LEGISLATIVE ASSEMBLY
FOR THE AUSTRALIAN CAPITAL TERRITORY

STANDING COMMITTEE ON ECONOMIC DEVELOPMENT AND TOURISM
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Submission Cover Sheet

Inquiry into Building Quality in the ACT

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Submission

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1. Introduction

Engineers Australia is the peak body of the engineering profession. We are a professional association with about 100,000 individual members. Established in 1919, Engineers Australia is a not-for-profit organisation, constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

Engineers are central to the success of the building and construction sector. The construction sector directly employs about 29,000 engineers nationally, with many thousands more in supporting sectors such as professional, scientific and technical services. This includes fire safety, civil, structural, risk and building services engineers, amongst others. The association has representation on the Australian Building Codes Board Building Codes Committee, plus hundreds more on Standards Australia standards development committees.

This submission is in response to the ACT Government inquiry into the building quality in the ACT. It includes information that considered to be critical to improving construction quality in the ACT, from the perspective of civil and structural engineers.

This submission is informed by the experiences of Engineers Australia's members in Canberra who work in the civil and structural domains. These members are highly experienced structural and civil engineering practitioners who frequently confronting the problems raised in the discussion paper. They are regularly required to write reports that are eventually sent to the ACT government, outlining shortcomings in building projects. Some members are also asked to work with Bodies Corporate to assist them in rectifying the problems, so are also acutely aware that repairs can often be one or two orders of magnitude more expensive than it would have been to construct the building correctly in the first instance. In one well-publicised case in Bruce, the rectification cost is anticipated to be replicate the original build cost for the complex.[1] This experience has informed the views put forward in the submission.

The submission concludes with recommendations for action.

1.1 Contact details

Engineers Australia would welcome the opportunity to meet with you to discuss this submission in greater detail. To do so, please contact:

[redacted]

[1] See: *How Canberra developer Ivan Bulum allegedly left apartment owners with a $20 million bill*, James Fettes, ABC News, 28 February 2018. Available at: http://www.abc.net.au/news/2018-02-28/cracked-empire-ivan-bulum-canberra-developer-elara/9425510.

2. The *Building Confidence* report

In 2018, the Council of Australian Governments (COAG) Building Ministers Forum (BMF) received the report, *'Building Confidence – Improving the effectiveness of compliance and enforcement systems for the building and construction industry across Australia'* (Building Confidence report).

The report by Peter Shergold and Bronwyn Weir assessed compliance and enforcement problems affecting the efficacy of the National Construction Code (NCC) across Australia in the wake of the Lacrosse and Grenfell Tower fires.

The report's recommendations are supported by Engineers Australia's members. They see implementation of the recommendations as part of an essential program of reform that will deliver greater levels of safety to the public.

A number of the report recommendations are of particular interest to the engineering profession and Engineers Australia has offered to assist the BMF members as they work through the detail of each one. These are:

- Recommendations 1-3: Registration and CPD requirements.
- Recommendation 8: The International Fire Engineering Guidelines and engagement with fire authorities as part of the design process.
- Recommendations 13-15: Building approval documentation by registered practitioners, and approval of performance solutions.
- Recommendation 17: Third party reviews.
- Recommendation 19: Registered fire safety practitioners for fire safety systems in Commercial buildings.
- Recommendation 20: Comprehensive building manuals for commercial buildings.

However, despite providing in-principle support for the report at their April 2018 meeting, the most recent communique issued by the BMF shows that clear and consistent industry support for urgent implementation of the recommendations has been heard but not entirely heeded.

The BMF says it will now develop a paper that sets out an implementation plan for reform to be reviewed at the next BMF meeting in December. Unfortunately, the paper will focus on just three of the recommendations contained in the report, with further consideration of only three more.

The three recommendations slated for implementation focus on the integrity of private building surveyors.

While Engineers Australia applauds the ministers for responding to these three recommendations, as well as the commitment to development of an Australian Standard for permanent labelling of Aluminium Composite Panel (ACP), the association is concerned with the lack of urgency in planning for implementation of the remaining 18 recommendations.

These recommendations are about risk management, fire safety and competency. Implementation of the Building Confidence recommendations will build confidence that all steps have been taken to ensure our community is safe in the built environment.

The Commonwealth Department of Industry, Science and Innovation has confirmed with Engineers Australia that there is continued in-principle support from the BMF for all recommendations and that those slated for inclusion in the implementation plan paper, as well as those listed for further consideration, should be considered as priorities, with the balance of recommendations to be considered for implementation at a later date.

However, this date was not specified. A comprehensive timetable for implementation is vital to building confidence in ministerial commitment to public safety.

The BMF response to the report is decidedly underwhelming. It is now more than a year since the tragic Grenfell Tower fire and nearly four years since the Lacrosse Building fire. The report advocates for implementation of the recommendations over three years.

Engineers Australia recommends that the ACT Government fully implements all recommendations of the Building Confidence report, with an agreed timetable for implementation and public reporting on progress towards implementation. It should furthermore urge all other BMF members to do the same.

3. Response to the discussion paper

The comments below seek to focus on the needs and long-term interests of final owners, customers and users of buildings in the ACT. Not all points raised in the discussion paper have been addressed. Rather, focus is applied to those matters germane to the professional role of engineers.

The experience of Engineers Australia members generally supports the views expressed in the issues paper. It is noted that most of the problems raised are in the multi-unit residential development sector, but can also occur in single dwellings and townhouses. The experience of Engineers Australia's members is, however, that commercial developments tend to have a much higher level of architectural, structural, hydraulic, mechanical, electrical and fire engineering documentation, and fewer problems. This is primarily because the developer will often continue to own the development once it is completed.

Put simply, many more building problems arise where the developer/builder is fundamentally focussed on selling the properties. Many of the most serious problems are only discovered long after the properties have been sold.

Most of the problems seen by engineers in the building industry are related to:

- Waterproofing
- Passive fire rating
- General structural design.

Each issue has important implications for design documentation and for on-site supervision.

3.1 Stage inspection and on-site supervision

Engineers Australia strongly supports the creation of a role of an independent designated inspector "*who is independent of the developer and builder or other interests in the project.*" The key role for this inspector is to "*reduce the likelihood of defects and minimise reliance on expensive post-construction rectification, litigation and penalty process.*"

This will greatly reduce the conflicts of interest that can arise when a developer also has an interest in a building company. In these circumstances the builder is effectively selecting and paying the certifier, which we consider to be an untenable conflict of interest.

Furthermore, the designated inspector should not review critical structural elements of buildings that are outside the inspector's area of training, experience and expertise. Engineers Australia is strongly of the view that inspectors should be assisted by experienced and competent structural engineers in these circumstances. This point is also true for many other areas such as fire engineering and hydraulic engineering, especially where the documents describing the works are of poor quality.

3.2 Waterproofing

Inadequate waterproofing is an ongoing concern, and in our experience is caused by the following factors:

- There are often no architectural drawings beyond plans and elevations. Consequently, no detailing has been carried out. Issues like set downs to balconies are often insufficient or non-existent, so proper repairs are also extremely difficult. Flashings are not detailed so the builder, or more often the subcontractor, is left to solve complex problems through whatever mechanism comes to mind and with little reference to industry recommendations or Australian Standards.
- Even when design details are provided, they are quite regularly not compliant with Australian Standards and are unfit for purpose. This is typically a problem with the design of gutters and downpipes which are not signed off by a hydraulic consultant.
- Some products used for balcony membranes are unsuitable, poorly applied or impossible to cure during a Canberra winter. The contract documents often contain no specification for seals or membranes, so the cheapest products are often used.
- Builders' supervision of subcontractors can be poor or non-existent.

- Some certifiers appear to take little interest in these important aspects of the work.

These deficiencies require improved documentation, design certification and supervision if the situation is to change. Structural engineers cannot offer sound advice to all members of the design team unless all details are documented prior to construction.

3.3 Passive fire rating

Over the past 10 to 15 years a significant proportion of units and other building developments in the ACT have been constructed using very small (100mm or less) cement filled steel columns, and small (150mm or 200mm) steel beams, purporting to be suitably fire rated. However, in many instances we have seen no evidence to support the rating for a particular project. On projects were the situation has been closely scrutinised it has been found that the work has left building occupants exposed to serious fire dangers as the fire resistance levels were well below the minimum required.

This raises serious concerns about the level of risk posed to residents of units and aged care facilities, in the event a fire occurs.

Engineers Australia believes that an effective response to this problem requires the following:

- An effective registration process for engineers practising in this field.
- Effective performance monitoring of engineering practitioners.
- Requirement for provision of credible and documented evidence to support any “alternative solutions”.

3.4 General structural design

In the experience of Engineers Australia members in the ACT, structural design in the commercial sector has been relatively good, with commercial clients paying suitable fees for good documentation. In contrast, in the residential unit sector the fees are generally far less for similar sized projects, and this had led to a much lower level of documentation, and poorer outcomes. Some of the identified problems could have serious safety consequences, while others have been more related to serviceability issues, such as excessive deflections or failure to cater for masonry expansion.

For example, for M Class sites (with moderately reactive clays and silts) there have been a significant number of floor slabs which do not comply with the requirements of *AS 2870-2011: Residential Slabs and Footings*. This approach reduces the cost to the builder, but can lead to extensive cracking over the next 20 years. The costs of rectifying the cracking will then fall to the future owner of the property.

This problem can only be rectified through regulation of structural engineers so that developing companies know that they will be made accountable for their designs by the regulator.

Prior to the current era of private certification, the government employed engineers to ensure that Australian Standards were adhered to and that the standard of engineering documentation was sufficient to describe the works to be constructed. We have now moved to a situation where every consultant knows that no one with any engineering expertise is ever likely to review their work. This situation has resulted in some designs that satisfy a market demand for cheap construction, but do not comply with Australian Standards.

To address this issue, we recommend that a system of peer review of structural designs be considered, so that accountability is returned to the system. Note that this is reflected in Recommendation 17 of the Building Confidence report. These reviews could be conducted on risk-based principles. For example, conduct review on a sample basis that could represent 10% of a designer’s work unless the designs are found to be problematic. In the latter case, more frequent reviews could be instigated.

Engineers Australia is strongly of the view that inspections of structural items should be carried out by competent practicing structural engineers and not certifiers. Members have provided anecdotal evidence that suggests certifiers are beginning to operate outside their field of expertise by carrying out inspections that are largely ineffective, because they are unaware of ramification of critical elements of the inspection. In a number of instances these inspections by certifiers have resulted in significant injuries or loss of amenity.

3.5 Regular and alternate dispute mechanisms

The current regulatory system for building work in the ACT does not provide for adequate record keeping by the private sector or the government sector, as set out below. Section 1 of the ACT Government paper touches on this subject, but further background perspectives and suggestions are provided below.

With respect to private sector record keeping (by designers and/or builders) Engineers Australia members have often found that the first line of defence for poorly or even dangerously constructed buildings is that the structural drawings have 'gone missing'. The second common claim is that the drawings cannot be released without the builder's permission. We note that it is never in the builder's interests to open the design up to scrutiny, so the permission is frequently withheld.

In a similar vein, it is noted that the builder is obliged by law to provide drawings to the body corporate. However, in the experience of Engineers Australia members, this rarely occurs because there is no penalty for non-compliance. In one example, a member was told by strata managers that they never ask for the drawings because if they did they would not be given another role by the developer.

With respect to government record keeping, the experience of Engineers Australia members is that over the past decade or so there has been much less rigour. The drawings for a particular project (which have been lodged and accepted) often contain little detail, or may only be preliminary drawings which do not reflect the finally constructed works. In one example provided by a member, on a recent large 18 level project in Belconnen the department did not have a single structural drawing and had to go and plead with the builder for a set of drawings well after the building had been fully occupied. It appears from member feedback that this was by no means an isolated example.

A significant consequence of this inadequate record keeping is that if there is a catastrophe, such as a building collapse, and structural engineers are asked to assist with the rescue operation, the relevant drawings will not be on the public record. This could put lives at risk.

To address these record keeping shortcomings, Engineers Australia recommends that:

- Certificates of Occupancy should not be issued on a building until a representative of the unit responsible for achieving and storing the drawings (and the certifier) has signed a document to verify that the drawings issued to the department are all of the relevant 'work as executed' structural (including shop drawings and precast drawings), architectural, mechanical, electrical, hydraulic, fire and landscape drawings.
- These drawings should be provided in PDF format, with the PDFs of sufficient resolution to ensure that all details are clearly legible. In the future it might be possible to adopt a proven BIM technology for such records.
- Certifiers who do not comply with the above regulation should be suitably disciplined to ensure compliance.
- Obligations on builders to provide accurate drawings to bodies corporate should be greatly strengthened, policed and penalties applied.

3.6 Quality assurance and the role of engineers

Engineers Australia welcomes the opportunity to be formally involved in providing greater transparency and accountability in achieving quality outcomes for the building industry. Engineers should take a more formal and active role in providing independent reviews and advice on:

- Design and contract documentation
- Stage inspections and onsite supervision
- Compliance with Certificate of Occupancy
- Dispute resolution.

This would include providing a quality assurance role, supported by legislation, to enable access to documentation for the undertaking of reviews at the request of the final owner, customer, user or ACT Government.

Under the *Building ACT 2004*, all documents relating to the building work are to be issued to the construction occupations register. The maintaining of the records is covered by the *Territory Records ACT 2002*. Checking the quality of the records submitted through periodic inspection by qualified engineers at the request of the final owner,

customer or ACT Government is one means of improving the system. At present, it appears that the ACT government does not have enough engineering expertise on hand (either employed within the agency or engaged as service providers) to develop a full appreciation and understanding of the quality of documentation being submitted.

The increased scrutiny would lead to greater transparency; developers, builders and Building Certifiers would know what is expected of them and be confident that their work is being appropriately checked. Their work should be able to be reviewed so that issues arising are made available to the final owner, customer and the construction operation register to enable rectification, dispute resolution and ongoing improvement.

3.7 Registration of engineers

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, anyone can purport to provide engineering services without appropriate competencies and with disregard to standards.

Engineering services are vital to Australia's 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.

There are five key benefits of a registration system:

1. Reduced risks to public health, safety and welfare
2. Legislative efficiency and cutting red tape
3. Industry and consumer information
4. Professional recognition
5. International mobility and trade in engineering services.

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.

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

The NER is the largest publicly searchable register in the country. 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.

The Register is accessible to both members and non-members of Engineers Australia. 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.

Engineers Australia recognises that the ACT Government, in the most recent Territory budget, earmarked funding to progress the registration of engineers. It is also noted that the new Chief Engineer position will drive this reform process. The Institution is however critical of the slow pace of reform and urges the government to implement a registration scheme as a matter of priority.

3.8 Re-birthing of engineering companies

In structural engineering it often takes a period of some five to 10 years before mistakes in design become apparent to the owners. This is because many phenomena such as creep, shrinkage, masonry expansion, soil moisture changes and active earth pressures are time-dependent.

Corporate phoenixing has become a significant issue in the ACT with engineering companies sometime closing down, but a company with very similar name subsequently registered. Such companies often convey the impression to the public that they are a company with a long and proud history in the ACT and elsewhere. Engineers Australia regards this practice as detrimental to sound building practice to say nothing about the ethical issues involved. We believe that the ACT authorities should take steps to avoid these practices such as basic checks of a company's history and exclusion of offending entities from work on government projects.

4. Recommendations

The following actions are recommended:

1. Engineers Australia recommends that the ACT Government fully implements all recommendations of the Building Confidence report, with an agreed timetable for implementation and public reporting on progress towards implementation. See section 2 for more details.
2. Engineers Australia supports the proposal to create the role of an independent designated inspector who is independent of the developer and builder or other interests associated with a project. The designated inspector should not review critical structural elements of buildings that are outside the inspector's area of training, experience and expertise. Engineers Australia is strongly of the view that inspectors should be assisted by experienced and competent structural engineers in these circumstances. See section 3.1 for more details.
3. Engineers Australia recommends that record keeping for building documentation be upgraded. Detailed and accurate plans should be lodged with the ACT government, and lodgement should be verified by the responsible officer. All documents should also be lodged with corporate bodies. Certificates of occupancy should be withheld until lodgement has occurred. See in Section 3.5 for more details.
4. Engineers Australia recommends that existing legislation for records management be better enforced, especially to enable suitably qualified engineers (at the request of the final owner, customer and ACT Government), to take on a quality assurance role to improve transparency, dispute resolution and provide continuous improvement of the system and the sector. See section 3.6 for more details.
5. Engineers Australia recommends that a registration scheme for engineers be implemented as a matter of high priority. See section 3.7 for more details.

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