Yes, they are.

Mr ADAMS—In the overall mining operations there is much gold gathered. What is the percentage of that as to designated goldmines as such out of production in Australia?

Mr Levy—As opposed to co-product?

Mr ADAMS—Yes, co-product I suppose would be the term.

Mr Levy—From other mines, like a copper mine as a co-product. Over the history of Australia it has oscillated up and down. At this moment pure gold only goldmines are still the dominant producer, but we do see a growth of copper-gold businesses. We see a lot of that in Papua New Guinea particularly in Australasia.

Mr ADAMS—About 50 per cent?

Mr Levy—No, I could not give you a figure, but I would guess it would be less than that coming as co-product.

Mr ADAMS—Forty per cent?

Mr Levy—I would be guessing. I should not comment. It would be a smaller percentage.

Mr ADAMS—I would have thought the gold council would have that figure.

Mr Levy—We do in our database.

Mr ADAMS—Would you let the committee have it?

Ms Gorrie—Certainly.

Mr ADAMS—Thank you. Last year, you forecast $6 billion. Capital expenditure was $6.7 billion. So last year money over and above what was expected was spent. That comes from your survey.

Ms Gorrie—Yes.

Mr ADAMS—If we have a crisis of exploration, how do we account for more capital being spent than was anticipated?

Ms Gorrie—In terms of the survey that you refer to, every year the Australian Gold Council surveys the industry. In the most recent survey, the 2002 survey, we discovered that the industry was planning to spend $7.6 billion in the next 12 months on capital, operational and exploration expenditure. It is a staggering sum and is driven largely by consolidation of the sector and the offshore majors wanting to make good their Australian gold acquisitions. However, the important part of that figure is that, in terms of exploration expenditure, that represented a mere 4 per cent of that $7.6 billion forecast to be spent—the remaining figure to be spent on capital and operational expenditure, which is not exploration and which is not going towards shoring up the industry's future and replacing reserves as they are exhausted.

If anything, that was a highly alarming figure for us—that the bulk of industry expenditure was not going to exploration but going into operating mines and capital investment in relation to existing production facilities but not finding the mines of tomorrow.

Mr ADAMS—On the value adding, you say 80 per cent of gold in the world goes into jewellery. How much are we making in Australia?

Ms Gorrie—In terms of jewellery fabrication, a great deal, as I understand it. Again, we are not experts because we are not resourced to be. The World Gold Council has all the statistics.

Mr ADAMS—Could you let the committee have those statistics?

Ms Gorrie—I could certainly do that. However, a large proportion of jewellery manufactured within Australia is manufactured and fabricated offshore and then brought back in South-East Asia.

Mr ADAMS—But there is a connection. It is a modern world, isn't it?

Ms Gorrie—Certainly.

Mr Stafford—To add to Tamara's comments regarding capital and exploration expenditure, there is obviously a lag between exploration, discovery and new mines.

Mr ADAMS—And jewellery!

Mr Stafford—And jewellery—maybe up to five years or seven years.

Mr ADAMS—The consolidation of Australian gold mines: the committee heard evidence that there are not the companies on the Australian Stock Exchange now as there are in London. They are listed on the London Stock Exchange. Do you think that this proposal on the flow-through share concept is the sort of proposal that will help the capital that is out there for exploration, for people who have a portfolio and have money that could go out to more risky operations? Do you think this will give them the opportunity to do that? Have there been too many schemes in which people have been burned? Do you think this scheme has credibility?

Mr Stafford—In terms of the deductibility under our proposal, there is no uncertainty in terms of the arrangement. I will just go over the bones of it. When making an agreement with an investor, whether that be a member of the public through a prospectus or a so-called 'sophisticated' investor under the Corporations Law, you would have an agreement in either the prospectus or a warranty in the agreement made with the sophisticated investor to spend so much of the money raised on eligible expenditure. To make sure the timing of the deduction matches the timing of the expenditure, we are proposing that the accounts are audited every year and an audited notice sent to the ATO and to the investor.

Whereas a lot of schemes were uncertain—in terms of forestry and so on—you know that from that perspective your money will be spent on exploration and you have recourse under law in the prospectus or the agreement you have at the outset as an investor. Of course, if the company were to spend the money other than on exploration, from a Treasury perspective there would be no loss because there would be no deduction.

In answer to your main question, as the managing director of an exploration company, six years ago we raised $8 million for exploration predominantly in Western Australia and

Queensland. Most of that money went into airborne geophysical surveys, which are now part of the geological map for Western Australia, extending the Yilgarn Craton further south than was thought it went before—150 kilometres or so further south. We spent approximately $3 million on that project. If I were to try to raise that money today, I could not—I simply could not. If I want to raise money for a project which is advanced and has a defined resource, I have a better chance, because the mantra for today's investor, no matter what industry, is 'earnings' and, if you are at the high risk end, it is 'potential earnings'.

Tax incentives have been shown in Canada to encourage investors to go into the higher risk end. That is probably the only way that we can see that—and the whole industry can see—we can encourage people to invest in higher risk propositions.

Mr ADAMS—Since the high-tech wreck went down, there must be money there. Where is the money going that would have gone into exploration in the past? Do you have any ideas? Have you discussed this as a council?

Mr Stafford—It was an alternative at the time and it was a sexier alternative. There was a general belief in the community that it was something it could recognise: everyone had a computer and so they could associate with it. Since a lot of people lost a lot of money over that, as schemes did not come through, that has tended to cause investors to shy away from high risk investments. It is also important to note that, during that period, a lot of broking firms were downsizing in regard to their research capabilities and, at the same time, the Financial Services Act was being toughened up, as it probably should have been, in terms of disclosure.

We do not mind that. The recent changes to CLERPS have made it easier to raise money without a prospectus, as long as we have full disclosure. However, you try to go to a broking company: they will say, 'We really don't have anyone who can properly assess your projects, who has the expertise so that we can make the assurances to our clients.' That had a profound impact upon the capabilities of broking firms to support the exploration industry.

Mr ADAMS—That is an interesting point.

Dr WASHER—Flow-through shares seem to be the solution, as you see it. Certainly, in Canada, since the mid-eighties you state it has generated $3 billion-plus for mines in various places, such as British Columbia, Quebec, Ontario and so on. The Canadian government surely would have detected rorting problems if they existed to any extent and would have closed it down if there were a major problem. I notice that in the appendix there are two pages on possible rorts and one page on the proposal. Was that a problem in Canada? Has it had to correct and finetune things?

Mr Levy—A Canadian colleague of mine, Professor Brian Mackenzie, is a mineral economist of world renown. He felt that in the early years the system they had set up allowed rorting. He noted that the revised systems that were brought in in the recent Canadian experience have eliminated the vast majority of them. In our proposal to you, we have tried to incorporate the good ideas from the Canadian experience. They cannot be translated one for one because the tax structure is different, but in principle Canada was able to eliminate the early evidence of rorting. They acted fast.

Dr WASHER—Mr Haase in the past has been as enthusiastic as me about this, but it really only appeals to the small companies. What proportion of small companies would operate in the goldmining sector in Australia and would benefit from this?

Ms Gorrie—It would theoretically be of no interest to producers. For example, they want to claim the deductions themselves. The scheme we have proposed would really only be attractive to explorers; for instance, companies that are cash flow negative. They are at the small business end of what we do, the R&D aspect. As I said, theoretically it would be of no interest to the larger companies, particularly the offshore majors that have come to Australia and acquire gold assets and so on. It is only for the smaller end.

Mr Stafford—Part of it is that we are suggesting we ex gratia be treated the same as R&D and therefore there would be an uplift. Currently it is 125 per cent up to 175 per cent due to recent amendments. That is what we are proposing in this document. Of course, that would be of benefit to the larger companies as well, so that may well encourage them to explore. But really this is the focus at the junior end and ABARE's report last year, commissioned for the industry, showed that in the gold industry 60 per cent of all major discoveries were attributable to junior companies. We are at the small end but we can have quite a significant impact.

At our last Australian Gold Council board meeting on Friday the managing director of Newmont, which has a significant exploration budget in Australia, said—and I am sure he would not mind me quoting him—that he felt the best way of increasing exploration success in Australia was by revitalising the junior end. It gives them another iron in the fire and through that they can form associations and can have a bigger spread of opportunities being created. The big companies have the dollars; they have the money and they can muscle in at the appropriate time.

Dr WASHER—The consumption of gold is mainly in jewellery, as we have heard. Are there countries where you can identify a growth potential from a cultural point of view, where they would wear more gold than other cultures?

Ms Gorrie—The largest consumer of gold is India and that is based very much on its cultural aspects. The jewellery aspect is key, but from an investment perspective the Australian Gold Council, along with the World Gold Council, believes the time is right to heavily promote gold as an investment. To that end, certainly within the Australian marketplace, you will shortly see some new gold investment products launched. They will effectively securitise gold on the Australian Stock Exchange. It has never been done before.

Similarly, there are moves afoot globally, under the auspices of the World Gold Council, to do a similar thing in North America and the UK. A clear decision has been taken that, while jewellery marketing is important, there is massive untapped potential in terms of gold as an investment. With escalating global issues, economic uncertainty, a falling US dollar et cetera, we are fairly confident we can greatly increase interest in gold as an investment and uptake of gold.

Dr WASHER—How much is currently held, roughly, in reserve banks and their equivalent throughout the world?

Ms Gorrie—I do not have that statistic on me but I can get it for you.

Mr Levy—But in a relative sense the reserve banks hold between three and four years annual production.

Dr WASHER—I was told about that, but I thought it was almost five years annual production.

Mr Levy—It has diminished over the years.

Mr Stafford—My company invests a lot in South-East Asia. In terms of gold consumption you mentioned women but over there it is men. They have the heavier chains. Store of value is one thing with reserve banks but it is a store of value for those individuals. That is where the Indian market comes from. In terms of these gold products that Tamara mentioned, we were associated as the AGC with the development of one of those products. One has been sponsored by the gold refinery in Perth, the Perth Mint, and the other one is sponsored by the World Gold Council.

Their research showed that if investment institutions in Japan started allocating between five and 10 per cent of their funds to gold, all the free gold in the market would be sucked up. There is a big conspiracy theory debate about how the price has perhaps been affected by dealings between major companies and banks. Indeed, there are some ongoing court cases about that in America. It is safe to say this is a brilliant opportunity for Australia, which is endowed with the right rocks, to get out there and be exploring now to build up the nation's inventory.

Mr Levy—We are also endowed with the right people. We have a long history of having the right people in this country.

CHAIR—We are out of time, so I thank you for your appearance before the committee.

Mr Levy—Thank you, sir.

CHAIR—Is it the wish of the committee that the proposal to amend the income tax provisions to encourage exploration, tabled by the Australian Gold Council, be accepted as exhibit No. 43? There being no objection, it is so ordered.

[11.58 a.m.]

DENHAM, Dr David, President, Australian Geoscience Council

LARKIN, Mr Don, Secretary and Treasurer, Australian Geoscience Council

CHAIR—Welcome. I invite you to make a short opening statement.

Dr Denham—The Australian Geoscience Council is very appreciative of the opportunity to contribute today to this inquiry. We are the peak council of professional geoscience societies in Australia. We represent nine societies and the total membership of geoscientists in those societies is about 7,000 professionals.

As we all know, the resource industries are the main export earners for Australia. Minerals and energy underpin our wealth creation and the geosciences are needed to discover, develop and manage these resources. Our future prosperity will depend on these industries remaining healthy, innovative and competitive. Consequently it is crucial that we have in place an environment that is conducive to efficient and effective exploration. We identify four key areas where action is needed. Some of these have been raised earlier today.

The first is venture capital. The current taxation regime we believe does not encourage investment in resource exploration. This regime needs to be reformed to provide appropriate incentives to stimulate both Australian and overseas investment in exploration here. As a first step we believe the ATO should allow exploration activities in unexplored—that is greenfield—areas as a research activity for taxation purposes. Earlier today the question was raised about how you would define 'research activities'. That has already been done to some extent in the department of AusIndustry, where the IR&D board looks at three main elements in assessing whether or not projects qualify as an activity. The key one here is:

A program of experimentation including testing or trials for the purpose of discovering something unknown.

Therefore, if one is exploring in greenfield areas where nothing is known, that could very well and very appropriately be classified as research under that definition.

So much for venture capital. The second area is land access. This is perhaps a little complex, but on an Australia-wide basis the ratio of exploration title applications pending to those granted has increased from parity—that is one to one—in 1992 to close to six to one in 2001. That is the latest figure we have. In other words, in 1992 there were, say, 1,000 applications for exploration licences and 1,000 were granted Australia-wide; but in 2001, according to the ABARE figures, that went up to about six to one, so there were 5,800 applications still in the pending queue in 2001 and about 1,000 approved. There is a huge backlog there.

Furthermore, the costs involved in submitting these applications, as was said earlier today, impact much more heavily on junior explorers because they are unlikely to have the major cash flows of the established majors. It is much harder for junior explorers to go through this complexity. We are not going to suggest major solutions to that. We just pose that land access as

a huge problem in terms of the healthiness and the innovativeness of the Australian exploration industry.

The third area is geoscience education and research. This is really what our members are mostly on about. We need a reliable supply of high-quality geoscience graduates for the exploration industry. These can only be provided if we have world-class geoscience research and teaching facilities in our universities and research organisations such as CSIRO and Geoscience Australia. At present there is a shortage of high-quality graduates in some areas due to the decrease in the number of specialist courses available. Also, several geoscience departments are struggling to remain financially viable, we believe primarily because of the funding model that applies to tertiary institutions and also because of the uncertainty of employment prospects in the industry.

In the education sector we make three recommendations. These were not included in our original submission. First, we believe that the Commonwealth should encourage state and territory governments to include earth science and environmental curricula in all secondary schools. We believe that the earth sciences and environmental sciences are so important for the future of this nation that the state and territory governments should implement these curricula in our schools so that people know more about earth science, are inspired by the complexity of it and the interest in it and are able to make sensible judgments when mining and environmental issues arise.

Second, we believe the current model for university funding should be modified—and here I have some really good bureaucratic terms—in line with the `variable rate learning' entitlement. How does that grab you? That is option 4 in the background papers that were presented in the Nelson review of higher education. Basically, what it says is that the Commonwealth funding should not be just on a per student basis but should also take account of the cost of the courses. This does not apply just to geoscience but also to the whole science sector. In geoscience you have laboratories, you have field trips and then you have the ordinary teaching, so it is comparatively a very expensive course to teach. We believe that the current funding model disadvantages science—and geoscience particularly—and this model 4 which was proposed would take a better account of national priorities and the cost of these courses. It would also lead, we believe, to collaboration within and between universities, which should be encouraged to improve course choice and content.

In the research sector: in the context of the national research priorities which were announced last year, we believe that for the resource industries the minister should establish a high-level program advisory board to review the resource exploration research programs funded by the Commonwealth and to advise on future research directions so that the Commonwealth investment is properly focused. We have a lot of action goals in the national research priorities. One of these is exploring or developing the deep earth. One of the challenges with these goals is how you are going to implement them. When you look at the national research priorities, they cover a pretty wide scope and there are not too many activities which are not included. What we need is an implementation process which ensures that the Commonwealth investment is properly focused on this. I think that the minister should have some responsibility for that in terms of Commonwealth funding on that particular goal. Also, we endorse the proposal generated by FASTS that the government introduce 100 new postdoctoral positions annually, to be jointly funded by industry and government. This would increase the business exploration

research and development expenditure and it would provide new jobs for our highly qualified geoscientists.

The fourth issue, which has also been discussed in quite some depth today, is geoscience information. We believe that regional geoscience data sets obtained by Geoscience Australia and the state and territory surveys are very important for encouraging exploration and contributing to an understanding of the geology of Australia. We recommend that Geoscience Australia and the surveys develop a national plan to complete the regional geophysical coverage of the onshore part of the continent over a 10-year period to encourage exploration in poorly explored areas.

The value of regional geophysical data is huge—not just for the resource industries but also for the environment and land management industries. We believe that at regional level, say the 400-metre line spacing level, it should be a responsibility of the states and the Commonwealth to provide this information. Industry is able to provide input to these surveys on a more detailed scale where the data are clearly more applicable to active prospecting. There I will finish.

CHAIR—Thank you.

Mr HAASE—Prior witnesses to this inquiry have recommended that the Geoscience Australia budget appropriation be boosted. Few have suggested how allocation and monitoring should take place. How do you see the Geoscience Australia program advisory board working?

Dr Denham—It should be representative of the exploration industry—the majors, the smaller companies, the people who use the data and the people who can identify in industry the particular research problems which are important right now. For example, one of the problems is seeing through the regolith or the top surface to the prospective rocks. That is in the mineral part of the industry. In the search for oil it is a question of boosting the budget there so that Geoscience Australia can do more in opening up the key areas which have been unexplored so far. We suggested in our submission an $8 million boost for that. The money involved is quite small. In the mineral side we would probably be looking at $2 million to $3 million to boost that so that the regional coverage can be completed in a 10-year program.

Mr HAASE—They would feed this back? I am looking at the process of somebody analysing their progressive, hopefully improved, performance and how such monitoring and transparency will be fed back to the industry and how that would encourage a better level of either technology or depth of study or whatever.

Dr Denham—Geoscience Australia's program development would benefit from such an advisory group. Right now there is good collaboration between the majors in Geoscience Australia but this could be broadened to take into account the smaller companies and to have a formal process for assessing the program and making recommendations. Right now, as I understand it, there is no formal process for that.

Mr HAASE—Doctor, you might have heard my questioning earlier about whether or not industry had an attitude of user pays.

Dr Denham—Yes.

Mr HAASE—They of course declared that they did not have that on the books at this stage. Do you have a point of view in that regard? Do you think the industry should be paying for an improved performance by Geoscience Australia?

Dr Denham—In terms of the regional data sets, to get the more closely spaced ones, industry should pay for that and they do pay for that. The important thing is that we have a Commonwealth investment to a major wealth generator of the nation. We have to make sure that that investment in there is properly focused. That is where I am coming from. The main thing is that the investment is appropriate. I believe the return on the investment is really very good in terms of the export earnings, in terms of the numbers that Dr Powell quoted earlier today on the triggering effect of new information. If you look at the data sets that the states make available, as soon as those are opened up the exploration usually increases and the leverage effect is huge.

Mr HAASE—That is fine, thank you.

Dr WASHER—Dr Denham, you mentioned the use of postdocs. That is something FASTS had that was an idea I thought was excellent. You said that yourself today. Can you flesh that out again, just to get this on the record twice? It is one of the best things we can do in this country, to help generate employment incentives for our scientific graduates and also to teach them a bit about industry, commercialisation and the realities of things.

Dr Denham—As you know, one of the weaknesses at present in Australian industry is the R&D component; the BERD levels are very low compared to OECD comparators. What we are suggesting here is that 100 postdocs be funded jointly by industry and the Commonwealth. These would probably run for something like three-year periods, I would think. This would give new doctorates the chance to be able to contribute to the research of the companies. It would also benefit the companies because you are getting the bright new ideas in there that can only benefit industry. Also, we see this, as I said, as science that is industry wide, not just for the geoscience industry. The geoscience industries or the mineral and petroleum industries would have to bid for these positions. The cost would not be huge, I believe. You are looking at $20,000 or $30,000 from the Commonwealth—

Dr WASHER—They worked it out at just over $4 million to us.

Dr Denham—Yes, something like that. It is not huge. It would be a great opportunity for changing the culture in the industry to invest in R&D.

Mr TICEHURST—In your submission you were saying that about half of the geoscientists have left the industry over the last four years. Out of that group, how many would have naturally retired? Are some of the ones that left maintaining their skills so that they could come back into the industry?

Dr Denham—I will ask Don to answer that because he has a database of it there.

Mr Larkin—As well as being involved with the Australian Geoscience Council I am the CEO of the Australasian Institute of Mining and Metallurgy. We are trying to do a lot of work on what is the size of the bucket, the total of professionals in the minerals industry and what has happened to them. Previously any surveys on trends and numbers have been sent to individuals

and it has depended on whether they answered. Usually those who were most angry or out of work would answer them and say it is a worse position. We endeavoured to look at the 1996 census and then compared it with the 2001 census. Those figures are just coming out.

There are problems in those statistics because it depends on how the individual geoscientist answers what industry they are in. Because they might be in Geoscience Australia, they might not see themselves in the minerals industry. There is a lot of data. There are also a lot of complications in that a lot of geoscientists are now recorded under 'own account'. We believe most of those own account geoscientists are severely underemployed, but they still call themselves geoscientists in the minerals industry.

The bottom line of the statistics we have looked at is that there has been a 60 per cent drop in those in exploration between 1996 and 2001. Your question asked what had happened to them. Some of them have retired. Some have gone into other vocations and other industries. Some, who may have been head of exploration in a corporate, are now own account and hopefully can come back into the industry should exploration pick up.

That leads back to another area where I believe we need a lot of statistics. Are there enough geoscientists coming out of the system to meet the needs of the minerals industry? Some of the data coming out of the research we are doing on the action agenda shows that only 2.6 per cent of geoscientists in America go into exploration; only six point something per cent in Canada go into the exploration industry; in Australia it is about 16 per cent. They are the figures Kevin Tuckwell quotes from MTEC.

One of the major issues is the attractiveness of the industry, not the numbers of geoscientists. Why is it the attractiveness of the industry? It is about lifestyle, it is about peer pressure, it is about the cyclical nature and uncertainty of the industry. One of the biggest challenges for the industry and for governments, in addition to encouraging geoscience education at secondary levels and at tertiary levels, is to also work with industry to show that the minerals industry is important to Australia, is important to the future of Australia and is an attractive career option.

Mr TICEHURST—Fair enough. You mentioned in your introduction that we should have a national plan over 10 years to complete the survey. What sort of resources in terms of people and costs do you think would be involved in that project?

Dr Denham—I do not have the details because I have not done the sums recently, but when they were last done we were looking at something like $80 million to $100 million over 10 years. You would have to ask the Geoscience Australia people for the details of that. They could be worked out. We can get some figures on that. It is mainly, as we said earlier, in Western Australia and Queensland. They are the two states where the coverage is most needed. We can provide some estimate on that.

Mr TOLLNER—Dr Denham, I am interested in some of the native title issues you raised in your submission. I should warn you I am from the Northern Territory. I have not seen any mention of the Northern Territory Aboriginal Land Rights Act in your submission. I wonder whether you see that as being similar to native title and land access.

Dr Denham—From a professional geoscientist point of view, we are not experts in native title. All we see is an incredibly complex situation which is reducing job prospects for our

members. There are huge bottlenecks, as has been discussed earlier today. For example, one of my colleagues now works in Fiji as a consultant, rather than Australia, because he says that in Fiji at least you know who to go to negotiate the land title issues. It is just too complex here, particularly for the small companies. As professionals we see it as an impediment to jobs growth and also an impediment to research in the country. If you want to run a deep seismic line across the country, the process is incredibly complex.

Mr Larkin—The global mining initiative was the corporate side, on a major level, looking at how they interacted with their detractors, the non-government area, et cetera. In Australia there was a mining minerals and sustainable development project and I was chair of the reference group. What came out to me was that it was all about education—educating both sides on what their rights are, what they can do, what they cannot do—and funding Aboriginal groups to be able to partake in the discussion in an informed way, in the same way as the companies can partake in the discussion.

Mr TOLLNER—My understanding is that a lot of that role should be undertaken by the Aboriginal land councils. I am wondering whether you see them as dragging their heels in this area or whether they are just another victim of circumstance or complexity.

Mr Larkin—I think a bit of everything. Not all land councils are exactly the same. Some are much more informed and more professional than others. I do not think you can make a blanket statement, but it is a little bit of both.

Mr FITZGIBBON—On that point, is it possible that the mining companies from time to time use native title issues as an excuse not to commercialise leases at particular times?

Mr Larkin—I would prefer not to answer that question. I represent the professionals of the industry, who just want to work and develop—

Mr FITZGIBBON—You wouldn't like to comment?

Mr Larkin—I would get into deep water.

Mr FITZGIBBON—It is a bit unfair. I was going to put that to the Minerals Council, but I got dragged away. I had to pick on someone! Going back to the role of the juniors, you mentioned the need for a greater relationship between bodies like Geoscience Australia and junior players. We see time and time again in submissions the need for junior explorers to be more involved. They are traditionally the people who are most responsible for discoveries. I am thinking more offshore, by the way, as it is my greater interest at the moment. I am thinking of the Submerged Lands Act and its fairly liberal approach to the assignment of property rights. Do you see any relationship between that act and various state acts which control mining tenements, the investment of the smaller players and even the relationship between the smaller players and bodies like Geoscience Australia? You said there should be a stronger relationship. You are not likely to have a strong relationship if smaller players feel that they are locked out of the process.

Dr Denham—I am not quite sure what the point is there. I do not think you would really get smaller players offshore, because the investment is so huge. It is primarily an onshore issue.

Mr FITZGIBBON—You could argue you might get relatively small players if the environment was one which was more inviting to them. Let's go onshore, where again they are outbid by the powerful players more often than not. That must be a disincentive for them to both be involved generally in exploration and also in a closer working relationship with Geoscience Australia.

Dr Denham—I am not saying they do not have a close working relationship. The problem is that there are many more of the smaller players and, if you had a formal structure discussing this program, you could have two or three of the smaller players providing advice and okaying the program. That would strengthen both Geoscience Australia and where the smaller people come from.

Mr FITZGIBBON—You do not see any relationship between the current regime of the assignment of property rights and a fall-off in exploration expenditure or investment? You do not think the current framework is a disincentive for people to become involved?

Dr Denham—For juniors to explore?

Mr FITZGIBBON—Yes.

Dr Denham—Yes, because the two main things are the raising of the capital and the land access. As I said, the land access costs are going to be the same or similar whether you are a major or a minor and, of course, if you are a major that cost is going to be much easier to bear than if you are a smaller player.

Mr Larkin—Can I answer your question in a different way? One of the most significant things that is happening, as you are aware, in the mineral industry is the globalisation of the industry and the corporates becoming international companies. They make decisions on a global basis. They will do product portfolio planning and say, 'I have a mine here, am I getting my return? No, I'll invest over here.' The biggest challenge for us as a country is to get those global people to invest in R&D and do their exploration in Australia because it is relatively more attractive to do that.

Mr FITZGIBBON—How do you do that?

Mr Larkin—That is the whole thing about the action agenda that we are putting significant time and effort into, because currently they are taking large profits out of Australia. They might be doing their R&D into mineral processing in Australia, but are they doing the exploration in Australia? I do not have the right answer. We have the skills, the sovereign risk and the terrain.

CHAIR—We are ranked first in the world in sovereign risk.

Mr Larkin—Yes. It is a huge challenge for us. If the federal government leaves it just to market forces and leaves it up to supply and demand, I do not think we will be as successful. There are too many market imperfections out there and we need to look at the impediments and incentives for investment, as you are doing and as the action agenda is doing. I am very confident that out of that action agenda will come some recommendations which are not special pleading, but are looking at how we can take advantage of that situation.

Mr ADAMS—That probably leads on to market impediments in the world; to leave it to the market to help push exploration. They are in other countries, you mean?

Mr Larkin—Yes.

Mr ADAMS—Too many incentives will come from governments and those sorts of things. Just say yes and we will get it on the record!

Mr Larkin—Yes.

Mr ADAMS—I was interested in the drop-off of geoscientists et cetera. Also in other areas the mining industry has had a problem with its image. Do you believe that people are just not going into mining or following that course as a career for a whole variety of reasons?

Mr Larkin—Not only in the minerals industry. Professionals in general, when they are now graduating, are looking at their careers and their lifestyles; the accountants, the lawyers and so on. They employ a few people for a few years and then they go off to London. They want to be employed in the cities. The minerals industry has issues about most of the mines being in regional Australia. It is a cyclical industry in exploration and there are enormous pressures on them at university that it is not an attractive career option.

Mr ADAMS—You were talking about the globalisation, but the big corporates—the world players—want to come to Australia and have enough people to pick up when they are here. As a country, we have to make sure we get enough back from them to be able to educate people.

Mr Larkin—That is the challenge, and one of the opportunities is for us to become the suppliers of the skills and mining services for those companies worldwide and we then export.

Dr Denham—What worries us greatly is that we will lose the core quality skills which are needed, and that is a big issue.

Mr ADAMS—I was very interested in what you said about other levels, though, of land management and those sciences working together. Are there are a lot of opportunities to do degrees? Are there opportunities in the way the degrees are done? We have a lot of this land management, resource management, environmental sciences et cetera: how much of that can we pool together in universities?

Dr Denham—This is a strange paradox, you see. We have the dryland salinity, the water problems and the drought, and I do not think there is a geohydrology or hydrology course of note available in Australian tertiary education. I may be wrong on that, but I could not think of one the other day. There has to be some consolidation of the tertiary institutions so that at least the broad spectrum of skills can be taught to several students. What is happening now is that you get lots of students going into the first year of geoscience, but the key specialists such as geophysicists—there is no hard data on this, but people who are trying to recruit them are saying that they are just not being produced now in sufficient numbers to meet industry demands, and this is a worry.

Mr ADAMS—Is your body pushing for that change? You are talking to the vice-chancellors.

Dr Denham—Yes. We have made submissions to the education review. We want to change the funding model. That is the crucial issue. It is the biggest change that can be made. I do not know what has been recommended in the cabinet papers, but that would be the most appropriate funding model as far as scientists in geoscience are concerned. I don't know what that is.

CHAIR—Thank you for your time here today.

[12.32 p.m.]

BASHFORD, Mr Keith, Manager, Marketing and Communications, Division of Exploration and Communications, Division of Exploration and Mining, Commonwealth Scientific and Industrial Research Organisation

PHILLIPS, Professor Geoffrey Neil, Chief, Division of Exploration and Mining, Commonwealth Scientific and Industrial Organisation

CHAIR—I now welcome representatives from the CSIRO, Exploration and Mining. I invite you to make a short opening statement.

Prof. Phillips—Thank you for this opportunity to follow up on what we presented to this inquiry in November.

A PowerPoint presentation was then made—

Prof. Phillips—With a little tongue in cheek, regarding Australia's global position, and referring to the same issue that Dr Williams referred to earlier, in the time between our first presentation, a time I remember very well because it was 11 o'clock on 11/11 and today, 3/3, we have lost that No. 1 position to Canada. What has happened—we have seen this diagram before—is that there has been a dramatic drop off in exploration worldwide. We have seen a similar pattern—depicted in the green—in Australia. That coincides with falls in commodity prices. We could have shown gold, with a falling price down to 250 an ounce in the late part of the 1990s, but this is showing copper, lead and zinc. Again, a similar fall in commodity prices coincides with the decline in exploration spending worldwide.

Last time, I finished by saying that I believed that science can make a difference, that it is not the only way to address this impediment to exploration, but it is certainly one way. I used the example from the gold industry. We really had no effective gold industry in Australia around the late seventies to eighties. We were producing less than a million ounces of gold a year. Somehow—and it is no coincidence; there are a series of steps on the way—we now have an industry that is producing $4 billion to $5 billion worth of gold. That is clearly a blueprint for getting things right in the industry.

Let us look at some of the stages along the way and what took place that contributed in the science section. Very early on in the seventies, some research was carried out in Floreat Park in Perth on the study of the regolith, which is the dirt, the layer of sediment, that is covering a lot of Australia. One might say that that has no application in the gold industry and probably in those days it did not. That led to new sampling methods that were effectively transferred to the industry in the eighties through joint projects and, in the nineties, that sort of work, which is really embracing a series of university geoscience agents and companies Australia-wide, is helping us to understand the weathering of ore bodies, including gold ore bodies.

Seed funding on a very small scale that is followed up afterwards can play a part in creating a new industry. In the last 10 years, despite the production continuing at 200 tonnes or 300 tonnes of gold per year, through exploration success we have managed to keep up with that and

increase the reserves. You will also see the small fall-off in production in the last two or three years, which has been mentioned before.

Why should science be one of the ways to address these impediments in exploration? Science breakthroughs today are with us forever. Those breakthroughs on understanding the regolith made in the early seventies are still being used today and are being built upon. If we had not invested then, we would still not understand the regolith. Secondly, they let us build on our Australian strengths. We are world leaders in exploration science. Lots of countries that have exploration potential simply do not have the intellectual capital, the people or the universities where they are able to say, 'Let's go out and invest in exploration science.' They cannot do that. We can tailor the solutions from our R&D for Australian conditions. Clearly, that overcomes one of Australia's weaknesses—the cover. If you leave the cover and do not understand it, we will have a barrier; if you provide ways in which everybody can understand it, we will have a strength.

One of the dilemmas is that—and this is in different words—those who have the money for research do not wish to explore and those who wish to explore need the research but need to direct their money elsewhere—to exploration. As much as anything, this is the dilemma of the small to medium exploration company. So we have a major problem, but we have a major national solution. I wish to address, mostly, the solution aspect that we have worked on since 11 o'clock on 11 November.

We have been talking to a series of leading geoscience organisations at federal and state level. I should also mention that the action agenda—which is going on at the same time—and a national committee of earth sciences are all playing a part and are creating networks among different groups of people who are feeding into this. The technology development and data delivery application are two parts that we will touch on.

Today, we are looking at something that we will call, temporarily, Australia's Exploration Future. We need a whole of Australia approach. We are not talking about the CSIRO or universities: we are talking about simply getting the best people from the country and organisations to address this issue and to build on the collaboration for which the mineral industry has a proud record to date. So we are not starting from scratch.

In recent journal articles, there is talk of a global research boom starting. The question is: will we participate? Diamonds in Canada have taken Canada to the No. 1 place. That is clearly something in which we are not participating, nor are many other countries.

How can we analyse if we will participate when there is an upturn? Almost certainly, there will be an upturn some time. I like to put ourselves in the situation of the exploration manager, who could be in Toronto, Vancouver, Denver or Perth. There has been a global upturn, there is more money in the pockets and that person has to make a decision. They will make that decision on the basis of risk and regulation—and we talked about the sovereign risk advantage in Australia—access to information, which we have touched on, prospectivity and uniqueness of Australia. I will explain that in a moment.

Australia and other countries are favourably disposed in relation to risk issues. The low numbers—depicted high up on the table—are countries of low risk. We must preserve the advantages for Australia, but we must also recognise that there are really no differentiators

between whether you would invest in Australia, Canada, USA or Chile; it is all pretty much the same. So something else will differentiate between countries and will say to people that Australia is a good place to be. I will touch on that.

Dr Denham mentioned that part of the national research priorities announced by the Prime Minister just before Christmas was developing deep earth resources and we are very much in that category. In relation to prospectivity—real and perceived—there should be access to information and the uniqueness of Australia is relevant. With regard to prospectivity, it is sometimes said that Australia has been explored out. If you think of just the ore deposits sitting on hilltops, perhaps that is partly true. In Victoria, in the 1850s and 1860s the prospectors were very effective in combing the ground, checking quartz veins and rivers. However, undercover to the north, there are areas that they were not able look at and that you and I cannot walk on today or, with our bare eyes, make any determination of what is underneath. Those are the new frontiers for Australia.

I want to follow up on a comment made by one of the speakers this morning regarding platinum and chromium. We have a global industry worth approximately $6 billion per year. We produce nothing. As far as Australia is concerned, we do not play in that. Geoscience Australia, I and my colleagues will tell you that rock types in Australia are very similar to those in Southern Africa and Russia, where these deposits are found. The age is very similar. What is going on? Are they just not here, or do we need new models on how to find these new ore types? This would clearly be one part of this new initiative.

It has already been alluded to that we have a world-class geoscientific database here. We do have some gaps. Being realistic, we will always have gaps and we will always have demand for more and better quality information. The issue of delivering digital data worldwide—and I go back to that analogy of sitting at the desk in Denver, money in pockets, ready to invest. If we have to order a map from Australia as a piece of paper it will take ages. If we fax it across that is okay. If we have digital data on that database sitting on the desktop we can play with it, overlay, cut in half and manipulate, and that makes it easy. In a sense we are making it easy for anyone to explore in Australia. Whatever we do with this data, we still have to address the issue that it is not something we want to make available to one or two companies; we really want to make this available to all and sundry so that they can come and explore here.

Let me touch on the uniqueness of Australia. That is the issue of this regolith cover. A large part of Australia is covered by this regolith, obscuring what is beneath. That is not the situation in many other countries. This is something we have to address through R&D to help understand this continent. The outcome of this could be new mines in places we have not explored before, through better geophysics, better processing and drilling and geochemistry.

That is the type of country I am talking about, where hills in the background could have gold or base metal deposits on them. Good geologists could walk over there and say, ‘Right, I realise there is a Broken Hill or a Kalgoorlie or a Bendigo sitting there.’ Most of us could not stand in this area in the foreground and determine what is underneath. That is the challenge for the future in Australia.

There are several possibilities: new mines in places not searched before; new mines in places searched before but with old technology; deposit styles—and I referred to the platinum and chromium and others not found in Australia previously; extensions to existing mines; and the

big one. I will touch on the big one. Few discoveries will change this country as a new Witwatersrand goldfield would. This is the type of goldfield found in South Africa that the city of Johannesburg is built on. It has been operating for 115 years. It is still producing $10 billion worth of gold a year. It is clearly in its old age and decay but is probably going to go for another 50 years.

We have a national problem here, but immense opportunity. Potential for early results through funding into the Australian Exploration Future aligned with national research priorities, a whole of Australia approach getting the very best scientists from all organisations across the country, and we need to pay attention to danger signals that countries which lose their technological edge will lose their mining industry. England led the world in mining at one period of time; Germany certainly did; the USA did in my lifetime. In the last 20 years, we have seen that disappear from the USA very rapidly.

I will conclude with some words from Andy Stoekel: 'The only way to continue to be a success is to be the world's best, to be the country at the leading edge of productivity gain and innovation.' That is where we need to be. With your permission, Mr Chairman, we will hand out this document in progress. It is a suggestion as to how we might go forward. It has embraced comments across the community in the last month or so.

CHAIR—Thank you for that. Colleagues, questions.

Mr HAASE—A previous witness raised the issue about exploration being eligible for R&D on the basis that research and development after all was about finding something not now known, finding something new. Clearly if you are in the business of exploration you are looking for something not yet found. But I have a point of view which says that the thing you are looking for in exploration is possibly gold or some other mineral, perhaps even one not found in Australia, such as chromium. I would like your comments, please, on my interpretation that R&D ought to be for developing new processes or technology and that exploration for a known mineral in an unknown location is not something that ought to be so considered to be R&D.

Prof. Phillips—I can understand this is not clear cut, but parts of that process to me fit very much in ordinary R&D—for example, sitting down and trying to understand where chromium is found around the world, where platinum is found around the world, develop some exploration models and be the first people to do that on where you might find those in Australia and how you might go about it. Then the exploration process grades into what others might think becomes routine, perhaps drilling holes and testing. At one end of the spectrum it seems very clear that it is R&D. Somewhere along the path it becomes less clear.

Mr HAASE—Just to be a little more specific for the record, what aspect of that discovery chain might clearly be R&D?

Prof. Phillips—There are some clear cases in the last 20 or 30 years in Australia where genuine R&D developing new and innovative ideas has then followed on to discoveries. It is that type of thing. We are developing new ways to look for gold, new places to look for gold deposits not found in Australia, or platinum or chromium. That is innovative. It has every component of what I understand R&D to be. To me, that part of it is the same as R&D that I would be doing on any other aspect of geoscience.

Mr HAASE—Okay. That will satisfy me, Mr Chair.

CHAIR—Professor Phillips, one of our earlier witnesses this morning mentioned the mining industry now is truly, in the majors, globalised. Given that the decisions as to where to explore will probably be made in a boardroom in London, how can Australia get up the ladder to encourage them to automatically or, as a No. 1 issue, explore in Australia rather than South America, South Africa or wherever?

Prof. Phillips—I have tried to indicate, as far as the national risk goes, we are already high up there, and as long as we do not let that slip—

CHAIR—I do not want to cut you off but, as your own chart shows, the other countries I mentioned are already favourably well up that list. As other previously less stable localities in the world have now got their act together a touch, they are seen as a reasonable chance for investment. Given all that, how do we get there first in the mind of the CEO based in London?

Prof. Phillips—I was going to lead on and say we have to look at things beyond the national risk. We have to maintain that advantage and then ask, 'Can we get digital data onto your desk as easily as possible so that you can make an informed decision? Can we explain to you, as the potential investor, that there is realistic potential for platinum, chromium, gold or other things in Australia?' That does not mean a throwaway line saying, 'You will find it in Australia.' It means going through the argument thoroughly and saying, 'We have the best researchers. We have researched platinum and, for these reasons, this is why we believe there is an opportunity in Australia—the similar rocks, the similar age—and these are some innovative exploration ways to go about putting it into place.' To me that is explaining the prospectivity in some detail and making it easy.

The other one is the uniqueness. There are two ways to look at that: one is to educate the world to handling regolith types of environment as I have shown; the other one—and David Denham is hinting at that as well—is to make available a pool of people here who can go out and work for companies and understand the environment in Australia and how to explore here. We want those people to be as capable as possible.

Mr TICEHURST—We have had witnesses here saying that the new world-class discoveries are there to be had in Australia, but they are going to be deep mining. All of the easy stuff apparently has been found. Is CSIRO looking at the technologies that would be required for this deep mining, as well as looking at the exploration and where these minerals might be?

Prof. Phillips—I am talking today on exploration, but I come from a part of CSIRO that looks after exploration and mining. We do have some work going on there in mining. A lot of that is to do with the coalmines as they get deeper. Some of that is transferable to underground mines for gold, nickel and so forth. If you want to take it to the final stage of the very deep mines in South Africa, a lot of that expertise resides in South Africa and we would have to tap into that or gain it over time. We are one or two kilometres short of where they are the moment, depthwise.

Mr TICEHURST—How deep are the mines in South Africa?

Prof. Phillips—They are mining down to about 3.8 kilometres below the surface. Three kilometres is reasonably regular. Our deep mines in Australia are one to 1½ kilometres in depth.

Mr ADAMS—In relation to keeping in front with R&D, you say the US has dropped off on having expertise and people in that area to lead their minerals. Do they still have minerals to find in the States?

Prof. Phillips—The USA is still a significant producer of many of these metals we have talked about today. They are still the world's second largest gold producer, behind South Africa and just ahead of Australia. It is interesting to see that there are probably only three or four states in the USA which people would actively consider exploring for minerals in a large way: Alaska, perhaps Arizona, maybe Utah, Nevada—not many others. There are not many parts of the States people would be exploring in today. Therefore, we would probably not be seeing a mineral industry across the whole of the country.

Mr ADAMS—Do their states look after land management and the mining industry more than their federal government? Is it a state based regulatory body or is it national?

Prof. Phillips—A mining operation, if it wanted to get a goldmine up in California, would have a whole series of state and probably national constraints. I would not like to compare it with how it is in Australia.

Mr ADAMS—The expertise is in the people. We have heard about software. We have a lot of good software for mining and exploration and the geoscience we are doing. What else has to be done to keep us at the edge?

Prof. Phillips—There is prospectivity and explaining that Australia has a large potential. I do not think that message always gets across. Often we hear the message that Australia is mature and everything has been found. Sitting on top of the mountains and hills, that probably is mature, but we do not explain clearly to everybody that under cover there is probably two-thirds of the potential area left to be searched. That is a real opportunity. It means prospectors have not walked over it in the past.

Mr ADAMS—How do you do that, other than the industry itself? How do you tell the rest of the world? It is an investment thing, isn't it? We are seeking investment: how do we get people to listen to that?

Prof. Phillips—The best way is to have the best geoscientists who are respected for their work, who can say with authority, 'This person may be the best person on platinum'—or 'this research group'—'and this is their assessment of Australia and it's got credibility.' That type of thing carries a lot of weight.

Mr ADAMS—That is fine, but we have heard from the Geoscience Council of Australia that the global players now come to Australia and say, 'Do you have the expertise? Do you have the'—whatever. They come in and they want to pick up the people. How do we get enough back to make sure we can educate people so they have expertise? You have to generate enough wealth to be able to do that. I see a dilemma there about how you are going to get these global players to come in if you are not building from the bottom up.

Prof. Phillips—The return in that scenario comes from those companies moving into Australia, investing in exploration, being successful and then developing mineral industries here.

Mr ADAMS—They are not doing that.

Prof. Phillips—They are. There are mines in Australia that are—

Mr ADAMS—Okay; the new exploration, though. Those players are not putting their money back into exploration, or a lot of exploration. I guess that is why we have an inquiry.

Prof. Phillips—You are talking about the last few years.

Mr ADAMS—Yes, and the future. How are we going to get those major players to invest their money in exploration in Australia? We are talking about schemes and taxation to encourage smaller players. We have been told the big players do not want to get into the minor stuff. That is where the little guys come in and the big guys come in later. But how can we get the money or the investment? I have seen your slides, I have seen the scenario, but it is not saying how we do things. It does not give us an answer to how we get that money and that investment.

Prof. Phillips—I am not suggesting this is the only or the complete answer to the impediments to exploration. I am addressing just one way. We heard earlier today that finances are needed and land issues exist. I am just addressing the way we have a track record of investing in R&D and science and getting good value back from this industry. If we continue that, all things being the same, we should get good value back from that investment.

Mr ADAMS—Okay.

CHAIR—I note that you distributed a pamphlet labelled *Retaining Australia's global leadership in exploration*. I put it to you that we possibly have leadership in exploration in the minerals area but not in gas and oil. First, would you comment on that? Second, if you find that has substance, how do we correct that, particularly in regard to oil?

Prof. Phillips—I am talking on the minerals side—

CHAIR—We know that.

Prof. Phillips—As far as the minerals go, we are right up there, if not the leaders, in exploration science and how to do it, recognised around the world. One of the things to note is that the whole worldwide minerals sector is much smaller than the petroleum one. As a producer of oil, gas and so forth, we are still very small on the world stage. It is the quite different balance of what part we play, as opposed to being the world's largest producer or in the top six producers of a whole swag of minerals.

CHAIR—My question then is how do we get up to speed in the area of oil and gas, in your view?

Prof. Phillips—In my view, recognising that that domain is minerals exploration and mining, I would make a generic comment. That is, it would have to be targeted at aspects of Australia. Therefore, we are not trying to be the best in petroleum for everything for the whole world; we are trying to be the best for parts of Australia. As we heard earlier from Geoscience Australia, it is a question of identifying new parts around the coast and offshore. Then as a nation we will try to address whatever issues are specific to those basins.

CHAIR—We are doing very well with gas. Contracted sales are something like 16 million tonnes a year. With oil we are not so flash. Does CSIRO have a division that looks specifically at oil and gas?

Prof. Phillips—CSIRO has a petroleum division.

CHAIR—Any further questions?

Mr TOLLNER—I want to ask a brief one. I can see where you guys are coming from and you have put together a good presentation. Just in regard to impediments to mineral exploration, you have touched on one area. What do you see as the priorities? We continually hear that land access is an issue in Australia. What is the pecking order as you see it? If you were going to knock off one big issue, what would it be?

Prof. Phillips—There are some things that are global in their nature and I do not think we can affect those all that much. That is global cycles and global investment. What we need to do is get a larger piece of the pie, as small as it is at the moment or as it increases. I still see one of the key differentiators for Australia as R&D targeted at aspects of the Australian continent.

Mr HAASE—The regolith exploration that you are carrying out in Australia is cutting edge stuff. Is there any evidence of major discoveries under regolith on other continents?

Prof. Phillips—There would be places in Nevada and West Africa where discoveries have been made under cover.

Mr HAASE—What technology do they use?

Prof. Phillips—It all varies. What we have been talking about this morning is the harder areas further away from outcrop. What is being used there is often, 'Well, we've got a series of deposits here and they're heading off down that way, so we'll just keep drilling that line as it goes under cover.' That is pretty straightforward; that is not too innovative.

Mr HAASE—To your knowledge, is that how discoveries on other continents have been made, by extrapolation?

Prof. Phillips—I know that is the way a lot of discoveries were made in the seventies.

Mr HAASE—Are you aware of anything major overseas where it has been found through a technology of examining, through some process, what is underneath the overburden?

Prof. Phillips—There might be elements of that technology, but the type of thing we are talking about and others have been talking about this morning is really the next step up to harder areas which will suddenly open up a large part of Australia that has been very difficult.

Mr HAASE—A process that you would say would be quite correctly covered by R&D in a perfect world.

Prof. Phillips—I would say very much so, because it is innovative.

Mr HAASE—That is good enough.

CHAIR—Thank you very much for attending today. I thank all the witnesses who have appeared before the committee today. We will meet again on Thursday, 6 March.

Committee adjourned at 1.04 p.m.