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The Inquiry Secretary
House of Representatives Standing Committee on Science and Innovation
R1 Suite 116
Parliament House
CANBERRA ACT 2600

Dear Secretary,

The Australasian Institute of Mining and Metallurgy welcomes the opportunity to make representations to the Inquiry into Business commitment into R & D in Australia.

1. The Australasian Institute of Mining and Metallurgy

The Australasian Institute of Mining and Metallurgy (The AusIMM) has been in existence for 109 years and throughout that time has been the pre-eminent body representing the professionals in the Australasian minerals and supportive industries. Mining Engineers, Geologists and Metallurgists make up the majority of the 7,500 members although there is a growing number of Environmental Scientists and other tertiary qualified professionals. They are employed by mining companies, government, research institutes and universities with an ever increasing number of contractors and consultants based throughout Australia, New Zealand and other overseas countries.

Under The AusIMM Code of Ethics members are committed to take responsibility for the welfare, health and safety of the community at all times before their responsibility to the profession, sectional and private interests or to other members. As a consequence, the members are committed to sustainability of our minerals sector and to enhancing their professional excellence and their industry.

2. Australia is a minerals dependant economy, now and into the foreseeable future

> "Mineral and energy exports have contributed more than $500 billion to Australia's wealth over the past 20 years. In 2000–01 these exports
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> were worth $55.6 billion (up 27% over the previous years). They currently constitute 47 percent of Australia's merchandise exports and 37 percent of total exports including services. They comprise eight of Australia's "top 10" commodity exports.

> As well, roughly $2 billion is earned from the export of high technology mining products and services, and the mineral industry pays around $5 billion in taxes, royalties and transport levies annually to government".[1]
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> The Federal Government acknowledged in 1999, "that the resources industries are the backbone of the Australian economy. Without their contribution of $40 billion to exports, we would be a different country."[2] Yet the sustainability of this contribution is under threat in the absence of Greenfields exploration.

In 2000, Australia was among the top three producers for 10 of the world's most important minerals. Exports have grown from $7 billion AUD in 1980-81 to $55.6 billion in 2000-01. Minerals direct contribution to GDP has been around 9% for the past decade and the sector accounts for just under half of all merchandise exports, which is of enormous significance for an economy often running an international current account deficit. Additionally, we export our professionals' intellectual property. For example, we lead the world in the development of mine planning software now used by at least 70% of all large mines in the world. Minerals and petroleum provide jobs for 83,000 people and generate a further 327,000 manufacturing jobs downstream. Regional Australia, in particular continues to benefit from the resources industry. Mining companies have built 25 towns, 12 ports and 20 airfields since the 1960's.

3. Employment Trends in the Industry!

Despite the mining sector experiencing growth in outputs and exports, the labour force is declining. Although, mineral industry real growth in output is increasing at 4.2% per annum, employment in the mining sector has continued to decrease at a rate of 1.9% per annum since 1994/95 (DISR, 2001). This is due in part to the introduction of new technologies and rationalization and consolidation of companies, to improve their international competitiveness. Mergers and takeovers result in relocations and redundancies, contributing to a declining employment market. In addition, many corporate activities are now being outsourced to consultants and contractors.

The mining sector in 1999 relied on a higher proportion of highly skilled workers, than low skilled workers, and to a lesser amount on middle skill level workers, whilst experiencing an overall declining workforce (DISR, 2001). Whilst the mining sector still relies on highly skilled workers, there are changes occurring within the employment structure. For example, many companies are relying on more technically qualified people with TAFE certificates in practical computer training to operate their systems rather than degree qualified professionals. In addition, land access issues and a bottom-line driven industry, are decreasing the number of geoscientists employed in exploration in favour of increasing shareholder return. If there is no substantial exploration there will be no substantial minerals sector, with severe implications for future sustainability of the industry.

For example, a surplus of degree exploration qualified professionals, means more competition for the reducing number of jobs in the industry, forcing qualified minerals industry professionals to retrain and enter other industries. This loss of qualified people is further exacerbated by other industries such as the IT industry poaching top students with incentives such as on-the-job retraining, guaranteed employment, high salaried, and a perceived more attractive lifestyle. For example, many qualified minerals industry professionals such as mining engineers are attracted to other

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[1] Jacques, L and Huleatt, M – 2002
AusGeo News 64: 3-7

[2] Senator Minchin 1999

subsidiary careers such as finance/banking rather than on site positions. This is attributable to the many factors reducing the overall attractiveness of the industry to qualified graduates such as an increase in long distance operations. This has severe implications for the future sustainability of the industry and therefore the Australian economy.

Another trend is the increasing number of Environmental, Social or Community Affairs, Public Relations professionals employed by the minerals industry. This is related to the increasing pressure from the community for social and environmental responsibility of mining companies and hence maintain a "licence to operate." This negative public image constrains its capacity to influence government, community and attract high calibre graduates (Dept of Education, Training and Youth Affairs, 2001).

4. Globalisation, Centralisation and Sustainability

The two big and fundamental changes now impacting on our industry and its professionals (our members) are the drive for sustainability and the move to consolidation and Globalisation. The AusIMM has constructively addressed the former, by redefining its basic ethical responsibilities and called for an action agenda for exploration to address sustainability. We must now work to reposition and empower these wealth-generating professionals in a globalising industry. The differentiating characteristic of the Institute in the minerals sector is that it is about people and expertise ---intellectual capital--- at a time when this is especially valued by government and community but is not necessarily valued by shareholders. For example, exports of Australian mining related intellectual property totalled over $1 billion in 1999-2000. Other world-class processes include advance electronic blasting, Atomic Absorption Spectrometry, aluminium smelter innovations, Becher process, bioheap bacterial leaching, HISmelt, SIROMELT, Jameson Flotation Cell, P9 Project, robotics processes etc. etc. etc.

However, the human capital in the industry is faced with uncertainty as to the place that the Mineral industry will hold in the future economic development of Australia and whether their experience, skills and talents will be a sought after commodity either locally or internationally.

The rate of consolidations, mergers and acquisitions will not slow down; neither will the calls for sustainability of every part of the Industry in order to get and continue to have a license to operate.

5. Skill Needs to address a changing landscape

In the last half of the year 2000, the AusIMM took the lead in a study funded by DETYA and several major mining corporations to address the question – Are we confident that the minerals industry has the professional staff capability to appropriately position it to meet the demands of tomorrow?[3]

Over 150 professionals were interviewed by the consultants, World Competitive Practices, as to the current challenges facing the industry. In summary, the outcomes were:

- an increasing trend towards globalisation
- an increasing use of new technologies to reduce costs and increase outputs
- commodity prices continuing to fall

[3] Rising to the Challenge – Building professional staff capability in the Australian Minerals industry for the new century. Report prepared by World Competitive Pratices Pty Ltd for DETYA and The AusIMM

- the attractiveness of the industry was decreasing
- there was a lack of shared vision within the industry
- the prevailing culture was not conducive to responding effectively to the challenges
- investors with an increasing focus on short term returns
- an ever increasing squeeze in the capital markets
- restricted and reduced access to land
- an inability to attract and retain the required talent to grow the industry.

Unfortunately, these outcomes did not pick up the many good things, which are occurring in the industry, such as technological developments, environmental performance and emphasis on sustainability and a desired engagement with external stakeholders.

A consensus of observations, however, was distilled into 8 principal findings:

(i) The negative image of the industry constrains its capacity to effectively influence community and government.

(ii) A major repositioning of professional staff competencies is required.

(iii) Existing organisational arrangements and capabilities are under pressure to change.

(iv) It will be difficult to access professional staff of the required capability.

(v) The industry is facing significant external challenges with a real concern about capacity to address them.

(vi) The prevailing culture is not suited to the needs of the future.

(vii) The fragmentation of the industry leads to a lack of shared vision/voice, and

(viii) There is a need for change.

6. What the AusIMM is doing

How does a “traditionally learned” Institute react to the challenges and opportunities created by:

- Globalisation and concentration of the Industry
- The ever increasing calls for sustainable development
- The ever increasing calls for self regulation and ethical behavior on a world wide scale
- The challenges of greater technical innovation and change
- Changing employment practices by international corporations (use of consultants, contractors, level of commitment to employees CPD, International flexibility and recognition of qualifications, FIFO, duty of care, etc)
- The need for more appropriate and effective risk, environment and OH&S management
- Other cost and regulatory pressures.
- Declining commodity prices.

The Institute can react, by supporting and assisting the professionals in the Minerals and related industries, to:

- keep abreast of the latest technological developments and opportunities

- manage and develop their careers whilst successfully managing all compartments of their lives (social, religious, family, health, etc)
- be flexible, transferable and accountable whilst their qualifications, competencies and experiences are recognised world wide
- acquire the broader range of skills to cope with and be successful in the ever-changing environment, particularly to address their emotional intelligence
- accept opportunities to network with fellow professionals in the minerals industry to their mutual advantage
- understand and accept the advantages of embracing diversity
- be aware of issues which may impact on their current and future employment and careers
- take pride in themselves, their profession, their industry, and their employer, to be informed and to speak out in support of all of these
- adhere to codes of conduct supported by ethical processes wherever they practice in the world
- lead passionate and fulfilling lives
- work with other mineral sector stakeholders for an increasingly sustainable minerals sector for Australia.

The Institute is addressing these challenges so that we can provide career support for professionals in the Minerals Industry who are committed to continuing professional development of both themselves and in the broader community in which they work and play. For example, provision of International Conferences, Proceedings and Transactions and International reciprocal recognition of qualifications and competencies.

These opportunities must also be addressed by the Tertiary Education sector as they endeavour to provide graduates which will meet the needs of the Global Corporations wherever they practice. Australia has the opportunity to continue to be the source of professionals for the worldwide Minerals Industry. The AusIMM will play its part to ensure its members are equipped to fill the expectations of those who seek fully qualified Professionals**.**

7. Research and Development

Many of the members of the Institute are actively involved in research and development in corporations, Government, Universities and through joint initiatives. Some are inventors who hold patents directed at improving productivity in the mining industries. Based on their experiences, the following is submitted to the Inquiry.

(i) The R & D drivers in small and medium sized Business

The main driver has to be economic. If a company cannot negotiate the very high risks inherent in R&D activity without the promise of unusually high economic reward, there is every probability that the R&D effort will not be under taken in the first place.

To safeguard a company's economic reward there must be private investment in Intellectual Property and a government regime that recognises the commercial imperatives inherent in the various intellectual property facilities.

From a government perspective it is worth noting the following:-

a) The high risk taken by R&D companies must be respected and recognised by all levels of government as being in Australia's best long-term interest.

b) Governments should then ensure a bipartisan approach is taken with regard to all aspects of public funding issues associated with R&D. These include taxation concessions, and grant allocation. One of the main impediments to

private R&D is the ever-changing government initiatives on the subject. These range from regarding R&D investments as tax lurks to regarding R&D concessions as a budget balancing variable, to regarding it as the essence of "The Clever Country". The reality is that effective R&D needs to be conducted in an atmosphere of consistent policy and positive public recognition. Policy should consistently reflect these needs.

c) The Government "take" on R&D should be eliminated. Currently, the annuity holding charges exacted by the Federal Government compounds at an average rate of 18.1 % pa! There is therefore a supercharging of the patent annuity charge without there being any commercial return to the patent holder. There is also no reason to apply these charges as the government "Take" should come through increased company tax returns following the successful commercialisation of the product.

d) There is a positive discrimination against small business and Trusts when it comes to R&D concessions. Investments greater than $50k are required before a tax concession is eligible and trust companies are not eligible. This excludes the greatest arena of innovative thinking this country has to offer - namely the small independent operator who frequently crystallises the first step in innovative thinking.

e) In controlling the use of public funds for assisting in R&D and for raising the profile of Intellectual Property, government should require that a patent application in good standing, or a granted patent be in place before processing an application for R&D concessions.

(ii) The needs of fast growing companies

Fast growing companies need ready access to funding and resources frequently mortgaging future revenues to achieve the growth. In this environment regulatory certainty is a critical necessity to offset the many normal market vicissitudes which are generally beyond the control of governments.

There is, however, one glaring short coming in almost every government R&D incentive package. This is the general lack of specific recognition for the need of a prototype product. The asset treatment of any R&D hardware is either non existent or complicated by a morass of regulation that seeks to avoid the contention that public funds were used to materially assist in the commercial development of a private business. There needs to be clear government recognition that desk studies are usually the start of R&D not the product, and that the physical product in its various stages of Mark developments is an integral and essential part of a successful R&D profile. Without Mark development stages, R&D investigations usually get pigeon holed. There is a need for physical development products to be easily accounted for in a simple write-off procedure that facilitates the construction of better models - not impedes them. To this end, there needs to be incentive packages or grants that are staged through to commercialisation, but contiguously dependent on the success of the preceding stage of R&D.

(iii) The consideration by which major international corporations site R & D investment

These are usually commercial considerations, but which indirectly encompass;

- availability of an educated workforce.
- consistent and encouraging government policy initiatives.
- ready access to resources including land, buildings, and services.
- competitive commercialisation taxation considerations.
- low sovereign risk environment.
- ethical business environment.

The prevailing R & D culture in a corporate environment can impact on extent and effectiveness of R & D. That is a culture of “shape up or ship out” can be in conflict with a good R & D ethic of “it is OK to be wrong”. In addition, there can be tensions between long term and short term results. In the current competitive business climate, the long term nature of the investment in, and management of, R&D can be difficult to accommodate.

Also some large international mining companies have terminated their R&D programs in exploration in favour of smaller more versatile companies doing their R&D and then they utilise what they can after the commercialisation stage.

Innovation can come from many sources both large and small corporations, Universities, Government and joint cooperation arrangements. With respect to the mining industry it is essential that the Government recognises the importance of the minerals sector and that it relies on leading edge technology and is not an old or sunset low technology industry.

(iv) What would be the economic benefit for Australia from a private sector investment in R & D?

The improvement would be in higher GDP growth and a higher standard of living for all Australians and populations generally. One can look back on the Japanese post war successes and recognise that a large part of their economic miracle can be put down to an open national embrace of R&D. One can only image what place the UK would now occupy in the economic world if they had similarly embraced R&D at that time - given their previously more advanced position with regard to education, finance and corporate maturity.

In Australia, we have particular talents that are of international significance - in the fields of mining, mineral processing, primary industry and biotechnology. There are obvious export potential and balance of payment benefits in successfully commercialising our domestic IP.

(v) What are the impediments to business investment in R & D?

In Australia, the main impediments are founded on a long period of lack of national recognition of the importance of R&D to our society. For example, our sports heroes or artists often gain instant recognition while our technologists are usually inconspicuous. This feature is evident in our various honours lists, 'Australian of the Year' and similar opportunities for national recognition.

(vi) What steps need to be taken to better demonstrate the benefits of higher private sector investment in R & D?

The quickest results will come from a hip pocket impact through well directed and enduring taxation relief.

The aims would be significantly enhanced by various forms of public recognition - an arena in which large corporations are particularly receptive. Possible examples could be 'The Prime Minister's Eleven' of Australia's most notable technologists, or the Large Corporation Award to the company that most assisted an inventor to commercialise their product.

8. Conclusion

The AusIMM thanks Robert Beatty BE (Minerals), F AusIMM (CP), Principal, BOSMIN, and other members of The Institute for their assistance in preparing this submission.

The challenge for the Federal Government is to go beyond getting the macro economic settings right and producing reports about a knowledge economy. The challenge is to attract the major international Corporations to invest in R & D in both short and longer term research in Australia because it is comparatively better to do so and to facilitate the

growth of the smaller companies to ultimately take the place of the previously Australian owned Corporations. The minerals industry is a vital part of the New Economy and R & D is a vital part of the minerals industry.

The Higher Education Review, the Review of the National Priorities, the proposed Action Agenda's whole of Government approach to impediments to and incentives for Exploration are a great start. However, it is now time to turn the rhetoric into actions as outlined above in this submission. We have a great opportunity to attract the global corporations to commit to both their short and long term research in Australia. The multiplier effect on smaller companies and thus employment will then be significant. We must therefore remove the impediments and use incentives to foster increased R & D in Australia.

We would be pleased to further expand on the above or appear before the Committee if the Committee so requires.

Regards,

Don Larkin
CEO – The AusIMM