## CanConstructNZ

CanConstructNZ is an MBIE-funded research and development programme to establish an enduring facility for reliable views of sector workload and the capacity and capability of the sector to deliver it. We are creating a tool to gather supply and demand information, incorporating shocks and stresses uncertainties, able to make comparisons and provide targeted information and predictions for a variety of users.

Our fundamental aim is to bring demand - supply balance to the sector, benefiting all New Zealanders.
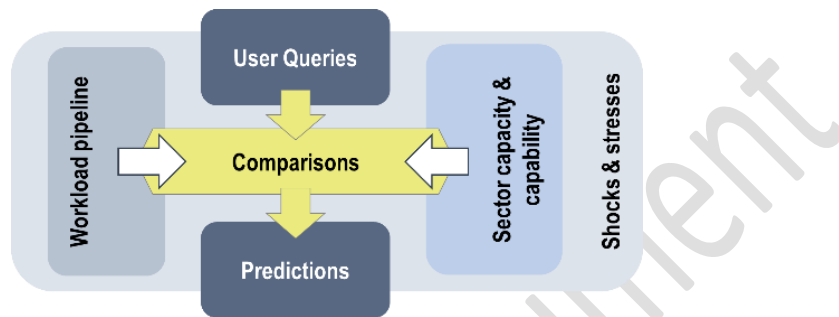
The principles are straight-forward - the devil is in the detail
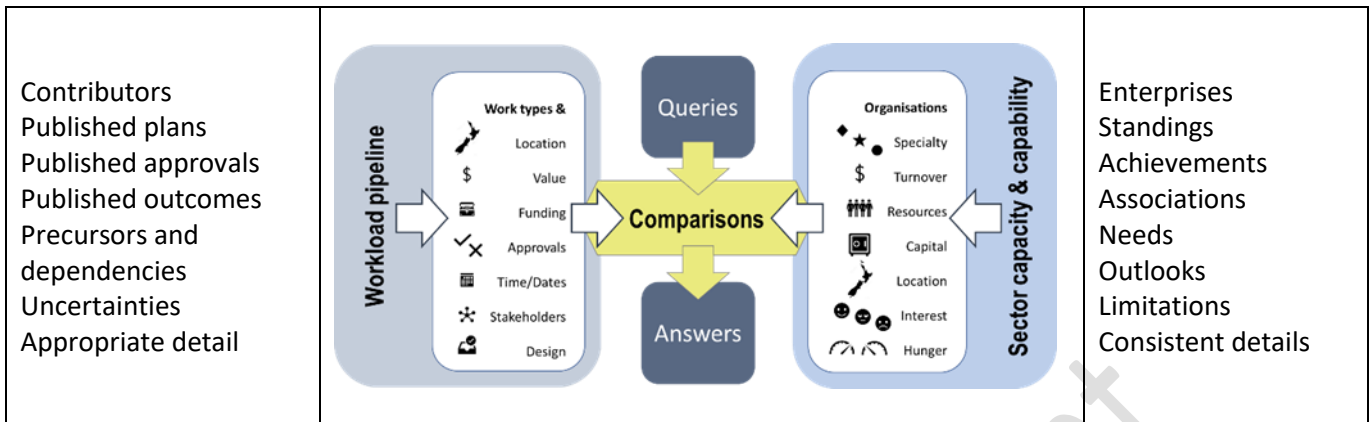
Who will use it?

There will be many users, each with different perspectives and needs, such as, a local authority wanting to know whether roading in the draft 10-year plan will cause too much pressure local contractors, or a leader in the sector wanting an objective view of impending residential work in their region over the next five years, and so on.

What do users think?

Many potential users across our network respond very positively to the concept, commonly saying: 'NZ needs this, make it happen.'

Data Models

For the CanConstructNZ tool to function it needs reliable pipeline and sector information including key identifications and values (data) to enable quantification and delineation of programme/project work type(s), and capacity and capability of corresponding portion(s) of the sector to enable comparisons and output information. This looks complicated in the following diagram.

CanConstructNZ
▲ *Balance in the sector*

Contributors Published plans Published approvals Published outcomes Precursors and dependencies Uncertainties Appropriate detail		Enterprises Standings Achievements Associations Needs Outlooks Limitations Consistent details

Both workload and sector have many potential identifiers

Reduce the complication

However, our initial research and comparator mechanism development leads us to believe that only some 10-12 identifiers and values are needed to enable useful demand-supply comparisons both for projects, and for sector organisations, and perhaps less for shocks and stresses.

Neither are the identifiers and values complex, nor do they need to present sensitive information nor disclose specific project or sector organisations.

In summary terms therefore, we believe it is surprising how little needs to be known before useful, sound comparisons can be made. We believe there are no insurmountable barriers to project sponsors or sector organisations sharing information once our models and mechanism are understood.

Sector model

For the sector, we begin with a simplistic representation of its structure, together with a set of assumptions and calculations of turnover and workforce. Our hypothesis shown overleaf will be evaluated over coming months by research interviews and data sourcing.

Model structure

Tiers

The sector organisations are separated into four tiers, defined by annual turnover, with assumed average values for each.

Number of organisations

The number of organisations in each tier are assumed, differing for vertical and horizontal construction.

Project resourcing:

A vital set of assumptions is needed for each tier to delineate the work conducted by the delivery organisations, plus subcontracted out to others, but separated from work where the organisation has contracted its services to others. This separation is needed to remove double- counting of turnover, one of the main challenges in defining the capacity of the sector.

Resourcing assumptions

This table shows the principle of resourcing, using illustrative percentages.

	Amount of work subcontracting to others	Work done by own resources	Amount of work subcontracted out to others
Tier 1	NA	40%	60%
Tier 2	10%	40%	50%
Tier 3	50%	30%	20%
Tier 4	80%	20%	NA
	This work should be ignored when calculating sector turnover, thereby avoiding double counting.	These two categories should be combined to show the total work being done, the turnover of the sector, or part of it.	

This is a simplistic summary of a complex set of interrelationships, justified on the basis that it enables a comparator mechanism to work.

Tabular summary of structure and turnover

The table overleaf shows a structure for the sector with nominated turnover values, extended by resourcing assumptions to give a calculation of the total annual throughput of the sector. The check totals are correct, and the total turnover of the sector is of the right order of magnitude against our research. However, the number of companies are significantly less than those published by Stats NZ, yet employee numbers are of the right order. The number of organisations would be larger if another tier was added for smaller turnover bands, however it is preferred to keep the model simpler at this stage of its development.

All the assumptions and values used in this table will be reviewed following interviews of sector players, testing reactions to the model.

Sector structure model

Group	$/a range	Assumed average $/a	Nr of Cos	Own delivery	Own $/a	%	Employees	Sub-contract out	Subcontracted $/a	%	Employs	Sector turnover $/a	%	Total Employees	Sub-lng to others	For others $/a	Check total delivery
Vertical																	
Tier 1	>$250m	$400,000,000	6	15%	$360,000,000	2	1,440	85%	$2,040,000,000	17	8,160	$2,400,000,000	7	9,600	(nil)		100%
Tier 2	$100m-$250m	$175,000,000	25	20%	$875,000,000	4	3,500	50%	$2,187,500,000	19	8,750	$3,062,500,000	9	12,250	30%	$1,312,500,000	100%
Tier 3	$20-$100m	$60,000,000	500	25%	$7,500,000,000	32	30,000	25%	$7,500,000,000	64	30,000	$15,000,000,000	42	60,000	50%	$15,000,000,000	100%
Tier 4	<$20m	$5,000,000	10,000	30%	$15,000,000,000	63	60,000	(nil)		0	0	$15,000,000,000	42	60,000	70%	$35,000,000,000	100%
Check totals			10,531		$23,735,000,000	100	94,940		$11,727,500,000	100	46,910	$35,462,500,000	100	141,850		$51,312,500,000	
Horizontal																	
Tier 1	>$200m	$250,000,000	5	20%	$250,000,000	4	667	80%	$1,000,000,000	25	2,667	$1,250,000,000	12	3,333			100%
Tier 2	$50m-$200m	$125,000,000	25	30%	$937,500,000	14	2,500	50%	$1,562,500,000	38	4,167	$2,500,000,000	23	6,667	20%	$625,000,000	100%
Tier 3	$10m-$50m	$30,000,000	250	40%	$3,000,000,000	45	8,000	20%	$1,500,000,000	37	4,000	$4,500,000,000	42	12,000	40%	$3,000,000,000	100%
Tier 4	<$10m	$2,500,000	2,500	40%	$2,500,000,000	37	6,667			0	0	$2,500,000,000	23	6,667	60%	$3,750,000,000	100%
Check totals			2,780		$6,687,500,000	100	17,833		$4,062,500,000	100	10,833	$10,750,000,000	100	28,667		$7,375,000,000	
Vert + Horiz			13,311		$30,422,500,000		112,773		$15,790,000,000		57,743	$46,212,500,000		170,517		$58,687,500,000	
												Of the right order					
StatsNZ			**65,000**											**177,000**			

Additional identifiers

The preceding structure and values give a framework for the sector, enabling the comparator mechanism to make a tailored measure of part of the pipeline of work and compare it with the relevant part of the construction sector.

Additional identifiers are needed to describe individual organisations within the sector, for those specific inquiries. These include the following, currently regarded as the minimum sufficient for comparator functions:

- Unique organisation identifier, preventing duplication of data (this will be created and maintained within CanConstructNZ)
- Location, which is needed for geographic analysis (The LG Region is sufficient)
- Specialisation (A broad characterisation of work type or types able to be conducted by the organisation, which for now is set to match the project types: Civil, Commercial, Environmental, Housing, Industrial, Institutional, Utilities)
- Role (What role(s) does the organisation play in delivering work? One or more of: Investigation, Design, Advice, Management, Supply, Construction, Maintenance)
- Range of operation. (The following set of assumptions are made to allow geographic boundaries to be set to address demand/supply queries: Tier 1 will work anywhere in the nation, Tier 2 will be constrained to one of three regions, North of North Island, South North Island and South Island, Tier 3 will be assumed to work within 5 LG regions centred on its own; and Tier 4 will only work within its LG region).
- Available capacity (This is a vital element as it sets how much work can be taken on. At this initial stage of development of the sector model it is recommended that this be set as a linear sliding scale value from 20% of current turnover in the current year to 100% in 6 years. This will be confirmed or adjusted by research).
- Excess capacity (In addition to available capacity, this can be expressed for any year as none, some (to 20% more), or significant (20% to 40% more))
- Experience (This is a secondary identifier, not essential for high level comparisons. For this model it is can be expressed as acceptably, moderately, or very experienced, based on a proxy of years that the organisation has been established, which we suggest can be in three bands <3 years, 3-6 years, >6years)
- Reputation (This is another secondary identifier. It can be expressed as satisfactory, good, or very good, based on the following number of references available: <2/annum, 2-5/annum and >5/annum)
- Bidding success (The relevance or useability of this secondary factor is questionable, but at this stage in the evolution of the model it is to be expressed as Satisfactory or Good, based on two measures: less than 1 in 5, or better than 1 in 5)
- Hunger (interest in new work, described as: Low, Medium, High, with a value to apply to capacity yet to be agreed)

These identifiers will be used in initial runs of the comparator mechanism, with assumptions made for values applying to each. Interviews with sector players will test whether these are seen as relevant and whether others might be added to the set.

Data collection

It is expected that a collection mechanism will be needed to establish values for this data in future. This might include annual or more frequent industry-wide surveys or statistical returns, required by formal obligations, supported by legislation.

Project and shocks and stresses identifiers

We have similar work for project and shocks and stresses identifiers which will be described in a separate document, and later, with use case inquiries.