Engineering New Zealand
hello@engineeringnz.org
www.engineeringnz.org

04 473 9444
L6, 40 Taranaki Street
Wellington 6011

PO Box 12 241
Wellington 6144

31 May 2024

University Advisory Group
Ministry of Business, Innovation and Employment

Email: info@uag.org.nz

Tēnā koe

RE UNIVERSITY ADVISORY GROUP – PHASE ONE

Thank you for the opportunity to submit on the University Advisory Group – Phase One consultation. Engineering New Zealand (formerly IPENZ) is the largest professional body for engineers in New Zealand. We support over 23,000 engineers in shaping a better New Zealand. This submission reflects the views of Engineering New Zealand and may not capture the full range of views within the engineering profession.

Our response

Engineering New Zealand welcomes the Government's commitment to maintaining a thriving higher education system for the benefit of all New Zealanders. Our submission focuses on the Group's work as it relates to the training of engineers. Engineers are critical for economic growth and prosperity. Our main points are:

- Long-term university sustainability is crucial for delivering the skill-based education that fuels innovation-led economy and economic growth. This is particularly important as New Zealand faces a shortage of skilled engineers, a post-graduate skills gap, and a disconnect between academia and industry.
- Universities are facing multi-faceted challenges that threaten New Zealand's engineering pipeline. Challenges include the misalignment between the NCEA curriculum and tertiary education, low international student enrolments, underfunded engineering programmes, and rising living costs.

Our submission provides high-level comments, focusing on what the functions of universities should be and the barriers that limit them from conducting that duty.

1. The primary functions of universities

Sustainable universities are key to a skilled workforce and economic growth and the development of solutions to global challenges

Universities need to be sustainable in the long-term to deliver skill-based education that fosters economic growth. New Zealand's university sector is collectively facing unprecedented deficits[1]. The

[1] Tertiary Education Commission. Briefing to the incoming Minister for Tertiary Education and Skills. November 2023.

recent closure of Massey University's Bachelor of Engineering (Honours) programmes highlights the extent of this situation. We are hearing similar struggles from other universities, and we cannot afford to lose more critical programs.

Key engineering firms are struggling to recruit engineers

Engineering New Zealand is aware that engineering firms are struggling to recruit engineers in New Zealand and research shows that recruitment and retention is an ongoing issue, despite the recent short term workforce reductions. We are committed to working with our partners to help address skill shortages and support initiatives to develop, attract and retain a skilled workforce.

Universities are critical to training the future workforce. As the need for engineers grows, we encourage ongoing strengthening of the provision of level 7 engineering training. We also welcome the Group's consideration of flexible options for post-graduate study to support re-training and encourage New Zealanders into advanced engineering degrees to address skill shortages.

We need to bridge the academia-industry gap

We encourage the Group to consider opportunities to incentivise new ways of working. We observe traditional models between academia and industry often creating silos, hindering the effective exchange and transfer of knowledge and expertise between researchers and the private sector. It is our view that the Group's review is an opportunity to consider new partnership frameworks to bridge the gap between the private sector and academia, to help establish and grow new ways of working and to reduce barriers to commercialisation. To enable better academia-industry alignment, we hear that funding mechanisms should be considered. Applied research and partnership models are not recognised or encouraged within the current system.

2. Barriers that limit universities (excluding fiscal)

Misalignment between NCEA and Tertiary Education

We understand there is a misalignment between the NCEA curriculum and university STEM programmes. The current secondary system is failing to prepare sufficient student numbers with the fundamental maths and science knowledge to fill tertiary engineering programmes, resulting in a reduction of qualified applicants. Engineering New Zealand urges the Group to review the interdependencies between the primary and secondary school system and New Zealand's training of engineers. Wherever possible, standardisation of the science and math curriculum is needed.

Furthermore, we understand there is a significant shortage of science and maths secondary teachers, as well as science and maths knowledge in primary school teachers. To address the misalignment between NCEA and tertiary education, more teachers are needed and further support for existing teachers is needed.

Low international student enrolments

New Zealand universities are struggling to attract and retain international students. Enrolment numbers have not returned to pre-Covid numbers, and we are hearing that long visa processing delays are discouraging applicants and hindering enrolments. Additionally, we have heard that in some cases scholarships are being paused due to visa issues affecting the university's budgets. This impacts research outputs and weakens New Zealand's global competitiveness in attracting top talent.

Engineering programmes need greater support

Universities are struggling to fund engineering programmes, as seen by the Massey University closure. Engineering is a professional discipline and training engineers requires tertiary providers to facilitate interaction with practising professionals, including through small group interactions (similar but to a lesser extent as the training for nurses, architects and/or doctors). This service model is costly. Furthermore, teaching engineering requires specific equipment and laboratories.

Although universities have some discretion over their budgets, the current funding model and commercial pressures on universities incentivise the provision of courses that are cheap and profitable to deliver, irrespective of their relevance to NZ Inc. This often diverts resources from engineering to other priorities, hindering these critical programmes. Further, poor salaries for Engineering academics (and academics in general) means it is extremely difficult to recruit and retain high performing staff. This ongoing underfunding threatens New Zealand's supply of skilled professionals needed to deliver infrastructure projects.

Students need greater support

We are hearing that the rising cost of living is affecting students, forcing them to balance their studies alongside their work. This financial pressure is leading to increasing rates of course dropouts, missed classes, and ultimately, fewer students completing their degrees. The impact extends beyond individuals, affecting universities' graduation rates and potentially the future workforce, economic growth and productivity.

Conclusion

Engineering New Zealand recognises the urgent need to address the challenges facing our engineering education system. Challenges include underfunded engineering programmes, curriculum gaps, and an engineering talent shortage. These challenges threaten New Zealand's economic wellbeing and future engineering pipeline. We appreciate the opportunity to contribute to the University Advisory Group's phase one consultation and look forward to collaborating on solutions in the next phase. Please do not hesitate to contact us if you have any questions.

Nāku, nā

Dr Richard Templer **FEngNZ**
Chief Executive