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Building Policy
Building, Resources and Markets
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A good first step is to target licensing at high risk activities

Thank you for the opportunity of providing our submission on MBIE's discussion document on the proposed Occupational Regulatory Regime for Engineers[1]. We understand and support MBIE's disposition towards setting up the proposed licensing regime because it is critical that the application of engineering knowledge is regarded as a professional activity, to be done by trained and experienced professionals.

Powerco is a privately owned utility company, operating the largest network of electricity distribution lines in New Zealand by geographical area and network size and second largest gas distribution network in New Zealand. We supply about 340,000 electricity consumers in Manawatu, Taranaki, Tauranga, Waikato, Wairarapa and Whanganui, and about 111,000 gas consumers in Hawkes Bay, Hutt Valley and Porirua, Manawatu and Horowhenua, Taranaki and Wellington.

First, the past. The proposal will establish an engineering registration regime with similarities to what was in place for many decades. The Engineers Registration Act 1924 first established the need for engineering professionals to be registered. To become registered, engineers required a recognised qualification and a minimum period of relevant practical experience. Under this act and other public infrastructure acts, the role of engineers was well recognised within the management hierarchies of public infrastructure owners within the electricity and gas supply industries.

Under the legislative reforms of the 1990s, electricity and gas supply organisations became commercial entities and with the passing of the Chartered Professional Engineers Act 2002, the drivers for engineers who work for an infrastructure organisation to achieve a professional or institutional status have become less visible.

[1] https://www.mbie.govt.nz/have-your-say/proposed-occupational-regulatory-regime-for-engineers/

Separating individual and organisational accountabilities is key

The proposed registration and licensing arrangements need to be capable of distinguishing between individual accountabilities of engineers from the organisational accountabilities delegated within a management hierarchy. In the infrastructure context, it is not clear how risk accountability would be shared between licensed engineers and Boards of Directors. The Energy Companies Act 1992 requires directors to be ultimately accountable for infrastructure performance, and it is up to the entity to decide how the people in its organisation are best trained. Within the electricity and gas supply industries, audited public safety management systems create another layer of accountability.

In this context, the encouragement of asset management system thinking within infrastructure organisations could achieve many of the improvements envisaged in the discussion paper. With varying degrees, “engineering failures” by infrastructure asset owners often stem from organisational shortcomings.

Amongst infrastructure organisations, asset management systems can provide high value for governance and accountability, effective decision making and sustainability, effective customer service, risk management and financial performance. In the energy sector, the Commerce Commission routinely reviews the asset management practices of electricity[2] and gas distributors. These could be a useful vehicle for parties to demonstrate how they are achieving the outcomes described in the consultation paper.

Infrastructure asset management requires engineering within all life cycle stages of long-life infrastructure assets. The regime should not focus on one life cycle stage without considering the others. Each asset life cycle stage requires application of different engineering specialisms extending through concept planning, design, commissioning, maintenance and operational phases, to decommissioning and disposal. Most public and worker safety hazards revolve around legacy or aged assets.

For professional engineers, it is suggested that separate registration arrangements could be created for engineering technologists, engineering technicians and engineering geologists, and that legal protection be applied to each of the terms. An engineer registration and licensing regime will not provide full coverage against engineering failures. “Engineering failures” occurred during the previous times of engineer registration (Ruahihi dam collapse and Wheao canal failure are two examples) and will no doubt happen again in the future. Likewise, the nature of risk management means that risks can, in practice, never be controlled to zero.

If implemented, assessments must be completed quickly

For the proposal to be effective the process of engineer registration and licensing assessments must be timely - they can’t take too long. CPEng assessments are currently taking many months, often longer than one year to complete even for experienced engineers. The assessment bottleneck seems to be because of a lack of assessors, and this problem may not be easily solved.

Ideally registration of engineers and membership of Engineering NZ should be symbiotic, closely interacting so that the engineering profession is upheld and the assessment process is undertaken as efficiently as possible. The electricity supply industry is facing de-carbonisation challenges that appear as if they will result in electrification demand increases.

[2] https://comcom.govt.nz/regulated-industries/electricity-lines/electricity-distributor-performance-and-data/review-of-asset-management-practices/review-of-asset-management-plans

Our concern is that assessment uncertainty or time delays could create additional barriers to delivering the outcomes customers and the Government are seeking.

Merit in a balanced approach to risk and responsibilities

It seems that a key driver for the change is to address engineering activities that have serious potential health and safety consequences if poorly delivered. Many engineers work in roles that do not have the potential for serious health and safety consequences, and an appropriate balance needs to be struck that identifies the specific engineering activities that have high risk consequences and requires engineers that have responsibility for those activities to be licensed.

Thank you for the opportunity to provide feedback on the proposed engineer licensing framework. Powerco generally supportive of the proposal and we would be happy to engage further with MBIE on the design and implementation. Attachment 1 contains our specific answers to the discussion paper questions. Please contact me (Andrew.kerr@powerco.co.nz) if you have any questions about our submission.

Yours sincerely

Andrew Kerr

Head of Policy, Regulation, and Markets

Attachment 1: Question responses

Item	Question	Response
1.	Do you agree there is a case for occupational regulation of professional engineers? Why do you think so?	We agree in principle with establishment of an occupational regulation of professional engineers to provide the public with greater accountability. Industry representative associations should be involved in its development.
2.	Have we identified the issues with the status quo correctly? Are there any issues that we have not included?	Most issues are identified, but not all issues are identified fully. 1. There will likely be practicalities and time lags associated with becoming registered or licenced. If licencing is a higher bar than CPEng, then assessment, in particular adequate numbers of assessors, could be problematic. Obtaining CPEng involves preparing statements of an engineer's prior experience, which in practice can take around three days for an engineer to compile. But it is evident that there are also few numbers of CPEng assessors, leading to long time delays for assessment. 2. If the intent is to license individuals rather than organisations, the paper does not articulate how accountabilities would be assigned to asset owner organisation directors or to engineers who work within the organisation. 3. Within the electricity and gas supply sectors, the Electricity Safety Regulations and Gas Safety and Measurement Regulations require asset owners to have audited Public Safety Management systems in place. How engineer accountabilities would work in a PSMS context is a point for consideration. 4. Within infrastructure organisations, the application of good asset management techniques has a large influence on the quality of engineering outcomes. Section 1.2 of the International Infrastructure Management Manual presents several benefits of implementing an asset management system within infrastructure organisations. The benefits are well aligned with the problems presented in the discussion paper. Maturity of asset management is an organisational context worth considering.
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?	Some engineering associations like Engineering NZ or Electricity Engineers Association might be able to help with numbers. One of the difficulties is that the public loosely applies the term "engineer". The term "engineer" includes many sub-professional work classes, encompassing trade qualified people who fulfil an engineering role, or those with a Level 5 or 6 qualification, that historically would have been called engineering technician, engineering associate or engineering officer.

Item	Question	Response
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?	Generally performance is fit for purpose. The electricity and gas sectors work under legislation that governs how engineering work is implemented. Industry associations like the EEA and NZIGE provide industry guidelines. Engineering NZ manages the complaints process for engineers and would have the best information on poor engineering. Sometimes the needs of the principal drive engineers to apply solutions that don't have an appropriate balance between cost, performance and risk. Engineers are human and, in common with other professions, they work within the limitations of their own experience. Networks of peer support are important. The electricity and gas supply industries have become more fragmented over time, which has created an environment where it is difficult to obtain broad experience, particularly hands on experience. The organisational context within which engineers work is an important factor affecting the quality of engineering outcomes. Within infrastructure sectors, poor engineering outcomes may be driven from inconsistent or unclear organisational direction. Perhaps the approach proposed seems to be suggesting that engineers should perform an organisational conscience function, moderating the organisational outcomes within which they work. "Engineering failures" often stem from organisational shortcomings. For example, the Havelock North Drinking Water Inquiry report contains many pages describing organisational issues, and comparatively little content devoted to the engineering consultants who undertook bore assessments for the District Council incompetently.
5.	Does our working definition of professional engineer and professional engineering services adequately reflect the profession? Can you suggest any changes?	Within the electricity and gas supply sectors, the proposed definition encompasses tasks that are currently fulfilled by many trade qualified and sub professional (with Level 5 or Level 6 qualifications) people. This seems inconsistent with the discussion document's intention of "meeting a higher bar to be licensed". We believe that different levels of engineer should be recognised including professional engineer, engineering technologist and engineering technician. The focus on application of engineering principles and judgement for balancing public safety hazards against other stakeholder needs is relevant to the role of professional engineer.

Item	Question	Response
6.	Do you agree that the regime should cover all professional engineers? Are there any disciplines that should be exempted and why?	The registration regime should cover all disciplines but the regulator should be able to provide exemptions under certain conditions. There is a case for extending registration coverage to include certain IT professions due to cyber security risks and their possible interaction with critical electrical protection and control systems. We think licensing should be more targeted to those engineering activities that are specifically identified as “high risk”. A more general classification of engineering activities as high risk of say, design of gas assets, would create inefficiencies that could compromise normal operations.
7.	Do you agree with establishing a new protected title? Do you have a preference for what it is?	We think protected titles should be extended to include Professional Engineer, Licensed Engineer, Registered Engineer, Engineering Technologist, Engineering Technician and Engineering Geologist.
8.	Is a qualification enough for registration? Should we also include experience and an assessment of competence?	We think there should be a qualification, several years’ of experience and a test or exam. To allow assessments to be done within a practically short period of time, our suggestion is that people with CPEng or chartered engineers should automatically qualify for registration.
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?	Requiring a particular standard of engineering qualification would certainly restrict people from registration, but that seems to be the point of licensing. Lesser status degrees could be supplemented by greater years of relevant experience and recognition of a different standard of registration, such as engineering technician or engineering technologist. We understand that some overseas engineering qualifications are not included within the Washington or Sydney accords, for instance no French engineering schools are part of these accords.
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?	In practice, overseas engineers are often engaged by many industries. To hire overseas qualified engineers in New Zealand, an option would be to have equivalency recognition processes for overseas engineers, or if overseas engineers are engaged for specific consulting assignments, they could be allowed to bypass registration.

Item	Question	Response
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.	Code of conduct and continuing professional development obligations are part of the current Chartered Engineer and CPEng statuses. These requirements were not part of the 1924 Engineers Registration Act. The suggestion is that if code of conduct and professional development obligations are not required by registration, then these still form part of the Engineering NZ requirements.
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?	We see no problem with a proposal for a practicing certificate. Probably if registration is done alongside Engineering NZ membership, the continuing professional development can be overseen by Engineering NZ.
13.	How often should an engineer need to renew their practising certificate?	Probably annually, this used to be the process under the Engineers Registration Board.
14.	Should issuing a practising certificate be contingent on an engineer completing their continuing professional development commitments?	The current Chartered Engineer membership of Engineering NZ already requires fulfilment of Continual Professional Development and code of conduct commitments. If registration is symbiotic with Engineering NZ membership, there would be no need to replicate this.
15.	Should electrical engineers registered by the Electrical Workers Registration Board continue under that regime rather than the new one proposed?	This point will require special attention. Engineers are considered as “workers” according to the Electricity Act 1992. Whilst the Electricity Act 1992 allows engineering activities to be regarded as Prescribed Electrical Work (PEW), Schedule 1 of the Electricity Safety Regulations limits PEW to work of a hands-on nature. The Electrical Engineer class of registration allows technician engineers and non-trade qualified electrical engineers to perform PEW. Many electricity supply industry engineers are not currently registered by the Electrical Workers Registration Board, and this does create divisions between those who can do PEW and those who cannot.
16.	Are there other engineering practice fields that should also be recognised for similar reasons? What are they, and why should they be recognised?	We don’t have specific comments on this.

Item	Question	Response
17.	Should we include engineering associates, engineering technologists, engineering technicians and/or engineering geologists in the new regime?	There is a case for including engineering associates, engineering technologists, technologists, technician engineers and engineering geologists in a registration or licensing regime, but it depends on settling the definitions in Question 5. If they are included, there should be individual definitions governing what each of these engineering classes do.
18.	If we expand the scope, should we make registration mandatory for those practising in these additional areas?	Mandatory registration might provide greater clarity of what people in these categories are doing. However the answer depends on what the regulation is trying to achieve.
19.	Is a recognised statutory credential of value for engineering associates, technologists, technicians, and engineering geologists? Why?	Probably there is, because these classes of engineer fulfil important work, but the answer would depend on the definitions of activity that these classes undertake.
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?	Our expectation is that engineering practice fields would be set out in regulations that would give flexibility to adapt quickly to societal application of technology and technological changes.
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?	Often electrical engineering or trade qualified people currently undertake overhead line design, and there is an argument for having a unique specialism of line design as different from structural design.
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?	The current eligibility requirements for CPEng seem adequate in our view. These requirements include written personal experience records, evaluation interviews and essay under exam conditions. That few candidates for CPEng are unsuccessful says much about the candidates' preparation for eligibility.

Item	Question	Response
23.	Should licensed engineers undergo regular checks of their continued competency?	Yes, but in practice, the availability of CPEng assessors seems to be a bottleneck for engineers being assessed for CPEng. The lack of assessors will cause practical limitations on how often engineers are checked for their continued competency. The regular competence checks would thus need to rely upon personal attestation or be diminished in their coverage.
24.	How often should the regulator check a licensed engineers' competency?	The answer depends upon the license class being checked. We do wonder how the regulator would go about regularly checking a licensed engineer's competency. The discussion paper speaks of providing a range of tools such as audits of an engineer's work or response to complaints. However engineers are skilled professionals who are usually busy people. Checks of their competency would require peer assessment, and it may be rare for an engineer to receive complaints.
25.	What tools would be most useful to check competency in your practice field?	A prescribed audit framework should be established, in which peer assessment would be the most practical and effective way of checking an engineer's competence in their practice field.
26.	Would you prefer using the Chartered Professional Engineering (CPEng) credential for licensing classes rather than creating a new credential? Why?	The suggestion is that CPEng (or Chartered Professional engineer) status would be an effective requisite for an engineer to be licensed. The discussion paper perhaps overplays the risk of engineers working outside their practice area, since one of the attributes of working as a professional is to not work outside one's area of competency.
27.	Do you prefer the option of licensing companies instead of individuals? Why?	The legislation within which the electricity supply sector works essentially directs the asset owning entities to manage their customer performance and public safety hazards corporately. Audited public safety management systems are prescribed in the Electricity Safety Regulations and Gas Safety and Measurement Regulations, Price Quality performance in regulated by the Commerce Commission, work force safety is regulated by Work Safe. It has been up to the entity itself to decide how best to train its staff and what skills are needed for their competency. For these reasons, it is not clear what effect licensing engineers would have within an infrastructure asset owning organisation whereby risk accountabilities are delegated from the Board of Directors through the management hierarchy.
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?	The two-tier regulatory model proposed would appear to work well.

Item	Question	Response
29.	Do you have a preference for who the regulatory service provider should be?	We see no reason why Engineering NZ should not provide the services of a regulatory provider. Engineering NZ has many thousands of members and significant expertise in assessing and advocating for engineers.
30.	Do you agree with the proposed functions of the regulator and regulatory service provider? Can you suggest any different functions?	The roles of regulator and regulatory service provider should be split. At this stage, we are not aware of other functions.
31.	Have we missed any other grounds for discipline? Have we proposed grounds for discipline that you think should be modified or removed?	We do not propose any further grounds for discipline.
32.	Should the regulator have the flexibility to recognise and automatically deem some existing practitioners as registered and/or licensed?	Yes. We would suggest that existing Chartered Professional engineers should be automatically registered.
33.	Do you have any suggestions for other ways to transition the profession to the new regime?	It would be useful to hear further articulation on how risk accountabilities would be assigned to individual engineers who work within infrastructure asset owning organisations where existing legislation assigns accountabilities on the corporate entity.
34.	Should we retain the Chartered Professional Engineer credential in the longer term? If we do, what role should it play?	I would suggest that existing Chartered Professional engineers should be automatically registered. Once someone is registered, there seems to be no need for someone to be chartered if registration and chartering are equivalent.