19th May 2021

Expert Panel's Review of Victoria's Building System: Framework for Reform Discussion paper

This submission is provided in response to the expert panel's request for feedback on the Framework for Reform Discussion paper.

About Engineers Australia

With over 100,000 individual members, Engineers Australia is the engineering profession's peak body. We are the voice of the profession and exist to advance the science and practice of engineering for the benefit of the community. In the Victoria, we represent over 20,000 Engineers.

Our high standards, globally-recognised credentials and international agreements enable Engineers Australia members to live and work around the world – with our members currently in more than 120 countries.

Founded in 1919 as the Institution of Engineers Australia, our work has underpinned the progress of our nation for more than a century. Engineering plays a pivotal role in society and will continue to shape the future of Australia, creating healthy, just, prosperous, secure and sustainable communities.

Engineers Australia has undertaken a thorough review of the Framework for Reform Discussion paper and consulted with members. We are pleased to respond to the following 32 questions on which the panel is seeking feedback.

1. **Are there any additional issues that you believe could be covered in our proposed reform program?**

   In general, Engineers Australia commends the proposed Stage One of the reform agenda as it covers the right issues, namely practitioner registration, building approvals and the role of the Relevant Building Surveyors (RBS), regulatory oversight (audit and enforcement), and consumer protection.

   Based on the consultation paper, a key area that could be further strengthened is to require professional engineers to do formal inspections for critical aspects during construction stage irrespective of the model of contractual delivery. This is recommended because the services of engineers working on buildings that are not owner-occupied are frequently declined/reduced during the construction phase(s), resulting in quality deficiencies and debatable compliance outcomes. Some of the concerns are addressed by the recent ABCB consultation paper on mandatory inspections.

   As a further suggestion, Engineers Australia has previously prepared an industry report, *Building Confidence: How to use engineers to improve building and construction*, which can be found here: https://www.engineersaustralia.org.au/sites/default/files/resources/Public%20Affairs/2020/Building%20confidence.pdf. The report introduces two key professional engineering roles into the delivery and approval of a building:

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- Engineer of Record – engaged by owners to review and assess drawings, reports, or documents for compliance with the performance objectives and compatibility with the concept design. This role is frequently used by tier 1 developers/builders with in-house engineering reviewers, e.g. design managers. Yet for smaller jobs, the role is largely missing; and
- Proof Engineer - engaged by the building approval authority, i.e. Relevant Building Surveyors (RBS), to verify the integrity of integrated complex engineering systems for compliance with the NCC. For example, for fire safety engineers, the principle applies to the full integration and verification of the testing and commissioning of smoke management, alarm, vertical transportation etc. The purpose of the role is to fill in any technical capability gap an RBS may have when the person assesses complicated engineering designs for NCC compliance. Engineers Australia emphasises that, to ensure independence, the role should only be engaged by the RBS.

As the report identified, *'There is an ever-increasing complicated building environment to be navigated. With this comes risks of error or omission associated with the design of related engineering systems.'* Engineers Australia believes that significant improvement to the engineering processes is necessary to lift the standards and eventually lead to better outcomes in the building construction industry and highly recommends the two proposed roles be considered by the reform panel.

Additionally, Engineers Australia recommends the following aspects be embodied into the final agenda:

- Support innovations in key areas such as data-driven decisions, reduction of greenhouse gas emission with new materials, advanced manufacturing practices etc. Where relevant, these should be supported by locally available testing and verification providers to confirm compliance with the relevant domestic and international codes;
- Identify pathways to improve building sector productivity; and
- Encourage positive cultural shift such as promotion of workplace gender/cultural diversity, endorsement of better workplace practices on mental health and wellbeing etc.

All three aspects above are critical to the future of the industry as the industry has seen poor performance for each of the three aspects, when compared against other industries.

2. What are the pros and cons of the possible improvements presented and do they address the key issues?

The improvements suggested address the key issues. They are not only important but essential to a proper quality control system that protects consumers.

3. Where there are potential alternative options presented in the possible improvements (such as for building approvals or regulatory oversight), please explain which is your preferred approach and why.

Engineers Australia has four high-level comments.

Firstly, regulatory oversight in terms of government audits and inspections of both building performance and practitioner performance are critical. The work of the Office of Building Commissioner in NSW and the targeted inspections in Victoria have shown very significant numbers of defects (e.g. waterproofing) and poor practitioner behaviours, and hence emphasise why this is critical to building improvements. Detailed

auditing of practitioner CPD and random audits of sites for compliance with certified designs during construction should be considered.

Secondly, Engineers Australia suggests further consultation be conducted for the proposal to hand building approvals back to councils from Private Building Surveyors (PBS). This is because some councils may not have the necessary skills, nor have the resources to carry on the task. Scholarships or fee relief to increase the number of building surveyors and an improvement in the insurance offerings available will assist in training new practitioners and retaining competent practitioners within the industry.

Thirdly, minimum standards of documentation upon which a construction certificate may be based (a similar approach has been indicated in NSW under the Design and Building Practitioners Regulation 2021) could assist in improving the quality of 'for construction' documentation.

Lastly, New Zealand also operates a highly successful and industry-wide set of definitions which have ensured quality and consistency of outcomes (the Construction Industry Council Guidelines for scope and stage of design). This has led to a consistency of fees which has reduced the extent of price undercutting and increased the quality of the building construction and commissioning when compared to similar installations in Victoria (as reported by members who work within companies who work in partnership with local NZ consultants). The relevant documentation can be found via: https://nzcic.co.nz/resources/guidelines/. Further, the consistency of scope and quality has resulted in practitioners remaining in the industry in NZ, which is a challenge that many are facing in the Victorian building construction industry.

Additionally, as outlined in the answer to question 1, the proposed two roles (Engineer of Record and Proof Engineer) have the potential to drive improved practices. However, their authority needs to be clear and widely agreed to maintain the independence that the work entails.

4. Are there other possible improvements to deliver the reform objectives which have not been considered?

Engineers Australia has no further improvement to suggest. Any additional topics identified during Stage 1 should be allowed to be added to Stage 2 reform.

5. Are there any implementation issues you would like to draw to the Panel's attention?

Engineers Australia notes that Stage 1 covers a wide range of topics that are important to a better future of the industry. Given its breadth and scale, Engineers Australia suggests priority action lists under each element be developed with clearly defined outcomes and timelines.

Furthermore, Engineers Australia notes that one of the potential implementation issues relates to education and competency and the time to bring all practitioners up to the right standards. Education, training and CPD must be given high priority to lift competency as quickly as possible. Engineers Australia is

open for collaboration with relevant stakeholders in this space with our trusted training providers and subject matter experts.

Practitioner Registration

6. **How can accountability across all construction work be improved?**

   Engineers Australia agrees that in the current building construction industry, accountabilities are not very clear among practitioners (especially with many specialists works) and often become convoluted when the scope of works is defined vastly differently under different engagement contracts. Therefore, Engineers Australia recommends the reform investigate accountability allocation both from a registration perspective and from a system process perspective.

   The registration of practitioners helps define the scope of work for each discipline and uses codes of practice and disciplinary actions to deter people from practicing without understanding their accountability.

   From a process perspective, the design and construction process could have multiple practitioners engaged at different stages by different contracts for different outcomes. The accountability is transferred from one party to the other through the process. Therefore, accountability allocation along the process should be considered and clearly defined. For example, how much accountability the detailed-design stage designer should inherit from the concept-design stage designer. One of the approaches to define this accountability is to use Level of Details (LoD) defined by the 3D modelling process as the criterion to allocate the responsibility properly based on the level of documentation produced. This is consistent with the approach adopted in the NZ CIC Guidelines mentioned earlier.

   Lastly, Engineers Australia emphasises the importance of regulatory oversight in this process. Guidelines should be developed to help practitioners to be familiar with their accountability, establish an understanding of fair risk allocation, and understand the consequences if anyone fails to discharge their duties in this process. It is critical to add that practitioners may be engaged by different parties at different stages and hence can be affected by compromised outcomes and changing priorities. Engineers Australia encourages the reform panel to consider how practitioners can be supported through legislation to uphold the highest practice standards and empowered to do so even under tremendous amount of pressure from other parties.

   In summary, accountability will be improved when there is clear knowledge of who has to perform each action, what standard is required for the action to be performed, and what registration and competence the person doing the action has to have.

7. **Which currently unregistered practitioners should be considered for registration?**

   - Structural engineers should be considered because, though there are similarities, in practice they are very different from Civil Engineers.

- Hydraulics Engineers are different from plumbers, mechanical engineers and civil engineers. Their engineering input is needed to design authority sewer drainage, stormwater drainage above ground, trade waste treatment and management before connection to the sewer, kitchen grey water treatment, Reverse Osmosis water creation and many more detailed systems.
- Fire system design engineers, including both fire protection (hydrants, hose reels, sprinklers, etc., known as "Wet Fire") and fire detection (Fire alarms, SSIPs/FIPs, EWIS or BOWS systems, speakers, MCPs, VESDA etc., known as "Dry Fire"). In NSW, these are supported by the Fire Protection Association of Australia and recognised via government registration schemes. Engineers Australia notes that some of the work is frequently carried out by other designers, such as electrical engineers. Such engineers are frequently assessed under the Building Services Area of Practice.
- Complex vertical transportation system such as hoists, goods lifts, large hospital lifts etc. requiring priority control, fire mode, destination control and multistorey banks of lifts for high rise buildings require specialist knowledge.
- Other categories, such as geotechnical and façade should be considered.

The Professional Engineers Registration scheme will be implemented from 1 July 2021. All engineers currently registered with the VBA will transition across to the new scheme to be managed by the Business Licencing Authority. We expect that the above items will be addressed under the new scheme which is outside the scope of this discussion paper.

8. Do you agree with developing practitioner competence frameworks to support system-wide industry competence?

Engineers Australia agrees that the key elements for the competence framework outlined on Page 49 of the paper are essential and supports the idea in principle. However, Engineers Australia notes that many tasks taken up by specialist disciplines are not sufficiently common or frequent and it is common to have practitioners working in different roles, e.g. an electrical engineer as a vertical transportation designer. Any frameworks should consider this situation. Engineers Australia is open to collaboration with the government and to share experience the organisation has developed over decades of competence assessment experience.

9. Could accreditation by industry bodies or RTOs become part of the practitioner registration and/or licensing process?

Yes. Many Industry bodies have lots of experience in assessing for accreditation of practitioners. Those industry bodies are well positioned to assess competence of their members, and non-members, for compliance with the defined requirements for qualifications and practical experience for registration.

10. If so, how can we guarantee the improvement of practitioner standards through such a process?

Practitioner standards will be improved by requiring defined competence standards to be met as a pre-requisite to registration. Further improvements will arise from a requirement for registered practitioners to undertake CPD (especially mandatory CPD on NCC matters) for registration renewal.

Commonly, CPD opportunities have been created to help with improving practitioner competence. However, many practitioners working for small companies may struggle with the time investment and have limited access to CPD resources. Engineers Australia suggests the Victorian government continue to develop CPD training that are informed by site inspection findings and promote the training resources in collaboration with industry bodies.

Furthermore, Engineers Australia suggests developing and publishing joint practice notes on common project challenges that the industry frequently observes. The topics could be identified through the Stage 1 consultation process.

11. Should the NSW approach to design practitioners be considered for Victoria?

Yes. The NSW approach to register design practitioners to provide compliance declarations for regulated designs is supported. Further legislation changes should be developed to support the approach. It is important to harmonise among existing registration schemes covered by various legislation before introducing new scheme for the registration of design practitioners.

12. What measures could be considered to boost the number of skilled building surveyors and technical experts?

In general, to boost numbers of skilled building surveyors, a method of converting others in related occupations should be found. This could include intense programs, upskilling practitioners by topping up their existing competence.

For technical experts such as engineers, Engineers Australia suggests the industry support the professional development of young engineers to be involved in inspections, testing and commissioning activities. Due to the devaluing of engineering services within industry, engineers have seen their engagement level being reduced during the construction and commissioning stages. Therefore, the opportunity to gain site experience has been limited for junior engineers and potentially will result in serious knowledge gaps. The reduced use of engineers on inspections/testing/commissioning eventually results in more improvisation on site and concealment of issues which cause greater economic loss to the building owners.

Similar to engineers, building surveyors should be provided with more opportunity to develop their technical capability. In addition, building surveyors should be supported and guided by the government when those professionals deal with issues such as conflict of interest.

Building Approvals

13. **What do you see as the benefits and potential risks of the models described in the Framework for Reform? In particular, what are the implementation issues which the Panel needs to consider?**

    Engineers Australia notes that there are certain merits for each model, with the additional oversight into the building surveyor's decision-making process. However, Engineers Australia points out that there are many risks in all the three models, including:

    - The models are complex and could be confusing when the role of MBS and PBS is merged;
    - All models seem to have a degree of complexity, which brings risks in implementation. The principles upon which a system of building approvals should be based are as follows:
        - Building design is a top-down architectural and engineering design process, not a bottom up process of fitting a building into a set of code provisions that is typically the approach of a building surveyor.
        - The building permit and occupancy certificate should be able to be issued by a PBS or MBS, acting independently of the design team and design process, and acting in the public interest with no conflict of interest.
        - Engineers Australia notes that a dedicated project consultant – building surveyor helps provide clarifications on BCA compliance issues to the design team and hence adds value to the projects. However, this role should be separated entirely from RBS. Please refer to Engineers Australia submission to ABCB consultation paper: Integrity of Private Building Surveyors regarding how to avoid conflict of interests.
        - The design team architect, engineers and design practitioners should develop the Performance Solutions, not the PBS or MBS.
        - The process should be the same for all buildings, although the competence of the RBS might be assessed depending on the complexity/risk of the building.
    - MBS may not have the expertise to take up the additional tasks, nor councils have the resource. Potential disruptions to project delivery due to this should be considered; and
    - besides the independence of building surveyors, it is important to focus on the quality of certificates from engineers, architects, and other designers that the RBS relies upon for their certification. The independence of the certification process would be compromised if those sub-certificates are not prepared based on the same principles.

14. **Do you agree that a stronger regulatory framework for building approvals for complex or high-risk building work is needed?**

    Yes, Engineers Australia supports this in principle. It makes sense to have an increasingly proportionate approvals systems that recognises the greater risks in some more complex or high-risk buildings.

On the other hand, it is important to point out that as the complexity of buildings climbs up, the pool of practitioners becomes smaller. For projects such as hospitals, for example, most are the tier 1 designers/builders who would have the right expertise to do those projects. Due to this fact, high-risk, high complexity projects may have fewer issues than low risk buildings such as low rise residential apartment buildings. This should be factored in when more complicated building approval models are proposed to target the high-complexity buildings. The use of building surveyor track record (i.e. risk profile) could be a better tool once the data has been established.

15. Are there any other potential approaches to strengthen accountability across the building approvals process that the Panel should consider?

Mandatory CPDs on prescribed topics could be used to strengthen regulator's messages.

16. What other suggestions are there that would remove the potential for conflicts of interest between PBSs and builders, developers or design practitioners?

Engineers Australia recommends attention be drawn to the recent ABCB consultation paper on the same topic. Various approaches have been proposed including restrictions on engagement, upfront fee payment to PBS etc. The paper also defined different scenarios that should be considered as 'conflict of interest'. In addition, the independence, and codes of practices of other relevant parties who are involved in the certification process should be considered, as per the answer to the first question under 'building approval'.

17. Is there merit in introducing a 'clerk of works' or similar oversight function into the approvals process?

Engineers Australia endorses the introduction of a 'clerk of works'. Besides this role, Engineers Australia also suggests considering the notion of 'Independent 3rd Party Reviewer' based on the recent ABCB consultation paper as well as 'Engineer of Record', 'Proof Engineer' roles outlined by answer to the first question. For 3rd party reviewers, a similar role is sometimes included for the Private-Public Partnership (PPP) delivery method and jointly paid for by the ultimate owner, the financier, the building contractor and the maintenance contractor.

18. How should we differentiate between different type of buildings in terms of which types need greater oversight?

Engineers Australia suggests data from owners' corporations and insurance industry (such as past claim history per class of buildings) be analysed to understand the priority in Victoria. Once the approach has been tested and approved, it can be expanded and applied to other classes of buildings.

Anecdotally, it is worth noting that in Australia owner-occupied buildings usually have fewer problems with quality of build due to the involvement of relevant professionals throughout the design and construction

process. This may be due to Owner's Engineers/Architects/input from the operations team. Good examples are universities, major supermarkets who have their own standards, banks and other financial or superannuation bodies with formal commercial property portfolios, and government departments (Health, Education, Defence etc).

19. **Should the NSW system of requiring the developer to notify the regulator in advance of the issuing of an occupancy permit and associated enforcement measures be considered?**

    Yes

20. **Are there other key issues and possible improvements the Panel should consider?**

    The current approach of allowing building permits to be obtained with high level design documentation subject to later design (usually by a D&C contractor) runs the risk of the budget being inadequate for the full design work (and under reported for the purpose of Building Permit levies). It also runs the risk of the D&C contractor not knowing the full extent of relevant codes and provisions of the NCC. The D&C contractor also faces a dilemma as they are employed by a builder/developer who is often simply driven by cost and delivery program. As there is no benchmark on the minimum documentation level before a builder is engaged for the D&C process, confusion can easily be caused, design documentation is often inadequate, and thus may lead to lack of accountability and scope gaps.

    To set the minimum requirement, LoD may be used together with the builder's capability. In general, the absence of an industry agreed standard for Concept Design, Schematics Design, Detail Design and For Construction Design (post Shop drawing stage) is a major cause of communication and expectation difficulties. As mentioned previously, New Zealand Construction Industry Council Guidelines adopts a standard nomenclature and scope. The BIM LOD descriptions (100,200,300, 400) may assist.

    Lastly, the routine strategic re-corporatising of builders or other related contracting entities needs more attention. Many companies rebrand the business entities to avoid liability from the past. Engineers Australia suggests further oversight be exercised into this space.

Regulatory Oversight

21. **What changes to the functions and/or structure of the regulator(s) would improve regulatory outcomes?**

    Engineers Australia recommends more investment into building up in-house technical competence rather than purely expanding on regulatory power. The technical competence would be reflected by more frequent inspections and targeted practice guides to improve industry practice based on data collections and case studies from inspections.

    Overall, Engineers Australia believes that both high-level overarching oversight system as well as specialised regulatory sub-systems are required to ensure consistency and thoroughness.

22. Will improvements to strengthen existing oversight arrangements adequately address the issues relating to regulatory oversight of the building and construction industry?

Yes, the audit of practitioners and of building performance is critical to good outcomes for building and consumers. These audits must be regular, comprehensive and undertaken by skilled practitioners. Where issues are uncovered, education should be provided and strong disciplinary action and penalties should be considered for deliberate/repeated offence. This has been one of the weakest areas of regulatory policy and action in the past.

Engineers Australia suggests only one organisation be responsible for regulatory oversight, and if that is the VBA, then it must be adequately resourced for that function with full expertise in all sub-categories.

23. What are the benefits and risks of establishing an independent Office of the State Building Surveyor?

There are risks of delays and costs but if the balance is correct, the processes are transparent, and competent building surveyors/engineers are employed as technical staff to carry out random and scheduled inspections, Engineers Australia trusts it will deliver valuable result for the public.

24. What are your views on the most effective oversight structures for the regulatory functions in construction work, practitioners and consumer protections?

In general, more inspections at critical project nodes (such as before a concrete pour) should be considered by the regulators. Additionally, design certification provided by practitioners as a request of RBS should be audited randomly by regulators, based on the project risk profile and practitioners' track records. Currently, the design certification process leads to confusion and concerns on its effectiveness. The process could be improved if Proof Engineers are engaged directly by RBS only to assist RBS to review designs, instead of RBS purely relying upon the good faith in each design certification from consultants/suppliers.

Engineers Australia has proposed the inclusion of Engineer of Record and supported the role of 'clerk of work' in this submission as both should have the skill to oversee the works from different angles.

25. Should there be separate regulators for practitioners and for building works?

Engineers Australia does not have any specific comment at this point.

26. Should regulation of all design practitioners be brought together under one regulator?

Engineers Australia has provided comments under previous questions in this paper and notes that there are certain merits as outlined by the paper with bringing all design practitioners under one umbrella if they are all working in the construction industry and within the scope of National Construction Codes. However, Engineers Australia suggests further consultation be held with other regulators such as Architects

Registration Board Victoria. Also, the registration of professional engineers in Victoria extends beyond the building sector which would need to be considered when designing a regulatory framework for engineers.

27. Are there other key issues and possible improvements the Panel should consider?

Based on our members feedback, Engineers Australia points out the absence of full time MBS in many smaller municipalities, which is usually caused by skill shortage and/or insufficient funding . Further support should be provided in this regard to ensure competent MBSs can be effectively engaged by all municipalities.

Consumer Protection

28. Are there innovative ways to identify systemic issues faced by consumers in building and construction activities?

Engineers Australia recommends data be collected and analysed to gauge consumer experience. Based on the data analysis result, priority action list can be formulated. Overall consumers (especially owners for high-rise apartment buildings) do not have much involvement in the design and construction process. As a result, many off-the-plan apartments are reportedly completed differently from the concepts consumers signed up for. The change has not been perceived favourably by most consumers and results in horrible experiences for consumers. Engineers Australia suggests that further research is undertaken to investigate consumer experiences throughout the process and then identify ways to improve.

Engineers Australia also suggests reviewing the appointment contract between consumers and Owners Corporation Managers. It often occurs that the appointment contract includes appointment periods as long as 25 years. It is suggested that the initial appointment should not be longer than the relevant warranty period of the building.

29. How can consumers be better represented in the building system?

Consumers are typically vulnerable with limited knowledge and experience dealing with defects/disputes and are often deterred from taking proper actions due to insufficient understanding of the process or support. To help consumers, Engineers Australia suggests targeted training and concise guidelines on defect/complaints reporting be provided to consumers once their contracts are settled. It should be noted that for residential and some commercial properties, a conflict of interest occurs between the developer, building managers appointed by the developer and the ultimate owners of the strata titles (as outlined by earlier comment regarding owner occupiers). Engineers Australia strongly supports the establishment of a consumer representative body and would like to provide support during its formulation. The proper development of building manuals prepared for owners, such as highlighted in the ABCB consultation paper on manuals, should also assist building owners and consumers.

30. What kinds of direct consumer feedback mechanisms would work best in the building context?

Engineers Australia recommends that a clear flow chart be designed to show who to contact in what matters and associated time frames expected for resolution. That would help to identify the problematic areas and then redesign the process from there.

31. Which of the approaches outlined above would improve the consumer experience most effectively?

Auditing and enforcement actions by a sole regulatory body with strong penalties and high-profile communication of failures are critical to improving outcomes and confidence for consumers. Transparency should be built into the overall consumer experience, e.g. access to information on who the practitioners on the projects are, whether they are all registered and competent to deliver the building, whether they have fulfilled their CPD requirements, what their track records are etc.

The other approach being very effective in NSW is for government regulator teams to conduct random and targeted audits of buildings prior to occupation permits being issued, forcing developers and builders to fix defects before owners hand over their funds to the developers. Money is a driver, and this approach is likely to have the biggest impact on getting consumers the quality product they deserve.

32. Are there other key issues and possible improvements the Panel should consider?

For consumer protection, Engineers Australia calls for special attention to the certificates each party produces during the design and construction process. For example, if engineers are expected to issue a certificate at the end of construction, they must be engaged to carry out sufficient and regular site inspections throughout construction period. Our members have numerously raised the concern that engineers' work is not sufficiently valued and are not engaged properly with inspections. Consumer protection links to the quality of products, which rely upon the certificates from each party on the project.

Secondly, Engineers Australia suggest the quality of building manuals be improved, as per the recent ABCB consultation paper and associated Engineers Australia submission on the same topic. The Building Manuals are likely to be overlooked as the construction teams who prepare the document are rarely involved in the building operation and maintenance. As a part of Building Manuals today, 'As Built drawings' are reportedly unreliable. On this note improvements to the Building Manuals require some serious consideration to ensure current and future owners' interests are protected properly.