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Crisis in Geoscience education – implications for our future workforce

The Australian Geoscience Council (AGC) holds serious concerns regarding the declining pipeline of STEM graduates—particularly in Geoscience—required to meet rapidly growing global demands for resources across construction, energy systems, electrification, satellite earth observations, and other advanced technologies for climate change-driven hazard mitigation (heat, drought, flooding). A thriving Geoscience graduate pipeline is required for critical sovereign capability, to meet Australia's national challenges and harness future opportunities. In addition to the more traditional elements of the discipline such as geology, geophysics, geochemistry and mineralogy, Geoscience covers aspects of spatial, marine and Antartic sciences, all of which support a secure, ambitious and prosperous nation. Geoscience, which is subject globally to geopolitical tensions, is thus a strategic national capability as well as a very significant sustained contributor to the Australian economy (11% of GDP in 2024).

Since 2019, six Geoscience-focused university departments and degrees/majors have closed and others restructured across Australia. University Geoscience course closures have removed approximately 20% of Australia's university Geoscience teaching capacity, whilst a further 25% of the remaining capacity is either under review, or likely to be reviewed in the near term. The result is that almost half of Australia's pre-2019 Geoscience teaching capacity at risk.

Geoscience course closures are particularly severe in NSW where 60% of teaching capacity has been lost, despite the state accounting for 58% of national Year 12 *Earth and Environmental Science* enrolments. In addition to program closures, many universities have reduced or amalgamated Geoscience courses, resulting in today's graduates having completed substantially less Geoscience-specific training than students who graduated 10–20 years ago, further eroding Australia's national Geoscience capability.

The closure of University Geoscience courses has resulted in diminishing opportunities for students to specialise in key disciplines such as geophysics, geochemistry, hydrogeology, regolith science and geomorphology. This is exacerbating an already critical skills shortage, leading to an industry increasingly dependent on an ageing workforce (Academy of Science, 2025) to minimise the impact of natural hazards and ensure the sustainable utilization of the Earth's resources that are essential to Australia and the global human population more broadly. This is a situation that is not sustainable.

University closures and restructures appear linked to lower enrolments in Geoscience compared with other STEM fields, as well as the comparatively high cost of delivering laboratory- and field-based science degrees. Findings from the AGC-commissioned 2024 Student Drivers Survey show that many high-school students are unaware that Geoscience—and its diverse sub-disciplines—are available study options with a varied range of career opportunities.

Reversing this trend requires significantly increasing awareness of Geoscience as a distinct and compelling pathway beyond Chemistry, Physics, Biology and Environmental Science. Such awareness will increase demand for Geoscience subjects at tertiary level. Early and accurate exposure in primary and secondary school—especially by Years 9–10, when students typically make subject and career decisions—is essential.

Equally important is the need to improve both the quality and depth of Geoscience taught in school science curricula. Teaching students about Earth history, evolution, and the processes that have shaped our planet over 4.5 billion years gives them access to engaging, practical problems that draw on the full range of STEM skills, as well as critical thinking. It also helps students develop a stronger appreciation of society's dependence on the Earth, the ways humans interact with Earth systems, and how climate change is reshaping those systems.

The AGC is committed to advocating for stronger Geoscience education and clear pathways that will rebuild the skilled workforce needed to secure Australia's future resource capability, including the ability to implement natural hazard mitigation strategies in the 21st Century. The AGC supports:

- The development of a national roadmap and strategy to drive community and student understanding of Geosciences, uplift University enrollments and mitigate further Geoscience school closures.
- Targeted support into Primary and Secondary schools, to up-skill teachers and organisations delivering Earth Systems science, and coordinated efforts across already established bodies via an integrated national strategy
- Additional tertiary-to-industry transition pathways that include nationally accredited courses, or funded cadetships and industry placements

Keep, M., Zahirovic S., & Betts, P. 2026, The need for a National Education and Outreach Roadmap, Australian Earth Sciences Convention, Geological Society of Australia, p. 91.

Driscoll, J. 2026, Recruiting the Next Generation: Why High School Outreach Matters for Earth Science, Australian Earth Sciences Convention, Geological Society of Australia, p. 92.