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

04 473 9444
L6, 40 Taranaki Street
Wellington 6011

PO Box 12 241
Wellington 6144

14 March 2025

Hon Dr Shane Reti

Parliament Buildings

Wellington, 6160

S.Reti@ministers.govt.nz

Tēnā koe Minister

SCIENCE REFORMS, UNIVERSITIES AND LONG-TERM SKILLS SHORTAGES IN ENGINEERING

Congratulations on your appointments as Minister of Science, Innovation and Technology, Statistics and Universities. We look forward to working with you over this term and supporting your ambitions for a stronger, future-ready New Zealand.

As the country's largest professional body for engineers, Engineering New Zealand represents over 23,000 members. Engineering New Zealand also regulates the engineering profession, as the Registration Authority for Chartered Professional Engineers (Chartered Professional Engineers of New Zealand Act 2002). We are dedicated to advancing science, innovation, and technology to benefit all New Zealanders.

We are keen to meet with you to discuss how we can support your priorities, particularly in ensuring New Zealand has the skilled workforce, research capabilities, and policy settings to drive long-term economic success.

Science, Innovation and Technology

New Zealand's ability to compete globally depends on a strong science and innovation ecosystem. Yet, at 1.45% of GDP, our research and development investment lags behind the OECD average of 3.01%.[1]

[1] Research and development expenditure (% of GDP) - New Zealand | Data

Engineering New Zealand welcomes the Government's commitment to strengthening New Zealand's science system. We need a future-oriented system that targets investment to address critical national needs and gaps in knowledge – and improve New Zealand's productivity.

Role of engineers in the science sector

Engineers play a central role in the science sector. There are a significant number of engineers involved in research across all parts of the sector, both public and private research and development work. Many large organisations involved in R&D have engineers supporting their programmes (i.e. Universities, Scion, Fonterra). Engineers are critical to the application and commercialisation of science.

New Zealand science sector reset

We welcome your recent announcement on funding for natural disaster research in partnership with Japan. This is an example of innovative investment that will use cutting edge research to ensure New Zealand is more prepared and resilient when natural disasters strike. We would support a stronger focus on international research collaborations to provide more opportunities to grow innovation and learn from other countries.

We also support your efforts to grow New Zealand's science sector, through the recent science sector announcements, in particular:

- *a national policy for managing intellectual property for funded research*. Engineering New Zealand is supportive of the principle of enabling researchers to see greater returns and have more ownership of their work, which should help support a thriving industry. We do want to ensure there are robust ways to commercialise this and look forward to seeing the detailed proposals.
- *advanced technologies.* It is great to see the Government embrace and encourage advanced technologies as they provide boundless possibilities. This should be encouraged across the sector and all PRO's.
- *the Prime Minister's Science, Innovation and Technology Advisory Council*. We are strongly supportive of ensuring the Government has access to high quality advice. We have been a strong supporter of the Chief Science advisor role and the value it provides New Zealand.

Engineering New Zealand does however have concerns that the current transition plan is limited. We welcome your efforts to provide certainty for some of the staff at Callaghan Innovation and continuing to fund highly effective parts of the sector. However, there are still a number of affected staff that do not have a clear transition plan.

The lack of certainty for the engineers and researchers will likely result in skilled people leaving the workforce or the country. The engineering profession is already suffering from a long-term skills shortage. We cannot afford to lose more talented professionals. The sector needs a clear and cohesive plan that clearly outlines what happens to each part of the sector when and where each function maps to.

Related to this, we have concerns that the quantum of public funding for the science sector will continue to be reduced. Less funding will inevitably result in less skilled people, and New Zealand needs to invest in engineers and researchers to increase our science and innovation capacity.

Engineering New Zealand is highly interested in the next stage of the reforms. As we believe the funding model needs to change. In particular, we recommend there is more funding certainty and deeper investment. There should be a clearer focus on longer term priorities and endeavours that will build New Zealand's future workforce, meets industry needs and leverage New Zealand's unique place in the world.

University review and integration of science

We welcome the upcoming University Review and hope it will lead to a system that is sustainable, aligned with industry needs and leverages and integrates with the science reforms. 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 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. This service model is costly. Furthermore, teaching engineering requires specific equipment and laboratories.

Additionally, New Zealand's postgraduate education system, while producing graduates strong in foundational knowledge, can struggle to equip graduates with the specialised skillsets required by the evolving needs of our economy. We hope that the University Review outcomes will help bridge this gap and foster stronger collaboration between universities, industry, and end users.

Engineering New Zealand wants to support you to help make New Zealand's university system accessible and effective for learners and thrive in the workforce. Without sustained investment, we risk a growing mismatch between the skills our economy needs and what universities can provide.

AI in engineering

AI is rapidly transforming industries worldwide, driving productivity and innovation across many sectors. It is essential for New Zealand engineers to embrace AI skills to remain competitive and effectively address emerging technological challenges. We thought you might be interested in some of the work we are doing in this space.

Engineering New Zealand is committed to empowering engineers to explore and harness AI's potential. We are working to support our members to use AI responsibly, ethically, and effectively through the development of guidance and training material, including industry fronted webinars and use case studies. An example of this is our most recent webinar in our AI series on Data management and cybersecurity - the safe adoption of AI in engineering practices. Our members are already using AI in ways that could revolutionise ways of working. An example of this is the New

Zealand consulting company Performance Building Technologies. They use laser scanning, drones, UAV and robots to create a 'digital twin' of a building, modelling every component from the pipes and wires to structural beams, enabling building owners to have a complete understanding of their building across its lifecycle, revolutionising building maintenance.

Engineering New Zealand is actively involved in the AI Forum New Zealand's Architecture, Engineering and Construction (AEC) Working Group. Our AI Advisory Committee includes leading industry experts and academia working to build a skilled workforce prepared to apply AI in practical, real-world engineering contexts. Our Engineering and AI programme will help enable the engineering profession to continue to deliver substantial economic and societal benefits in a world where AI innovations are rapidly growing.

Long-term engineering skills shortage

The industry is very concerned about the long-term development and retention of engineers in New Zealand. Historically, New Zealand has needed to rely on overseas talent to fill skill shortage gaps, however in a competitive global market and with New Zealand's difficulties attracting overseas trained engineers, this strategy is no longer fit-for-purpose.

Engineering New Zealand has developed the engineering workforce skills shortage action plan, alongside Waihanga Ara Rau and ACE New Zealand (the Association of Consulting and Engineering) to address the long-term engineering skills shortage challenges New Zealand is facing. The Plan identifies priority areas for intervention, details actions already underway, and highlights where further work is required. We will send you a copy when it is released in early April.

Sparking children's interest in STEM early – the Wonder Project

The engineering profession wants to partner with Government to address these challenges in a future-focussed way. This starts with inspiring children to embrace STEM when it matters most – at school.

The Wonder Project is Engineering New Zealand's free schools programme, designed to inspire rangatahi with STEM. It includes successive programmes aligned to the New Zealand Curriculum, which are fun, hands-on, engaging and accessible so they resonate with all ākonga, and especially girls, Māori and Pacific Peoples. They deliver sustained engagement across the most impressionable years of Kiwi kids' school experience – reinventing their perceptions of STEM when it matters most.

We want to ensure the longevity and continued alignment of the Wonder Project to this Government's priorities. We continue to seek industry sponsors but are concerned at the level of unmet need in schools with nearly 500 teachers on our waitlist in 2024 who we did not have funding to support.

Previous longstanding government support, via Callaghan Innovation, made up 93% of the funding for the programme, but this ended in December 2023. Operation of the programme has since relied fully on industry sponsorship. The success of the Wonder Project needs partnership from the Government. Any support you can give to this work would be most appreciated.

Conclusion

Engineering New Zealand welcomes you to your new portfolios. We know you aspire to make New Zealand a world leader in science, innovation, and education. We share that ambition and would love the opportunity to discuss how Engineering New Zealand can support your priorities and partner with you to achieve them.

Nāku, nā

Dr Richard Templer
Chief Executive