

CANTERBURY

2022 REGIONAL CONSTRUCTION WORKFORCE PLANNING & DEVELOPMENT



PREFACE

“Life is divided into three terms – that which was, which is, and which will be. Let us learn from the past to profit by the present, and from the present, to live a better future” William Wordsworth

In the period 2000-2019, growth in the Gross Domestic Product (GDP) of Aotearoa New Zealand’s construction sector increased 46% more than total GDP.

In the same period, the construction workforce nationally has grown significantly faster than our population, from 33.3 to 52.2 per thousand of general population.

New Zealand’s low productivity, based on GDP per hour worked, puts it in the bottom 25% of 38 OECD countries and the gap is widening.

REGIONAL CONSTRUCTION WORKFORCE PLANNING & DEVELOPMENT (Based on Australian and New Zealand Standard Industrial Classification (ANZSIC) ‘E’ codes)

From delivering critical infrastructure to connecting our communities, the construction sector in Aotearoa New Zealand has vast socio-economic impacts and is consequential to all facets of our lives. It provides the physical foundation of our society and the way we live.

The statistics above highlight key issues preventing people and projects fulfilling their potential across the sector and partly explain the industry’s struggle with recruitment and retention which are caused by broader systemic issues.

With Aotearoa’s future prosperity dependent on a construction sector that is resilient and effective, we cannot ignore what the statistics – and industry – are telling us.

Since its inception in June 2020, the Workforce Information Platform (WIP), a data-driven tool, has brought the construction and infrastructure sector’s challenges into even sharper focus, reinforcing, with clear evidence, what businesses are up against.

Pioneered by BCITO, and now managed by Waihangā Ara Rau Construction and Infrastructure Workforce Development Council, the WIP displays workforce gaps and surpluses within the national and regional construction labour markets as well as the pipeline of work by building type and workforce supply and demand.

During 2021/2022, regional workshops with industry and community stakeholders were set up across New Zealand in conjunction with Regional Skills Leadership Groups (RSLGs) to share and review the implications of information stemming from WIP data. This data reinforces the demand for construction services is significantly outstripping supply, posing a substantial problem nationally and regionally.

Workshop participants were tasked with brainstorming workforce barriers, potential solutions and priorities leading to recommendations in section 3. Collectively, they and other insights have informed the calls to action across the 15 reports that make up our **Regional Construction Workforce Planning & Development Project**.

Workshop insights, combined with our own research into the history of the construction sector’s performance, have revealed several important principles at the heart of our project:

Productivity is fundamental: Historically, the focus of the construction workforce has been on increasing the number of people on-the-tools. We need an enduring shift in approach – continuously improving productivity is vital. Measured by rate of output (Construction GDP) per unit of input (Construction Workforce), productivity is a key component in determining workforce numbers. It must be a central focus in New Zealand’s construction sector to create a resilient and sustainable workforce.

It is also key to maximising the sector’s contribution to society. We must upskill the workforce as this will increase the capability, quality and productivity of the workforce and reduce the rework and the number of people required to do the work.

Improving productivity will also enhance most of the other challenges facing the industry, such as retention, recruitment, reputation, capability, value, quality, sustainability, workforce wellbeing and health and safety outcomes while also providing a greater variety of career paths. A more stable and engaged workforce will also help to attract more customers and investment.

Boom and bust cycles must be balanced:

Construction investment decisions impact our society and shape our future. A balanced investment approach is required to ensure a sustainable society. The current practice of aligning the construction workforce’s capacity with economic peaks and troughs is counter-productive to managing demand and improving productivity.

Building a resilient and effective construction sector that provides value and enriches our society is a long-term game that depends on effective workforce planning and development.

Continuing to manage our workforce in line with a boom – bust economic cycle perpetuates a backlog of work which is more expensive to deliver and prone to reducing quality of output due to a heightened sense of urgency. An example of this is the current housing shortage which was compounded by the Global Financial Crisis and saw us fall an estimated 40,000 houses behind what our country needed.

Prioritisation is key: Construction investment decisions impact our society and shape our future. Capacity constraints require projects to be prioritised

into categories such as ‘action,’ ‘defer,’ and ‘cancel.’ A balanced investment approach is required to ensure a sustainable society.

We must create an alternative way of prioritising construction work to align with regional needs and based on a project’s impact on society. That’s why we are introducing a potential impact criteria model; a holistic approach to construction activity and activity outcomes. We propose a prioritisation process predicated on the societal outcomes of a construction project and the needs of the community it serves.

Ultimately, we are not suggesting our Regional Construction Workforce Planning & Development Project is anything more than a start, facilitating thought and discussion, visibility, and accomplishment. This is just the beginning.

Meaningful change depends on collaboration. That is why our work has not been developed in isolation – we looked to the Productivity Commission, Treasury, New Zealand Infrastructure Commission, the Construction Sector Accord and its Construction Transformation Plan for intelligence and inspiration – among other sources.

It is our aspiration that our research, findings, and recommendations catalyse collective action that delivers better results for industry and our society. We want to unite the readers and influencers of this report – industry, industry representative organisations, central and local government, economic development agencies, training organisations and Regional Skills Leadership Groups – to work together.

We must get industry and its regional voices to the table as champions for change. Industry must participate in leading the discussion and be at the forefront of developing and implementing the actions needed to create the resilient and effective

construction sector society deserves. Without achieving this first step, it is difficult to see the change we need realised without unpopular policy intervention.

For many this will mean learning new systems, interpersonal dynamics and problem-solving skills, all of which will require thoughtful incorporation into our future education programmes and industry practices, so akōnga/learners have elementary readiness from the start. It is essential that industry has access to the right people, with the right skills, at the right time. These skills will not only enhance productivity, but also deliver improved wellbeing, health and safety standards and industry reputation.

We understand and appreciate that change can be overwhelming because all change involves stretch – the need to reach beyond our comfort zone. It means embracing the challenge of learning new things and having the confidence to action them. Sustained change is perpetual learning, trying, succeeding, trying, failing, learning, trying – the end is never reached, and perfection does not exist, but striving to do better is the constant.

Innovation happens through action – you will not always get the result you want, so mitigate the risk and do it, the worst is that you learn something you can use later.

“Done is better than perfect”
Mark Zuckerberg

Canterbury Regional Construction Workforce Planning & Development Report is one of 15 reports. You can read other regional reports and access educational tools at www.waihangaararau.nz/research

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WAIHANGA ARA RAU
Construction and Infrastructure
 Workforce Development Council

DISCLAIMER

Every reasonable effort has been made to maintain current and accurate information in this report. Information contained has been assembled in good faith. The Workforce Information Platform (WIP) does not accept any responsibility for the content or condition of any external links on this site.

Access to some data used in this study was provided by Stats NZ under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. Project information used in the WIP is provided by Pacificon NZ Limited. The results presented in this study are the work of the authors, not Stats NZ or individual data suppliers.

This project was made possible by the COVID-19 Recovery Fund administered by the Tertiary Education Commission and through the sustained support and assistance of the Canterbury Regional Skills Leadership Group.

The project was initiated by the Building and Construction Industry Training Organisation and finished by Waihangara Rau the Workforce Development Council for Construction and Infrastructure.



**CANTERBURY 2022
REGIONAL CONSTRUCTION
WORKFORCE PLANNING
& DEVELOPMENT**

**EXECUTIVE
SUMMARY**



Photo: Guy Hasler – Civil Contractors New Zealand.

EXECUTIVE SUMMARY

The focus of this report is to assist with understanding and forecasting workforce demand for the construction sector¹ for the Canterbury region and the need to develop its capabilities and productivity to meet the challenges now and in the future.

This report investigates the future of construction workforce planning, the development of its capacity, and its significance for the region.

A series of Canterbury regional workshops was held to identify regional issues and opportunities together with initiatives that could be actioned to help improve the supply demand gap in the short to medium term.

¹ Covered by the E classification under the ANZSIC system.



Why do we need to get construction right?

To set the scene, we must return to first principles and look at why it is so important that the construction sector is set up for success.

Reactive decimation of the workforce results in a backlog of work that can cause both economic and societal problems, some of which we are experiencing today – for example, the basic need for shelter:



Shortage of housing stock



Impact on wellbeing

- homelessness
- unaffordable rental housing
- decreasing home ownership rates



Impediments to the free movement of labour

- regions comment that housing is a major constraint when trying to attract recruits



Increased demand

- raising costs
- testing supply chains



The consequences

From this one shortage:



decreasing social engagement, reducing social license, and discouraging remaining in the region



reducing the ability to recruit externally



incentivising workers to immigrate offshore to build a better life

We already recognise that we are facing a skills shortage, so this works against our objectives.

The solutions to these issues depend on the construction sector working with the commercial and public sector on policy – including procurement and assuredness of pipeline demand – and funding possibly a public private joint venture partnership.

Forecast Canterbury Situation: construction demand outstrips supply.

Consented projects together with an allowance for unconsented work (estimated at \$1B per quarter nationally) highlight a gap between our current construction workforce and the supply required to match the current levels of demand.

Figure 1 shows the Demand Model data, which is sourced from actual and proposed project data, at a point in time, as a result of new projects entering the pipeline and as deferred projects come on stream. The peak wave in demand will continue to roll forward in time with non-delivery and as deferred and additional projects come on stream. The data reflects planning timeframes, most fitting within a 30-month window, which demonstrates that the current demand for construction resources far outstrips the current supply.

The vertical workforce shortfall for the Canterbury region is estimated to be an average of over 15,100 (34.8% of the 2020 workforce) workers for the remainder of 2022 and an average of over 14,800 (34.1% of the 2020 workforce) for 2023 without factoring in the effect of delayed projects due to workforce shortages or supply channel issues in 2022. www.wip.org.nz

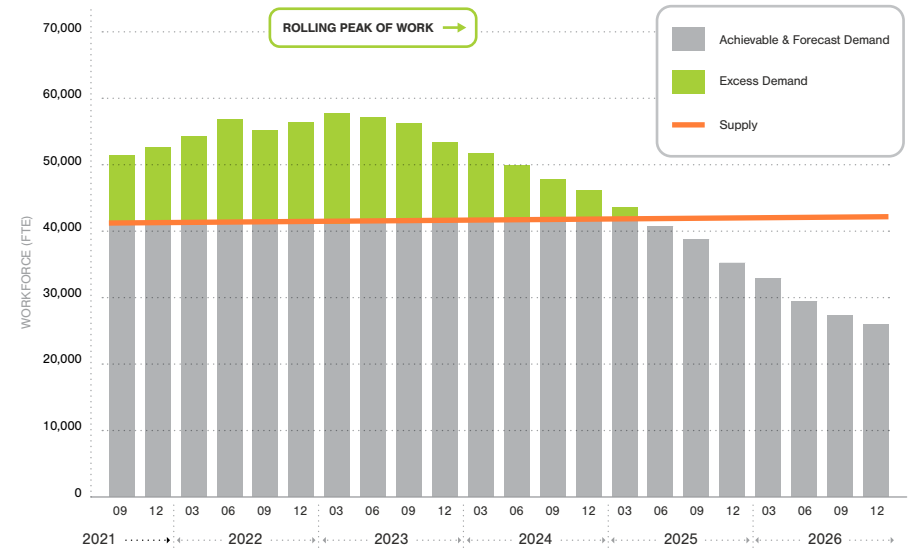
The Workforce Information Platform (WIP) data informs workforce planning by highlighting the short-term issues, however, such planning requires a focus well beyond the 60 months displayed in the WIP supply and demand graph.

Our historical analysis also helps provide a trendline that we can use to project workforce requirements, however demand is not the sole consideration for workforce planning and development. We will address other considerations throughout the report.

The WIP contains information pertaining to the Vertical Construction Workforce as of April 2022. The intention is to add Horizontal Construction workforce information by the end of June 2022. This will further increase the supply and demand gap but does not alter the recommendations or calls to action.

The peak wave in demand will continue to roll forward in time with non-delivery and as deferred and additional projects come on stream.

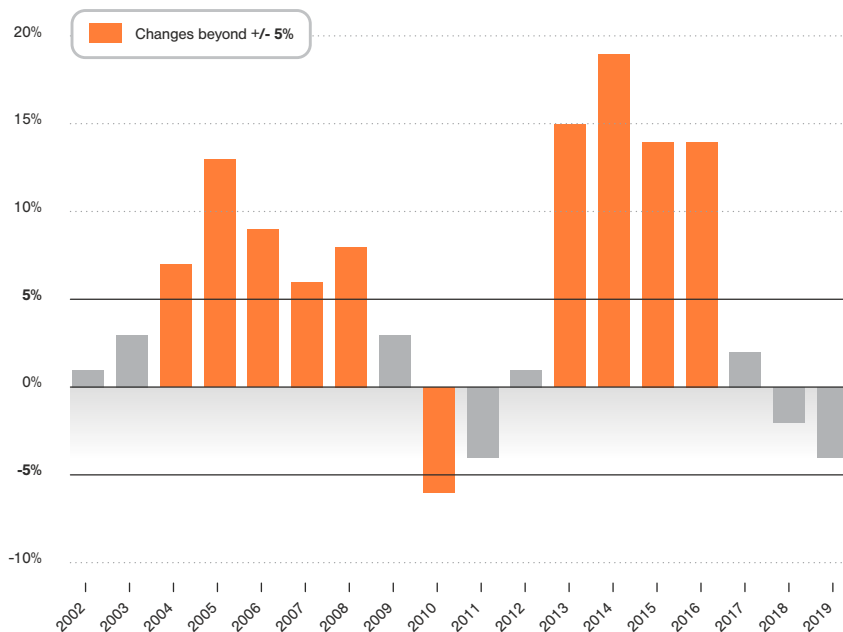
FIGURE 1: CANTERBURY WORKFORCE SUPPLY & DEMAND



Source: www.wip.org.nz

Historic Trend: Workforce management based on short-term economic cycles leads to large disruptive change

FIGURE 2: CHANGES IN CANTERBURY WORKFORCE BEYOND +/-5%



Source: Stats NZ

Current workforce practices follow a short-term project view of contracting and hiring based on short term economic cycles. This produces wide ranging peaks and troughs in workforce population, which are not conducive to developing capabilities, improving productivity and the reputation of the industry.

The nature of contracting cycles and work practices come at an economic cost making construction costs higher than they need to be, however, addressing this will require a different way of thinking to get the desired outcomes.

Effective workforce planning and development must be recognised as a long-term game if we are to develop the capabilities required to build a resilient construction sector that will provide value and enrich our society through the results of efficient construction activity.

Remedies – what can we do?

Given that a skilled workforce of the magnitude needed to address issues and leverage opportunities to meet our objectives cannot be ‘magicked’ into existence, we must look to the things we can do now to help get the maximum benefit from our available resources.

For the foreseeable future we expect to have a tight labour market with almost all sectors competing for people to join their businesses and sectors. This leads us to the realisation that as an industry we must look at ways to achieve more with fewer people.

We look at three means to alleviate the congestion:

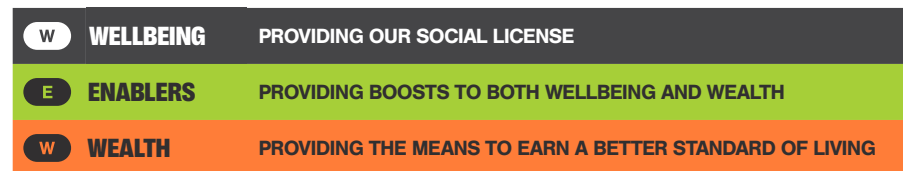
ONE: ADDRESSING DEMAND: PRIORITISING PROJECTS

FIGURE 3: CONSTRUCTION OUTCOMES IMPACT MODEL



Refer section 2.3 – for more detail.

A new way of how we might evaluate the priority given to projects in the pipeline looks at the outcomes of construction activity, assessed against three categories:



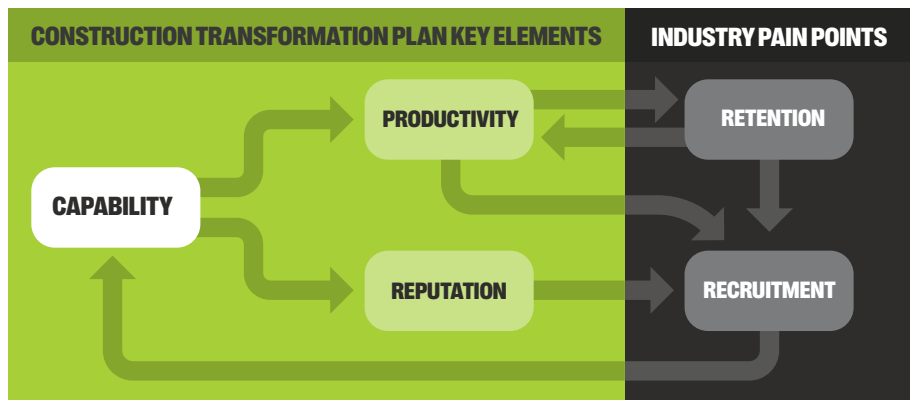
Construction investment decisions impact our society and shape our future. A balanced investment approach is required to ensure a sustainable society. We are introducing a potential impact-criteria model which takes a holistic approach to construction activity focusing on activity outcomes.

Our society needs a balanced approach to these forms of investment, understanding where gaps and over-investment in societal needs exist. By looking at some of our investment options through this societal lens and identifying potential areas of under and over investment, we will strengthen our progress as a region and as a country.

Balancing boom and bust cycles also help to address retention and builds capability in the sector. The construction and infrastructure sectors in Aotearoa New Zealand have been in a growth phase since the early 2010s but economists and the community are still looking for the next bust cycle to follow the boom rather than looking to the need for people to build housing to provide shelter, infrastructure to build our communities and projects to build prosperity.

TWO: ADDRESSING SUPPLY: OPTIMISING WORKFORCE CAPACITY

FIGURE 4



<https://www.constructionaccord.nz/assets/Construction-Accord/files/construction-accord-transformation-plan.pdf>

Optimising workforce capacity addresses the core industry pain points of retention and recruitment identified through our regional workshops as shown in the diagram.

How might we optimise the workforce capacity – now and in the future?

We have adopted the goals of the Construction Transformation Plan as our framework to optimise our workforce capacity.

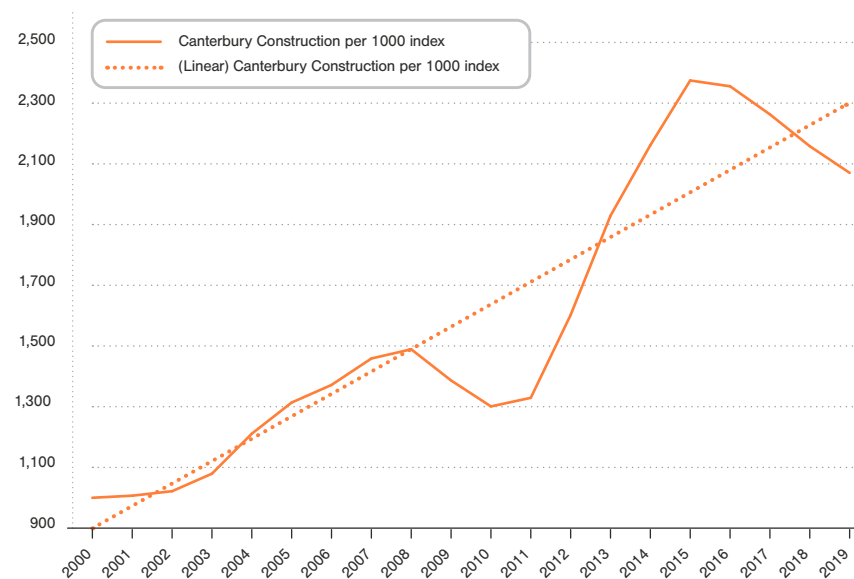
Capabilities address and resolve the internal impediments affecting productivity and reputation.

THREE: ADDRESSING SUPPLY: BASE WORKFORCE PLANNING ON LONGER TERM TRENDS NOT SHORT-TERM ECONOMIC CYCLES

We have observed that the current practice of having the construction workforce follow the economic peaks and troughs is problematic, both in terms of meeting long run demand and productivity.

The 2000 – 2019 history demonstrates that the construction workforce nationally has grown significantly faster than our population. With only modest productivity improvements this metric grows larger – but will we be competitive enough to attract the people required to grow our workforce?

FIGURE 5: CANTERBURY CONSTRUCTION PER 1000 INDEX



Source: Stats NZ

The graph also highlights the current practice of decimating the workforce in response to economic cycles, from 2000 to 2001. From 2008 to 2012 the sharp decline in workforce can be seen. The trendline shows our recommended path for workforce planning and development – build the workforce to the trendline of demand. The loss of capability and corresponding lack of construction activity created, at least in part, the housing shortage we are experiencing now. COVID-19 responses such as Apprentice Boost and the Targeted Training and Apprenticeship Fund (TTAF) have reduced the repetition of this effect in the 2020s but there is still ground to be made up, particularly in filling the housing shortage.

How many people we will need, based on productivity and workforce projections

Productivity has a major impact on workforce numbers and is key to maximising the benefits that the construction sector can contribute to our societies.

In this report we measure Construction Productivity (CP) as being the Construction GDP divided by the number of people engaged in the construction sector under the 'E' ANZSIC classifications.

In the 19 years to 2019 Canterbury's CP averaged 1.67% p.a. (NZ 1.382%p.a.). In the last 10 years to 2019 CP improved by 1.77% p.a. (NZ 1.756%p.a.).



Photo: BCITO

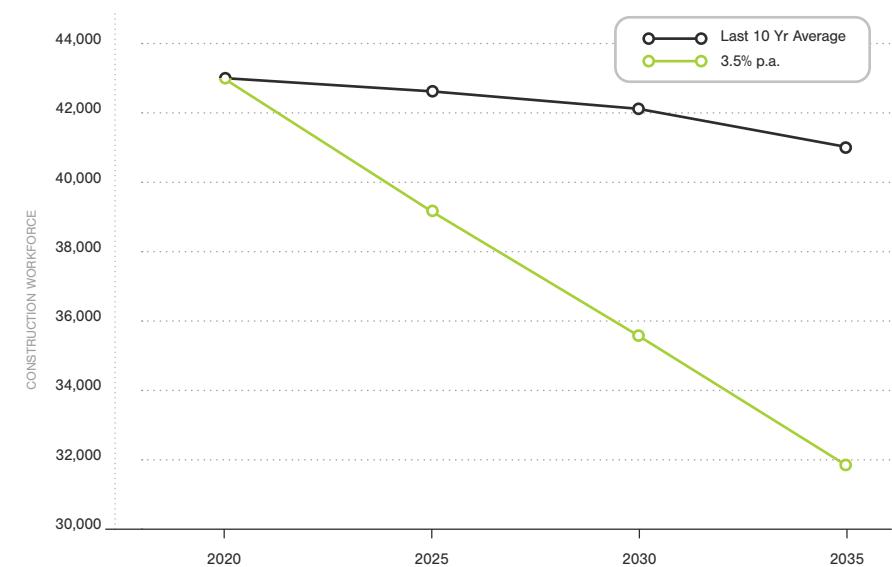
Workforce projections incorporating the impact of productivity improvements

Based on the Last 10-Year Average productivity changes, the workforce in 2035 is projected to be 41,024. If productivity could improve by 3.5 % p.a. (67.5% over the 15-years) the projected workforce would only need to be 31,859: **equating to an FTE reduction of 9,165 or 22.34%**. (Real Productivity - adjusted for inflation).

Productivity is a key component in determining workforce demand and needs to be a central focus to create a resilient and sustainable construction sector.

Figure 6 shows the impact that a change in productivity has on workforce numbers (WF).

FIGURE 6: PRODUCTIVITY IMPACT ON WORKFORCE



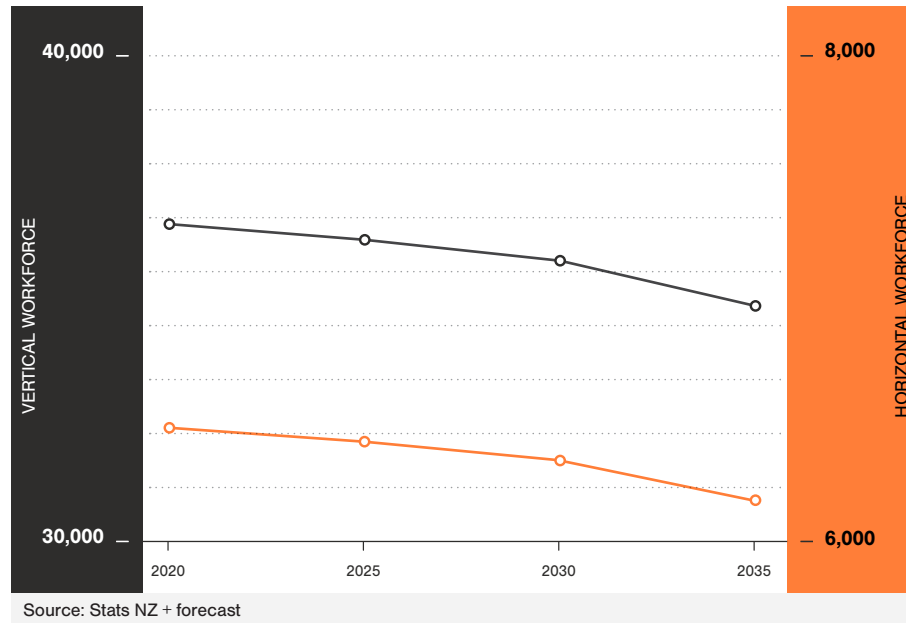
Source: Stats NZ + scenario forecast model

The black line shows the construction workforce required should regional productivity remain at the average rate achieved in the ten years to 2020.

The green line shows the WF required to achieve the same workload, but with a 3.5% annual increase in productivity over the period 2020 – 2035.

Using a very conservative approach of assuming construction payroll is equal to the median wage, saving 9165 FTE is equal to reducing costs by more than \$514M in Canterbury, by lifting productivity improvements from 1.77% to 3.5% p.a.

FIGURE 7: WORKFORCE BREAKDOWN



The drivers of construction workforce demand are:

- population change
- change in the relationship between construction GDP and GDP
 - external investment, either public or private investment
- productivity.

Our workforce forecasting model factors in these drivers, using both historical trends and future expectations to predict the workforce requirement.

This diagram shows the predicted workforce numbers for both the vertical and horizontal sectors of the construction industry. These forecasts have been developed based on productivity improvements of 1.77% per annum.

Externally driven challenges facing the construction sector.

External Impediments – those that require the co-operation and collaboration of those not within the industry, examples:

- COMPLIANCE**
 - Health & Safety and Regulatory
 - the current requirement is economically and outcome inefficient
 - Building for climate change
- PROCUREMENT**
 - pipeline commitment and timing
 - insufficient to provide the confidence required to make the investment needed
 - lack of market understanding regarding standardising requirements
 - the level of bespoke work prevents efficiencies
- SUPPLY CHAIN**
 - competitiveness of pricing domestically v. internationally
 - timeliness, this issue has been exacerbated during COVID

Case studies showcasing solutions identified during the workshops include Mohua Affordable Housing Project, Te Heke mai, Massey Building Academy, and Dunedin Skills Hub can be found in section 03.

CALLS TO ACTION

PRODUCTIVITY

- improving productivity to reduce the utilisation break-even point
- bundling contracts to provide more certainty over time to facilitate better investment in people and technology
- wider standardisation and prefabricated 'elements' to improve quality and cost efficiencies.

FINANCIAL MANAGEMENT

- arranging funding to carry work through troughs – potential joint venture public private partnerships
- changing financial planning cycles to 60 - 100 months v. 12 - 36 months
- ensure pricing reflects the financial cycles.

REPOSITIONING THE INDUSTRY

- greater industry leadership and collaboration needs to be forged between Trade and Industry Associations, industry-dedicated government bodies such as The Construction Accord, Regional Skills Leadership Groups, Waihanga Ara Rau, Infrastructure Commission, and ConCove Tūhura to provide a co-ordinated voice to advocate for policy and capability change to achieve the necessary goal – a resilient industry that provides the physical foundations for our society.

- closer relationships with customers to secure a higher proportion of work over longer timeframes
- sustainability - improving industry attention to environmental sustainability by establishing how relevant sustainability principles can be incorporated into appropriate training products. ConCove Project².

INDUSTRY INTELLIGENCE

- get the ANZSIC and ANZSCO codes sourced on IR330 and IR3 forms to improve our workforce intelligence (i.e., enhancing IDI).

WORKFORCE

- advocate to introduce a targeted open age Work Visa for Construction – say four years, which is not employer specific allowing for movement from project to project and allowing training to New Zealand standards.
- support attraction and onboarding that increases participation and outcomes for learners, employers, and industry. ConCove Project.
- support Career Progression - improve Productivity through Retention, Upskilling and Reskilling ConCove Project
- diversity - Growing and Strengthening the Workforce through Diversity Waihanga Ara Rau and ConCove Projects.

²Waihanga Ara Rau and ConCove Projects noted in the calls to action above are underway as at April 2022, recommendations and actions supporting the topics will come from these projects.

WORKSHOP

- establish and maintain a regional group with a focus on attracting people to construction, by strengthening career pathways and raising the cultural perception of the social value of trade professions.

COMPANIES

- employers and supervisors, especially those new to structured industry learning need support to realise the benefits of on job training
- additional support for smaller businesses likely to find change more difficult. Evidence is being sought, but it is thought this could be particularly relevant to a growing number of Māori and Pacific businesses
- there is also an opportunity for large employer and industry bodies in the sector to act regionally and nationally as agents for change and equity for the whole sector.

**CANTERBURY 2022
REGIONAL CONSTRUCTION
WORKFORCE PLANNING
& DEVELOPMENT**

**01.
PURPOSE**



Photo: Guy Hasler - Civil Contractors New Zealand.

01 PURPOSE

This report investigates the future of construction workforce planning, the development of its capacity, and its significance for society.

The focus of this report is to assist with understanding and forecasting workforce demand for the construction sector (covered by the E classification under the ANZSIC system) for the Canterbury region and the need to develop its capabilities to meet the challenges now and in the future.

The regional workshops provide a local flavour to the issues they identify with as being significant for them. The workshops were also aimed at being educational and productive – identifying a local initiative that could be actioned to help improve the local status quo in the short to medium term.

1.1 Context

We relate our work in preparing this report to The Construction Sector Transformation Plan which aims to ensure a resilient sector by:

- restoring our industry’s confidence, pride, and reputation
- raising capability within the industry
- increasing our productivity.

The Construction Sector Transformation Plan (Transformation Plan) is a package of 21 programmes across six major work streams that will create transformational change in the construction industry over a three-year period to achieve the goals of the Construction Sector Accord.

The Accord was launched in April 2019, setting out the outcomes sought for the sector and a group of principles to follow to affect the culture change needed. Since that time, government and industry have been engaging widely across the sector to develop a Transformation Plan that will achieve the goals and outcomes set out in the Accord (listed previously).

<https://www.constructionaccord.nz/assets/Construction-Accord/files/construction-accord-transformation-plan.pdf>

There are many facets to this plan, and this report will provide some insight into how we might productively begin the journey to achieve those worthy objectives.

This report:

- gives an overview of population and economic trends over the last twenty years to 2020 to provide a context and understanding about the present and the steps required to assure the future we want for the construction sector in New Zealand.
- analyses the challenges facing the industry as they impact the workforce and draws conclusions indicating a course of action to achieve a resilient construction sector.

How this report is structured

Part One of this report provides context – describing the ecosystem that needs to be understood to successfully implement workforce planning, in this instance for the Construction and Infrastructure (construction) sectors. Our review gives a quick interpretation on the key elements regionally and nationally:

- Population growth
- GDP per capita growth
- Construction Workforce per 1,000 of general population (Workforce Metric (WM))
- Construction GDP as a ratio of GDP (in constant year 2000 NZ\$)
- Construction GDP per construction worker (as our productivity measure)

Part Two of this report covers the output of regional workshops which were held to share and review the implications of information stemming from the WIP showing the demand for construction services significantly outstripping supply. Workshops enabled a regional voice and gave participants the opportunity to brainstorm barriers to growing the workforce to meet demand, as well as potential solutions, priorities, and recommendations.

**CANTERBURY 2022
REGIONAL CONSTRUCTION
WORKFORCE PLANNING
& DEVELOPMENT**

**02.
PROCESS AND
RATIONALE**



Photo: Waihangā Ara Rau

02 PROCESS AND RATIONALE

Our logic follows **three concepts** that look to holistically understand the past and the present and help predict and manage the future. This is significant because workforce planning and development is a long game; skilled workers take time to train so supply is not instantaneous. Workforce development (post-apprenticeship education) and productivity have been largely overlooked by the industry in New Zealand, this provides us with an opportunity to make significant progress with our workforce capability if we choose to embrace it.

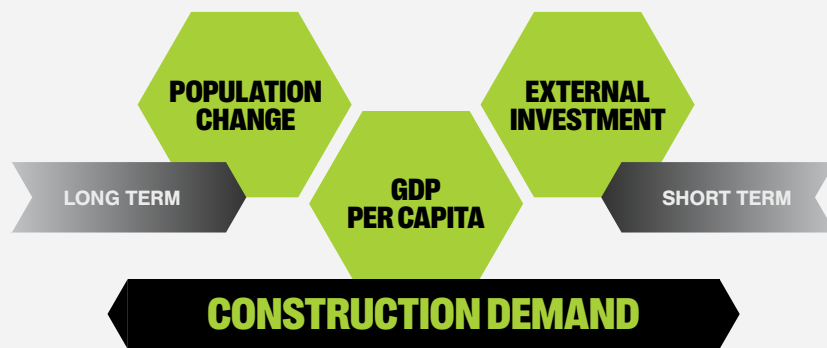
2.1 Concept One - Fundamentals for effective workforce planning

POPULATION AND GDP (GROSS DOMESTIC PRODUCT) PER CAPITA

Determining the size of the construction workforce factors in changes in population and wealth-generation (GDP per capita), which provides the ability to afford construction activity.

A society's expectations grow with greater wealth – examples include larger and more houses, health and education facilities, shops, sporting and cultural facilities, entertainment, and investment in more infrastructure and commercial activities which generate further returns.

FIGURE 8:



Demand is driven by:

- growth in population which generates demand – to provide shelter, amenities, and workplaces for the increased populace
- wealth generated by the population – the more affluent the society is, the greater the requirement for construction.

External capital typically shows up as a deviation from the trendline as these types of investment are usually not part of the normal activity and tend to be large by nature.

Governments investing in a region to boost the local economy can involve different approaches and be motivated by different things. For example:

- catching up on accumulated maintenance,
- rectifying an imbalance of social spending,
- bridging support for construction activity covering an economic dip to ensure that supply can keep up with the demand trend over the long term,
- strategic investment aimed at generating ongoing economic and or societal benefits.

ECONOMY

Economic activity follows a pattern of rolling peaks and troughs which over time demonstrate a predictable pattern, although the years in the cycle may vary a bit. This variability has been labelled the 'boom and bust cycle' by the construction sector which has tended to follow these patterns with its workforce numbers.

However, this cycle has too much variability to provide a robust workforce plan both in terms of workforce numbers and achieving economic and societal outcomes.

By understanding the relationship between construction-GDP per capita, GDP per capita, and productivity we can look to follow the growth trendline and make investment decisions for the workforce accordingly.

Any investment in the construction workforce should be managed to the trendline, not the peaks. To help alleviate the impact of these rolling cycles it is important to manage a business' capital reserves to fund the entire economic cycle.

Therefore, it is important that construction sector businesses carry out their workforce and financial planning to include the peaks and troughs of the economic cycles in which they can model the periods of downturn and devise plans to compensate without damaging their forward capacity.

One of the longstanding challenges for the industry is its fragmented nature. The skills required to navigate the complexities inherent in construction are unlikely to be found in most construction businesses by virtue of their size with almost 86% of the industry businesses (Total: 70,602 at Feb21) having a turnover of less than \$1M per annum.

The industry business owners and managers need to have a fuller understanding of the options available to plan and manage this. During our discussions with those close to the industry the feedback on this was:

- most of the small industry-players do not have the ability to plan and execute the change required on their own
- greater visibility of the key metrics required to advise on workforce investment is needed
- more awareness of how industry challenges might be addressed is necessary to gain buy-in to significant change.

Conclusion:

Greater industry leadership needs to be forged between Trade and Industry Associations, industry-dedicated government bodies such as The Construction Accord, Waihanga Ara Rau, the Infrastructure Commission and other industry and Peak Bodies to provide a co-ordinated voice to advocate for policy and capabilities change that will empower the sector to achieve the necessary goal – a resilient industry that provides the physical foundations for our society.

By developing workforce plans to a trendline and having the business systems in place that support productivity, businesses can maintain their workforce volume to take advantage when the economy begins its upwards cycle.

Those who manage their workforce in this manner will be better positioned to take market share from those that do not. By being able to handle downward parts of the cycle through a reduced utilisation rate, rather than just a headcount drop, construction businesses will become more sustainable and more profitable over the longer term. This will require efficiencies that reduce the utilisation-rate break-even.

2.1.1 CONSTRUCTION WORKFORCE PLANNING

The number of people in the construction workforce is driven by population and wealth. By using the metric of workforce per 1,000 of general population we can account for changes in our regional or national population. It also gives us a ready calculator e.g., a 53.5 per 1,000 means that if we grow our population by 100,000 it means we will need 5,350 more people in the construction sector, if using the current ratio.

FIGURE 9: WORKFORCE METRIC



We can break this down by the (ANZSIC) code to drill down into specific trades and determine how many carpenters, concrete workers, electricians etc. the industry will need. Currently the information is obtained at company level, so it includes all staff (e.g., administration) not just people on the tools. (One of our recommendations is to capture this at individual level, perhaps as part of the annual tax registration process).

This gives us the growth element of our equation; we then add our expected attrition headcount (attrition rate x opening workforce number) to get our recruitment target. Over time we will get a better understanding of the relationship between the recruitment target and training target as some employees/learners may already possess the skills required.

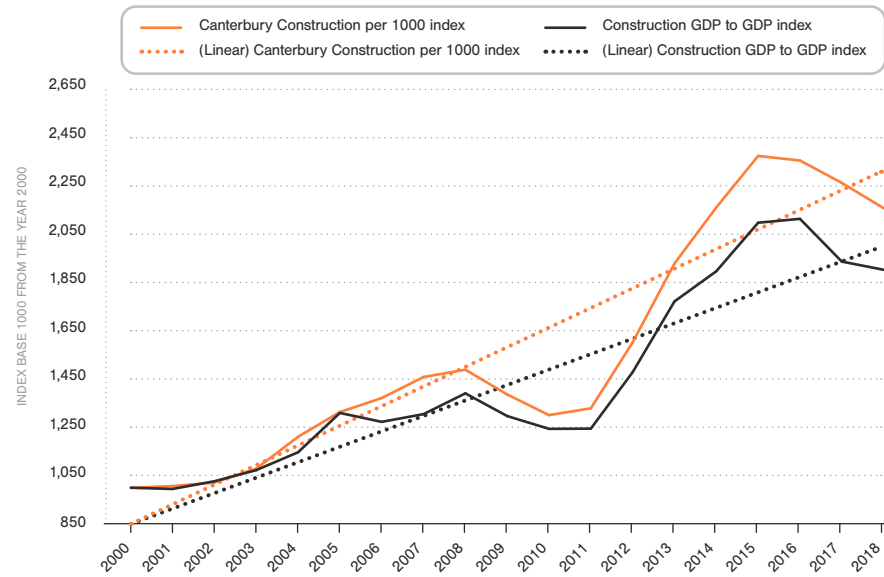
Nationally our workforce metric (WM) has gone from 33.3 per 1,000 20 years ago to 53.5 per 1,000 in 2020.

Our construction workforce has grown significantly faster than our general population, so we endeavour to identify the drivers behind this growth. This is necessary if we are to improve our workforce planning and productivity.

Construction Workforce planning needs to plan for peaks and troughs and smooth the growth on workforce numbers rather than grow and retrench in what is a predictable and manageable cycle.

Doing so will build the trust of the workforce and enhance the reputation of the industry – both required to achieve a sustainable and resilient industry. These outcomes are consistent with the goals outlined in the Construction Sector Transformation Plan.

FIGURE 10: CONSTRUCTION GDP: GDP AND WORKFORCE METRIC



Source: Stats NZ

Economic wealth is measured as GDP per capita. By expressing the change in Construction GDP as a ratio of the change in overall GDP (including adjusting for inflation and using an index system starting in the year 2000 beginning at 1000) we can predict the trend in construction workforce per 1,000 people in the population.

As can be seen, the trendline for WM (workers per 1,000) follows the Inflation-adjusted Construction: Regional GDP per capita trendline. In absence of any other guide, this measure will be our indicator for demand of construction workforce per 1,000. (2019 is the last year NZ Statistics has reported Construction GDP.) The key to predicting future requirement is testing for indications of change in population growth, construction GDP, GDP, and productivity.

In addition, regular updates need to track persons per domicile and housing stock analysis. This allows for visibility of residential demand which currently equates to the largest share of our total spend based on the data from 2012. This will also give insight into three waters, energy, health, and education demand.

Understanding each assumption means that recalculation can be easily triggered after statistics show a deviation from the expectation. This keeps our projections alive and as accurate as they can be – in absence of a more accurate alternative.

REGIONAL HISTORY 2000 – 2019 AND WORKFORCE FORECASTS 2020 – 2035

FIGURE 11

Year	Workforce Metric	Workforce
2000	31.4	15,487
2009	43.5	24,387
2019	65.0	41,035
2020	66.8	43,005
2025	63.4	42,624
2030	60.2	42,119
2035	56.6	41,024

Source: Stats NZ + Analysis

This table shows the Construction Workers per 1,000 (WM) and the Construction Workforce figures for the period from 2000 to 2020 actuals and the projections for 2025, 2030, and 2035.

This table shows the 15-year growth to 2035, based on scenario A – this predicts an 4.6% decline in the required construction workforce which is significantly lower than the 12.6% projected population growth raising our Workforce Metric to 56.6 per 1,000.

The key driver of Construction GDP in scenario A is a flattening off of rebuild activity following the peak in 2016. This scenario A is based on a productivity improvement of 30.1% over the period which assumes continuation of the last 10-year improvement rate of 1.77% p.a.

FIGURE 12

Growth	2020-2035
Δ Workforce	-1,981
Δ Workforce	-4.6%
Δ Productivity	30.1%
Δ Inflation	40.2%
Δ Region GDP	128.6%
Δ Constn GDP	80.1%
Δ Regional Popn	12.6%
Δ National Popn	13.0%

Source: Stats NZ + Analysis

The productivity shown is real productivity (adjusted for inflation). Regional GDP and Construction GDP are nominal values (unadjusted for inflation).

Given the employment market is currently, and predicted to continue to be, highly competitive with widespread shortages, the question must be asked:

How realistic is it to continue current industry practices that require so many people?

While this may not be the case for Canterbury, it is for the rest of the country. Poaching or luring staff from Canterbury to other regions or offshore is a risk that Canterbury construction businesses need to mitigate against. For this reason, the work of this report is equally pertinent.

Current industry practice is the central focus of this report, but we will touch briefly on the other two elements as they are both of great significance.

2.1.2 CONSTRUCTION WORKFORCE DEVELOPMENT

‘Capabilities’ is about matching training and support to the needs of the industry. This was a major driver behind the Reform of Vocational Education (RoVE) and remains key to Waihanga Ara Rau and the role of the other Workforce Development Councils (WDCs).

As the voice of industry, WDCs will primarily work with industries and employers in their sectors, including Iwi and Māori industry and businesses. They will give industries greater leadership and influence across vocational education.

Waihanga Ara Rau works with its industries to develop and maintain a strategic view of the skills their industries require now and in the future. They translate these needs into expectations of what the vocational education system will deliver.

CAPABILITY SUMMARISED

At a high level we can align capabilities into two groups

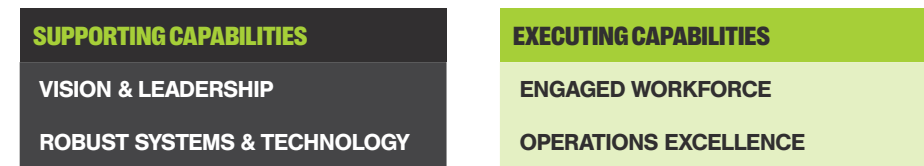
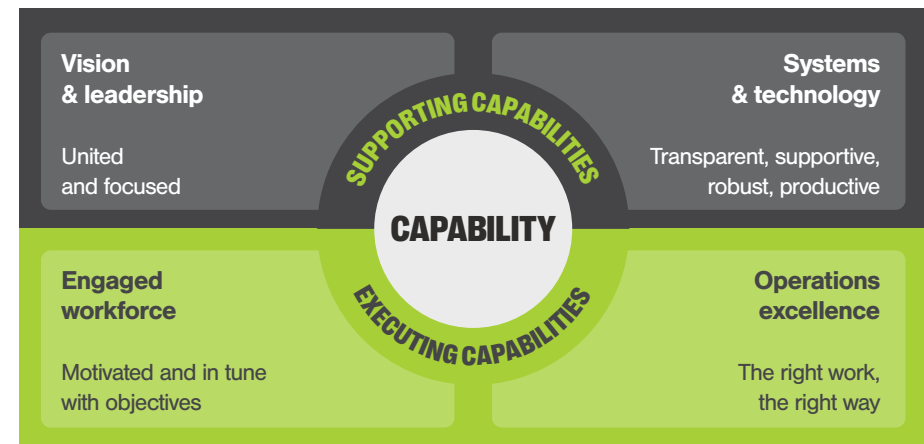


FIGURE 13



These are mutually inclusive – both are required for success.

Key themes revolve around direction, communication, trust, empowerment, structure, and order.

Creating a resilient construction sector will require a step-change in the way we think about our work, workplaces, and our people.

Accurate, timely and relevant information is a vital support mechanism that guides our planning and actions, providing risk mitigation as well as confirmation of success.

Investment in technology where appropriate will improve productivity and competitive advantage.

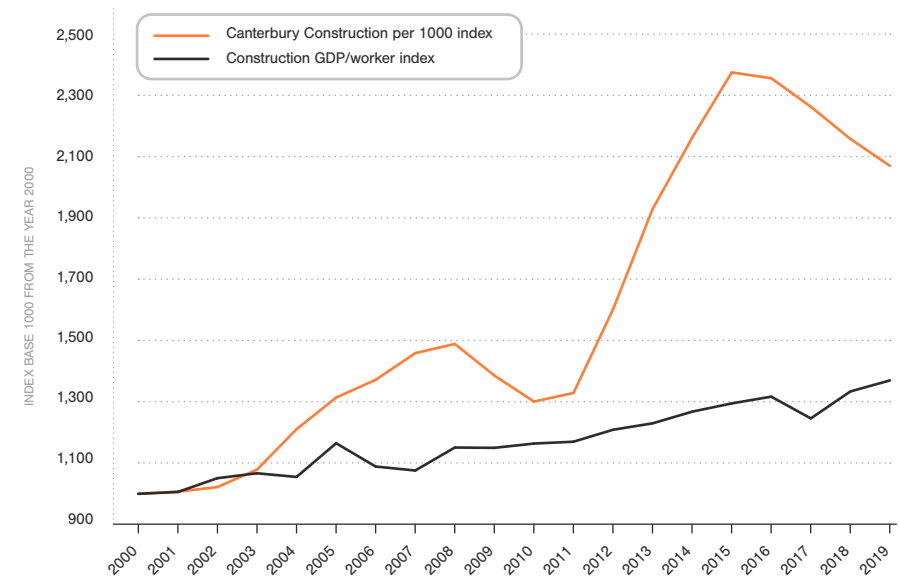
Continuously challenging the way we do things will mitigate the disruptive risk posed by the industry’s maturity and fragmented structure.

FIGURE 14



PRODUCTIVITY

FIGURE 15: CANTERBURY CONSTRUCTION PRODUCTIVITY



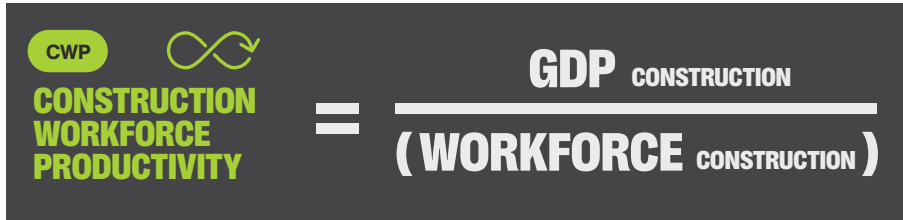
Source: Stats NZ

The graph shows that productivity improvement does not follow our WM as indicated by the gaps between the orange and black lines.

This indicates that our past workforce focus has simply been on number of people, often at the expense of productivity - highlighting an untapped opportunity to grow our ability to do the work with fewer more productive people.

This has been outlined both by the Construction Transformation Plan and the Productivity Commission.

FIGURE 16

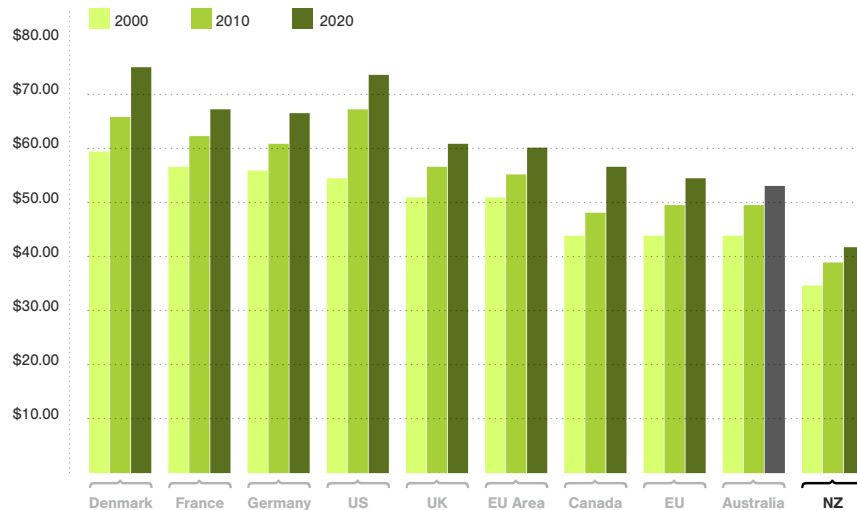


We have used Construction GDP per construction worker as our measure of productivity, based on the number of people engaged in construction activity as an indication of productivity.

We have used the Real Productivity value (inflation adjusted) to be consistent with the OECD results in Figure 17.

‘People engaged’ covers: employers, self-employed, and employees encompassing not only those “on the tools” but also people fulfilling overhead functions required to operate the business.

FIGURE 17: GDP PER HOUR (USD)



Source: OECD

When considering productivity, we need to look not only comparatively within New Zealand, but more importantly outside our borders. Figure 17 shows New Zealand’s productivity based on GDP generated per hour worked compared against a basket of OECD countries.

New Zealand’s 20-year growth was 19.32% (low) and had the lowest GDP per hour worked:

- US\$35 in 2000 – US\$8.90 behind the next lowest, Australia
- US\$41.80 in 2020 – US\$11.80 behind the next lowest, Australia.

Denmark is recognised as a SAE (Small Advanced Economy) along with New Zealand, so this is where to aim – our size need not hold us back. New Zealand is the lowest generator of GDP per hour worked and the gap is widening – improving capability and productivity needs to be part of the plan for Construction Workforce Planning. <https://data.oecd.org/lprdy/gdp-per-hour-worked.htm>

Going forward we need to consider the workforce as a combination of not only hands on tools, but also:

- skills through training and ongoing development
- systems that support & grow workforce performance
- the adoption of better technology when beneficial.

Improvement in systems, management capability and greater adoption of technology are all means by which this can be achieved.

IMPACT OF CHANGE IN PRODUCTIVITY

FIGURE 18: INCREASING PRODUCTIVITY REDUCES REQUIRED WORKFORCE

Δ PRODUCTIVITY p.a.	Δ PRODUCTIVITY 15-YEAR	Workforce	Δ Workforce	WM
1.770%	30.1%	41,024	Status Quo	56.6
2.5%	44.8%	36,853	-4,171	50.8
3.0%	55.8%	34,259	-6,765	47.2
3.5%	67.5%	31,859	-9,165	43.9
4.0%	80.1%	29,637	-11,387	40.9

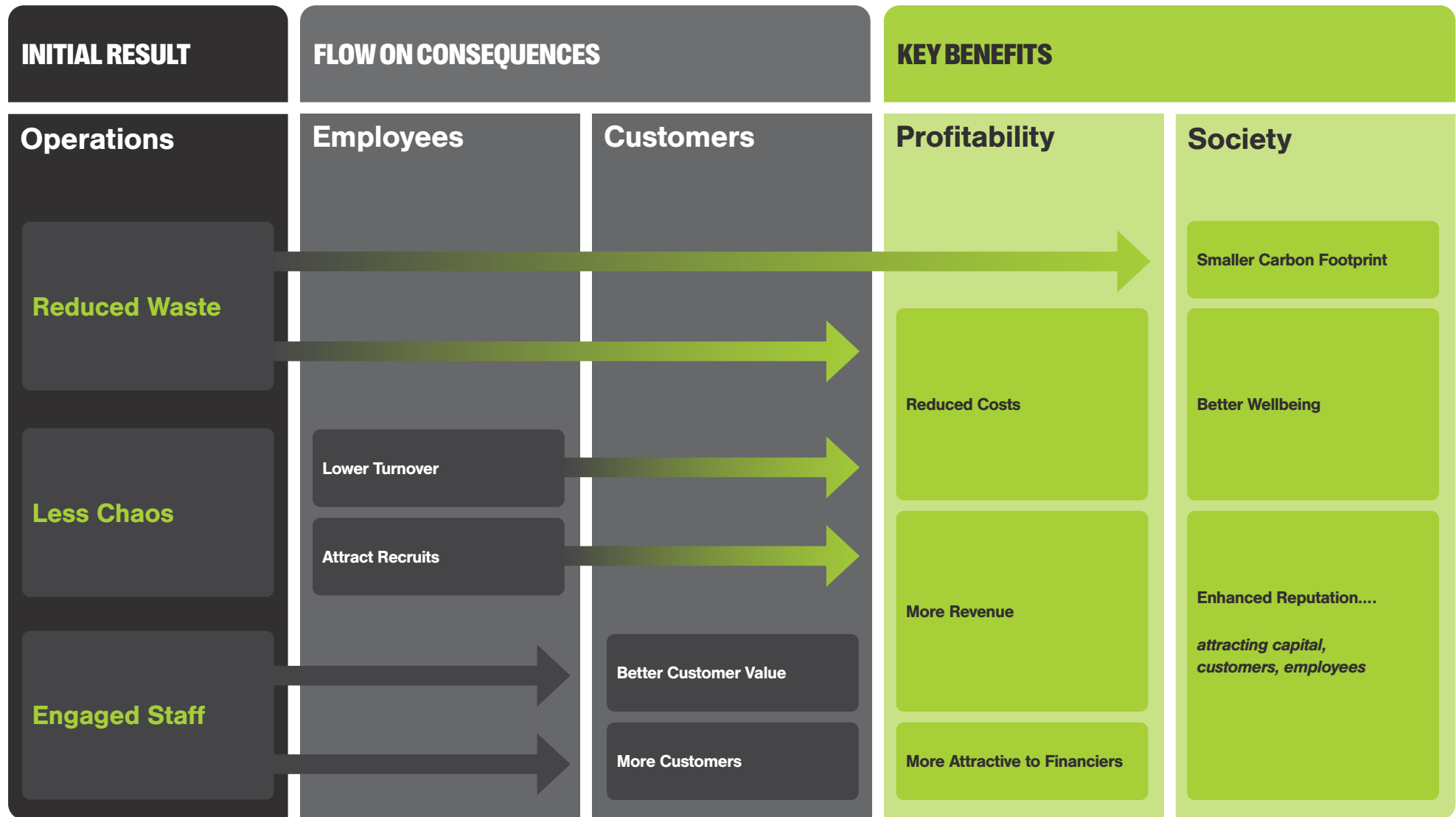
Source: Stats NZ + Analysis

This table shows the impact of different average annual productivity changes over the 15-year period and the impact it has on workforce numbers.

For New Zealand generally productivity improvements have been tied to working more hours.

Our future efforts must switch to working smarter.

FIGURE 18.1: THE BENEFITS OF IMPROVING PRODUCTIVITY

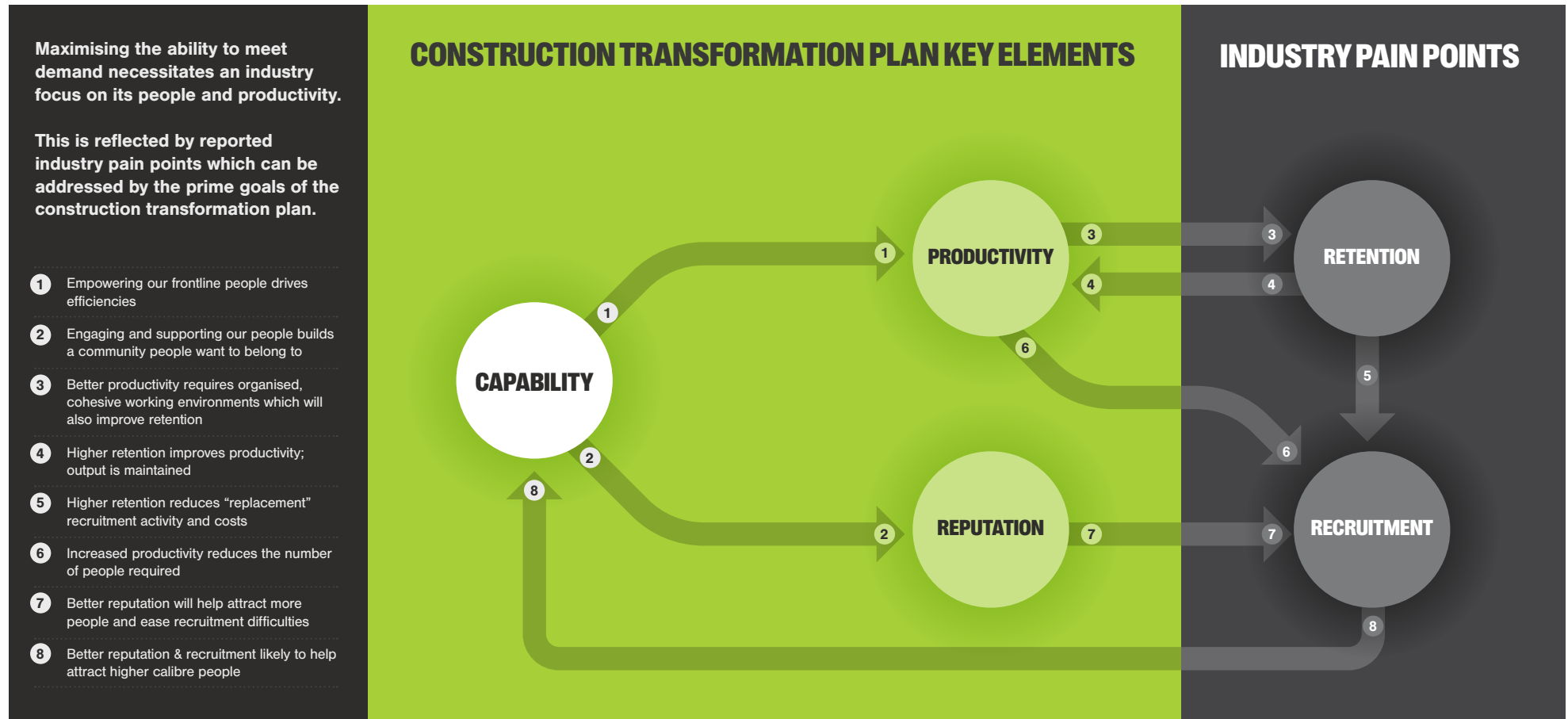


The commercial impacts of this are significant – the change in workforce numbers means a significant decrease in labour costs, even when factoring in likely increases in remuneration in recognition of the improved productivity.

2.1.3 OPTIMISING WORKFORCE CAPACITY

Figure 19 shows the relationship between the industry pain points 'recruitment and retention' identified in the workshops and the key elements of the Construction Transformation Plan, being capabilities, productivity, and reputation.

FIGURE 19: OPTIMISING WORKFORCE CAPACITY



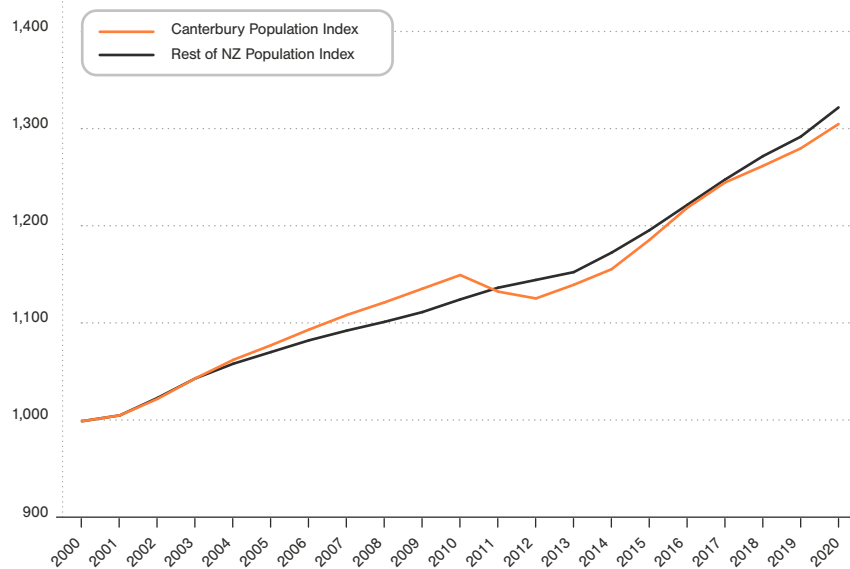
2.1.4 THE RELATIONSHIPS THAT DRIVE WORKFORCE DEMAND

The key drivers of construction workforce demand are population growth and GDP per capita growth. The following section highlights what has happened to those economic drivers over the past twenty years.

The following graph series demonstrates economic trends of the construction demand drivers in the 20-year period to 2020 within the region. This series follows the chain reaction that leads to construction workforce demand. What the graphs do not clarify is the detail of external investment which typically shows up on our graphs as spikes in the trend.

POPULATION CHANGE

FIGURE 20: POPULATION TREND



Source: Stats NZ

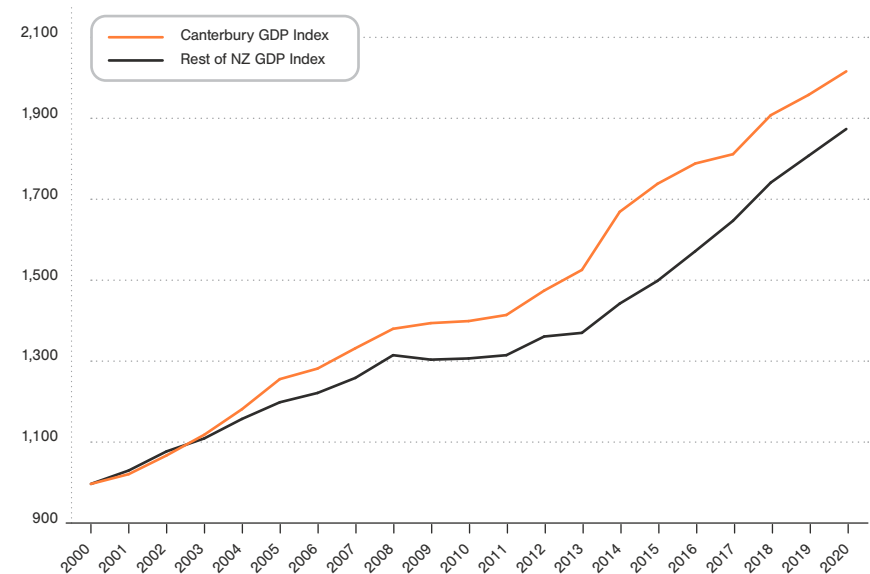
The Canterbury region's population has grown 30.49%, slightly more slowly than the Rest of New Zealand which grew 32.16%.

This has one impact on the region's GDP growth and level of construction investment from regionally driven demand.

New Zealand grew by 31.95% for the 20-years to 2020.

GROSS DOMESTIC PRODUCT

FIGURE 21: GDP TREND

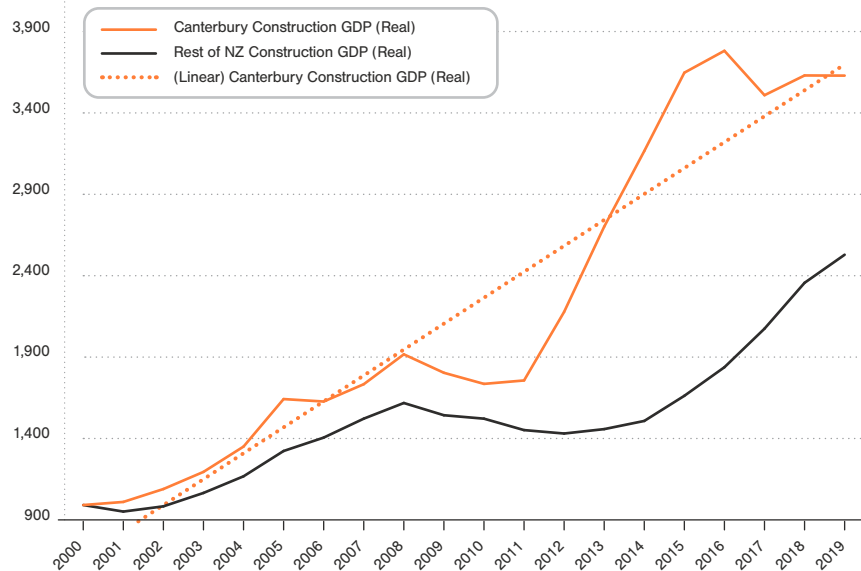


Source: Stats NZ

The gap in GDP trend between Canterbury and the Rest of New Zealand has been widening since 2008 with Canterbury GDP growing 45.91% in the twelve years compared to 42.29% for the Rest of New Zealand.

REGIONAL CONSTRUCTION GDP

FIGURE 22: CONSTRUCTION GDP



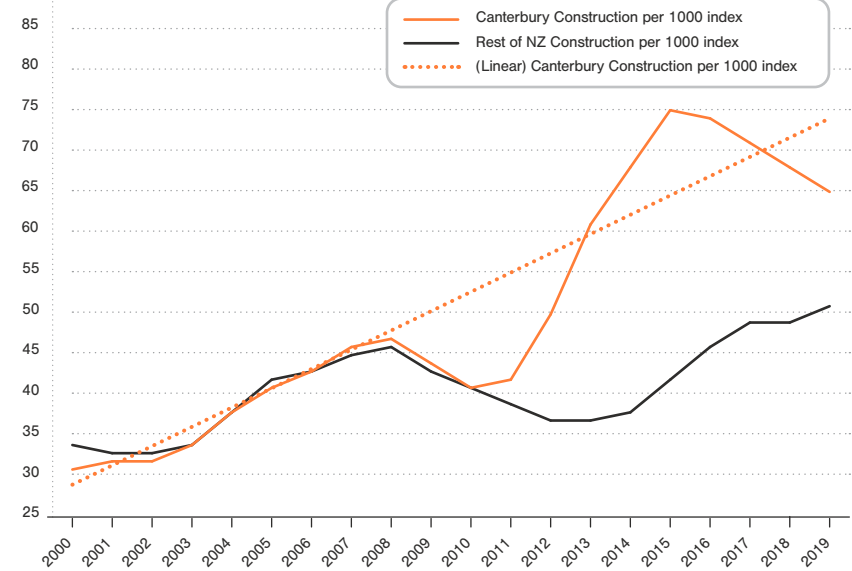
Source: Stats NZ

This table shows Canterbury’s Construction GDP trends for the 2000 – 2019 period compared to the trends for the Rest of New Zealand.

Canterbury has moderately been ahead of the Rest of New Zealand until 2011. Following the Canterbury earthquakes Construction GDP grew 105.9% compared to 73.6% for the Rest of New Zealand for the eight-year period until 2019. Growth has dampened since 2017.

CONSTRUCTION WORKFORCE

FIGURE 23: WORKFORCE METRIC TREND – CANTERBURY V. REST OF NZ



Source: Stats NZ

The previous graphs showing the economic drivers of construction workforce demand leads us to the impact that these have on our metric, Construction Workforce per 1,000 of general population.

Canterbury WM has grown from 31.4 in 2000, to 66.8 in 2020 – 112.74% growth. Down from a peak of 75 in 2015.

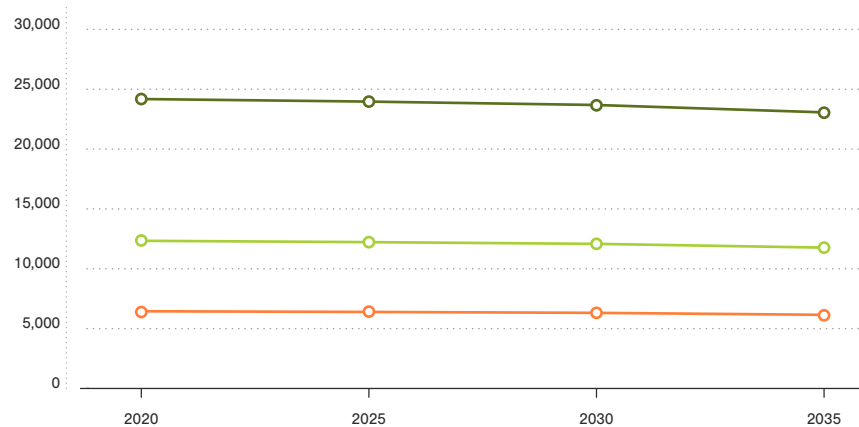
Construction workforce grew by 27,518 or 177.68% compared to population growth of 30.49% for the 20-year period.

2.2 Concept Two – Current v. Future; gaps and options

2020 WORKFORCE & PROJECTED 2035 WORKFORCE

FIGURE 24: WORKFORCE FORECAST SUMMARY

CANTERBURY		CONSTRUCTION WORKFORCE NUMBERS			
ANZSIC Code	ANZSIC ANALYSIS for CONSTRUCTION	2020	2025	2030	2035
E30	○ VERTICAL BUILDING	12,350	12,240	12,095	11,781
E 32	○ VERTICAL SERVICES	24,186	23,972	23,688	23,072
E 31	○ HORIZONTAL	6,469	6,412	6,336	6,171



Source: Stats NZ + Analysis

This table shows the 2020 position and the 2035 projection for the construction workforce analysed by ANZSIC code. The graph shows the 2035 top 3 'E' ANZSIC classifications.

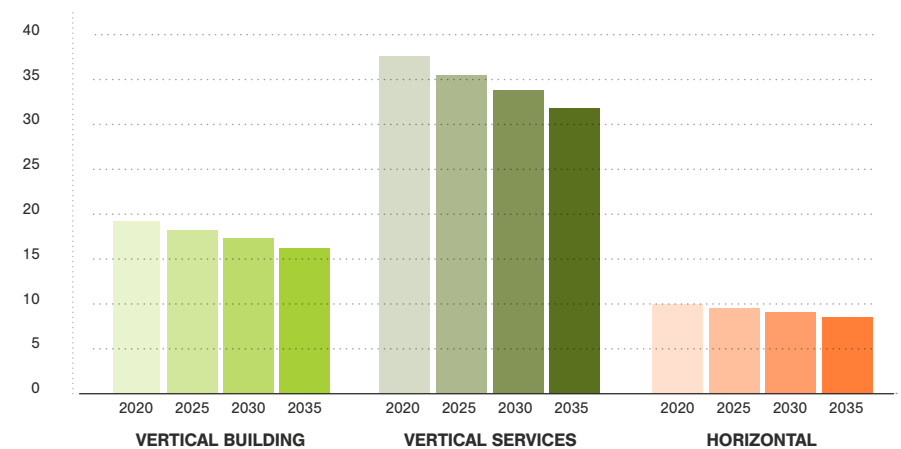
This data is collected annually by company classification and includes all the people engaged in the workforce, including overhead staff which we guesstimate being somewhere between 18 – 20% of the workforce.

The ANZSIC figures have been reconciled to the Household Labour-Force Survey by applying a multiplier to the Geographic Units figure. While these figures are not perfect, they are the closest indication we can make based on understanding the drivers of construction workforce demand identified in section 2.1.

2020 & PROJECTED 2035 WORKFORCE METRIC

FIGURE 25: WORKFORCE METRIC FORECAST SUMMARY

CANTERBURY		CONSTRUCTION WORKFORCE NUMBERS			
ANZSIC Code	ANZSIC ANALYSIS for CONSTRUCTION	2020	2025	2030	2035
E30	○ VERTICAL BUILDING	19.2	18.2	17.3	16.2
E 32	○ VERTICAL SERVICES	37.6	35.6	33.8	31.8
E 31	○ HORIZONTAL	10.0	9.5	9.0	8.5



Source: Stats NZ + Analysis

The allocation of the workforce to the ANZSIC classification has been done on a last two-year share basis. Some regions may have trends, e.g., a higher rate of growth in Air Conditioning & Heating Services as the skills lend themselves to setting up and maintaining plant being installed as part of the decarbonization programme. However, these are likely to be incidental in the overall picture bearing in mind this is intended as a best indication.

The following table shows the Workforce Metric (WM) position for 2020 and projections for 2035. This value discounts the population growth factor from the equation, so we can see more clearly the change in workforce driven by the change in GDP construction: GDP and productivity.

BENEFITS OF IMPROVING PRODUCTIVITY

- Raises profitability by reducing cost
- Reduced waste lessens our carbon footprint
- Improves access to capital by making us a better investment proposition.

The conditions required to improve productivity improve the workplace resulting in reduced attrition, improved attractiveness for recruits, and becoming more competitive in the job-market. A more stable and engaged workforce also attracts more customers.

For more detailed analysis by ANZSIC codes refer Appendix Tables 6 and 7.

2.3 Concept Three – Making better choices

Construction investment-decisions impact our society and shape our future. A balanced investment approach is required to ensure a sustainable society. We are introducing a potential impact-criteria model which takes a holistic approach to construction activity focusing on activity outcomes.

“Sustained growth in the construction sector means it is near operating capacity. ...It will be important to ensure that this limited capability is directed to investments that provide the greatest value to New Zealanders.”

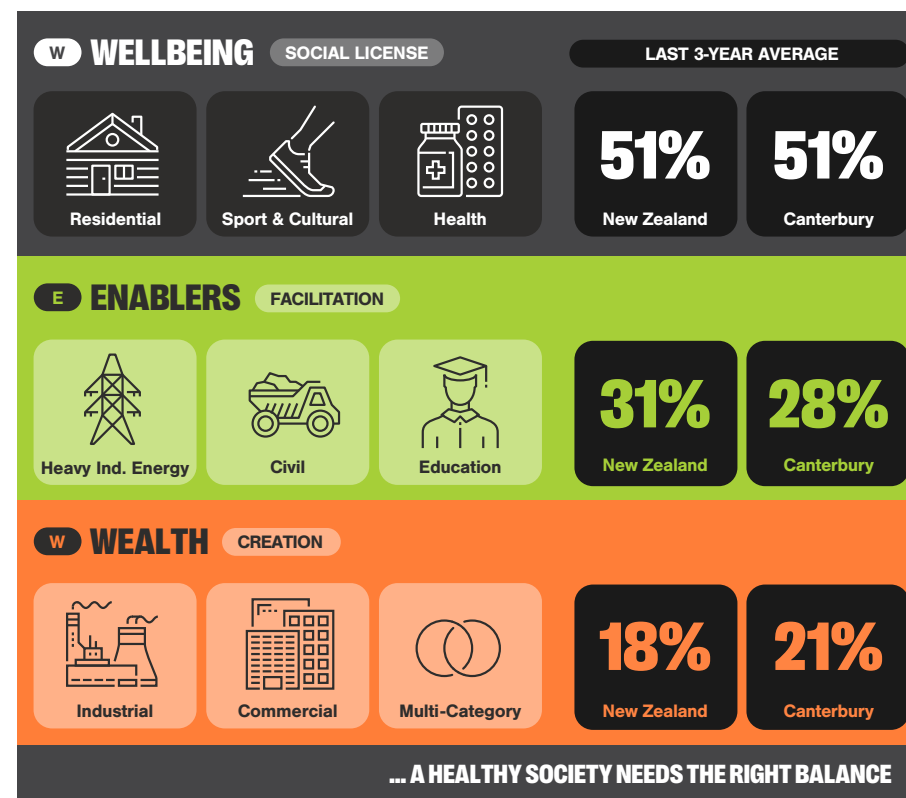
The Treasury – 2022 Investment Statement

Our society needs a balanced approach to these forms of investment. By looking at some of our investment options in this way we may find some of the decisions that need to be made are helped by adding this societal lens, identifying potential areas of under and over investment that weaken our progress as a region and as a country.

Capacity constraints ultimately require prioritising projects into action, defer, and cancel. This model guides the prioritisation process based on the societal outcomes produced by a construction project, and the needs of the community, particularly where under or over investment can be identified for a particular outcome category.

The figures so far are based on 6 years – 2015 to 2020, and while these reflect our national average, they do not necessarily strike the right balance given New Zealand’s current housing and infrastructural challenges. A more detailed set of tables can be seen in the Appendices in section 4.1.

FIGURE 26: CONSTRUCTION OUTCOMES IMPACT MODEL



Perhaps by using this model and refining it we will avoid recreating our current shortfall in housing stock and underinvestment in infrastructure, as visibility generally leads to better management. We are not suggesting this as anything more than a start – encouraging:

- thought and discussion
- visibility and accomplishment.

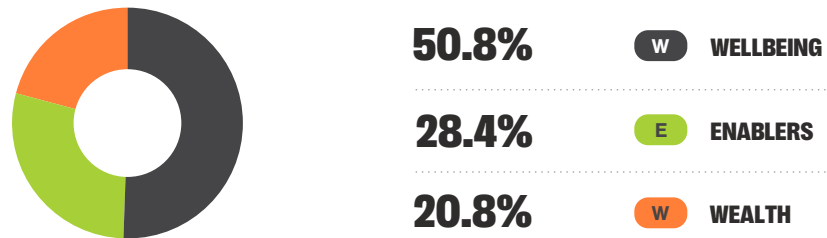
“Done is better than perfect” Mark Zuckerberg

Balance of Construction Investment

The graphs demonstrate that the balance between Wellbeing, Enablers, and Wealth (WEW) are in line with the national split. Our outcome-based model allocates construction activity into three categories summarized below:

WELLBEING OUTCOMES

FIGURE 27: CANTERBURY CONSTRUCTION OUTCOMES 2018-2020 AV.



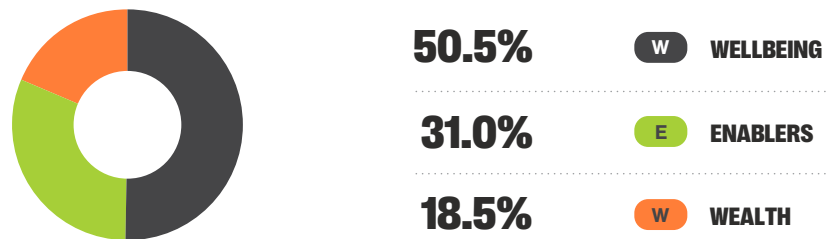
Source: www.wip.org.nz

WELLBEING is defined as the institution of social license by providing shelter and welfare, through residential building and retirement villages, health facilities, and recreational and cultural facilities.

Housing, retirement villages, health, sporting, and cultural construction projects that form an important part of political leadership and societal social license. Weakness in these areas is a source of unrest and disruption – inconsistent with the democratic ideal.

ENABLER OUTCOMES

FIGURE 28: NEW ZEALAND CONSTRUCTION OUTCOMES 2018-2020 AV.



Source: www.wip.org.nz

ENABLERS is defined as the conditions that must exist to generate prosperity such as educational facilities and communications including telecommunications, roading, bridges, ports, tunnels, airports, and of course energy and three waters.

These are the elements that are required to facilitate and attract Wealth generators.

WEALTH OUTCOMES

WEALTH is defined as structures that house our productive capability for commercial, industrial, and agricultural endeavours.

These are the end-use wealth producers, commercial, industrial, and aqua/agricultural trading in goods and services regionally and internationally.

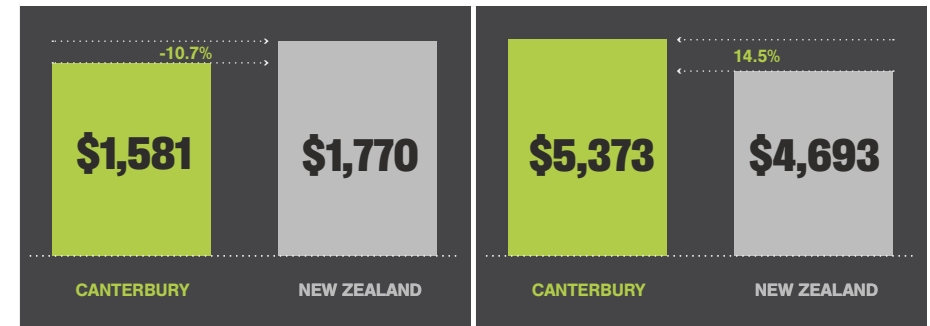
Any society needs a balanced investment in all three categories to be sustainable. Our contention is that when faced with over demand we can use these criteria as part of the investment decision-making process e.g., prioritising projects that correct an imbalance and avoid projects that create one.

HORIZONTAL AND VERTICAL SPEND

In round figures, New Zealand has a last-3-year average construction spend per capita of \$6,463 v. Canterbury at \$6,954 per capita.

FIGURE 29: HORIZONTAL PER CAPITA SPEND

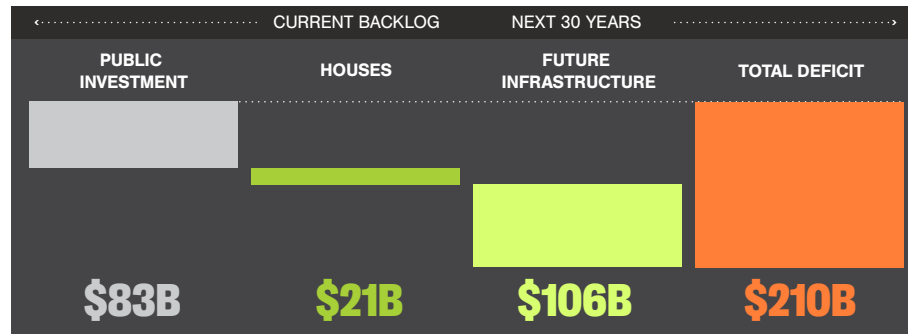
FIGURE 30: VERTICAL PER CAPITA SPEND



Source: www.wip.org.nz

Canterbury spends 7.6% more on construction per capita than the New Zealand average. Vertical spend per capita is 14.5% higher, while the Horizontal spend per capita is 10.7% less. This reflects Canterbury’s rebuild programme rather than population growth – in the 20-years to 2020 Canterbury grew over 1.27% slower than the Rest of New Zealand.

FIGURE 31: THE TREASURY'S ESTIMATED INFRASTRUCTURE DEFICIT



Source: The Treasury

The Treasury's 2022 Investment Statement has identified a \$210B infrastructure deficit:

- **\$104B – what should have been built, but has not**
 - \$83B shortfall in public investment
 - \$21B estimated to eliminate the current housing shortage
- **\$106B future infrastructure gap over the next 30 years**
 - what government is planning to spend v. identified demand.

He Puna Hao Pātiki: 2022 Investment Statement (treasury.govt.nz)

WIP PROJECTIONS 2022 – 2025

The following table shows the pipeline of work as reported through the Workforce Information Platform, this data is sourced from Pacifecon (NZ) Ltd and is in NZ\$M.

FIGURE 32

Year	NZ Total \$M	PER CAPITA
2022	92,810	\$17,941
2023	82,355	\$15,771
2024	54,855	\$10,422
2025	40,076	\$7,450
4Y Total	270,095	

Source: Stats NZ + Analysis

New Zealand – the pipeline for 2022 shows \$92.8B worth of projects – this is compared to our capacity in 2019 and 2020 of under \$33.5B. Our largest step-jump was between 2018 and 2019 where activity grew by just under \$4B – given market feedback on tight labour-market conditions and supply-chain challenges, we would estimate that the next 4-year pipeline of \$270B is the equivalent of just over 7 years' work.

FIGURE 33

Year	Canterbury	PER CAPITA
2022	9,914	\$15,127
2023	8,228	\$12,447
2024	6,733	\$10,098
2025	4,993	\$7,423
4Y Total	29,868	

Source: Stats NZ + Analysis

Canterbury – the pipeline for 2022 shows almost \$9.9B worth of projects – this is compared to our capacity in 2019 and 2020 of under \$4.2B. Our largest step-jump was between 2018 and 2019 where activity grew by just over \$68M – given market feedback on tight labour-market conditions and supply-chain challenges we would estimate that the next 4-year pipeline of \$29.9B is the equivalent of just under 7 years' work.

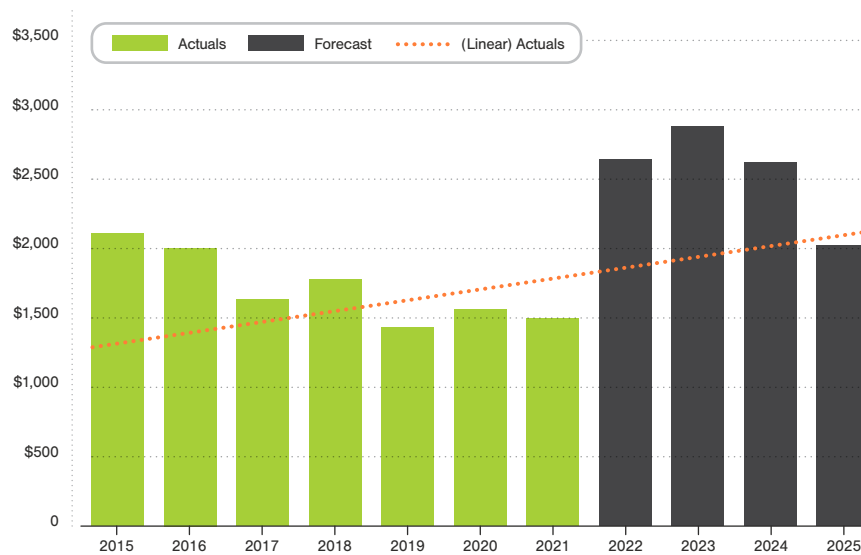
Regardless of the detail, the overall sentiment is that demand for construction will remain high for the foreseeable future. This adds merit to our call to plan and develop our workforce and its capability to the trendline of demand. Should we persist with managing our workforce to the boom – bust economic cycle we will continue to build a backlog of work which will become more expensive to deliver.

CANTERBURY HORIZONTAL AND VERTICAL CONSTRUCTION ACTIVITY 2015 – 2025

The graphs below show actual per capita activity and projected activity from 2015 through to 2025 analysed by Horizontal and Vertical Construction categories. We have calculated the 2021 figures as being the average of 2019 and 2020.

We believe that the trendline in the graphs below show the realistic capability of the sector to deliver work based on past actual performance and conditions prevailing for the sector today.

FIGURE 34: HORIZONTAL CONSTRUCTION ACTIVITY PER CAPITA



Source: Stats NZ

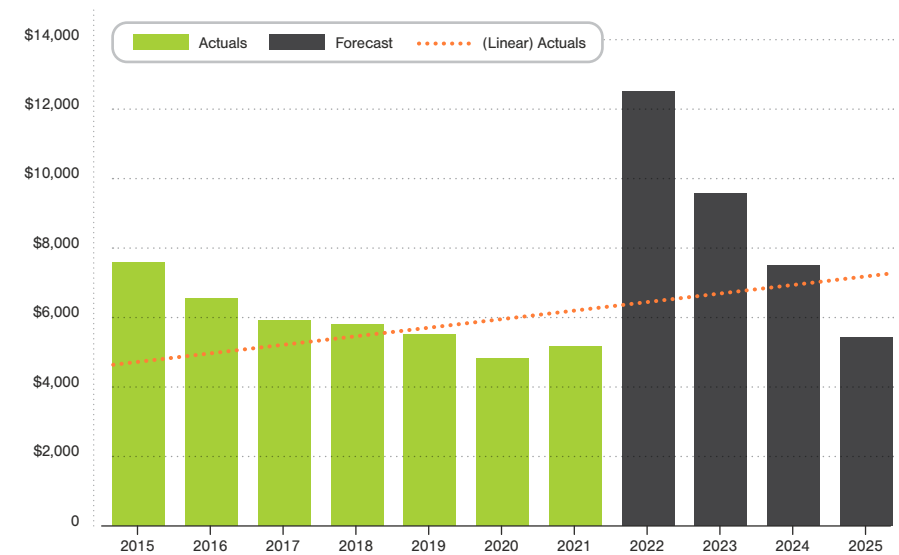
The forecasts shown above the trendline are likely to be pushed out into the future or cancelled.

Our expectation is that cancelled projects will inevitably be replaced with others given the infrastructure gaps referred to earlier.

This table shows the per capita construction spend analysed by the Horizontal and Vertical sectors.

The Horizontal sector experience almost a doubling of demand, whereas demand for the Vertical sector more than doubles.

FIGURE 35: VERTICAL CONSTRUCTION ACTIVITY PER CAPITA



Source: Stats NZ

The gap for the Vertical sector is even more pronounced with additional demand of more than \$7,300 per capita in 2022.

Obviously, this is undeliverable hence the call for:

- ➔ alternative decision models to assist determining project priority based on the societal outcomes
- ➔ a focus on productivity, and the capabilities that requires to achieve over the long term.

We have adjusted the trend line to better reflect the downsizing of the Christchurch Rebuild and take the forecast growth rate for Construction GDP. This differs from an Actuals-based trendline which shows a downward trend coming off the peak construction activity in 2015.

**CANTERBURY 2022
REGIONAL CONSTRUCTION
WORKFORCE PLANNING
& DEVELOPMENT**

**03.
WORKSHOP
OUTCOMES**



Photo: Waihanga Ara Rau

03 WORKSHOP OUTCOMES

3.0 Workshops Background

Regional workshops were first held to share and review the implications of information stemming from the launch of the Workforce Information Platform. www.wip.org.nz The information showed that the demand for construction services significantly outstripped supply which posed a substantial problem nationally and regionally.

Workshops were tasked with identifying workforce barriers, potential solutions, and priorities leading to recommendations. The focus of each workshop series across New Zealand was to bring a regional voice to the project which is reflected in the recommendations. Some regions looked at successful case studies from outside their region as a way to inspire other solutions, without the need to re-invent the wheel.

After eleven regional workshops were carried out a review found that the issues faced regionally were in most cases common throughout of the country – the demand/supply gap, recruitment, and retention.

3.1 Evolution

Over time three key solutions themes emerged: increase the workforce, do more with the workforce we have, and postpone or cancel projects to reduce demand.

While new entrants to the construction workforce are growing, they are insufficient to fill the demand gap, particularly in the short to medium-term.

As a result, our focus shifted to identifying the long-term implications, which is why the first section of our report looks at how we do more with the workforce we have, and how we might sensibly prioritise construction projects to filter demand with the least detriment possible to our regional societies.

It is important to recognise that each section of work provides its own value to the journey of learning and adapting. Without the former, the latter will not follow.

The workshop series not only allowed us to get a holistic view of key issues across the region, but also presented potential solutions and priority areas that industry leaders could focus on. It also included gaining a regional perspective of the national industry issues.

ASSESSMENT CRITERIA

Key stakeholders from the construction industry, councils, government agencies and schools, participated in the regional workshops. They were presented with a range of national issues and feedback was provided on whether these issues substantially impacted their region. Then further input was solicited from the participants to identify specific construction issues in the region. The first initial assessment was grouping the barriers into themes which were identified as: attracting people to construction and infrastructure, supporting employers, supporting workers, and training and upskilling.

3.2 Construction Transformation Plan Workstreams and Outcomes

We believe that the Construction Transformation Plan provides a useful framework and is outlined here.

LEADERSHIP

The aim is to be known as trusted and respected professionals. Creating a high-performance culture through collaborative and transparent work practices.

BUSINESS PERFORMANCE

Business success that is resilient and sustainable; successful leadership working to encourage greater pipeline certainty, confidence to make the investments necessary for future profitability and balance sheet strength.

PEOPLE DEVELOPMENT

Safe, secure, and rewarding careers offering job security, career pathways with opportunities to upskill and increase earning power. A more representatively diverse workforce continuously improving capacity and capability.

HEALTH, SAFETY, AND WELLBEING

All our people home safe every day; work environments that support not only physical but thriving mental health and wellbeing.

REGULATORY ENVIRONMENT

Quality durable builds that are consistent, reliable with timely project delivery, fit-for-purpose options covering products and services.

PROCUREMENT AND RISK

Better whole-of-life value and fair risk allocation; transparency building trust and confidence delivering a stable, healthy, and more productive construction sector.

3.3 Workshop Analysis

! All feedback expressed in this section is from industry. Data has been deliberately kept in its verbatim raw state to retain the authenticity of ideas shared in the workshops.

#1 Theme: Attracting people to construction and infrastructure. Focus areas:

Promotion about the trades and careers	Better pathways and perception for school leavers	Incentives or things that will make the sector attractive	Females in construction	Standard training model
CURRENT SOLUTIONS				
<ul style="list-style-type: none"> Tricky chat advertisements promotion targeting parents Career/Pathways expos 	<ul style="list-style-type: none"> Gateway programme 	<ul style="list-style-type: none"> Fees Free 	<ul style="list-style-type: none"> Trade careers woman's advocate – Kelly BCITO 	
FUTURE SOLUTIONS				
<ul style="list-style-type: none"> Career advisors with better knowledge about the trades Better understanding of a good career path Promote the \$ to be made, real life examples More expos 	<ul style="list-style-type: none"> Start earlier, don't wait until they are leaving school Practical school subject options Promotion through careers advisors and principles Exposure to practical activities in primary school Real life testimonials 	<ul style="list-style-type: none"> Clear career pathways and earning potential in marketing and school Resources into primary schools that are trade specific "hammers for schools" Sharing knowledge about funding Financial support from government investments in industry 	<ul style="list-style-type: none"> Exposure to trades in general Changing people's perception and attitudes Encouragement from parents that this is a path for women too Better inform people that there is technology and tools to make it easier for women Culture on site 	<ul style="list-style-type: none"> During RoVE – consistency in models that are currently being used, student centered learning To attract apprentices and uplift experienced tradies, we need a centralised approach to training Digital standardised RPL, apprenticeship training

#1 Theme: Attracting people to construction and Infrastructure. Focus areas:

Case Study: Attracting people to construction and infrastructure

A Tricky Chat – BCITO 2019 TV advertisement

BCITO took a bold step to change the negative perception of the trades by influencers (parents, family member).

Did it work? Yes, not only with influencers but a positive shift by career seekers wanting to explore the opportunities in building and construction was observed.

Also, there was a rise in social engagement, with people wanting to know what happened next.

Did Michael the young career seeker pursue a career in the trades, or did he follow what his parents wanted, which was for him to go to university.

BCITO – "A Tricky Chat"

<https://www.youtube.com/watch?v=N9YdpqYhRe8>

Followed by BCITO – "Tricky Chat II – The Stake Out"

<https://www.youtube.com/watch?v=dHjQAf9QUfY>

Trade up to a construction apprenticeship

bcito.org.nz/tradeup

BCITO
building people

#2 Theme: Supporting employers. Focus areas:

Utilising the aging workforce

Education for pastoral care strategies and practices

Rising business costs

Improving information & access to government assistance

Time and cost to train

CURRENT SOLUTIONS

- Skills hub
- Connected NZ website
- Mana in Mahi – cash incentives for employers and employees
- Apprenticeship boost scheme
- Ngāi Tahu scholarship scheme

FUTURE SOLUTIONS

- Use them as trainers, utilise their fountain of knowledge
- Make flexible conditions of employment
- Identifying those who are best for passing on knowledge
- Dad’s army of trainers – retired builders doing training
- Use them as business mentors
- Set up a mentoring system where businesses with experience in pastoral care is shared
- LBP Master Builders – part of renewal of licenses (optional)
- Better training for tradies that don’t have middle management skills (support)
- Train the trainer
- Best mentors for cross training with others rather than sitting in a classroom
- Innovation workshops as part of WDC working with industry across all of NZ – innovative ways of delivering so industry gets involved
- Ongoing platform where ideas and knowledge can be shared
- Simple things like obtaining a driver’s license being moved to govt responsibility
- “Skills Hubs” or similar one-stop-shop for support, possibly an online portal
- 3-month trial period
- Networking and communicating better between industry and Government
- Centralised source of information to support employers
- Consistency in information provided
- Coordination/communication across Government and local organisations regarding available funding
- Give staff the time to learn
- Incentive to ensure employers will get benefit from cost and effort put into training
- Use a bonding contract
- Paying staff to learn

#2 Theme: Supporting employers. Focus areas:

Case Study: Supporting employers

Mana in Mahi

Mana in Mahi is aimed at upskilling New Zealand jobseekers into industries with recognised skills shortages. It offers employers financial incentives for employing either a Work and Income job seeker, or someone not on a benefit but with barriers to employment, with the intention of offering either an apprenticeship or industry related qualification.

Most jobseekers who partake in Mana in Mahi will start their paid employment on day one and work towards a relevant industry training qualification. Depending on the training pathway and needs of the person you're employing, Mana in Mahi can provide:

- a wage subsidy of up to \$16,000 in your employee's first year and up to \$8,000 in their second year while still training up to \$2,000 to help with pre-employment training
- Work and Income also assists new workers to seamlessly commence work by meeting other needs such as:
 - Upgrading from a restricted to full drivers' license
 - Purchase of appropriate footwear
 - First aid training and certification
 - Other employment related training such as Site Safe Certificate, safety at heights.

<https://www.skillsinconstruction.govt.nz/construction-skills-action-plan-programme/mana-in-mahi-strength-in-work/>



#3 Theme: Supporting & retaining employees. Focus areas:

Supporting further training and upskilling

Job satisfaction

Loyalty and long service incentives

Flexibility in work environments

CURRENT SOLUTIONS

- Online or job construction management qualification

FUTURE SOLUTIONS

- | | | | |
|---|---|---|--|
| <ul style="list-style-type: none"> • Money paid directly to employee • Time to train • Understanding career pathways • Sharing knowledge moving people into roles to broaden the skill set. • Keeping development internal not just external | <ul style="list-style-type: none"> • Gold star rating for employers • Creating the right work culture • Understanding employment rights and obligations • Open communication – feel comfortable talking to managers (part of mental health as well) • Appreciate being listen to / spoken with | <ul style="list-style-type: none"> • Long service leave • Higher % on kiwi saver for older staff • Qualification to unlock a tax break for businesses that hold employees for longer periods of time as an example 25% above a 5-year tenure, for the financial year • Health insurance • Ashburton DC family first – paid time to go to school assemblies etc | <ul style="list-style-type: none"> • Flexibility in work hours • Job share • Managing the younger generation – what works for them • Supporting aging workforce by utilising their skills (specific tasks [light weight], coaching, flexible working hours and days) • Targeted recruitment for non-qualified labor force to support aging workforce – NO pressure to undertake apprenticeships • Encouraging a gap year – take a year in construction before making career decisions • Use of tech/to develop apps/platform to share workforce |
|---|---|---|--|

#4 Theme: Immigration changes. Focus areas:

Cost for residency and unknowns

Restrictions on migrant workforce throughout the regions

Visa sponsorship and support

More people through immigration

CURRENT SOLUTIONS

- Nationwide can put in up to 8 regions currently – is this well communicated and known by advisors and immigrants?

FUTURE SOLUTIONS

- | | | | |
|---|---|---|---|
| <ul style="list-style-type: none"> • Free/lower the cost for residency visa particularly on skills shortage lists • More affordable health insurance options – until becoming a permanent resident • Online support and monitoring platform to track where immigrants are working • Free/reduced costs for immigrants | <ul style="list-style-type: none"> • INZ to change skills shortage immigrants to be able to move flexibly to other regions that have shortages of their particular skill • Link to an online monitoring platform for immigrants to access and see what regions have a shortage of their skills that they will be allowed to move to | <ul style="list-style-type: none"> • Government support/assistance for completing immigration documentation and process • Bonding workers to New Zealand and keeping them within the industry – not bonded to a specific employer for 2-3 years | <ul style="list-style-type: none"> • Children of migrants given the same accessibility to free education (not just classified as international students) |
|---|---|---|---|

#5 Theme: Attracting workers to the region. Focus areas:

Promoting the region

Employment for partners and family

Housing shortages and rising accommodation costs

Pay parity nationally and internationally

CURRENT SOLUTIONS

- | | | | |
|---|---|---|---|
| <ul style="list-style-type: none"> • Venture Timaru has a suite of promotional materials for businesses to utilise | <ul style="list-style-type: none"> • There is a business Hub in Oamaru – Business Hive | <ul style="list-style-type: none"> • Ashburton District Council provides a “Council flat” for new employees for 6 months | <ul style="list-style-type: none"> • Promoting benefits of “Timaru Living” e.g., no commute, pay vs. cost of living – Venture Timaru • National Ad campaign to attract workers underway |
|---|---|---|---|

FUTURE SOLUTIONS

- | | | |
|---|--|--|
| <ul style="list-style-type: none"> • Faster service for substantial services (e.g., new roof on your house gets done faster than in Auckland) • Lifestyle – short commute, boat, caravan, classic car, cost of housing, lakes mountains, beaches • Lower cost for substantial services | <ul style="list-style-type: none"> • Shared Spaces – BNZ space available for businesses to have meetings • New Move – Tax credits from IRD- additional payment to move (for 1-2 years) especially with children • Good opportunities for different fields – not just working in the office • Develop a “Business Hub” where businesses can go to operate their own businesses with Wi-Fi, kitchen etc. | <ul style="list-style-type: none"> • Alternative Housing – collectives/tiny houses (legislative change required) • Businesses purchasing housing for employees in regions for large projects. Part of employee accommodation package |
|---|--|--|

#5 Theme: Attracting workers to the region. Focus areas:

Case Study: Attracting workers to the region

Tiny Houses

- In New Zealand and internationally the tiny houses movement has been gaining popularity. Tiny houses are self-contained homes that are considerably more compact than more traditional house plans. Tiny houses have become popular in response to both high house prices and growing interest in reducing consumption and environmental sustainability.
- Some tiny houses are mobile and can be transported either under their own power or on a trailer while others are built in place. However, if you plan to occupy it permanently, you need to ensure that the tiny house remains movable to ensure it remains exempt from the Building Act.
- While some district councils are actively welcoming tiny homes on wheels, this is not the case with all councils.
- Council Code Compliance for purpose built prefabricated tiny homes, such those built by NZ Tiny Homes, now encourages more people to invest in tiny houses which could help address accommodation shortages.

Sources: <https://www.nztinyhomes.com/> and <https://www.buildtiny.co.nz/faq>



RECOMMENDATIONS

The coming months and years will be critical to the retention, maintenance, recruitment, and upskilling of the Construction workforce needed to meet the level of work planned:

As the rest of the country moves into a construction and infrastructure workforce crisis, it is our recommendation that the focus for the greater Canterbury region should be on supporting employers and employees to retain the existing workforce. This would include:

- regular events to share knowledge and best practices
- ensuring competitive remuneration is sustained comparative to other regions
- progressive pastoral care practices
- cultural changes and practices that support the inclusion of women and diversity in the sector

Build on the connections made through this project to put in place a network of anyone interested or invested in construction employment and training in the region.

**CANTERBURY 2022
REGIONAL CONSTRUCTION
WORKFORCE PLANNING
& DEVELOPMENT**

**04.
APPENDICES**



Photo: Connexis

04 APPENDICES

4.1 Key inputs for Workforce Planning metrics

Metrics are a useful way to focus attention on the important elements necessary for success. These vary greatly dependant on the activity and the definition of success.

In our case, our activity is Construction Workforce Planning and Development. Success is a resilient and sustainable construction sector that contributes to build a healthy, affluent democracy.

POPULATION

Change in population impacts the demand for construction activity, however, it is not the only driver of construction demand.

TOTAL WORKFORCE

From this number we can see the proportion engaged in work which produces a monetary return – a higher proportion generally supports a greater distribution of wealth. Typically, greater wealth drives higher demand for construction.

Within the total population there are people who are part of the workforce and those who are not.

Our report does not make a study of this relationship, focusing instead on the primary rather than supplementary drivers.

CONSTRUCTION WORKFORCE

We use this data for determining relationships that provide some insight into the future needs of workforce numbers and productivity.

GROSS DOMESTIC PRODUCT (GDP)

A higher GDP typically reflects a higher standard of living – which drives demand.

$GDP = (Consumer\ Spending) + (Government\ Spending) + (Business\ Capital\ Spending) + (Exports - Imports)$

It represents the economic output of a region or country reflecting the market value of all the products and services created.

CONSTRUCTION GDP

This represents the value created by the construction sector.

GDP PER CAPITA

This measure is used because it factors in population change thereby giving a more accurate view of the likely wealth and standard of living.

GDP divided by the population gives the GDP attributable to each citizen.

CONSTRUCTION GDP PER CAPITA

This number indicates the level of spend on construction on a per person level making for easy comparison with either other regions or countries.

The value created by the construction sector divided by the population.

We use these input metrics to produce our Construction Workforce Planning Metrics:



CWP

CONSTRUCTION WORKER PER 1,000 (WM)

measures our workforce compensating for population change



WM

CONSTRUCTION WORKFORCE PRODUCTIVITY (CWP)

indicator of workforce effectiveness

Our report endeavours to demonstrate how these metrics help us understand, plan, and manage our workforce and the development needs.

NEW ZEALAND CONSTRUCTION ACTIVITY 2015 TO 2020

APPENDIX TABLE 1

NEW ZEALAND SPEND \$M	2015	2016	2017	2018	2019	2020	L3Y av
Sport	56	42	108	151	278	143	1.2%
Residential	10,817	12,862	13,852	14,582	16,412	15,981	96.8%
Health	368	429	213	248	314	401	2.0%
Total Wellbeing	11,241	13,332	14,172	14,980	17,004	16,526	WELLBEING
Wellbeing Share	46.4%	50.8%	52.0%	51.1%	50.9%	49.7%	50.5%
Education	1,103	1,226	1,024	1,030	1,063	1,249	11.2%
Civil	7,370	7,200	6,900	7,600	9,500	9,200	88.4%
Heavy Industry/Energy	18	14	34	35	43	35	0.4%
Total Enablers	8,491	8,441	7,959	8,665	10,606	10,484	ENABLERS
Enablers Share	35.0%	32.2%	29.2%	29.6%	31.7%	31.5%	31.0%
Industrial	1,470	1,367	1,667	2,030	1,896	2,065	33.8%
Commercial	2,386	2,304	2,889	3,009	3,050	3,345	53.0%
Mult Category	638	780	564	615	858	859	13.2%
Total Wealth	4,494	4,450	5,120	5,654	5,803	6,268	WEALTH
Wealth Share	18.6%	17.0%	18.8%	19.3%	17.4%	18.8%	18.5%
Regional Total	24,227	26,223	27,251	29,299	33,413	33,278	31,997
Regional Activity/worker	\$113,157	\$112,689	\$109,399	\$116,775	\$127,079	\$126,567	NZ
Construction Population	214,100	232,700	249,100	250,900	262,930	262,931	L3Y av
Construction Popn share	4.7%	5.0%	5.2%	5.2%	5.3%	5.2%	5.2%
Construction Activity per capita	\$5,307	\$5,622	\$5,716	\$6,029	\$6,761	\$6,599	\$6,463
Horizontal Activity per capita	\$1,614	\$1,544	\$1,447	\$1,564	\$1,922	\$1,824	\$1,770
Vertical Activity per capita	\$3,693	\$4,078	\$4,269	\$4,465	\$4,839	\$4,775	\$4,693
Regional Population	4,564,900	4,664,200	4,767,300	4,859,800	4,941,900	5,042,900	

Source: www.wip.org.nz, Stats NZ & MBIE. Sources: Consents for Vertical and National Construction Pipeline Reports 2015 – 2021 for Horizontal, population NZ Statistics median forecast @ 5.75M by 2035 – Infometrics sourced for 2021 population.

CANTERBURY CONSTRUCTION ACTIVITY

This table shows the Canterbury construction history. The right-hand columns compare Canterbury with NZ.

APPENDIX TABLE 2

CANTERBURY SPEND \$M	2015	2016	2017	2018	2019	2020	L3Y av	NZ
Sport	10	4	55	52	225	19	4.4%	1.2%
Residential	2,563	2,344	2,200	1,990	2,180	2,065	93.0%	96.8%
Health	217	217	76	91	29	52	2.6%	2.0%
Total Wellbeing	2,790	2,566	2,331	2,133	2,434	2,135	WELLBEING	
Wellbeing Share	49.2%	49.9%	50.3%	45.3%	55.6%	51.9%	50.8%	50.5%
Education	420	330	231	362	216	161	19.7%	11.2%
Civil	1,230	1,200	1,000	1,100	900	1,000	80.0%	88.4%
Heavy Industry/Energy	2	2	3	7	0	5	0.3%	0.4%
Total Enablers	1,652	1,532	1,234	1,469	1,116	1,166	ENABLERS	
Enablers Share	29.1%	29.8%	26.6%	31.2%	25.5%	28.4%	28.4%	31.0%
Industrial	391	396	360	397	325	267	36.1%	33.8%
Commercial	795	602	643	607	404	432	52.7%	53.0%
Mult Category	49	49	70	100	95	111	11.2%	13.2%
Total Wealth	1,234	1,047	1,073	1,104	824	810	WEALTH	
Wealth Share	21.7%	20.4%	23.1%	23.5%	18.8%	19.7%	20.8%	18.5%
Regional Total	5,676	5,144	4,638	4,706	4,374	4,111	4,397	31,997
Regional Activity/worker	\$130,099	\$115,638	\$106,335	\$111,590	\$106,584	\$103,200	CANTERBURY	NZ
Construction Population	43,631	44,485	43,618	42,172	41,035	39,834	L3Y av	L3Y av
Construction Popn share	7.5%	7.4%	7.1%	6.8%	6.5%	6.2%	6.5%	5.2%
Construction Activity per capita	\$9,693	\$8,547	\$7,550	\$7,556	\$6,924	\$6,382	\$6,954	\$6,463
Horizontal Activity per capita	\$2,100	\$1,994	\$1,628	\$1,766	\$1,425	\$1,553	\$1,581	\$1,770
Vertical Activity per capita	\$7,593	\$6,553	\$5,922	\$5,790	\$5,499	\$4,830	\$5,373	\$4,693
Regional Population	585,600	601,900	614,300	622,800	631,700	644,100		

Source: www.wip.org.nz, Stats NZ & MBIE.

WIP PROJECTIONS 2022 – 2025

The following table shows the pipeline of work as reported through the Workforce Information Platform, this data is sourced from Pacifecon (NZ) Ltd and is in NZ\$.M.

NEW ZEALAND

APPENDIX TABLE 3

Year	Residential	Sport	Health	Civil	Heavy Industry / Energy	Education	Industrial	Commercial	Multi Category	NZ Total
2022	35,841	1,141	2,150	16,829	4,154	3,256	3,860	10,438	15,142	92,810
2023	26,872	1,128	1,899	16,022	3,849	1,973	3,268	9,828	17,516	82,355
2024	13,169	796	1,183	14,571	2,964	1,152	2,783	6,576	11,661	54,855
2025	7,363	480	816	13,337	2,590	497	2,395	4,023	8,576	40,076
4Y Total	83,244	3,545	6,047	60,759	13,558	6,878	12,306	30,864	52,895	270,095

Source: www.wip.org.nz

CANTERBURY

APPENDIX TABLE 4

Year	Residential	Sport	Health	Civil	Heavy Industry / Energy	Education	Industrial	Commercial	Multi Category	CANTERBURY
2022	3,864	160	322	1,721	228	681	231	1,257	1,449	9,914
2023	1,895	219	236	1,894	316	262	149	1,419	1,838	8,228
2024	1,270	81	250	1,740	218	170	230	1,014	1,761	6,733
2025	769	45	253	1,352	159	56	229	756	1,374	4,993
4Y Total	7,797	504	1,061	6,708	921	1,168	840	4,446	6,422	29,868

Source: www.wip.org.nz

CANTERBURY HORIZONTAL AND VERTICAL CONSTRUCTION ACTIVITY 2015 – 2025

This table shows actual per capita activity and projected activity from 2015 through to 2025 analysed by Horizontal and Vertical Construction categories. We have calculated the 2021 figures as being the average of 2019 and 2020.

APPENDIX TABLE 5

per capita	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
HORIZONTAL	\$2,100	\$1,994	\$1,628	\$1,766	\$1,425	\$1,553	\$1,489	\$2,627	\$2,866	\$2,610	\$2,010
VERTICAL	\$7,593	\$6,553	\$5,922	\$5,790	\$5,499	\$4,830	\$5,164	\$12,500	\$9,581	\$7,488	\$5,413

Source: www.wip.org.nz, Stats NZ & Analysis 2021 figures are derived from the average of the 2019 and 2020 figures.

2020 WORKFORCE & 2035 PROJECTED WORKFORCE

APPENDIX TABLE 6

ANZSIC Code	CANTERBURY ANZSIC ANALYSIS for CONSTRUCTION	CONSTRUCTION WORKFORCE NUMBERS			
		2020	2035	CHANGE	% CHANGE
E301	Residential Building	9,810	9,358	-452	
E302	Non-Residential Building	2,540	2,423	-117	
E31	Heavy & Civil Engineering Construction	6,469	6,171	-298	
E321	Land Development & Site Preparation Services	3,045	2,905	-140	
E321100	Land Development & Subdivision	443	423	-20	
E322100	Concreting Services	1,061	1,012	-49	
E322200	Bricklaying Services	579	553	-27	
E322300	Roofing Services	769	733	-35	
E322400	Structural Steel Erection Services	309	295	-14	
E323100	Plumbing Services	2,379	2,270	-110	
E323200	Electrical Services	3,524	3,362	-162	
E323300	Air Conditioning & Heating Services	1,142	1,090	-53	
E323400	Fire & Security Alarm Installation Services	663	632	-31	
E323900	Other Building Installation Services	625	596	-29	
E324100	Plastering & Ceiling Services	1,404	1,339	-65	
E324200	Carpentry Services	590	563	-27	
E324300	Tiling & Carpeting Services	1,038	990	-48	
E324400	Painting & Decorating Services	2,375	2,265	-109	
E324500	Glazing Services	376	358	-17	
E329100	Landscape Construction Services	1,555	1,484	-72	
E329200	Hire of Construction Machinery with Operator	268	256	-12	
E329900	Other Construction Services n.e.c.	2,042	1,948	-94	
E	Regional Construction Workforce	43,005	41,024	-1,981	-4.6%
All Citizens	Regional population	644,100	725,387	81,287	12.6%

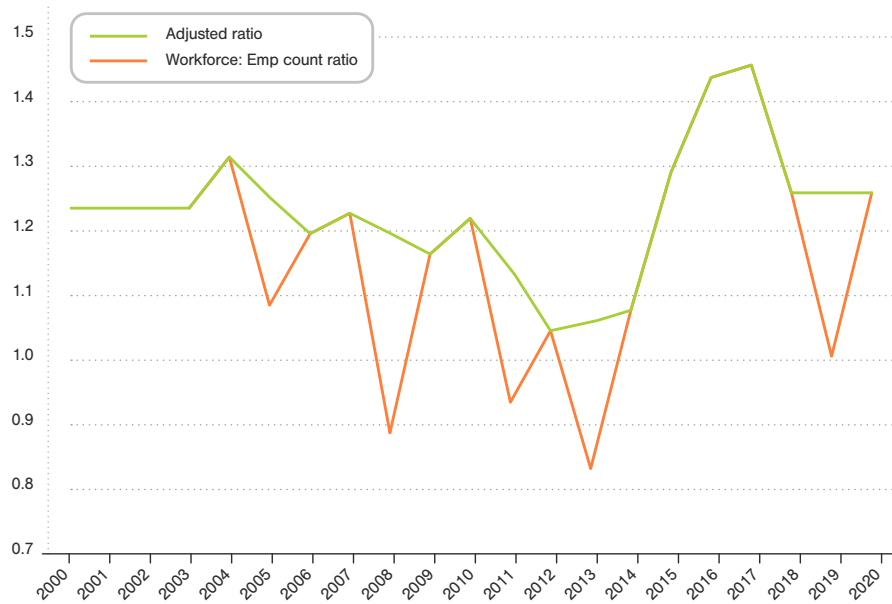
2020 WORKFORCE & 2035 PROJECTED WORKFORCE METRIC

APPENDIX TABLE 7

ANZSIC Code	CANTERBURY ANZSIC ANALYSIS for CONSTRUCTION	CONSTRUCTION WORKFORCE PER 1000			
		2020	2035	CHANGE	% CHANGE
E301	Residential Building	15.2	12.9	-2.3	
E302	Non-Residential Building	3.9	3.3	-0.6	
E31	Heavy & Civil Engineering Construction	10.0	8.5	-1.5	
E321	Land Development & Site Preparation Services	4.7	4.0	-0.7	
E321100	Land Development & Subdivision	0.7	0.6	-0.1	
E322100	Concreting Services	1.6	1.4	-0.3	
E322200	Bricklaying Services	0.9	0.8	-0.1	
E322300	Roofing Services	1.2	1.0	-0.2	
E322400	Structural Steel Erection Services	0.5	0.4	-0.1	
E323100	Plumbing Services	3.7	3.1	-0.6	
E323200	Electrical Services	5.5	4.6	-0.8	
E323300	Air Conditioning & Heating Services	1.8	1.5	-0.3	
E323400	Fire & Security Alarm Installation Services	1.0	0.9	-0.2	
E323900	Other Building Installation Services	1.0	0.8	-0.1	
E324100	Plastering & Ceiling Services	2.2	1.8	-0.3	
E324200	Carpentry Services	0.9	0.8	-0.1	
E324300	Tiling & Carpeting Services	1.6	1.4	-0.2	
E324400	Painting & Decorating Services	3.7	3.1	-0.6	
E324500	Glazing Services	0.6	0.5	-0.1	
E329100	Landscape Construction Services	2.4	2.0	-0.4	
E329200	Hire of Construction Machinery with Operator	0.4	0.4	-0.1	
E329900	Other Construction Services n.e.c.	3.2	2.7	-0.5	
E	Regional Construction Workforce	66.8	56.6	-10.2	-15.3%
All Citizens	Regional population	644,100	725,387	81,287	12.6%

4.2 Information Sources

APPENDIX TABLE A: LABOUR FORCE SURVEY ADJUSTMENT FACTOR



Source: Stats NZ

Construction population numbers have been sourced from New Statistics ANZSIC reports reconciling to the Household Labour Force Survey (HLFS).

The ANZSIC numbers are for a given year ended March while the HLFS is completed quarterly – we have taken the first quarter numbers and balanced each regional total.

This is done by applying a balancing ratio to the number of geographic units which recognises those who do not record as employees. This second group of personnel consists of employers, self-employed, and business Partners.

For the years 2005, 2008, 2011, 2013, and 2019 we did not balance to the HLFS as the ratio trend indicated a likely inaccuracy in the HLFS result. In these circumstances we have a ratio midway between year n-1 and year n+1.

