Australian Geoscience Council Inc.

The Council of Earth Science Societies in Australia

AGC

c/o 15 Jaeger Circuit,
Bruce, ACT 2617
29th January 2008

The Hon Wayne Swan MP,
Treasurer of the Commonwealth of Australia
Parliament House, Canberra

Dear Minister Swan,

Pre Budget Submission 2008
Policy Issue: Funding Mechanisms under the *Higher Education Support Act 2003 (Commonwealth)*

This submission from the Australian Geoscience Council (AGC – see Attachment A) is written in support of the position taken by the Australasian Institute of Mining and Metallurgy regarding university training of geoscientists[1]. However the AGC believes the issue transcends the mineral sciences in that there is a fundamental problem with the way educational polices and funding mechanisms address occupational needs, particularly where relatively small number of graduates (on a national scale) are required to fill vital occupational roles.

As I am sure you are aware the minerals and petroleum industries are facing a critical skills shortage at a time when the opportunities for growth and wealth creation in the sector have never been stronger. A particular concern of the AGC is the supply of geoscientists to industry and AGC's growing alarm at the 'Plight of University Earth Science Education in Australia'.

In 1990[2] there were 28 earth science departments around the country and at the end of 2007 these had reduced to five. The other departments have either closed or been merged (11 departments) with biology, geography, physics, maths or environmental science to the detriment of the maintenance of a supply of appropriately trained earth science graduates. This decade, the number of Honours graduates and students currently enrolled in Honours courses in earth science has more than halved. At the same time geosciences share of national research effort has dropped by 22%[3].

[1] Australasian Institute of Mining and Metallurgy, 'AusIMM PreBudget Submission 2008-09', January 2008
[2] Australian Geoscience Council, "Australian Geoscience Tertiary Education Profile 2007," January 2008.
[3] Federation of Australian Scienctific and Technological Societies, 'Is this what you had in mind? Science and the changing profile of R&D expenditure.' FASTS Discussion Paper 18 June 2007 Part 1&2. www.fasts.org

There is anecdotal evidence that some employers are refusing to take graduates from some universities where the degree in geoscience is not seen as being of an appropriate standard. In other cases companies are willing to employ partly trained graduates to meet their immediate short term needs. Neither case is sustainable – further the supply of graduates to become the teaching professionals of the future is also under threat. The decline in university capability has the potential to exacerbate the supply crisis in the future notwithstanding any current interest by students in geoscience as a career. Honours and sometimes MSc degrees are often required levels for long term careers and specialist roles in the industry. The same skills issues are faced by other employers in geoscience fields addressing Australia's National Research Priorities where there is also a burgeoning demand for geoscientists:

- Mitigation of environmental impacts of resource industries
- Water supply, quality, use and re-use, identifying causes and solutions to land degradation
- Capture and sequestration of carbon dioxide
- Managing and protecting our costal and marine environments
- Enhanced capacity in frontier technologies such as geo-informatics
- Improved data management and protection of critical infrastructure

As stated in the AusIMM 2008-09 Pre-Budget Submission[1]*:*

The steep decline in the number of minerals related courses is largely due to the funding arrangements instituted under the Higher Education Support Act 2003 (Cth). The Act providing funding for Universities on the basis of the number of students enrolled in a particular subject. The per student allocation is based on general assumptions about costs of teaching a subject within a 'cluster', the formula took no account of the differences in course content requirements, infrastructure needs, location or any other course or institution-specific factor. Under this funding formula, small, capital intensive courses such as mining engineering and field and laboratory intensive courses such as geoscience were particularly disadvantaged and for many Universities it was simply not viable to run them.

The 2007 Australian Geoscience Council Summit and survey have confirmed that overall geoscience continues to lose status and visibility through merger of departments and reduction in staffing levels. Many or the sixteen 'geoscience departments' identified as having the capacity to teach geosciences are uneconomic for the universities on a teaching basis. The problem is structural with too few students per teaching academic at current funding levels. Furthermore, differentiation in degree types has emerged where some universities have created 'geoscience degrees' from a blend of geography or environmental courses and traditional earth science subjects of relevance to the resources industry – graduates from these degrees are poorly equipped to meet the requirements of the resources industry.

The reliance on student demand, interacts with the 'economics of universities' to count against universities maintaining courses in disciplines which are high cost and have relatively low numbers of students. Geoscience and other degrees of relevance to the petroleum and minerals industries fall into this category.

Universities themselves are under no obligation to maintain teaching or research areas that are strategically critical to Australia's economy. Once university teaching and research capability declines, it takes an extremely long time before it can be re-built

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There is no national perspective on these issues which are complex. AGC believes the Commonwealth Government should take a national strategic approach to Tertiary educational policies and programs to address occupational needs, such as those for the minerals and petroleum industries, and that funding of university places should ensure that basic occupational needs for these industries are being met. The current funding mechanisms under the *Higher Education Support Act 2002 (Cth)* do not achieve this.

AGC supports the AusIMM's concept in the policy recommendation[1] '*Establish mission-based compacts with …. higher education providers in ……. geoscience to be reviewed on a triennial basis*' and believes it has wider application.

It also strongly agrees with the recommendation *'Review of the funding formula established by the Higher Education Funding Act 2003 (Cth)"*.

Following a summit in September 2007 on the "Plight of University Earth Science Education" and the completion of its survey report[2], AGC will be continuing to address to address all aspects of the problem that is resulting in market failure of the education system to supply an appropriate number of trained geoscientists.

Yours sincerely,

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Attachments
A Australian Geoscience Council – Who are we?

Australian Geoscience Council Inc.

The Council of Earth Science Societies in Australia

AGC

Attachment A

Who are we?

The Australian Geoscience Council (AGC) is the Peak Council of geoscientists in Australia. It represents eight major geoscientific societies with a total geoscience membership of ~9000 comprising industry, government and academic professionals in the fields of geology, geophysics, geochemistry, mineral and petroleum exploration, hydrogeology and geological hazards. The Australian Geoscience Council comprises the Presidents or CEO's of the following professional and learned societies:

- Association of Applied Geochemists,
- Australasian Institute of Mining and Metallurgy;
- Australian Geoscience Information Association;
- Australian Institute of Geoscientists,
- Australian Society of Exploration Geophysicists,
- Geological Society of Australia,
- International Association of Hydrologists (Australian Chapter),
- Petroleum Exploration Society of Australia.

Our Mission

The AGC's mission is to provide a forum in which representatives of geoscientific bodies can cooperate to encourage the development of the earth sciences in the interest of Australia. Geoscience covers the earth sciences, which includes geology, geophysics and geochemistry. This recognizes the vital contribution that the application of geoscience makes to our quality of life and economic prosperity. The objective of the AGC is to represent the broad range of earth science professions, and in particular to provide Australians with a greater appreciation of the economic environmental and cultural values of earth sciences.