Submission No 125

INQUIRY INTO REGULATION OF BUILDING STANDARDS, BUILDING QUALITY AND BUILDING DISPUTES

Organisation: Engineers Australia

Date Received: 31 July 2019

ENGINEERS AUSTRALIA

CELEBRATING OUR CENTENARY

Regulation of building standards, building quality and building disputes

Submission to NSW Legislative Council inquiry

August 2019

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1. Introduction

1.1 About Engineers Australia

Engineers Australia is the peak member-based professional association for engineers. Established in 1919, Engineers Australia is in its centenary year and is constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community. We have around 100,000 members, including about 25,000 in NSW.

Engineers Australia maintains national professional standards, benchmarked against international norms. We do this through accreditation of undergraduate university engineering programs, and management of Australia's largest voluntary register for engineers, the National Engineering Register (NER).

1.2 Scope of this submission

This submission addresses the following Term of Reference:

> *(e) the current status and degree of implementation of recommendations of reports into the building industry including the Lambert report 2016, the Shergold/Weir report 2018 and the Opal Tower investigation final report 2019.*

In addressing that Term of Reference, this submission addresses the various report recommendations to introduce a register for professional engineers.[1]

Given the broad membership coverage and knowledge we have of the engineering profession, Engineers Australia is well placed to provide well-informed views to Parliament on how a registration scheme can operate. For example, we developed the NER in 2015, are an approved assessment entity for the QLD Government's registration scheme and have been instrumental in the development of the Victorian Government's Professional Engineers Registration Bill 2019 (which is before Parliament).

1.3 Key recommendations

The below is a list of key recommendations. Each is easily attainable in the context of current efforts to reform the building and construction sector, will make a big step towards regaining public confidence, and enable the NSW Government and Parliament to take reforms further when the time is right:

1. Engineers in NSW are not currently required to be registered, and it is recommended that a new registration scheme is applied to all who provide professional engineering services (other than those working under the supervision of a registered engineer) in the building sector. *The profession advises that this is a critical element for success.*
2. It is recommended that legislative mechanisms created to fulfil the short-term goal of engineer registration in the building sector is designed to enable later expansion of the scope of registration to all engineering occupations in all industries. *This is what the public expects.*
3. It is recommended that a new registration scheme for currently unregistered engineers in NSW be aligned with the system already in operation in QLD and is proposed for Victoria in the Professional Engineers Registration Bill 2019. This will ensure mutual recognition of registration across borders. *This is what is needed to one day attain a bigger vision for public safety and consumer confidence in engineering services.*

[1] This submission relates to the work of engineers and comments are therefore not intended (unless specifically indicated) as a comment on reform for other professions and building sector practitioners.

1.4 Contact details

To discuss the contents of this submission further please contact either of the following:

- Jonathan Russell, National Manager for Public Affairs,
- Greg Ewing, General Manager for the Sydney Division,

2. Implementing reforms to register engineers

Engineers Australia has engaged with the NSW Government throughout the process of implementing all three reports that are the subject of this inquiry: Lambert, Shergold & Weir, and Opal Tower.

2.1 Lambert

Engineers Australia has a long-standing position of support for the need to work through the recommendations of the Lambert review. Engineers Australia engaged with the reform process with several submissions in 2016-2017 as part of the NSW Government's efforts to take action in response to the Lambert report recommendations.

The Lambert review focussed on certification and its application in the wider building industry. Engineers Australia continues to endorse the value of the Lambert review and is applying its efforts to the engineering-specific recommendations of the Shergold & Weir and Opal Tower reports.

2.2 Shergold & Weir

The Building Ministers Forum (BMF) Shergold & Weir report offers a rare opportunity to deliver a program of reform to fix a broken system. Engineers Australia recommends that all jurisdictions implement all recommendations of that report.

Recommendations 1-3 of the Shergold & Weir report are of particular importance to Engineers Australia and provide the context for this submission:

1. That each jurisdiction requires the registration of the following categories of building practitioners involved in the design, construction and maintenance of buildings: … Engineer.
2. That each jurisdiction prescribes consistent requirements for the registration of building practitioners.
3. That each jurisdiction requires all practitioners to undertake compulsory Continuing Professional Development on the National Construction Code.

Initially, progress to implement all 24 recommendations of that report was slow and not coordinated across jurisdictions. However, it is encouraging to see that in recent months the NSW Government has taken clearer and more decisive steps towards full implementation.

The wider BMF membership has also taken steps to ensure that reforms are coordinated across jurisdictions with the formation of an implementation team within the Australian Building Codes Board (ABCB).

It is however too early to offer a conclusion on the effectiveness of the reforms proposed by the NSW Government because, at the time of writing and due to the timing of the upper house inquiry, outcomes on the stakeholder consultation to their discussion paper has not been provided and draft legislation has not been developed.

2.3 Opal Tower

Within the Opal Tower report, the first recommendation is of greatest interest to Engineers Australia:

- The creation of a government registered engineers database developed in partnership with an appropriate professional body.

The Opal Tower recommendation acts to reinforce Recommendation 1 of the Shergold & Weir report. In fact, the Opal Tower report recommendations generally overlap the Shergold & Weir report recommendations. Action on the two reports can reasonably be taken together.

3. Benefits of compulsory registration of engineers

This section of the submission provides more detail on why implementation of Recommendation 1 of Shergold & Weir and Opal Tower reports is so important.

The community trusts engineering without realising it. The buildings we live in. The cars we drive. The devices we use every day. We trust that they are safe and will work as they are designed to. Rarely do we realise that the world we inhabit was created by engineers.

When trust is unconscious, it's even more important to protect the integrity of engineering practice.

Use of the title 'engineer' is unrestricted and is likely to remain so because it has become a generic term. In the absence of regulation for engineering in NSW, anyone can purport to be an engineer and provide engineering services without appropriate competencies and with disregard to standards.

Engineering services are vital to state and national economic prosperity and social well-being, yet there is no uniform regulatory regime covering engineering practitioners in Australia. Instead, it is ad hoc and largely voluntary.

This point was highlighted by the NSW Minister for Better Regulation and Innovation, Hon Kevin Anderson MP, when he was reported as saying: "***I can't believe that in this state engineers don't have to be registered.***"[2]

Engineers Australia does not promote registration as a 'silver bullet' to all ills of industry. Registration is the first recommendation of the BMF's Shergold & Weir report, and of the NSW Government's Opal Tower report, because it is the first step; it creates a system to recognise people likely to perform competently, and a mechanism to exclude those found to be unsuitable to work as an engineer.

Primarily, compulsory registration of all engineers will enable significant enhancement of public safety and consumer protection. More broadly, there are five key benefits of a registration system for engineers:

3.1 Industry and consumer information

Engineering services are purchased by governments, large and small business, and individual consumers. In the absence of a common standard for ordinary engineering practitioners, consumers are limited in terms of the extent they can measure the professionalism of an engineer they wish to engage.

A registration scheme will aid the market by providing advice to consumers on the competence and experience levels of engineering practitioners. This enables consumers to make more informed decisions and reduces the common tendency to choose services based on price alone.

[2] Elias Visontay, "Minister to reform building industry", The Australian, June 24, 2019. Available at: https://www.theaustralian.com.au/nation/minister-to-reform-building-industry/news-story/7eafbf904b49b1c2293a2bec6549f098. Accessed 21 July 2019.

By way of comparison, it should be noted that doctors, lawyers and architects all have to be licenced/registered to practice but, as things stand, engineers do not.

3.2 Reducing risks to public health, safety and welfare

The greatest risk to consumers of engineering services in the current registration environment—where there is little or no regulation of the engineering profession—comes from engineering practitioners attempting to undertake work without adequate skills or competencies. Registration helps to ensure that only those with suitable baseline qualifications (that is, an appropriately recognised engineering degree), enough relevant experience, and a proven commitment to ongoing training and development can provide engineering services.

Risks to the public resulting from the provision of engineering services by unqualified or incompetent persons have three elements:

- Health: through such things as badly designed or 'sick' buildings (poor air-conditioning, rising damp, low natural light levels). Beyond the building sector, health effects can include things such as contaminated drinking water and other environmental incidents.
- Safety: through the collapse or other significant failure of buildings such as was seen in the Opal and Mascot Towers of Sydney in 2018-2019. Safety issues can also arise beyond the building sector with infrastructure failures (for example, bridges) or through the failure of hazardous services such as gas, electricity or mechanical works.
- Economic: involving financial costs such as design and construction costs, litigation expenses, lost production and rectification costs. The economic costs associated with the Opal and Mascot Towers offer relevant contemporary case studies.

Requiring engineering practitioners who offer services that place public safety, health and welfare at risk to be registered can minimise these risks. It does this by, as described above, creating a system to recognise people likely to perform competently, and a mechanism to exclude those found to be unsuitable to work as an engineer.

3.3 Professional recognition

Businesses and the community expect a certain set of standards and skills from engineering practitioners. As with other professionals, engineering practitioners have a high degree of responsibility and liability imposed on them by courts and regulators. A statutory registration scheme would identify those persons whose academic qualifications, cumulative and current experience, competencies and commitment to ethical conduct and continuing professional development are the standard expected of the ordinary skilled person exercising and professing to have that skill.

This point was highlighted in the independent expert report into Opal Tower, commissioned by the NSW Government, which recommended, "[t]he creation of a government Registered Engineers database developed in partnership with an appropriate professional body."[3]

In addition, regulators can create a register to signal that registrants, in the provision of engineering and engineering-related services, can maintain and have the benefit of professional indemnity (PI) insurance in the event that a professional services provider fails to discharge his/her duties properly.

3.4 Enhanced international mobility and trade in engineering services

In many countries, engineering is seen as an essential profession whose practitioners should be recognised and registered. Standards of practice that are recognised by government have the potential to improve overseas trade

[3] John Carter, Mark Hoffman and Stephen Foster, Opal Tower Investigation Final Report, 19 February 2019. Available at: https://www.planning.nsw.gov.au/-/media/Files/DPE/Reports/opal-tower-investigation-final-report-2018-02-22.pdf?la=en. Accessed 21 July 2019.

and are essential for trading in accordance with the World Trade Organisation trade and services obligations, and under bilateral trade agreements.

A statutory compulsory registration scheme for all engineers in NSW can provide a competitive edge for a state that is seeking to export services to the global market.

3.5 Legislative efficiency

A statutory registration scheme with requirements that match those of other jurisdictions creates legislative efficiency. It is a means of ensuring that both a common standard for engineering practice is in place in all states and territories and that engineers do not have to comply with the different requirements in each jurisdiction.

3.5.1 Assessing authorities

In QLD, the government recognises independent assessing authorities to conduct the initial checks of applicants for registration. Using assessing authorities, such as Engineers Australia, can help simplify compliance requirements and avoid red tape. It offers a mechanism for assessing the qualifications and experience requirements of a statutory register, with a letter of assessment that is issued once but can be used in all jurisdictions that require registration of engineers. The assessment provided by Engineers Australia can nominate an individual's areas of practice, which is especially useful for jurisdictions that require engineers to be registered for work in selected industries or engineering occupations.

4. Scope of registration

Current proposals by the NSW Government for registration of engineers may be too restricted. Feedback to that effect has been provided as part of a submission in response to the Government discussion paper, "Building Stronger Foundations." This section explains why registration of engineers should be applied as widely as possible.

Engineers Australia recommends that all engineers in all areas of practice and operating in all industries are registered to practice (unless working under the supervision of a registered engineer).

This comprehensive approach has existed in Queensland where a compulsory register of engineers has been in place since 1930 and is being considered for implementation in Victoria through the Professional Engineers Registration Bill 2019.

For NSW, Engineers Australia accepts that the immediate concern is engineering services in the building sector. The recommended scope of registration in that sector is explored at Section 4.1.

Importantly, Section 4.2 provides advice on why short-term solutions that target the building sector should be designed to enable future realisation of a vision for comprehensive registration of engineers, such as is required in Queensland. The reality is that engineering pervades all industries and all industries are at risk of associated failures—not just the building industry. Unless there is compulsory registration of all engineers, engineering failure across all industries will continue to pose a risk to community safety and consumer protection.

4.1 Building sector

Recommendation 1 of *the Shergold & weir report* is that each jurisdiction require the registration of engineers involved in the design, construction and maintenance of buildings. The report's detailed commentary to accompany that recommendation does not give any indication that the scope of registration should be restricted; it instead reads as a recommendation that calls for all engineers operating in the building sector to be registered.

Polling conducted by Engineers Australia, nationally and in NSW, shows that broad-based registration of engineers has very high levels of public support across all demographics. The poll of 1,222 people aged 18 years and older was conducted on 18-23 July.[4] It asked:

> *"Now a question about engineers in Australia. Engineers are involved in a range of things such as designing and building residential towers, making public infrastructure like bridges and roads, or delivering manufacturing and high-tech innovation. Do you think engineers in Australia should, or should not have to be registered in order to practice, in the same way as other professions such as architects, doctors and lawyers?"*

Nationally, 88% of respondents answered that, "Yes, engineers should have to be registered." Just 4% answered "No, should not have to be registered" and 8% answered "No opinion / can't say."

NSW respondents showed even higher levels of support: 91% support, 3% oppose and 6% can't say.

Public support for broad-based and compulsory registration of engineers is incredibly high. When the results are broken down to various demographics, support never gets below 82%. If the NSW Parliament legislates for a broad-based statutory register for engineers, it will have the support of city and rural voters, those on high and low incomes, men and women, and people of all age groups.

Indeed, as mentioned above, following the Mascot Towers situation becoming public, the NSW Minister for Better Regulation and Innovation was reported as saying that he couldn't believe that there was no requirement for engineers in NSW to be registered.[5]

Despite these widely-held expectations, the NSW Government 2019 building reforms Discussion Paper indicates that the registration scheme will only apply to those "who intend to make declarations." That is, to only apply to those who will be designated as "'building designers'…who provide final designs and/or specifications of elements of buildings to declare that the building plans specify a building which will comply with building regulations, including the BCA (Building Code of Australia)."

If registration requirements are limited to only a sub-category of engineers, to be known as 'building designer', then the benefits of a broad registration scheme will not be realised, community expectations will not be met, and public safety and consumer confidence will continue to be compromised.

A restricted registration scheme would be a missed opportunity and misapply the intent and vision articulated in Recommendation 1 of the BMF Building Confidence report.

Recommendation: Engineers in NSW are not currently required to be registered, and it is recommended that a new registration scheme is applied to all who provide professional engineering services (other than those working under the supervision of a registered engineer) in the building sector.

4.2 A bigger vision

At the time of the 2016 census, 107,993 engineers resided in NSW. Of these, 60,197 (55.7% of the total) were in engineering occupations and therefore likely to be providing engineering services of some kind.

4.2.1 Engineering occupations

Engineers Australia analysis of the 358 four-digit industries in the Australian Bureau of Statistics (ABS) Australian and New Zealand Standard Classification of Occupations (ANZSCO) has identified 51 engineering occupations.

[4] The poll was conducted for Engineers Australia by OmniPoll. The poll was conducted nationally among 1,222 people aged 18 years and over. Respondents were drawn from the online consumer panel managed by Lightspeed Research, OmniPoll's online partner. Sample quotas were set for each state, city and regional area, along with sex and age. To help reflect the overall population distribution, results were post-weighted to Australian Bureau of Statistics data on age, sex, area and highest schooling.

[5] See footnote 2.

The BMF *Building Confidence* report recommends that seven engineering occupations are registered. They are certainly appropriate for the building sector, but they are just the tip of the iceberg when it comes to the types of roles that engineers fill.

The long-term vision of the NSW Government for registration of engineers should therefore extend beyond the engineering occupations that are specific to the building sector.

4.2.2 Engineering industries

Using nation-wide 2016 census statistics as a guide, it is estimated that 9.3% of NSW-based engineers are working in the construction industry (which includes both building-related and 'heavy and civil engineering' construction). Similarly, 15.0% are estimated to be working in the Professional, Scientific and Technical Services industry (not including computer systems design sub-sector), a large number of whom will be supporting the building sector.

It is evident from these statistics that the building sector is a significant user of engineering services but is by no means the only—or even dominant—sector in which engineers work. An estimated 75.7% work in industries that have little relationship with the building sector.

Engineers provide engineering services in all industries and, through analysis of ABS census data, Engineers Australia has developed the concept of "core industries" for engineering. A "core industry" is an industry in which the proportion of engineers in the industry employed in engineering occupations is higher than the national average. Expressed more simply, core industries employ lots of engineers who provide engineering services.

There are seven such industries:

1. Professional, scientific and technical services
2. Mining
3. Electricity, gas, water and waste services
4. Information, media and telecommunications
5. Construction
6. Public administration and safety
7. Manufacturing.

Even 'non-core industries' employ many engineers who provide engineering services. For some, the percentage providing engineering services is very low. For example, just 4.3% of engineers in the Accommodation and Food Services industry are in engineering roles. In the Education and Training industry, 53.6% of engineers are in engineering roles, but more likely to be teaching discreet subjects—such as maths—than providing engineering services.

But for some non-core industries, there is still a large number of people providing engineering services for which registration would be appropriate. For example, in the Transport, Postal and Warehousing industry 53.3% of employed engineers are in engineering roles and, given the industry, are quite likely to be providing engineering services.

The above discussion highlights the ubiquity of engineers across industries. The NSW Government vision for registration of engineers should therefore extend beyond the building sector. If it doesn't, community safety and consumer protection will continue to be compromised.

4.2.3 The Queensland and Victorian models

The compulsory registration system in place in QLD since 1930 reflects the fact that there is a very large number of engineering occupations, and that engineers work across all industries. In QLD, anyone providing a professional engineering service in Queensland or for Queensland must be registered as a Registered Professional Engineer of Queensland (RPEQ), or work under the supervision of an RPEQ. That system helps maintain standards in the profession and upholds public confidence in the services provided by engineers.[6]

[6] See, Applying for Registration – Explanatory Notes, Board of Professional Engineers Queensland, Version 2 Approved 19 June 2019. Available at:

Victoria has a well-established system for requiring engineers who occupy four key areas of practice in the building sector to be registered, and is currently expanding the scope of registration to cover five engineering areas of practice, and to include services in any industry. The Professional Engineers Registration Bill 2019 is awaiting debate in the upper house.

Recommendation: It is recommended that legislative mechanisms created to fulfil the short-term goal of engineer registration in the building sector is designed to enable later expansion of the scope of registration to all engineering occupations in all industries.

Recommendation: It is recommended that a new registration scheme for currently unregistered engineers in NSW be aligned with the system already in operation in QLD and is proposed for Victoria in the Professional Engineers Registration Bill 2019. This will ensure mutual recognition of registration across borders.

5. Essential elements of a statutory registration scheme

This section explains the finer detail that should be included in a registration scheme for engineers.

All registration systems have the same basic characteristics in that standards must be set, courses accredited, candidates examined or assessed, and a register maintained. Performance must be monitored, and failures disciplined. A register has greater effect if supported by licensing arms of government.

Engineers Australia supports a co-regulatory model of registration involving statutory bodies and professional associations undertaking various roles. The co-regulatory model provides greater assurance of the competency of registered engineering practitioners and reduces the risk of physical and financial harm to consumers. This approach allows industry and the professional association to control the qualifications and competency standard applied to a practitioner, but allows government to oversee the assessment and monitoring system and standards applied to practitioners through the approval process.

A guiding principle of the voluntary registration model introduced by Engineers Australia (the NER), is to increase the professionalism of the broadest possible cohort of practising engineers. Under a co-regulatory approach, Engineers Australia believes that the legislation governing the delivery of engineering services in NSW ought to:

- Contain restrictions on who may deliver engineering services
- Restrict the 'registered' title to those who are on an engineering register
- Register engineers in the broadest possible areas of engineering practice and not by industry. The onus is on each registered engineering practitioner to only undertake work that he or she is competent to undertake. In QLD, for example, 26 areas of practice are currently recognised.
- Base registration on a competency assessment by approved assessment entities
- Include a mandatory continuing professional development regime for ongoing registration

Regulators may also wish to require registrants to have the benefit of professional indemnity insurance.

5.1 Occupations to be registered

Engineers Australia recommends a long-term goal for all engineers in all areas of practice and operating in all industries to be registered to practice (unless working under the supervision of a registered engineer).

That comprehensive vision has existed in Queensland since 1930 and is being proposed in Victoria through the Professional Engineers Registration Bill 2019.

https://www.bpeq.qld.gov.au/images/documents/forms/1900625%20Application%20for%20Registration%20Version%204.pdf. Accessed 4 July 2019.

For NSW, Engineers Australia accepts that the immediate concern is engineering services in the building sector. The list of engineering practitioners provided at Recommendation 1 of the BMF Building Confidence report represents the minimum to be registered:

- Civil engineer
- Structural engineer
- Hydraulic engineer
- Mechanical engineer
- Geotechnical engineer
- Fire safety engineer
- Fire protection system engineer

Engineers Australia recommends that anyone providing engineering services in the areas of practice listed above should be registered, unless if working under the supervision of a registered engineer.

5.2 Minimum requirements for a registration scheme

Engineers Australia supports basic minimum requirements for any registration scheme such as being over 18 years of age, being a fit and proper person, completing standard forms and the like.

In addition to those general requirements, there are others specific to professional engineers. All registrants on the compulsory professional engineers' register should meet the following minimum requirements:

- a professional engineering qualification benchmarked to international education standards via the Washington Accord[7] or equivalent
- a minimum of five years of professional practice relevant to the registered area of practice
- currency of continuing professional development of 150 hours over a three-year period
- a commitment to ethical practice
- an annual certificate of registration.

Regulators should also seek to require applicants to have the benefit of Professional Indemnity (PI) insurance, and may also require applicants to be of good character.

5.3 Mandatory skills for a registered engineer

Professional Engineers require at least the equivalent of the competencies in a four-year full-time bachelor degree in engineering.

As such, a professional engineer subject to compulsory registration in NSW should hold an engineering degree that is either:

- A four-year engineering degree earned at an Australian educational institution that has been accredited by Engineers Australia
- A degree earned at an overseas education institution that has been accredited by a signatory to the Washington Accord (*see note below*).
- An engineering degree from any other educational institution that has been independently assessed by Engineers Australia as producing a graduate with at least the equivalent of the competencies in a four-year full-time bachelor degree in engineering.

To meet changing demands it may in the future be possible for an applicant with a non-engineering degree, but with suitable practical experience, to be independently assessed and verified to be considered as having the equivalent to a four-year engineering degree.

[7]The Washington Accord is an international agreement between bodies responsible for accrediting engineering degree programmes. More information about the Washington Accord is available online, at: http://www.ieagreements.org/accords/washington.

For clarity, as noted in other sub-sections, all registrants on a professional engineers' register should meet the following minimum requirements:

- a professional engineering qualification benchmarked to international education standards via the Washington Accord or equivalent
- a minimum of five years of professional practice relevant to the registered area of practice
- currency of continuing professional development of 150 hours over a three-year period
- a commitment to ethical practice
- an annual certificate of registration.

Regulators should also seek to require applicants to have the benefit of Professional Indemnity (PI) insurance.

5.4 No specific qualifications

Specific qualifications should not be required in a registration scheme for engineers. Engineers Australia recommends that a co-regulatory scheme be created that includes independent assessment of an applicant's qualification and competency claims to determine if they meet the requirements for registration within a particular area of practice. As in Queensland, relevant organisations can be accredited to provide assessment services. Engineers Australia is one such organisation, along with eight others.

If compulsory registration of engineers is introduced in NSW, Engineers Australia would seek to become an assessment entity. However, we note that it should not be compulsory for someone to be a member of Engineers Australia to be listed on the government's register of engineers.

5.5 Insurance

The crisis in the insurance market for the building sector cannot be ignored and the focus that all governments have on resolving the issues that have led to it is endorsed by Engineers Australia.

All engineers, registered or not, should have appropriate insurance cover. This can be achieved either with a personal insurance contract, or by virtue of coverage through an employer's insurance contract.

Liability for poor quality work does not diminish in the absence of registration. What compulsory registration can achieve is a mechanism for ensuring that only those with appropriate insurance coverage are able to practice.

In particular, Professional Indemnity (PI) insurance enables registered professional engineers to provide their services without fear of financial ruin that may arise from a successful law suit to recover the cost of work that has gone wrong.

Engineers Australia recommends that the government make PI insurance a condition of registration.

5.6 Three categories of engineer

There are three categories of engineer recognised as providing engineering services in Australia. There is merit in including all three on a NSW register for engineers, though at present only those who provide *professional* engineering services are required to be registered in Queensland and Victoria.

Engineers Australia therefore recommends that the requirement for registration of engineers in NSW be applied to professional engineers as a minimum.

It must become illegal for a person to call themselves a professional engineer unless they are competent, as recognised by them being listed on a compulsory register of professional engineers.

Similarly, it is important to ensure that those who provide engineering services to the level described below for "Engineering Technologist" and "Engineering Associate" are not unintentionally excluded from the building sector (or any other sector). The main thing is to ensure that "professional engineering services" are only provided by "professional engineers", but that the other levels of engineering service can continue to be provided by engineering technologists and associates.

5.6.1 Professional Engineer

Professional Engineers apply lifelong learning, critical perception and engineering judgement to the performance of engineering services. They challenge current thinking and conceptualise alternative approaches, often engaging in research and development of new engineering principles, technologies and materials.

Professional Engineers require at least the equivalent of the competencies in a four-year full-time bachelor degree in engineering.

5.6.2 Engineering Technologist

Engineering Technologists exercise ingenuity, originality and understanding in adapting and applying technologies, developing related new technologies or applying scientific knowledge within their specialised environment.

Engineering Technologists require at least the equivalent of the competencies in a three-year full-time bachelor degree in engineering.

5.6.3 Engineering Associate

Engineering Associates apply detailed knowledge of standards and codes of practice to selecting, specifying, installing, commissioning, monitoring, maintaining, repairing and modifying complex assets such as structures, plant, equipment, components and systems.

Engineering Associates require at least the equivalent of the competencies in a two-year full-time associate degree in engineering or a two-year full-time advanced diploma in engineering from a university or TAFE college.

6. Role of the Engineers Australia National Engineering Register

The National Engineering Register (NER) was introduced by Engineers Australia in 2015 and is recommended as the model for introducing a co-regulatory system of registration for engineers.

The NER is the largest publicly searchable register in the country with 21,363 people registered as of July 2019. It delivers a uniform national benchmark of professionalism in the broadest areas of engineering practice, both general and special, in both the private and public sectors.

The NER covers each of the three occupational categories of professional engineer, engineering technologist and engineering associate.

It is possible for both members and non-members of Engineers Australia to be registered on the NER. It improves professional recognition and public trust of engineers in Australia because all registrants on the NER meet the standard of professionalism expected of any professional:

- a recognised qualification benchmarked to international education standards
- a minimum level of professional practice
- currency of continuing professional development
- a commitment to ethical practice
- an annual certificate of registration.

The benefit of Professional Indemnity (PI) insurance is also currently a requirement for NER status. The annual registration certificate issued to registrants on the NER demonstrates their currency and continued commitment to the serious obligations of professional practice.

In the context of NSW building sector reforms, it is important to note that while the NER has made important advancements towards achieving its objectives, it is not a substitute for compulsory registration of engineers.

Because it is not compulsory for an engineer to be registered on the NER, an engineer looking to avoid scrutiny/regulation can simply not sign up to it. Of the roughly 60,197 engineers working in NSW, only 5,248 are on the NER (about 8.7%).[8] The bottom line is that someone can still call themselves an engineer without having to be registered on the NER.

This information is shared because many Engineers Australia members either support the calling up of the NER in legislation in all jurisdictions, or erroneously believe that it already is. The NER is, after all, a *national* engineering register.

For clarity, Engineers Australia believes that the NER provides a good *model* for the NSW Government, and that bodies like Engineers Australia are best-placed to assess the qualifications and experience of applicants to a statutory register. However, we do not ask for the NER to be called up in legislation. There are three reasons for this:

1. The role of regulator belongs to Government. Unlike professional bodies, governments have the resources and legal power to conduct comprehensive investigations of the kind outlined in the discussion paper, and to enforce sanctions. If Engineers Australia was to take on this role, we could be accused of having a conflict of interest.
2. Engineers Australia recognises that the government is unlikely to support monopoly control of a public registration system, albeit by a not-for-profit professional association.
3. Engineers Australia views registration of engineers as a fundamental priority for the profession and seeks to avoid any inference of a profit motive in its advocacy.

Driving our work is the fact that Engineers Australia is constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

[8] The 60,197 figure is based on Engineers Australia analysis of the 2016 census and includes all engineers (professional engineers plus far lesser numbers of engineering technologists and engineering associates) who were in the labour force and working in engineering occupations. The NER figure stated is accurate for July 2019.


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