



Valuing the role of Construction in the New Zealand economy

A report to the
Construction Strategy Group

Final Report

*An economic analysis of
the Construction sector
that highlights its value
and to the New Zealand
economy and its
vulnerability to boom and
bust cycles*

October 2011



Strictly Confidential

The Construction Strategy Group
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4 October 2011

Valuing the role of Construction in the New Zealand economy

Dear Sirs

In accordance with the terms of our engagement letter dated 28 February 2011, we attach our final report providing economic analysis of the role and value of the Construction sector in New Zealand.

Our key findings are contained in the Executive Summary of the report.

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Craig Rice'.

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Executive summary

The Construction sector (defined on p.10) accounts for one in 12 jobs in New Zealand, and over the last decade contributed one in seven **new** jobs. The sector is fairly evenly represented across New Zealand, and contributes nearly 50% of all gross fixed capital formation, making it a significant driver of economic growth. Yet the Construction sector is subject to boom-bust cycles far stronger than those experienced by other sectors usually associated with fluctuating fortunes. At the same time, and likely as a direct result of this volatility, the sector suffers from poor skills retention and low labour productivity growth.

The sector has a key role to play in overcoming these issues, and this is a particular focus of work being undertaken through the current industry government partnership on building productivity.

This is a time of opportunity for the sector, with the rebuilding programme in Christchurch, earthquake strengthening nationwide, leaky building rehabilitation and a shortage of housing stock. However, unless the sector's volatility is addressed, there is a danger that this time will be wasted.

This report focuses on how **Government**, working with industry, can help through its stated economic growth strategies of investing in productive infrastructure, removing red tape, lifting skills, and creating a growth-enhancing tax system. Government plays two roles in the sector, as both a direct purchaser of construction services; and as developer of legislation, policies and tools that influence private sector behaviour. As a **buyer of construction services**, Government can:

- Improve capital forecasting, to provide certainty in planning for the Construction sector;
- Invest counter-cyclically, thus removing pressure from overheating, and support as necessary;
- Widen procurement approach to use whole-of-life costs, value procurements, PPPs and alliancing;
- Build scale in regional procurement and advocating best practice, creating certainty; and
- Build closer procurement relationships between central and local Government.

Government can also **influence more productive private sector behaviour** through:

- Enabling new funding tools such as tolls, fuel taxes or congestion charges;
- Broadening the basket of monetary tools and objectives;
- Streamlining the RMA and building consent process further;
- Reducing speculative investment through levelling the playing field between asset classes; and
- Being more responsive to immigration trends, to ensure a steady stream of skilled migrants.

The Christchurch rebuild, earthquake-strengthening and the remedial work on leaky buildings raise the prospect of the largest construction-led boom in history. They also raise questions, including:

- | |
|--|
| <ul style="list-style-type: none">• Do we currently have enough skilled people to do the work?• How do we ensure the greatest building boom ever is not followed by the greatest building bust? |
|--|

Overview

This report highlights the role and value of the Construction sector in the New Zealand economy today and over the last 10 years. It further shows the role of the Government not only as a purchaser of Construction goods and services, but also its key part in managing market failures, and stimulating investment in the most productive forms of construction and infrastructure investment.

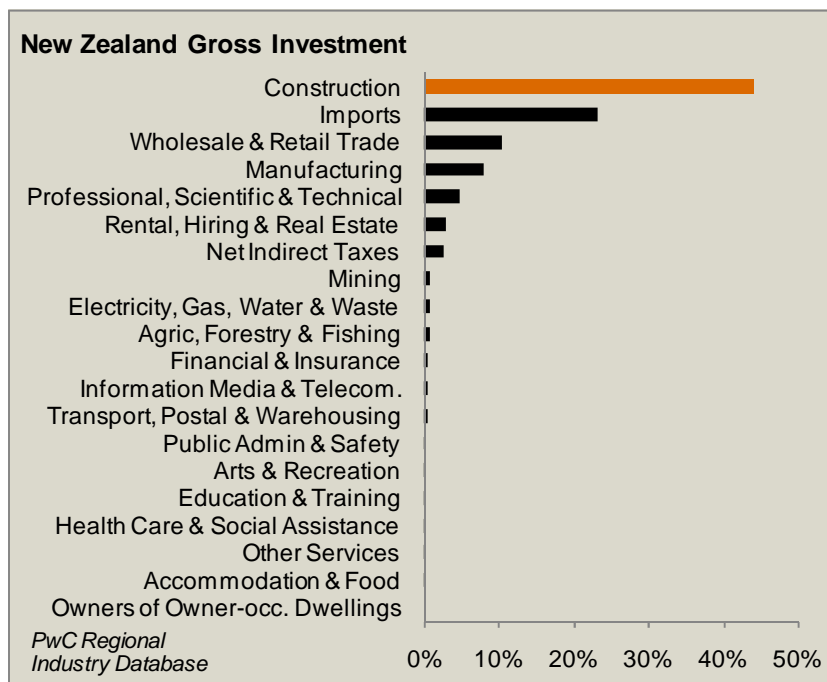
The Construction sector is a big part of New Zealand's economy

The Construction sector plays a large role in the New Zealand economy. It is New Zealand's fifth largest sector employing over 157,000 full-time equivalents (FTEs), or 8% of the total economy. Construction-related services employ a further 42,000 FTEs. In the last 10 years, 14% of all new employment has been in the Construction sector.

The sector is characterised by small businesses, and low labour productivity. The 8% of national employment generates only 4% of national GDP, but accounts for 10% of all businesses.

Construction mostly occurs where people live, and consequently the sector is spread throughout the country in much the same way as the general population.

Output from the sector dominates New Zealand's investment, contributing 45% of all Gross Fixed Capital Formation. The sector plays by far the largest role in building New Zealand's infrastructure stock, which is the foundation of productivity and economic growth.

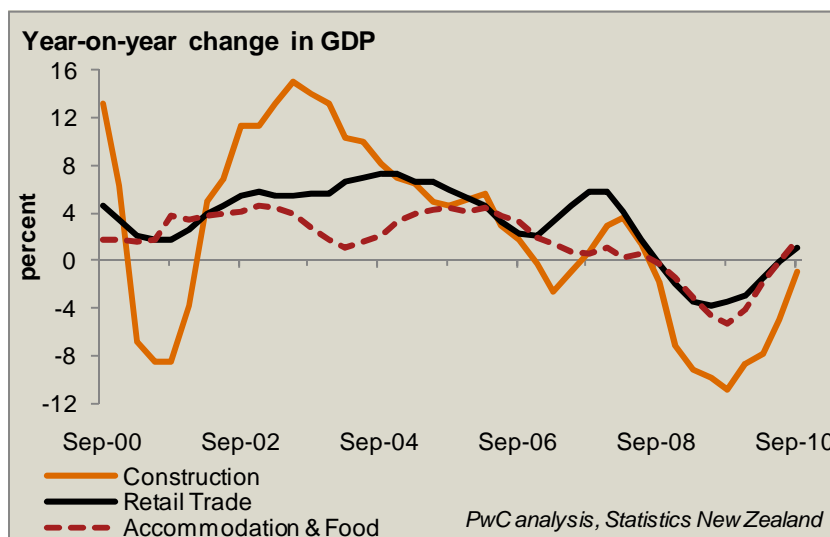


The national input-output tables¹ show that one dollar invested in the Construction sector generates a total of three dollars in economic activity. The sector has the second highest multiplier impact of any sector in our economy. This is because of the major impact construction spending has in stimulating other sectors in its supply chain and through its workers spending their incomes.

The Construction sector is volatile

The Construction sector is characterised by high volatility in employment and GDP compared to other sectors in New Zealand. In times of economic upswing, the sector suffers from capacity constraints, while in downturns, a far greater share of jobs are shed than in other sectors.

Even compared with other sectors often perceived to be disproportionately subject to fluctuations in business cycles – such as hospitality and retail trade – Construction sector performance is far more volatile.



The implication of this pattern is that the volatile cycles in the Construction sector do not allow it to build and maintain capacity, or to plan more than a few years out because there is no certainty over any length of time. This discourages investment in skills and means that when there is a downturn, many skilled people head overseas, in many cases never to return to the New Zealand labour force.

Productivity is poor

The sector has low labour productivity, and has seen a decline in labour productivity over the last 10 years, compared to growth in most other sectors. Low labour productivity is fairly typical of labour intensive industries like construction. Added to that, the small business size of the sector makes it hard to invest, in people and in capital, to boost productivity. Unquestionably, the volatile nature of the sector compounds these issues.

¹ See p. 22 for an explanation of input-output analysis.

An increase in labour productivity within a sector that plays such a major role in the economy would be huge. PwC estimates that a 1% increase in labour productivity in the Construction sector would add \$300 million to the New Zealand economy.²

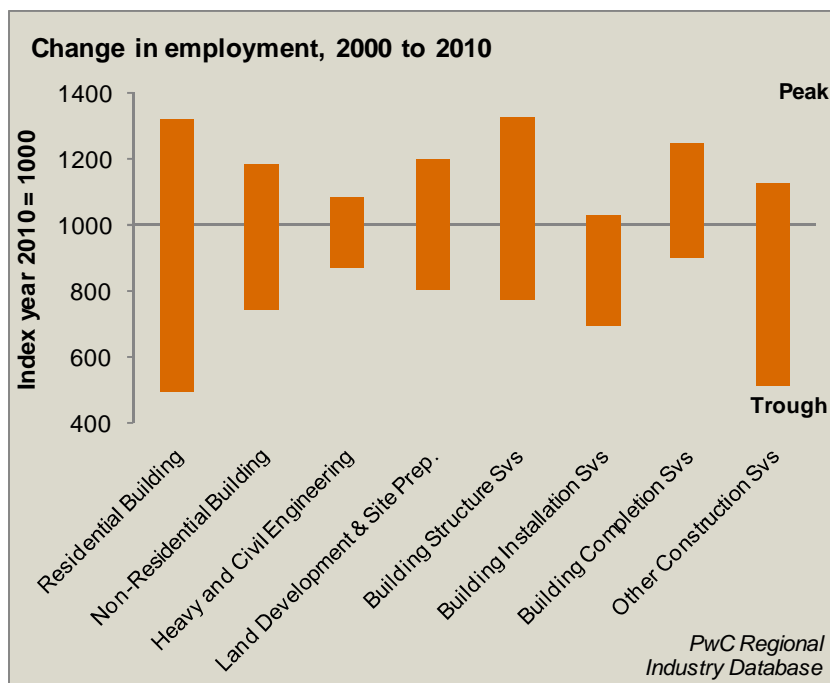
The sector is vulnerable

Low productivity is reflected in remuneration in the sector. The Construction sector is the 4th worst paid across New Zealand. This implies the sector's employees are relatively more vulnerable, with less stored wealth and consequently a greater reliance on social services if they lose their jobs.

Furthermore the sector employs a relatively young workforce and higher levels of Māori and Pasifika – demographic cohorts characterised by higher levels of unemployment and lower educational attainment. In other words the sector's volatility threatens those already at highest risk.

The volatility and boom-bust cycles that characterise the sector in New Zealand are not atypical of the sector. In Australia, changes in GDP in Construction fluctuate even more wildly from year to year. Yet at the same time, Australia's Construction sector has enjoyed growth in labour productivity, something we have not been able to emulate. Some commentators believe this may be a result of changes to the unionised workforce in that country.

Residential housing is a key driver



When the Construction sector is broken down into sub-sectors, it is apparent that the major driver of volatility is the Residential Building sub-sector. It has seen the strongest growth over the decade; in

² This is broadly in line with an estimate in a BERL report(2003), commissioned by BRANZ, that found a 10% increase in labour productivity in building and construction would boost national GDP by \$2 billion.

2000, the sub-sector employed 48% fewer FTEs than in 2010. However, this sub-sector has been most susceptible to the downturn, with employment 32% higher in 2008 than in 2010. To put this in perspective, over the 10 years to 2010, an average of 21,700 FTEs were employed in Residential building, but at one point just 12,000 were employed in the sub-sector, and at another, 32,100 were employed.

Government spending only does so much

Government's role as a buyer of Construction goods and services has risen strongly over the last 10 years. Nevertheless, Government's total share of Gross Fixed Capital Formation is just 27%. This means that although counter-cyclical Government-funded construction is a good way to assist the Construction sector to smooth out boom-bust cycles, it is not a silver bullet. The key focus in tackling volatility in the Construction sector must be on smoothing investment behaviour in the private sector.

Options for Government

Government's key focus needs to be in developing forward certainty for the sector, allowing the sector to maintain and develop skills, and boost labour productivity. This is not easy, and it is unlikely that any one specific action or policy will be transformational. However, there are a number of options for Government that can enable a more consistent and predictable environment for the sector.

1. Improve planning of capital works programmes

Neither central nor Local Government appears to have a clear picture of their capital programmes beyond two or three years, and the quality of information about those programmes is inconsistent and difficult to access.

The consequence of this short term cycle is that the industry gears itself up with a short term focus. It cannot justify investment in training, or build a skills pipeline. It is encouraged to buy in contractors as needed rather than develop its own capacity. Furthermore, sector employees recognise that today's job may not be there tomorrow, and are encouraged to move around.

It is crucial that Government provides a better lead on planning for capital works, in line with the acknowledgement made by the National Infrastructure Plan (NIP) that:

*"The OECD suggests that investment in infrastructure – particularly in network infrastructure such as transport and communications – seems to boost long-term economic output more than other kinds of physical investment. The World Economic Forum identified inadequate investment in infrastructure as a particular problem in New Zealand, second only to access to finance as a barrier to doing business."*³

³ New Zealand Treasury. (2010). *National Infrastructure Plan*.

2. Build knowledge of sector capacity and plan counter-cyclically

Building a better understanding of the sector's capacity, geographically and by its key sub-sectors, is important to enable Government to consider how it times and coordinates capital investment.

For example, Government could develop a stockpile of sound, justifiable projects that it can implement during troughs in the construction cycle. This would enable Government to take advantage of capacity in the market, obtaining lower prices and driving value for its constituents.

An added advantage of this approach would be that by stimulating the construction sector, which has one of the highest multipliers in the economy, the Government can maximise its “bang for buck”. One further benefit will be that this approach will provide the steady growth path needed by the sector, so that training and career paths can be better assured and planned.

3. Enhance procurement practices in the sector

Government procurement processes have tended to favour traditional design and contract methods with a focus on lowest price rather than lowest whole of life costs for projects.⁴ These approaches restrict opportunities for innovation and creativity in the sector, and limit opportunities to leverage private sector finance. For larger scale and more complex projects consideration needs to be given to more sophisticated procurement methods such as collaborative or partnership based approaches.

It is recommended that CSG advocates for systemic change to Government procurement policy. The specific focus of these changes should be:

- to drive innovation throughout the process, including: the procurement, the structure of the contract and the design of the project itself;
- consideration of whole of life costs, rather than contract price;
- opening up opportunities for increased private sector investment;
- improved allocation and management of risks;
- a recognition that complex projects which are difficult to price can lead to significant risk-premiums. Thus, these projects may be more suited to collaborative procurement approaches.

4. Build scale in procurement

There are a significant number of “buyers” of construction services across central and Local Government. Aggregation or consolidation of this activity will develop improved buying power, and enable scale that facilitates a greater degree of sophistication.

⁴ Department of Building & Housing. (2008). *Developing an Improved Approach to the Procurement of Construction Projects: Scoping Paper*. Building and Construction Sector Productivity Task Force.

Government should develop shared service arrangements that consolidate procurement and procurement expertise. These arrangements could build on work already being done that aims to integrate back office services, and would reduce costs to market on both sides of the equation and create greater certainty in the Construction sector.

5. Integrate across Government

Frequently, valid construction projects that require co-funding between central and Local Government do not go ahead or are significantly delayed because central and Local Government cannot agree on the relative funding mix.

These issues are exacerbated by the number of central and Local Government policies and activities that cut across one another with often poorly aligned funding mechanisms.

Central and Local Governments should develop a better set of protocols around how and when they work together and how these joint projects are funded. This should mean larger scale projects are handled less on a one-off basis, reducing time delays and costs.

There also needs to be improved integration between layers of Government where responsibilities overlap, and a greater focus on ensuring accountable decision-makers have funding responsibility and capacity to effect their decisions.

6. Increase monetary policy tools and objectives

Reserve Bank monetary policy is generally focused on adjustments in the Official Cash Rate (OCR) to maintain price stability in the economy. The OCR is one tool with a specific focus on overall price stability. It is not best suited to addressing volatility within specific sectors of the economy.

To provide greater support for the Construction sector, the Reserve Bank could be mandated to achieve a broader set of objectives (such as unemployment targets), or be given new tools in its basket such as enforcing higher reserve requirements for banks. These may assist in curbing speculative behaviour and/or moderating unemployment, which hits the Construction sector hard.

7. Make it easier to do business

New Zealand consistently performs well in international comparisons of ease of doing business. However, if perception or reality is that construction investment is time consuming and the risks are high, perhaps as a result of the Resource Management Act (RMA) process or regulation, this may disadvantage investment in construction relative to investment in other activities.

Interviews suggest that areas of real or perceived weakness in the RMA include a failure to balance social, economic, and environmental benefits of improved infrastructure against adverse effects; different local authorities interpreting the Act inconsistently; overlapping as a result of RMA consents being required by regional and local authorities; a disproportionate role played by interest groups; lengthy timeframes required; and a lack of monitoring RMA effectiveness.

Consequently, the existing process to streamline the consents programme will assist the sector, by encouraging business investment. It is recommended that the Construction Strategy Group (CSG) supports this process and continues to advocate for RMA process improvements and enforcing improved consents issuance timeliness by local authorities.

8. Remove the bias toward speculative residential investment

Construction sector volatility is largely due to Residential building volatility. The Residential sub-sector is volatile because a lot of investment in the sub-sector is speculative in nature. Housing is seen as a safe asset class compared with other investment options.

A more sustainable approach to residential investment, built on legislation and regulation that makes residential investment an equal among options for investment, would benefit the Construction sector by removing much of the volatility in the residential construction market. This would provide the certainty required to reduce job creation and destruction, plan for growth, and provide the training and skills maintenance required to lift productivity in the sector.

Recent tax changes to depreciation, the review of securities law, and the Prudential Requirements for Non-Bank Deposit Takers (NBDTs) may reduce residential investment bias and create confidence in other forms of investment. It is recommended that the Government continue to move toward a more balanced investment playing field.

9. Monitor immigration to possibility adjust immigration more responsively.

In recent times, net migration in New Zealand has been amongst the most volatile in the OECD. Volatility in population growth can be expected to translate into volatility in Construction sector investment. While the level of Government's control over net migration is limited, it can use its immigration policy to control the flow of new immigrants into the country. This might involve, for example, lowering points requirements to stimulate demand for residential construction activity.

Impacts of the Christchurch earthquakes

The devastating earthquake in Christchurch on 22 February 2011 will have significant repercussions for the country – and the Construction sector in particular – as infrastructure is rehabilitated and residential and commercial buildings are repaired and replaced.

It is unlikely that the sector has the capacity to absorb increases in activity of this scale, without consequent impacts elsewhere through the sector and economy. Broadly we can expect:

- Price increases across the sector due to the increased demand;
- Deferral of other projects, both by Government and the private sector;
- Growth in employment in the sector, through immigration and from other sectors.

This imminent surge in activity may offer the sector the chance to develop skills and a capital base that will serve it well for the future.



Introduction

The CSG was established in May 2010 as a high-level strategy group to address Construction sector issues. Its purpose is to provide leadership and strategic direction to grow a productive, value driven professional Construction sector.

CSG commissioned PwC to develop a robust economic analysis of the Construction sector in New Zealand with the aim of demonstrating to Government the value and significance of the sector. A key focus of this analysis is to demonstrate the Construction sector's volatility and the consequences of this in terms of the sector's economic performance, and the impact on the economy more broadly.

The agreed scope of work is as follows:

1. Develop an overview of the sector including its size, reach and economic performance;
2. Profile the role of the sector in the context of the broader economy, including its role in the supply chain and its volatility relative to other sectors;
3. Demonstrate the impacts and benefits of Construction investment;
4. Show the role the Government plays in the sector, in terms of direct investment and through Government policy;
5. Investigate options for Government to assist the sector, with a focus on smoothing the sector's boom-bust cycles;
6. Build a qualitative picture of key issues facing the sector by interviewing key industry stakeholders; and
7. Outline the implications of the recent Christchurch earthquake for the Construction sector.

This report is subject to the restrictions in Appendix D.

The scale and value of the Construction sector

This section introduces the current role of the Construction sector in the New Zealand economy. The sector is the fifth largest in New Zealand, with 157,400 full-time equivalents (FTEs) employed directly in Construction and a further 42,245 in Construction-related services.

The sector is characterised by small businesses, and low labour productivity. Because construction mostly occurs where people live, the distribution of Construction employment is broadly population-based. Nevertheless, there are economies of scale in larger urban centres, while some regions like Taranaki and the West Coast have higher shares of Construction employment linked to their strong Mining sectors.

Workers in Construction have a similar proportion of workers with no qualifications or school qualifications as the national average. However, considerably lower proportions of workers have tertiary qualifications. Workers in Construction are younger, are more likely to be Māori or Pasifika, and earn less per hour than workers in most sectors.

The Construction sector dominates investment (gross fixed capital formation, or GFCF) in New Zealand, and is less reliant on imports than other sectors that produce significant shares of capital. For every dollar invested in Construction, three dollars of activity are generated across the economy, making it one of the most stimulatory sectors.

The sector thus provides the backbone of New Zealand's investment, and has powerful impacts on the rest of the economy. Yet it is vulnerable, with a high number of small businesses, and low labour productivity and earnings. A downturn in the sector places disproportionately large numbers of young adults with lower levels of accumulated wealth and lower earnings at risk of losing their jobs.

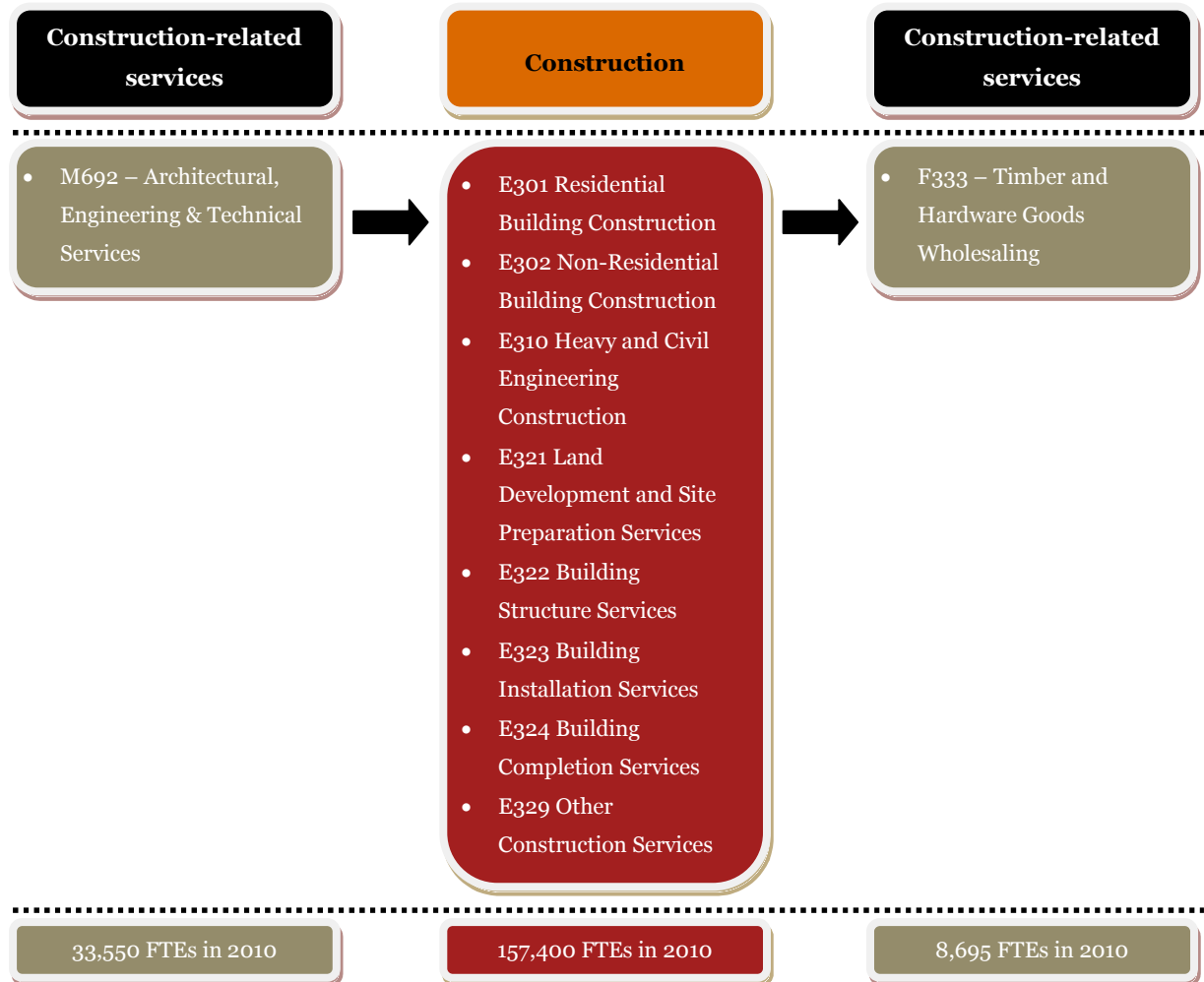
Defining the sector

The Construction sector as defined in this report refers to:

- a core industry denoted as *Division E – **Construction*** in the *Australia New Zealand Standardised Industrial Classification* (ANZSICo6) codes as used by Statistics New Zealand. Most analysis is at this level.
- **Construction-related services**, consisting of ANZSICo6 industries *F333 - Timber and Hardware Goods Wholesaling* and *M692 - Architectural, Engineering and Technical Services*.

These groupings are shown graphically in Figure 1.

Figure 1 Definition of the Construction Sector and Construction-related services⁵



PwC Regional Industry Database, Statistics New Zealand

Where possible, we have separately itemised Construction and Construction-related services throughout this report. In several cases, data for Construction-related services is not separately available. In this case Construction data refers only to core Construction activity, and Construction-related services are included under the broader Wholesaling; and Professional, scientific and technical services sectors.

Notwithstanding these definitions, the sector broadly operates in three **core areas**: residential, non-residential and infrastructure. These three areas broadly line up with residential building construction, non-residential building construction, and heavy and civil engineering construction, with

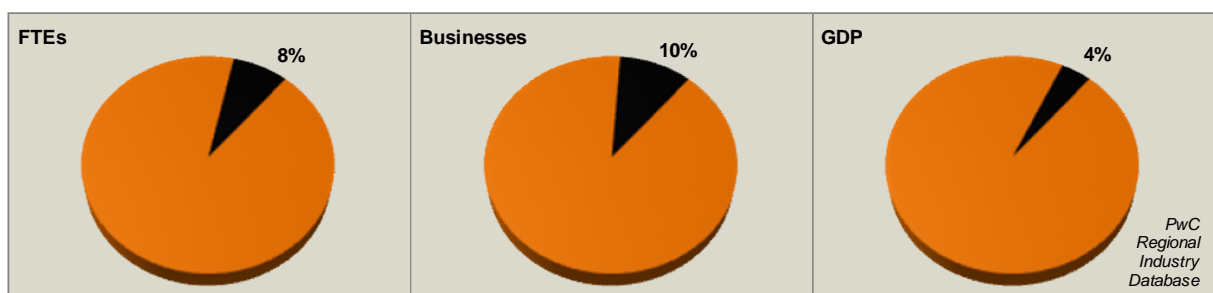
⁵ The PwC Regional Industry Database (RID) is intellectual property developed by PwC New Zealand. It provides employment, GDP, business size, labour productivity, and industry concentration information at a national, regional, district/city and sub-district level by over 200 industries. The RID uses national GDP and employment by industry, combined with differentiated labour productivity and employee to FTE ratios at the industry and local authority level to provide granular data by industry and geographic area over a 10-year period.

the other sub-sectors, such as building structure services or building installation services serving all three **core areas**.

Employment, GDP and business units

As Figure 2 shows, the Construction sector is a major employer in the New Zealand economy, representing 8% of the total workforce. It also accounts for 10% of total businesses and 4% of GDP.

Figure 2 The Construction sector's share of New Zealand employment, businesses and GDP



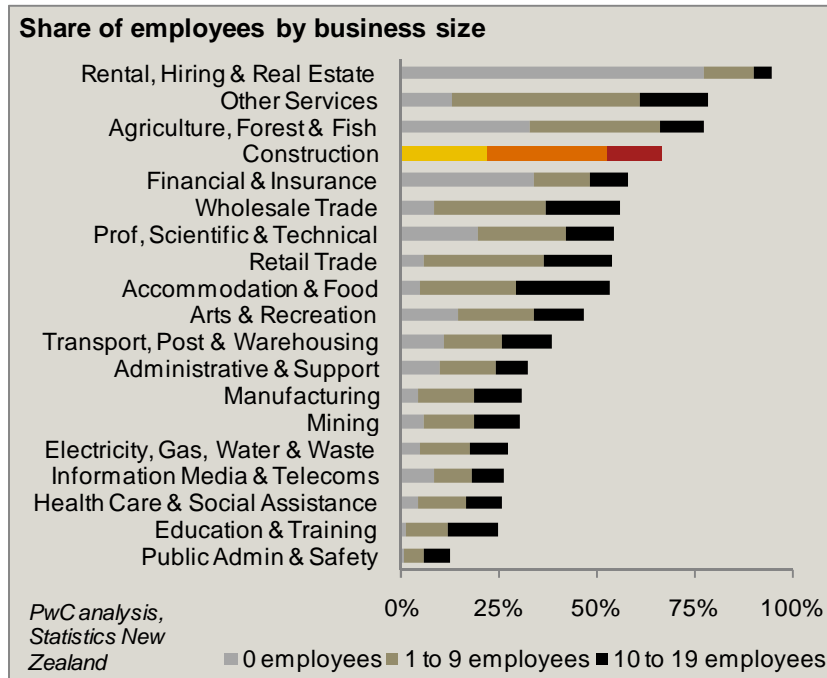
These facts have two important implications. First, a higher proportion of businesses relative to employment indicates that the average business size for this sector is smaller than for most of other sectors. Second, a higher proportion of employment compared to GDP means that the labour productivity in Construction is lower than average.

Figure 3 overleaf shows the relative size of Construction businesses, in terms of employment, relative to other sectors.

Nearly 70% of employees in the Construction sector work at organisations with fewer than 20 employees, with more than 50% working at organisations with nine or fewer employees. This places Construction fourth in terms of its share of workers employed at small businesses across the 19 top-level industries in New Zealand. In other words, workers in the Construction sector are more likely to be employed at small businesses than workers in most other industries.

Above Construction we find three sectors that are typically characterised by small sized businesses: Agriculture, forestry and fishing; Other services; and Rental, hiring and real estate services. The first of these sectors is dominated by small agriculture businesses (farms) while the second is mainly characterised by businesses providing a range of personal care services, such as hair, beauty and diet. The Rental, hiring and real estate services sector comprises businesses or persons that rent, hire, or otherwise allow the use of their own assets by others, including real estate agencies, and landlords with rental businesses, again usually small businesses.

Figure 3 Construction has a high proportion of small businesses



This means that among businesses that are usually assumed to be larger, Construction businesses tend to be the smallest. This helps explain the sector's low productivity, as there is not the breadth or depth of finances to invest in capital or human resource development.

Construction businesses are usually smaller and have lower labour productivity than businesses in other sectors.

Employment by sub-sector

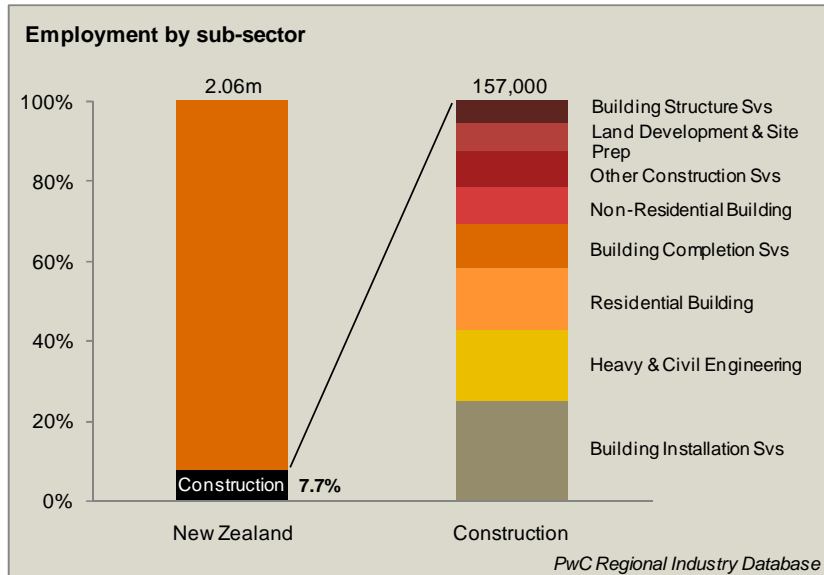
The Construction sector comprises eight sub-sectors, each providing a range of different activities related to building, renovating, maintaining, installation and management, as shown in Figure 4 overleaf.

Almost 60% of the Construction sector is represented by three main sub-sectors: Building installation services, Heavy and civil engineering and Residential building construction.

Building installation services represents nearly a quarter of total employment in Construction and it consists of businesses engaged in plumbing, electrical, fire security and alarm services. These types of services are typically performed by small businesses.

A fifth of the employment in the sector is generated by Heavy and civil engineering. It consists of businesses engaged in the construction or general repair of roads, bridges, ports, runways, parking lots or other major infrastructure. These businesses are of medium to large scale.

Figure 4 Composition of the Construction sector



The third largest component of the labour force is represented by Residential building construction. Primary activities of this subsector are construction, additions, renovation of houses or managing these activities. Importantly though, this sub-sector does not include a number of other services linked to residential construction, including building installation services, building structure services and building completion services, which are itemised separately in the classification used here.

Labour productivity

Figure 5 shows the labour productivity for the main sectors in New Zealand, defined dollars of GDP produced per FTE. As expected, capital intensive sectors like Mining or Electricity, Gas, Water and Waste have a significantly higher labour productivity in comparison to the New Zealand average.

In contrast, the Construction sector has one of the lowest labour productivities, at nearly \$50,000 per FTE. This is due the fact that, excluding major infrastructure projects, most of the activities performed by this sector are labour intensive.

Construction-related services rank slightly better due to a more qualified workforce including architectural and technical services, and less labour intensive industries such as timber and hardware goods wholesaling.

The Construction sector has one of the lowest labour productivities as a result of its labour intensity and small business size, which make it hard to invest in capital to boost productivity.

Figure 5 Labour productivity is low in Construction



Other sectors like Accommodation and food and Education and training have low labour productivity as many of the jobs in these sectors are performed on a part-time basis, and tend to be at the low-end of the skills spectrum.

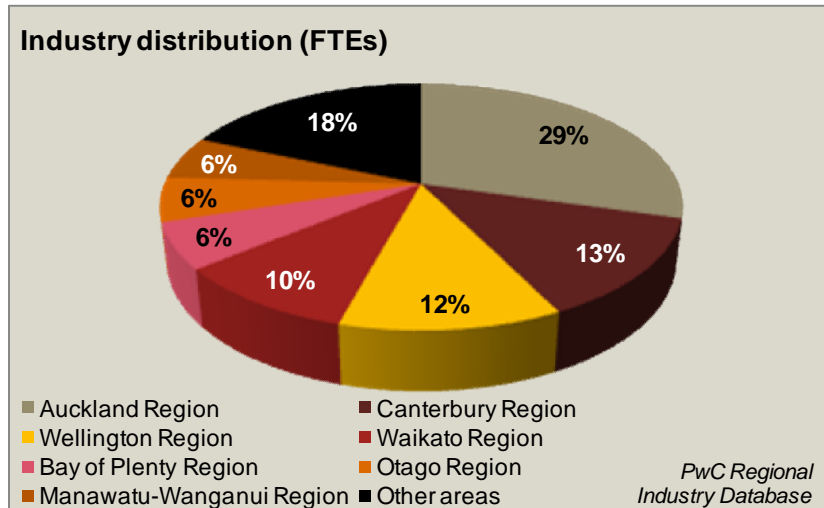
A 1% increase in labour productivity would increase national GDP by almost \$300 million, given the sector's size and large multiplier impacts (discussed in more detail on p. 25). Given the low labour productivity base off which Construction is growing, this would be more achievable than in many other sectors, were the changes recommended in this report implemented.

Regional role

As shown in Figure 6 overleaf, nearly two thirds of total employment in the sector is located in Auckland, Canterbury, Wellington and Waikato. The distribution of employment for these regions is broadly comparable to their share of the New Zealand population.

The similarity between the share of employment and population shows that this sector is tightly linked to where people live.

Figure 6 The Construction sector is located where people live



It is worth noting that although Auckland has around 34% of the population, its share of employment is slightly lower, whereas the share of employment for areas like Otago is slightly elevated. This can be partly explained by the fact that Auckland is more densely populated, and benefits from economies of scale in construction. On the other hand, Otago's fast-growing Queenstown community has a need for higher relative levels of construction.

Figure 7 overleaf shows the share of total local employment accounted for by the Construction sector across New Zealand's 16 regions.

The West Coast and Taranaki stand out, with the Construction sector representing 11% and 10% of their regional employment respectively. This can be explained by the fact that Heavy and Civil Engineering Construction businesses play a major role on the West Coast due to the strength of the Mining sector. Similarly, in Taranaki, the nature of local industries requires a higher proportion of Construction sector input compared to the New Zealand average.

On the other hand, the Construction sector accounts for a lower share of employment in Auckland and Southland, representing around 7% of the regional workforce.

Auckland benefits from larger scale businesses providing less labour intensity and more economies of scale. Southland is dominated by the Agriculture, Forestry and Fishing industry, with other sectors having low employment concentrations.

Figure 7 The importance of Construction across regions

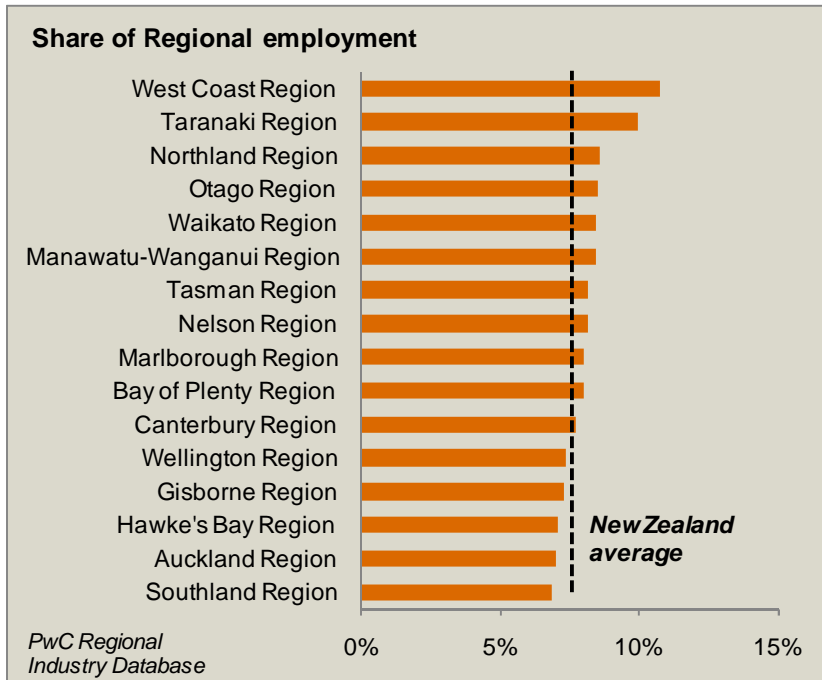


Figure 8 overleaf shows where employment in the Construction sector is centred, using Employment Concentrations (ECs). ECs compare the share of workers employed in a particular sector in a geographic area, to the share of workers employed in that sector nationally.

An EC above 1.0 means the sector is highly concentrated in a particular area. It also means when a sector is booming, that area will benefit strongly, and that when the sector suffers, that geographic area will as well.

An EC below 1.0 means a sector is less concentrated in a particular area, meaning it is less likely to benefit from strength in that sector, but is also less exposed to a downturn in that sector.

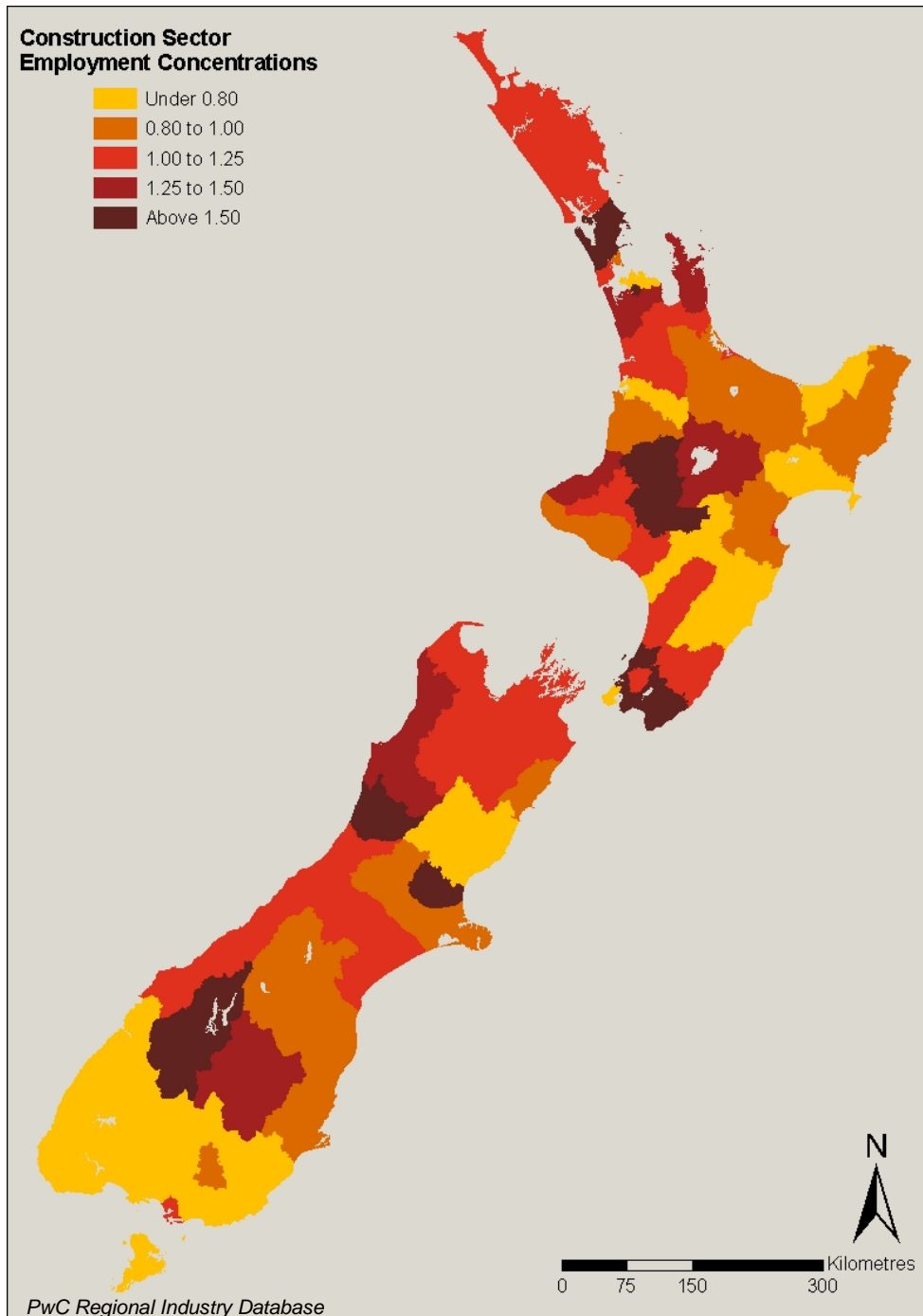
High ECs are recorded in:

- Queenstown-Lakes District due to the strong growth in population seen there over the last decade, with accompanying construction activity.
- Grey District, likely the result of the significant mining industry there.
- Outer areas of major cities, including Waimakariri, Hutt City, Kapiti Coast, Papakura and Rodney. This pattern is a result of many Construction businesses having their offices or warehouses outside the CBD, including many owner-operated businesses such as plumbers and electricians.

Lower ECs are recorded in:

- CBDs in Auckland and Wellington, even though much of the work completed in the Auckland and Wellington Regions may be completed by workers based in areas on the outskirts as mentioned above.

Figure 8 Where the Construction sector is based



The Construction sector is largely population-growth based, rather than the result of a particular resource-endowment. Although there is variation in ECs across Local Government areas in

Construction, the sector is far more broadly-based than other sectors such as Mining, where the West Coast Region has an EC of 26; or even Agriculture, Forestry and Fishing, where Tasman has an EC of 3.6.

This means that when the Construction sector experiences a slump, the impacts are felt across New Zealand.

Because the Construction sector is fairly evenly distributed across the country, a downturn leaves no part of the country unscathed.

Socio-economic and demographic characteristics

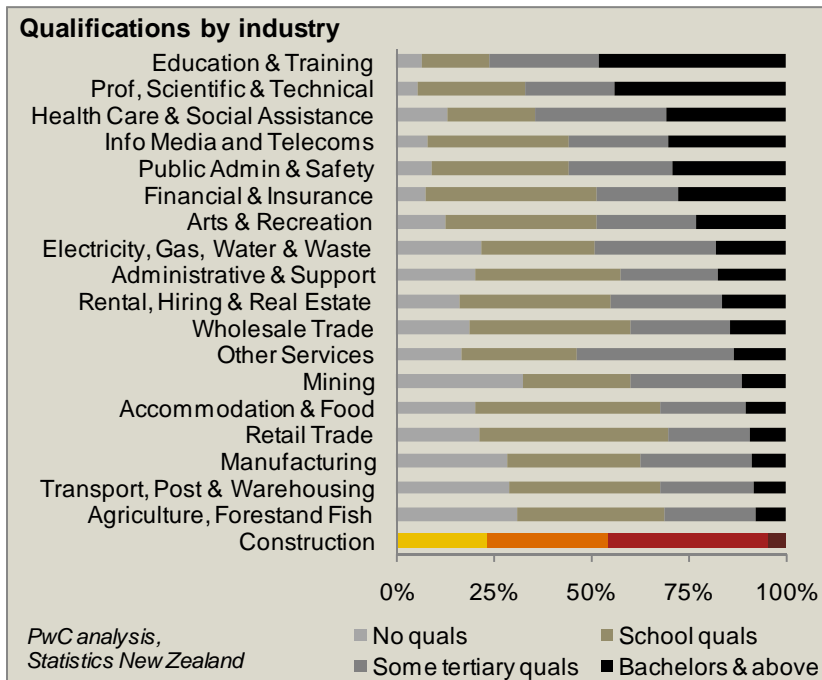
This section describes the socio-economic and demographic characteristics of the Construction sector by looking at educational attainment, ethnicities, and age groups employed in the sector.

Educational attainment

Figure 9 shows how Construction compares to other sectors in educational attainment of its workforce.

Construction has the lowest share of people with Bachelors or above qualifications in New Zealand. This is somewhat unexpected, when compared to other sectors such as Agriculture, Forestry and Fishing; or Retail. However, this gap can be explained by the high proportion of workers in Construction with some tertiary (often trades-related) education. When we consider the share of workers with only school qualifications or below, Construction sits mid-field.

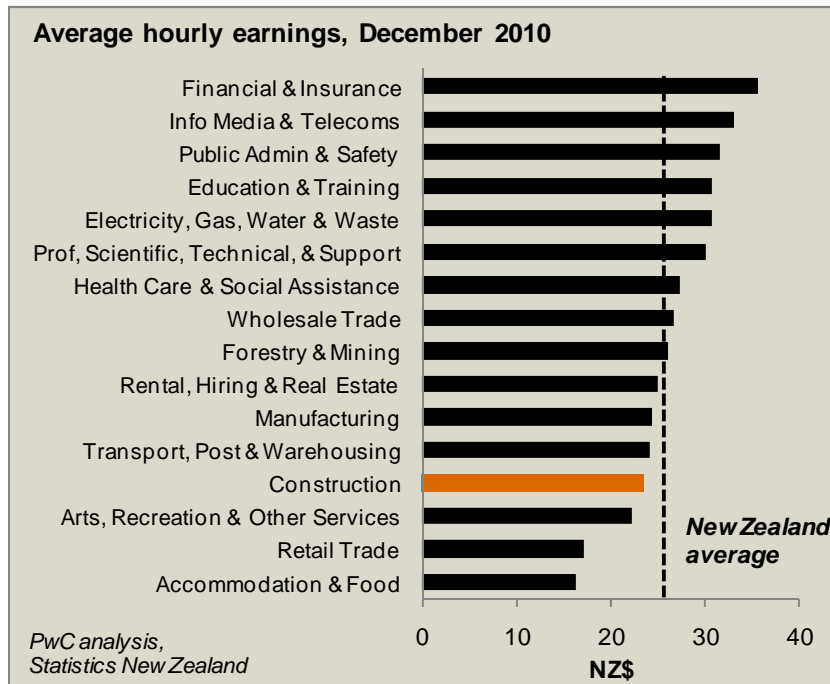
Figure 9 Educational attainment in Construction is mid-field



Personal incomes

Figure 10 shows the average hourly earnings by sector for the latest available quarter – December 2010.

Figure 10 Average hourly earnings are lower in Construction than in most sectors



Construction receives the fourth-lowest hourly earnings of all sectors in New Zealand, after Accommodation and Food; Retail trade; and Arts, Recreation and Other services, at \$23.60 an hour.

Despite a relatively large share of Construction workers having at least some tertiary training, the sector is characterised by low earnings. This is almost certainly in part due to the low labour productivity growth of the sector, itself a result of the difficulty in extracting labour productivity gains from a labour intensive industry.

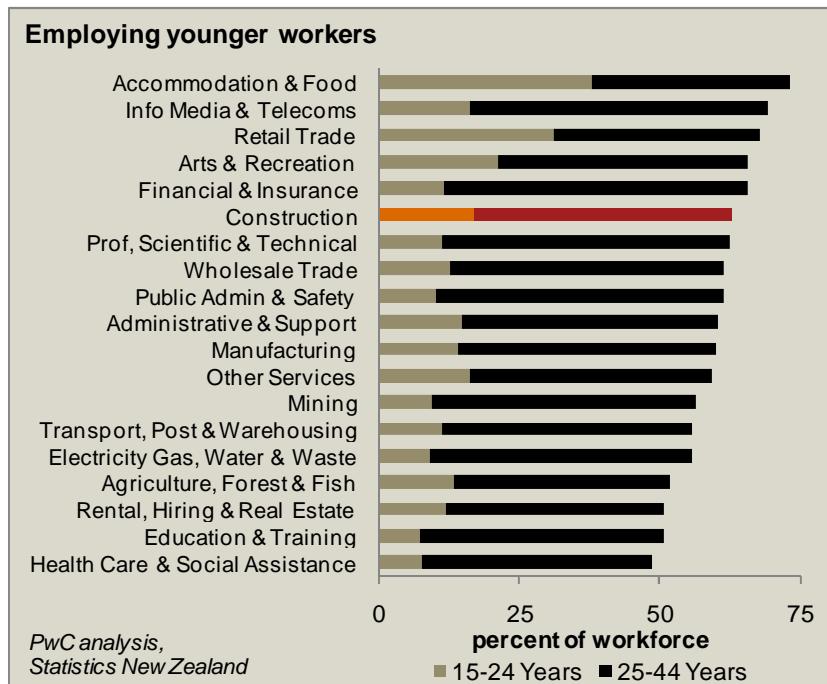
The implication of this is that workers in this sector are more likely to be reliant on social services if they lose their jobs, as they cannot rely on stored wealth, and are poorly-placed to deal with a significant slowdown in the economy.

A further implication of the low wages and relatively low qualifications in the Construction sector, dealt with in further detail in the section on Job and worker turnover, is that many workers in Construction can easily move into relatively unskilled jobs in other sectors, or to Australia when New Zealand experiences a downturn. At the more skilled levels, there are significant opportunities for work in many other developed countries where standards are similar. This creates ongoing skills retention problems for the sector.

Age groups

Figure 11 below shows the percentage of the total workforce represented by two age groups: 15 to 24 (young workers) and 25 to 44 years (mid-career workers).

Figure 11 Construction employs younger workers than most sectors



The Construction sector employs a relatively young workforce, with the fourth highest proportion of 15 to 24 year olds, and the fifth highest proportion of 15 to 44 year olds.

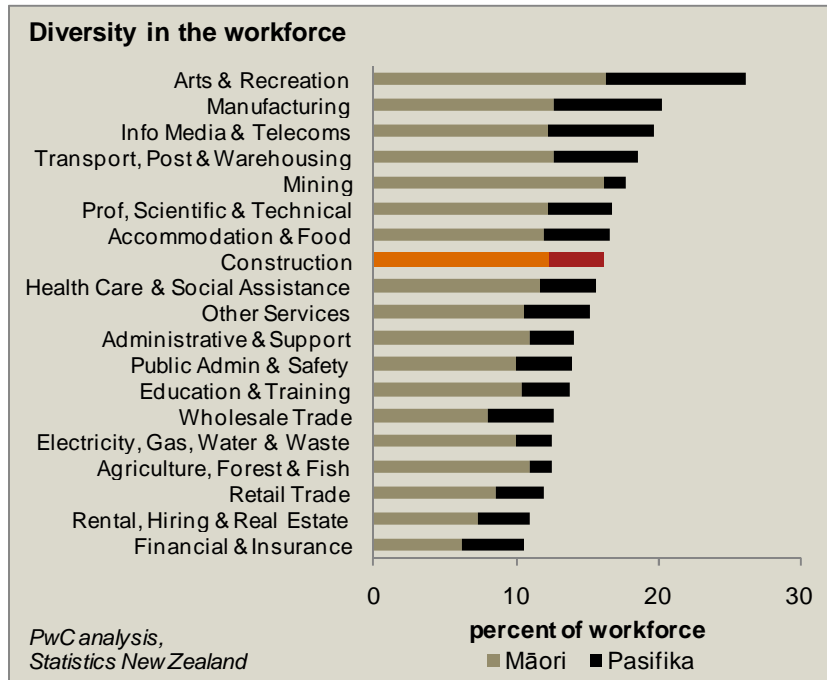
Because people in these two age groups are more likely to have families to look after, the implication is that the risks and impact of downturns on Construction sector employment are higher compared to other age groups. Not only do downturns affect workers in the Construction sector more than any other sector in New Zealand, but these workers are of the prime working age and are more likely to have young families and mortgages to pay off.

Ethnicities

Figure 12 shows the proportion of people identifying as Māori and Pasifika employed by the main sectors across New Zealand.

Workers in Construction are more likely to rely on social services if they lose their jobs, as they tend to be more poorly paid and younger than workers in most sectors.

Figure 12 Construction employs a high proportion of Māori and Pacific Peoples



The Construction sector sits in the top half of sectors with high shares of Māori (5th highest) and Pasifika (8th highest) employment. These two ethnic groups are characterised by higher unemployment rates and lower educational attainment rates. The Construction sector offers significant employment opportunities for these ethnic groups, making the consistent provision of work by the Construction sector an important part of improving economic conditions for these minority groups.

Upstream and downstream impacts

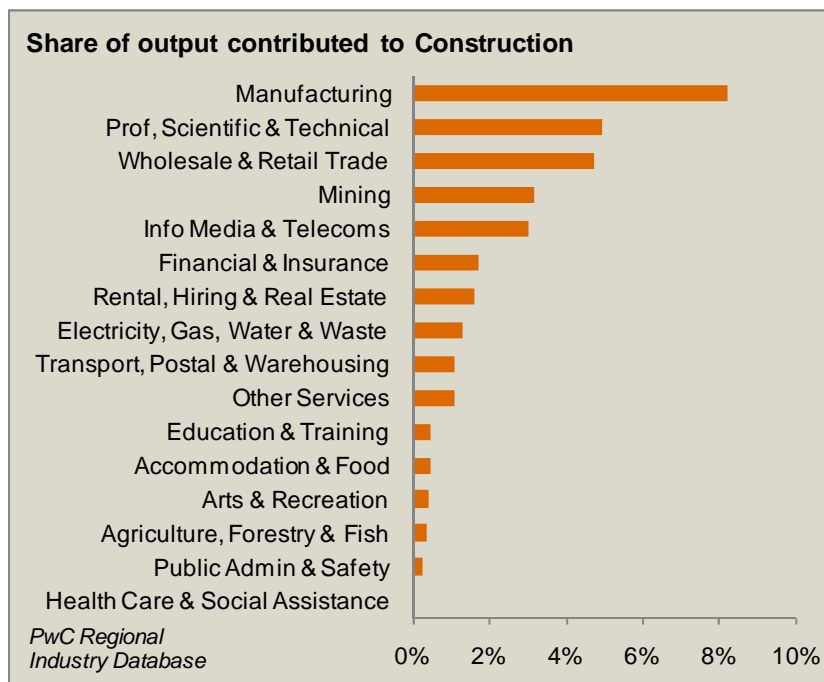
Any impact on a particular sector has flow-on effects to other sectors in the economy. The sector buys inputs from other sectors, creating employment for its suppliers (indirect impacts). Workers then use their earnings to buy goods and services for their households creating jobs in retail, personal services and other sectors (induced effects). It is thus crucial to examine how a sector interacts with other sectors in the New Zealand economy.

The New Zealand national input-output tables help explain how the economy fits together by showing the extent to which industries interact, supplying each other, and benefitting from the outputs of each other. The input-output tables also allow us to estimate the effect on GDP and employment of a one dollar investment in a particular industry. This helps show which industries are likely to return the “biggest bang for your buck” in investment terms at a national level.

Key input industries

Figure 13 shows the proportion of each sector's output contributed to the Construction sector. This gives an indication of how important the Construction sector is in absorbing outputs from other sectors.

Figure 13 Construction absorbs output from a wide range of sectors



More than 8% of the total output of the Manufacturing sector is used by the Construction sector, while other sectors such as Professional, scientific and technical Services; and Wholesale and retail trade contribute 5% of their total output to Construction.

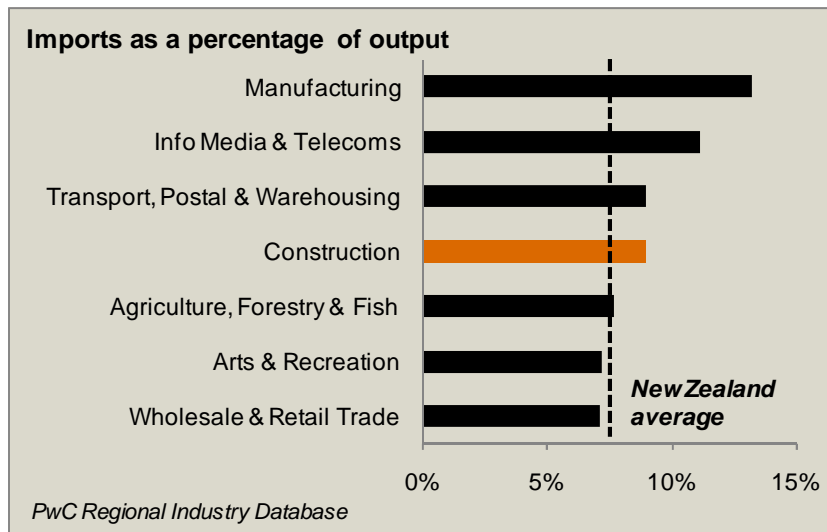
The Construction sector thus plays a role across a number of sectors by using their outputs in its own production.

The role of exports and imports

In terms of production, the Construction sector is generally regarded as a non-tradable sector. This means that, in contrast to Agriculture or Manufacturing, Construction is a service sector rather than a producer of goods. The Manufacturing sector produces building supplies, but the Construction sector turns those materials into useable infrastructure. Given the scale of the outputs of the Construction sector (houses, schools, roads and ports) exports directly by the Construction sector are estimated at just 0.7% of output in the national input-output tables.

Imports by the Construction sector are mostly in the form of imported materials. Imports by the Construction sector play a less important role compared with capital intensive industries such as Manufacturing or Transport, postal and warehousing, as shown in Figure 14.

Figure 14 Construction is import-independent compared to other investment sectors



This means that compared with other major infrastructure-building sectors, the Construction sector keeps a larger share of expenditure in New Zealand, rather than sending it offshore.

The implication is that a dollar invested in Construction will cycle through the economy more than a dollar invested in other investment-heavy sectors such as Manufacturing; Telecommunications; or Transport, postal and warehousing. This is explored further when we consider how a dollar invested in Construction flows through the New Zealand economy.

Investment in Construction yields one of the highest returns in terms of output stimulated across the economy.

Investing in New Zealand

This section shows the relative importance of the Construction sector in contributing to investment in fixed assets (gross fixed capital formation, or GFCF) in New Zealand.⁶

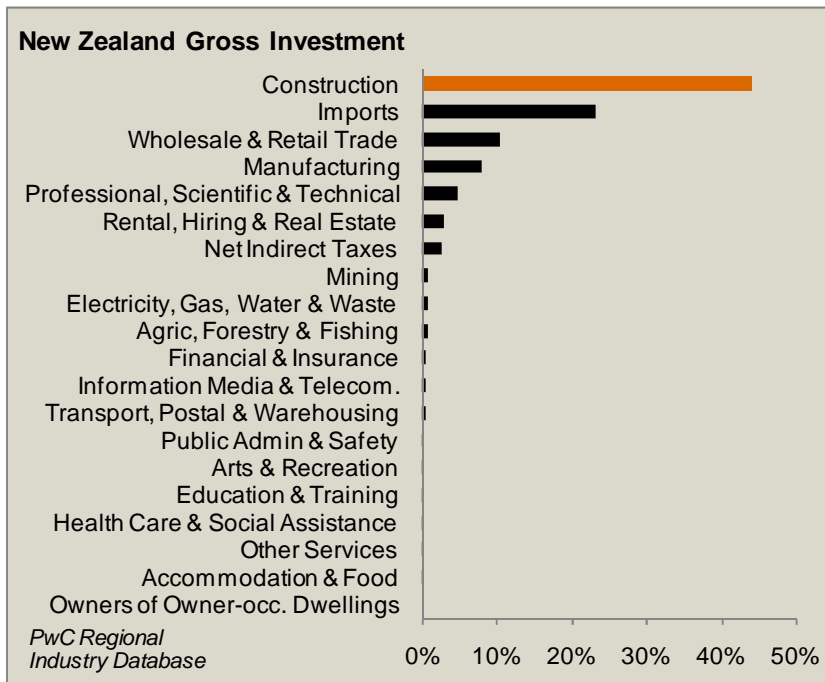
Figure 15 shows the proportion of total investment in New Zealand by origin.

The Construction sector is by far the highest contributor to the total GFCF, representing 45% of all investment in New Zealand. It is the only sector that produces a larger share of total investment in New Zealand than is accounted for by imported goods. Wholesale and retail trade, and Manufacturing

⁶ GFCF (Gross Fixed Capital Formation) measures the value of acquisitions of new or existing fixed assets by the business sector, Governments and households less disposals of fixed assets. In less technical terms, it is a universally- used measure of the extent to which an industry or a country invests in assets, rather than spending on consumption. It shows how focused an industry or country is on building capital stock.

represent 10% and 8% of national GFCF respectively, while most other sectors represent an insignificant percentage.

Figure 15 Construction dominates New Zealand investment

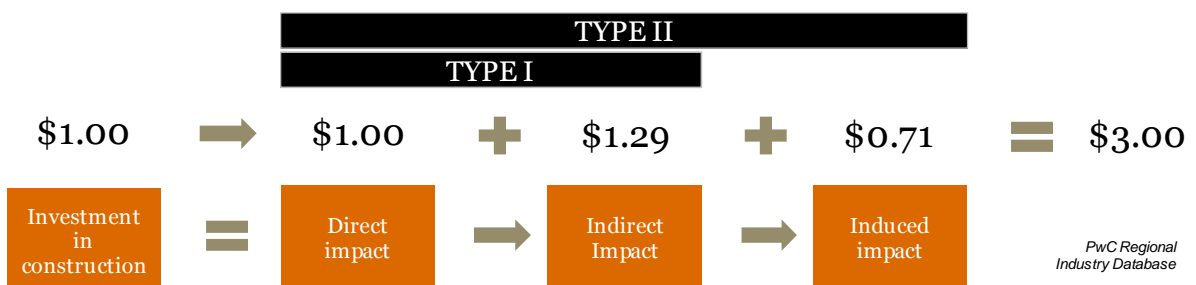


In other words, the Construction sector plays by far the largest role in building infrastructure stock in New Zealand, forming the foundation of economic growth.

Multiplier effects

Multipliers measure the extent to which investment in a particular sector affects other sectors upstream and downstream. Estimates of these impacts are based on the New Zealand national input-output tables. Figure 16 shows the total impact of investment in the Construction sector. It considers the indirect (upstream) and induced (downstream) impacts of a dollar invested in Construction.

Figure 16 The multiplier impact for Construction is large



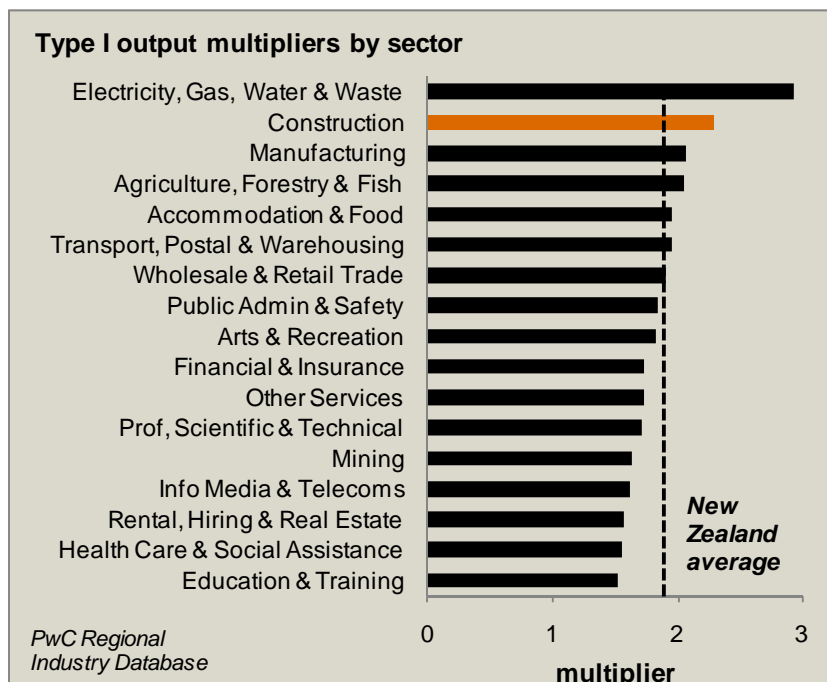
One dollar invested in Construction generates a total of three dollars in economic activity.

Of the three dollars, one dollar comes from direct impact as wage income and corporate profit.

Indirect impacts account for another 1.29 dollars. These indirect impacts include the supply chain of Construction and other sectors that benefit from increased construction such as Manufacturing; Real estate; and Architectural and Engineering services. The direct and indirect impacts together are referred to as Type I multipliers.

As shown in Figure 17, Type I multipliers for the Construction sector are the second highest in the New Zealand economy. Because Type I multipliers measure the way a stimulation of a sector affects its suppliers, it gives an idea of the short-term (rapid) impacts of stimulating a particular sector.

Figure 17 Construction spending quickly stimulates the economy through indirect impacts



The only sector with a higher Type I multiplier than Construction is the Electricity, gas, water and waste sector, which employs few workers in New Zealand and is characterised by large capital to labour ratios.

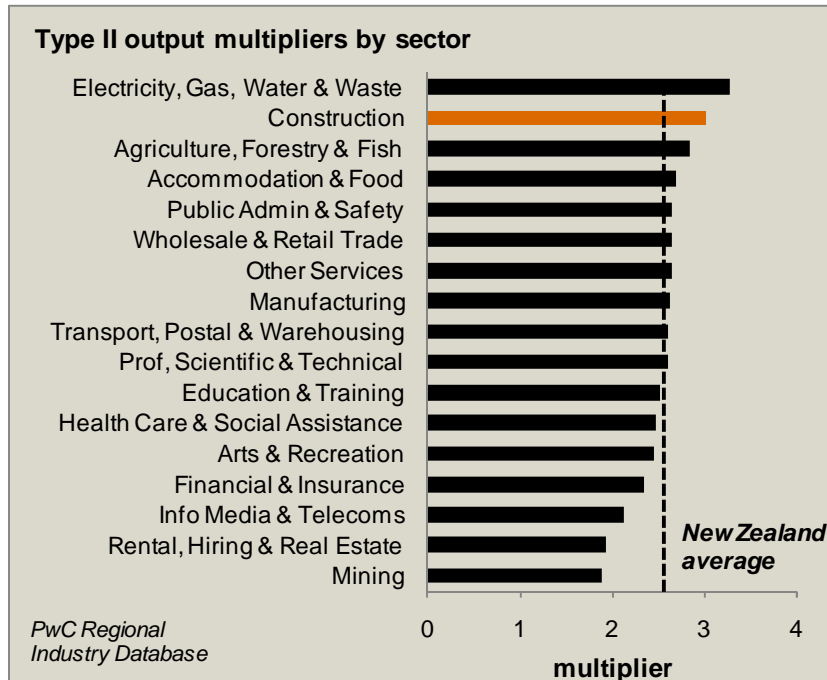
This means that the *quick impact* of a dollar invested in Construction is higher than a dollar invested in almost any other sector.

In addition, for every direct dollar spent, there is 71 cents that comes from induced impacts such as an increase in household income and expenditure. The sum of direct, indirect and induced impact is referred to as Type II multipliers.

Construction brings larger returns in the short and long-term than investment in almost any other sector than a dollar invested in almost any other sector.

Figure 18 shows that the Construction sector also has the second highest Type II multiplier.

Figure 18 Construction spending generates three times as much output in the economy overall



This means that the *total* impact of the dollar invested in Construction has a higher contribution to New Zealand's economy than any other sector other than the Electricity, gas, water and waste sector. This is achieved by the major impact Construction spending has in stimulating other sectors in its supply chain and through its workers spending their incomes.

A wider benefits view of construction

Even multiplier analysis does not capture the full extent of how construction activity can stimulate the economy. While multipliers capture the upstream and downstream spending by Construction firms and their workers, they do not capture the benefits to other users, particularly of non-residential and non-building construction.

The wider benefits of the Construction sector can be visualised as in Figure 19.

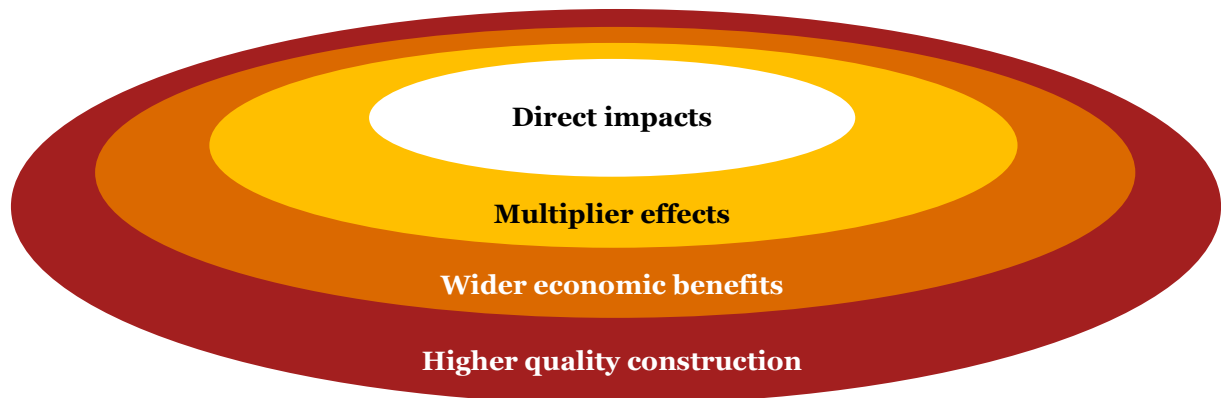
In addition to the direct and multiplier impacts, spending on construction also has wider economic benefits for people who were not directly linked to the construction process or to spending by workers in the Construction sector. For instance, a roading project may also:

- create time savings for a wide number of other people needing to move from A to B, whether businesses, commuters or recreational travellers;
- reduce loss of life or injury, thus reducing economic losses to the economy;
- stimulate agglomeration benefits, where many related businesses co-locate, resulting in higher labour productivity;

- increase tax-take as labour supply rises due to reduced travel time costs;
- increase competition meaning better prices for consumers.

Many of these wider economic benefits are already being acknowledged in Government planning – particular in relation to large transport projects. For example, agglomeration benefits have been included in the Economic Evaluation Manual used by NZTA since 2010. In recent months, a Steer Davies Gleave research report for NZTA has also found that the last two wider economic benefits itemised in the list above can also be quantified in New Zealand, and it is likely NZTA will look to quantify these benefits on future projects of significant scale.

Figure 19 There are several layers of benefits associated with construction



Finally, an improvement in the quality of projects being constructed can expand these benefits out even further. Examples of improvements in quality include:

- whole-of-life savings through greater longevity of completed work;
- improved health leading to greater output or quality of life through the use of healthier materials and healthier occupied spaces;
- greater productivity from more fit-for-purpose attributes in the finished built environment.

Trends in the Construction sector

This section highlights the key role the Construction sector has played in the economic growth of New Zealand in the last 10 years, as well as its vulnerability to the business cycle. It considers these impacts at the national, regional, and sub-sector levels.

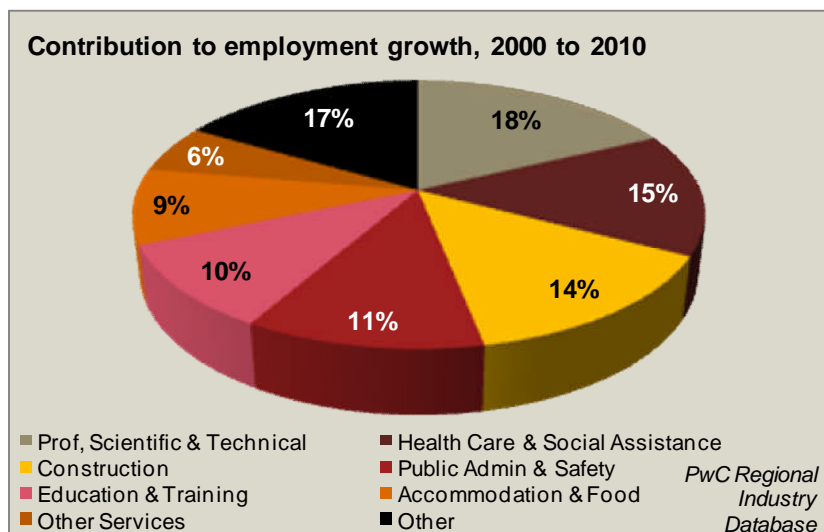
The findings of this section are that the sector has provided a large share of total New Zealand employment growth over the last decade, but has far higher volatility in performance than other sectors. One result of this volatility is poor labour productivity growth, partly because forward planning and skills development is especially challenging when there is little certainty about the future strength of the sector. The dominance of small businesses in the sector means there are high rates of job creation and destruction, while worker churn in and out of the sector is also high, meaning skills are not maintained. This no doubt further hampers labour productivity gains, and again is likely the result of the sector's boom-bust nature and the lack of predictability in future work streams.

The last 10 years

The period from 2000 to 2010 has seen remarkable changes in the fortunes of the Construction sector. The sector has provided a share of employment growth far larger than its share of total employment would suggest. Unfortunately, it has also suffered a sharp reversal in the recent downturn.

Figure 20 shows the share of total employment growth in the New Zealand economy over the last 10 years provided by each sector.

Figure 20 Construction has played a major role adding jobs to the economy



Over the decade to 2010, nearly 300,000 FTEs were added to the New Zealand economy. Of these, 14% (42,100 FTEs) were in Construction, with a further 4.4% (13,300 FTEs) in Construction-related

services. Remarkably Construction and Construction-related services have only accounted for 10% of employment, but almost 20% of employment growth since 2000.

These figures mask an even more significant story. As Figure 24 shows, between 2000 and 2007, the Construction sector had even more exceptional growth. In fact, between 2000 and 2007, Construction added 60,000 FTEs, almost 50% more than any other sector in New Zealand.

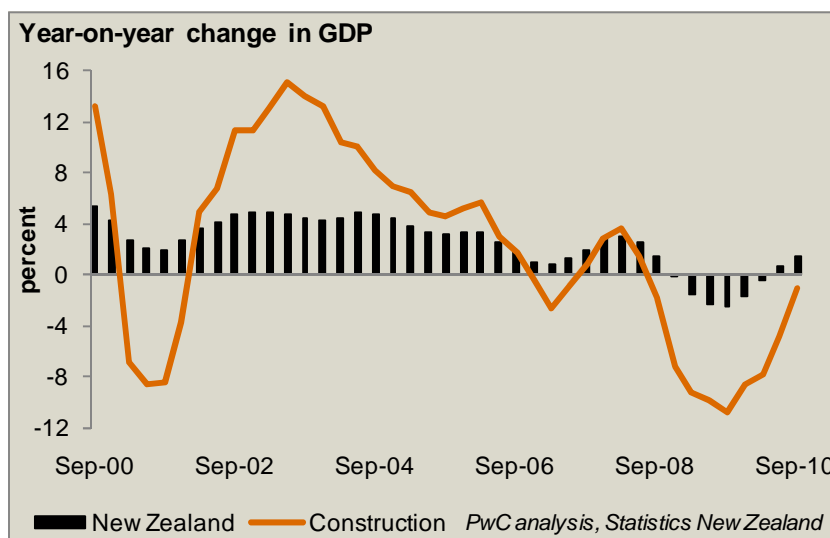
What this means is that the Construction sector has underpinned much of the growth that has occurred in the last 10 years, but is subject to inhibiting fluctuations in fortunes.

The Construction sector has underpinned much of the growth that has occurred in the last 10 years, but is subject to inhibiting fluctuations in fortunes.

Volatility in growth

Figure 21 shows the growth in Construction GDP relative to overall GDP growth for the last 10 years.

Figure 21 Construction GDP growth fluctuates widely compared to national GDP growth

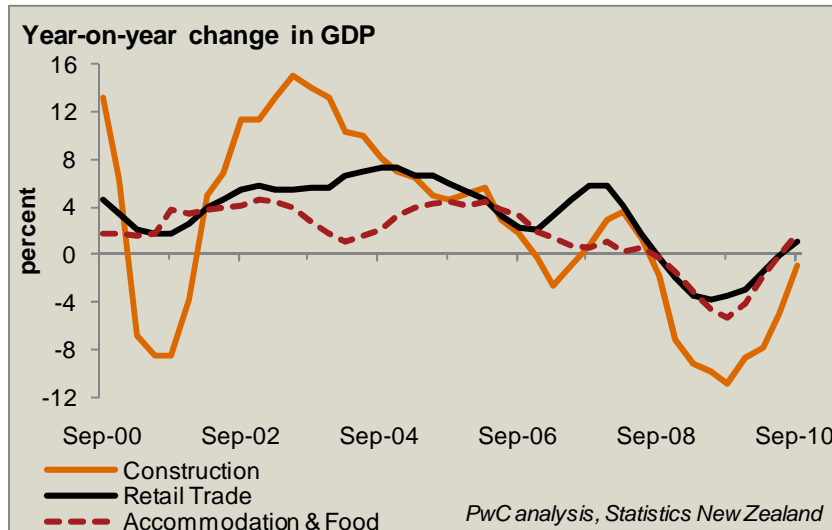


It is clear that the Construction sector experiences far greater changes in growth across the business cycle. In 2001, when year-on-year growth in New Zealand slowed to around 2%, Construction GDP fell 8.6%. The boom years between 2003 and 2006 saw overall GDP grow up to 5% year-on-year, while Construction sector GDP surged by up to 15% a year.

Yet with the downturn in more recent years, Construction is once again seeing GDP fall dramatically, by up to 10.8% in the September 2009 year.

It might be argued that this is typical of any sector that is subject to the actual or perceived economic well-being of domestic or international consumers. Yet when we look at the effect of the business cycle on hospitality and the retail trade, two frequently-used barometers of consumer sentiment, we see they are both far less affected by swings in overall GDP growth. This is highlighted in Figure 22.

Figure 22 Construction GDP growth fluctuates widely compared to other sectors



Both the Retail Trade and Hospitality sectors maintained moderate growth through the slow GDP growth period in 2001. GDP growth remained steady through the boom years and although negative during the latest downturn, growth has remained far less volatile than for Construction.

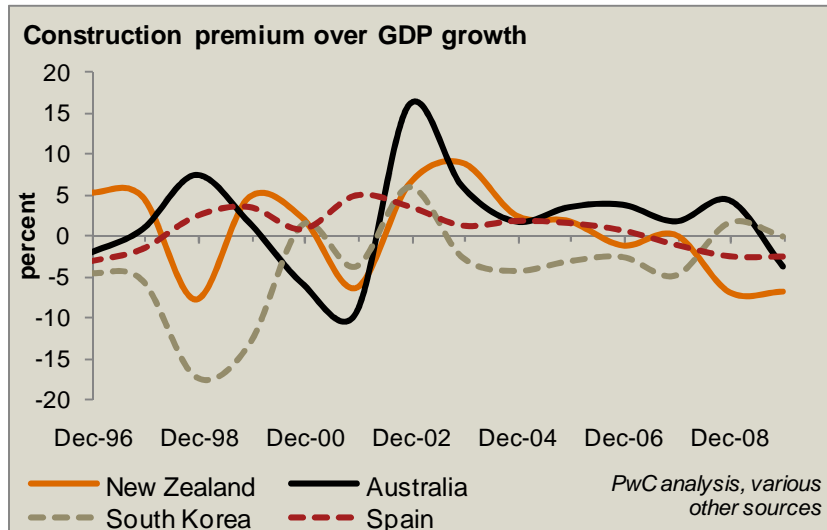
The implication of this pattern is that the violent cycles in the Construction sector do not allow it to build and maintain capacity, or to plan more than a few years out because there is no certainty over any length of time. This discourages investment in skills and means that whenever there is a sharp downturn, many skilled people head overseas, perhaps never to return to the New Zealand labour force.

Uncertainty in the Construction sector stunts the ability to plan long-term, invest in people, and build up capital to grow labour productivity.

Another question that arises is whether New Zealand's Construction sector is more susceptible to volatility than the sector in other countries. Three common comparator countries are presented with New Zealand data in Figure 23. The reason for comparison with these countries is their growth pattern relative to New Zealand. Australia is commonly used as a comparator country for New Zealand, given our similar GDP/capita 20 to 30 years ago, which has since diverged. Spain and Korea are two countries that were well behind New Zealand in GDP/capita 30 years ago, but are now comparable.

The figure shows how Construction GDP has fared against overall GDP growth in each country, as a premium over national GDP growth. e.g. a value of 2 means Construction GDP grew 2 percentage points faster than national GDP in the country concerned.

Figure 23 Construction volatility is not only a New Zealand problem

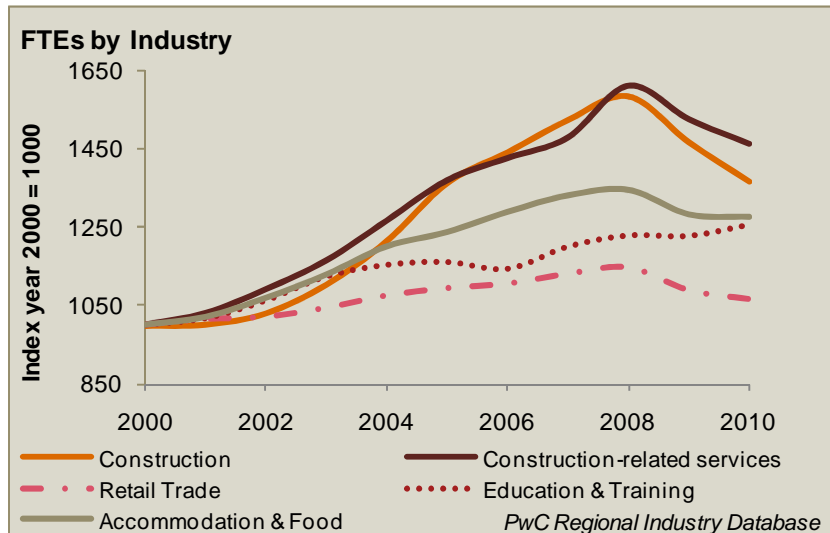


New Zealand sits mid-field in terms of volatility. Australia has seen even stronger volatility over the last 10 years although part of this may be explained by the downturn in construction immediately after the 2000 Olympics, with so much construction having been put in place in time for the Games. Spain, a country that has enjoyed very strong economic growth over the last 10 years, on the back of high levels of gross fixed capital formation, has done much better, with Construction sector growth broadly mirroring overall GDP growth. Korea has seen significant fluctuation in the performance of Construction GDP. Much of this is the result of the bubble in real estate prices in East Asia (most notably Japan) in the 1980's, from which these economies have still not fully recovered. Since 2003, Korea's Construction GDP has changed at a more constant rate.

In other words, the volatility of the Construction sector is not only a problem here, but is seen to a greater or lesser extent across developed countries.

The implication of this volatility in Construction economic activity is borne out by Figure 24, which shows employment growth for selected sectors over the last 10 years.

Figure 24 Construction employment growth is volatile compared to other sectors⁷



Employment grew most sharply in Construction and Construction-related services between 2000 and 2008. However, these sectors have also seen the sharpest decline in employment since then. By contrast, employment in education and training rose less dramatically to 2008, but has continued to see an upswing since. This is because many people return to study when the economy is weak, either to delay entering the workforce after completing schooling or tertiary study; or to up-skill to make themselves more employable.

Hospitality and retail both saw slower growth paths during the boom years, but have remained noticeably resilient compared to Construction and Construction-related services, despite the regular reports in the media of how difficult things are for retail in particular.

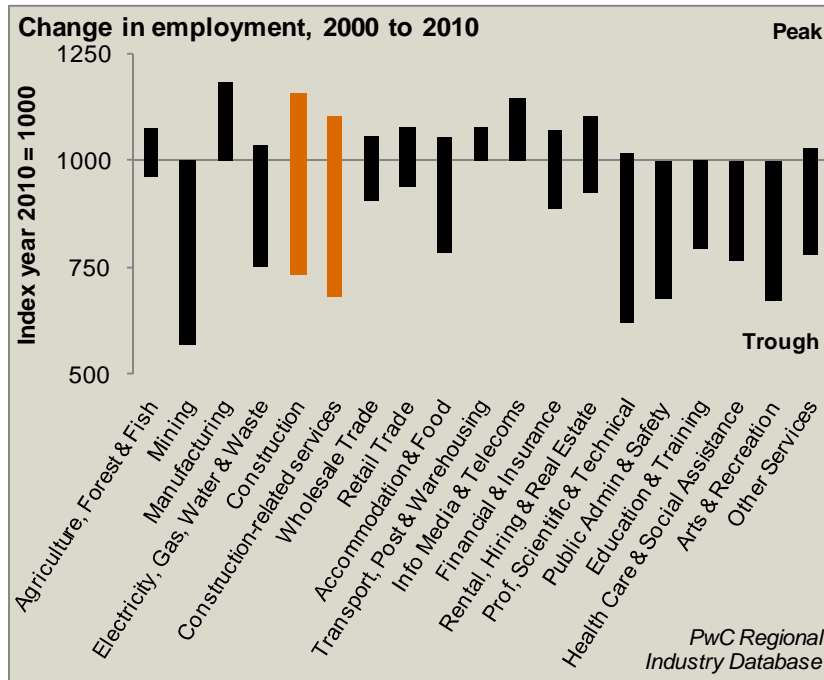
Figure 25 overleaf shows the volatility of all sectors in the economy over the last 10 years. The year 2010 is indexed as 1000. The graph shows that most sectors grew significantly over the decade, with employment peaking and then falling to 2010 levels.

At one point in the last 10 years, employment in Construction was 27% lower than in 2010 (the bottom of the orange Construction bar), while at another point in the last decade, employment was 16% higher than it was in 2010 (the top of the orange Construction bar). The picture for Construction-related services was similar although growth was even stronger, and with a smaller decline to 2010 levels.

Looking at the other sectors, it is clear that only Manufacturing has seen employment fall further than Construction from its peak in the last 10 years. Manufacturing has been pummelled by a strong New Zealand dollar and increasing low-cost competition overseas. Among non-tradable sectors (which produce services rather than products), **Construction has seen by far the largest decline in employment since the peaks of the boom years.**

⁷ Further analysis on volatility compared to other sectors is provided in the Appendices.

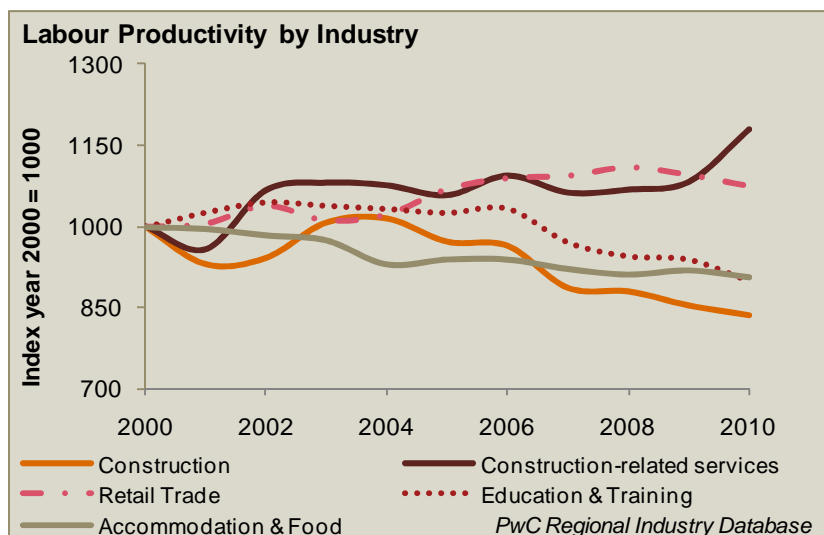
Figure 25 Construction sector up-turns and down-turns are sharper



Compare this outcome to Mining, which once had employment 43% lower than today, and which has not been affected by the downturn. Retail trade, often highlighted as a sector strongly affected by booms and busts, has had far smaller fluctuations in employment than Construction. Similarly, Accommodation and Food has been far less affected.

Theory would suggest that the implication of these facts is that labour productivity in the Construction sector would suffer as long-term planning and skills maintenance and development are affected by the uncertainty in the sector. Labour productivities for selected sectors are shown in Figure 26.

Figure 26 The boom-bust impact on Construction labour productivity is significant



Over the last 10 years, labour productivity in the Construction sector has slumped. It experienced some growth in the boom years from 2002 to 2004, but has trended clearly downward. The pattern in Education and Training, and Accommodation and Food have been similar but less dramatic, while Retail Trade and Construction-related services have enjoyed some improvement in labour productivity.

There are at least two reasons for this poor labour productivity growth in Construction. One reason, which affects Education and Training, Accommodation and Food, and Retail Trade to some extent, is the sector's labour-intensive nature. Sectors characterised by labour intensity battle to achieve labour productivity gains.

A second, more concerning reason, is the boom-bust cycle in the sector, which discourages businesses from investing in training and capital, and reduces the potential to

develop and maintain skills within New Zealand. With the sharp declines in employment shown earlier, workers tend to either head overseas, often to Australia, or into other sectors in New Zealand.

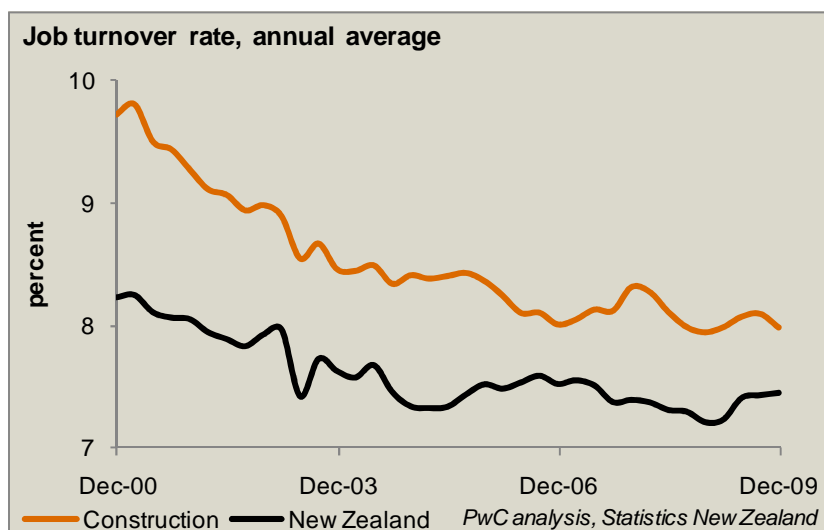
The inherent insecurity in the sector results in high levels of both job turnover and worker turnover.

The boom-bust cycle discourages businesses from investing in training and capital, and reduces the potential to develop and maintain skills.

Job and worker turnover

The Construction sector is characterised by relatively high **job turnover rates** when compared to other sectors in New Zealand, as shown in Figure 27. This means there is a relatively high level of instability in the sector in terms of job creation and job destruction ("internal churn").

Figure 27 Job turnover rates in Construction are high



Over the last 10 years, the job turnover rate has always been higher in Construction than in the economy overall. In other words, jobs are created and destroyed at a higher rate than in other sectors.

The **worker turnover rate** measures how regularly workers enter or exit the sector (“external churn”). Construction does better by this measure, but is still one of the highest in the country. This is especially true when considering the sectors that have higher rates, as shown in Figure 28.

Figure 28 Worker turnover rates in Construction are high



Sectors with higher worker turnover rates include Agriculture, Forestry and Fishing, which is characterised by seasonal and part-time work. Similarly, Administration and support services; Accommodation and Food; Arts and Recreation; and Retail trade often have large shares of student workers or part-time workers who frequently move on to other work or further study. This leaves Construction with one of the highest worker turnover rates among sectors in which almost all workers are full-time.

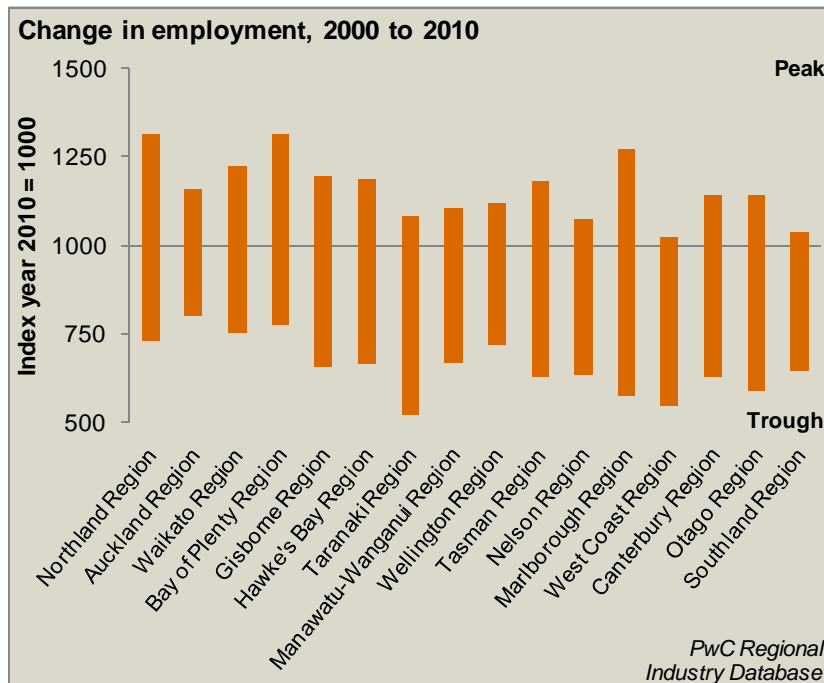
Vulnerability across regions and sub-sectors

Having established the vulnerability of the sector at a national level, the question arises as to how this vulnerability may differ at the local level. Figure 29 overleaf shows changes in employment by Region between 2000 and 2010. In the figure, employment levels in Construction by region are indexed at 1000 for the year 2010. The graph shows the growth and decline in employment in Construction by region over the last 10 years.

The clear picture is that provincial areas (rather than major urban centres) tended to be worst affected by the bust of the last few years. Northland, Bay of Plenty and Marlborough have all seen employment fall at least 20% since the peaks of 2006 and 2007 (represented by the tops of the orange bars). Auckland, Wellington and Canterbury have seen more modest declines in employment since the peak. Least affected of all areas has been West Coast, where there is a strong link between Construction and

Mining. The boom in commodity prices in recent years has strengthened the Mining sector there, and therefore shielded the Construction sector from much of the decline seen elsewhere.

Figure 29 Provincial areas are hit hardest



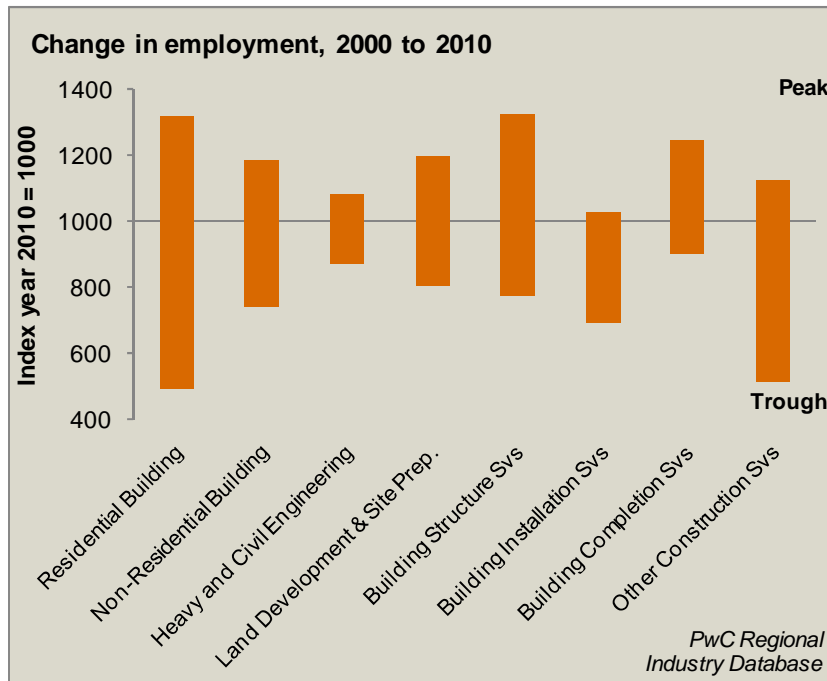
There are two implications to be drawn from this picture. First, the violent boom-bust cycle of the Construction sector affects all Regions. Second, the effects are strongest outside the three main centres. In these provincial areas, knock-on effects are felt more strongly because Construction tends to be a bigger share of total employment.

Figure 30 presents the changes in employment by sub-sector over the last 10 years. In the figure, employment levels in each sub-sector are indexed at 1000 for the year 2010. The graph shows the growth and decline in employment in each sub-sector over the last 10 years.

The boom-bust cycle of the Construction sector affects all Regions but its effects are strongest outside the three main centres where Construction tends to be a bigger share of total employment.

By far the strongest growth over the decade has been in Residential building. In 2000, the sub-sector employed 48% fewer FTEs than in 2010 (represented by the bottom of the Residential building bar). However, this sub-sector has been most susceptible to the downturn, with employment once 32% higher than in 2010 (the top of the Residential building bar). To put this in perspective, over the 10 years to 2010, an average of 21,700 FTEs were employed in Residential building, but at one point just 12,000 were employed in the sub-sector, and at another, 32,100 were employed.

Figure 30 Changes in employment by sub-sector, 2000 to 2010



One sector that has seen modest employment growth but with almost no decline is Building installation services, which consists of businesses engaged in plumbing, electrical, fire security and alarm services. This may well be because in times of economic downturn, people tend to stay where they are, and spend money upgrading what they have, rather than building a new house or commercial property.

The message from this picture is that the Residential building and Building structure services sub-sectors have driven most of the decline in employment in the last few years. Having shown the volatility of employment in the Residential building sub-sector, it is worth further considering the role this sub-sector plays in economic development.

Figure 31 considers volatility from another angle, plotting the indexed range of growth for each sub-sector against the relative importance of each sub-sector in terms of employment.

The Residential building sub-sector had the highest level of volatility, as shown also in Figure 30, and is also the third largest sub-sector. Building installation services, and Heavy and civil engineering employ more people, but have been far less volatile. All other sub-sectors both employ fewer workers, and have been less volatile.

The implication of these figures is that the volatility of the Construction sector is driven largely by the fortunes of the Residential building sub-sector.

Figure 31 Volatility and scale in the Construction sub-sectors

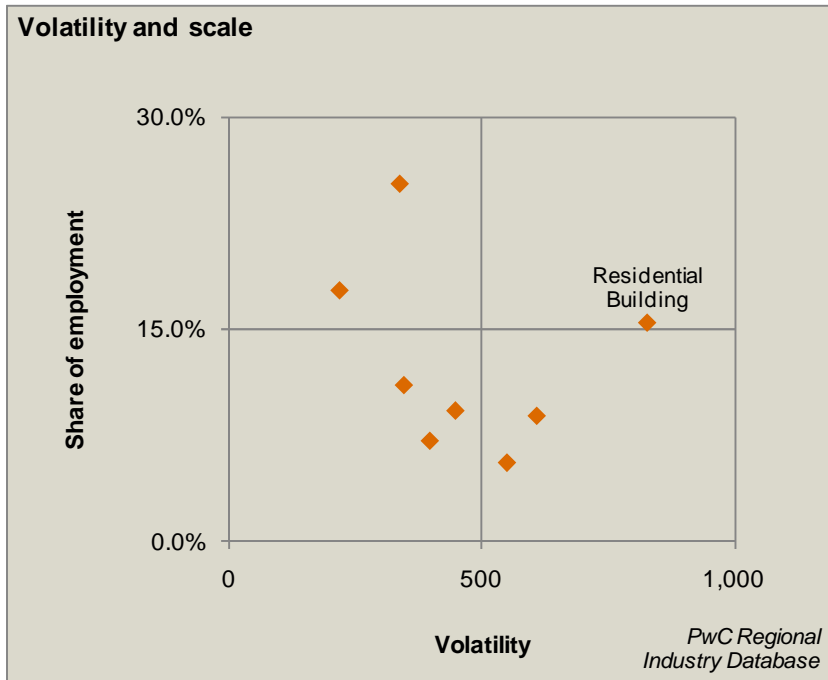
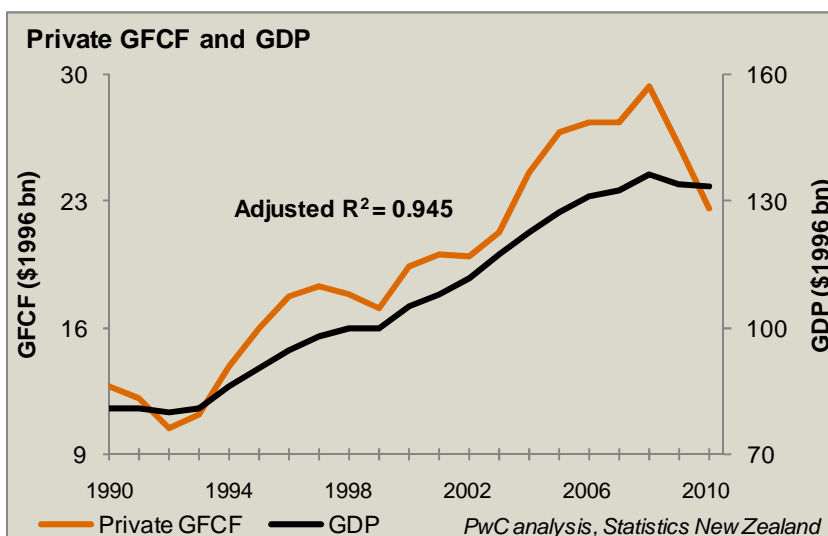


Figure 32 presents the relationship between Private Gross Fixed Capital Formation (GFCF) and GDP. Private GFCF is a broader category than just investment in buildings and non-building construction, as it also includes business investment in machinery and equipment. Nevertheless, it is a useful proxy for examining the relationship between Construction investment and GDP growth, as presented in Figure 32.

Figure 32 The link between Private Gross Fixed Capital Formation and GDP



Private GFCF typically forms 15% to 20% of GDP. Even though it forms a relatively small share of GDP, the adjusted R^2 of 0.945 shows that Private GFCF explains most of the variation in GDP growth.



This graph does not show causality, but it does show very clearly the strong relationship between Private GFCF and GDP growth, a point borne out by a later comparison with other OECD countries.

The links between Government GFCF and GDP growth are significantly weaker, which highlights the importance of Private GFCF in the economic cycle. Given that Government only accounts for around one-third of GFCF, the implication is that action needs to be taken to stimulate Private GFCF during economic downturn.

Government only accounts for one-third of GFCF, which means the key focus in tackling volatility in the Construction sector must be on moderating changes in investment behaviour in the private sector.

The role of Government

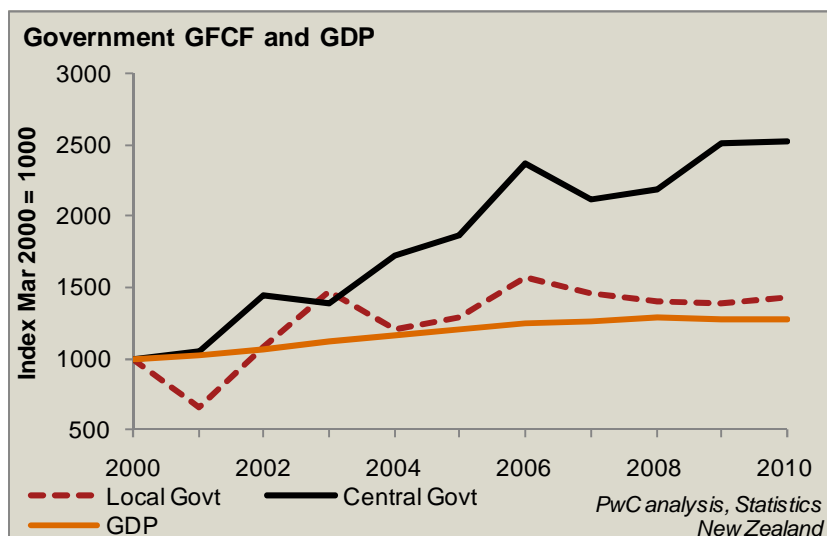
This section reviews the role Government has played in the Construction sector over the last decade.

While Government GFCF has grown strongly, particularly at the central Government level, it remains a small share of total GFCF (one quarter). This means that though Government investment is a good thing, simply ramping up Government investment spending during economic downturns will not be a strong enough response. Instead, it may be better for Government to look at ways to encourage and leverage investment spending in productive infrastructure that will help the private sector to continue to invest in appropriate areas of construction even through economic downturns.

Government investment and GDP growth

We have already examined the role of the private sector in GFCF. Figure 33 presents growth in Government GFCF and GDP over the last 10 years.

Figure 33 Government GFCF has out-performed GDP growth



Central Government GFCF has clearly grown far more strongly than GDP over the decade. Local Government GFCF has grown more slowly, but still at an overall rate above GDP growth.

Encouragingly, central Government GFCF rose sharply in 2009, presumably in response to the economic downturn.

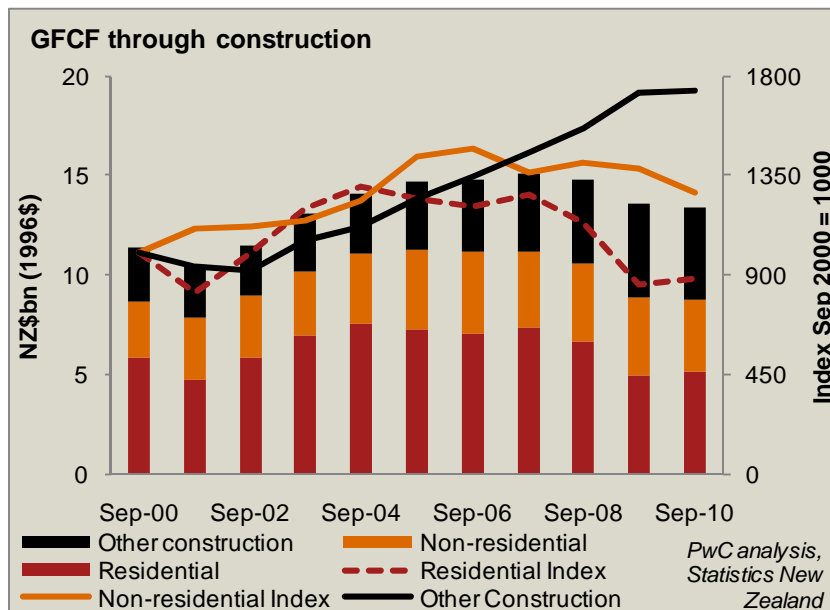
The implication of these figures is that Government has continued to spend during the slowdown, creating demand for construction. However, Figure 34 and Figure 35 show that although Government GFCF is growing, this is not enough to overcome the boom-bust cycle of the Construction sector, because Government does not form a sufficiently large share of the market for construction projects.

Government GFCF is growing, but this is not enough to overcome the boom-bust cycle of the Construction sector.

The mix of private and public sector investment

Figure 34 shows what share of GFCF is in the form of three sub-types of construction, and how investment in each sub-type has changed over the last decade.

Figure 34 Other construction has risen as residential investment falls

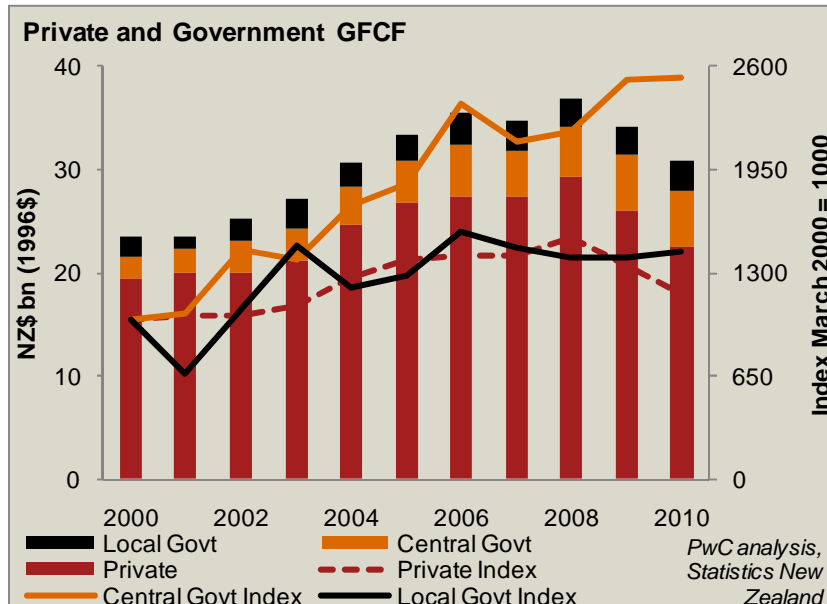


GFCF through construction peaked in 2007, and has since declined sharply. As the indexed lines show, the decline has been almost entirely the result of residential investment plummeting. Other construction (non-building construction) has remained strong, while non-residential building construction has fallen slightly.

These results are almost certainly linked to the fact that Government investment has continued (the major investor in non-building construction) while private, and in particular households investment, has slumped.

Taken with Figure 35 below, this again suggests that Government is playing an important role investing in construction during the downturn, but the drop in employment and GDP in Construction shows that this is not enough to overcome the downturn in private investment. The implication is that the volatility is directly linked to the cycles in residential (and to a lesser degree, non-residential) building investment.

Figure 35 Government GFCF has grown, but private GFCF still dominates



In the 10 years since 2000, the strongest growth in GFCF in real terms has been in central Government, with almost three times as much investment in 2010 as in 2000. Over the same period, growth in Local Government and private investment has been far more modest.

The result is that central Government GFCF now accounts for 18% of all GFCF, double its share in 2000. The share of GFCF accounted for by Local Government has grown slightly, while the share accounted for by private investment has fallen to 73%.

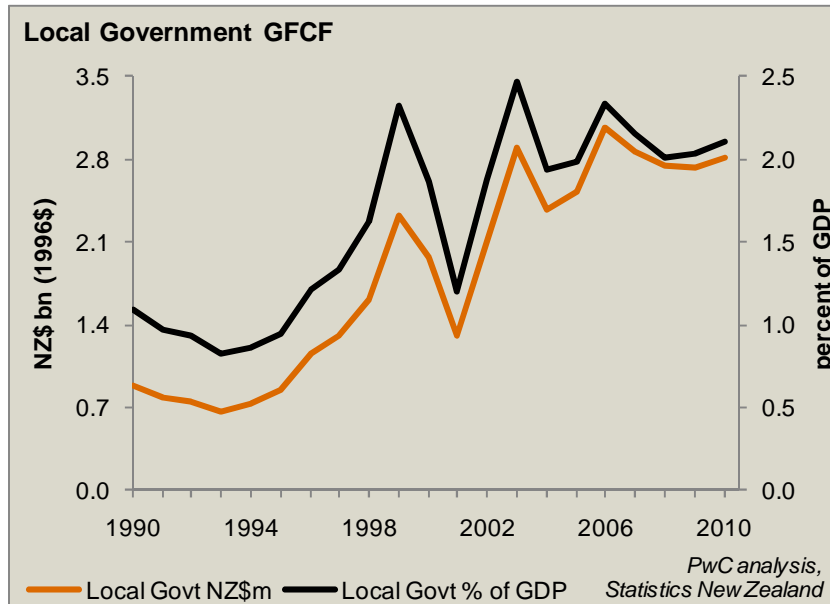
This means that central Government in particular is playing a more important role in GFCF than it did 10 years ago, and that Government decisions and policy on investment have a greater impact than before. Nevertheless, the fact that Government in total accounts for just one quarter of all GFCF means that any approach to smoothing out the business cycle for the Construction sector must predominantly tackle factors affecting private investment decisions.

Local Government

The role of Local Government has already been mentioned, but it is worth looking at in more detail, given the role Local Government has in overseeing maintenance of local roads, water and wastewater services, as well as community facilities like libraries and swimming pools.

Figure 36 presents the growth in the contribution of Local Government GFCF to GDP in both dollar and percentage terms.

Figure 36 Local Government share of GFCF has increased



Local Government investment spending in constant dollars has more than tripled over the last 20 years. In percentage terms, this means Local Government GFCF now contributes just over 2% of total GDP, compared with 1.1% in 1990, a doubling of its contribution.

There is a role for Local Government in planning infrastructure investments to be counter-cyclical, although its share of overall GFCF is only 9%.

Local Government's share of total GFCF is just 9%. Nevertheless, it can play a role in planning infrastructure investments to be counter-cyclical, taking advantage of capacity in the sector to secure a good price, at the same time as it reduces volatility in the sector.

One difficulty in this, however, is the small size of some of New Zealand's Local Governments, for instance, the Chatham Islands, with just 640 residents, or Kaikoura District, with 3,800 residents. Sixteen Local Government areas in the country had populations of under 20,000 as of 2010. This makes procurement tricky, not only in terms of the specialist procurement skills required at such a localised level, but also in terms of the scale of purchasing power of small Local Government areas.

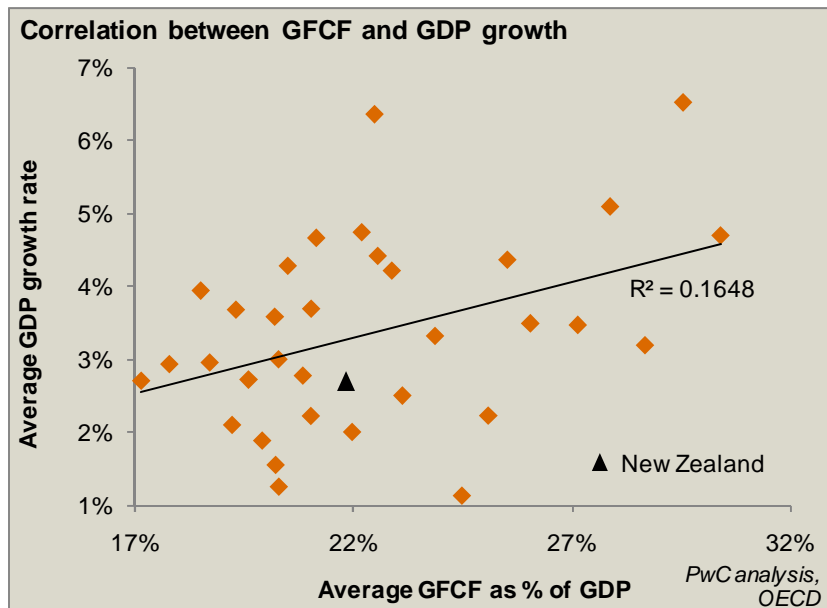
The solution may not be the creation of more "super-city" style initiatives, but there may be some benefit in pooling specialist skills and developing scale through joint procurement processes between some of the smaller Local Government areas.

An argument for stimulating higher levels of investment: OECD comparators

There is strong evidence for the link between higher levels of GFCF and higher GDP growth, as illustrated in Figure 37, which shows average GDP growth rates and average GFCF shares of GDP for 34 OECD countries for the last 14 years.

GFCF as a share of GDP explains around 16.5% of all variation in GDP growth. Given the wide range of other factors that play a role in economic development, including resource endowment, population size and density, natural disasters and the like, this is a substantial, statistically significant explainer.

Figure 37 GDP growth is linked to higher levels of GFCF



In simple terms, countries that channel a larger share of output into investment (whether private or Government) instead of consumption by the private sector or Government record stronger GDP growth over the long-term.

New Zealand is midway through the field, with GFCF averaging 21.8% of GDP, and real GDP growing at 2.7% a year over the last 14 years. Nevertheless, we are well behind comparator countries like:

- Korea – 30.4% GFCF, and 4.7% per year GDP growth;
- Australia – 27.1% GFCF, and 3.5% per year GDP growth;
- Spain – 26.1% GFCF, and 3.5% per year GDP growth;
- A range of emerging East European economies with populations similar to New Zealand, including Estonia, the Czech Republic, and the Slovak republic, with GFCF rates of 27.9% to 29.6% and GDP growth rates of 3.2% to 6.5% a year between 1995 and 2008.

These results are supported by the findings of an OECD report, cited in the New Zealand National Infrastructure Plan (NIP), released in 2010. The NIP states:

The OECD suggests that investment in infrastructure – particularly in network infrastructure such as transport and communications – seems to boost long-term economic output more than other kinds of physical investment. This is because infrastructure investment provides positive benefits to other sectors. For example, good transport systems improve business efficiency, innovation, competition and trade, support agglomerations of economic activity, and facilitate a

mobile and flexible labour force. The World Economic Forum identified inadequate investment in infrastructure as a particular problem in New Zealand, second only to access to finance as a barrier to doing business.

The implication is clear. Regardless of the source of GFCF (Government, households or business), more investment leads to stronger economic growth. The role for Government, then, is to encourage investment not only through its own spending, but through stimulating the far larger private investment market through appropriate policies to tackle market failure⁸ and encourage sensible, non-speculative investment.

A major role for Government is to encourage investment through appropriate policies to tackle market failure and encourage sensible, non-speculative investment.

A further point is that given its GFCF level, New Zealand's GDP growth is lower than expected. This may well be because GFCF formation in New Zealand is so strongly geared toward residential investment, rather than more productive investment types in infrastructure or commercial activity.

The pipeline of Government investment

The NIP provides a good indicator of where Government priorities lie in terms of infrastructure development over the next 10 years or more. One big focus is on developing Roads of National Significance, together accounting for approximately \$9 billion of investment. Other land transport projects include the additional Waitemata Harbour Crossing, for which an Indicative Business Case has already been completed. This project is likely to cost between \$3 and \$5 billion. At a far smaller scale, rail projects are also well underway.

Several new electricity projects, many using wind technology, have been consented although most of these wind projects are small (under 100 mega Watts). Electricity transmission projects including the North Island Grid Upgrade are underway, and together worth more than \$1 billion.

"Three waters" projects (water supply, wastewater, and stormwater) are estimated to create \$10.5 billion worth of investment over the next 10 years.

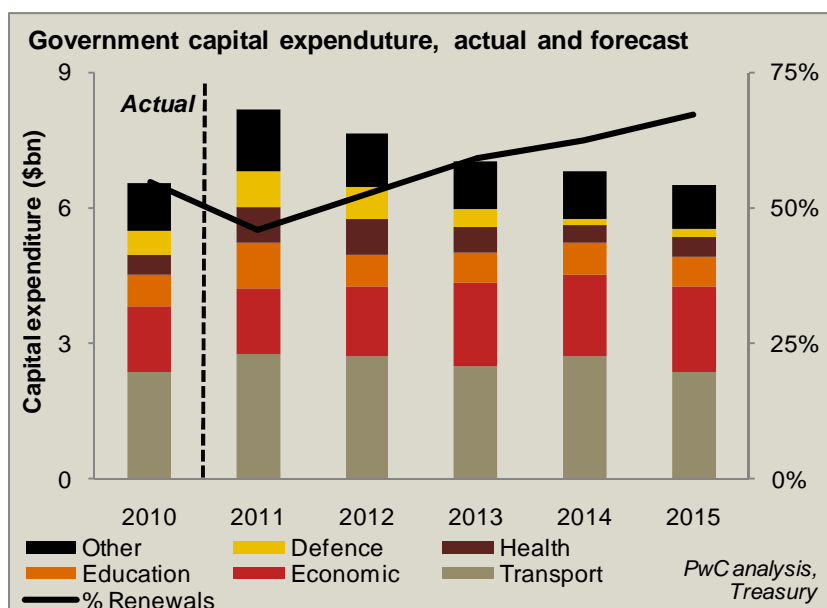
While these headline figures are impressive, there is often uncertainty about when some of these projects may begin (e.g. those in the three waters), either as a result of Government finding the funding to get underway, or drawn out consenting processes.

Government forecasts of spending, whether at local or central Government level, tend to become far less accurate even just a couple of years out from the current year. Depreciation costs (a proxy for

⁸ Market failure is defined as a situation in which the allocation of goods and services by a market is not as efficient as theory suggests. Market failures occur in a number of instances, including when there is imperfect or asymmetric information, when monopolies exist, or when external results of the provision of a good or service are not taken into account. Market failure is a justification for Government regulation, as in the case of building inspections, where the particular market failure is imperfect information available to the home buyer.

renewals) are usually quite robustly included, but new capital investment is not as robustly captured. An example of this is provided in Figure 38, which shows Treasury's actual and forecast spending for the next few years, as well as what share of that spending is on renewals rather than new capital.

Figure 38 Government investment in property, plant and equipment is uncertain



The Government has brought forward several capital projects in an effort to counter the effects of the economic slowdown. This is reflected in the strong growth in capital expenditure in 2010. However, forecasts out to 2015 show a steady decline.

While this could indicate a return to pre-economic downturn levels of spending on capital, the share of total spending accounted for by renewals (with depreciation as a proxy) suggest that at least some part of the puzzle must be missing. Renewals (rather than new infrastructure) rise from 46% of all capital expenditure in 2011, to 67% just four years later. This change seems unrealistic, and indicates that some new capital spending is unlikely to be included in the forecast expenditure.

The situation with Local Government is similar. The 10 largest councils (representing about 60% of Local Government by revenue) are forecasting new capital expenditure of around \$10 billion over the next five years. Of this expenditure it is estimated that 55% will be for renewals based on depreciation provisions. However the proportion of renewals expenditure (using depreciation as a proxy) is scheduled to increase from about 50% to over 70% over the next five years.

The implication of these figures is that at the time of preparing forecasts, neither central nor Local Government have a clear picture of what they will be spending on new capital projects more than a couple of years down the track. This creates the perception that there is little emphasis on planning beyond the next couple of years in infrastructure planning, and sends the wrong signals to the Construction sector as it tries to plan for the future.

Options for smoothing the cycle

This section considers the options for smoothing out the boom-bust cycle from two perspectives. First, it looks at what **direct** Government action can be taken to increase Government's ability to leverage funding and stimulate infrastructure development. Second, it sets out some practical ways Government can help **remove biases and red tape** in the investment system, and encourage construction activity into **more productive parts** of the economy.

This section draws on our empirical analysis as well as in-depth interviews with a number of major stakeholders in the Construction sector. A list of the stakeholders we spoke to is provided in the Acknowledgements at the end of this report.

The key is certainty. The way the Government procures, and signals procurement intentions, will help the sector plan better. Similarly, steps the Government can take to counter market failure or reduce bias toward specific investment types will decrease volatility, creating certainty for the sector. Certainty is likely to result in less workforce turnover, and more investment in capital and skills, leading to a higher productivity workforce.

Direct Government investment

This section considers actions Government can take to help the Construction sector through the ways it directly purchases Construction goods and services.

Improve capital forecasting

The previous section discussed the investment pipeline within local and central Government. It demonstrates that neither central nor Local Government appears to have a clear picture of their capital programmes beyond two or three years. While councils ostensibly are required to issue a 10-year plan, this is updated annually, and does not really provide certainty beyond this annual cycle. Similarly, central Government operates mostly on an annual basis, with the exception of NZTA, which has a three year outlook.

The consequence of this short term cycle is that the Construction sector has little certainty about the future. It cannot justify investment in training, or build a skills pipeline. It is encouraged to buy in contractors as needed rather than develop its own capacity. Furthermore, sector employees recognise that today's job may not be there tomorrow, and are encouraged to move around.

Additionally, the quality of information and the consistency of this information make it very difficult to get an accurate picture of the Government capital pipeline. While the National Infrastructure Plan (first released in 2010) is a step in the right direction, the level of detail and information across the different sectors within the plan is inconsistent. Councils' Long Term Plans are not aggregated at a

capital programme level, and the treatment and format of the capital planning within each Long Term Plan varies considerably.

What can Government do?

It is crucial that Government provides a better lead on planning for capital works. This should include the development of a common public sector database of capital projects, and far more focus across the board on providing greater planning certainty. The National Infrastructure Plan and the requirement for councils to develop ten-year plans provide a strong platform for Government to work from. This is an area that the Department of Building and Housing and industry are working on as part of the Productivity Partnership.

1. Develop a common public sector database of capital projects
2. Provide a better lead on capital project planning

Build sector capacity and improve investment timing

It is the nature of a number of Government capital works projects that they have significant lead times and as a consequence can be inflexible in terms of delivery timing. However, there is a sensible commercial rationale for Government to develop a stockpile of sound, justifiable projects that it can implement during troughs in the construction cycle. This would enable Government to take advantage of capacity in the market, obtaining lower prices and driving value for its constituents. At the same time, it gives certainty to the Construction sector that when the residential sub-sector is weak, Government will work with them to maintain skills and capability in the sector.

Similarly Government should be open to deferring capital works when the industry is at capacity. This is likely to become an issue stemming from the impending programme of work in Christchurch. Planned activity in other jurisdictions should be reassessed to consider whether there is merit in delaying or changing the scope and approach of this work.

Before addressing this however, there needs to be a better understanding of exactly what the capacity of the industry is, and this needs to be stratified by the three primary sub-sectors: residential, non-residential and infrastructure; and also geographically if the impacts of a regional shock like the Christchurch earthquake are to be considered. Put another way, for the sector to move from a boom-bust cycle to a steady and consistent growth path, there needs to be a clearer picture of what the base of the steady path is.

What can Government do?

Government needs to analyse and understand the capacity of the sector, geographically and by its three key sub-sectors. This can then be used to drive more informed planning and development of

capital forecasts. It will also assist Government to invest counter-cyclically. This will help Government get the best price, and will give the sector more certainty about the future.

3. Improve planning of capital works programmes
4. Develop an understanding of the sector's capacity by geography and sub-sector and invest counter-cyclically wherever possible

Broaden procurement methods and approaches

Government plays a major role in the Construction sector through its capital expenditure. The approach to procurement has typically been via traditional tender processes (e.g. contracts for Design and Construction or individual contracts for each). This form of procurement typically relies on public sector finance. The party contracted for the construction work receives progress payments as each stage is completed, thereby meeting working capital requirements. At the conclusion of the project, the public sector owns the asset and has a corresponding liability financed from its balance sheet.

Under traditional procurement methods, there is a strong emphasis on the **lowest cost outcome**. One of the impacts from the emphasis on short term up-front cost is the use of lower quality, lower cost materials to alleviate the pressure on contractor margins. This may result in increased **whole of life costs** for the assets in question and also limits the ability to offer innovative solutions. The Ministry of Education currently faces a \$1.5 billion investment into its existing property portfolio as a result of issues with leaky buildings.⁹ While this is the result of several causal factors, an emphasis on whole of life cost rather than up-front cost may have helped to reduce the likelihood of this happening.

The Building and Construction Sector Productivity Task Force released a scoping paper in November 2008, which explored potential improvement in the approach to procuring construction projects.

They tabled a number of concerns from the building sector around the Government's approach, and also looked at studies in the United Kingdom and Australia that had considered changes to these more traditional procurement methods.

The consistent theme across these studies is that the traditional and most pervasive procurement methodologies are focused on the initial price rather than the whole of life costs.

Their key concerns are summarised well within their scoping paper: "A simplistic transaction focussed, cost driven model was inadequate in dealing with the complexities of substantial developments, and delivered less optimal results compared to a more collaborative model".

It is argued that these issues are having a detrimental impact on the industry, and in particular:

⁹ http://www.nzherald.co.nz/leaky-buildings/news/article.cfm?c_id=562&objectid=10702527

- discouraging collaboration with users, limiting innovation, and leading to substandard quality (as competitive processes are focused on cost rather than quality);
- traditional models have a traditional approach to risk allocation which limits the opportunity to allocate risk in a more efficient manner;
- the payment mechanisms under traditional forms of procurement, limit the opportunity to leverage greater private sector investment.

Both the New Zealand research and overseas studies have advocated for greater use of procurement processes that involve collaboration or (for larger scale projects) partnering.

PPPs

One example of a partnering approach is a **Public Private Partnership** (PPP). One impact of this procurement approach is a shift from focusing on short term cost to focusing on whole of life cost. The private sector is remunerated for provision of an asset over a longer term period than under traditional procurement (usually 25-30 years). Because the private sector has limited recourse to other assets, its income is reliant on the long term quality and availability of the asset. While there is still a focus on up front construction cost minimisation, this is balanced with the long term quality of the asset so that a return is earned by private sector equity investors. This change in focus encourages innovation from the design and construction partners as they seek a solution that includes both a durable asset and lower whole of life cost. One impact that has been seen internationally from this drive for innovation is the purchasing of private sector intellectual property. On some projects, both the successful and unsuccessful bidders have been compensated for innovative solutions that the public sector partner has adopted and later utilised on other assets within their portfolio. Many Request for Proposal documents for PPP projects now include a separate section (and payment over and above the cost of the underlying contract) asking respondents to identify and quote on innovative ideas and solutions.

The use of PPPs also provides access to private sector investment resources. However, the up-front costs involved in PPPs have resulted in this procurement method being restricted to large scale projects. There are a number of significant infrastructure projects in the New Zealand market which have sufficient size and project characteristics to allow a PPP

PPPs provide opportunities to leverage private sector finance and encourage a broader suite of construction investment opportunities. But most crucially they bring private sector expertise and discipline, particularly into project design. This drives creativity, innovation and productivity into the sector.

procurement method to be utilised. The decision on the procurement method will be made at the central and Local Government levels for these projects. Given the current fiscal restrictions, the use of private sector investment is likely to expedite the initiation of further projects that will have positive impacts on the Construction sector.

International public sector investors have recently begun investigating methods to utilise PPP style procurement methods on smaller scale projects (<\$100 million). While this investigation is currently in its infancy, this has the potential to make small scale PPP projects viable for private investors. This would have positive flow on effects to demand across the Construction sector as it would allow the public sector to leverage its balance sheet and commission projects earlier than would otherwise be possible. By bundling a small number of projects into a larger project, or ensuring there is a pipeline of smaller projects with less up front bidding requirements, the weaknesses of PPP procurement approaches can be mitigated.

As the PPP procurement method embeds itself as one of the selectable procurement options in the public sector, it is likely that the model will be refined and reviewed. This will include refinement for large and small scale projects as discussed above. The PPP model is a complex contractual relationship, with contracting parties often having opposing goals (consider the needs of the construction partner compared with those of an equity investor). These goals must be balanced in order for the model to have ongoing use. For this reason it is important that the construction industry works with local and central Government to play a part in shaping any future changes to the PPP procurement method.

Alliancing

Collaborative procurement approaches, such as alliancing (and its various sub forms – such as managing contractor and early contractor engagement) focus heavily on earlier engagement with the Contracting partner. This allows the project to be de-risked prior to

Alliance to de-risk the project prior to finalisation of the project cost.

finalisation of the total cost of the project. This form of procurement serves a valuable purpose for high risk projects, where the cost of de-risking the project prior to issuing a tender document is uneconomic, or where there is a large component of in-situ or bespoke construction required. Where the project is identified as having a high degree of risk, the private sector will not provide a fixed price, or will incorporate a large risk premium into their cost to mitigate the cost of risk occurrence. In these circumstances a more collaborative approach serves to de-risk the project for all parties, so that project costs and risk acceptance are more certain prior to contractual award. While these projects form a valuable part of the suite of procurement methods, they do not by themselves encourage greater use of private sector funds and for that reason their use on future projects is unlikely to have any material impact on demand across the Construction sector. They do, however provide a mechanism to develop innovation and improve the quality of construction projects.

What can Government do?

The issues with alternative forms of procurement are generally well understood by policy makers in central Government. However, a combination of risk aversion, a lack of qualified procurement

specialists and procurement reform processes that are almost single minded in their focus on leveraging Government's buying power, have meant changes in guidelines and policy have been slow.

It is recommended that the CSG advocates for systemic change to Government procurement policy. The specific focus of these changes should be:

- to drive innovation throughout the process, including the procurement, the structure of the contract and the design of the project itself;
 - on whole of life costs, rather than contract price;
 - opening up opportunities for increased private sector investment;
 - improved allocation and management of risks; and
 - a recognition that complex projects that are difficult to price can lead to significant risk premiums.
- Consequently these projects may be more suited to more collaborative procurement approaches.

The impacts of the recent earthquakes in Christchurch are discussed in further detail in section 6 of this report. These events represent a real opportunity to implement and embed changes in procurement not just in Christchurch, but also for large scale projects elsewhere in New Zealand, from which funds and expertise will undoubtedly be diverted.

5. Drive systemic changes in procurement that focus on innovation, whole of life value, increasing opportunities for private sector investment, and better risk allocation and management

Build scale in procurement

Across the almost 80 local authorities in New Zealand and the plethora of central Government departments, agencies or enterprises, there are a significant number of "buyers" of Government construction services. The structure of these buyers reflects the structure of the Construction sector itself – a small number of dominant players, and large number of small players.

The consequences of this include:

- reduced buying power on behalf of those agencies;
- lack of scale to justify procurement specialists, which can lead to inferior practice or limited sophistication in approaches; and
- inability to create and build strong relationships with vendors.

What can Government do?

A potential solution is to aggregate procurement, through the development of shared service solutions. This will reduce costs to market on both sides of the equation and create greater certainty in the Construction sector.

6. Create shared service solutions to consolidate procurement and procurement expertise

Integration across Government

Aside from its own investment portfolio, central Government plays a significant role as co-investor with Local Government. In this respect it leverages Local Government investment.

In principle, there is a basis for local and central Government to share funding costs when the benefits of the project cut across their responsibilities. The difficulty of course is that any number of projects fit this criterion and judgements as to who has primary responsibility and who stands to benefit most are often very subjective.

These issues are exacerbated by the number of central and Local Government policies and activities that cut across one another with often poorly aligned funding mechanisms. Topical examples include the various transport projects currently being promoted within Auckland such as the proposed CBD Rail Loop. The Auckland Council has responsibility for developing the Auckland Plan, of which a key component is enhanced public transport. Yet responsibility for the rail network is shared between Local Government (above ground) and central Government (below ground). If Auckland Council cannot convince Central Government that the CBD Loop should be part of its national transport planning, then funding is at risk, the project is at risk and the Auckland Plan itself is undermined.

The consequence of this type of issue is that projects that might stack up are not progressed because central and Local Government cannot agree on the relative funding mix. This issue is best demonstrated with a simple example:

- Assume Local Government is considering a project that costs \$100 million, and that will provide benefits to the community of \$120 million.
- They have taken a view that the community benefits are spread evenly between local and central Government; i.e. that their constituents receive \$60 million of the projects benefits, and the broader community receives \$60 million.
- Local Government therefore determines it can contribute no more than \$60 million towards the project.
- Meanwhile central Government takes the view that only 30% of the project's benefits fall to them. i.e. that the local community reaps \$84 million of value, but the broader community only sees \$36 million.
- Central Government therefore determines it can contribute no more than \$36 million towards the project.
- The total contribution of \$96 million does not cover the \$100 million of project costs, and so it does not go ahead, despite the fact that it can be shown to be of benefit overall.

While this example is simplistic, there are a number of examples of projects which have been failed to go ahead in recent years despite demonstrated demand and / or return on investment.

These issues are to some extent unavoidable, especially for public sector projects where the quantification of benefits is at best difficult, at worst wrong, and nearly always controversial.

What can Government do?

Firstly, central and Local Governments should develop a better set of protocols around how and when they work together and how these joint projects are funded. This should include principles around how benefits are assigned, and how costs can be shared. This won't (and shouldn't) resolve all debate, but at least it can focus the debate on specific areas, and potentially improve and accelerate decision-making. These processes and protocols have precedent. The New Zealand Transport Agency, for example, provides for a reasonably systematic approach to prioritising its partnering investments. However, they tend to be developed by central Government from its own perspective, rather than from a partnership perspective to maximise mutual benefit.

Secondly, there needs to be greater integration between different layers of Government and different agencies. At all layers, Government needs to take greater accountability for an improved focus on the coordination and integration of plans or policies that overlap jurisdictions.

Finally, Government should promote the principle that funding follows accountability. The accountable decision-makers at each layer of governance need funding responsibility and capacity to effect decisions.

7. Develop clearer protocols for how central and Local Government work together so that larger scale projects are handled less on a one-off basis
8. Improve integration between layers of Government where responsibilities overlap
9. Ensure accountable decision-makers have funding responsibility and capacity to effect their decisions

Government policy to influence private investment

This section focuses on how the Government can encourage more productive private sector investment in construction and infrastructure through levelling the playing field across investment types, and through approaches to immigration and a bigger basket of monetary policy tools and objectives.

Enable new funding tools

A relatively straightforward mechanism to enhance investment, particularly in infrastructure, is to make rules around charging for infrastructure more permissive. Increased use of tolls, fuel taxes or congestion charges for example would increase funding available within the transport sector and investment in it. Presently a number of these mechanisms are not permitted legislatively or are very

difficult to progress. The requirement for a free alternate route for example, makes a toll funded third harbour crossing infeasible.

Enlarge the basket of monetary policy objectives and tools

The Reserve Bank of New Zealand (RBNZ) uses monetary policy to control inflation. The RBNZ controls the money supply by setting the Official Cash Rate (“OCR”), which is the wholesale price of money.

When the RBNZ is concerned about inflation it increases the OCR, making it more expensive to borrow money for investment and household consumption. This has the effect of dampening economic activity and taking pressure off prices. Conversely, when the economy is stagnant, the RBNZ can reduce the OCR to make it cheaper to borrow for investment or spending and hence stimulate economic activity. Higher interest rates also lead to a stronger New Zealand dollar. This makes exports more expensive which also tends to dampen the economy.

The current focus of the RBNZ is exclusively on price stability, with no legislated or policy-initiated concern with employment or growth in money supply (except to the extent these affect inflation).

The OCR has been effective in bringing down the rampant inflation of the 1980s, but is a relatively blunt tool. Specific issues include:

- Inflationary pressure is not spread evenly across the different sectors of the economy, so while the economy on average may be overheating, specific sectors may not be;
- Similarly, increased interest rates have different impacts on different sectors, and can impact them at different times;
- Borrowers and exporters who have fixed interest rates or who have locked in their exchange rates will only be affected as those agreements expire. In the case of the residential housing market, this can mean some existing borrowers are unaffected by day-to-day changes in the OCR, and consequently do not adjust their spending behaviours; and
- The RBNZ controls the wholesale short term (cash) rate only. Longer term rates are essentially determined by the market’s expectations as to how the short term rate will change. In other words, if the market is of the view that the increase in the cash rate is only short-term, longer-term rates will not be significantly affected.

Implications for the Construction sector

The implication of these issues is that the OCR may not always be the most effective mechanism to provide stimulus or to dampen the Construction sector. Monetary policy could be

An increase in the objectives and tools at the disposal of the RBNZ would help not just the Construction sector, but all the more volatile sectors. An added benefit would be to exporters, who would benefit from greater stability in exchange rate.

reviewed to provide for broader objectives such as management of the unemployment rate, which is common in other jurisdictions, but it remains difficult for monetary policy to target specific sectors.

What can Government do?

For Government to have targeted impacts, it needs to consider specific policy changes or additions and/or changes in fiscal policy (how it spends and raises money). To provide greater support for the Construction sector (and other sectors such as manufacturing), the RBNZ would benefit from a broader set of objectives in setting the OCR, and new tools in its basket such as e.g. enforcing reserves in line with Basel II as discussed elsewhere). These may assist in curbing speculative behaviour and/or moderating employment, which hits the Construction sector hard.

10. Increase monetary policy tools and objectives

Help business investment by improving RMA and consent responsiveness

There is a level of perceived and real bias against business investment as a result of legislation, regulation, and practice. Some of these biases are dealt with in the section on the bias toward the residential sub-sector.

Particular areas of real or perceived weakness in the RMA include a failure to balance social, economic, and environmental benefits of improved infrastructure against adverse effects; different local authorities interpreting the Act inconsistently; overlapping as a result of RMA consents being required by regional and territorial authorities; the disproportionate role sometimes played by interest groups; lengthy timeframes required; and a lack of monitoring RMA effectiveness.

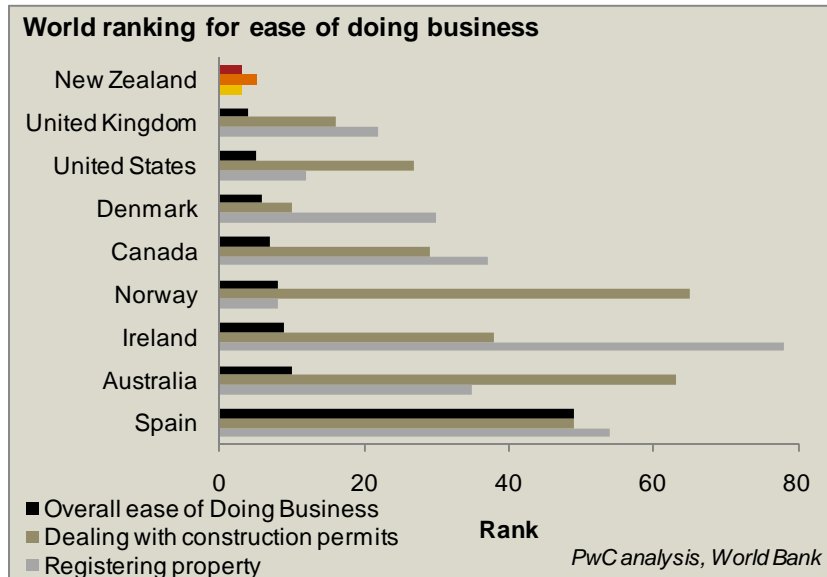
The key for successful investment (and construction activity) in an economy, and a stated economic strategy of the current Government is to move investment into the most productive assets. These assets usually include infrastructure and business plant and capital investment. To encourage investment in this part of the economy, perceived and real weaknesses need to be dealt with.

Consenting and construction process

Interviews and the media often perceive that the New Zealand consent and construction process is slow and cumbersome. Yet work undertaken by the World Bank, through its annual Ease of Doing Business survey, suggests that New Zealand actually performs quite well relative to other countries in ease of dealing with construction permits and registering property.

Figure 39 shows our performance against selected countries among the 183 countries ranked on the Ease of Doing Business index.

Figure 39 Construction red-tape in New Zealand is less extensive than elsewhere



Overall, New Zealand placed third on the Ease of Doing Business survey in 2011, behind Singapore and Hong Kong. With regard to ease of dealing with construction permits, and registering property, we came 5th and 3rd in the world respectively, well ahead of the usual comparator countries.

The implication of this is that, on a global scale, New Zealand does well. What the index does not deal with explicitly is:

- the time lapse in going through a consenting process relative to other countries; and
- differences in consenting processes across different types of construction project. e.g. building an apartment complex or a road.

But an even more important argument is that although New Zealand may fare well on the construction-related indicators relative to other countries, it does even better overall. In other words, the key question should not be how well our construction consenting process works compared to other countries, but how attractive investment in construction and infrastructure in New Zealand is relative to using money in other ways.

If perception or reality is that construction investment is time consuming and the risks are high, perhaps as a result of the Resource Management Act (RMA) process or regulation, this may disadvantage investment in construction relative to investment in other activities.

The key question should not be how well our construction consenting process works compared to other countries, but how attractive investment in construction and infrastructure in New Zealand is relative to using money in other ways.

A 2009 report released by Minister for the Environment Nick Smith on local authorities' administration of the RMA showed that a large number of local authorities were not issuing consents

within the legislated timeframe. Some councils were issuing up to 71% of consents more slowly than the legal requirement.

The Government used these figures to point to a need to streamline the RMA process. Some of these changes have taken effect, but perceived difficulty in getting projects consented, particularly larger ones with an infrastructure focus, may discourage investment in construction.

What can Government do?

The Government should continue to look at ways to streamline the consents process. It is important to take national interests into account in the RMA process, as outlined in the current Government's proposals on RMA reform first raised on 9 February 2009.

Ensuring actual compliance with consents legislation by local councils is also crucial if mindsets about the difficulty of undertaking construction and infrastructure investment are to be changed. Current work into reducing the number of consentable construction activities, and developing a common consenting process across councils, will also encourage businesses to think more favourably about construction activity.

These consents changes, taken with the proposals to leverage private money through PPPs, and actions to remove the bias toward residential investment, will also help Government-initiated (but privately-funded) construction projects get underway more rapidly in the event of a downturn. This will allow the Government to respond more speedily to excess capacity in the Construction sector. This will keep skills in New Zealand, create greater certainty, and help to raise labour productivity.

11. Continue to streamline the RMA process

Remove bias toward residential investment

Construction sector volatility is largely due to Residential building volatility. The Residential sub-sector is volatile because a lot of investment in the sub-sector is speculative in nature. Housing is seen as a safe asset class compared with other investment options. Many would-be landlords invest in rental properties in the hopes of strong capital gains rather than expecting high yields. Often these investments are highly-g geared through using the family home as collateral. When there is an economic downturn and house prices flatten, and perhaps the landlord even becomes unemployed, there is a degree of panic in the investment property sub-sector as the rental yields alone don't justify the investment. As a result, demand for new housing dries up.

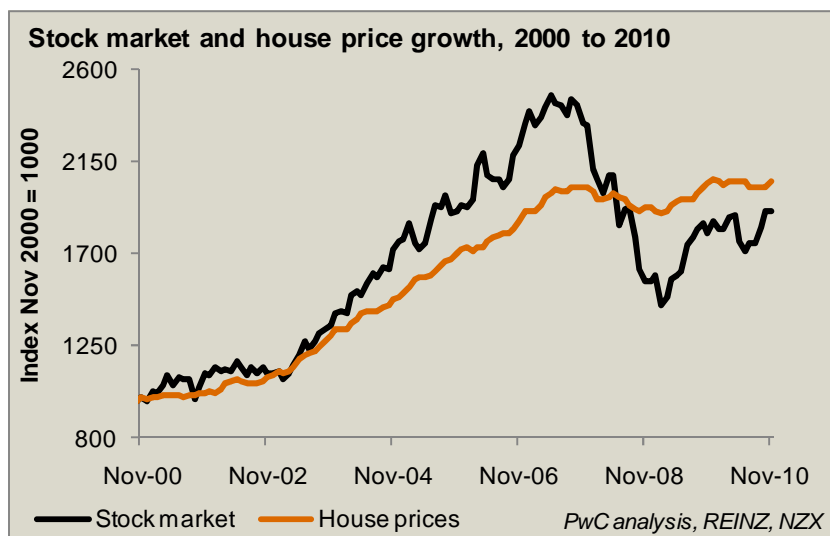
The strong relationship between private GFCF and GDP growth has already been highlighted (see Figure 32). During periods of strong private GFCF growth, the economy grows strongly. The direction of causality is not clear, but the two clearly appear together.

The dominant role of private investment, whether through residential construction, non-residential construction, or other capital investment, has also been established (see Figure 35). At 73% of total GFCF, any policy to smooth the cycle for the Construction sector must focus on how to make the private investment market more predictable.

Historically, there has been a strong bias toward **residential** investment (often speculative) as opposed to **infrastructure** or **business** investment as the “best option” in New Zealand because of:

1. A lack of attractive alternatives for on-shore investment. This is in turn linked to:
 - a. the **inconsistency in stock market performance** relative to house prices, as shown in Figure 40. Over the last 10 years, house prices have grown faster than the stock market (the NZSE40 index and its replacement, the NZX50). This difference is mostly because although house prices have slumped in the last three years, the variation in fortunes of the housing market is nowhere near as wide as for the stock market.

Figure 40 Investing in housing has made more sense than the stock market



- b. the **regular failure of the finance system**, partly due to a lack of effective regulation. Examples include the banking crisis of the late 1980s following deregulation in the mid 1980s. This led to speculative investment on the stock market and in commercial property due to an absence of prudent restrictions on how much credit financial institutions could lend. The stock market crash in October 1987 triggered a financial collapse. The fall in share prices of investment companies and property developers caused the value of the assets held by these companies to fall dramatically.

History repeated itself in 2007 when a similar period of speculative growth in the stock market and residential development came to an abrupt end, with the demise of numerous finance companies at the loss of millions of dollars in private investments. As of May

2008, the collapse of 21 finance companies had been at the loss of an estimated \$1.1 billion.¹⁰ This repetitive cycle makes investment through formal investment vehicles unattractive to private investors.

The Reserve Bank responded by introducing the Prudential Requirements for Non-Bank Deposit Takers (NBDTs) in late 2009. Time will tell if the regulatory environment has been tightened sufficiently to protect the investor, and to direct investment away from riskier speculative residential investment to more defensible, productive asset classes.

2. Tax advantages of residential investment including:

- a. the ***absence of taxes on the increase in value of residential properties***. Unlike returns on investment through financial institutions or the stock market, gains in value on residential property are not taxed. This market distortion makes residential investment more attractive than investment in commercial property or in direct business activities.
- b. The ability to ***write off losses against personal incomes*** through, for example, Loss Attributing Qualifying Companies (LAQCs). Many aspiring landlords are able to 100% finance rental properties, and to offset the losses on these properties against their personal incomes. Coupled with the lower level of risk associated with residential property investment, this results in low barriers to entry relative to other types of investment.

The result of this bias has been that residential construction dominates GFCF, with Construction sector growth dependent on the strong fluctuations in residential market sentiment. While the Construction sector benefitted from the frenzy of residential construction through the mid 2000s, its dependence on the volatile residential market puts the sector in a constant state of uncertainty.

The “safe as houses” approach that dominates investment in New Zealand is the result of rational behaviour leading to investment in low-risk, high-return products. The result of this bias has been that New Zealand regularly performs poorly in housing affordability relative to comparator nations.

For instance, a recent Demographia report examined 325 housing markets in Australia, Canada, Ireland, New Zealand, the United Kingdom, the United States and Hong Kong. In the report’s definition of housing affordability, any housing market in which the median house price is more than 3 times annual household incomes is deemed unaffordable. The report found that almost all major New Zealand markets were severely unaffordable, including Tauranga (6.5 times annual income), Auckland (6.4), Christchurch (6.0), and Wellington (5.5).

Overly-high housing prices mean that in times of economic slowdown, the impact on the Construction sector is likely to be even stronger as a greater share of people are forced to re-examine whether or not

¹⁰ Sunday Star Times. 18 May 2008. *Finance companies: the scale of the losses*. Retrieved on 1 June 2011 from <http://www.stuff.co.nz/business/448840/Finance-companies-the-scale-of-the-losses>.

to invest in a more affordable housing market. The way to overcome this is to remove some of the incentive for speculative residential investment.

What can Government do?

A more sustainable approach to residential investment, built on legislation and regulation that makes residential investment an equal among options for investment, would benefit the Construction sector by removing much of the volatility in the residential construction market. This would provide the certainty required to reduce job creation and destruction, plan for growth, and provide the training and skills maintenance required to lift productivity in the sector.

Specifically, the Government could ensure that the tax burden falls in such a way that it encourages investment in the most productive asset types. Changes in Budget 2010 to significantly limit the depreciation on buildings and to limit the scope for the offset of losses are steps in the right direction. In addition, Government could ensure that any market failures (possibly making other asset types less attractive) are addressed. For instance, it can assist in removing the relative risk of stock market and the financial system through improved regulation. One way to overcome these risks could be through Monetary Policy, such as adoption of the Basel Accords (specifically Basel II) recommendations on how much capital banks need to put aside to guard against financial and operational risks. This would give the Reserve Bank better control over the speed with which money supply is allowed to grow, reducing risk of speculative bubbles and moderating growth to a pace that will provide greater certainty to the Construction and other sectors.

Another option would be for the Government to use legislation or policy to incentivise investment in more productive asset classes such as transformational infrastructure.

A further benefit of these changes would be to remove incentives for land banking, which occurs when buying and selling of property is in effect speculation on land values. In this way, more funds would be freed up for more productive uses.

12. Develop a more sustainable approach to residential investment, which removes the bias toward residential investment relative to other investment

Monitor trends in immigration to be more responsive

Between 2002 and 2008, New Zealand had the fourth most volatile rate of net migration in the OECD.¹¹

Due to the relative stability of natural increases in population, volatility in net migration is almost completely reflected in volatility in population growth. As the population increases, new infrastructure

¹¹ Cited in *Saving New Zealand: Reducing Vulnerabilities and Barriers to Growth and Prosperity*. (2011). Savings Working Group Final Report to the Minister of Finance.

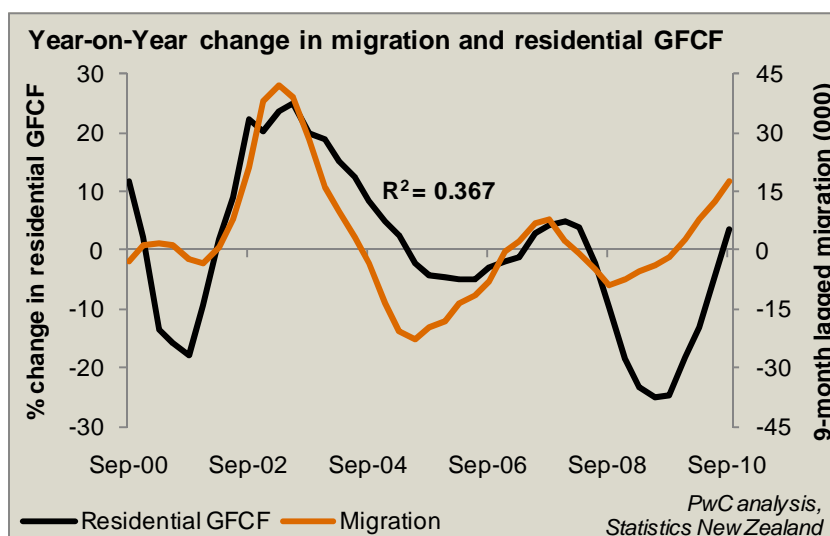
needs to be built to support the increased population. This includes core infrastructure like schools, hospitals, roads and energy, as well as housing and commercial facilities.

The scale of investment in core infrastructure generally means it is planned on the basis of longer term trends in population, and is able to absorb the year on year variability.

However, private investment in housing and non-residential buildings is market driven. To the extent that a surge in population puts pressure on prices and price signals such as vacancy rates, private investment in construction can be expected to respond. In other words volatility in population growth can be expected to result in volatility in Construction investment – particularly from the private sector.

Figure 41 shows the link between net inward migration and residential GFCF. This provides an idea of how net inward migration affects demand for residential capital formation.

Figure 41 Increases in net migration push residential investment up



There is a statistically strong relationship between lagged changes in net inward migration and changes in residential GFCF. Statistical analysis suggests there is a nine-month lag between an increase in net inward migration and a spike in residential GFCF. Migration does not explain all the variation in levels of residential GFCF, but it does account for 37% of the variation.

For every 1,000 increase in net inward migration year-on-year in the last decade, the data suggests there is a 0.54% increase in residential GFCF year-on-year nine months later. For example, if 5,000 more net migrants enter New Zealand in a March year, this has historically resulted in a 2.7% increase in residential GFCF in the subsequent December year.

This raises the question of what control, if any, New Zealand has over net inward migration.

What causes the volatility in net migration?

Net migration is calculated as permanent arrivals less permanent departures. It includes New Zealanders choosing to relocate overseas, New Zealanders returning from time spent overseas, new immigrants to New Zealand, and immigrants leaving.

These movements are driven by a number of factors, including:

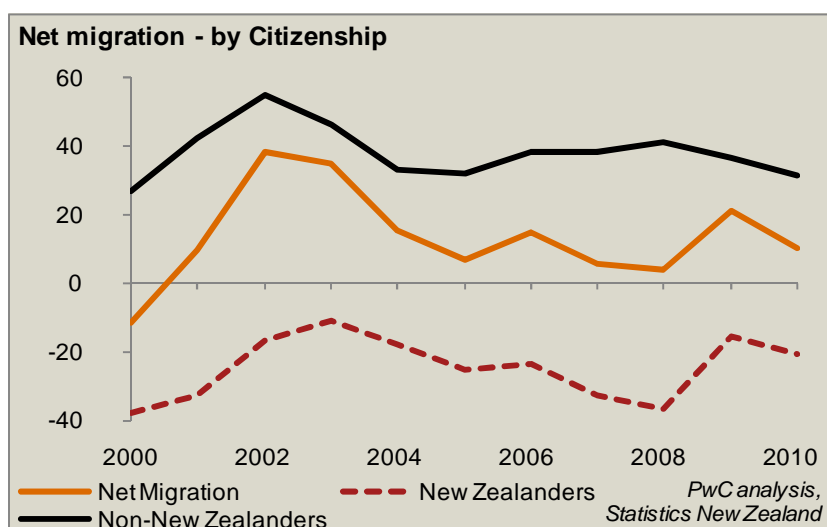
- the prevailing economic conditions within New Zealand including wage rates and employment opportunities;
- the relative economic conditions internationally, particularly in Australia which is the key destination for emigrants; and
- the ease with which new immigrants can enter New Zealand, which is determined by Government immigration policy.

What can Government do?

The Government's jurisdiction in terms of the net migration figures only applies to new immigrants coming to New Zealand. In other words New Zealand immigration policy does not control the movement of New Zealand citizens in or out of New Zealand, or departing non-New Zealanders. Furthermore, the economic conditions and employment opportunities within New Zealand are largely outside of the influence of the Government's immigration policy.

As Figure 42 shows, net inward migration is however largely driven by the arrival of non-New Zealanders, but volatility of net migration especially since 2004 has been driven by New Zealanders.

Figure 42 Net inward migration is driven by the arrival of non-New Zealanders



Government can control the flow of new immigrants to the country, through pursuing more or less relaxed immigration policies. The Government is able to pull the levers (say, through varying the

points required for entry into New Zealand) that govern immigration policy to help stimulate demand for residential GFCF. This needs to be done carefully, so that immigration policy settings provide potential migrants with consistency and certainty. However, Government should review its policy settings regularly, recognising the role immigration can play in stimulating activity in the economy.

Finally, Government can use immigration policy to directly target and attract new immigrants to fill skill shortages in the sector. We have not explored this option further here as we understand it is the focus of other work being undertaken more broadly.

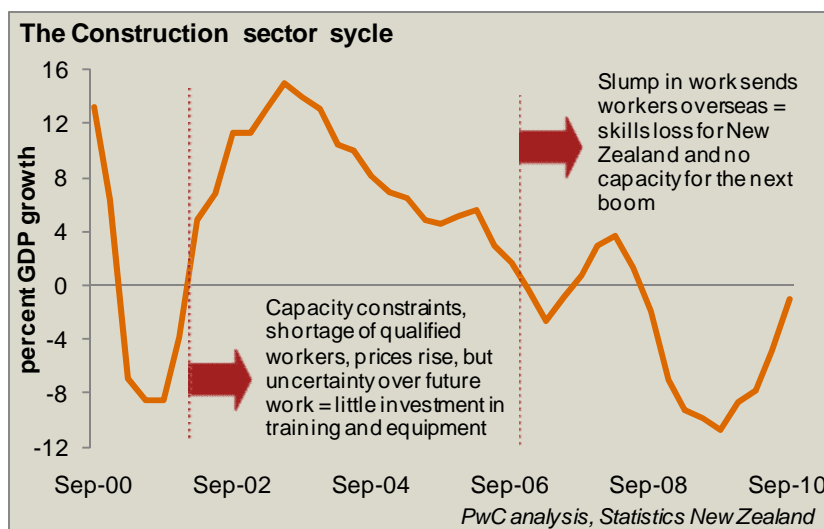
13. Use more responsive immigration policy settings to smooth overall net migration levels
14. Temporarily add some construction-related skills to the skill shortage list when capacity constraints exist

The risk of not reforming

The recommendations set out in this section would play an important role in removing biases from the Construction sector, and perhaps even more importantly, creating certainty.

A failure to reform will ensure that the cycle we have seen over the last 10 years will be set to repeat itself after the Canterbury earthquake and remedial leaky buildings work are mostly completed in the next five years or so. This cycle is summarised in Figure 43.

Figure 43 The Construction sector cycle may repeat itself if no action is taken



During the boom years, as seen between 2002 and 2007, the sector operates at capacity, and qualified workers are hard to find. The result is often that less qualified workers are employed, and construction prices rise sharply as a simple result of demand outstripping supply. At the same time, however, there is little certainty of continuing work, so little is done to invest in training or capital equipment. When the inevitable bust occurs, work dries up and many qualified workers head overseas, often not



returning. This means when the next recovery occurs, we do not have sufficient qualified workers to meet demand, meaning the cycle repeats.

The Canterbury earthquake and remedial leaky buildings work offer an opportunity for greater certainty over the next few years, which may offer more incentive for the sector to invest in longer-term training and capital equipment purchases. But the question still remains as to what happens next, when the boom is over. Unless the recommendations presented here are introduced, New Zealand is likely to see the cycle repeat, with an even greater peak in demand due to the rebuild and remedial work, potentially followed by a near-catastrophic bust.

Impact of the Canterbury earthquakes

The devastating earthquakes in Canterbury in September 2010 and February 2011, and related aftershocks, will have significant repercussions for the country – and the Construction sector in particular – as infrastructure is rehabilitated and residential and commercial buildings are repaired and replaced.

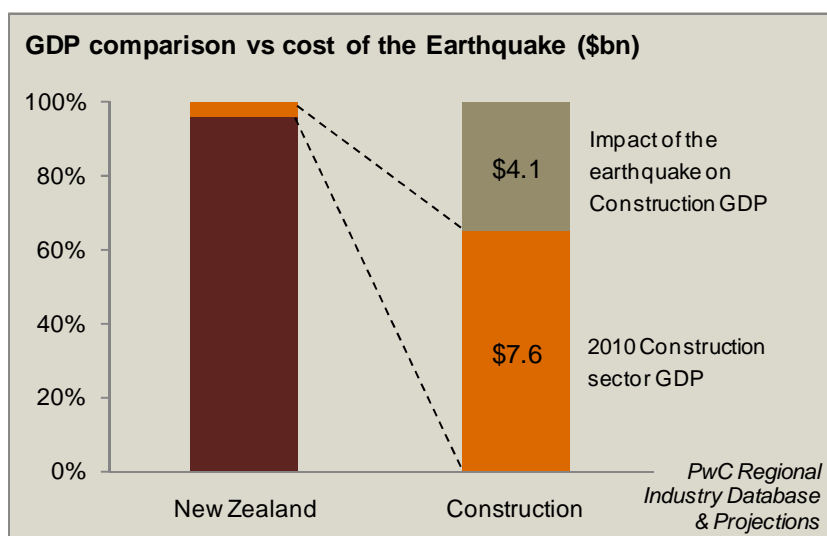
The Treasury's initial estimates of the financial cost of the earthquake were \$10 billion-\$15 billion in addition to the \$5 billion that had been estimated for the initial quake in September 2010 (i.e. around \$20 billion in total).¹² It is reasonable to assume that most of these costs will be spent in the Construction sector.

The numbers

There are a number of assumptions that can be made based on budget announcements and other data sources:

- The Government will fund around \$5.5 billion of the costs itself. It hopes to raise \$4.8 billion through a bond tender, and a further \$740 million will come from existing spending. Around \$3.3 billion will come from reserves through EQC and ACC funding.
- The Construction sector contributed \$7.6 billion to GDP in 2010. The relative scale of the work associated with the Canterbury earthquakes is massive. Figure 44 gives a sense of the scale of the impact on the sector, assuming 70% of the estimated \$20 billion costs are construction costs, and the GDP to output ratio used in the national Construction sector.

Figure 44 Scale of earthquakes' direct impact on the Construction sector



¹² Since completion of the analysis in this report, the Government has suggested that the costs could be around \$4 billion higher than at first estimated.

Around \$4.1 billion in direct GDP is expected to be generated by the construction aspects of the rebuild, or around 54% of one year's national Construction GDP. Taking into account indirect and induced (flow-on) impacts, the Construction component of the rebuild could stimulate approximately \$15.8 billion of GDP across all sectors around the country, as a result of the large multipliers in the Construction sector.

- It is unlikely that the sector has the capacity to absorb increases in activity of this scale, without consequent impacts elsewhere through the sector and economy. The nature and extent of these impacts will depend on several factors, but broadly we can expect:
 - Price increases across the sector due to the increased demand;
 - Deferral of other projects, both by Government and the private sector, as Canterbury soaks up both financial and resource capacity;
 - Growth in employment in the sector, through temporary and permanent immigration and from other sectors.

The opportunities and risks

In essence, the reconstruction programme in Canterbury is likely to lead to significant growth in the sector, and lead the sector into the upside of its boom-bust cycle. There is a risk that this will be exacerbated by increased construction related to leaky building remediation and the general uplift in construction to redress the pent up demand starting to be seen in some regions, particularly Auckland.

The key challenge is to look at ways to harness this anticipated surge in activity and the surety of the work programme over at least the medium term. These could include:

- Developing skills and capacity in the sector, through sector training;
- Leveraging the geographic concentration of the work programme and the opportunity that it can provide for agglomeration benefits;
- Testing and developing more innovative procurement processes.

Some actions the Government has taken include the introduction of multi-proof design and the proposed move to stepped consenting. The first of these will allow a single design to be approved for use on multiple occasions, with the consent applicant only having to lodge site and foundation details, thus reducing the time lapse and cost of the consenting process while significantly improving its certainty. The second, once passed by Parliament, will reduce consent hoops for more standard/basic house designs, with only 4 required per house if built by a Licensed Building Practitioner. Canterbury will act as a pilot for these changes, allowing tweaks to be made before the policies are rolled out across the country.

Reconstruction due to the earthquake may offer the sector the chance to develop skills and a capital base that will serve it well for the future.



The significant reconstruction focus within central Canterbury and the CBD also presents the opportunity to develop innovation in respect of building techniques involving seismic resilience, and restoration of heritage buildings.

Similarly, the central location of redevelopment is an opportunity to build sector capability in the development of high-quality medium density housing. This type of housing has only been used sparingly in New Zealand but is a key tool to cater for growth within our larger and faster growing cities.

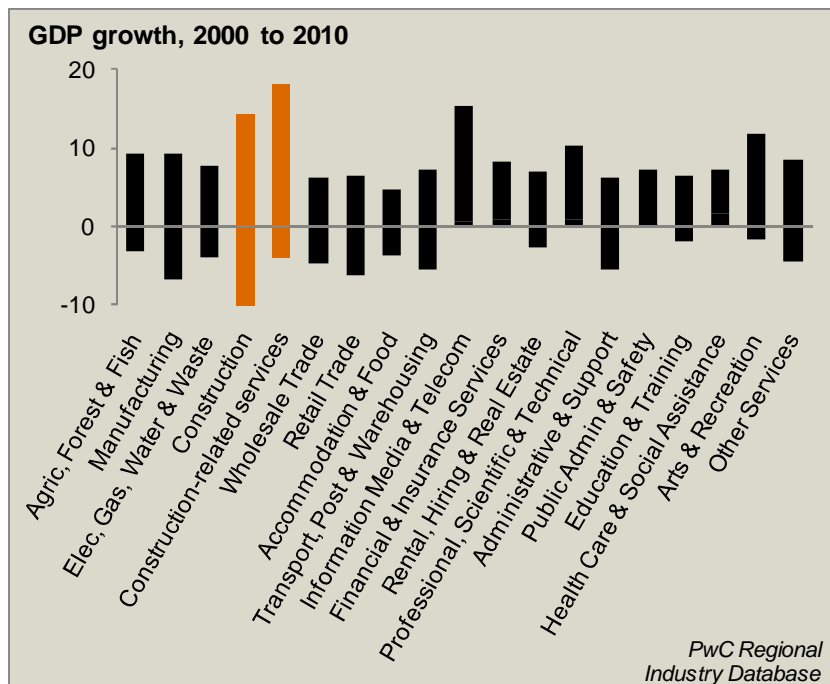
One justified concern given the evidenced volatility of the Construction sector is that this greatest of all booms will be followed by the greatest of all busts. It is crucial that the recommendations made in this report be implemented in advance of the Canterbury-led boom ending, to bring about the systemic changes that will reduce the likelihood of the bust being as harsh.

Unless there is greater certainty that there will still be a moderately strong market for construction work five years out, there is likely to be little appetite by construction businesses to recruit and train people in specialist trades, or to invest in management and capital goods that will give the sector the productivity boost it needs. This would lead again to the historical problem of many people in the sector leaving for Australia or elsewhere when the market slows here, and a lack of qualified workers when the next boom arrives.

Appendix A: Further evidence of volatility

Figure 45 shows the volatility in GDP by sector in New Zealand over the last 10 years. The top of each bar represents the fastest annual growth rate recorded in each sector in the last 10 years. The bottom of each bar represents the slowest annual growth rate in GDP over the last decade. The longer the bar, the greater the volatility over the last decade.

Figure 45 GDP growth by sector, 2000 to 2010



Every sector with the exception of Mining (which recorded a huge boost in GDP in 2008 off a relatively small base when the Tui oil field came on stream), has a longer bar than either Construction or Construction-related services, indicating that these two sectors suffer from relatively severe volatility.¹³

¹³ Mining has been excluded from the figure in that its 42% growth in 2008 makes it hard to compare the average growth rates in other sectors.



Appendix B: Statement by Richard Aitken, Chairman of Construction Strategy Group

The Construction Strategy Group (CSG) thanks PwC for this comprehensive report. It well meets the brief that was set by the CSG. Following its formation the CSG has focussed on three key themes: firstly, confronting the apparent undervaluing of the Building and Construction Industry's contribution to the wider economy; secondly, overcoming the destructiveness of boom and bust cycles over past decades; and thirdly, preparing the sector to best deal with the increased volume of activity arising from the Christchurch rebuild, weather-tightness remediation and a lift in housing demand from New Zealand's growing population. The CSG sought a report that was all encompassing, independent, free of any sectoral interests and balanced. It was to be a report which could become a reference point for debate on future high level policy and strategy decisions. I believe PwC has achieved that with this report.

This PwC Report warrants recognition as a useful addition to the current platform for development of the growing partnership between government and the Building and Construction Industry that is focussed on lifting the industry's performance. As an authoritative analysis of factors that impact on the industry's capability to better contribute to the country's economic progress, the report complements work already under way to raise quality and standards at all levels within the industry. This work, driven by the Department of Building and Housing through a range of the Government's policy programmes, covers greater accountability of industry participants, lifting of competency standards for building practitioners, product assurance programmes, improvements to the consent and compliance process, debate on the important issues facing the sector and more attention to consumer needs.

Partnership involves contribution and compromise from both sides to be successful. In this case the partnership is between government and the wider Building and Construction Industry. The industry's commitment is demonstrated through its close collaboration with the Department in all these programmes. It is typified through involvement of the CSG, the Construction Industry Council and the many individual trade associations that represent the various sub-sectors within the industry. It is further highlighted by the Productivity Partnership between Industry and the Department, aiming to raise productivity levels 20 percent by 2020. Industry representatives sit side by side with public sector officials to provide the industry with the means of lifting its efficiency.

The CSG commissioned PwC to arrive at an independent view of the industry's value to the national economy, and hence identify the most critical levers to pull in search of improvement. In the opinion of our members, all experienced building industry practitioners with business commitments at the coal face for success of the industry, this report does that. It canvasses the impact of the Canterbury earthquakes, the heavy workloads which will arise from weathertight building remediation and the



response to currently low demand for new housing. It offers policy choices for addressing these challenges in a positive manner that will enhance employment and add to long term industry and general economic stability. The report also presents opportunities to address the pressing social issue of lifting skill levels among the unemployed and low paid.

There is no silver bullet to deal with industry volatility. But this report identifies what can be done to smooth out the impact the boom-bust cycles have in inhibiting economic progress. We need to address this issue, if for no other reason than the necessity to offer a more certain career future for those who have recently entered the industry, or are yet to do so.

The industry is committed to working with the Government in partnership to add value to the contribution the Building and Construction Industry makes to New Zealand's economic performance. This report, if adopted by both, provides pathways for a better and more productive future.

Richard Aitken
Chairman
Construction Strategy Group

Appendix C: Acknowledgements

Construction Strategy Group

The Construction Strategy Group consists of the following members:

Name	Position	Organisation
Richard Aitken (chair)	Executive Chairman	Beca Group Ltd
Mark Binns	Chief Executive, Infrastructure	Fletcher Construction Ltd
Pieter Burghout	Chief Executive	BRANZ
Gordon Buswell	Chief Executive	Independent Timber Merchants Coop Ltd
Paul DeBernardo	Managing Director	Aquaheat Industries Ltd
Chris Ellis	Chief Executive	Brightwater Group
Mike Fox	Director	PrimeSite Homes Ltd
Peter Gomm	Chief Executive	Mainzeal Property & Construction Ltd
Richard Harris	Director	Jasmax Ltd
David McConnell	Managing Director	McConnell Group
Richard Merrifield	Managing Director	R J Merrifield Ltd

Funding

PwC and the Construction Strategy Group would like to thank the following funders of this report:

- BRANZ
- Department of Building and Housing
- Building Industry Federation
- New Zealand Institute of Architects
- Registered Master Builders Federation
- BECA

Interviews

The following stakeholders provided invaluable input into the project:

- Hon Maurice Williamson, Minister for Building and Construction
- Connal Townsend, CEO, Property Council
- David McConnell, Managing Director, McConnell Group
- Gordon Buswell, CEO, ITM
- Ian Page, Manager Economics, BRANZ
- Jim Bentley, Director, Centre for Infrastructure Research, Auckland University
- Mark Binns, CEO, Fletcher Building Limited
- Rodney Dickens, Managing Director, Strategic Risk Analysis Ltd
- Richard Carver, CEO, Jennian Homes
- Members of the NZ Construction Industry Council.

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Appendix D: Scope of services

This section sets out the scope of services agreed by CSG and PwC.

1. Develop a picture of the sector by outlining:
 - a. The scale of the sector and its value to the economy – share of GDP, business units and employment;
 - b. The reach of the sector in terms of its geographic concentration, socio-economic and demographic characteristics;
 - c. Productivity estimates including relative to other sectors;
 - d. Key trends over the last ten years in terms of employment, business numbers and size, and GDP.
2. Provide a detailed profile of the role of the sector within the broader economy by showing:
 - a. The impact of the sector across the supply chain including the role that capital formation plays in the broader productivity of the economy;
 - b. The economic multipliers associated with spend in the construction sector relative to other sectors;
 - c. The vulnerability of industry to economic cycles, for the industry as a whole and also for industry sub-sectors and across specific locations;
 - d. A comparison of the volatility of the New Zealand sector with the situation in Australia; and
 - e. The flow-on impact to the broader economy of this volatility.
3. Outline the impacts and benefits of construction investment by analysing:
 - a. The full potential impact of a \$ investment in the construction sector versus a \$ invested elsewhere;
 - b. The impact of improved sector productivity for the broader economy;
 - c. The relationship between the boom and bust nature of the sector and its productivity;
 - d. The impact of government investment on productivity and GDP growth, including comparing government investment across OECD countries over time.
4. Outline the significant role of government in the sector by:
 - a. Analysing the mix of public and private sector funding, including government owned entities (e.g. SOEs) and local government;
 - b. Developing a picture of the pipeline of government investment; and
 - c. Demonstrating the indirect influence of government through its broader policies such as monetary policy, immigration policy, dividend policy and tax policy.
5. Investigate options for government. Options are likely to fall out of the analysis, but this work will include for example:
 - a. Manipulating asset management planning and procurement processes to help smooth the impacts of economic cycles and improve their efficiency;
 - b. Potential policy changes (potential “silver bullets”) that can act to smooth the impacts of economic cycles on the sector; and
 - c. Researching other markets to identify case studies where the sector is more stable, productive and consequently plays a greater role in the broader economy.
6. Gather a qualitative picture of key issues facing the sector by interviewing key industry stakeholders (as agreed with CSG).



Appendix E: Questions and feedback

Any comment or questions that readers may have in respect of this report should make contact with the Construction Strategy Group in the first instance through Laurelee.berkett@branz.co.nz.



Appendix F: Restrictions and disclaimers

Important message to any person not authorised to have access to this report

Any person who is not an addressee of this report or who has not signed and returned a Hold Harmless Letter to PwC is not authorised to have access to this report (save to the extent required by applicable law and/or regulation).

Should any unauthorised person obtain access to and read this report, by reading this report such person accepts and agrees to the following terms:

- The reader of this report understands that the work performed by PwC was performed in accordance with instructions provided by our addressee client and was performed exclusively for our addressee client's sole benefit and use;
- The reader of this report acknowledges that this report was prepared at the direction of our addressee client and may not include all procedures deemed necessary for the purposes of the reader;
- The reader agrees that PwC, its partners, employees and agents neither owe nor accept any duty or responsibility to it, whether in contract or in tort (including without limitation, negligence and breach of statutory duty), and shall not be liable in respect of any loss, damage or expense of whatsoever nature which is caused by any use the reader may choose to make of this report, or which is otherwise consequent upon the gaining of access to the report by the reader; and
- Further, the reader agrees that this report is not to be referred to or quoted, in whole or in part, in any prospectus, registration statement, offering circular, public filing, loan, other agreement or document and not to distribute the report without PwC's prior written consent.

Restrictions

- This Report has been prepared solely for the purposes stated herein and should not be relied upon for any other purpose. We accept no liability to any party should it be used for any purpose other than that for which it was prepared.
- This Report is strictly confidential and (save to the extent required by applicable law and/or regulation) must not be released to any third party without our express written consent which is at our sole discretion.
- To the fullest extent permitted by law, PwC accepts no duty of care to any third party in connection with the provision of this Report and/or any related information or explanation (together, the "Information"). Accordingly, regardless of the form of action, whether in contract, tort (including without limitation, negligence) or otherwise, and to the extent permitted by applicable law, PwC accepts no liability of any kind to any third party and disclaims all responsibility for the consequences of any third party acting or refraining to act in reliance on the Information.



- We have not independently verified the accuracy of information provided to us, and have not conducted any form of audit in respect of the Company. Accordingly, we express no opinion on the reliability, accuracy, or completeness of the information provided to us and upon which we have relied.
- The statements and opinions expressed herein have been made in good faith, and on the basis that all information relied upon is true and accurate in all material respects, and not misleading by reason of omission or otherwise.
- The statements and opinions expressed in this report are based on information available as at the date of the report.
- We reserve the right, but will be under no obligation, to review or amend our Report, if any additional information, which was in existence on the date of this report, was not brought to our attention, or subsequently comes to light.
- This report is issued pursuant to the terms and conditions set out in our engagement letter and the Terms of Business attached thereto.
- In addition the following should be noted:
 - Certain numbers included in tables throughout this report may have been rounded and therefore may not add exactly.
 - Unless otherwise stated all amounts are stated in New Zealand dollars.