BUILDING PERFORMANCE

Discussion document

A Proposed Occupational Regulatory Regime for Engineers

MAY 2021

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

New Zealand Government

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Submissions process

The Ministry of Business, Innovation and Employment (MBIE) seeks written submissions on the issues raised in this document by 5pm on Friday 25 June 2021.

Your submission may respond to any or all of these issues. Where possible, please include evidence to support your views, for example references to independent research, facts and figures, or relevant examples.

Please use the submission template provided at: http://www.mbie.govt.nz/proposed-occupational-regulatory-regime-for-engineers. This will help us to collate submissions and ensure that your views are fully considered. Please also include your name and (if applicable) the name of your organisation in your submission.

Please include your contact details in the cover letter or e-mail accompanying your submission.

You can make your submission:

- By sending your submission as a Microsoft Word document to building@mbie.govt.nz.
- By mailing your submission to:

Building Policy
Building, Resources and Markets
Ministry of Business, Innovation & Employment
PO Box 1473

Wellington 6140
New Zealand

Please direct any questions that you have in relation to the submissions process to building@mbie.govt.nz.

Use of information

The information provided in submissions will be used to inform MBIE's policy development process, and will inform advice to Ministers on the proposed occupational regulation of engineers. We may contact submitters directly if we require clarification of any matters in submissions.

Release of information

MBIE intends to upload PDF copies of submissions received to MBIE's website at www.building.govt.nz. MBIE will consider you to have consented to uploading by making a submission, unless you clearly specify otherwise in your submission.

If your submission contains any information that is confidential or you otherwise wish us not to publish, please:

- indicate this on the front of the submission, with any confidential information clearly marked within the text
- provide a separate version excluding the relevant information for publication on our website.

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Executive summary

Occupational regulation of a profession aims to protect the public from the risks of an occupation being carried out incompetently or recklessly. While many of New Zealand's engineers are highly professional, our system for regulating the profession is flawed. Too many engineers operate outside of a regulatory regime, it is hard to hold engineers to account when standards slip, and there are no means of ensuring engineers who practise in particularly high risk fields are competent.

There is a risk that substandard engineering work will lead to catastrophic failures, harm to the public, significant economic costs, and damage to the public's confidence in the engineering sector.

We have consulted on reforms to occupational regulation of engineers twice before. Both times we focused on building safety, but consultation told us that risks exist in all elements of engineering. Submitters expressed concerns that government was only proposing to regulate one element of engineering while leaving the public exposed to risks in others.

We are now seeking feedback on a new two-tier regulatory scheme that would affect all professional engineers, overseen by a new regulator.

Under this proposal, all persons providing professional engineering services would need to be registered. This will include engineers working in the major disciplines of chemical, civil, electrical, and mechanical engineering and their subbranches.

Registration will lift the professionalism of the entire profession and provide an avenue for substandard performance and behaviour to be addressed. All registered engineers would be subject to a code of conduct. New continuing professional development obligations would keep engineers' skills up-to-date.

We are also proposing a licensing regime to restrict practise in high risk engineering disciplines. Our proposal is substantially similar to what was proposed in our 2019 consultation. However, we also propose giving the regulator more flexibility to design licensing classes, including determining eligibility criteria and what areas of practice will require a licence.

A new two-tiered regulator would oversee the regime. A regulatory board would report to the Minister for Building and Construction, with the Ministry of Business, Innovation and Employment (MBIE) providing oversight and monitoring. The regulatory board would determine who can be registered, what work needs to be licensed, and investigate complaints. The Minister would have the ability to designate a regulatory service provider to provide all or some of the board's functions. Appeals would be heard by the District Court.

Our proposals would improve the public's confidence in the profession. The proposals would help ensure engineers are competent, behave ethically and can be held to account. Your feedback on these proposals will help us ensure they are workable, add value, and minimise costs to the profession. We ask a series of questions throughout the document and there is a collated list of questions at the end.

Submissions close 5pm Friday 25 June 2021.

Introduction

Engineering encompasses a range of industries that includes on-site practical construction work as well as office-based design and evaluation work. Engineers use maths and science to make things work and solve problems in transport, structures, machines, and the environment.

There is no denying the extraordinary contribution engineers have made to our daily life. The ideas and inventions of Alexander Graham Bell, Thomas Edison, and the Wright Brothers are being felt to this day. However, there have also been some tragic and unforgettable engineering disasters. Poor design, acting on insufficient knowledge, and over- and underestimates are all behaviours that have led to engineering failures.

New Zealand has had its fair share of engineering catastrophes.

In 2011, the CTV Building collapsed, killing 115 people.

The building's failure stemmed from design and construction defects that were hidden until the building was stressed by an earthquake. The Royal Commission of Inquiry into Building Failure Caused by the Canterbury Earthquakes (the Royal Commission) found that the design engineer misrepresented his competence in designing a multi-level building and was not adequately supervised by his senior engineer, saying:

> Mr Harding was working beyond his competence in designing the CTV Building. He should have recognised this, given that he had never designed a building like this before. We also consider that Dr Reay should have realised that this design was pushing Mr Harding beyond his limits given his past experience. The design process led to a building that was under-engineered in a number of important respects[1].

The Royal Commission made 189 recommendations, several of which related to how engineers were being regulated. The Royal Commission recommended creating a new class of engineer with specific prescribed qualifications, competencies and expertise in structural design.

In response to the Royal Commission's report, the Ministry of Business, Innovation and Employment (MBIE) reviewed the occupational regulation of engineers in 2013 and 2014. The review found:

- the regulatory system for engineers did not ensure that commercial and multi-unit and multi-storey residential buildings were designed by people with the right knowledge, skills and competency levels
- engineers were not always held to account when their engineering designs were substandard
- the regulatory system was based on self-regulation without sufficient checks and balances.

[1] Canterbury Earthquakes Royal Commission. (2002). Vol 6, Section 2: Canterbury Television Building (CTV).

Consultation undertaken in 2014

In 2014, MBIE consulted on proposals to reform the occupational regulation of engineers. Our consultation document set out issues with the current system, with a focus on ensuring building integrity. It proposed introducing greater checks and balances on the self-regulation model and restricting some engineering work to a Chartered Professional Engineer registered in an appropriate practice field.

We received 69 submissions, predominately from the engineering profession. Most submitters supported the objectives of the proposals either explicitly or in principle, particularly those that would improve the quality of practitioners and new registrants.

Many submitters agreed that the issues with engineers and engineering practise identified in the consultation document were valid and accurate, but there were differing views on how serious or widespread the issues were. Very few respondents were totally opposed to any reform at all, accepting that some change was needed to the regulatory system, especially to disciplinary processes.

Most supportive responses had caveats around getting the detail right and not creating additional compliance costs for engineers or clients.

Consultation undertaken in 2019

In 2019, we consulted again on proposals to regulate engineers. We proposed a new voluntary certification process that would become a mark of quality for professional engineers. We also proposed introducing a new licensing regime for high risk work and new governance arrangements.

Submitters did not support the voluntary certification proposal, questioning its value. However, there was widespread support for a licensing regime, though many submitters questioned its focus on building safety. We heard arguments that other engineering disciplines have the potential to harm public safety and wellbeing, and therefore should be included in any new regulatory scheme.

We have reassessed occupational regulation of engineers and are consulting again with a new proposal

Since the building failures of the Canterbury earthquakes, there have been other high profile engineering failures in New Zealand, many occurring outside of the building and construction sector. In 2016, over 5000 people became ill due to the contamination of Havelock North's drinking water supply, a third of the township's population. An inquiry into the contamination found poor monitoring and inspection by engineers[2].

Also in 2016, five people were injured after a tuk-tuk rolled in Mt Victoria, a hilly suburb of Wellington. A mechanical engineer had earlier certified the vehicle as satisfying rollover strength and stability requirements when it did not[3].

[2] Government Inquiry into Havelock North Drinking Water. (2017). Report of the Havelock North Drinking Water Inquiry: Stage 1. Available at https://www.dia.govt.nz/Stage-1-of-the-Water-Inquiry

[3] See https://www.engineeringnz.org/news-insights/complaint-upheld-about-tuk-tuk-design/

In response to the feedback we received in 2019, we are now consulting on a proposal with a wider scope, encompassing all professional engineers, not just those in building and construction. We propose compulsory registration for all persons that provide professional engineering services. In line with the 2019 consultation, we propose to require those who practise in high risk engineering disciplines to be licensed. We also propose to establish a regulator to oversee the new regime.

We ask a series of questions throughout the document. Answers to these questions will help us understand whether our proposal is workable, adds value, minimises costs to the profession and consumers, and whether we can make improvements while still meeting our identified objectives. A collated list of questions is at the end of the document.

Part 1: Objectives and problem definition

Our primary objective when designing an occupational regulatory regime for engineers is to give people confidence in the engineering profession and in engineering work by ensuring:

- regulation is proportionate to the risks to public safety and wellbeing
- engineers provide engineering services with reasonable care and skill, including by:
    - practising within their areas and levels of expertise
    - being held to account for substandard work or poor behaviour.

There is a strong case for occupational regulation of engineers

The key objective of occupational regulation is to protect the public from harm that is caused by negligent, reckless or dishonest practise. A regulated occupation typically has restrictions on who can perform certain tasks, and a person usually needs to demonstrate their competence before they can enter a profession. Once admitted to a regulated profession, practitioners are required to maintain specified professional standards.

Practitioners within a regulated occupation benefit from the increased professionalism and skillset of all members, as well as improved public confidence.

While occupations are regulated to raise standards and protect the public, they also impose costs and can 'close shop' to new entrants – potentially driving up prices for consumers. Therefore, the government uses a framework when deciding whether to regulate an occupation[4]. The first step is to determine whether there is a case for intervention by considering the following matters:

1. The potential for significant harm – this covers significant harm to one person or moderate harm to a large number of people. Significant harm that is irreversible (eg permanent disability or death) is more likely to justify intervening than harm that is recoverable.
2. The probability of a harm occurring.
3. Whether the risk to the public is assumed voluntarily or involuntarily.

Potential for significant harm

Many aspects of professional engineering practise have the potential for significant harm as engineers are working with complex designs, structures and machines. Recent engineering failures in New Zealand have resulted in lives lost due to buildings collapsing and drinking water contamination, while others have been injured as a result of poor mechanical engineering (such as the tuk-tuk example).

Overseas, chemical engineering failures in Flixborough (UK) and Bhopal (India) resulted in fatalities. Significant disruptions occurred due to the 2003 Northeast electricity blackout, which affected 55 million people in North America and was attributed to at least 100 deaths.

[4] Cabinet Circular (99)6: Policy Framework for Occupational Regulation. Available at https://dpmc.govt.nz/sites/default/files/2017-03/coc_99_6.pdf

Probability of harm occurring

We do not have good information on the probability of significant harm occurring from poor engineering. A poorly engineered structure or machine may perform adequately until there is an external stress – such as an earthquake. Or there may be a systemic failure that is exacerbated by poor engineering. A catastrophic failure may have several different root causes.

We expect the probability of significant harm occurring from substandard engineering to be low. It is clear though, through the CTV Building example and others, that the consequences of poor engineering can be catastrophic, significantly harming large numbers of people.

Nature of the risk

The nature of the risk in engineering is generally involuntary. Either engineering defects are hidden or the public lacks the expertise to be able to identify issues. People trust that the building they are in will stand up in an earthquake or the complex machine designed by a mechanical engineer is safe.

The government is best placed to regulate engineers

The second step to consider, after establishing the need for regulation, is whether it is appropriate for industry to regulate its own profession or government. There is a case for government regulation when:

- significant harm to consumers or a third party is possible; and
- existing means of protection from harm from consumers and third parties are insufficient; and
- intervention by government is likely to improve the outcomes; or
- the industry is unable to regulate itself because of the costs involved.

We have already established that significant harm to consumers or a third party is possible from substandard engineering. The next section establishes why the existing means of protection from harm are insufficient and the difficulties the industry has in regulating itself. The proposals set out in this document are intended to address these issues and improve outcomes for all New Zealanders.

Problem definition

The current approach to occupational regulation of engineers is not adequately protecting the public

Many engineers are practising outside of an occupational regulatory regime

Despite the complex and important work engineers perform, many engineers are not subject to occupational regulation.

New Zealand has two approaches for occupational regulation of engineers: the co-regulatory approach of the *Chartered Professional Engineers of New Zealand Act 2002* and self-regulation by Engineering New Zealand of its members.

The *Chartered Professional Engineers of New Zealand Act* established the Chartered Professional Engineer (CPEng) title as a protected mark of quality. Engineers wishing to have CPEng status must meet minimum standards, which are reassessed every six years. They are subject to a code of conduct and disciplinary processes.

While CPEng was intended as an overall mark of quality for all engineers, only around 4000 engineers are registered[5]. Many engineers are dissuaded from CPEng membership because of procedural complexities and its perceived lack of value for some engineering disciplines. The mechanical and electrical engineering disciplines each have around 300 engineers registered as CPEng.

Engineering New Zealand also operates a self-regulatory system for approximately 22,000 members. Engineering New Zealand members must agree to a code of conduct and continuing professional development obligations, and are subject to discipline should standards slip.

Both CPEng and membership of Engineering New Zealand are voluntary.

A large number of engineers are not part of either scheme. These engineers are not subject to any checks on their professionalism or competence. They are not subject to a code of conduct and have no requirements to keep their skills up-to-date. They are also not subject to a complaints and disciplinary process, meaning consumers have little ability to complain about their professionalism or competence.

Even if an engineer is subject to a disciplinary process, sanctions are weak. There is no ability to prevent an engineer who has had their CPEng registration or Engineering New Zealand membership suspended or revoked from practising.

We lack good information about how many unregulated engineers there are. Using 2018 Census information on the total number of self-declared engineers, and excluding those that hold Engineering New Zealand membership, we estimate there to be around 14,000 engineers who are not regulated. However, alternative estimates put it as high as 50,000 engineers[6].

We also are unsure of the number of engineers who may be operating at below an acceptable standard. These engineers may be putting the public at risk or risking potentially significant economic costs for their clients. There is no complaints and discipline regime for these engineers that would otherwise help show how the profession is performing.

In the absence of a comprehensive regulatory regime for engineers, other regulators have developed their own checks for engineers working in their areas. Waka Kotahi New Zealand Transport Agency regulates mechanical engineers certified to work on heavy vehicles. There are similar restrictions for some electrical engineers operating under the *Electricity Act 1992*, recreational safety engineers[7], and design verifiers (pressure equipment, cranes, and passenger ropeways)[8].

[5] As at February 2021.
[6] PWC (2020). Economic contribution of engineering: FINAL Report for Engineering New Zealand. Available at https://www.engineeringnz.org/public-tools/big-deal/
[7] Recreational safety engineers inspect amusement devices. They operate under the *Amusement Devices Regulations 1978*, which are made under the *Machinery Act 1950*. Recreational safety engineers are certified by WorkSafe.
[8] Under the *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999*, design verifiers must be certified by WorkSafe.

The public lacks information about who is competent to practise

A practitioner's reputation, qualifications and experience acts as a signal to consumers about whether the practitioner is capable of providing a good quality service. However, the nature of professional engineering services can make it difficult for consumers to determine whether an engineer is suitable. Engineering is inherently technically complex and the need for an engineering service is often infrequent.

Complicating the issue is the lack of protection for the title 'engineer' and the absence of restrictions on entry into the profession. Anyone could potentially call themselves an engineer, regardless of their qualifications or experience. The outcome has been the use of 'engineer' to describe many different occupations.

The widespread use of the title 'engineer', and the absence of checks on a practitioner's qualifications and experience makes it difficult for consumers to know whether an engineer is qualified to practise. The burden falls on the consumer to uncover any adverse information about an engineer's competence.

There are few restrictions on practising in specialised fields

All engineering work carries an inherent risk of significant harm. However, some speciality fields pose a higher risk of significant harm to the public than others. Examples include structural, geotechnical and fire safety engineering.

While some practice fields are restricted under other regimes (such as heavy vehicle engineering or amusement device certifiers), generally there are no restrictions on who can practise in high risk fields. There are also no checks on whether an engineer has sufficient knowledge, skills and experience to competently practise.

Engineering New Zealand members and CPEng have a professional obligation through the Code of Ethical Conduct to only work in their areas of competence. While this provides an avenue for a disciplinary process should an engineer practise outside their area of competence, it does not provide sufficient assurance that all engineers practising in a high risk field are competent.

The current governance structure does not provide sufficient accountability, transparency and independence from the profession

Good regulatory outcomes for any regulatory regime depend not only on well-designed rules and regulations, but also on the way they are applied in practise by regulators. Regulators need to adopt good policies and practises, apply them consistently and be held to account.

Regulators also need to make informed, objective, impartial and consistent decisions to maintain the confidence and trust of the profession and the general public. This, in turn, supports compliance, which is key to achieving good outcomes.

Under the *Chartered Professional Engineers of New Zealand Act*, there are two main entities involved in running the CPEng scheme: Engineering New Zealand and the Chartered Professional Engineers Council (CPEC), a statutory body established under the Act.

Engineering New Zealand is the Registration Authority and is responsible for core regulatory functions that relate to the operation of the CPEng scheme. It is the body that holds the decision-making powers related to registration and discipline.

However, as a private membership organisation, Engineering New Zealand has a potential conflict of interest between its role as Registration Authority and its role as a representative and advocate for its members.

There is some oversight of Engineering New Zealand's performance as the Registration Authority through CPEC. However, at least half of the CPEC Board is made up of members nominated by Engineering New Zealand and the Association of Consulting Engineers of New Zealand[9]. This creates the perception that there is not enough independence between CPEC and Engineering New Zealand to minimise potential conflicts of interest and ensure Engineering New Zealand is held accountable for its decisions.

In addition, mechanisms to ensure Engineering New Zealand's accountability as the Registration Authority are limited. As an incorporated society, Engineering New Zealand is a private entity and the Minister does not have the power to appoint members of its governing board. It is also not subject to the *Official Information Act 1982* or the *Ombudsmen Act 1975*, which are additional checks to ensure accountability and transparency.

This lack of clear separation between the regulator and the profession has been raised as an issue, particularly by representatives of the CTV Families Group and some within the profession. While there may be protocols and processes in place to ensure separation of the regulatory and representative functions within Engineering New Zealand, the perceived conflict of interest remains.

Regulation of engineers is at odds with comparable professions within New Zealand and overseas

The occupational regulatory regime for engineers is at odds with similar occupations in New Zealand. Building practitioners, electrical workers and plumbers, gasfitters, and drainlayers must be registered to practise certain work and 'architect' is a protected title. These occupations are subject to entry restrictions (such as a professional qualification or an examination), and can be subject to disciplinary action. Overseas, there are moves in many jurisdictions to tighten regulation of engineers, such as in New South Wales and Victoria in Australia.

Questions:

1. Do you agree there is a case for occupational regulation of professional engineers? Why do you think so?
2. Have we identified the issues with the status quo correctly? Are there any issues that we have not included?
3. We are unable to verify the number of practising engineers and those who may be operating at substandard levels. Can you suggest information sources for us?
4. What is your perception of the overall performance of engineers? Does your perception depend on the engineering discipline? Do you have examples of poor engineering you can share?

[9] A professional membership body mainly representing companies and firms.

Part 2: Options Identification

Options that have been considered

We considered several options for addressing the issues identified above:

- **Status quo** – this retains the CPEng regime and continues to rely on Engineering New Zealand enforcing standards with its members. This is not the preferred option, as action is clearly required to improve the regulation of engineers.

- **Voluntary certification and licensing** – a new voluntary certification regime would act as a mark of quality for engineers. It would be complemented by a new licensing regime for engineers working in high risk practice fields. This option was consulted on in 2019. It was deemed unsuitable as feedback from submitters indicated little interest in a new mark of quality. It also fails to address the problem of engineers practising outside of a regulatory system.

- **Licence high risk practice fields only** – engineers practising in specific high risk practice fields would need to be licensed. Engineers practising in other fields would not be affected. While this ensures that engineers working in high risk practice fields are competent, it does not address the issues of some engineers practising outside of a regulatory regime.

- **Licence all practice fields** – all engineers would require a licence to work in their practice field. This could mean an engineer needs to hold several licences to practise. This option is unsuitable as it would impose high costs on the profession and it is a disproportionate response to those aspects of engineering that pose a lower risk to public safety and wellbeing.

- **Mandatory registration and licensing for high risk practice fields** – all professional engineers would be required to be registered and work in high risk practice fields would be restricted to engineers licensed in that field. This is our preferred option as it best meets our objectives.

The table below summarises how each option aligns with our objectives.

Table 1: Comparison of options

Objectives	Status quo	Voluntary certification, with licensing in high risk practice fields (2019 proposal)	Licence high risk practice fields only	Licence all practice fields	Mandatory registration for all engineers and licensing for those in high risk practice fields
Engineers are providing engineering services with reasonable care and skill	0 Many engineers can operate outside of a regulatory regime. There are no checks on their competence.	+ Licensing restricts practise in high risk fields. Other engineers can operate outside of a regulatory regime.	+ Licensing restricts practise in high risk fields. Other engineers can operate outside of a regulatory regime.	++ All engineers are covered by a regulatory regime. There are checks on qualifications and competency.	++ All engineers are covered by a regulatory regime. There are checks on qualifications for all practitioners and competency for licensed engineers.
Regulation is proportionate to the risks to public safety and wellbeing	0 The current approach is not adequately protecting public safety and wellbeing.	+ Only engineers working in licensed fields are regulated. Other engineers that may pose a risk to safety and wellbeing are not subject to regulation.	+ Only engineers working in licensed fields are regulated. Other engineers that may pose a risk to safety and wellbeing are not subject to regulation.	- There would be disproportionate and unjustifiable costs to engineers working in lower-risk practice fields	++ The split system ensures all engineers are included in regulatory regime while imposing a higher degree of scrutiny and regulation for high risk practice fields.
Engineers are operating within their areas and levels of expertise	0 There are no restrictions on who can practise in high risk fields. Engineers are not prevented from practising outside of their area(s) of competence.	+ There are restrictions on who can practise in high risk fields. Engineers are not prevented from practising outside of their area(s) of competence in lower risk fields.	+ There are restrictions on who can practise in high risk fields. Engineers are not prevented from practising outside of their area(s) of competence in lower risk fields.	++ Engineers may only practise in fields where they hold a licence.	++ There are restrictions on who can practise in high risk fields. All engineers are bound by a code of conduct, which will require engineers to only practise within their area(s) of competence.

Objectives	Status quo	Voluntary certification, with licensing in high risk practice fields (2019 proposal)	Licence high risk practice fields only	Licence all practice fields	Mandatory registration for all engineers and licensing for those in high risk practice fields
Engineers can be held to account for substandard work and poor behaviour	0 There is no requirement for engineers to be part of a regulatory scheme.	0 There is no requirement for engineers to be part of a regulatory scheme. Only certified or licensed engineers are subject to a complaints and disciplinary process. Other engineers are not subject to any mandatory disciplinary process.	0 There is no requirement for engineers to be part of a regulatory scheme. Only licensed engineers are subject to a complaints and disciplinary process. Other engineers are not subject to any mandatory disciplinary process.	++ All engineers are included in a regulatory regime, including a complaints and disciplinary process.	++ All engineers are included in a regulatory regime, including a complaints and disciplinary process.
Overall assessment	0	+++	+++	+++++	++++++++

Table key: With respect to the status quo

Significant deterioration	Deterioration	No change	Improvement	Significant improvement
--	-	0	+	++

Our proposal

To achieve our objectives, MBIE proposes three key changes to the occupational regulation of engineers. These three changes are designed to address the problems we have identified with the status quo:

1. *Establish a new registration scheme for all engineers to ensure a base level of competence and professionalism*
   This would address the issues of engineers practising outside of a regulatory system and the public lacking information on who is competent to practise.

2. *Establish a new licensing regime to regulate who can carry out or supervise engineering work in specified practice fields that have a higher risk of harm to the public*
   This would address the issue of the few restrictions on who can practise in specialised fields.

3. *Set up a new regulator to oversee the registration and licensing process and investigate complaints*
   This would address the issue of the current governance structure not providing sufficient accountability, transparency and independence from the profession.

The public's confidence and trust in the engineering profession has been impacted by recent high-profile engineering failures. Our proposal would ensure the public has confidence that professional engineers are maintaining the high standards that are expected of them and that any issues are addressed.

Proposal 1: Establish a new registration requirement for persons who practise professional engineering

A comprehensive regulatory regime will give the public greater confidence in professional engineers

MBIE proposes a new registration requirement for all persons who wish to practise professional engineering. This would ensure all professional engineers practise within a regulatory system, with clear expectations about standards of professional behaviour and sanctions for breaches.

Registered engineers would be bound by a code of conduct and be committed to continuing professional development. They would also be subject to a complaints and disciplinary process.

To become registered, an engineer would need to meet certain minimum standards. It would become an offence to practise professional engineering without being registered.

A register of engineers would also give the public access to information on who may provide professional engineering services.

Who is a professional engineer?

For the purposes of this discussion document, our working definition of professional engineer is any person who provides professional engineering services. By this we mean any act of planning, designing, composing, evaluating, advising, reporting, directing, supervising, or managing, that requires the application of engineering principles and judgement and concerns the safeguarding of life, health, property, economic interests, the public welfare or the environment.

We want to capture the intellectual activities of engineering, the application of engineering principles and judgement, and societal interests. We also do not want to exclude emerging engineering disciplines from the regime.

However, we are aware that other occupations also undertake tasks similar to professional engineers, such as electricians or mechanics. A person would need to assess whether they are a professional engineer or not, which would be informed by whether they meet minimum standards for registration (discussed further below).

Question:

5. Does our working definition of professional engineer and professional engineering services adequately reflect the profession? Can you suggest any changes?

All professional engineers would need to be registered

Registration is an effective tool at ensuring new entrants to a profession are suitably qualified and practitioners can be held to account for poor conduct.

We propose to require all persons providing professional engineering services to be registered. This would cover the major engineering disciplines of chemical, civil, electrical and mechanical engineering and their subbranches. Registration would primarily be a standard for professionalism, with engineers needing to meet a minimum standard before becoming registered.

MBIE prefers mandatory registration for two reasons.

First, many aspects of professional engineering practice have the potential to risk significant harm to the public or a consumer. Poor engineering design led to the collapse of the CTV Building in Christchurch. The contamination of Havelock North's drinking water, causing a large proportion of the town's residents to become ill, was at least partially attributable to an engineering failure.

Significant harm can also include economic costs due to disruption of services (such as an electricity outage), remediation costs, and environmental damage.

Submitters told us in 2019 that there are risks associated with engineering fields outside of the building sector. On review, MBIE does not consider it justifiable to regulate one aspect of engineering practice while potentially leaving the public exposed to risk from others.

Second, mandatory registration ensures all professional engineers are subject to a code of conduct, continuing professional development and a complaints and disciplinary process. Currently, engineers can 'opt-in' to these commitments through CPEng or membership of Engineering New Zealand, but there are a number of engineers who operate outside of these regimes. Registration, with its ongoing obligations, has the potential to lift standards and improve the professionalism of all engineers.

The requirement to be registered would be separate to membership of any scheme operated by a professional engineering association.

Other options considered

We considered requiring licensing only for high risk practice fields, such as structural or geotechnical engineering, without registration requirements for other engineers. Other professional engineers, such as mechanical or electrical engineers, would not be included in such a regulatory regime.

We rejected this option as New Zealand has seen fatalities and injuries due to mechanical and civil engineering failures. Risks also exist in the electrical and chemical engineering fields.

While some engineering disciplines pose a lower risk to public safety and wellbeing, it would be difficult to exclude those engineers without being highly prescriptive or risking gaming from practitioners. Our preferred option of mandatory registration for all engineers better meets our objectives than no registration or a licensing regime only for high risk practice fields.

However, we are keen to hear your views about whether there are any engineering disciplines that could be easily excluded from a regulatory regime while not unduly retaining risks to public safety and wellbeing.

Our preferred option of mandatory registration better meets our objectives than no registration or a licensing regime only for high risk practice fields.

Question:

6. Do you agree that the regime should cover all professional engineers? Are there any disciplines that should be exempted and why?

A new title would be created

Registered engineers would be entitled to call themselves *'professional engineer'*. It would become an offence to call oneself a 'professional engineer' without being registered.

Our 2019 consultation also asked for feedback on a protected title for our proposed voluntary regime, which would have introduced the title 'certified' (the voluntary certification regime was discarded). Other suggestions were 'chartered', 'registered' or 'licensed', although a number of submitters also told us there was no need to change.

Question:

7. Do you agree with establishing a new protected title? Do you have a preference for what it is?

Minimum standards must be met before being registered

An engineer would need to meet a minimum standard before being registered.

The regulator would be responsible for setting the minimum standard for registration by way of requirements set out in Rules. These Rules would be developed in consultation with the profession and be approved by the Minister for Building and Construction.

This is the approach taken for registered architects in New Zealand. It gives the regulator the flexibility to change standards in response to the profession's needs. It may mean that over time, the standard required for entry into the profession is adjusted.

At a minimum, MBIE anticipates that a registered engineer would have an engineering qualification and be a fit and proper person. Other jurisdictions, such as Victoria in Australia, require a four-year Washington Accord level degree or equivalent.

MBIE wants the bar for registration to be set at a level that ensures all professional engineers, including those newly qualified, become bound by a code of conduct, continuing professional development requirements and be accountable for their performance and behaviour.

However, we want your feedback on whether professional engineers should have a certain level of experience or demonstrate competence before becoming fully registered.

Other jurisdictions require experience, with developing engineers working under the supervision of a registered engineer. If New Zealand was to just rely on a qualification for registration, and not experience or some assessment of competency, our regulatory regime may not align with international norms and benchmarks. However, requiring engineers to demonstrate their experience and/or competence would increase compliance costs for engineers and the regulator.

We also want to know whether requiring engineers to hold an engineering qualification would exclude engineers that have gained their skills and knowledge through a different pathway – such as by way of an apprenticeship.

Some current engineers could be deemed to be registered as part of transitional arrangements. This is discussed further on page 41.

Overseas engineers would need to be registered to practise unsupervised in New Zealand.

To recognise our Trans-Tasman Mutual Recognition Agreement obligations, engineers registered in Queensland, New South Wales, and Victoria in Australia would be entitled to register in New Zealand without needing to demonstrate their qualifications. New Zealand would also recognise engineers registered in other Australian states and territories if registration schemes are established there.

Questions:

8. Is a qualification enough for registration? Should we also include experience and an assessment of competence?
9. Would limiting registration to those with an engineering qualification (such as a Washington Accord level degree or equivalent) exclude some engineers in the profession? How can we recognise those engineers?
10. Do you engage engineers from overseas? Would requiring them to be registered affect your ability to engage their services? Or would overseas engineers be able to work under the supervision of a local engineer?

Registration will come with obligations

All registered engineers would be subject to a code of conduct, continuing professional development, and a complaints and disciplinary process.

The regulator would be responsible for developing the code of conduct and running the complaints and disciplinary process (discussed further below on page 29).

A code of conduct sets the minimum standards of professional behaviour. A code of conduct can build the public's trust in a profession and establish a common understanding within the profession of what behaviour is acceptable and what is not. Engineers that are CPEng or members of Engineering New Zealand are already subject to a code of conduct[10].

Breaches of the code of conduct can addressed through disciplinary processes.

Registered engineers would be expected to continue their professional development to maintain their skills and knowledge. By maintaining and improving the competency of engineers, continuing professional development is a valuable tool to protect the safety and wellbeing of the public. Continuing professional development is common in other regulated professions, including lawyers, registered architects, and plumbers, gasfitters and drainlayers.

Many professional engineers are already committed to continuing professional development, with Engineering New Zealand members committing to 40 hours a year. The regulator would be able to recognise substantially similar or better professional development schemes from appropriate organisations and membership bodies to prevent unnecessary cost and effort for regulated persons.

Question:

11. Do you agree that all engineers should be subject to a code of conduct and continuing professional development obligations? Please share your reasons if you disagree.

[10] Available at https://www.engineeringnz.org/engineer-tools/ethics-rules-standards/code-ethical-conduct/

A practising certificate would be issued

The regulator would issue a practising certificate to registered engineers. This practising certificate would be used to confirm that registered engineers remain competent and have fulfilled their continuing professional development obligations.

The practising certificate would need to be renewed periodically. Every term, the registered engineer would pay a fee and declare their fitness to practise, the continuing professional development undertaken, and their commitment to a code of conduct. We do not have a view on how frequent the renewal should be and are seeking your feedback.

We prefer this approach to the six-yearly reassessment undertaken as part of the CPEng regime, as a practising certificate better ensures a link to the code of conduct and continuing professional development.

A person could be subject to disciplinary processes for making a false declaration for a practising certificate.

Questions:

12. Do you agree with the proposal for a practising certificate? Do you have any other suggestions for how we can link registration to continuing professional development?
13. How often should an engineer need to renew their practising certificate?
14. Should issuing a practising certificate be contingent on an engineer completing their continuing professional development commitments?

Engineers registered under other regimes

In the absence of a comprehensive regulatory regime for engineers, other regulators have developed parallel systems to ensure engineers are competent and regulated. Examples include heavy vehicle engineers, recreational safety engineers, design verifiers, and some electrical engineers.

Most of these engineers would be able to be accommodated in the new regime. They would become registered and would continue to be assessed by the current regulator unless they are transitioned to licensing in the future (discussed further on page 41).

However, electrical engineers undertaking prescribed electrical work under the *Electricity Act* must be registered by the Electrical Workers Registration Board. An electrical engineer undertaking prescribed electrical work must hold an appropriate qualification and pass a Board-approved exam to be registered. Potentially, such an electrical engineer could be required to hold two registrations. This duplication is unwarranted and unnecessary.

We propose that engineers registered by the Electrical Workers Registration Board are recognised by the new regime. The requirements of the Electrical Workers Registration Board already fulfil most of the objectives of our proposal.

Questions:

15. Should electrical engineers registered by the Electrical Workers Registration Board continue under that regime rather than the new one proposed?
16. Are there other engineering practice fields that should also be recognised for similar reasons? What are they, and why should they be recognised?

Pathways for others in the engineering field

We seek your feedback on whether our proposed reforms should also include people who work in the engineering field but who are not professional engineers. This includes people already registered as engineering associates under the *Engineering Associates Act 1961*, as well as engineering technologists, engineering technicians and engineering geologists.

There have been requests for a broad-based multi-register engineers' regulatory regime for some time, but for various reasons these requests have not been pursued. A single regulatory regime that encompasses the broader engineering profession would ensure all individuals are subject to the same code of conduct, continuing professional development expectations, and a complaints and disciplinary process. Potentially, it could provide a pathway for people who are not professional engineers to become licensed.

If we expanded the scope, we would likely disband the Engineering Associates Registration Board. Its functions would be taken over by the new regulator.

Questions:

17. Should we include engineering associates, engineering technologists, engineering technicians and/or engineering geologists in the new regime?
18. If we expand the scope, should we make registration mandatory for those practising in these additional areas?
19. Is a recognised statutory credential of value for engineering associates, technologists, technicians, and engineering geologists? Why?

Proposal 2: Restrict who can carry out or supervise high risk engineering work

Licensing would regulate the practise of high risk engineering work

Licensing an occupation explicitly prohibits all but licensed persons from offering certain services. Entry to the occupation depends on the person meeting prescribed standards. As there is a barrier to entry, licensing should be reserved for cases where there is a significant risk of irreversible harm.

We consulted on establishing a licensing regime in 2019 that would restrict safety-critical engineering work on buildings of medium to high complexity.

While we had broad support for restricting safety-critical work, with some caveats around implementation and upskilling, we heard concerns about how 'safety-critical' would be defined and how the requirement to be licensed would be triggered. We received examples of recently built simple commercial buildings that would not trigger our proposed test, but because of their poor engineering design would pose a significant risk to their occupants during an earthquake.

We also heard that restrictions should include all specific engineering design and have broader considerations than life safety, as all engineering work has an inherent risk of harm. Submitters identified electrical, water, mechanical, aeronautical, civil, façade, engineering geology (separate from geotechnical engineering), 'process safety' issues in chemical engineering, and weather-tightness as posing risks to life safety.

Certain engineering practice fields would be licensed

We propose to set up a framework to restrict certain engineering practice fields to engineers licensed in that field. For example, an engineer may be required to be licensed in order to practise structural engineering or to certify amusement devices. This would ensure that only competent practitioners with relevant expertise could provide engineering services. It also reduces the risk of consumers choosing a lower cost but poorer quality service.

The framework would enable the Minister to identify licensing classes and to introduce them via regulations. Criteria in primary legislation would set out how a licensing class would be identified.

Regulations gives the Minister more flexibility than primary legislation and better allows licensing classes to be bespoke to the practice field being regulated. It also allows the profession and other stakeholders to help identify practice fields for licensing, determine eligibility requirements and what triggers the need for a licence.

Licensing classes would be prioritised for development based on:

- evidence of risk of significant harm posed by substandard work in the practice field
- readiness of the practice field to be licensed
- speciality practice fields restricted by other regulators that rely on the engineer being registered as CPEng[11].

We heard in 2019 that engineers often work across sectors, and that their skills may encompass several practice fields that may become restricted in the future. It is common in occupational regulatory regimes for practitioners to hold multiple licences. However, how many licence classes an engineer would need to hold to perform their day-to-day work, and how to minimise undue complexity and cost, would be considered when licensing classes are developed.

Questions:

20. Do you support the Minister being able to decide what practice fields should be licensed? Or would you prefer greater certainty by setting out licensed practice fields in the primary legislation?
21. Do you agree with the proposed list of criteria that the Minister would use to prioritise the development of licence classes? Are there other criteria that should be considered?

Offence to practise in a restricted practice field without a licence

Engineers already have a professional ethical obligation to only work within the boundaries of their competency. To reinforce this, it would become an offence to practise in a restricted practice field without a licence.

Unlicensed engineers may practise only under the supervision of a licensed engineer or under a prescribed standard (such as a New Zealand Standard).

[11] An example is design verifiers under the *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999* and recreational safety engineers under the *Amusement Devices Regulations 1978*. Both categories of engineers must be CPEng to be registered as a qualified engineer.

Engineers must meet a higher bar to be licensed

One of the criticisms of the CPEng regime is that it is a generic credential and does not provide clarity about an engineer's area of expertise[12]. There is no standardised assessment for each field or discipline. Candidates supply a self-selected portfolio of work for assessment, which may not represent their overall competence. Nearly all candidates for CPEng are successful.

We want to restrict who can practise in identified, high risk fields to those engineers that have demonstrated they are competent and experienced in that speciality field. The requirements for becoming a licensed engineer would be greater than registration and more specific than what CPEng requires currently.

The regulator would be responsible for determining eligibility requirements for each licensing class. We anticipate that these requirements would vary by licence class and reflect the characteristics of the practice field being restricted.

We prefer giving the regulator the flexibility to determine eligibility as specifications set out in primary legislation can quickly become out-of-date.

Tools available to the regulator could include:

- examination
- evaluation of work
- interviews
- track record
- other matters the regulator considers appropriate.

Question:

22. What sort of eligibility requirements for licensing would provide a suitable level of assurance on an engineer's expertise? Should they differ depending on the practice field?

Assuring the ongoing competence of licensed engineers

CPEng currently requires engineers to be reassessed every six years. This is out of step with other professions and has been acknowledged as not delivering desired outcomes. There have been examples of engineers holding current CPEng registration being involved in high profile failures[13].

As licensed engineers would practise in high risk practice fields, a more suitable mechanism is needed to assure the public these engineers are competent and their skills are up-to-date.

We propose to give the regulator a range of tools to check a licensed engineer's ongoing competency. These tools could include audits of an engineer's work, both randomly selected and in response to complaints, or requiring an engineer to re-sit exams. The tools used to check competency would reflect the licensing class and the level of risk involved.

Questions:

23. Should licensed engineers undergo regular checks of their continued competency?
24. How often should the regulator check a licensed engineers' competency?
25. What tools would be most useful to check competency in your practice field?

[12] See, for example, https://www.engineeringnz.org/engineer-tools/cpeng-review/
[13] See https://www.engineeringnz.org/engineer-tools/cpeng-review/

Adapting the Chartered Professional Engineers framework instead

We want to hear your views on whether you would prefer using a strengthened CPEng regime to fulfil the role of licensing.

Engineering New Zealand and others have suggested CPEng with registration classes or endorsements as an alternative to licensing. Standardised and specific assessments would apply to each CPEng endorsement.

The benefits of using CPEng include adapting a well-known and respected credential, both within New Zealand and overseas. A generic CPEng credential could remain available for those engineers wishing to distinguish themselves with additional endorsements. Such engineers would not be able to practise in a restricted practice field.

Our concern is that retaining a generic CPEng title and introducing endorsements could cause confusion from consumers about what sort of engineer they need. As each CPEng already has a practice field listed, engineers themselves may unwittingly practise in a restricted field in the mistaken belief they are allowed to.

Question:

26. Would you prefer using the Chartered Professional Engineering (CPEng) credential for licensing classes rather than creating a new credential? Why?

Licensing companies rather than individuals

We also considered requiring a company to be licensed instead of individual professional engineers. An engineering project may be a structure or other asset with a long life and involve a team of multi-disciplinary engineers in its development. An upgrade to part of the National Grid or a new power station are examples. If there was a failure some time later, it would be easier to hold the company accountable rather than pinpoint an individual engineer.

The company would be responsible for ensuring that only engineers with suitable expertise worked on a particular project.

We do not prefer this option as licensing an individual ensures that they are competent to practise in a high risk field without supervision. This assurance would come from an independent regulator rather than a company. As non-licensed engineers are able to work under the supervision of a licensed engineer, companies may elect to only seek licensing for certain individuals.

There are also other tools to hold companies and their directors to account, such as under the *Health and Safety at Work Act 2015*.

Question:

27. Do you prefer the option of licensing companies instead of individuals? Why?

Proposal 3: Establish a new two-tiered regulator comprised of an independent regulatory board and a regulatory services provider

New governance arrangements would be needed to oversee the regime

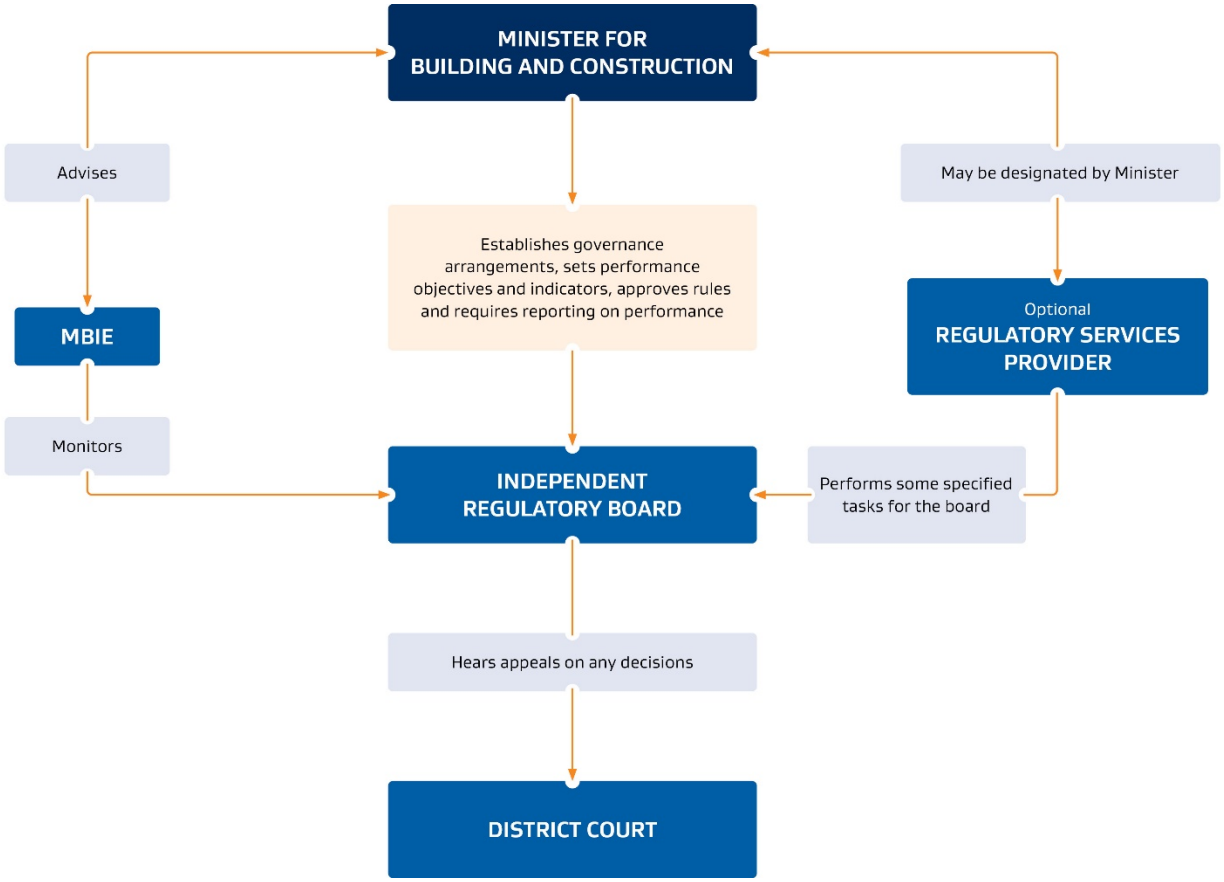
MBIE proposes to establish a new regulatory board to oversee registration and licensing of engineers. The Board would be appointed by and accountable to the Minister for Building and Construction, with MBIE responsible for monitoring performance. The Minister may choose to have the day-to-day services of the regulator provided by a regulatory services provider. The exact form and function of each entity would depend on what decisions are made for registration and licensing.

A new regulatory regime for engineers needs to be rigorous and independent from the engineers it regulates. MBIE proposes four measures that would give the regime the independence and powers it would need:

- an independent regulatory board to administer the registration and licensing schemes
- accountability by the board to the Minister for Building and Construction, including reporting on performance against expectations set by the Minister
- oversight and monitoring of the board by MBIE on behalf of the Minister
- services provided by an expert regulatory services provider accountable to the board.

We also propose to disestablish the Chartered Professional Engineers Council.

Figure 1: Proposed governance and oversight arrangements for the regulator



The board would have new powers and functions

The regulatory board would have the overall responsibility for developing and running the registration and licensing regimes. We propose that it have the following functions:

- proposing new rules for approval by the Minister for Building and Construction and support the development of regulations for registration and licensing
- making decisions on applications for registration and licensing
- holding hearings into complaints
- setting requirements for continuing professional development
- approving a code of conduct
- monitoring the functions and performance of the regulatory services provider (if appointed).

The Minister would appoint a regulatory services provider

The Minister would have the ability to designate who provides regulatory services to the board. The regulatory services provider would the operational arm of the board.

Designating a services provider would be simpler and more efficient than requiring the regulator to recruit its own staff before it could begin to establish the regime.

The functions that the services provider could provide include:

- developing a code of conduct
- establishing and administering the registration and licensing regime
- assessing the eligibility of engineers applying to be registered or licensed
- maintaining public registers of registered and licensed engineers
- monitoring compliance with the rules, standards, and conditions of registration and licensing, and receiving and triaging complaints
- investigating complaints through to a recommendation to the board
- sharing information where needed to protect public safety and wellbeing, in accordance with the *Privacy Act 2020*

The Minister would also have the power to revoke the designation if performance of the services provider is unsatisfactory.

Option 1: Engineering New Zealand could be the regulatory services provider

In 2019, we noted Engineering New Zealand's considerable in-house expertise gained from administering the CPEng scheme.

As the Registration Authority for CPEng, Engineering New Zealand is experienced in managing a registry and already has investigative and disciplinary processes. As the main professional body, it has expert knowledge of the profession, and has already developed professional development programmes and a code of conduct.

Engineering New Zealand could become the regulator's service provider with the board being the final decision maker. Independence would be managed by the Engineering New Zealand staff that perform regulatory functions being directly accountable to the board, and the board being accountable to the Minister.

There is logic in having the professional body for engineers directly involved in the regulation of their profession. But there are some disadvantages, which have been canvassed in Part 1. There is a conflict of interest between Engineering New Zealand's potential role as a services provider and the support and advocacy roles they provide for their members. Even if the actual conflict of interest can be mitigated, there may still be a perceived conflict that could undermine the public's trust in the regulatory regime.

Option 2: MBIE could be the provider

MBIE has experience running registries and undertaking investigations and could serve as the services provider. For example, MBIE provides regulatory services to the Building Practitioners Board and the Electrical Workers Registration Board. There is merit is having the regulation of similar professions in the one agency to allow expertise to build up over time.

However, MBIE currently lacks the specific expertise to run a complex regime relating to engineers. This is particularly the case in regards to the proposed licensing regime. This would not be easy to create from the ground up and would need significant upfront investment.

Other delegations

The Minister could delegate specific functions to other government agencies where appropriate. Waka Kotahi New Zealand Transport Agency and WorkSafe already run de facto registration or licensing schemes for some specific engineers. Should those practice areas become restricted to licensed engineers under the new regime, it may be appropriate for those agencies to continue assessing those engineers.

Questions:

28. Do you agree with the proposed two-tier regulator model of a regulatory board and a regulatory services provider? Are there any other models we should consider?
29. Do you have a preference for who the regulatory services provider should be?
30. Do you agree with the proposed functions of the regulator and regulatory services provider? Can you suggest any different functions?

There will be a robust process to manage complaints and discipline

A robust complaints and disciplinary process will be critical for ensuring engineers, consumers and the public have confidence with the engineering profession. It ensures engineers will be held to account for substandard work or poor conduct.

We consulted in 2019 on a complaints and disciplinary process. We are not proposing any changes to that process but, for completeness, are setting it out again.

Managing complaints and discipline needs to be robust, fair, impartial and transparent to ensure that all parties – engineers, consumers and the wider public – have confidence in the regime. This requires:

- clear separation of discipline functions from those providing services to engineers to mitigate the risks of any conflict of interest
- a person deciding if a standard has been breached be different to the person that takes the complaint to the decision maker.

MBIE proposes that the regulatory services provider would monitor compliance with the standards and rules and receive and assess complaints.

It is not appropriate for the regulatory service provider to make a decision about whether a standard has been breached or impose a sanction for a breach. That role should be given to a person or body independent of the regulatory service provider. This separates out the investigative and adjudicative functions so that the regulatory service provider is not both a prosecutor and a judge.

Two features will help deliver a robust, fair, impartial and transparent process:

- The board, as an independent decision-maker, would make decisions on whether there has been a disciplinary breach and any consequences.
- An appeals process would be available, where a person would be able to appeal to the district court against any decision by the disciplinary decision-maker.

Grounds for discipline would be similar to those of the current CPEng scheme

We have taken the current grounds for discipline of registered engineers under section 21 of the *Chartered Professional Engineers of New Zealand Act* as our starting point and added some grounds for discipline from the Licensed Building Practitioner Scheme in relation to work that has been restricted.

The list below is not exhaustive. We are keen to hear your views if there are other grounds that should be added or if there are any that should be modified or removed.

The proposed grounds for discipline of a registered or licensed engineer are:

- practising in a restricted engineering discipline without appropriate supervision or an appropriate licence
- supervising engineering work in a restricted engineering discipline that they were not licensed to work in
- publicly stating that they can carry out or supervise restricted engineering work that they were not licensed to carry out or supervise
- being convicted of an offence before or after registration that was punishable by term of imprisonment of no less than six months
- breaching the standards of professional conduct
- carrying out engineering services in a negligent or incompetent way
- providing false or misleading information for an application for registration, licensing, or for a practising certificate (for their own application or another person's)
- failing to comply with the terms or conditions of their licence
- misrepresenting their competence or carrying out or supervising work outside their competence.

These proposed grounds were consulted on in 2019, with the majority (72 per cent) of submitters agreeing with them.

Question:

31. Have we missed any other grounds for discipline? Have we proposed grounds for discipline that you think should be modified or removed?

Disciplinary penalties would be in proportion to the breach of discipline

One of the criticisms of the CPEng regime is that penalties do not align with similar professional regulatory schemes. The maximum fine of $5000 is relatively low, and there are no means to prevent an incompetent engineer from continuing to practise due to the voluntary nature of regulation currently.

We propose that breaches of discipline could be subject to a range of consequences, including:

- cancellation of registration or licensing
- suspension of registration or licensing
- restrictions on the type of work the person may carry out or supervise
- censure
- public naming
- an order to undertake training
- an order to pay a fine.

Our 2019 consultation document proposed that maximum fines be set at a level consistent with other proposals that would increase penalty levels in the *Building Act 2004*.

The regime would be funded by fees and levies

The costs of processing and assessing applications for registration and licensing (including renewals) would be recoverable through fees. A separate annual levy would cover costs not directly related to the processing and assessment of applications. These costs would include:

- developing rules and standards
- servicing the registration and licensing functions and monitoring compliance
- investigating and making decisions on disciplinary matters.

The level of fees and levies would be set through regulations (which would involve consultation) and would have to comply with the Treasury's *Guidelines for Setting Charges in the Public Sector* (Treasury guidelines).[14]

Some initial funding would be required from government to set up the regulator and initial frameworks.

More information about the potential costs is available in Part 3: Impact Assessment.

[14] https://www.treasury.govt.nz/publications/guide/guidelines-setting-charges-public-sector-2017-html

Part 3: Impact Assessment

Does the proposal meet the objectives for occupational regulation?

The proposal meets our four objectives for occupational regulation, as set out on page 11.

Regulation is proportionate to the risks of public safety and wellbeing

The proposal would require all persons that provide professional engineering services to be registered.

The proposal would also set up a framework to restrict engineering work that could have a significant impact on health and safety and/or wellbeing by way of a licensing regime. To obtain a licence, an applicant would need to demonstrate they have sufficient experience and expertise to practise unsupervised.

Engineers provide engineering services with reasonable care and skill

Registration would demonstrate professional capability and general engineering competence for those engineers who do not hold a licence.

The licensing requirements would demonstrate an engineer's technical competence in a particular field and remedy a gap in the current system. Licensing will make it clear to the sector – and the public – which engineers are competent to carry out particular work.

Engineers are held to account for carrying out substandard work or poor conduct

The current voluntary regime has low associated penalties. Registration would ensure all engineers can be held to account if their standards slip. A move to licensing will set clear competency-based restrictions and establish offences and penalties for not complying.

Grounds for discipline are set out on page 32. They include:

- breaching the standards of professional conduct
- carrying out or supervising work without being registered or, where appropriate, licensed
- carrying out work in a negligent or incompetent way.

People have confidence in the engineering profession and their work

Many engineers are not part of the current regulatory regime and there are few mechanisms to hold those engineers to account. The current voluntary regime has low associated penalties.

Requiring all engineers to be registered will ensure all engineers are subject to a code of conduct and a complaints and disciplinary process if standards slip. It will ensure all engineers have a base level of competency.

A move to licensing will set clear competency-based restrictions and clear offences and penalties for not complying.

Objectives are consistent with other occupational regulatory regimes

Occupational regulation sets requirements for certain practitioners and restricts who can do certain work. Protecting the public from harm that is caused by negligent, reckless or dishonest practitioners is the key objective of occupational regulation.

The proposed changes would establish a framework to ensure all engineers are competent, take responsibility for their work and behaviour, and are held accountable for poor conduct. This proposal would also bring the profession into line with other comparable professions within New Zealand and overseas. In New Zealand, building practitioners, electrical workers, and plumbers, gasfitters, and drainlayers, must be registered to practise certain work.

Restricting who can do high risk engineering work and establishing a licensing regime will ensure the regulation of engineers is consistent with other occupational regulatory regimes. This approach is also consistent with the framework used when deciding when to regulate an occupation in New Zealand (discussed on page 11).

The proposal is consistent with related government policy and regulations

The proposal is consistent with other government policies intended to improve public safety and wellbeing, including the safety of building users. This includes obligations on designers in the *Health and Safety at Work Act*.

This proposal is similar to the checks other regulators have established in the absence of a comprehensive regulatory regime for engineers. For example, Waka Kotahi New Zealand Transport Agency regulates mechanical engineers certified to work on heavy vehicles. There are similar restrictions for some electrical engineers operating under the *Electricity Act*, recreational safety engineers[15], and design verifiers[16].

Impacts: Costs and Benefits

Key limitations or constraints on analysis

The first step in implementing the proposal for the occupational regulation of engineers is to introduce legislation to establish a regulator and a requirement to be registered and licensed in specified areas of practice.

Under the regulatory framework, we propose that rules, prepared by the regulatory board, and regulations set out:

- the minimum requirements for registration
- the practice areas that would require a licence and the minimum requirements to be met to be eligible to obtain a licence
- continuing professional development requirements.

As these details are uncertain at this stage, it is difficult to determine the exact costs and benefits of the proposed regime.

[15] Recreational safety engineers inspect amusement devices under the *Amusement Devices Regulations 1978*. Recreational safety engineers are certified by WorkSafe and must be CPEng.

[16] *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999* require design verifiers to be registered with WorkSafe and hold CPEng.

The data on complaints about substandard practise or behaviour is also limited as we estimate 14,000 engineers currently operate outside of any of the current occupational regulatory regimes.

This impact assessment highlights the main features of such a scheme to determine what the potential costs and benefits of implementing this scheme could be. For the purposes of this impact assessment, other similar schemes from New Zealand and overseas have been used as a proxy.

Expected costs

The majority of the costs would fall directly on persons wanting to supply professional engineering services. These costs are likely to be passed on to the consumer; however, it is unclear how significant this impact will be on the cost of services.

There would be a cost impact on government as there would be one-off costs to establish the regulator and a register.

The costs of the regime are likely to be funded through a mixture of fees and levies. Actual costs will depend on final decisions on the design and administration and will need to go through a regulatory process, including consultation, and comply with Treasury guidelines.

Obtaining registration and licensing – one off costs

Registration and licensing would require all persons to meet a specified skill standard prior to entry into the occupation or restricted practice field. We anticipate that the main fee for registration would be the application fee.

The application cost for registration is not expected to be as high as obtaining a licence. At a minimum, MBIE anticipates that the regulator would do a paper-based check that the applicant had the appropriate professional engineering qualification and is a fit and proper person.

Licensing would include additional charges to assess the candidate's knowledge and skills. Overseas, this can involve passing an examination, face-to-face assessment, and/or a review of experience, including assessing previous work completed. There may be some ancillary charges, such as paying travel costs for face-to-face assessments when needed.

There may be additional costs for those who have entered the profession in alternative ways, such as by way of an apprenticeship. This would require the regulator to check additional information and they may cost recover any referee checks.

The proposed fees would be set at cost recovery in accordance with Treasury guidelines. Once the exact nature of the application processes are determined by the new regulator, a Cost Recovery Impact Statement would be required.

We propose that certain engineers are deemed as registered or licensed as part of the transitional arrangements (discussed further on page 41). An example is any engineer currently registered in the CPEng scheme or as a member of Engineering New Zealand could be automatically transitioned into the new scheme. Those engineers would not incur the initial costs of registration.

We estimate that around 14,000 engineers are practising outside of an occupational regulatory regime and would be affected by this registration cost, as well as any new entrants into the profession.

Generally, the costs of assessment are likely to be similar to other occupations, where the assessment fees are not less than $1,000 (see Table 2 below). However, this level fee is more likely to reflect the cost of licensing as it will require a more thorough assessment of a person's competency. Registration costs would likely be lower.

Table 2: Summary of fees in similar registration and licensing regimes

Fee type	***Chartered Professional Engineer***	***Registered architect***	***Design licensing class under the Licensed Building Practitioner scheme***
First time assessment	$1,565.00 ($1,215.00 with mutual recognition)	$1,200.60	Ranges from $776.89 to $1012.00
Equivalent knowledge assessment	$1,175.00 (if you do not have a Washington Accord qualification)	$632.50	N/A
Annual fee	$460.00	$724.50	$239.00 (includes the levy amount)

Maintain registration and licensing – ongoing costs

The main ongoing costs for engineers are likely to be associated with:

- an annual fee (if registration or licence has a limited term)
- compliance with continuing professional development requirements.

The potential annual fees could be at the same level that is charged for similar regimes (see Table 2). The exact cost would depend on what is required to maintain registration. If it is simply submitting a record of continuing professional development and making a declaration of compliance with the code of conduct, the annual fees are likely to be much lower.

An annual levy may also be charged to help the regulator recover some or all of the costs of providing or performing functions under the proposed regime, including the funding of disciplinary and prosecution functions. Current regimes that require a levy to be paid include the licensed building practitioners scheme ($123.48 excluding GST) and the plumbers, gasfitters, and drainlayers scheme ($271.00 excluding GST).

The exact nature of the costs for complying with continuing professional development requirements would depend on the nature of those requirements and the number of hours that must be undertaken each year. If an engineer must do accredited courses, costs would be higher. If on the job experience is acceptable, then the costs of compliance would be lower. In addition, the number of hours required for continuing professional development will affect the compliance costs for engineers.

The general compliance costs will be:

- opportunity costs (especially if on the job training opportunities are limited)
- administrative costs of keeping a record of the continuing professional development
- costs of the learning activities themselves.

The compliance costs for Engineering New Zealand members are the opportunity costs of undertaking a minimum of 40 hours continuing professional development each year. There is a requirement to maintain a record of the activities undertaken; however, it is not required to be submitted each year. A member is only required to make an annual declaration but must supply their record of activities if requested.

The New Zealand Registered Architects Board uses a points-based system for continuing professional development. The compliance costs between architects could vary as architects only have to demonstrate "reasonable steps to stay current". A target of 1000 points is suggested, including 100 points each in ethics and professional conduct, legislative changes, and fundamental professional issues such as insurance.

Supply of engineers

There is a risk that the restrictions may limit the supply of engineers who can carry out or supervise engineering work.

Some engineers who could meet the standards to become licensed may not see sufficient value in going through the application and assessment process. This may particularly apply to engineers near the end of their careers. However, we have heard that engineers want to be able to demonstrate their technical competence – something that CPEng does not let them do now – and that the restrictions on engineering work would create market demand for licensed engineers.

Restrictions on engineering work could affect some regional areas where some engineers may be currently doing work outside of their competence under remote guidance from a more specialised engineer.

The risk of a shortage of licensed engineers needs to be weighed against the risks to public safety of engineering work being carried out by engineers who do not have the necessary technical competence. A longer transition period for implementing the new regulatory regime could provide time for engineers currently doing work to be become licensed before the restrictions come into effect.

Direct costs to government

Establishing a new regulator may have a significant one-off cost. However, the ongoing running of the regime would be funded through a mixture of fees and levies. Actual costs would depend on final decisions on the design and administration of the proposed regime and would need to go through a regulatory process, including consultation, and comply with Treasury guidelines.

Expected benefits

Consumers would benefit from higher quality engineering work and a reduction in the time and cost to repair engineering defects. A significant benefit of this proposal will be the improved safety of the general public, who can be involuntarily exposed to engineering failures, such as being a building occupant during an earthquake or as a user of complex machinery.

Other regulators would benefit from this proposal, as several other regulatory regimes rely on engineers. This scheme would strengthen those regimes as there would be greater assurance of an engineer's competence and any substandard work or behaviour can be addressed.

Consumers and the public

The requirement for all persons who practise engineering to be registered would ensure a base level of competency across the profession. Continuing professional development as a condition of registration would ensure engineers' skills are kept up-to-date and relevant, while the code of conduct would promote greater professionalism. Poor performance at any level of the profession would be addressed, giving engineers an incentive to carry out work in a satisfactory way.

These measures combined will lead to improved public safety and wellbeing.

Substandard work would be reduced resulting in fewer defects and engineering failures

Risks of substandard work would be reduced, as engineers can be held to account if they work outside of their competence and/or carry out or supervise substandard work.

There would be strong incentives for licensed engineers to carry out work in a satisfactory way to avoid losing their licence and their ability to work in a restricted field.

The public would benefit from better quality engineering work and safer buildings, infrastructure, and machines, and assurance that engineers can be held to account for poor practice. Ensuring that restricted engineering work has been carried out or supervised by competent engineers with reasonable care and skill would reduce the risk of engineering failure, which can have significant health and safety impacts including illness, injury and in catastrophic failures, fatalities.

MBIE expects that costs from substandard engineering would be reduced for consumers of engineering services. Ensuring work is carried out only by those who have been assessed as competent should result in decreased defects, avoiding repair or replacement costs for consumers.

Other regulators

For other regulators, an occupational regulatory regime for engineers would give them greater confidence that engineers are competent and can be held to account. An occupational regulatory regime would help prevent the proliferation of bespoke, fragmented and potentially conflicting regulatory regimes for particular engineering practice fields.

For building control authorities, an occupational regulatory regime should support a more efficient consenting process. Individual building control authorities would no longer have the need to keep lists of competent engineers. It should also minimise the use of producer statements that councils rely on to minimise their risk.

Having authenticated, competent engineers carry out or supervise work should provide confidence to other regulators that work with a higher level of risk will be carried out with the appropriate level of skill and care.

Other parties

Banks and insurance providers are less likely to face risks associated with substandard engineering work. These proposals should increase confidence as the proposals would make it clear who is competent to carry out particular kinds of engineering work.

Conclusion

Reducing the risk to public safety and wellbeing from engineering failures should outweigh the costs of this proposal. Even if there is a low probability of a failure, when a failure does occur it can have significant, and sometimes fatal, consequences. Preventing just one significant failure that results in fatalities would likely outweigh the costs of the proposed scheme.

It would be clear what types of work are restricted, and when a licensed engineer is needed. Consumers and developers will be able to engage appropriately competent engineers and rely on them. This should reduce risks to public safety, reduce costs of remedying problems and lead to better design work.

Part 4: Implementation

There are some challenges to implementation that will need to be addressed.

It would take time to establish a new regime

MBIE estimates that a transition period to establish the regime in full could take up to six years from when enabling legislation is passed.

We propose that Engineering New Zealand should continue to administer the CPEng regime during this transition period, with oversight by CPEC, to allow the new regulator to focus on establishing the registration and licensing regime.

Establishing the registration scheme is expected to take priority over licensing.

Some of the actions to be completed during this transition period include:

- establishing governance arrangements
- developing a code of conduct and set expectations for continuing professional development
- recruiting any additional staff needed to administer the regime
- developing and implementing processes and systems
- developing regulations to set licensing classes, and the fees and levies for registration and licensing
- developing and approving the competency standards and rules for licensing, and ensuring compliance with existing mutual recognition arrangements
- developing assessment processes and systems, and recruiting assessors
- receiving and assessing applications for registration and licensing.

Automatic deeming some engineers as being registered or licensed

The regulator would have the ability to automatically deem some engineers as being registered.

Some engineers would already meet the eligibility requirements for registration and potentially licensing. For example, if eligibility for registration is dependent only on a professional qualification, then current CPEng and members of Engineering New Zealand have already demonstrated that they satisfy that requirement.

Likewise for licensing, the regulator may choose to recognise a practitioner's experience in lieu of meeting other eligibility criteria.

These would be transitional arrangements and would not affect the requirement for an engineer to obtain a practising certificate.

Questions:

32. Should the regulator have the flexibility to recognise and automatically deem some existing practitioners as registered and/or licensed?
33. Do you have any suggestions for other ways to transition the profession to the new regime?

The future of the Chartered Professional Engineers regime

We propose to disestablish CPEng in favour of the new registration and licensing regime. Licensing will be the new benchmark for competent and experienced engineers working in high risk practice fields. A licensed engineer would need to demonstrate a higher degree of competency than what CPEng currently requires.

Several other regulatory regimes rely on CPEng. These include:

- *Building Act 2004*
- *Fire and Emergency New Zealand Act 2017*
- *Amusement Devices Regulations 1978*
- *Health and Safety in Employment (Pressure Equipment, Cranes, and Passenger Ropeways) Regulations 1999.*

Some consequential amendments to these pieces of legislation would be needed to phase out reference to CPEng.

However, we appreciate that many engineers value CPEng as a mark of quality and for its international recognition. We would like to hear your views about whether you see a role for CPEng in the future.

This paper earlier discussed the possibility of using CPEng with endorsements as future licensing classes (page 27). This would retain the credential, but was not our preferred option as we were concerned that consumers would become confused between CPEng-endorsed engineers and those engineers with CPEng but who do not have an endorsement.

For those engineers where licensing is not an option, and who wish to distinguish themselves from other engineers, Engineering New Zealand's Chartered membership is available.

Question:

34. Should we retain the Chartered Professional Engineer credential in the longer term? If we do, what role should it play?

Recap of questions

The case for intervention

1. Do you agree there is a case for occupational regulation of professional engineers? Why do you think so?
2. Have we identified the issues with the status quo correctly? Are there any issues that we have not included?
3. We are unable to verify the number of practising engineers and those who may be operating at substandard levels. Can you suggest information sources for us?
4. What is your perception of the overall performance of engineers? Does your perception depend on the engineering discipline? Do you have examples of poor engineering you can share?

Proposal 1: Establish a new registration requirement for persons who practise professional engineering

5. Does our working definition of professional engineer and professional engineering services adequately reflect the profession? Can you suggest any changes?
6. Do you agree that the regime should cover all professional engineers? Are there any disciplines that should be exempted and why?
7. Do you agree with establishing a new protected title? Do you have a preference for what it is?
8. Is a qualification enough for registration? Should we also include experience and an assessment of competence?
9. Would limiting registration to those with an engineering qualification (such as a Washington Accord level degree or equivalent) exclude some engineers in the profession? How can we recognise those engineers?
10. Do you engage engineers from overseas? Would requiring them to be registered affect your ability to engage their services? Or would overseas engineers be able to work under the supervision of a local engineer?
11. Do you agree that all engineers should be subject to a code of conduct and continuing professional development obligations? Please share your reasons if you disagree.
12. Do you agree with the proposal for a practising certificate? Do you have any other suggestions for how we can link registration to continuing professional development?
13. How often should an engineer need to renew their practising certificate?
14. Should issuing a practising certificate be contingent on an engineer completing their continuing professional development commitments?
15. Should electrical engineers registered by the Electrical Workers Registration Board continue under that regime rather than the new one proposed?
16. Are there other engineering practice fields that should also be recognised for similar reasons? What are they, and why should they be recognised?
17. Should we include engineering associates, engineering technologists, engineering technicians and/or engineering geologists in the new regime?
18. If we expand the scope, should we make registration mandatory for those practising in these additional areas?
19. Is a recognised statutory credential of value for engineering associates, technologists, technicians, and engineering geologists? Why?

Proposal 2: Restrict who can carry out or supervise high risk engineering work

20. Do you support the Minister being able to decide what practice fields should be licensed? Or would you prefer greater certainty by setting out licensed practice fields in the primary legislation?
21. Do you agree with the proposed list of criteria that the Minister would use to prioritise the development of licence classes? Are there other criteria that should be considered?
22. What sort of eligibility requirements for licensing would provide a suitable level of assurance on an engineer's expertise? Should they differ depending on the practice field?
23. Should licensed engineers undergo regular checks of their continued competency?
24. How often should the regulator check a licensed engineers' competency?
25. What tools would be most useful to check competency in your practice field?
26. Would you prefer using the Chartered Professional Engineering (CPEng) credential for licensing classes rather than creating a new credential? Why?
27. Do you prefer the option of licensing companies instead of individuals? Why?

Proposal 3: Establish a new two-tiered regulator comprised of an independent regulatory board and a regulatory service provider

28. Do you agree with the proposed two-tier regulator model of a regulatory board and a regulatory services provider? Are there any other models we should consider?
29. Do you have a preference for who the regulatory service provider should be?
30. Do you agree with the proposed functions of the regulator and regulatory service provider? Can you suggest any different functions?
31. Have we missed any other grounds for discipline? Have we proposed grounds for discipline that you think should be modified or removed?

Implementation

32. Should the regulator have the flexibility to recognise and automatically deem some existing practitioners as registered and/or licensed?
33. Do you have any suggestions for other ways to transition the profession to the new regime?
34. Should we retain the Chartered Professional Engineer credential in the longer term? If we do, what role should it play?

BUILDING PERFORMANCE

CONTACT DETAILS PO Box 1473, Wellington 6140 | **T** 0800 242 243 | **E** info@building.govt.nz

For more information, visit **building.govt.nz**

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HĪKINA WHAKATUTUKI

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