

Submission on NSW Government Paper: “Building Stronger Foundations”

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Purpose:

My submission seeks to widen the registration of building designers to include all engineering disciplines involved in the provision of buildings, infrastructure and manufactured items.

Impact of lack of registration:

The qualifications, skill-sets, experience and ethics required by professional structural engineers in designing and supervising building structures is mirrored in all other disciplines of the engineering profession. The engineering profession as a whole is involved in providing buildings, infrastructure and manufactured items to the community with similar levels of risk and impact of poor design, uninspected construction and deficient manufacturing.

Potential impacts on the community relating to the main branches of engineering are:

- Structural – reinforced concrete, steel and timber building frames, foundations, bridges, towers, etc. The consequences of failure are obvious and are currently in the media focus.
- Civil – geometry and pavements for motorways, airports and other roads. Poor quality leads to traffic accidents and higher maintenance costs
 - Rail tracks. Classic track failure caused the Granville disaster
 - Water infrastructure including dams, pipelines and stormwater drains. Failures can be catastrophic as in the Brazil tailings dam.
- Mechanical – air conditioning, motor vehicles, machines, robots. Think of the risks of self-driving cars and cooling towers causing legionella.
- Chemical – substances and chemicals and their manufacture. Contamination from chemicals, nano particles, plastics, etc
- Aerospace – aircraft, spacecraft, satellites. Think of Apollo 1, space junk and the latest Boeing problems
- Bio medical – implants, prosthetics, 3D printed bone. Direct impact on the lives of individuals.

Benefits of a Registration scheme:

- Design of built and manufactured items with public safety would be carried out by qualified and experienced engineers. (and also architects for buildings).

- Building and infrastructure construction should be inspected at critical stages to assure owners and the public that the built items are in accordance with the design.
- The quality of infrastructure and buildings would be greatly improved. Such fiascos as the current unit building evacuations owing to severe structural problems and inflammable building cladding would be largely avoided in future.

Recommended Actions:

- Design and inspection of building, infrastructure and manufactured items impacting on public safety is restricted to registered engineers and also architects for buildings.
- Professional bodies such as Engineers Australia already have highly development voluntary registration systems with significant coverage. These could be legislated as mandatory to save the cost of duplicating schemes.
- The role of private certifiers should be reviewed considering the failure of the current situation where certifiers are responsible for signing-off constructed works as complaint. Certifiers should be required to ensure registered engineers are used to inspect critical aspects of construction work including:
 - Reinforcement and formwork before pouring concrete
 - Completed structural steelwork before covering with further construction.