

Occupational Regulatory Regime for Engineers

Submission to Ministry of Business, Innovation and Employment

25th June 2021

Executive Summary

The Structural Engineering Society of New Zealand (SESOC) supports the proposals in the MBIE consultation document and endorses the objectives to improve public confidence in the sector and to ensure engineers are competent, behave ethically and are held to account.

In accordance with our 2019 MBIE submission, SESOC supports:

- A new two tier, two gate regulatory regime that addresses *behavioural competence* (i.e. professionalism and ethical behaviour) at the lower tier and *technical competence* at the upper tier. The lower and upper tiers are referred to as 'Professional Engineer' and 'Licenced Engineer' in this submission.
- A new early career registration scheme (tier 1 – behavioural competence) for all Professional Engineers with up to 2 years of engineering experience, under the guidance of suitable engineers. This timeframe enables the graduate engineer to:
 - learn and apply behavioural competence through engineering practice in the workplace.
 - demonstrate behavioural competence in the workplace and through professional training courses.
- A new licencing scheme (tier 2 – technical competence) for Structural Engineers and other high risk practice fields of engineering. We see this licencing regime applying to the types of structural engineering design work outlined in our 2019 submission, i.e. specific design under the verification method of the Building Code.
- The establishment of a new regulator to oversee any regulation and licencing process including the need for sufficient accountability, transparency and independence.

For the purpose of clarity, we do not support the continuation of the CPEng scheme for either the lower tier Professional Engineer qualification or the upper tier Licenced Engineer qualification. Our reasons for this position are that:

- It would be confusing to retain CPEng because it covers behavioural and technical competence, whereas the new Professional Engineer mark would cover only behavioural competence and the new Licenced Engineer mark would cover only technical competence.
- The technical competency required to qualify for Licenced Engineer would be higher than for CPEng, so retaining CPEng would devalue the licencing regime.
- CPEng is not well regarded, especially by Building Consent Authorities, so there is little value in retaining this qualification.
- There is currently considerable confusion within the existing dual CMEngNZ and CPEng frameworks which needs to be replaced with a simple and transparent framework. We believe the best way to achieve this is to remove both existing frameworks and we strongly believe that Engineering New Zealand and MBIE need to work together collaboratively in order to achieve this outcome.

As outlined in our 2019 submission to MBIE, SESOC believes the broader objective of improving quality outcomes in the building sector will be achieved only by having a regulatory framework that supports a holistic view of quality. New occupational regulations for structural engineers will lead to improvements in certain areas of the sector, but it will not eliminate problems.

Other areas of the building performance system will need to be addressed in order to achieve better quality outcomes. We strongly recommend improving the building consenting process by strengthening peer reviews and introducing technical design audits.

Two years on from the previous MBIE consultation we see further examples (e.g. 230 High Street, Christchurch and Harington Street Carpark, Tauranga) of unnecessary structural engineering failures in the building sector. Frustratingly, there continues to be a lack of evidence gathering in relation to the technical quality of engineering design. There remains, to our knowledge, no consistent means by which the technical quality of designs are assessed against the requirements of the Building Code, nor gathering of data to assess quality outcomes.

SESOC would like to be actively involved in helping MBIE shape the detail of the legislation and believe we have an important role to play in any subsequent implementation phases.

Any new system must be of high quality and have sustained investment, support and curation, with input and buy-in from across the entire sector for it to become successful over time – this system will not achieve long term meaningful outcomes if it is treated as a “set and forget” approach.

Introduction and Background

The New Zealand Structural Engineering Society (SESOC) is a collaborating technical society of Engineering New Zealand, with a membership of nearly 3000, most of whom are practising structural engineers. The majority of our members will be directly affected by this proposed reform. We also work collaboratively with other disciplines in associated areas such as Earthquake, Geotechnical and Fire Engineering. SESOC employs a part time Executive Officer and we work closely with Engineering New Zealand who manage many of our operational needs. SESOC otherwise runs on the goodwill and volunteer efforts of our Management Committee and Membership.

SESOC has close links with overseas Structural Engineering Professional bodies such as IStructE (UK), SEAOC (California) and Engineers Australia.

SESOC's objectives are:

- To promote the science, art and practice of structural engineering;
- To ensure the advancement and dissemination of knowledge relating to structural engineering; and
- To provide a forum for structural engineering practitioners to communicate amongst themselves and to the public at large

This submission has been prepared by a SESOC Working Group made up of members of the SESOC Management Committee and those that participated in our 2019 submission. It is intended to reflect the views of the wider membership of SESOC however time constraints have meant that a formal member consultation and feedback process has not been possible.

In preparing this submission the SESOC Working Group has drawn heavily on work previously undertaken by SESOC in relation to occupational regulation, higher qualifications and improved practice. SESOC has been a proactive contributor to these topics over a number of years and believe much of that previous insight and documentation is of significance to this current MBIE reform process. In particular, we reference the following work previously undertaken by SESOC;

- SESOC Higher Qualification and Improved Practice (HQ&IP) discussion paper and report – September 2013
- SESOC Membership Consultation on HQ&IP (late 2013) and summary feedback paper – January 2014
- SESOC Presidents Roadshow – mid 2014
- SESOC submission to MBIE on the proposal to change the occupational regulation of engineers in New Zealand – October 2014
- SESOC collaboration with Engineering New Zealand in relation to a Technical Auditing proposal 2015-

2017.

- SESOC letter to Standards NZ dated June 2018.
- SESOC development of the Structural Engineering body of knowledge and skills (SE BOKS, v1 2018).
- SESOC submission to the MBIE regulatory reform proposal June 2019 – including associated membership consultation and feedback.
- SESOC input to Engineering New Zealand in relation to their proposal to review CPEng – August-October 2020.
- SESOC submission to Engineering New Zealand on their Chartered Professional Engineer review – January 2021.

From this summary it's clear that a lot of effort and thinking has gone into this topic over many years. There is also considerable "consultation fatigue" and frustration over a lack of action and we look forward to assisting MBIE in concluding a positive outcome this time around.

SESOC Submission

Overview

SESOC supports legislative change that aims to improve quality standards across the engineering and building sector to ensure buildings are safe, healthy and durable. SESOC believes that any changed legislative system needs to ensure the following;

- Simplicity, Clarity and Consistency – the system needs to be understood within the profession, the building/construction sector, the wider engineering sector and the public.
- Pitched at the right level(s) – and to solve the actual problem.
- Work within the Building Sector – including existing regulations, guidelines and frameworks (e.g. Building Consent system and including the existing Producer Statement system – or equivalent).

SESOC is aware that there is a lot of Structural Engineering undertaken in New Zealand that is of high quality and in many instances, world-leading in the context of structural design for earthquakes. However, SESOC does have concerns about the range of quality within the Building Sector, including the quality of structural engineering design. Evidence suggests that quality outcomes at the lower end of the spectrum do not always meet acceptable minimum standards.

As per Part 1 of the proposal, SESOC agrees that there is a strong case for Occupational Regulation of (Structural) Engineers. However, there remains a lack of meaningful quantitative data to understand the scale and extent of that quality problem or establish trends in relation to the areas where these problems exist or the cause of them (refer SESOC 2019 submission in relation to information gathering and/or technical audits, which SESOC believes is still lacking). SESOC does not believe that a lack of such data should further delay the implementation of an Occupational Regulation regime, however we do have concern that this information gap could impact the regime's effectiveness.

Holistic Quality Approach

As outlined in our 2019 submission, SESOC believes that improved quality standards will be achieved only by having a regulatory framework that supports a holistic view of quality – whilst understanding the full lifecycle of building and construction projects. The need for a holistic/systems view of the industry and the need for quality improvements to achieve a high-performing, transparent and trusted sector are also consistent with the aim of the Construction Industry Accord. It is not clear from the current MBIE proposal how this proposed Occupational Regulatory Regime fits in with broader holistic systems views, including any work being undertaken within the Construction Sector Accord.

The MBIE discussion document seeks to make improvements to Engineer behaviour and competence, however we do not believe that it addresses all those elements needed to ensure standards are raised to a suitable level. These issues were outlined in some detail in our 2019 submission and whilst they remain equally relevant now, are not repeated here.

As SESOC has previously stated, whilst we welcome the proposed changes and improvements proposed by MBIE, these alone may not achieve the desired quality improvements, without a broader systems approach including all the aspects of quality (as alluded to in our 2019 submission). To improve quality, we need to adopt a "fence at the top" approach in order to address poor design outcomes before they happen.

Occupation Regulation - Engineers

Proposal 1:- Registration

SESOC supports the establishment of a new early career registration scheme to help address issues of professionalism and ethical behaviour (i.e. behavioural competence). We see that the purpose of such a scheme would be to ensure Engineers are operating from a perspective of being "in the tent", to value the virtues of collegiality and collaboration and to foster the culture of continued learning. We also agree that members of such a scheme should be bound by a Code of Ethical Conduct and make a commitment to continuing professional development (CPD). SESOC believe that other aspects of this system should include;

- Washington Accord Engineering Degree (or equivalent)
- An understanding of and a commitment to learning/training about technical areas specific to the New Zealand context (e.g. Earthquake Engineering/Design where such training was not part of their original qualification)
- Participation in courses on Ethical Behaviour
- Demonstration of the practice of Professionalism
- Ongoing relevant (to their area of practice) CPD
- Employment under the guidance of an equivalently qualified (i.e. Registered) Engineer

SESOC believe that candidates should have also obtained some level of experience within the wider Engineering sector (one to two years) and show a commitment to the Profession. SESOC believes that this proposed Registration regime needs to have very strong alignment with the engineering profession (e.g. Engineering New Zealand and associated Technical Societies). Given the proposed two tier system for high risk engineering work (e.g. Structural Engineering), SESOC believe that only one tier should include an assessment of technical competency (in order to avoid duplication, confusion and inconsistency).

SESOC agree that under the current proposal the licensing bar would be the ideal place for a technical competence assessment and hence registration by default would be non-technical (consistent with an entry level bar).

SESOC believes that Professional Engineer is an appropriate name for this registration regime as it reflects what this gate is seeking to focus on – behavioural competence and professionalism. SESOC agree that this name should be protected.

Likewise, there is a need to consider others that sit outside of the Professional Engineering umbrella (e.g. technologists, technicians, geologists etc). MBIE will need to work closely with Engineering New Zealand to address these complex issues, whilst not diluting the important purpose of this regime. SESOC would support a parallel registration regime for such candidates, provided this sits outside the Professional Engineer registration regime.

Given SESOC's recommendation that some level of work experience should form part of this Registration regime, consideration will need to be given to the role of Engineering Interns and Graduate Engineers (pre-Registration), and the need for practice in an "on the job" learning environment under the oversight of a Professional Engineer.

Proposal 2:- Licensing

SESOC supports the establishment of a new licencing scheme for Structural Engineers. We see this licensing regime applying to types of specific Structural Engineering design work as outlined in our 2019 submission. We also see this licensing gate as the appropriate place for a technical competence assessment. As outlined within our 2019 submission we see important aspects of this licensing regime will need to include;

- Consistent assessment criteria and processes, based on the Structural Body of Knowledge and Skills (SESOC Structural BOKS). The role of Technical Societies and associated subject matter experts in the development of these criteria and assessment requirements is critical and we would like to see this reflected in the primary legislation.
- The selection criteria, training and remuneration of Practice Area Assessors.
- The availability of appropriate Practice Area Assessors.

SESOC strongly believes that the primary legislation should require (via regulation) the development of a BOKS for each licensed discipline. Further primary legislations should require the BOKS to be developed by all stakeholders such as regulators, local authorities, government agencies and must include industry and subject matter experts.

Further information in relation to licensing is contained in our 2019 submission and within the appended question and answer section.

SESOC do not have strong views of the process or criteria for determining what practice fields are licensed, other than to say we believe Structural Engineering should be. Initially we believe that the aim of licensing within the Structural Engineering practice field should be to raise the bar at the bottom end of the profession and to achieve minimum acceptable competence within Structural Engineering. We do not believe a higher technical licensing tier, for larger more complex structures, should be an initial priority – but do not preclude it in the future, provided other holistic and system wide improvements are implemented first (Building Consent processes, Peer Review, technical audits etc).

In order to be credible – any licensing regime must address and negate alternative processes currently implemented by various territorial authorities (e.g. Auckland Council, Producer Statement list).

For disciplines outside Structural Engineering, we agree that flexibility may be necessary in decisions around what practice fields should be licensed.

Proposal 3:- The Regulator and Independent Board

SESOC supports strong governance, independence and leadership of the licensing regime, provided that appropriate technical input is available.

SESOC considers that it is more important how effective the regulatory services provider is rather than who it is. SESOC believes that it must be independent of industry and this should be in primary legislation. Further SESOC believes any 'monitoring of performance' function must include monitoring outputs rather than just process, ie some check/review/audit function is needed to make sure that engineers who are licensed are meeting the expectations for licensed engineers – again this should be in the primary legislation.

SESOC sees registration largely as a professional qualification so believe that Engineering NZ could be the regulatory services provider in that instance.

SESOC sees licensing as a technical quality mark, which will require input from subject matter experts, legal input and independent (of Engineering NZ and the profession) governance. SESOC sees the need for the regulatory services provider to have access to subject matter technical experts for each of the licensed engineering fields – currently neither Engineering NZ nor MBIE have this capability or expertise.

Implementation and the future of CPEng

SESOC believe that CPEng should be repealed and replaced with a new system. We do not favour grandparenting for licensing from the existing CPEng regime and suggest MBIE require the regulator to work with

stakeholders (including subject matter experts and Technical Societies) to develop a risk based screening tool to determine how much flexibility should be shown to individual candidates transitioning between CPEng and Licencing.

Obviously, any attempt to raise the bar in terms of professional standards and quality will have consequences with respect to resource availability of suitably qualified Engineers. However, we believe those consequences can be managed by careful consideration of transitional arrangements, combined with adequate resources and training to assist those seeking to become Licenced. If we recognise that change is required, the consequence of that change needs to be balanced in the context of the system improvements that we are trying to achieve. Ultimately, system changes will impact on resources and outcomes only to the extent to which those changes are policed – hence the need for ongoing Technical Audits and competence re-assessment.

There is currently a large amount of resource within the sector focused on addressing existing quality issues and poor design outcomes. Over time, a higher quality system should see considerable resources efficiencies and greater productivity due to the need for less effort being required to address the mistakes of the past. This should lead to more affordable, better performing buildings and greater sustainability outcomes over time.

Ongoing and sustained investment, support and curation, with input and buy-in from across the entire sector will be crucial to ensure ongoing success over time.

Conclusion

SESOC endorse and support the purpose of the consultation document, and in principle agree with most of the proposals. We are pleased to provide this submission to MBIE and would be happy to provide further information if required. We are also keen to provide input into the final legislation and to work with the regulator, MBIE, in its implementation.

In the meantime please feel free to contact the following people in relation to this submission:

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Appendix A: MBIE Submission Questions – SESOC Response