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To: Grant Macaskill, Ministry of Justice

Estimation of Employment During Construction of Tauranga Court House

We estimate the employment effects of a proposed investment by the Ministry of Justice in a new court house building in Tauranga. As this is a relatively small project in the sense that economy-wide feedback effects are likely to be insignificant, we use standard multiplier analysis. A larger project would require more sophisticated analysis such as general equilibrium modelling.

The Multiplier Concept

Each dollar spent on the output of one industry leads to output increases in other industries. For example, a construction company may require inputs of diesel, materials and services provided by subcontractors such as carpenters, plumbers and electricians. Part of the construction fee is used to cover the cost of these inputs. Another part covers the cost of the machinery and equipment (spread over their useful lives) and there is a portion for staff wages and salaries.

The supplying industries such as trades services require inputs themselves, pay wages and salaries, and so on. The effect on these supplying industries is known as the upstream or indirect production effect and is commonly measured by a number called a Type I multiplier. It is defined as the ratio of the direct plus indirect effects, to the direct effect.

The construction company and supplying industries pay wages and salaries, which are used to purchase household consumption goods. This effect is generally known as the downstream or induced consumption effect. Again the effect may be measured by a multiplier. The total effect is described by the Type II multiplier, defined as the direct, plus indirect production, plus induced consumption effects, all divided by the direct effect.

Multipliers are typically calculated for three different measures of economic activity:

- gross output
- value-added
- employment

Here we are interested in the employment multipliers.

Results

For the Tauranga court house the relevant ANZSIC industry classification is Non-Residential Building Construction.

Multipliers are sourced from Butcher Partners based on the 2012/13 input-output table produced by Stats NZ. Prices are updated to the year ended December 2020 (the latest data available) using the PPI output series for Non-Residential Building Construction.¹

For Non-Residential Building Construction every million dollars of activity (gross output) is associated with 1.97 direct jobs in the region concerned. Refer Table 1. The Type I and Type II multipliers that encompass the effects across the whole of New Zealand are 4.27 and 5.67 respectively. Because of the large amount of subcontracting that goes on in this industry its direct job impacts are relatively low, but its indirect (upstream) job impacts are relatively high.

For the Tauranga court house the Indicative capital cost is \$90m, excluding the cost of land. Hence the direct employment effect is 177 full time equivalent (FTE) jobs. Type I multiplier effects raise this to 757 FTE job of which around 622 FTE jobs would be in the Bay of Plenty area. Spending effects via the Type II multipliers increase these numbers further to 1005 and 754 respectively.

Table 1: Summary of Employment Generation

	Bay of Plenty		New Zealand	
	Multiplier	FTE	Multiplier	FTE
Direct	1.97 FTE/\$1m	177		
Direct + Type I effects	3.51	622	4.27	757
Direct + Type I + Type II effects	4.25	754	5.67	1005

However, two caveats are in order:

- The length of the construction period
- Construction industry capacity

Construction period

The construction period (including design and consenting etc) spans more than four years to the end of 2025, such that over the entire period the number of direct FTE jobs would average about 40 per year. We can interpret this as 40 people working full time on the project for 4-5 years, or as different people in different years, which may include part time workers.

The multipliers in Table 1 also apply to the annualised FTE. For example the Type II effect for Bay of Plenty in a 12-month period would be approximately 170 FTE jobs (being 40×4.25).

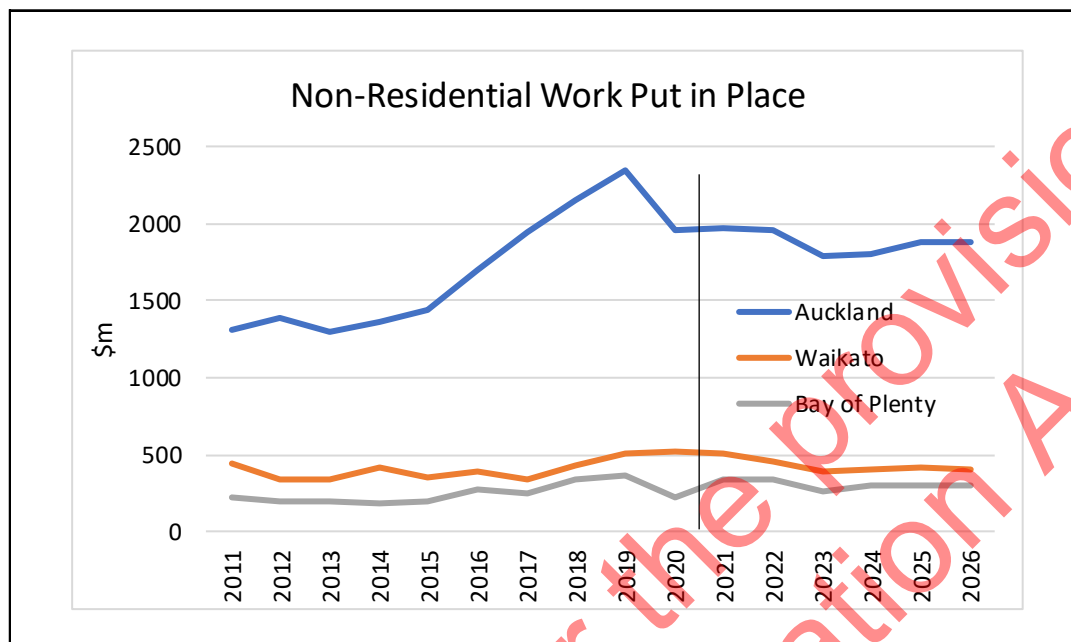
Construction capacity

Interpreting these numbers as jobs created is strictly valid only if people are otherwise unemployed. In other words, they are not merely being reallocated from other (mostly construction) activities. The current state of the labour market in Bay of Plenty, especially in the construction industry is likely to have less slack than usual.

¹ The price change from the year ended March 2013 to the year ended December 2020 is 17.0%.

However, looking at projections of Work Put in Place for the Auckland, Waikato and Bay of Plenty regions (Figure 1) one can see that the level of activity in Bay of Plenty is only about one sixth of that in Auckland and also less than in Waikato. Coupled with some reduction in expected activity in Auckland over the period of the court house construction, this suggests that there may be some scope to attract workers from Auckland to Tauranga.

Figure 1: Non-residential Work Put in Place (year ended March, forecasts from 2021)



Source: Stats NZ and Infometrics

Summary

The capital cost of the proposed new court house in Tauranga is \$90m spread over 4-5 years. Over that entire period this level of expenditure directly generates about 177 FTE jobs. Over an average 12-month period direct employment is estimated to be about 40 FTE jobs. Adding in upstream production effects raises this to 171 FTE jobs of which 141 FTE would be in Bay of Plenty. Downstream spending effects increase these numbers to 228 FTE jobs and 170 FTE jobs respectively.

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