



engineering
new zealand
te ao rangahau

BRIEFING FOR INCOMING MINISTERS

Engineering New Zealand is the professional home for New Zealand engineers and we regulate engineers in New Zealand. We are Aotearoa's strongest and most influential voice on engineering issues, with more than 22,000 members dedicated to engineering better lives for New Zealanders. More than 30 specialist technical groups thrive under our umbrella, advancing and sharing technical knowledge and helping to solve some of Aotearoa's most pressing issues.

WHY DOES ENGINEERING MATTER?

Approximately three percent of New Zealand's workforce are engineers. Engineers work across a huge range of sectors, including building and construction, transport, water, aerospace, food technology, manufacturing, information technology and health.

Engineering New Zealand supports our members across every discipline, through professional development, growing technical knowledge and career progression.

Earlier this year, we released [research by PwC](#) estimating engineering was worth \$15 billion a year to the New Zealand economy:

- If engineering were an industry, it would be roughly the size of the primary sector.
- On average, each engineer contributes \$213,000 to New Zealand's GDP per annum.

Engineers will play a critical role in both New Zealand's economic recovery from Covid-19 and our future growth.

INFRASTRUCTURE PROJECTS MUST BE DEPLOYED QUICKLY

We strongly support the Government's focus on infrastructure to create jobs and support economic recovery. We're encouraged by the Prime Minister's recent comments that the Government is focused on making sure projects are rolling out the door in a timely way.

However, we've heard repeatedly from engineering firm CEOs that they are concerned about the pipeline of work through 2021, especially how quickly shovel-ready projects will translate into actual dollars in the

market. Speedy procurement is essential to retain this skilled workforce before firms have to make hard decisions to manage cashflow. Once engineers are lost to the sector, it's very difficult to get them back.

Long-term planning and coordination of infrastructure development across New Zealand is critical.

[Research commissioned by ACE New Zealand](#) highlights New Zealand's potential \$75 billion underinvestment in infrastructure, created over decades. We would like to see the New Zealand Infrastructure Commission - Te Waihanga taking a leadership role in long-term infrastructure planning. This kind of Government leadership would help buffer industry from the regular boom-and-bust cycles experienced over the last decades. As well as being bad for the economy, boom-and-bust cycles mean people can't choose engineering as a career with confidence. The Commission also potentially has a role in setting infrastructure standards, including for asset management and investment, which would improve accountability and reduce regional disparities.

BETTER PROCUREMENT PRACTICES HELP EVERYONE

As the largest procurer of construction services in New Zealand, the Government sets procurement standards. But optimising outcomes for all stakeholders has been constrained by agencies' management of risk and focus on lowest price rather than "value for money over time". The unbalanced allocation of risk is also making it difficult for engineers and others in the professional services sector to obtain insurance, invest in training, innovation, sustainable practices and health and safety, and in some cases has meant businesses have collapsed. This has led to a culture of mistrust.

The [Construction Sector Accord](#) is working across a wide range of parties to develop trust, improve contract terms and conditions, and ensure value for money is a key project driver. We support this work and have played an active role in the Accord. However, progress needs to continue at pace and commitments made at the top levels of Government need to be matched by action from agencies.

Given the current economic situation, we need rapid improvement on the status quo. A race to the bottom and practices that favour the lowest tenders will result in poor long-term outcomes for everyone. We encourage the Government to expediate the Construction Sector Accord's work and to commit to all-of-Government directives around fair and transparent contracts. A partnership model where risk is well understood and allocated fairly promotes the best outcomes.

CREATING NEW ZEALAND'S FUTURE ENGINEERING WORKFORCE

Many engineering disciplines have long been on New Zealand's skills shortage list. PwC's research estimates we need about 1,500 new engineers every year (under normal circumstances) to support ongoing economic growth. We also need to retain existing engineers and replace the large number of engineers due to retire in the next 5-10 years. Much of the work engineers do is highly specialised and requires years of training and experience.

Covid-19 makes specialist international recruitment challenging but at the same time provides an opportunity to better support workforce development in New Zealand. More certainty on work pipelines would provide employers with the confidence needed to recruit, train and retain employees, especially new graduates. Firms are taking on far fewer graduates this year – anecdotally about half their normal intake – given uncertainty around the work pipeline.

Inspiring kids to see science, technology and engineering's potential

Engineering New Zealand has developed a schools programme to inspire more young New Zealanders to pursue careers in engineering and other STEM fields. The [Wonder Project](#) is primarily funded by Callaghan Innovation and takes young Kiwis on a creative, dynamic and fun STEM journey via three hands-on, student-led programmes designed to fit seamlessly into the New Zealand school curriculum. Each programme is supported by a team of trained Wonder Project Ambassadors – passionate STEM industry professionals – who guide and inspire students. In the past two years, we've touched almost 30,000 Kiwi school kids with our Rocket Challenge and STEM Careers programme – and doubled the number of Kiwi kids wanting to be engineers.

Taking the next step with vocational training

In its last term, the Government introduced sweeping reform of vocational training, which is now being operationalised. This reform presents a strategic opportunity to address engineering skills shortages, support future engineering and technology workforce demand, and better align engineering vocational training with other relevant technology training programmes.

Over the past 15 years, we have championed the development of single national engineering technician and engineering technology qualifications, which are now delivered across institutes of technology and polytechnics. These two qualifications prepare engineers for work in a range of industries spanning multiple Workforce Development Councils. It will be essential that the reforms establish a highly collaborative model able to leverage arrangements already in place.

Advanced training could create more Kiwi specialists

New Zealand could develop more advanced post-graduate training and qualifications to support specialised industries – for example, the rail industry – as long as there's sustainable, long-term demand for these services. This would decrease New Zealand's reliance on the overseas specialist market.

Greater diversity is good for everyone

In 2018, together with the New Zealand Institute of Architects, we launched the Diversity Agenda, which is all about making everyone feel welcome and safe to be themselves in our workplaces. Then, at the start of this year, we launched the Diversity Agenda Accord, which involves our chief executives making an explicit, accountable commitment to their organisation's diversity and inclusion. More than 50 CEs have signed up. We welcome any opportunity to collaborate with Government on improving diversity and inclusion.

IMPROVING THE REGULATION OF ENGINEERS

Engineering New Zealand has been at the heart of legislatively backed, self-regulatory schemes for engineers for nearly 100 years. Currently we're the Registration Authority under the Chartered Professional Engineers of New Zealand Act.

Since the Canterbury Earthquakes Royal Commission's [report](#) was released in 2012, successive Governments have talked about changing the way engineers are regulated. We support change. The current regulatory system for engineers does not enable us to provide the public with sufficient assurance that engineers are competent to practise or appropriately held to account when standards slip, as high-profile failures have demonstrated. We all want a regulatory system that keeps New Zealanders as safe as possible – one that the public and regulators can trust.

Engineering New Zealand extensively consulted our members when MBIE ran a public consultation on regulatory change in 2019. Engineers strongly support a form of licensing for safety-critical work so that the public and regulators have assurance of who is competent to carry out this work, underpinned by professional body membership that supports ethical behaviour, technical learning and professional development.

This work is yet to progress. We will continue conversations with MBIE as it leads policy work on regulatory reform.

However, because we continue to see high-profile failures, continued confusion and an urgent demand from the profession to raise the bar, Engineering New Zealand is now proposing strengthening the Chartered Professional Engineer (CPEng) registration scheme. Rather than wait any longer for regulatory change, we want to improve what's in place now. Our proposals include setting out clear competence requirements for specific disciplines that would raise the bar and make it clear to regulators who should carry out safety-critical work. We opened consultation on our review in on 5 November 2020 and will close it in on 20 January 2021.

BOOSTING NEW ZEALAND'S RESILIENCE BEFORE THE NEXT EARTHQUAKE

The Christchurch earthquakes have taught us a lot about the impacts of New Zealand's regulatory settings for the built environment. Developed over 50 years ago, these settings focus on minimising death and injury. While protecting people should remain central, the Christchurch and Kaikōura earthquakes demonstrated the high economic and social costs of building performance failures. Ideally buildings would suffer limited damage in most earthquakes and quickly return to functionality. This is particularly important for multi-unit, multi-story residential buildings in cities.

Engineering New Zealand is leading a low-damage design programme of work that provides tools for building owners and engineers to collaborate on building design risk. At the same time, the New Zealand Society of Earthquake Engineers, along with Engineering New Zealand, is undertaking work with the Earthquake Commission to develop a framework that articulates performance objectives from a user perspective. The framework is aiming to encompass technical standards above minimum Building Code requirements, to allow greater transparency for building developers on building performance expectations.

We believe failures could be minimised by a dedicated reworking of New Zealand's earthquake design approach and standards. This reworking would inform the future direction of the Building Code, Design Standards (NZS1170.5) and existing building assessment guidelines, as well as the expected performance of lifelines in an earthquake. We encourage the Government to reassess its role in ensuring our buildings can withstand future earthquakes, to increase New Zealand's economic resilience. We would welcome any opportunity to support this work.

WE LOOK FORWARD TO WORKING WITH YOU

Engineers will be fundamental to New Zealand's recovery from Covid-19 and we welcome opportunities to work in partnership with the Government. At the moment we are helping resolve outstanding Christchurch earthquake claims by providing an expert panel for the Greater Christchurch Claims Resolution Service. We're also partnering with MBIE to provide research and develop guidance for areas of the Building Code. And we're working with Waka Kotahi to establish the future state for heavy vehicle certification. These are all long-standing, tricky issues and we appreciate the chance to address them.

This term of Government provides unprecedented opportunity to address long-standing challenges like infrastructure investment, resilient building and engineering workforce growth and regulation. We want to support your work.

We are available to meet with you at any time.