

# SUBMISSION

Commonwealth House of Representatives  
Standing Committee on Industry and Resources

## Inquiry into resources exploration impediments

### A Geological Perspective

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# 1 Executive Summary

Geological knowledge can not be overlooked at the expense of market sentiment and economic factors when considering the future of the Australian mining and exploration industry.

Australia must continue to increase its volume of shared geological knowledge and promote the growth of research facilities committed to the geosciences.

By defining the Australian landscape in geological terms, we can confirm the prospective nature of vast areas of land and accurately define its worth to investors. By applying increased geological knowledge we can minimise the risk of exploration and the early-stage costs of exploration programs.

**Only 20% of Australia's prospective rocks have been explored and yet created enormous wealth for this nation.**

The contribution of Australia's mining and exploration companies to the economic development and recognition of indigenous communities is not recognised by government or the broader community. By implementing an incentive based system, leading companies will be rewarded and communities will continue to benefit. A public education campaign should be considered to support such as system, highlighting current and past achievements.

## 2 Introduction

What this submission is not, is a detailed analysis of financial markets, commodity prices and statistics on mining and exploration in Australia over the past century.

What this submission does is present the views of one of Australia's most respected and most successful exploration geologists. Eduard Eshuys is responsible for leading teams that uncovered half of all the gold deposits discovered in Australia in the past 15 years. The submission's perspective is a scientific one and based on a depth of experience and knowledge. It highlights views shared by the majority of Australia's leading geoscientists.

The submission provides information to support the Commonwealth Standing Committee on Industry and Resources Inquiry into resources exploration impediments in Australia.

It provides information in response to four of the eight areas of inquiry identified by the Standing Committee. These are:

1. An assessment of Australia's resource endowment and the rates at which it is being drawn down
2. Impediments to accessing capital, particularly by small companies
3. Public provision of geoscientific data
4. Relationships with indigenous communities

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## An assessment of Australia's resource endowment and the rates at which it is being drawn down

**Current estimates of Australia's mineral wealth are based on only 20% of the total prospective rock types**

The Australian resources industry has witnessed three generations of exploration, distinguished by advances in technology and geological knowledge.

During the first generation of exploration success, extending from the 1850s to the 1960s, rich deposits were discovered in outcrop at the earth's surface. It is during this period that intensive mining was undertaken in regions such as Ballarat, Bendigo, Kalgoorlie, Broken Hill, Mt Isa, Mt Morgan, in the Pilbara of north western Australia (iron ore) and in the \_\_\_\_\_ region of Queensland (bauxite and coal).

The second generation of exploration success commenced with the discovery of the massive Kambalda nickel deposit in the mid-1960s. During this period, deposits such as Olympic Dam, Telfer and, some time later, the 1990s gold deposits of Kanowna Bell, Plutonic, Bronzewing, Jundee and Granny Smith were discovered. The second generation of exploration was characterised by application of geological theories as developed within academic circles. The use of more technical equipment, including the development of soil geochemistry, resulted in more accurate delineation of deposits and enabled information on resource rich regions to be gathered, leading to further exploration success.

We are now at the beginning of a third generation of exploration in Australia. Third generation exploration utilises the vast exploration databases available from government, research institutes and earth science academic institutions. Advances in geology, geochemistry, geophysics, remote sensing and drilling technology are enabling geologists to accurately identify prospective areas and minimise the cost of resource development. For instance, now exploration companies can carry out much deeper exploration at reasonable costs.

Large areas of prospective rocks have not been explored using advanced technology and applying enhanced geological understanding.

The development of Australia's mining industry has been based on discovery of surface out-cropping mineral deposits. The Cooperative Research Centre for Landscape Evolution and Mineral Exploration (CRCLEME) estimates that 70% of Australia is covered by intensely weathered rock and transported overburden (the regolith), or a cover of later sediments, that together conceal the presence of mineralisation. A working understanding of the regolith has only been fully applied by industry in the 1990s. As a consequence, early exploration ineffectively

tested for under-cover mineral deposits. Future exploration has the potential to predict the position of mineral deposits below the regolith.

The resource endowment of Australia remains strong in view of the fact that 80% of the prospective mineralised rocks with the potential to host major deposits are subterranean and covered by younger non-mineralised rock layers.

Expressed differently, Australia's current mineral production and resource wealth is based on only 20% of the total prospective rocks available for exploitation using modern exploration technology and knowledge.

## 4 Impediments to accessing capital, particularly by small companies

**Expert committees are needed to accurately assess the integrity and quality of the proposed exploration expenditure**

The prospective nature of vast areas of the Australian landscape and the country's proximity to rapidly developing Asian economies places Australian resource companies in a fundamentally strong position.

The difficulty of raising capital in Australia, which is compounded by the lack of incentives provided by government in the form of research and development benefits or flow through shares, will no doubt be discussed in detail by other submissions to this inquiry.

This submission aims to draw attention to the fact that success in exploration is not proportionate to the level of expenditure but the quality of scientific and commercial strategies employed by exploration teams.

There exist many examples over the past thirty years where exploration has been ineffective. The reasons for this are:

- Lack of experience among exploration teams
- Insufficient knowledge gathered before commencing the program
- Lack of discipline in the approach wherein analysis is not rigid and decisions are not based on sound geological data
- Multiple exploration activities on tenements where exploration teams repeat the activities of earlier explorers

Any government expenditure, channeled as incentives to individual companies, needs to be reviewed case by case and by expert committees with the capacity to accurately assess the integrity and quality of the proposed exploration expenditure.

Expert committees could provide added value to government and investment markets. Governments need to remain continuously informed of the progress and activities of exploration companies, as a sustained resources industry is an economic imperative for Australia. Investment analysts need access to information from independent experts that clarifies the risk of proposed exploration programs. Qualifying perceived risk would make exploration more attractive to investors.

## 5 Public provision of geoscientific data

**Leading research centres have the ability to achieve much more but require greater funding**

Government and research databases have been consistently developed over the past four decades. The information stored within those databases is invaluable to exploration geologists because it:

- Enhances the ability of geologists to accurately identify and delineate areas for exploration drilling.
- Reduces the time and cost of exploration for smaller companies
- Increases the value of Australia as a target for exploration investment

There are a number of public and privately funded research centres that have the capacity to achieve a much greater breadth and depth of geoscientific research. These centres require increased funding to expedite geoscientific research projects, acquire and utilise leading technology and subsequently provide robust data to resource explorers.

Financial support needs to be maintained for research centres. In specific instances, where excellence has been established in cooperative research centres or government agencies, the government should consider increasing the level of funding (by at least 50%) to provide an incentive for high quality geoscientific research and attract talented researchers.

Organisations providing valuable information to the resource industry include:

- CSIRO
- Universities with strong earth science faculties
- State government geological surveys
- Geoscience Australia



## 6 Relationships with Indigenous communities

### **The contribution of Australian mining and exploration companies to indigenous communities is not recognised**

A significant number of mining and exploration tenements include areas within their boundaries that are recognised Aboriginal land. In some cases isolated Aboriginal communities are resident on prospective tenements.

Legislative changes such as the establishment of the Commonwealth Native Title Act, the NT Aboriginal Land Rights Act, Mabo, and Wik have formed a legal and regulatory framework for adjudication over land rights. As a result of its need to negotiate with Aboriginal communities, the mining and exploration industry is at the forefront of reconciliation and support for the economic advancement of Aboriginal people in Australia.

However, the Australian community does not recognise the significant contribution the mining and exploration industry has made, and continues to make, towards policy debate and the support of Aboriginal communities across Australia.

Governments should provide “bonuses” or incentives to those companies or organisations which demonstrate a long term commitment to Aboriginal people in Australia.

Additionally, there should be a more formal recognition by government and community leaders of the positive contribution that Australian mining companies have made towards indigenous communities. A lack of understanding subsists in the broader community with regards to the relationship resource companies have with indigenous communities. A public education campaign would serve to better inform the community.

Many resource companies would willingly contribute to discussion aimed at developing a realistic and equitable basis for incentives and information for public education campaigns.

## 7 Background of the author

Eduard Eshuys has thirty-five years experience in mineral exploration in Australia. In 1996, he was recognised by his peers for his contribution to geology in Australia and awarded the Geological Society of Australia Joe Harnes medal for distinction in exploration success and project development.

Eduard Eshuys has led the discovery of some of Australia's most famous deposits including the Lady Bountiful Extended, Plutonic, Bronzewing, Jundee, Quarters and Rosemont gold deposits. Plutonic, Bronzewing and Jundee were greenfields discoveries while Lady Bountiful Extended, Quarters and Rosemont were new discoveries within existing fields. All were made within a twelve-year period (from 1986-1998). The combined mineral resource inventory of these discoveries today has been calculated at approximately 25 million ounces.

Eduard Eshuys established a pattern of discoveries early in his career. He led the discovery of important nickel deposits such as the Cawse nickel and cobalt deposit in 1993, Maggie Hay, south of Lake Johnson in 1972 and the Mariners deposit at Widgiemootha south of Kalgoorlie in 1974.

His exploration strategy consists of astute target area selection followed by consolidation of large land holdings and detailed compilation and analysis of continental, regional and past exploration data. He employs strategic drilling after the data analysis stage to test available evidence and preliminary concepts. Once discovered a deposit is aggressively drilled to evaluate and outline the mineralisation.

New Hampton Goldfields Limited appointed Mr Eshuys to the position of Managing Director and CEO in November 1999. His primary directives were the exploration and development of the Jubilee Gold Operations and the acquisition of the Big Bell Gold operations. Mr Eshuys resigned as Managing Director and CEO following the successful takeover of New Hampton by Harmony of South Africa in December 2000.

Eduard Eshuys was an Executive of Great Central Mines Limited, Centaur Mining & Exploration Limited, Johnson's Well Mining N.L., Gutnick Resources N.L., Astro Mining N.L., Quantum Resources Limited and Australian Gold Resources Limited from 1986-1998 and was responsible for all exploration, development and mining operations. Mr Eshuys was an Executive Director of the companies from 1993 to early 1999.

Mr Eshuys worked as a minerals exploration consultant for a number of the major oil companies from 1977-1986. Prior to that he worked for leading global metals and materials group, Union Miniere. Eduard Eshuys is Chairman of ASX-listed Acclaim Exploration NL and Executive Chairman of the National Institute for Metal Exploration Ltd.