



30 August 2024

University Advisory Group
Ministry of Business, Innovation and Employment

Email: info@uag.org.nz

Tēnā koutou

RE UNIVERSITY ADVISORY GROUP – PHASE TWO

Thank you for the opportunity to submit to the University Advisory Group's Phase Two 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 and are both a regulatory and membership organisation. This submission reflects the views of Engineering New Zealand.

Our response

Engineering New Zealand welcomes the Government's commitment to maintaining a thriving higher education system for the benefit of all New Zealanders. Engineering New Zealand has several roles supporting the education pathway of potential and future engineers. This gives us insights into the system. For instance, we:

- support professional development - offering training opportunities tailored to the needs of engineers and support them throughout their careers
- accredit engineering qualifications to internationally-benchmarked standards
- manage competence standards - set standards and perform assessments that meet international standards for Chartered Memberships and Registrations for Chartered Professional Engineers

Despite the recent economic slowdown, New Zealand faces long-term shortages of skilled engineers. We need at least 2,300 additional engineers per year to keep up with economic growth.¹ Engineering New Zealand is particularly interested in ensuring university reforms help address the long-term skill shortages. Engineering is estimated to contribute between \$14.6 billion and \$18.1 billion for the year.¹

This submission focuses predominately on the Advisory Group's questions on quality assurance and how well degrees meet industry and student needs. Within New Zealand, we need to train engineers to meet New Zealand's current and future needs.

¹ PWC August 2021 Economic Impact of Engineering update: Engineering NZ

The role of accreditation in quality assurance for engineering programmes

Questions 1 and 2

Accreditation of engineering programmes supports quality assurance, but formal recognition is needed

Engineering New Zealand accredits engineering programmes against outcomes-based standards that have been established by the Dublin, Sydney and Washington Accords.² These Accords define global academic benchmarks for entry-to-practice in the engineering profession, ensuring that programmes align with industry needs and meet international standards. Accreditation has a significant role in quality assurance and offers independent verification that engineering programmes meet both academic and professional standards required by the engineering profession.

We hear from university staff and industry representatives how important this external accreditation is to maintain quality and relevance of engineering education and that it is needed to supplement the internal university quality assurance mechanisms. It is a voluntary accreditation programme and yet all universities agree to use it. Our accreditation process involves structured engagement with industry stakeholders and asks for assurance that programme designs reflect the advice of likely employers and target industries. We also require feedback from graduates.

While universities actively engage with the accreditation process, it is our view that the engineering accreditation process should be formally recognised within the future national quality assurance framework. This recognition would encourage further university engagement with professional body accreditation.

Moreover, greater recognition of professional accreditation processes may also provide a mechanism for streamlining the approval process for programme changes. The current system tends to be slow and resistant to change. It is our view that a more agile process would better support more timely adaptation, particularly in rapidly evolving fields like professional engineering.

Strengthening alignment between industry and universities

Questions 5 and 16

Industry advisory committees form part of Engineering New Zealand's accreditation programme, however tools and resourcing to ensure their effectiveness are recommended

We consider our professional accreditation programme, particularly the requirement to establish and maintain an industry advisory committee important for ensuring university programmes align with the needs of the engineering profession³. Industry advisory committees integrate feedback

² Accredited engineering qualifications. <https://www.engineeringnz.org/engineer-tools/ethics-rules-standards/accredited-engineering-qualifications/>

³ Accreditation criteria and documentation requirements. April 2024 (version 4.1). https://d2rjvl4n5h2b61.cloudfront.net/media/documents/ACC_02_Accreditation_Criteria_V4.1_FINAL_10-May-2024.pdf

from employers and industry representatives, helping ensure that education aligns closely with workforce demands.

While groups such as industry advisory boards hold immense value, it is important to consider tools and resourcing requirements to allow opportunities identified by advisory groups/boards to be implemented. We observe that the effective use of industry advisory boards to be challenging in our current accreditation process.

Improving funding alignment for engineering programmes

Question 10

Training engineers is costly, and we know engineering schools are struggling financially to deliver quality education

It is our view that Government should strategically invest in future economic growth by incentivising professional study in critical areas such as engineering. Engineering is a very resource intensive discipline and requires more specialised equipment and laboratories than some other non-engineering degrees. While a higher level of Student Achievement Component (SAC) funding does attempt to recognise these higher costs, we are not always able to see how this funding is spent by universities. We know engineering programmes are under financial strain and they are finding it difficult to sustain the specialised facilities and resources necessary to deliver quality education.

Performance-Based Research Fund must be reassessed

Questions 4 and 13

There are a lot of improvements to be made to the PBRF to help universities connect with industry and support national work

The Performance-Based Research Fund (PBRF) places heavy emphasis on research outputs and publications. Through our experience with professional accreditation, we have observed this emphasis creates barriers to recruiting and promoting staff with valuable engineering industry experience. As a result, applied knowledge, industry collaboration, and teaching excellence (core elements of professional degree programmes) are often sidelined.

It is our view that the PBRF should be revised to equally value applied research, industry engagement and teaching excellence alongside academic publications. We support employment for engineer professionals to work alongside academic staff on research tracks. This would enable for a more balanced approach and allow universities to better attract and retain staff with more diverse, industry-relevant expertise, which will enhance the overall quality and relevance of engineering education.

Additionally, there is opportunity to integrate professional practitioners into academic roles and facilitate collaboration between academics and industry on national projects. We are seeing this happening internationally, with Singapore, Taiwan, and Finland. We recommend expanding on the External Research Income provision within the PBRF to support these collaborations, along with establishing incentives for staff participation in industry projects, would better align with academic

priorities with real-world professional practice. It is our view that these changes would better prepare students for their careers and also address critical industry and societal challenges while ensuring that New Zealand remains competitive in the global engineering landscape.

We asked members of our [Standards and Accreditation Board](#) to provide comment on other opportunities that exist with a review of the PBRF. Some additional comments are as follows:

- Funding allocations for projects of national significance so that universities are involved in key national projects (Singapore, Taiwan, the Netherlands and Finland have similar programmes)
- An extension of the External Research Income fund in the PBRF allowing for additional funding for every dollar universities bring in from industry. This extension would fund start-ups (university staff are currently reluctant to participate in start-ups).
- Introducing further incentives for recruitment of international students. This would attract talent to New Zealand and support diversity within the wider New Zealand engineering profession.

Conclusion

Engineering New Zealand is committed to working alongside Government and universities to uphold and enhance the quality of engineering education. We appreciate the opportunity to contribute to the University Advisory Group's phase two consultation and look forward to seeing your work progress. We also refer you to our [submission](#) in Phase one where we emphasised the challenges of underfunded university engineering programmes and how critical engineering degrees are to our economy. Please do not hesitate to contact us if you have any questions.

Nākū, nā

A handwritten signature in blue ink that reads "R. Templer". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Dr Richard Templer FEngNZ
Chief Executive