

## Review of Australia's Higher Education System

### Submission regarding Terms of Reference

The following is a personal submission from one who returned to Academia after 40 years in the private sector and has witnessed the changes wrought on the University system and the consequent deterioration of the quality of graduates over that period.

Issues that warrant further investigation are highlighted under each of the stated key areas for review by the panel. These concern scientific study in general but with specific emphasis on earth sciences.

#### 1. Meeting Australia's knowledge and skills needs, now and in the future.

*Enhance the delivery of quality education that meets the needs of students across all stages of lifelong learning and develops the skills needed now, and in the future. This will include recommendations for new targets and reforms recognising that more than nine in ten new jobs will require post-school qualifications, and fifty per cent of new jobs are expected to require a bachelor's degree or higher.*

##### Major Issues:

- Market-driven business models adopted by universities are causing critical, but low demand, courses to be dropped.
- Many of these are the 'hard' sciences which traditionally have not attracted high numbers of students and are expensive to equip and deliver
- **There is no national strategic plan for the delivery of tertiary education across the country and few transparent means to measure the quality of courses**
- Unlike secondary education, there are no overall standards set for Australian university science graduates and weak students are granted degrees
- Administrative staff make business decisions based on cost without in-depth knowledge of the specialist subjects they are culling and the effect on the future of Australia's workforce.
- In NSW, both the University of Newcastle and Macquarie University have closed their Earth Science departments in the past 4 years resulting in a brain-drain of specialists out of the country. Of the remaining universities in NSW, our most populous state, only the University of New England offers enough subjects to adequately train a geologist and many of these are offered on-line only. Geophysical training is virtually non-existent in NSW and rare across the country.

##### Comments:

A quality Earth Science degree equips graduates to be employed as volcanologists, economic geologists, earth-systems research geologists, planetary scientists, groundwater managers, geotechnical engineers, quarry managers, exploration geophysicists, seismologists, mineralogists, resource investment managers, insurance risk managers and other less well defined roles.

Specialist knowledge about the way the earth works and how it creates minerals (not just those that are currently 'economic') has unknown applications into the future. Conditions of how rocks and minerals form under the temperatures and pressures of the lower crust and mantle inform research into new materials and thus eventually into everyday technology.

#### 2. Access and opportunity.

*Improve access to higher education, across teaching, learning and research. This will include recommendations for new targets and reforms to support greater access and participation for students from underrepresented backgrounds (including First Nations Australians, those from low socio-economic backgrounds, people with disability, and regional and rural Australians).*

##### Major Issues:

- The majority of students enter university with limited understanding of the options available for study in the sciences
- Longstanding and ongoing reductions in the scope of subjects offered at universities limits students' options
- In the case of Earth Science, it is extremely common for students to discover the subject at university and develop an overriding interest and transfer to graduate with expertise in this area
- If a full breadth of science courses is not offered, 'discoveries' will not happen and the number of broadly trained scientists can only decline to the detriment of the nation

##### Comments:

Research has not yet been undertaken, but anecdotal evidence points to a high percentage of geologists and geophysicists having discovered their interest at university while enrolled in another area of study or even degree. This could equally apply to other specialist scientific subjects.

#### 3. Investment and affordability.

*Explore funding and contribution arrangements that deliver equity, access, quality and longer-term investments to meet priorities in teaching, research, workforce and infrastructure. This will include a review of the Job-ready Graduates Package.*

No informed input here

#### 4. Governance, accountability and community

*Enhance regulatory and workplace relations settings to support universities to meet their obligations to both staff and students.*

*Explore the contribution that higher education makes to the Australian community, national security, and sovereign capability.*

##### Major Issues:

- Casualisation of the academic workforce devalues the high level of skill inherent in researchers and lecturers (the basic product a university offers)
- Short-term contracts deter many talented young people from following an academic career, particularly once they start families
- There is a power imbalance between administrators and academics
- Cost-cutting has increased student to teacher ratios with detrimental outcomes to both parties. Less talented students take up more of lecturers' time.

#### 5. The connection between the vocational education and training and higher education systems

*Explore possible opportunities to support greater engagement and alignment between the vocational education and training (VET) and higher education systems. In particular, the panel will have regard to the experience of students in navigating these systems and ensuring a cohesive and connected tertiary education system.*

##### Major Issues:

- Universities are in competition for students and they have no incentives to collaborate in offering courses
- Ideas for collaboration by academics find many roadblocks to implementation
- University timetables make it difficult for students to traverse between different campuses (except for practical classes, on-line options and better communication between universities can help alleviate this problem)

#### 6. Quality and sustainability

*Examine the challenges faced by domestic and international students and staff due to the COVID-19 pandemic and the temporary and permanent impacts on the way the higher education sector works.*

*Support a competitive and resilient international education sector, reflecting the important role international students play in our society and economy, and Australia's interest in deepening partnerships abroad.*

##### Major Issues:

- Lack of a national strategic plan and transparent means to monitor the quality of courses and graduates to ensure Australia's universities are competitive in the international marketplace

#### 7. Delivering new knowledge, innovation and capability

*Support a system of university research that delivers for Australia, securing the future of the Australian research pipeline, from basic and translational research to commercialisation. In doing so, the Accord will explore relevant initiatives and other opportunities and to further boost collaboration between universities and industry to drive greater commercial returns. The review will synchronise with the ARC review and consider issues raised through that review and other areas of government that impact on the capacity of the higher education system to meet the nation's current and future needs.*

##### Major Issues:

- Recognition that most research is incremental and that 'breakthroughs' are built on the accumulation of these increments
- Designation of key universities in each State to offer specialist science courses (possibly at master level) and associated research critical to Australia's future
- Developing national incentives for universities to work together to deliver courses in critical areas of low demand
- Streamlining of funding proposals and fair distribution of funding between disciplines to minimise time taken to apply
- Development of widespread media programs to explain and attract students to the 'hard' sciences

##### Comments:

The public is fully aware of the need for medical and biological training and research because of direct personal applicability. Other sciences are more opaque and difficult to explain and generate interest. Although quality media presents interesting science programs, it is unlikely they reach a significant audience. Consequently, (and also due to high salaries on graduation) medicine attracts a large number of high scoring students and the lion's share of scientific research funding.

It is not unexpected that high profile professions like engineering, medicine and law are always in demand given the preponderance of TV shows based on these professions.

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