

16 October 2019

The Hon. Kevin Anderson, MP  
Minister, Better Regulation and Innovation  
Email: [BCR@finance.nsw.gov.au](mailto:BCR@finance.nsw.gov.au)

Dear Minister Anderson,

### **Submission on draft Design and Building Practitioners Bill 2019**

The Association of Professional Engineers Australia welcomes the opportunity to make a submission to the NSW Government's draft Design and Building Practitioners Bill 2019.

APEA is a registered organisation representing degree-qualified, professional engineers in Australia. Our members perform design, scoping and project management roles across industries and services including mining, construction, road, rail, water, gas, power, defence, aviation and ITC. APEA is a division of Professionals Australia which is a nationally registered industrial organisation representing a wide range of professionals throughout Australia.

There are good measures included in the Draft Bill, particularly those that seek to ensure practitioners are registered and the requirement for registered building practitioners to confirm that buildings have been constructed in accordance with those designs.

Our feedback concentrates on two issues:

1. The proposed Bill only applies to the building industry, leaving all other sectors where engineers work exposed to unregistered practitioners.
2. Even in the building sector, the Bill is unlikely to provide the conditions under which the Secretary could properly assess an engineer for eligibility because whereas all other professions working in the building sector (builders, electricians, plumbers, architects) are required to be registered/licenced, engineers are not. That means that unlike for those other professions the Secretary will not be able to have regard to whether someone is licenced or registered in their trade or profession when determining whether they have the necessary qualifications and skills to competently perform the work.

These issues would be resolved with the development of complimentary legislation for the registration of professional engineers and we believe this legislation would sit comfortably next to the Design and Building Practitioners Bill. In fact, it would streamline the assessment process for engineers and the Government.

The absence of a broad-based engineer registration scheme in NSW creates inconsistencies with neighbouring jurisdictions in Victoria, Queensland and the ACT meaning that NSW engineers who work on projects across multiple jurisdictions (as is the case in most big engineering businesses) will be forced to apply for registration in multiple jurisdictions since neighbouring states and territories would not recognise a vastly inconsistent scheme in NSW.

This will create additional regulation costs for individuals and business and will also mean that we are failing to take advantage of the streamlined process available for assessing an engineer's eligibility for registration, with systems already set-up in professional bodies for the purpose of registering engineers in other states easily applied to NSW.

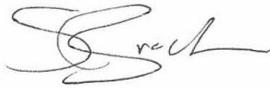
Most concerning, it would lead to NSW being flooded by unqualified engineers from other states who are no longer eligible to work there (for example from Victoria who have recently adopted their Professional Engineer Registration Act).

To avoid these issues, we have proposed a very simple and neat solution to this problem which allows for the passage of an amended form of this Bill, while also supporting a broad-based engineer registration system for the state.

We also note that significant matters are left to regulation and we expect to make further comments once those regulations are exposed for public consultation.

We look forward to our further involvement in the process.

Your sincerely,

A handwritten signature in black ink, appearing to read 'G Brock', with a stylized flourish at the end.

Gordon Brock  
**Director NSW**

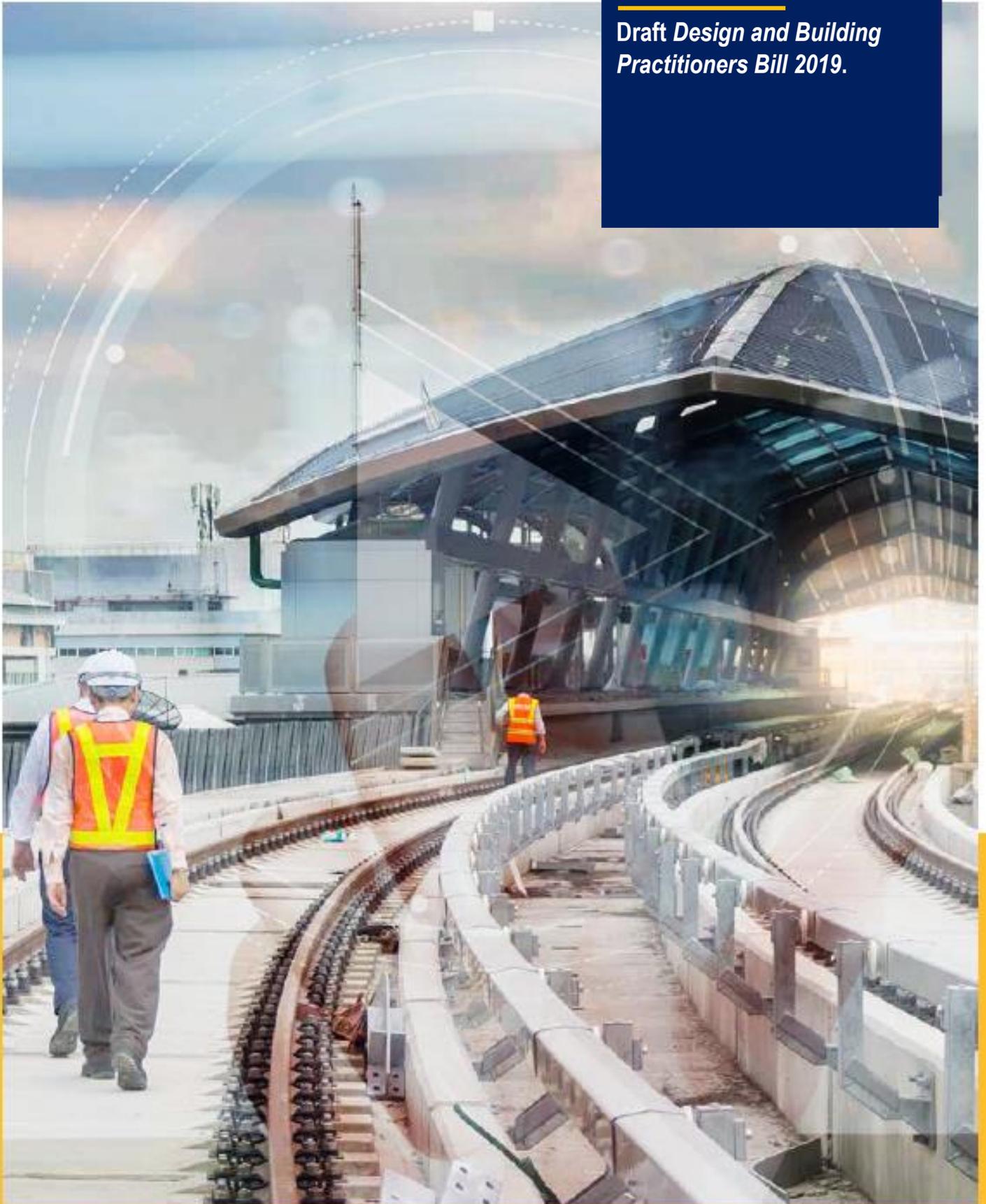
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**ENGINEERING  
A BETTER FUTURE**

## **SUBMISSION:**

*Draft Design and Building  
Practitioners Bill 2019.*



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## The Association of Professional Engineers Australia

The Association of Professional Engineers Australia (APEA) is a registered organisation representing degree-qualified, professional engineers working in Australia.

Our members perform design, scoping and project management roles across essential industries and services including mining, construction, road, rail, water, gas, power, defence, aviation and ITC.

We provide a scheme for the assessment of professional engineers and is approved to undertake assessments of professional competency for the Board of Professional Engineers of Queensland (BPEQ).

APEA is a division of Professionals Australia which is a nationally registered industrial organisation representing a wide range of professionals throughout Australia.

Our members include professional engineers, scientists, managers, pharmacists, architects, contractors, consultants and more. They are employed in all levels of government and are spread across the private sector.

We provide support and advocacy on behalf of our members so that they can focus on providing our community with safe and reliable infrastructure and with vital goods and services.

This purpose has driven Professionals Australia to make this submission, as better regulation of the building and construction sector means better community outcomes, better use of taxes and better recognition of the important role our members play in Australian society.

APEA would like to thank the NSW Government for the opportunity to make a submission on the draft legislation.

## Executive summary

High profile residential construction failures have highlighted an emerging crisis in the engineering sector. While failures in the building and construction sectors are currently the most topical, this is the tip of the iceberg and the issues extend to all aspects of engineering.

Currently, NSW does not require those providing engineering services to register in a manner that confirms their qualifications or skills. This is unlike all other professions which impact on public safety (electricians, plumbers, architects etc), making it a major regulatory flaw. The absence of a registration scheme for engineers in NSW has widespread consequences for public safety, economic waste and constitutes a major political risk for government.

Given that a similar scheme already exists in Queensland, has recently been legislated in Victoria and is about to be legislated in the ACT, the introduction of an engineer registration scheme would avoid NSW becoming a destination of preference for those practitioners who claim to be engineers but are either unqualified or have not maintained their skills through ongoing professional development.

Additionally, the introduction of a scheme which is compatible with those in the other eastern states will enhance the viability of the engineering industry in this state and ensure that NSW is well placed to transition to a nationally consistent registration scheme at some time in the future. Importantly, a compatible scheme will reduce the burden on industry, who often work across state boundaries.

We note that the draft legislation only applies to the building industry and that in the case of engineers, those providing engineering services in areas such as civil engineers on roads, rail, bridges, water, energy and other infrastructure will remain totally unregulated.

Poor scoping of engineering dependent/critical projects can contribute to cost over-runs and delays on major infrastructure projects and based on an \$80 billion infrastructure spend this wastage could amount to \$5.2 billion.

While welcome the NSW Government's proposed legislation recommending that a Registration Scheme be put in place for practitioners who provide building designs and prepare plans based on those design, we contend:

1. There must be a way to ensure registration of all engineers, regardless of the sector in which they are working; and
2. The current legislation makes the job of the Secretary in assessing an engineer's eligibility impractical.

In terms of point 2, whereas the Secretary will be informed by other professionals' licensing and registration status (for example whether an electrician or builder is licensed) this will remain absent for engineers, meaning the Secretary will need to satisfy him or herself of a broad range of matters beyond formal qualifications, such as a whether an engineer has kept their skills up to date through credible ongoing professional development and the level of experience the engineer has in practice.

## **Our proposal**

We have developed a proposal which is simple and complementary to the Government's draft legislation and essentially requires two changes:

1. The proposed Bill (section 35) provides that the Secretary must refuse to register a person as a practitioner if "...the Secretary is of the opinion that the applicant does not have the qualifications, skills, knowledge and experience to carry out the work for which the applicant is seeking registration". We propose that this section specify that eligibility for registration of an engineer includes a requirement that the engineer seeking registration as a Building Practitioner is registered under a (separate) Professional Engineer Registration Act.
2. That the Government introduces a Professional Engineer Registration Bill for enactment in the NSW Parliament which is broad-based and consistent with the schemes already in place in Victoria and Queensland.

This would close the loophole in NSW which exposes the state (and by extension, the public/taxpayers) to significant regulatory risk on other infrastructure such as electricity, gas, water, bridge, rail and road assets.

It would also streamline the assessment process for the Secretary and bring it into line with other professions subject to his/her assessment for eligibility under the *Design and Building Practitioners Bill*.

Finally, it would ensure national consistency for the engineering profession, which makes sense given this profession is increasingly national (and international) in the way it conducts work with employed engineering professionals working from a head office (often in NSW) on projects across multiple jurisdictions.

This approach has the support of all key engineering representative organisations and is intended to be self-funding in nature and therefore cost neutral to the government. It would also create no additional insurance requirements for engineers.

Critically, the implementation of a NSW registration scheme may be a key component of the government's decisive response aimed at restoring public confidence in the construction and engineering sector and enhancing the value of the engineering profession in the eyes of the community. This has the added benefit of a likely increase in the export of engineering services, particularly to Asia, as purchasers have confidence they are contracting recognised professional services.

We genuinely feel that limiting the registration scheme to the building sector will leave an unacceptable risk open and we flag now that this is a risk to life, as well as a financial risk. It is also an unnecessary burden on the profession and industry if engineers need to meet different requirements in each state. A well-designed regulatory regime will ensure that technical standards are in place, competition is promoted, consumer protection is prioritised and professionals are held accountable.

Given the proposed amendments to the *Design and Building Practitioners Bill* are relatively minor, we have concentrated the remainder of this submission on the proposed *Professional Engineer Registration Bill* which is being sought by the engineering profession.

## Introduction

In NSW anyone can call themselves an engineer. The existing registration system is ad hoc and largely voluntary, which means that neither the engineering profession nor the community are protected. There is no scheme or system in place to ensure competence and enhance the integrity of the engineering profession. Practicing doctors, lawyers, accountants and architects must be registered. We licence skilled trades, but do not require registration for the engineers who supervise them and who design key elements of, and oversee the execution of, the projects they are working on.

It is true that engineers wishing to issue construction, occupation, subdivision, compliance and complying development certificates under the Environmental Planning and Assessment Act 1979 (NSW) must be accredited by the Building Professionals Board under the Building Professionals Act 2005 (NSW). However, there is no requirement for the person issuing the certificates to be an engineer which can mean that plans are prepared, approved and construction is checked off by people who do not possess appropriate engineering qualifications and skill, or who have not updated their skills through ongoing professional development.

The current accreditation system is further limited insofar as it only applies to the building industry and even in that industry, competency standards are not able to be enforced. Engineers and others claiming engineering expertise cannot be prevented from providing services even where there is evidence of misconduct or incompetence. Add the current system of self-certification to that mix, where companies can engage engineers and other certifiers directly, and it is further evident the current system is patchwork and of very limited value.

The opportunity exists to develop a nationally consistent, state-based registration system for all professional engineers carrying out work in the building industry and on projects involving all types of infrastructure - roads, rail, bridges, energy, water infrastructure, local government and so on.

The absence of a registration scheme for engineers operating in NSW poses major risks in relation to public safety, cost to government and political risk. Over 5,000 engineers enter Australia every year under our visa system, and many do not have their skills checked before they enter the country. NSW is currently the destination for more than half of these migrant engineers. Without a registration system in place across all industries, NSW risks becoming the go-to destination for unqualified engineers seeking to practice.

Underlining this risk is the adoption of broad-based registration schemes in Queensland and Victoria, with the ACT soon to follow. This will leave NSW as the only jurisdiction with a registration scheme that only applies to the building sector, and not to all other areas of engineering such as water, energy, roads and rail.

## Risks associated with absence of NSW registration scheme for engineers

### **Risk to public safety**

Threats to the public from provision of engineering services by unqualified or incompetent persons have three elements, namely:

- Health – through such things as contaminated drinking water, ‘sick’ buildings and other environmental incidents
- Property damage – where the effect is primarily measured in economic terms
- Safety – through collapse of buildings, bridges, dams and other structures or through failure of hazardous services such as gas, electricity or mechanical works.

Poor or deficient engineering work may present a threat to public health and safety in the form of unsafe water, gas and electricity systems, inadequate fire proofing and unsound structural integrity.

At best, these issues undermine public confidence in the regulatory system which oversees the construction industry and incurs unnecessary additional costs to the community in the form of building rectification and repair. At worst, failures in civil, residential and commercial engineering design and construction may be life threatening.

Unfortunately, we have already witnessed the consequences of such failure in Australia. In Victoria we had the Longford Gas explosion and the Westgate Bridge collapse, among others. The Canberra Hospital implosion and the Thredbo landslide are also both etched in the Australian psyche. The HMAS Westralia fire and the Sea King helicopter crash drove change in the Australian Defence Forces.

#### **Case study – The collapse of the Canterbury Television building – Christchurch, NZ, 2011**

During the 2011 Christchurch earthquake in New Zealand, the Canterbury Television building collapsed, killing 115 people. Subsequent investigations found that appropriately qualified and experienced engineers had not been engaged during the building’s construction, contributing to engineering failure with catastrophic consequences.

While these major tragedies may be our most stark reminder of the risks associated with engineering failure, closer to home, many Australians bear the costs of receiving poor engineering advice every day. For example, sub-standard soil testing and construction design can cause cracked homes and financial heartache for decades. Many apartments are covered top to bottom in flammable cladding, placing families at risk. And millions of Australian’s travel by car every day, and are faced with delays and potential safety risks due to poor design and execution on our roads.

The independence, competence and integrity of our engineer workforce is vital to ensuring our homes, places of work, the water we drink, the energy we use and the roads and bridges we drive on are safe and remain fit-for-purpose. The introduction of engineer registration in NSW is a vitally important community safety measure. It will address an anomaly that sees engineers as one of the only professions that does not have a mandatory registration scheme. Lawyers, doctors, accountants, nurses,

architects and other major professions have mandatory registration schemes. Given their impact on public safety, it is both ridiculous and risky in the extreme that a similar scheme does not also apply to engineers.

We sincerely hope it won't take a bridge collapse or some other catastrophic event for comprehensive action to be taken and this critical safety reform to be introduced.

### **Political risk**

As can be demonstrated with the recent public response to the Opal Tower and Mascot Tower debacles, the community expects government to appropriately intervene where there is a failure in the regulatory framework to ensure the safety and welfare of the public. The absence of an effective registration scheme that ensures that only qualified and appropriately skilled engineers undertake important design work and certify construction, is such a failure.

The NSW government should take steps now to avoid the further loss of public confidence in the engineering sector. Worryingly, deficiencies in work already completed may not become apparent for many years. Public perception of fault will most likely align to the government in power at the time that problems become apparent, rather than to the government responsible for the initial works.

A broad-based registration scheme is designed to ensure that engineers are only working in areas for which they are appropriately skilled. That way, you can be sure the right engineer is doing the right job. This will enable the community and government to purchase engineering services with greater confidence and better quality outcomes will be achieved.

### **Significant economic waste**

The contribution of unqualified and inappropriately skilled engineers to increased construction costs and delays both in the private and public sector can be considerable. These additional costs may arise due to incomplete or deficient scoping of the initial project by poor quality or unqualified engineers.

These cost over-runs and delays on infrastructure projects have now become a serious problem in Australia. While estimates vary, research by Deloitte for the Australian Constructor's Association estimated the average cost blowout at 6.5% across all projects and 12.6% for projects over \$1 billion.<sup>1</sup> By underpinning competence, registration helps ensure those designing and scoping major projects are suitably qualified to scope and design projects to budget and timeframe.

Based on a NSW government budget projection of \$80 billion to be spent on infrastructure over four years, a 6.5% cost blow out amounts to \$5.2 billion in taxpayer's dollars wasted.

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<sup>1</sup> <https://www2.deloitte.com/au/en/pages/economics/articles/major-infrastructure-projects.html>

These funds could more appropriately be invested in further infrastructure projects focused on stimulating the state's economic growth.

### **Case study – Lane Cove tunnel collapse – Lane Cove, NSW, 2005**

During construction on 2 November 2005 the roof of a ventilation tunnel for the \$1.1 billion Lane Cove tunnel project collapsed causing a 10 by 10 metre crater which damaged a 3-storey residential building and forced the evacuation of 47 people. Emergency crews were forced to pump 1,000 cubic metres of concrete into the hole to try to stop the housing block from collapsing into it. The project was a disaster for the owner and operator of the tunnel, Connector Motorways who went into receivership in January 2010 after a string of losses. Flaws in the civil engineering design and geotechnical engineering assessment were found to be among several causes of the collapse.

### **Attracting poor quality engineers to NSW**

A comprehensive formal registration scheme of engineers is already required in Queensland and Victoria. The ACT Chief Minister has also committed to adopting a mirror scheme. This will leave NSW the only jurisdiction on the east coast of Australia without the protection of a system for registering engineers working across all forms of infrastructure maintenance and construction.

The absence of a similar regulatory regime in NSW may have the effect of attracting a higher number of unqualified and unskilled engineers to the state than would otherwise be the case. Unable to practice in any other state on the east coast, those practitioners who claim to be engineers but are either unqualified or have not maintained their skills through professional development will be forced to relocate to NSW where they can continue to operate, unhindered by any requirement to register in a manner that confirms their qualifications and skills.

This would give NSW the unenviable status as being the state for 'poorest engineering practice' and would likely amplify the range of problems previously articulated.

A requirement for work to be completed by an appropriately qualified and competent engineering professional, selected from a credible register, will mitigate risks to public safety, minimise future political risks for government and reduce economic wastage for the public and private sectors.

### **A consistent regime across jurisdictions**

As mentioned previously in this submission, Queensland and Victoria already have a best-practice broad-based engineer registration scheme. The ACT has committed to follow the Victorian Government's lead which will mean that all other states and territories on the eastern sea-board will have a consistent model in place.

Were NSW to go down a different path and exempt unqualified engineers from registration in sectors like roads, rail, water, energy and other areas to practice, aside from the safety and economic costs of this decision, it also places unnecessary regulatory burden on industry. Whereas an engineer can be registered in Queensland which qualified them to work in Victoria and the ACT (because of the consistency of like registration schemes allows for mutual recognition), an engineer in NSW would not be qualified to work in other states, where the registration scheme is comparatively narrow. This would mean NSW engineers would be required to register twice in NSW and in one of the other (nationally consistent) states.

With the national conversation currently taking place about engineer registration and the need for reform, it would be a shame if this once in a generation opportunity for a nationally consistent approach to engineer registration was ignored in NSW.

## The proposed model

Our proposed approach for NSW is consistent with the current Queensland and Victorian schemes which involves a 'co-regulatory' model. This model is being used as the basis for draft legislation in the ACT.

Under a co-regulatory model, the assessment of a person's suitability as a registered professional engineer is undertaken by the profession itself, with oversight and enforcement undertaken by a statutory body.

A co-regulatory model would require the industry or professional body to develop a code of practice (or accreditation or rating scheme) in consultation with the government, and the Government then provides legislative backing to the code/schemes.

Once established, professional engineer associations would establish engineer assessment schemes which meet the requirements detailed in the responsible legislation and, when approved, would be responsible for administering the assessment of engineers on behalf of the statutory body with appropriate oversight.

The assessment scheme of the professional body is assessed by government to ensure the scheme will meet requirements. Competition between assessment entities will help minimise costs and the use of professional bodies meaning the scheme remains more contemporary than a state-run process.

Adopting a registration scheme run by the Government, rather than adopting a co-regulatory model, not only adds substantial additional cost to the taxpayer and increases prices by removing competition, it also compromises quality. Engineering bodies like ourselves are required to maintain knowledge of best practice in their sector. We already run engineer registration schemes (in our case RPEng), including those Queensland and Victoria, meaning we have deep experience and established systems and processes.

We therefore strongly recommend that the Government adopts a co-regulatory model of registration consistent with schemes in Victoria and Queensland.

### **Minimum requirements of the scheme**

The APEA believes a registration scheme for engineers should extend to every individual who:

- provides 'professional engineering services'
- where services fall within one of the six areas of engineering: civil, structural, fire safety, electrical, geotechnical or mechanical engineering

We concur with Engineers Australia in its submission to the Victorian government's "Consultation paper on a statutory registration scheme for Victorian engineers" which states that the minimum requirements for registration should be the same requirements mandated by the National Engineers Register (NER) and the Chartered Engineer process.

The minimum requirements engineers must possess to qualify for registration include:

- a four-year Washington accord degree which is a 4 or 5 year undergraduate engineering degree

- five years' relevant professional experience in each area of practice to be approved for registration and
- mandatory continuing professional development (CPD) in order to ensure that the practitioner providing engineering services is up to date in knowledge, skills, and innovation

### **No impact on insurance for engineers**

The implementation of a registration scheme would not introduce any new insurance requirements for engineers.

It is likely that the introduction of registration will improve the ability of insurers to more readily determine that engineers are appropriately qualified and experienced when setting premiums for those engineers.

Advice from an insurance broker indicates that there is no discernible difference in premium rates in Queensland (where there is a registration scheme) compared to other jurisdictions. Documentation of this advice can be provided on request.

### **No cost to government**

Such a scheme has the support of all key engineering representative organisations and is intended to be self-funding in nature and therefore cost neutral to government.

### **Consistency with Queensland and Victorian schemes**

The Association of Professional Engineers Australia believes that any registration scheme introduced for NSW should be consistent with those developed in Queensland, Victoria and shortly to be in place in the ACT.

The Victorian government has also committed to work with other jurisdictions to develop a nationally consistent registration scheme for engineers, suggesting there is value in considering the Queensland scheme as a template, to underpin national consistency.

Utilising an already established scheme in Queensland as the basis for the NSW scheme would also minimise 'start-up' costs in NSW and red tape for businesses operating across jurisdictions, which most big engineering and construction businesses now do.

Additionally, the introduction of a NSW professional engineer registration scheme that is compatible with other east coast jurisdictions will enhance the viability of engineers based in this state, and leave NSW well placed to transition to a nationally consistent registration scheme at some point in the future.

## Benefits of a registration scheme for engineers in NSW

### **Improving public safety**

Currently the community has no effective way of knowing whether they are dealing with a qualified, competent engineer who maintains standards through ongoing professional development. Registration of engineers will protect the community and enhance safeguards. It will lift the standing of genuine qualified engineers and allow the profession to protect the community from unqualified engineers carrying out work.

It will also provide legal recourse against those who deliver sub-standard work, much as it has in Queensland for many years. Engineer registration will enhance accountability, professional standards and underpin safety for workers and the community.

To ensure that unqualified and incompetent engineers are removed from the system, and that engineering students and graduates develop their skills in a well-managed working environment, a mechanism must be in place to underpin safe and professional work.

### **Reducing infrastructure costs for the NSW government**

Poor scoping and design of engineering projects has enormous financial impacts for NSW. We currently have no way to ensure the engineers that are working on our massive infrastructure build are competent. All too often in the past taxpayers' moneys have been wasted due to governments not being "informed purchasers" in government contracts due to the lack of professional engineering expertise.

The last independent Cost-Benefit-Analysis showed that engineer registration delivered real tangible economic benefits by preventing engineering failure. ACIL Tasman calculated the benefit-cost ratio of a scheme to be 3.14 in 2012.<sup>2</sup>

At a time of record infrastructure investment in NSW, we have to protect and build local industry, and leverage this boom to build a thriving local engineering sector which can export services across Australia and to the world.

### **Restoring public trust**

The introduction of a registration scheme for engineers may be a significant step toward restoring public trust in the expertise of building and construction industry professionals and the regulatory system that oversees it as managed by the NSW government.

Not only will a registration scheme reduce the incidence of poor-quality engineering work and cost overruns, it will enhance the standing of the profession in the community.

The concept also has strong support from the NSW public, with Omnipoll research shows that 96% of the NSW public believed that engineers operating in the State who work on major infrastructure should be registered or licensed, compared with 95% support for a scheme that covers vertical buildings.

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<sup>2</sup> [https://www.consultaustralia.com.au/docs/default-source/skills/ACIL\\_Tasman\\_CBA\\_full\\_report.pdf?sfvrsn=0](https://www.consultaustralia.com.au/docs/default-source/skills/ACIL_Tasman_CBA_full_report.pdf?sfvrsn=0)

Equally, the introduction of a registration scheme is widely supported by engineers themselves with, according to our internal polling, more than 4 in 5 supporting the establishment of engineer registration (85%).

The introduction of a registration system for engineers should be a key component of a package of reforms that comprise the NSW government's decisive response to the emerging crisis in the construction industry. It would complement the Government's proposed *Design and Building Practitioners Bill*.

## Conclusion

The risks posed by the practice of unskilled and unqualified engineers are not limited to the certification process. Nor are they limited to the building sector. An unskilled or unqualified engineer on a road project, a bridge project, in an energy generator, on a coal mine or designing a dam, poses all the same risks. The consequences of these risks can materialise at any point from design, to approval and monitoring of construction.

This submission has demonstrated that, in the context of reforming the regulatory regime of the NSW building and construction sector, the absence of a broad-based registration scheme for engineers facilitates a high degree of risk to the community in terms of safety and cost, and to the government in terms of reputational damage.

These can be readily avoided by implementing a well-designed scheme that ensures that appropriate technical standards are in place, consumer protection is prioritised, and professionals are held accountable.

APEA urges the NSW government to adopt a broad-based professional engineer registration scheme to complement the *Design and Building Practitioners Bill*, not just for engineers in the building and construction sector, but consistent with the successful Queensland scheme for all those purporting to provide professional engineering services in the community.

Fundamentally, the introduction of a coregulatory, broad-based registration scheme for engineers should ensure that plans are prepared by registered engineers, plans are approved by registered engineers and construction is checked off against plans by registered engineers.

The implementation of such a registration scheme will not only underpin community safety into the future, but will reduce infrastructure costs for government, the savings of which can be reinvested in further projects.

Critically, the implementation of a registration scheme for engineers may feature as an important component in the government's decisive response to the emerging crisis in the construction sector, restoring faith in the regulatory regime and enhancing the value of the engineering profession in the eyes of the community.