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CanConstructNZ



Balance in the sector



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Problem identified

In New Zealand delivery of large infrastructural projects is highly problematic. Shocks and stresses from the recent pandemic, in addition to seismic events, have challenged the resilience of the construction sector and its capability and capacity.

Many construction businesses failed and several notable megaprojects, including a new hospital, experienced significant delays and cost escalations.

This problem has raised the research question:

"How should large complex infrastructural building projects, such as a hospital in New Zealand, be planned and delivered within the capability and capacity of the construction industry, and remain economically sustainable?"





Objectives

1. **Evaluate resilience and capacity of the construction industry**, focusing on large and megaprojects in NZ, to understand the capacity and capability of the construction sector.
2. **Determine how to stimulate economic sustainability and regional growth**, considering how to plan and deliver large projects progressively, within the capacity of local communities or regions; to stimulate economic growth, and to establish a reliable and enduring ability to view construction sector workload.
3. **Consider project scale and impacts of shocks and stresses**, and how the scale of megaprojects, compared to non-megaprojects, adds to shocks and stresses within the industry and economy, and the construction sector's ability to withstand external pressures.
4. **Analyse case studies and identify practical applications**, considering how the New Dunedin Hospital and comparable projects in NZ and Australia add practical relevance to research, and provide reliable views of construction sector workload and capacity, through research and development initiatives.
5. **Focus on sustainability**, exploring options, including progressive growth as a potential solution, to understand how the construction industry can operate more efficiently and sustainably.





Methodology

A mixed-methods approach that includes:

- **Case studies.**
- **Interviews and surveys of stakeholders, contractors and consultants.**
- **Analysis of data from Stats NZ and BRANZ.**

The New Dunedin Hospital is the primary case study, plus 2 comparable hospital projects: Waipapa Christchurch (former Acute Services) Hospital, and Sunshine Coast University Hospital, QLD, Australia. Additional cases include Transmission Gulley and Te Pae Christchurch Convention Centre (having the same general contractor and project manager), and The Living Pā, regarding Mātauranga Māori and sustainability.





Preliminary results

- Capability and capacity of the construction industry is challenged by infrastructure pipeline demand and systemic issues, exacerbated by ongoing shocks and stresses of novel events, particularly earthquakes and pandemics that are inevitable. A resiliency model being developed by CanConstructNZ will help restore and maintain balance.
- The New Dunedin Hospital (NDH), NZ's largest (\$1.68B) and first digital hospital, is defined as a 'megaproject' therefore statistically is at high risk of failure to be delivered on time, cost and quality, reducing benefits expected by stakeholders. Pandemic and supply chain disruptions, caused delays and cost escalation. Value management cuts and re-financing announced in December 2022, led to significant redesign of Stage 2 Inpatients, while Stage 1 Outpatients continues to be constructed on time. Other significant megaprojects disrupted by the pandemic are in the transportation sector: Transmission Gully Motorway (\$1.25B), and Auckland City Rail Link (\$5.49B).
- The NDH case study, and comparable large and mega hospital projects in NZ and Australia, suggest another approach to reduce risk and ensure economic sustainability of large healthcare facilities and the building sector, that will be an outcome of this thesis.

