Background Paper to the Christchurch Economic Development Strategy

Prepared by Canterbury Development Corporation 2016
Background Paper Review Panel

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1 Introduction

1.1 The Background Paper

The background paper is to be read in conjunction with the Christchurch Economic Development Strategy (CEDS). The purpose of the background paper is to provide a high-level macro evidence base of data, statistics, research, forecasts and distilled thinking identifying the key attributes of the greater Christchurch economy and the challenges/drivers of economic growth.

The background paper is a collection of available statistics, data and trend information from a variety of sources such as Statistics NZ, internal Canterbury Development Corporation (CDC) research, Infometrics and academic papers to support the development of economic strategy and identification of interventions.

The key topics covered in the Background Paper are:

- Innovation
- People (the competition for labour)
- Natural resources (and primary sector growth)
- Connectedness
- The central city

Also included is a range of drivers of economic prosperity, sector profiles and CDC’s methodology and projections for Gross Domestic Product and population.

1.2 The Christchurch Economic Development Strategic (CEDS) Framework

1.2.1 Community Outcomes

CDC prepares and reviews the city’s economic development strategy on behalf of the Christchurch City Council.

The city’s economic strategy is owned and endorsed by Christchurch City Council.

The Christchurch City Council Long Term Plan is based on the delivery of community outcomes that have been grouped into five key strategic directions – liveable city, strong communities, healthy environment, prosperous economy and good governance.

CEDS is the key strategy for realising the Council’s outcome for a ‘prosperous economy’. Its purpose is to identify long term growth goals that will create a stronger regional economy.

A prosperous economy improves the economic wellbeing of residents through jobs and business opportunities and contributes to the development of the social and public amenities that make Christchurch an attractive place to live.

1.2.2 CEDS

CEDS outlines a shared vision for the economy of Christchurch and identifies long-term goals and priorities to 2031.
The CEDS framework separates strategic priorities into those that are ‘game changer’ opportunities and those that are necessary to ‘keep the city competitive’ with other cities.

Game changers are opportunities with the ability to step change economic growth and improve the city’s ability to attract and retain residents, visitors, migrants, businesses and investors.

Keeping the city competitive recognises all cities are investing in their development and seeking ways to continuously improve their operating environment. Large step changes in GDP are unlikely to result from these initiatives, but they are important in helping Christchurch remain a competitive proposition for visitors, business and the workforce against other cities nationally and internationally.

CEDS was first released in April 2013. It was updated in April 2014, reflecting rapid change in projects and forecasts as the rebuild settled, and is being reviewed in 2016.

1.2.3 CEDS Implementation Plan

CEDS has over 80 projects and over 20 delivery agencies contributing to growth and prosperity through economic development projects. The projects listed in CEDS will change over time as projects are completed and new ideas and interventions are developed.

CEDS is supported by a Programme Management Office (PMO), which is the city’s implementation tool. It has two key roles in implementation.

Firstly, to monitor and report to Council and other stakeholders on delivery progress of the whole economic development programme. PMO progress reports provide a view of all economic development projects, their status and interdependencies and progress against strategic priorities.

Secondly, the PMO facilitates dialogue and action with city leaders where opportunities, challenges and trends require action.

The PMO is guided by four principles:

**Principle 1** Leadership roles and responsibilities between parties are clear and understood

**Principle 2** What gets reported gets managed

**Principle 3** Where there isn’t a logical lead, projects will need support to get started

**Principle 4** Be a credible role model for other agencies
1.3 Our Place in the Australasian Economy

Christchurch City is the second-largest city in New Zealand, but it is much smaller when viewed from an Australasian perspective.

CDC has developed a representation of the Australasian city hierarchy using population as a base. In this model Christchurch is presented as a tier three city (population between 200,000 and 1 million).

Cities of a similar size will have similar economic and quality of living characteristics so benchmarking Christchurch’s performance against similar sized Australasian cities will provide a good basis for comparable analysis in exploring opportunities for improvement and development.
1.4 Government’s Business Growth Agenda

The Business Growth Agenda sets out the Government’s plans to build a more competitive and productive economy that ensures New Zealand businesses remain competitive in the world economy. It aims to create an environment that allows businesses to grow, export and create high-value jobs. Investment, innovation, infrastructure, exports, natural resources, and skilled and safe workplaces are the six agenda inputs considered necessary to encourage business growth. The themes of regulation, regions and Māori economic development cut across these inputs, as shown in the diagram below.
Various government departments have responsibilities for developing and implementing policy in these areas.


1.5 Canterbury Regional Economic Development Strategy (CREDS)


The CREDS was revised for the 2017–19 local government term and launched on 23 June 2017. Information about the Mayoral Forum and the strategy is available at [http://www.canterburymayors.org.nz](http://www.canterburymayors.org.nz).
CDC has worked closely with the Canterbury Mayoral Forum secretariat to ensure the current revision of the CREDS has been informed by the analysis and insight in this document and the revised CEDS, and CEDS has been informed by the development of the revised CREDS.

CREDS and CEDS are mutually supportive documents, recognising the strong interdependency of the region and city economies and communities. The CREDS strategic framework is as follows:

**20-year vision**

A region making the most of its natural advantages to build a strong, innovative economy with resilient, connected communities and a better way of life for all.

**Seven work programmes**

- Integrated regional transport planning
- Digital connectivity
- Freshwater management and irrigation
- Value-added production
- Education and training for a skilled workforce
- Newcomer and migrant settlement
- Regional visitor strategy

### 1.6 Strategy Map: City, Regional and National Strategies

There are a range of city, regional and national strategies which need to be aligned to achieve economic prosperity. Analysis of these strategies and their impact on CEDS formed part of the CEDS revision process.

|------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------|
| An attractive city for residents, business, investment and visitors | Christchurch Visitor strategy  
Christchurch Narrative  
Major events strategy  
Christchurch Attraction Strategy | Tourism Strategy  
Immigration policy | CREDS – regional visitor strategy  
CREDS – newcomer & migrant settlement |
<table>
<thead>
<tr>
<th>Objective</th>
<th>Strategy</th>
<th>Key Elements</th>
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</thead>
<tbody>
<tr>
<td>Realise the potential of Canterbury’s rural economy</td>
<td>Canterbury Water Management Strategy</td>
<td>BGA – building natural resources</td>
</tr>
<tr>
<td></td>
<td>CREDS – fresh water management &amp; irrigation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CREDS – value added production</td>
<td></td>
</tr>
<tr>
<td>Maximise the commercial value of innovation</td>
<td>Canterbury Regional Innovation Strategy</td>
<td>BGA – building innovation</td>
</tr>
<tr>
<td></td>
<td>Smart Cities work programme</td>
<td>Science &amp; Innovation Strategy, Statement of Science Investment</td>
</tr>
<tr>
<td>A connected, engaging and thriving central city</td>
<td>Central City Revitalisation Plan</td>
<td></td>
</tr>
<tr>
<td>Connect internationally for commercialisation and growth</td>
<td>Christchurch International Airport strategy</td>
<td>BGA – building export markets, Free trade strategy</td>
</tr>
<tr>
<td>Skilled &amp; adaptive workforce</td>
<td>CREDS – education &amp; training for a skilled workforce</td>
<td>BGA – skilled &amp; safe workplaces</td>
</tr>
<tr>
<td>Investment vehicles</td>
<td>Development Christchurch’s work programme</td>
<td>BGA – building investment, Investment Attraction Strategy</td>
</tr>
<tr>
<td>Infrastructure &amp; sustainable resource use</td>
<td>Greater Christchurch Urban Development Strategy</td>
<td>BGA – building natural resources, Energy Strategy</td>
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<tr>
<td></td>
<td>Lyttelton Port Long-Term Plan</td>
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<td></td>
<td>Christchurch Energy Action Plan</td>
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<td>Christchurch Land Water Drainage Plan</td>
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<td></td>
<td>Christchurch Three-Waters Strategy</td>
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<tr>
<td></td>
<td>CREDS – integrated regional transport planning</td>
<td></td>
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<tr>
<td></td>
<td>CREDS – digital connectivity</td>
<td></td>
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<tr>
<td>Industry development</td>
<td>Canterbury International Education Strategy</td>
<td>International Education Strategy</td>
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<tr>
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<tr>
<td>Christchurch Tech Sector Strategy</td>
<td></td>
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<tr>
<td>Cut across CEDS priorities</td>
<td>Greater Christchurch Resilience Plan</td>
<td>Regional Growth Programme</td>
</tr>
</tbody>
</table>
2.0 Overview of the Christchurch City Economy

2.1 History

Evidence suggests Christchurch was first settled by Māori as Ōtautahi in around 1250. European settlers later established themselves in the city around 1840, with significant numbers of arrivals beginning in 1850. Christchurch formally became a city by Royal Charter on 31 July 1856, making it the oldest city in New Zealand.

The region’s activity has traditionally been driven by agriculture due to its large area of arable land, the Canterbury Plains. Significant future investments in water projects has the potential to further enhance the already dominant role of agriculture in the region’s economy.

The agricultural hinterland of Christchurch, as a foundation of its economy and export base, created central city based Business Services and Manufacturing sectors and the distribution of goods through two major ports Lyttelton Seaport and later Christchurch International Airport. More recently Timaru Port has grown its regionally service.

More recently, Information and Communications Technology and High Value-Added Manufacturing have developed and Business and Financial Services has advanced as a growing and high value sector. The city and region also operates as an important gateway and destination for the South Island Visitor economy.

Christchurch suffered from a series of earthquakes in 2010/2011. A magnitude 7.1 occurred near the city on 4 September 2010 and caused significant damage but no fatalities. This earthquake was followed by a series of aftershocks including a magnitude 6.3 on 22 February 2011 that caused massive damage in the central city and some suburban areas and the death of 185 people. The earthquakes resulted in an initial decrease in population (which has recovered), movement of businesses out of the restricted CBD “red zone”, redistribution of consumer spending, infrastructure damage and ongoing significant insurance issues. Most of the central city area became unusable causing businesses to relocate to temporary or new permanent locations often in industrial zones or residential suburbs.

The recovery and regeneration of the city is well underway with the majority of infrastructure repaired, strong residential, commercial and industrial build activity occurring, a number of “anchor projects” completed, in development or opening soon and businesses moving back in to the city into new or redeveloped buildings.

2.2 Landscape

Christchurch is mostly located on flat coastal land at the foot of an extinct volcano (the Port Hills), which forms the southern edge of the city. As there are limited geographical barriers it is an easy place to get around and lies at the centre of the Canterbury region; the largest and one of the most diverse regions of New Zealand. Canterbury’s natural features and landscapes range from New Zealand’s highest mountain to the gently shelving Canterbury Plains, encompassing a huge variety of ecosystems and spanning a long history of human habitation. This allows for a variety of agricultural activities as well as providing an appealing landscape and outdoor environment attracting residents and visitors.
2.3 Population of the City and Region

Canterbury is the most populous region in the South Island, with an estimated population of around 599,900 people (subnational population estimate 2016, Statistics New Zealand). The region includes 10 territorial authorities.

<table>
<thead>
<tr>
<th>District</th>
<th>2016 Population estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaikoura</td>
<td>3,730</td>
</tr>
<tr>
<td>Hurunui</td>
<td>12,700</td>
</tr>
<tr>
<td>Waimakariri</td>
<td>57,800</td>
</tr>
<tr>
<td>Christchurch City</td>
<td>374,900</td>
</tr>
<tr>
<td>Selwyn</td>
<td>56,200</td>
</tr>
<tr>
<td>Ashburton</td>
<td>33,700</td>
</tr>
<tr>
<td>Timaru</td>
<td>46,700</td>
</tr>
<tr>
<td>Mackenzie</td>
<td>4,520</td>
</tr>
<tr>
<td>Waimate</td>
<td>7,950</td>
</tr>
<tr>
<td>Waitaki¹</td>
<td>22,100</td>
</tr>
</tbody>
</table>

Christchurch is the largest city in Canterbury and the second largest in New Zealand. The city’s population was around 376,300 in 2010 but fell to 355,100 in 2012 following the earthquakes due to population loss. The population has effectively recovered, estimated to be 374,900 as at June 2016.

Historically, growth in Christchurch City has typically been very similar to Canterbury and New Zealand. However, since the earthquakes there has been a significant movement of people from Christchurch to neighbouring Selwyn and Waimakariri Districts. These two districts are important to the Christchurch economy, with a net 16,035 people commuting into the city for work from these two districts daily. Christchurch City cannot be considered in isolation, particularly when considering workforce planning.

Annual population growth since 1997 has averaged 3.9 percent in Selwyn and 2.9 percent in Waimakariri, compared to 0.7 percent in Christchurch City. The region’s population has grown on average by 2.1 percent per annum between 2013 and 2015.

¹ Part of the Waitaki district lies within the boundaries of the Otago region. The full territorial authority population is provided here.
2.4 Recent Economic Performance

Gross domestic product

Much of Christchurch’s recent performance can be attributed to the rebuild and regeneration of Christchurch following the 2010-11 earthquake sequence. The earthquakes had an immediate impact on the city and region’s economic output. Infometrics Ltd estimated that Christchurch’s output in the year to March 2012 was down 2.9 percent from the previous year. As construction began and businesses returned to normal operating conditions, GDP growth improved, with a peak of 5.2 percent growth estimated in the city in year to September 2013. The growth rate has begun its decline as the rebuild has come off its plateau, however estimates indicate that the economy itself continues to grow, with the most recent annual estimates (December 2016) being 1.8 percent and 1.4 percent in Christchurch and Canterbury, respectively.
Workforce

Employment

Complementing GDP, employment growth was strong in Christchurch and Canterbury over the previous decade until the recession and earthquakes hit. The Household Labour Force Survey (Statistics NZ) estimated that employment fell by 11.9 percent between 2010 and 2011 in Christchurch. This was not only due to businesses closing down, but also the relocation of population and businesses to the surrounding districts. This is evidenced by the Canterbury employment growth being far less negative than Christchurch. Again, as the recovery began to take hold levels improved with peak annual growth of 7.5 percent seen in September 2014.

Because the rebuild is well underway, with many companies fully resourced and level of employment very high, it is likely that there will be periods of flat or negative employment growth in the city as the rebuild eases, migration flows adjust and residential subdivisions outside of the city are completed.
Unemployment
During the recession (Global Financial Crisis), the unemployment rate in Christchurch increased to 7.1 percent (September 2009 quarter) and 5.9 percent for Canterbury. The earthquakes saw unemployment peaking at 7.5 percent (June 2012). The rate then dropped significantly, as construction firms began to increase their staffing and businesses began their recovery and reached a low of 3.2 percent in June 2014, well below the national rate of 5.5 percent at the time. The unemployment rate in Christchurch has been generally tracking upwards since late 2015. We forecast that unemployment will re-converge with the national trend in late 2017 or early 2018.
**Participation**

Labour market participation in Christchurch and Canterbury is typically amongst the highest in New Zealand. With significant amounts of rebuild construction going on in the city, participation rose to record levels, with 73.3 percent of the Canterbury population aged 15 years and over engaged in the workforce at its peak in December 2014 compared to 69.8 percent nationally. Driving this increase has been steady growth in participation of the 15-24-year-old age group; workers over the age of 65 remaining in the workforce for longer than before; and greater participation by woman of all ages. The participation rate has fallen recently but remains at elevated levels.

**Labour Force Participation Rate**

*Percent working age pop.n in labour force*

*Source: Statistics NZ HLFS*

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**Incomes**

Average weekly household income in Canterbury grew strongly in 2013-14 as competition for labour fuelled wage increases, however wage growth has since backed off to match the national average. Average weekly household income in 2016 was $1,789, just below the national average of $1,814, which is driven by higher wages in Wellington and Auckland.
Migration

Christchurch has long been an attractive destination for migrants, with net migration into the city averaging 1,600 per year in the decade preceding the earthquakes. High demand for skilled and semi-skilled labour for the rebuild prompted net migration to reach a peak of 5,740 in 2015. Net migration still remains very high, reflecting the enhanced international profile that Christchurch has benefitted from post-quake.
Diversity

Christchurch and Canterbury have a higher proportion of people identifying as European ethnicity, with 84 percent in Christchurch and 87 percent in Canterbury, compared to 74 percent nationally (2013 Census). The second most stated ethnicity is Māori, with 8.5 percent in Christchurch, 8.1 percent in Canterbury, and 14.9 percent across New Zealand. Asian is the third most common, with 9.4 percent in Christchurch, 6.9 percent in Canterbury, and 11.8 percent across New Zealand. Note that people can identify with more than one ethnicity, so some people are recorded more than once in these statistics.

The identified ethnicity of Christchurch residents has been changing in recent years. This is partially due to the influx of workers for the rebuild, many of whom bring families. This has increased the proportion of people identifying as non-European in younger age groups.
**Education**

1. **Highest qualification**

Higher qualifications can result in better labour outcomes including more knowledge intensive work and higher productivity. Qualifications for people in Christchurch are slightly more favourable than the country as a whole, with 19 percent holding a degree or higher (17.8 percent nationally) and 17.7 percent holding no qualification (18.6 percent nationally), however underperforms compared to the other main centres, Auckland and Wellington.
2. School leavers

In 2015, 80 percent of school leavers in Canterbury had NCEA Level 2 or above. This is similar to the national average of 79 percent, but is below most other main centres: Auckland (83 percent), Wellington (85 percent), and Otago (83 percent). NCEA Level 2 is a fundamental high school qualification that is often a necessary requirement for entry-level jobs.

3. Tertiary study

The tertiary education system is a key component of the city’s knowledge infrastructure. This comprises two universities (University of Canterbury and Lincoln University in neighbouring Selwyn District); Ara Institute (formally Christchurch Polytechnic Institute of Technology [CPIT] and Aoraki Polytechnic); the University of Otago Christchurch Campus; the South Island ICT Grad school (a collaboration between the University of Canterbury, University of Otago, Ara Institute of Canterbury, Otago Polytechnic, and Lincoln University); and numerous private training establishments.

In 2015, across the three largest institutes of University of Canterbury, Lincoln University and Ara, there were 11,195 students studying towards sub-degree qualifications, 13,150 studying towards degree qualifications and 8,640 studying towards postgraduate qualifications - a total of around 32,000 students.

The international education sector in Canterbury has been recovering strongly since the earthquakes, with 4,290 international students studying at a tertiary level in 2016. Many of these students will remain in the region to enter employment after their study.
4. Staff Training

Labour supply constraints are expected to push up labour costs and lead to increased capital and investment by businesses on workforce productivity initiatives.

New Zealand’s low labour productivity levels have, in part, reflected a tendency to increase labour levels rather than invest in new capital, technology and training to increase labour productivity. This has been due to the relatively high cost of capital (due to New Zealand’s thin capital markets) and the relatively low cost of labour. When talent cannot be found in the local market, New Zealand businesses have broadened the search outside of the country, with only 17 percent considering training and development as an option. This is much lower compared to global companies, 25 percent of which provide additional training and development to existing staff to grow from within.\(^2\)

![Employer-provided training by size of business](https://www.nbr.co.nz/article/heartland-talent-mindset-hinders-competitiveness-126562)

The dominance of very small businesses in the New Zealand economy may influence low levels of investment in training. SMEs generally provide much less training for employees compared to large businesses in New Zealand. Low levels of staff training can lead to vulnerability in times of change, limited ability to be innovative and limited ability to adopt new technologies. Reluctance to invest in people development can be due to a lack of resource and money, a concern about losing on the investment if staff leave or a lack of awareness of the benefits that people development can deliver.

It is important to ensure that qualifications within an economy are aligned to the needs of business sectors and the changing complexity of knowledge intensity and work types.

Attracting skilled staff from overseas can be a useful option to manage short-term mismatches between the skills of the local population and needs of businesses.

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3.0 Forecasts and Growth Projections

3.1 “Predicting the Peak” Research Commentary

In mid-2014 CDC undertook research to examine price dynamics in Christchurch and Canterbury following the earthquake, including looking at the stages of economic change during the recovery period. This research included workshops with a number of stakeholders and economists to discuss the likely path of price categories and impacts across a range of groups (individuals, businesses etc). By examining how different groups would be impacted by, and respond to, changing prices, a model was able to be constructed of how the economy may perform in each phase. Growth rate forecasting was cross referenced with other rebuild variables to assess timing validity. This included private insurers’ forecast, public sector works programmes, EQC timetables and the infrastructure rebuild programme.

Following the earthquake firms began to ramp up their activity and then there was a period of economic boom, with rebuild activity happening at a fast pace. The peak of the earthquake was identified as the period where high growth rates would begin to ease, meaning that the rebuild was at full capacity. It was a period of high output, heading into low growth. The rebuild boom was followed by a period of economic easing before GDP would recouple with the underlying economy as rebuild projects gradually came to an end.

The table below is from that research project and outlines the various stages of the recovery after the boom phase and the effect on different groups.

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3 CDC, “Post-Earthquake Price Dynamics in Christchurch/Canterbury”, June 2014
<table>
<thead>
<tr>
<th>Event</th>
<th>When</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential builds and repairs that have insurance funded accommodation near completion</td>
<td>End 2016-mid 2017</td>
<td>Reduction in demand for short-term rental properties from insurers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduction in average price of rental accommodation</td>
</tr>
<tr>
<td>Economic easing period (GDP growth 0.5% – 2%)</td>
<td>End 2016 to 2020</td>
<td>GDP growth flattens (is below the national average)</td>
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<tr>
<td></td>
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<td>High demand for labour reduces as economy reaches capacity for rebuild activities</td>
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<tr>
<td></td>
<td></td>
<td>Wage pressure eases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Migration slows</td>
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<tr>
<td></td>
<td></td>
<td>Other price pressures ease such as housing and rental price</td>
</tr>
<tr>
<td>Economy realigns with underlying Growth and returns to normal growth levels</td>
<td>2020-2021</td>
<td>GDP growth rate starts to recouple with national average</td>
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<tr>
<td></td>
<td></td>
<td>Employment grows</td>
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<td></td>
<td></td>
<td>Certainty of new norms for wage, house and rental prices identified for region</td>
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</tbody>
</table>

### 3.2 Gross Domestic Product Forecast

To graphically and numerically represent growth scenarios for Christchurch and Canterbury, CDC has developed a model that describes forecasts under different growth conditions. The methodologies for calculating each of these projections are given in an appendix to the background paper.

The forecasts are used by businesses and government in strategic planning processes and have been subjected to peer review.

**Baseline** – (Green) A baseline projection using historical growth rates.

**Underlying** – (Green dotted) CDC estimate of the underlying economy without the rebuild.

**Upper Band** – (Purple) An upper band which delivers the baseline plus strong project success under the Game Changer priority.

**Declining Economy** – (Red) A scenario where the “keeping us competitive” priority fails leading to a loss of population and GDP. This is mostly influenced by the city not maintaining healthy levels of working age population as aging population retires.

**Rebuild Worse Case** – (Red dotted) A rebuild worst case scenario that didn’t happen. A forecast completed by CDC in 2012 based on an analysis of 10 cities which suffered long term loss of industry and loss of population after natural disaster.
Historically, economies have relied on underlying population growth to grow GDP, complemented with technology and productivity gains. This is the basis for the green line. However, with population projected to grow at 0.6 percent for Christchurch (0.8 percent for Canterbury), or almost flat to 2031, achieving historic GDP growth levels of 2.4 percent per annum for Christchurch (2.7 percent for Canterbury) will drive emphasis on growing migration and productivity.

The upper band suggests a range of optimal GDP outcomes if the region executes “step change” projects well, which will lead to additional attraction and retention of people in the greater Christchurch area. By 2031, the difference between the upper band and the baseline is around $5 billion (in $2010, or 18 percent of the baseline). For Canterbury, the difference is around $9 billion or 23 percent. This shows that if Christchurch is successful in its rebuild, becomes an innovative city, drives global distribution, attracts people and the productivity gains from irrigation are realised in the Canterbury region, there are potentially significant gains for the economy.

The declining economy scenario represents a potential loss of population as the rebuild eases, workers relocate and the aging population retires with the region not able to backfill and grow its working age population.

3.3 Population Forecasts

The baseline projection for the population of Christchurch is around 0.6 percent per annum, based on Statistics New Zealand’s medium population projections.
Across the Canterbury region by 2031, CDC projects\textsuperscript{4} the demand for workers will exceed local supply by around 74,000 workers. This is made up of 73,000 current workers retiring, 95,000 additional vacancies generated from baseline economic growth, and 93,000 school leavers entering the workforce. These estimates are based on historical growth rates and allowing for changes in retirement behaviours.

Migration will be necessary to enable future economic growth as deferred retirement and retaining young people within the region will not solve our working age challenge in its entirety.

Most of New Zealand and the developed world are facing the same ageing workforce challenge. Globally, competition for labour will intensify, therefore we can expect intense competition between cities, regions and business for labour.

If the rebuild is successful, resulting in a strong economy and amplified profile, the city would likely see stronger population growth estimated at 449,000 in 2031 (purple line), up from an estimated 362,000 in 2011.

If the city is unsuccessful in maintaining competitiveness after the rebuild and struggles to replace a retiring workforce population growth could fall to -0.5 percent per annum (red line).

\textsuperscript{4} Regional workforce 2031, CDC, 2015
4.0 Summary of Key Drivers of Prosperity

The following is a summary of the key drivers identified in the background paper that should be a focus of strategy and prioritisation in the Christchurch Economic Development Strategy.

There are many influences of prosperity, however this section summarises the list into those issues and opportunities that are considered significant at the time and are the foundation of discussions in economic planning workshops with stakeholders.

4.1 Attracting and retaining skilled workers over the next 15 years

The ageing population phenomenon will create 73,500 job vacancies by 2031. These vacancies cannot be filled by natural population growth and the city will have to rely on migration near post-earthquake levels (almost double historical rates) for 15 years just to maintain ‘green line’ growth rates.

Most cities in western economies will be in the same position and we expect unprecedented competition for labour between cities, sectors and businesses during this period.

Attraction requires stronger promotion of the city’s offering and continued investment in amenities, which attract people business and investment.

People are the lifeblood of a modern economy – as employees, entrepreneurs, and consumers. A steady availability of talented employees gives business the confidence to invest for the future knowing they are able to expand their workforce as their business grows. A flourishing population provides demand for new goods and services.

4.2 Responding to global trends

Rapid technological change, climate change and greater competition for talent are the key global trends expected to impact Christchurch over the next 15 years.

Technological change is expected to accelerate at a pace we have never experienced (exponential pace of change rather than linear and predictable) and cannot plan for.

Climate change is now accepted as a global economic and social threat. It is becoming an expectation that modern and attractive cities have communities and businesses with plans and projects to become low carbon, green and healthy.

Ageing population is a global trend expected to lead to a period of worldwide competition for labour. Cities will compete for labour based on job and career opportunity, alongside amenity and quality of life offering. Through the earthquake, the city has an opportunity to ensure that its CBD and rebuilt public amenity is amongst the best in the world for similar sized cities.

4.3 More economic value from our innovation

CDC research shows that, compared with similar sized Australian cities, Christchurch has a strong base of innovation assets, education and support systems generating good levels of innovation outputs such as patents, start-up businesses and employment in high value sectors.
However, the region benchmarks poorly with our Australasian counterparts across a range of economic prosperity indicators (wage levels, productivity).

As a region, we need to consider ways to get more value from our innovation eco-system rather than just investing in more innovation assets that are generating lower value outcomes.

### 4.4 Worst affected sectors after the earthquakes are ready for recovery

The sectors worst affected by the earthquakes, identified in the Earthquake Economic Recovery Plan, were Tourism and International Education.

The rebuild is starting to create a platform for the city to promote itself to the Visitor Economy\(^5\) (leisure tourists, international education, business visitors, Antarctic) where it hasn’t had that promotional platform to date. Visitor attraction also links to city profile and promotions and enhanced city amenity and activities for residents supporting retention aims.

### 4.5 Interdependent economies

The Canterbury and Christchurch economies are strongly linked. The success of the region depends on the success of the city and vice-versa.

Given the city and region are dependent on each other, it is important a co-ordinated approach is taken to preserve, improve and optimise outcomes especially with agriculture, water, leisure tourism and infrastructure planning.

\(^5\) Christchurch Visitor Strategy 2016 was co-ordinated by CDC, is owned by Christchurch City Council and will be implemented by the newly formed ChristchurchNZ
5.0 Key Focus Topics

5.1 Global Trends

The economic development strategy is being prepared during a time of significant changes in the world economy. The world is coming out of a period of recession but there have been significant social and political events recently, indicating dissatisfaction with the status quo. The key global trends which are likely to have an impact on Christchurch are briefly described below:

<table>
<thead>
<tr>
<th>Trend</th>
<th>Impact on Christchurch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanisation</td>
<td>Movement from rural areas to bigger cities and widening geographical city boundaries. This is evident in Christchurch following the earthquakes especially with increasing developments outside the city limits, This has impacts on factors such as commuting patterns, labour, and infrastructure plans.</td>
</tr>
<tr>
<td></td>
<td>There has been significant growth in the importance of cities in developing economies in particular, many of which are unknown to the average New Zealander. This will impact on the way in which New Zealand businesses interact with offshore markets.</td>
</tr>
<tr>
<td>Ageing Population</td>
<td>Much of the western world, including Christchurch, is experiencing an ageing population. This impacts on availability and competition for labour, as well as changing working environments to allow for older workers. Christchurch will need to compete with the rest of the world for a young, vibrant workforce. The city also needs to prepare for the requirements of an older population, such as aged care and health services.</td>
</tr>
<tr>
<td>Increasing Global</td>
<td>There is increasing international connectedness, including mobility of people, access to markets and communication through technology. This reduces the limitation Christchurch has traditionally seen as a remote market and opens up opportunity for collaboration globally, including new markets, new migrants, tourism opportunities and international students. However, it may also mean competition for local firms.</td>
</tr>
<tr>
<td>Connectedness</td>
<td></td>
</tr>
<tr>
<td>Accelerating</td>
<td>Technology has been advancing throughout human history but digitisation has seen exponential rates of technological progress, both in terms of development and uptake, rather than linear improvements (Moore’s Law). This has the possibility to disrupt some Christchurch industries, but also presents opportunities for new products and ways of doing things, as well as new ways of engaging with customers.</td>
</tr>
<tr>
<td>Technological</td>
<td></td>
</tr>
<tr>
<td>Advancement</td>
<td></td>
</tr>
<tr>
<td>Political Changes</td>
<td>In 2016, we witnessed two major political swings; the UK vote to leave the European Union and the election of Republican Donald Trump to the US presidency. These changes reflect uneven economic change; deepening social and cultural polarisation; and post truth political debate (the news industry is changing with opinion increasingly outweighing facts). Moves towards protectionism and nationalism make it difficult for trading</td>
</tr>
</tbody>
</table>

\[6\] CDC Research Paper, “Global Trends; Key Trends Report”, 2017
companies. There may be possible migration inflows, as well as impacts to exchange rates.

Climate Change

A rise in the earth’s temperature is currently being observed. This is expected to have wide reaching impacts; some of which relating to Christchurch, are detailed in the section below.

Singularity University

The Singularity New Zealand Summit was hosted in Christchurch in November 2016. This included over 1,400 attendees from 16 different countries, with the goal of starting a conversation about exponential technology and how it could impact New Zealand and the world. Singularity University is a global community applying exponential technologies to tackle the world’s biggest challenges. The communities learning and innovation platform aims to empower individuals and organisations with the mindset, skillset, and network to build breakthrough solutions that leverage emerging technologies like artificial intelligence, robotics, and digital biology. With a community of entrepreneurs, corporations, development organisations, governments, investors and academic institutions, Singularity University endeavours to bring together the necessary ingredients to create a more abundant future for all. Singularity University provides a range of products to help these audiences understand rapidly accelerating technologies and how to apply them to positively impact people throughout the world. Singularity University’s products include: custom educational experiences that transform leaders; conferences that inspire and prompt action; and innovative labs that aim to incubate and accelerate corporate innovation and social impact projects.

Additional commentary on climate change

Climate change (including global warming) is the observed phenomenon of the rise in the earth’s temperature and other related changing climate systems, such as more extreme weather patterns. While this increase has been occurring over a long period of time, most of the changes seen since the 1950s have not been seen over the last tens to thousands of years. There is a significant amount of research underway regarding causes and impacts of global warming, resulting in increased scientific understanding. The United Nations Intergovernmental Panel on Climate Change (IPCC) in 2014 reported that “It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century.” In particular, there have been significant increases in the level of carbon dioxide released into the atmosphere from human activity.

Projections are that the 21st century is likely to see the global surface temperature rise by between a further 0.3 to 1.7°C (low emissions scenario) and 2.6 to 4.8°C (high emissions scenario). This would result in a sea level change of 0.26 to 0.55 metres (low scenario) to 0.45 to 0.82 metres (high scenario). Additional impacts include changing rainfall patterns, expanding deserts, more frequent

8 IPC AR5 summary, page 17; D.3 Detection and Attribution of Climate Change
9 Thomas F. Stocker (Switzerland), Qin Dahe (China), Gian-Kasper Plattner (Switzerland), *Technical Summary*, in *IPCC AR5 WG1 2013.*
extreme weather events (such as heat waves, droughts, flooding, heavy snowfalls), and impacts on various lifeforms (including extinctions) due to changing temperatures and ocean acidification.\textsuperscript{10}

Christchurch’s coastal areas are susceptible to erosion and inundation due to extreme high tides, storm surges and sea level rises. Additionally, parts of the city are susceptible to fluvial flooding, when streams and rivers are at capacity and water flows over the banks, and pluvial flooding, when stormwater drainage systems cannot cope with extremely heavy rain. Many of these risks have increased due to land changes from the earthquakes. The Coastal Hazards Assessment Report (Tonkin & Taylor 2015) identifies areas potentially affected by coastal hazards (over the next 100 years). This information informs Council processes, such as LIM notifications and issuing of building consents. Resulting disruptions to housing in Christchurch can alter the attractiveness of the city to migrants, impact on the housing market (through housing availability), and in the short term can impact on labour and businesses while the disruption is occurring.

Globally, there will be significant changes to food production as a result of climate change due to changing climatic systems and viability of land for crops and livestock. Food production is a major component of New Zealand’s exports and significant changes will impact on our economy, including Christchurch’s, which services the rural hinterland. Shortages elsewhere are likely to put our food prices up (both for export and domestic consumption); however significant impacts on New Zealand, including damage caused by increased extreme weather events, will impact on our production and income.

As parts of the world become less viable for human habitation, there will be increased migration. New Zealand (including Christchurch) is a likely destination for residents of Pacific Island nations who are threatened by rising sea levels, such as Kiribati and Tuvalu.

Climate challenge also presents opportunities for the city. Knowledge economies are likely where new technologies aimed at promoting more sustainable living will be developed, and systems such as smart metering can be tested as the city is rebuilt. There will be significant demand for green technology as our understanding of the effects of climate change increase, as well technologies designed to mitigate the effects of significant weather events (including increased irrigation in the Canterbury plains). With a strong innovation and manufacturing sector, Christchurch is well placed to take advantage of this new industry.

5.2 The Labour Force

The Canterbury labour force exhibited remarkable adaptability and elasticity following the Canterbury earthquakes and subsequent rebuild. High demand for labour was met through increased workforce participation, reduced unemployment and strong migration from the rest of New Zealand and overseas. In the short term, the scaling down of the rebuild is likely to prompt migration outflows for a period. Looking beyond the rebuild, replacing retiring workers will be a significant challenge at the same time as technological change impacts employment in many occupations and industries.

The Canterbury labour market has proven to be highly adaptable as the earthquake recovery has progressed. As the rebuild began to scale up in 2013, businesses reported difficulty in finding both

skilled and unskilled labour. By 2015, the construction sector in Canterbury had expanded by approximately 30,000 employees. Around half of this expansion was met by the local population, through higher workforce participation, lower unemployment and young people entering the workforce for the first time. A further quarter to a third was met through international migration; the remainder of workforce expansion was met by workers arriving from elsewhere in New Zealand. (Source: CDC, Westpac, StatsNZ).

There have been a number of central government initiatives to improve the flow of labour within the region, across New Zealand and from overseas. The Ministry of Business, Innovation and Employment (MBIE) adjusted immigration policy through regular review of the Canterbury Skills Shortage List, which enabled an expedited working visa process for workers with sought after experience or qualifications. Visa extensions of up to three years were allowed for workers with suitable qualifications. The Canterbury Skills and Employment Hub was set up to enhance matching of job seekers with job vacancies and expedited immigration processes when suitable employees were unavailable locally. The Ministry of Social Development (MSD) offered grants of $3000 to young beneficiaries across New Zealand to encourage relocation and uptake of job opportunities in Canterbury.

This adaptability of the local population and responsiveness of migration settings proved essential in preventing wage inflation from escalating. Rebuild construction work reached a plateau level during 2015; subsequently businesses are finding it significantly easier to find unskilled labour than before and moderately easier to find skilled labour. Immigration settings will continue to adjust to mitigate the risk of an oversupply of skills as rebuild work subsides.

As the rebuild economy contracts, there is risk to the 30,000 jobs created by the rebuild. It is difficult to accurately forecast how this will manifest and how the workforce will respond; it is likely they will exit the labour force in the same manner they entered at the beginning of the rebuild. Some local workers will return to their previous occupations, others will leave the workforce entirely and return to postponed life stages such as studying, parenthood, or retirement. Workers that have come from other parts of New Zealand may return to their home regions. Around a third of workers arriving from overseas on a rebuild-related work visa have transferred to residency and these workers will be freely able to move as the construction sector expands elsewhere in New Zealand. Other workers from overseas may return home.

Beyond the rebuild, a different workforce challenge emerges with CDC research projecting a shortfall of workers in the region by 2031 caused by demographic change. Canterbury faces a similar ageing population challenge as most of the developed world. The group aged 65 and over is projected to grow from 16 percent of the population (2016) to 22 percent (2033). At the same time, workforce participation in older age groups is projected to grow considerably. For 65-69 year olds workforce participation is projected to grow from 38 percent to 59 percent; 70-74 year olds from 18 percent to 32 percent; and the 75-79 year olds from 11 percent to 22 percent. This trend of later retirement will help to mitigate labour shortages and retain experience and institutional knowledge in sectors, however new workers will still be needed when they ultimately retire.
Taking into account an ageing population and projected gains in workforce participation, CDC research\(^{11}\) projects 72,500 workers will retire by 2031. Meanwhile, 93,500 school leavers are projected to enter the workforce – sufficient to replace retiring workers, but insufficient to fill the additional 94,522 new jobs projected to result from economic growth at historic rates. Meeting the demand for workers will require sustained, elevated levels of net migration, well in excess of historic averages.

\(^{11}\) Regional Workforce Projection, CDC, 2015
Canterbury net migration - domestic and international
Historic and projected
Source: CDC, StatsNZ

The gap between workforce demand and supply will impact across all sectors, but agriculture; manufacturing; professional, scientific and technical services; and healthcare and social assistance are expected to require significantly more workers as these sectors grow and people retire. New job creation over the next 16 years is expected to be concentrated in highly skilled and semi-skilled occupations, which generally require tertiary qualifications.

Projected increase in employment by occupation skill level
Canterbury 2015-2031
Source: CDC

Industries with both a high proportion of older workers and strong growth prospects will come under considerable pressure to replace retiring workers while recruiting additional workers to meet growth. Significant demand for new workers is projected from the agriculture; manufacturing; professional,
scientific and technical services; and healthcare and social assistance sectors. It is possible many of the construction workers that migrated to Canterbury for the rebuild will similarly migrate out when the rebuild subsides. Ideally, there is an opportunity for labour to transition out of the rebuild into the underlying economy to meet the workforce demands of other sectors.

Productivity improvements have an important role to play in narrowing the workforce gap. New Zealand’s low labour productivity levels have in part, reflected a tendency to increase labour levels rather than invest in new capital, technology and training to increase labour productivity. This has been due to the relatively high cost of capital (due to New Zealand’s thin capital markets) and the relatively low cost of labour. When talent cannot be found in the local market, New Zealand businesses have preferred to broaden the search outside of the country, with only 17 percent considering training and development as an option compared with global companies, 25 percent of which provide additional training and development to existing staff to grow from within.

The dominance of very small businesses in the New Zealand economy may influence low levels of investment in training. A higher proportion of SMEs provide little or no training for employees compared to large businesses in New Zealand. Low levels of staff training can lead to vulnerability in times of change, limiting ability to be innovative and to adopt new technologies. Reluctance to invest in people development can be due to a lack of resource and money, a concern about losing on the investment if staff leave or a lack of awareness of the benefits that people development can deliver.

In workforce planning, it will be important to ensure that the mix of qualifications within the economy are aligned to the needs of the business sector, changing complexity of knowledge intensity, and work types. Attracting skilled staff from overseas can be a useful option to manage short-term mismatches between the skills of the local population and needs of businesses.

Improving workplace productivity requires more than highly qualified workers; there needs to be an understanding and alignment between the skill needs of industry and the skillsets of the workforce.

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5.3 City Profile and Attraction

In “Magnet Cities”, KPMG examined cities around the world that have successfully transformed from declining population and poor economic growth to ones which attract people and achieve higher growth rates. Their research found these cities adopted a surprisingly similar set of guiding principles that underpinned their city reinvention. These seven principles were:

- **Attract young wealth creators**: Create jobs of tomorrow, bringing along with them the city’s future wealth. They are entrepreneurs, researchers, designers, engineers, physicists, bloggers, artists, animators, app and game designers, clean-tech advocates and people that build on existing businesses or identify and grow new industrial niches. It is important to target groups that have a logical link to the city. The city’s point of attraction must be genuine – based on the city’s heritage.

- **Constant physical renewal**: Ongoing physical renewal keeps cities interesting and new. This included both the central city and the wider suburbs where people live, work and play.

- **Connected**: Magnet cities have good transport links and flows of people. Visitors help build magnetism and are potentially tomorrow’s residents.

- **Definable city identity**: Cities that attract young wealth creators have a strong and clear city identity that residents connect with. Without a clear city identity, it is difficult for people to understand what a city stands for and its attraction.

- **New ideas**: Magnet cities nurture new ideas. Academic institutions can be important drivers of changes to the city. Magnet cities are specific about the industry clusters they want to support, then focus and support this development.

- **Fundraisers**: Magnet cities attract private investments, research grants and public funds for the city. Some magnet cities offered their own risk capital to attract investment and funds. Significant improvement of a city requires public and private money working together.

- **Strong leaders**: Reinventing a city requires strong civic leaders. However, in some cases the drive came initially from others in the city such as business leaders. Magnet city leaders all worked more collaboratively with residents, investors, developers, businesses and universities than is the norm.

The key factors attracting and retaining people to a place are career / business opportunity, education, pay and lifestyle.

Research by INSEAD Business School has identified that people are attracted to destinations (cities, regions and countries) which provide:

- **Opportunity** – defined by the ease of doing business and the presence of clusters.

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14 The Global Talent Competitiveness Index – Talent Attraction and International Mobility 2015-16, edited by Bruno Lanvin & Paul Evans, INSEAD, Adecco Group, Human Capital Leadership Institute
• **Management practices** – places where people feel they are able and supported to develop their careers and skills and where professionalism is important for advancement, rather than personal connections.

• **Pay and lifestyle** – are more important for retention than attraction.

• **Quality of educational opportunities** – higher education can be an especially important entry point for young, talented people.

City amenities

The successful future of cities depends on their ability to provide attractive places for increasingly skilled and wealthy workers, who are increasingly fettered by constraints on employment location. That is, **people will commute distances to work, but want to live close to services**. The role of urban density in facilitating consumption becomes extremely important.

While amenity is secondary to careers/business related opportunity, research from the Harvard Institute of Economic Research identified that "high amenity cities have grown faster than low amenity cities".¹⁵

Amenity can be defined as:

• Rich variety of services and consumer goods (restaurants, leisure, etc)

• Aesthetics and physical setting

• Good public services (education, safety, etc)

• Low transport/commuting/communication time

As firms become more mobile, the success of cities hinges more and more on their role as centres of consumption.

Despite total population movement toward those amenities, subpopulations differ. University graduates are more numerous where there are fewer natural but more constructed amenities. Older populations are the opposite; they cluster more with natural amenities, but less with constructed amenities. Interestingly, residents filing high tech patents live in locations with more of both natural and constructed amenities.¹⁶

The type of constructed amenity is also relevant – live performance venues and restaurants both significantly predict growth at a county level while no connection was found between art museums and county growth (US, Harvard, page 12). Interestingly, amenities appealing to lower productivity/lower skilled workers – bowling alleys and movie theatres – are negatively associated with county growth.

Within cities, people make decisions about where they live based on consumption (i.e. amenities and services within the local community or suburb) rather than where they work. “The rise of separate

15 “Consumer City”, Edward L. Glaeser et al., discussion paper 1901, June 2000,
16 Terry Clark (2003), Urban Amenities: Lakes, Opera and Juice Bars: Do They Drive Development? In The City as an Entertainment Machine (Research in Urban Policy, Volume 9) Emerald Group Publishing pp. 103-140
work and consumption is yet further evidence of the rising focus of cities on providing consumption. In all cities in the US, population is generally moving away from the city CBD”.

NOTE

- Younger people like to live near constructed amenity, more urban
- Older people like to live with strong natural amenity
- Increasingly people will tolerate longer commutes to work, but want to live close to services

New Zealand quality of life and attractiveness

The INSEAD research ranked New Zealand 11th out of 109 countries in its Global Talent Competitiveness Index. New Zealand performed particularly well in terms of its talent attraction inputs including – the regulatory environment and ease of doing business (sixth); its openness and ease of mobility (fourth); its education system and networks (13th); and its quality of life factors (22nd). In terms of global talent outputs (i.e. how New Zealand uses talent), New Zealand performed well in terms of higher level skills and competencies and innovative outputs (fourth) and relatively poorly (50th) in terms of its labour productivity and mid-levels skills.

HSBC 2015 expat survey⁷ ranked New Zealand as second after Singapore out of 39 countries as a place for expats to live. Within this overall ranking, New Zealand ranked first for experience, second for family, but 16th for economic criteria pulled down by our disposable income, wage growth and savings scores. Seventy-seven percent of expats living in New Zealand felt their overall quality of life was better than in their home country and 78% of expats felt they had integrated well into New Zealand’s culture. Fifty-seven percent felt the work culture was better than in their home country, but only 25 percent believed their earnings prospects were better than in their country of origin. Parents scored New Zealand highly in terms of the benefits to their children from good quality education, more active lifestyle and a culture which developed more well-rounded and confident children.

Christchurch’s quality of life and attractiveness

Canterbury’s quality of life (including income) ranks amongst the top 20 percent of regions worldwide, mainly due to strong public services and natural amenities. This high quality of life is consistent across all Australian and New Zealand regions, which have the highest quality of life scores among OECD countries.

Canterbury ranks in the top 10 percent of regions worldwide for quality of life when income is removed from the equation. Auckland, Wellington and Waikato (and all Australian regions except Tasmania and Northern Territory) enjoy better quality of life scores than Canterbury. This is mainly due to Canterbury having lower household disposable income per capita.

In the 2016 New Zealand Big Cities Survey, 78 percent of Christchurch residents rated their quality of life as good or extremely good, citing reasons such as health and wellbeing (37 percent); relationships (34 percent) and financial wellbeing (34 percent). This was down from 80 percent in 2014. In 2014 Christchurch’s quality of life was similar to Auckland, but below Wellington and

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¹⁷ https://expatexplorer.hsbc.com/survey/, in 2015 21,950 expats from across the world participated in the survey.

¹⁸ OECD’s “Better Life Index” for 372 regions around the world.
Dunedin. Prior to the earthquakes, 95 percent Christchurch residents perceived their quality of life to be good or extremely good. A comparison between quality of life scores in 2010, 2014 and 2016 for Christchurch residents are presented below, to show both the impact of the earthquakes and how the recovery is progressing:

<table>
<thead>
<tr>
<th>% of people rating this aspect of their lives in Christchurch as good to excellent</th>
<th>2010</th>
<th>2014</th>
<th>2016</th>
<th>2010-2016 Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall quality of life</td>
<td>95%</td>
<td>80%</td>
<td>78%</td>
<td>-17%</td>
</tr>
<tr>
<td>Health</td>
<td>91%</td>
<td>79%</td>
<td>81%</td>
<td>-10%</td>
</tr>
<tr>
<td>Sense of community</td>
<td>57%</td>
<td>52%</td>
<td>58%</td>
<td>+1%</td>
</tr>
<tr>
<td>A great place to live</td>
<td>n/a</td>
<td>68%</td>
<td>74%</td>
<td>n/a</td>
</tr>
<tr>
<td>Pride in build and natural environment</td>
<td>68%</td>
<td>36%</td>
<td>46%</td>
<td>-22%</td>
</tr>
<tr>
<td>Work/life balance</td>
<td>77%</td>
<td>61%</td>
<td>59%</td>
<td>-18%</td>
</tr>
<tr>
<td>Sufficient money to cover every day needs</td>
<td>88%</td>
<td>78%</td>
<td>76%</td>
<td>-12%</td>
</tr>
</tbody>
</table>

Perception of Quality of Life
% of respondents rating perception of life as good or extremely good
Source: Big City Survey
The cost of housing in Christchurch, both to buy and rent, is similar to other areas in New Zealand such as Wellington and Hamilton. House prices and rents rose sharply following the earthquakes in response to a loss of housing stock and heightened demand. However, significant progress in repair and rebuild of damaged housing has seen prices and rents settle. It is estimated that the cost to service a mortgage or pay rent represents around 25 percent of median gross household income.

This analysis suggests the following:

1. Given that Canterbury’s quality of life factors are of the highest standard globally while income levels lag behind, the focus should be on better understanding the productivity factors underpinning income levels in the region.
2. High quality of life makes Canterbury an attractive place to live but there are several regions around the world with similar characteristics. However, the earthquakes seem to have impacted on Christchurch residents’ quality of life across a range factors. It will be important to consider how we can improve the perception and reality of Christchurch as a great place to live.

<table>
<thead>
<tr>
<th>What Christchurch has</th>
<th>What Christchurch doesn’t have</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economic Opportunity</strong></td>
<td>Breadth of career opportunity – limited career opportunities particularly at the high end</td>
</tr>
<tr>
<td>A diversified economy with strong high-tech, knowledge-intensive sectors</td>
<td>High wage rates</td>
</tr>
<tr>
<td>Second largest city in New Zealand, largest city in the South Island, natural gateway</td>
<td></td>
</tr>
<tr>
<td>Supportive policy environment – ease of doing business</td>
<td></td>
</tr>
<tr>
<td><strong>Lifestyle</strong></td>
<td>High-end consumer amenities (restaurants, sport grounds, entertainment venues, etc.)</td>
</tr>
<tr>
<td>Good quality education – school and tertiary</td>
<td>Consumer density – this lack of “agglomeration” can limit networking and the transfer of ideas and the provision of goods and services</td>
</tr>
<tr>
<td>Natural assets (rivers, hill, mountains, sea, etc.)</td>
<td></td>
</tr>
<tr>
<td>Good weather</td>
<td></td>
</tr>
<tr>
<td>Good public assets and services (health, safety)</td>
<td></td>
</tr>
<tr>
<td>Good international connections (physical and personal)</td>
<td></td>
</tr>
<tr>
<td>New (developing) amenities – infrastructure, business (Christchurch Innovation Precinct, Health Precinct, commercial property), “new city”, social amenity (stadium), anchor projects</td>
<td></td>
</tr>
</tbody>
</table>
5.4 Innovation

Globalisation, high and increasing consumer expectations and rapidly changing technology mean that businesses, industry and regions must continually innovate to maintain competitiveness. Canterbury has a strong public research base, closely aligned to the region’s sector strengths. It has four tertiary institutions, six of New Zealand’s seven Crown Research Institutes (CRI) and a District Health Board (CDHB), which is well regarded and resourced for research. These public research organisations (PROs) form four clusters; health; ICT; Hi-Tech Manufacturing; Agri-technology; which align well with Canterbury’s sector strengths.

The region has several commercialisation agents, innovation hubs and innovative local businesses, with a strong representation of firms involved in food processing, and the high value-added manufacturing, ICT, agri-tech (precision agriculture) and health sectors. There is also a range of commercialisation support via angel and private equity investor networks, marketing, legal and professional services firms.

CDC has carried out a benchmarking analysis of Canterbury’s regional innovation system and assets compared with other similar Australasian regions. Benchmarking variables in this input-output model were brought together in a composite index and plotted in the chart below. The key insight from this graph is that Canterbury is above the "line of average performance", or in other words, is relatively effective at generating innovation outputs (e.g. employment in high tech and knowledge intensive industries and the number of patents) from the current level of innovation inputs (e.g. R&D spend, tertiary students in tech related programmes, skilled people).
However, despite being an innovative region, we face some challenges when it comes to transforming this into real economic value add.

The benchmarking analysis illustrated relatively low levels of economic performance for such levels of innovation output. The graph below illustrates that in the same benchmarking exercise, Canterbury dropped below the “line of average performance” indicating that the region is not achieving the same levels of economic outputs from its innovation eco-system as our Australasian counter-parts. Examples of economic output include economic growth, number of high value jobs, sector productivity. GDP per capita in Canterbury is US$30,100 (2014 PPP), four percent lower than the national average of US$31,300 and 15 percent lower than the reference regions group’s average.

Context – Innovation

Accumulated analytical results suggest that a combination of technological and non-technological innovation activities is especially pertinent to performance. Firms that engage in both product and process type innovation and, at the same time, introduce organisational and marketing changes outperform firms that concentrate on one or the other activity underpinning growth at the macro level.19

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19 Von Tunzelmann, 1995; see also Innovation in New Zealand, 2013, Statistics NZ
Based on data collected by the Business Operation Survey (BOS), “Other machinery equipment” and “Computer systems design” are the most innovative sectors in the New Zealand economy with almost ¾ of the firms consulted reporting innovation activity.

As noted by MBIE in its Regional Economic Activity Report 2014, while every region produces a range of goods and services, each also specialises in something. Different industries make different contributions to employment and income and these fluctuate alongside factors like world prices. While it is true that more specialised regional economies can show higher volatility, regions can become more resilient by developing their current specialisations too. The objective is to find the right balance between developing regional strengths and mitigating threats.

In this context, Christchurch and, more broadly, Canterbury have been identified as a city/region with high value manufacturing and services businesses that play an important role in the national innovation scene. These industries are very innovative and represent a good target for policies aiming to foster economic growth through innovation.

The ultimate outcome would be to optimise the level of economic output - and therefore people’s wellbeing - by having a regional innovation system that provides a competitive advantage and distinctive proposition for the growth of existing businesses, creation and development of start-ups, business/investment attraction and access to government funding.

Current regional performance

An effective regional innovation system is one which provides the region with a distinctive value proposition and competitive advantage over other regions. This competitive advantage enables the desired outcome mentioned previously - the growth of existing businesses, creation and development of start-ups, attraction of new business and investment and access to government funding that can further accelerate regional economic growth.

CDC has recently completed a consultation process with over 50 people locally, nationally and internationally about the Canterbury innovation system. The key conclusions from this consultation were that Canterbury has a lot of innovative assets including a strong public research base closely aligned to the region’s sector strengths; a wider innovation support system; and innovative local businesses, with a strong representation of firms involved in food processing, and the high value-added manufacturing, ICT, agri-tech (precision agriculture) and health sectors.

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20 Based on data collected by the Business Operation Survey (BOS), “Other machinery equipment” and “Computer systems design” are the most innovative sectors in the New Zealand economy with almost ¾ of the firms consulted reporting innovation activity.

21 Regional Innovation Strategy Report, 15/3/16, CDC and Aotearoa Unlimited
However, New Zealand’s business expenditure on R&D is 0.58 percent of GDP, well below international averages, including an OECD average of 1.59 percent of GDP. New Zealand’s government expenditure on R&D is around 0.24 percent of GDP.

Canterbury figures are not officially available but CDC has estimated the business expenditure on R&D (BERD) and Government expenditure on R&D (GERD) based on the employment distribution of Medium-Hi tech manufacturing employees and regional GDP. Canterbury’s BERD rate is estimated to be 0.63 percent of regional GDP and Canterbury’s GERD is estimated to be 0.28 percent.

A number of people consulted identified the lack of multinational companies or commercial critical mass, as well as a lack of alignment of strategies and a galvanising purpose across institutions as limiting factors for the region.22

People believe there are some good examples of Christchurch taking an innovative response to post earthquake, particularly in relation to earthquake response and community engagement.

People consulted perceived Canterbury as an attractive place to live by talented people residing here and as a place to do innovative things, with people having a can-do attitude and keen to experiment.

22 Regional Innovation Strategy Report, 15/3/16, CDC and Aotearoa Unlimited
However, a conservative and insular mind set (fear of losing control, #8 wire, lack of global knowledge / naïve) was believed to limit Canterbury’s innovative potential. Many people also highlighted barriers to talented people being retained in Canterbury, including a lack of employment options and some difficulties for migrants to integrate. People also identified we were missing the opportunity to tell a more coherent story around innovation and to celebrate and talk about innovation models.

While personal connections (locally, nationally and globally) by Canterbury people were seen to be strong, there was potential to achieve more through breaking down silos between networks and getting better at hosting external visitors to the region.

There are a number of reasons Canterbury may struggle to realise the full economic potential of its innovation outputs. Many of the challenges facing Canterbury are national challenges.

- To realise greater wealth from our innovation we need to sell into international markets.
- We have a small domestic market geographically distant from large international markets. This means our innovators may not be exposed to the opportunities and innovations existing in international markets and makes it significantly more costly and more risky to expand into geographically distant markets.
- A significant majority of our businesses are micro businesses, often run by an owner-operator who is also the innovator. Access to significant capital is difficult in New Zealand leading to lower levels of marketing, distribution, strategy, international capability in startups for longer periods, compared with startups in larger countries. This can mean a higher risk of failure entering international markets.
- The cost of significant growth combined with a reluctance to give up control through shared ownership or partnership models, may place a natural limit on the scale of business that an entrepreneur / innovator may want to achieve. There might also be a degree to which New Zealand’s culture values place lifestyle / work/life balance higher than commercial success and absolute wealth compared with other countries (e.g. the US).
- With the potential exception of dairy, the Canterbury economy is diverse and has few businesses of international scale. While this increases the resilience of the economy to international shocks, it makes it more difficult to realise economic returns from innovation because every business must make its own way into international markets. It may also be more difficult to achieve profile in international markets to attract talent, investment and business partners.

Building critical mass may be important to realise economic returns from innovation

Patent applications

A patent is a monopoly right that gives the exclusive use of an invention for a set period. Lodging a patent can (but not always) be a signal of innovation, creativity and the potential for generating economic activity and competitive advantage. They give an indication of a strong innovative culture.
The OECD Metropolitan Regions Dataset includes the number of PCT\textsuperscript{23} (or international) patent applications per million inhabitants. Canterbury ranks well on this measure, with an average of about 85 per year (per million inhabitants) over 1998 to 2010, shown in the next chart. This average is higher than the Australian average and all New Zealand regions except Auckland.

\textsuperscript{23} Patent Corporation Treaty (PCT) is an international patent law treaty. It provides a unified procedure for filing patent applications to protect inventions in each of its contracting states. A patent application filed under the PCT is called an international application, or PCT application.
The chart below plots patent applications against population for several Australasian regions. Unsurprisingly, bigger regions have more patent applications. International research suggests this is not merely as a result of their bigger population bases, but also reflects the benefits of agglomeration, which drives more information sharing and competitiveness and leads to more innovative behaviours.
Domestic patent and trademark applications figures also point to Canterbury being relatively strong at idea generation – only Auckland and Waikato outperform Canterbury. For trademarks within New Zealand, only Auckland and Wellington do better than Canterbury. Proportionate to population, Christchurch is roughly on a par with Auckland in terms of trademarks.

International research\(^2^4\) found not only do more populous regions specialise in a greater number of technical areas but, on average, the types of technology they specialise in are less common than those associated with less densely populated regions. They also found evidence for New Zealand that suggests, not surprisingly, the combination of technical capabilities and the relationships of individuals and organisations plays a role in determining which innovation outputs a region develops, which is consistent with the hypothesis regions exploit agglomeration effects to develop novel technical innovations.

Canterbury must decide whether there is an opportunity to achieve greater innovation outputs and wealth outcomes, from a more deliberate focus on areas where the region has the combination of depth and scale of technical capabilities and local, national and international networks to realise the economic returns from these capabilities.

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\(^2^4\) Dion O’Neale and Shaun Hendy, The regional structure of technical innovation
Innovation related statistics

Employees in innovative sectors

Not only does Canterbury stack up well in terms of business start-ups and patent applications, it also enjoys a high share of employment in innovative sectors such as High-Tech manufacturing and Knowledge intensive industries.

Business births and deaths

Business births and deaths data suggest that Canterbury is a comparatively entrepreneurial region. As the charts illustrate, the net business births rate (births minus deaths, as a percent of geographic units) for Canterbury has typically been slightly higher than that of New Zealand, indicating a willingness to create start-ups. These charts exclude the construction sector, where business births and deaths statistics have been distorted over the past four to five years by the earthquakes.
This is particularly evident during 2015 and 2016 (whether or not you include construction firms in the analysis) indicating that the post-quake environment has led to a change in the levels of activity. Whether, and how, this increased enthusiasm for new businesses can be maintained into the longer term is a key challenge.

Success of large companies in the region

Generally speaking, bigger companies and organisations will tend to have more financial resources available to spend on innovation such as R&D, new processes etc. It is encouraging that Canterbury has its fair share of large firms (100+ employees; around 0.5 percent of firms and 30 percent of employees in Canterbury, 0.5 percent and 31 percent in New Zealand, 2015) and that exports account for a high share of GDP in the region. Again, it tends to be the larger firms that do the bulk share of exporting. The value of exports through Canterbury’s air and sea ports in 2014 equated to about 35 percent of GDP, well above the NZ figure of 25 percent – although not all of these goods are produced within the region. Consistent with many other regions across New Zealand, the majority (61 percent) of Canterbury’s exports in 2014 was primary produce.
5.5 Central City

The competitiveness of central cities comes from close geographic proximity. Businesses located close to similar or complementing businesses enjoy agglomeration advantages of lower transaction costs such as transport, easier access to and development of common services, benefits from sharing ideas and in many cases better access to customers and skilled staff.

Theoretical, statistical and case study analyses of agglomeration point to important factors that drive city development. Foremost amongst these are: positive social amenities, good climate and natural amenities, strong skill base, excellent infrastructure (including communications, and internal and external transport links), land availability (to contain property costs), initial clusters with potential for expansion, an excellent education system, and low levels of negative social externalities such as crime and pollution.25

An assessment of agglomeration impacts in Auckland26 concluded that while sectoral composition and educational attainment appear to contribute to the central city’s observed productivity advantages, employment density and the co-location of economic activity (in other words, “pure agglomeration benefits”) are the primary drivers.

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Furthermore, US Inner City 100 research (Inner City Renewal, 2001) found that inner-city companies in America had higher levels of growth and an average wage rate 170 percent above the minimum, suggesting more knowledge-intensive activities.

Sectors that benefit more from locating in successful central cities include Business Services, Education, Printing, Food, Health Care and Tourism. This mirrors the business activity that existed in central Christchurch prior to the earthquakes: accountants, lawyers, property, the polytechnic and private training establishments, restaurants, cafes, the hospital, visitor activities and hotels.

Encouraging residential living within the central city is an important factor of city growth, efficiency and maintaining a vibrant inner city. Traditionally Christchurch, in line with other New Zealand cities, had a relatively low proportion of its residents living within the central city area as land price, distance and time factors were not yet sufficiently divided between suburban living and inner-city living to drive high-density central city residential development. In Christchurch, a central city high density townhouse and apartment culture had been evolving. Residents can have a much bigger economic impact on the retail and hospitality sector within a central city than employees. Growing the residential population in the central city will drive inner city economic activity and vibrancy.

Although central cities are vibrant places, offering many local services and events, there are also challenges relating to central cities. For attracting residents these include the perceptions of and actual crime, land rents and parking availability. For attracting both workers and visitors, cost and availability of parking is also often an issue.

Key thoughts: central city:
- What are our priorities in building a strong central city?
- How can we encourage more central city residents?
- What amenities should our central city feature?

Pre-earthquakes and recovery

A successful inner city will see significant business and retail activity by day, supported by after-hours activity in the evening and weekends. The Christchurch central city area has traditionally been described as the area between the four avenues: Rolleston, Bealey, Moorhouse and Fitzgerald.

Statistics New Zealand produces estimates on the number of geographic units, employees and residents in an area roughly equivalent to the central city (it also includes Hagley Park). A breakdown of employment in selected industries prior to the earthquakes is given in the table below. The central area hosted around 16 percent of all geographic units in Christchurch and 28 percent of employees in Christchurch (meaning central city businesses tended to be larger) in 2010. Sectors with a strong proportion of employees in the central city included Accommodation, Cafes and Restaurants (36 percent of Christchurch’s employees in this sector were in the Central City); Information Media and Telecommunications (72 percent); Financial and Insurance Services (56 percent); Professional, Scientific and Technical Services (54 percent); Administrative and Support Services (50 percent); and Health Care and Social Assistance (36 percent). The single largest employment sector in the central city area was Health Care and Social Assistance with over 8,600 employees.

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27 Inner City Renewal, Professor Michael E. Porter, Harvard Business School, 2001
Post-earthquake data (2013) shows employment in the central city has significantly reduced with the most significant change seen in Financial and Insurance Services (down 84 percent); Accommodation and Food Services (down 76 percent); and Information Media and Telecommunications (down 71 percent). Some of these sectors have already seen an improvement in numbers employed in the central city. In particular, between 2013 and 2016, strong growth was seen in Construction (115 percent increase but off a small base); and Accommodation and Food Services (86 percent increase).

<table>
<thead>
<tr>
<th>Table: Employees Christchurch</th>
<th>2010</th>
<th>2013</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>City Centre</td>
<td>% of Chch</td>
<td>City Centre</td>
</tr>
<tr>
<td>Total Industry</td>
<td>50,990</td>
<td>27%</td>
<td>28,277</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>1,075</td>
<td>4%</td>
<td>515</td>
</tr>
<tr>
<td>Construction</td>
<td>455</td>
<td>4%</td>
<td>670</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>1,280</td>
<td>12%</td>
<td>690</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>4,260</td>
<td>21%</td>
<td>2,540</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>4,870</td>
<td>36%</td>
<td>1,180</td>
</tr>
<tr>
<td>Transport, Postal and Warehousing</td>
<td>965</td>
<td>11%</td>
<td>414</td>
</tr>
<tr>
<td>Information Media and Telecommunications</td>
<td>2,760</td>
<td>71%</td>
<td>803</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>2,540</td>
<td>56%</td>
<td>400</td>
</tr>
<tr>
<td>Rental, Hiring and Real Estate Services</td>
<td>745</td>
<td>24%</td>
<td>375</td>
</tr>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>6,950</td>
<td>53%</td>
<td>3,030</td>
</tr>
</tbody>
</table>
The 2006 Census describes the population living in the central city area (using the same three area units as the industry statistics given above). There was a small amount of residential growth. In 1996 2.2 percent of Christchurch lived in the inner city, rising to 3.8 percent (13,827 people) in 2006. There was a distinctive bi-modal age distribution of residents: 27 percent were 20-29 year olds and 20 percent over 60. Children and the middle-aged are less likely to live in the central city.

Residents of the central city were more qualified (50.7 percent have a post-school qualification, compared to 40.5 percent across Christchurch) and have a marginally higher median income.

Following the earthquakes there has been a loss in population in all three area units in the central city. Between 2006 and 2013 the population of Hagley Park fell by 46 percent, Cathedral Square by 54 percent and of Avon Loop by 28 percent (compared to just a two percent fall across the entire city).

Central city rebuild

In accordance with Canterbury Earthquake Recovery Authority’s (CERA) lead role in recovery, the Government created and tasked the Christchurch Central Development Unit (CCDU) with finalising and implementing the Central City Recovery Plan to provide confidence, certainty and direction to ensure a brisk recovery for the CBD.

CERA was disestablished on 18 April 2016, with the government transitioning from leading recovery to utilising locally-led solutions. Ōtākaro Limited is now responsible for the key anchor projects and precincts in Christchurch and Regenerate Christchurch oversees the Red Zone strategy and long-term development and enhancement of the central city.

The central city projects (and some expected dates) include:

- An Earthquake Memorial (opened February 2017)
- Margaret Mahy Family Playground (opened 2015)
- Christchurch Town Hall (restoration due for completion 2018)
- Metro Sports Facility (opening intended for early 2020)
5.6 Suburban Economic Development

"The suburban economy is so much larger than inner city areas. As a rule of thumb, between eight and nine out of ten jobs in our major metro regions of Brisbane, Sydney and Melbourne are suburban. Only one in ten or at most two in ten, are found in the inner-city areas. Achieving a 10 percent improvement in the suburban economic engine is hypothetically equivalent to achieving an 80 percent improvement in the economic performance of the inner cities."[28]

CBDs and suburban centres are intrinsically linked, where there is a positive cross-elasticity of suburban employment with respect to centre city employment and vice versa. This illustrates the importance of strong suburban economies to the city economy, and one can’t be developed in isolation to the other. A major focus of the rebuild has been on the CBD, with the major anchor projects concentrated to within the four avenues.

While CBDs provide high density and high paying employment, suburban centres are fundamental in the makeup of a city economy. Employment data helps to illustrate the importance of suburban centres to the city economy; a pre-earthquake snapshot shows 27 percent of citywide employment was in the CBD. This figure has fallen to 16 percent in 2015 due to the displacement of many central city businesses. While we will likely see this figure approach the pre-quake level as further office space opens in central city, the majority of employment in the city lies in suburban areas.

CDC has undertaken a series of suburban research documents on particular areas within the city landscape that are seen as in need of regeneration and revitalisation. The process included external consultation with interested parties and community groups, and took into account current policies and documents such as Christchurch City Council Master Plans.

Key insights form this research has been:

- Economies of suburbs can be defined geographically through an analysis that identifies a common core issue/opportunity(s) that become vague or disjointed as you move further away from the suburb.
- Suburban economic development must consider flows and transaction in and out of the suburb to fully understand its economy
- The result of the process tends to provide strategic priorities, less specific interventions.

Red Zone

With the scale of the Red Zone, it is important to focus on the creation of amenity value rather than a solely residential project. Green spaces, water features connecting the sea and rivers and mixed-grade housing will help to create and develop a more prosperous area of the city. As the central city rebuild progresses and decisions are made around the Red Zone, the eastern suburbs will have a platform on which regeneration can be based.

The criteria for defining areas as Residential Red Zone:

· There is significant and extensive area wide land damage;
· Most buildings are *uneconomic to repair*;
· There is a high risk of further damage to land and buildings from low levels of shaking;
· The success of engineering solutions would be uncertain and uneconomic;
· Any repair would be disruptive and take a considerable period of time.

Over 7000 flat land properties were red zoned. All homes red zoned were eligible for a pay-out.

Pay-outs were to all landowners whereby properties uninsured and insured would receive an offer of 100 percent of their 2007/08 rateable land value. Those insured properties would also be entitled to 100 percent of the 2007/08 rateable improvements value for the insured improvements and subsequently purchased by the crown.

Former owners (who accepted the original Crown offer) of vacant, insured commercial and uninsured improved red zone properties would be eligible for an ex gratia payment, if the total payment of new Crown offers is higher than 50 percent of the 2007/08 rateable land value.

Within the Red Zone there was a loss of key infrastructure with damaged roads, bridges and ground level movements. Schools, supermarkets and local community facilities were also lost within the area. The largest sports facility and host venue for the Commonwealth Games in 1974 in the city, QEII, was also lost to the earthquakes.

A new entity, Regenerate Christchurch, has been established as part of the Greater Christchurch Regeneration Bill and is a joint venture between the Crown and Christchurch City Council. Its function is to oversee the long-term development and enhancement of the central city, Residential Red Zone and wider-New Brighton – areas of focus in CDC suburban economic development research documents.

The Red Zone offers a unique opportunity to change the distribution of wealth within the city. Traditionally a low socio-economic area, redeveloping it with a mix of high end and affordable housing would attract young professionals, families and first home-buyers and increase the average
wage of the local area. This would help service centres in the area. With such a large area of land there is the opportunity to create amenity in the form of green spaces, flood mitigation lakes and community areas.

Other suburban priorities

CDC also completed a research document on economic development for the Woolston Bromley area, and has identified Akaroa and Lyttelton as suburbs which would benefit from economic planning interventions.

The key finding in Woolston Bromley was the need for a single 20 years vision for the area, is it predominantly industrial, high end retail or residential. Clarity would provide confidence to the private sector for investment and aid accelerating development in the area. The report has been provided to urban planning staff at Christchurch City Council.

5.7 Housing

Rebuild

The housing stock in greater Christchurch was significantly affected by the 2010 and 2011 earthquake sequence. An estimated 25,000 houses suffered significant damage, requiring substantial repair or rebuild. A further 69,000 properties required minor to moderate repairs. The government determined that 7,100 properties faced unacceptable exposure to future natural disasters, deciding to ‘Red Zone’ and purchase the properties.

Demand for housing intensified in 2012-13 as displaced households relocated and new workers arrived in the city to work on the rebuild. Housing pressures were most acute in 2014 with rents 42 percent higher and house prices 28 percent higher than pre-earthquake levels. These pressures have since dissipated due to substantial progress in completing earthquake repairs and a strong supply of new housing. After accounting for dwellings that have been demolished, a net 11,249 new dwellings have been built in Christchurch City alone, comprising 4,144 from intensification and 7,003 in new greenfield subdivisions.

Composition

Housing in greater Christchurch is exemplified by detached dwellings with three to four bedrooms, at odds with the average household size of one to two residents. The earthquakes exacerbated this misalignment, as losses were concentrated in one to two bedroom dwellings, yet replacement dwellings are typically three bedrooms or more.

Demographic analysis conducted by CDC indicates the most common household type by 2031 will be ‘couple without children’, followed by ‘one person living alone’, both of which have a basic need of one to two bedrooms. The generation born between 1946 and 1965, otherwise known as ‘baby boomers’, tend to comprise such aforementioned small households yet also tend to occupy dwellings with three or more bedrooms. The ownership patterns of this cohort between 2006 and 2013

29 CDC, REINZ, MBIE; 2017
30 CDC, 2014, Greater Christchurch housing supply and future demand
indicate although a small proportion will downsize as they approach retirement age, the majority will continue to occupy their larger dwellings. Modelling based on the life expectancy of this cohort reveals that there is unlikely to be any aggregate effect on the housing market when this cohort ultimately sells down their owner-occupied dwellings31.

The mismatch between household and housing composition is omnipresent across New Zealand and is due to a number of structural factors, particularly the incentives faced by developers of new housing.

**Households in greater Christchurch, 2013**

*Source: Statistics NZ*

<table>
<thead>
<tr>
<th>Bedrooms</th>
<th>Usual residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5.00%</td>
</tr>
<tr>
<td>2</td>
<td>15.00%</td>
</tr>
<tr>
<td>3</td>
<td>35.00%</td>
</tr>
<tr>
<td>4</td>
<td>25.00%</td>
</tr>
<tr>
<td>5 or more</td>
<td>10.00%</td>
</tr>
</tbody>
</table>

**Housing affordability**

The cost of housing in Christchurch is similar to other areas in New Zealand, such as Wellington and Hamilton. House prices and rents rose sharply following the earthquakes in response to a loss of housing stock and heightened demand. However, significant progress in repair and rebuild of damaged housing has seen prices and rents settle.

Rental affordability is similar to Wellington and Hamilton, with median rent amounting to 25 percent of median gross household income.

The affordability of houses for first home-buyers in Christchurch is also similar to Wellington and Hamilton. For a couple aged in their early thirties, it is estimated that saving for a 20 percent deposit would take five years and the subsequent mortgage would consume 25 percent of gross income32.

**Housing repair**

Significant progress has been achieved in repairing earthquake-damaged housing in greater Christchurch. The EQC insurance repair programme, which dealt with minor to moderate damage, is

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31 CDC, 2016, Baby Boomer Housing Bust: Myth or Reality?
32 CDC, 2016, Housing affordability knowledgebase

59
98 percent complete. The settlement and repair process of private insurers, which dealt with moderate to major damage, is 87 percent complete. However, 70 percent of these have been cash settled, meaning that the housing stock has not necessarily been repaired. Although there are relatively few houses yet to be settled with the insurers, many of those remaining will require complex repairs, meaning that insurer repair programmes will continue into 2017 and beyond.

In cases were the houses have not been repaired by the insurer, the owners may have arranged for repairs themselves; deferred repairs and put the funds towards other purposes; or on-sold the property in an unrepaired state. It is likely that many of these houses will remain unrepaired for some time to come. CDC research estimates that seven percent of all Christchurch City house sales in 2016 were on an as-is-where-is (AIWI) basis, that is unrepaired and unable to obtain full insurance. The lack of full insurance means that buyers are unable to obtain a mortgage over an AIWI house, so they are unlikely to be suitable for first home-buyers, despite being relatively affordable. AIWI houses were particularly attractive as rental properties early in the rebuild as they commanded relatively high rents despite being damaged, providing investors with a high yield. However, the rental market has since turned in favour of renters, which may lead to discounted rents and therefore lower yields for AIWI properties. In the long run, these properties are likely to be repaired or rebuilt, however it is not clear what will happen to them in the short term. These properties tend to be clustered in areas with high construction costs, particularly flood management areas and on liquefaction prone soils. There is no official register of as-is-where-is houses, meaning that prospective buyers are reliant on the vendors’ disclosure and thorough due diligence.

Land supply

Greater Christchurch is well placed to accommodate further population growth, due to the flat surrounding topography and large areas of residential zoned land. The government re-zoned large swatches of rural land around the city in 2013, providing for 28,500 sections in addition to previous plan enabled capacity. It is estimated that under current zoning in Christchurch City alone, there is land available for 15,000 additional dwellings in existing neighbourhoods, and 30,000 dwellings in new subdivisions. Ample land supply is a key component of housing affordability, acting as a circuit breaker for any deterioration in housing unaffordability.

5.8 International Connections

International connectedness is highly correlated with strong productivity growth. International connectedness allows businesses and cities to specialise and maximise the economic return from their ideas and activities and facilitates the flow of ideas, people and capital, which are the foundations of economic growth.

Globalisation of value chains and the economic integration of local economies into the world economy has increased significantly in recent decades. The value of trade (both goods and services) as a percentage of world GDP increased from 42.1 percent to 62.1 percent between 1980 and 2007. Flows of people and resources across country boundaries has increased markedly.

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33 Fletcher EQR, 2016
34 Insurance Council of NZ, 2017
35 CDC, 2017, As-is where-is housing knowledgebase
36 Christchurch City Council, 2017, Housing and business development capacity
Key factors driving a greater need for business international connectedness include:

1. Global value chains and short innovation cycles mean an ongoing and rich flow of information is required between the end user and the components of the (often global) value chain to ensure products and services can quickly evolve and adapt to changing consumer expectations – ongoing, relevant knowledge is power. Consumers are also expecting more information across the whole supply chain about where products are sourced from and associated social and environmental impacts.

2. Networks are the key vehicle to share information, ideas and even resources rather than relying on traditional channels or institutions:
   - The value of brands has diminished as people look to social media / peer review / “word of mouth” to guide purchasing decisions. People are more self-sufficient / less trusting – they find their own information from their peers.
   - There is not a single (traditional) channel any more. Engagement through traditional power-bases have shifted towards the network (democratised) – banks to crowd funding; traditional medial channels to social media; government to people power.

3. Collaboration is the key – increasingly innovation occurs at the intersections between industries, different ideas and between end users and businesses rather than through traditional in-house R&D processes.

4. There is more information – it is increasingly difficult in a networked environment to identify and connect with who you need to know and be noticed above the noise.

New Zealand is the most isolated and among the smallest developed countries in the world. International research has estimated that New Zealand’s geographical isolation and small scale contributes around 50 percent of the gap between New Zealand’s GDP per capita and the OECD average.

New Zealand, and therefore Christchurch, faces a particular challenge – our small local economy means international connectedness is critical to increase Christchurch’s productivity and wealth creation, but our geographical isolation makes international connectedness more expensive and difficult for our local businesses than for businesses less isolated from large overseas markets.

Factors to consider with regard to increasing Christchurch’s international connectedness:

- Is the infrastructure; air and sea links; digital connectivity, a barrier or advantage to Christchurch?
- How well is Christchurch leveraging the people networks/relationships that already exist?
- Profile – how well known is Christchurch’s offering known overseas/nationally?

Personal networks

At the time of the 2013 Census, 21 percent of people in Christchurch City were born overseas, compared to 23 percent nationally. While nearly a quarter of the city’s population may have retained significant interactions with their country of origin, homelands are not particularly diverse with a high proportion from the United Kingdom. Half of these United Kingdom immigrants came here more than 20 years ago, likely as children, which limits their international connections.
Asian migration is strong into Christchurch, supported further by high numbers of international students from Asian markets.

Birthplace (broad geographic area) of usually resident population 2013
Proportion of those born from those born overseas (stated)

Source: Statistics New Zealand, CDC

<table>
<thead>
<tr>
<th>Birthplace</th>
<th>Proportion of those born overseas</th>
<th>New Zealand</th>
<th>Christchurch City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td></td>
<td>25%</td>
<td>25%</td>
</tr>
<tr>
<td>Pacific Islands</td>
<td></td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>Europe (excluding United Kingdom and Ireland)</td>
<td></td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>United Kingdom and Ireland</td>
<td></td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>North America</td>
<td></td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Middle East and Africa</td>
<td></td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Partially because of the large number of foreign-born residents being from the United Kingdom, only a small proportion of the population can speak more than one language, which is a barrier to greater connectivity. Just over 84 percent of people in Christchurch City speak only one language, compared with 79.8 percent of people for all of New Zealand (Census 2013).

Languages spoken by Christchurch City residents as reported in the 2013 Census show that of people speaking a language other than English, it’s likely Māori or French. The breakdown of languages spoken is shown below.

<table>
<thead>
<tr>
<th>Languages spoken by Christchurch City Residents 2013 (Census)</th>
<th>Source: Statistics New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>312,849</td>
</tr>
<tr>
<td>Other</td>
<td>18,015</td>
</tr>
<tr>
<td>Māori</td>
<td>5,943</td>
</tr>
<tr>
<td>French</td>
<td>4,437</td>
</tr>
<tr>
<td>Northern Chinese</td>
<td>3,777</td>
</tr>
<tr>
<td>Sinitic not further defined</td>
<td>3,777</td>
</tr>
<tr>
<td>Samoan</td>
<td>3,714</td>
</tr>
<tr>
<td>German</td>
<td>3,318</td>
</tr>
</tbody>
</table>
International education

Traditionally, Canterbury was a popular destination for international students in New Zealand. Between 2003 and 2010, around 17 percent of international students in New Zealand chose to study in the Canterbury region across school, tertiaries and private training establishments (such as English language schools). This fell to around eight percent in the post-quake environment, although student numbers are recovering.

These students can help increase international connections when they return home and continue to maintain links with Canterbury, or if they decide to remain in the city and provide their international experience.

Below are the top markets for international education, by number of international students in Canterbury in 2015:

- China 1,565
- India 1,180
- Japan 685
- United States of America 290
- Thailand 285
- Germany 220

Digital connectivity

“Searching for “Christchurch New Zealand” on LinkedIn returns 49,405 people results, 19,159 of which are identified as located in Canterbury and the West Coast.”

Digital connectivity is increasingly important in supporting relationships between people in other countries, e.g. through social media or teleconferencing. Digital networks are also now essential platforms supporting international trade for managing business relationships, making sales and enabling collaboration. The communications infrastructure that connects New Zealand to the world provides a third port (in addition to sea and air ports), with digital products and professional services increasingly being traded internationally over the internet using digital technologies.

The Southern Cross cable network connects New Zealand to the world via Australia and the United States. It provides 3.6 Terabytes per second (Tbps) of data capacity, which will soon be upgraded to over 12 Tbps. Planning for a replacement cable, Southern Cross NEXT, is already underway and expected to deliver 60 Tbps. Planning is also underway for a competing cable, Hawaiki, with capacity of 42 Tbps. In addition, the Tasman Global Access Cable provides a link to Australia with total capacity of 20 Tbps. These cables all come ashore in the North Island close to Auckland.

The Household Use of Information and Communication Technology: 2012 Survey (Statistics NZ) examines the infiltration of technology by region in New Zealand. The number of households with internet access increased between 2006 and 2012; most households in Canterbury (81 percent) had internet access in 2012, up from 67 percent in 2006. This is slightly above the national average of 80 percent.
Slightly fewer households had access to broadband (75 percent). This has more than doubled since 2006 (33 percent). Nationally the penetration of broadband is also 75 percent.

Enable Networks Ltd, owned by Christchurch City Council, has been rolling out ultra-fast broadband (UFB) for Christchurch residents and businesses by laying fibre connections direct to every property in the command area. This will reduce the cost for existing fibre users and allow more businesses to connect and enjoy the increased efficiency that ultra-fast broadband provides. Enable Networks range of wholesale business products was released in February 2012 and has been available to at least 90 percent of Christchurch businesses since the end of 2015. Use of UFB is expected to have significant economic benefits for the city. Early estimates suggest that over the period 2009 to 2031, the cumulative value-added impact of the UFB scenario for Christchurch City is estimated to be around $7.4 billion in 2009 dollars through both construction impacts and productivity impacts (for example, being able to quickly adopt new technology, increased efficiency, online collaboration and better work-life balance).

International terminals

Christchurch International Airport is the largest airport in the South Island and the only airport capable of handling the largest long-haul commercial aircraft such as the Airbus A380, Boeing 747 and 777. It is curfew free so is able to operate 24 hours a day. A new terminal building was completed in 2013. This offers combined international and domestic services offering modern facilities and capacity for growth in passenger numbers. In the year to June 2016, 6.3 million passengers travelled in and out of the airport; 1.6 million of which were direct international journeys. International visitor arrivals to New Zealand numbered 3.5 million in 2016, whilst New Zealand residents departed on 2.6 million overseas trips in the same period.

Several airlines use the airport and direct international flights are available to Singapore, Guangzhou, Sydney, Melbourne, Brisbane, the Gold Coast, Perth and Nadi. There are comprehensive domestic services to destinations throughout New Zealand.

Below are the top countries by visitor arrivals to Christchurch Airport in 2016:

- Australia          234,272
- China              42,992
- United Kingdom     36,800
- United States      22,912
- Germany            21,808
- South Korea        18,208

In 2015, $1.6 billion of export goods moved through the airport. However, there is a limited air freight capacity from the airport. PwC found that the South Island is “under-exporting” around 18,300

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38 An Initial Assessment of the Economic Impact of the Government’s Ultra-Fast Broadband Initiative on Christchurch City”, January 2010, Prepared by Dr Garry McDonald, Market Economics Ltd and Amy Marshall and Anthony Thomas, Canterbury Development Corporation
40 Statistics NZ: International Travel and Migration: Year to December 2016
41 Statistics New Zealand, Total Exports by New Zealand Port
tonnes and “under-importing” around 13,700 tonnes by air. The potential demand for airfreight trade by South Island exporters and importers is expected to increase, suggesting the gap in capacity will worsen\textsuperscript{42}.

Despite being able to resume operations shortly after the February earthquake, Lyttelton Port suffered significant damage. In 2014, the Lyttelton Port Company produced a Port Lyttelton Plan, which outlines the 30-year vision for the recovery and enhancement of the port and how the company will capitalise on the unique opportunity to reconfigure its facilities to deliver a modern, thriving port.

The key exports from Christchurch Airport and Lyttelton Port in 2016 were:
- Dairy produce (and eggs and honey) $1,774 million
- Boilers, machinery and mechanical appliances $990 million
- Meat and edible offal $705 million
- Fish and seafood $341 million
- Preparations of cereals, flour, starch or milk $333 million
- Wool and animal hair $298 million
- Wood and articles of wood, wood charcoal $203 million
- Electrical machinery $193 million
- Oil seeds, grains, seeds, industrial or medicinal plants $115 million

The key export destinations from Lyttelton Port and Christchurch International Airport in 2016 were\textsuperscript{43}:
- China $1,442 million
- Australia $1,012 million
- United States $649 million
- Japan $387 million
- United Kingdom $195 million
- Thailand $183 million

The key import origins for goods arriving at Lyttelton Port and Christchurch International Airport in 2016 were:
- China $898 million
- Australia $628 million

\textsuperscript{42} Opening up the South, 2015 Progress Update, PWC, February 2015
\textsuperscript{43} Statistics New Zealand, Exports for Overseas Cargo (fob NZ$), may include a degree of re-exports
5.9 Business Environment

Commercial property market

The loss of buildings within the central city following the earthquakes has had a major impact on businesses, with many finding new premises. They have relocated to business parks and industrial zones such as Addington and iZone (Rolleston), with some in temporary accommodation. Businesses operating in substandard accommodation may see reduced productivity and, generally speaking, road infrastructure was not designed to cope with current levels of occupancy in some suburbs so traffic has slowed.

Also, a number of residents and some businesses have re-located to the Selwyn and Waimakariri districts.

Buildings are reopening in the central city but at a higher cost due to higher quality and safety. Rents in the CBD appear to have stabilised and are forecast to remain flat for the medium term as buildings continue to come into service, at an average of $395/sqm for prime grade buildings, which are typically new builds, and $285 for secondary grade.44

Colliers NZ CBD Office Market Indicators Report 2016. Average net face rent per square meter

<table>
<thead>
<tr>
<th>City</th>
<th>Prime grade</th>
<th>Secondary grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland</td>
<td>$447</td>
<td>$226</td>
</tr>
<tr>
<td>Hamilton</td>
<td>$220</td>
<td>$123</td>
</tr>
<tr>
<td>Wellington</td>
<td>$456</td>
<td>$216</td>
</tr>
<tr>
<td>Christchurch</td>
<td>$395</td>
<td>$285</td>
</tr>
<tr>
<td>Dunedin</td>
<td>$213</td>
<td>$127</td>
</tr>
</tbody>
</table>

Other business costs

The high demand for labour, coupled with the relatively low unemployment rate, caused upward pressure in wages – especially in sectors where workers could be attracted to high wages in the

44 Colliers International, 2016, CBD Office Market Indicators Report
construction sector. Earnings in Canterbury approached those nationally, with the gap in weekly earnings reducing from $72 in September 2010 to just $37 in September 2016.

Commercial property insurance has become more difficult to obtain and expensive following the earthquakes. Availability is no longer guaranteed and businesses face higher costs and find less than 100 percent of the risk is covered. While some insurance issues are being resolved as development continues, operating in a seismically active area will mean cost and complexity remain high.

Local/regional government regulation

Local government agencies have a range of responsibilities, which recognise some decisions are better made by local communities. This includes the development of planning rules that determine how the land resource and other natural resources within a local authority’s boundary can be used. These plans set the geographic framework that determines where businesses can and cannot operate and, as a result, how well they are connected to local supply chains and customers.

Local government also provide some key infrastructure, such as roads and water services, as well as community services such as rubbish collection. To support these activities, which help businesses as well as households, local authorities administer property and developer tax policies. These taxes form part of the business operating costs in a locality.

Collectively, the planning rules and regulatory settings put in place by local government and the integration of infrastructure and service delivery have a significant impact on the ease of doing business within the city.

Infrastructure provision

The availability, quality and cost of infrastructure in the city impacts heavily on business efficiency, productivity and competitiveness. A lack of provision can exclude certain business activities completely if they are heavily dependent on the supply of services over one or more infrastructure platforms.

Infrastructure supports the provision of energy, transport services, communication technology and clean water to business. Infrastructure also removes wastewater and manages storm water.

Infrastructure provision (and the services provided over it) are particularly important for supporting export activity. Traditionally this has meant ports, airports and access routes to them, which will remain important for exporting businesses into the future as the exit points for physical products.

The communications infrastructure that connects New Zealand to the world provides a third port (in addition to sea and airports) with digital products and professional services increasingly being traded internationally over the internet using digital technologies.

The current fibre technology installation and roll out of 4G mobile services throughout the city will raise the standard of telecommunications services, significantly opening up new opportunities for businesses and the resident population.

Social infrastructure within the city (e.g. education and health facilities) also support businesses by supporting the workforce and making the city an attractive place to live.

All these factors impact on the ability of the city to attract, and retain, new migrants.
5.10 Primary Sector Growth and Sustainable Management of Land and Water

The rural sectors in Canterbury are entering a period of transformation. The introduction of water quality standards and other environmental challenges has the farming community grappling with the complex challenges relating to stricter controls on rural production systems. The Canterbury Water Management Strategy (CWMS) sets out parallel goals of achieving these standards, whilst simultaneously increasing the economic productivity from land based industries and the amount of farmland in the region that is irrigated, i.e. sustainable development. Historically, increasing irrigated area has led to intensification of farming systems which have generally put increased stress on the environment.

Central government has also set a national goal to “double primary industry exports in real terms from $32 billion in June 2012 to $64 billion by 2025”. To achieve this, New Zealand’s primary industries must grow at a rate of 5.5 percent a year through to 2025.45

Options analysis indicates achieving primary sector production and greater levels of irrigation, whilst improving environmental quality, is a significant challenge. Overcoming this challenge successfully will deliver significant economic gains, estimated at potentially over $1 billion GDP per year for the region and make primary producers far more resilient to weather variations. However, it will require significant transformation and investment.

Adaption and innovation will be required in areas such as:

- Adding further value to agricultural products (processing higher value products or providing a point of difference with a price premium)
  - Examples: Processing higher value foods from farm products
  - Marketing the value added by farm practices (e.g. organic, environmental certification)
  - Highlight the ‘uniqueness’ of products
- Farm business and environmental management (farmers doing what they do, but better)
  - Examples: Following Good Management Practices
  - Implementation of farm environment management plans
  - Closer controls on farm inputs and outputs
  - Utilising management systems that drive better yield management and resource use
  - Improving skills and knowledge through education and training
- New farm systems (farmers doing things differently)
  - Examples: Alternative crops
  - Adoptions e.g. use of winter housing
- Technology adoption and development (moving towards precision agriculture practices)

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45 Ministry for Primary Industries
- Examples: Sensing technologies
- Pollutant reducing technologies
- Crop type / genetic advances

Catchment scale initiatives or management of sensitive receiving environments (community scale projects)
- Examples: Aquifer augmentation
- Sediment management
- Lake management programmes

The Christchurch economy is integrally linked with rural sectors and will be positively affected by the successful implementation of the CWMS. As the main urban centre in the South Island, Christchurch is well placed to provide many of the solutions that will lead to success.

There are significant opportunities for businesses, researchers, innovators and entrepreneurs in Christchurch to develop some of the solutions that will help achieve economic growth and good environmental practices in the rural sector:

- Provision of advisory services relating to farm management and systems, environmental management, accounting and banking will play a crucial support role for adaption and innovation by land users.

- The tertiary sector can provide scientific research and engineering solutions. It should also supply people with skills needed for highly managed farm systems and the provision of advisory services. The Lincoln Hub is strongly positioned to contribute to the development the on-farm solutions.

- The manufacturing and technology sectors can supply and support technological solutions.

- Precision agriculture and better business management will require investment in data analysis and secure storage, which could be supplied by Christchurch based software and analytics companies and data centres.

- Building irrigation schemes and catchment scale infrastructure requires engineering and construction expertise.

Key thoughts: Natural Resources

- Establishing Christchurch and the Lincoln Hub as a centre of expertise in sustainable resource management, ensuring innovation and research meets the technological change and adoption required to optimise economic outcomes from the CWMS.

- Develop a precision agriculture culture supporting the take up and utilisation of enabling technology.

- Protecting the purity of Christchurch’s fresh water supplies and leveraging the value of this resource.
Productive land

Just over 60 per cent of the Canterbury region’s land is suitable for production, i.e. land-use capability classes 1 to 6. Classes 1 to 3 are suitable for cultivation, while classes 1 to 6 are good for pasture and forestry. Class 7 is very difficult for pasture but moderately suited for forestry. The quality soils have long been the basis of Canterbury’s land-based economy, which accounts for approximately 14 percent of regional GDP including added value through food processing. Whilst it is not the largest sector in the region using the GDP measure, land-based production makes a significant contribution to the region’s balance of trade. Primary products and products manufactured from them account for approximately two thirds by value of export goods through Christchurch’s sea and air ports (Source: Statistics New Zealand).


<table>
<thead>
<tr>
<th>LUC Class</th>
<th>Arable cropping suitability†</th>
<th>Pastoral grazing suitability</th>
<th>Production forestry suitability</th>
<th>General suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>Multiple use land</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>Pastoral or forestry land</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>Conservation land</td>
</tr>
<tr>
<td>4</td>
<td>Unsuitable</td>
<td>Low</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Unsuitable</td>
<td>Low</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Unsuitable</td>
<td>Unsuitable</td>
<td>Unsuitable</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

More than a third of the land in Canterbury is arable (classes 1 to 4), but only four per cent of the total land area is in the most versatile classes 1 and 2. Half of the class 1-2 land, and significant areas of classes 3 and 4 land, lie within a one hour commuting distance from Christchurch. As a result,

urbanisation (in particular the development of lifestyle blocks) threatens the loss of this important natural resource for production.

Fresh water

Fresh water is an important resource for primary industries, power generation, food processors and the tourism sector in Canterbury.

The region accounts for 54 percent of the nation’s consented water allocation by volume. Excluding hydro-electricity, as this is a non-consumptive use, 83 percent of consented water takes are allocated to agricultural irrigation and 12 percent for stock drinking water supplies. Seventy percent of New Zealand’s irrigated land is in Canterbury.

The volume of water used in the urban areas of Canterbury, including Christchurch, are much smaller than those for the agricultural sector. Christchurch’s underground aquifers mean residents and businesses enjoy a very high quality, untreated water supply from five layers of confined aquifers that act as natural underground reservoirs. The water in these confined aquifers is under pressure, reducing pumping costs. Furthermore, because of the purity of the groundwater, treatment is not required meaning this water has low processing costs and is inexpensive to produce for residents and business consumers compared with other cities in New Zealand and the rest of the world. The purity of the water is an important factor for some industries, such as brewing or food processing operations. This is a natural competitive advantage for the city.

The Canterbury Water Management Strategy (CWMS) has been developed to address Canterbury water issues, including where there are deteriorating quality of surface water and groundwater, the loss of cultural value and recreational opportunities and the declining availability and reliability of water for both the agricultural and energy sectors. The strategy sets out targets for water management for the next 30 years. Leadership of the strategy lies with the Canterbury Mayoral Forum, with the strategy being prepared by a multi-stakeholder Steering Group.

Work was commissioned by CDC with the Agricultural and Economic Research Unit (AERU) at Lincoln University, to look at the economic value of irrigating all available and suitable land and the flow-ons to businesses which support to the agricultural sector. The results suggest if an additional 250,000 hectares of land were irrigated (this is the suggested potential area in the CWMS), an additional $1.1 billion in regional GDP would result and an additional 7,900 full time workers would be supported.

However, subsequent economic modelling has shown that reducing nitrate leaching at the zone level without further interventions and changes in farming practice will significantly constrain this opportunity to increase levels of economic output in Canterbury. Under hypothetical reduced leaching scenarios the GDP output is reduced and this is reflected in employment numbers. Furthermore, when testing these hypothetical scenarios, in almost all zones any reduction in nitrate sought leads to a land allocation that is utilising less irrigation than allowed for in the previous AERU work. In some cases this falls below the base year (2012) level of irrigation and in all the major zones it is significantly less than the maximum irrigation scenarios allow. This poses a significant challenge and need for change.

Minerals

New Zealand contains a wide variety of mineral deposits both onshore and offshore that reflect its dynamic tectonic history. The main minerals include coal, gold, silver, ironsand, aggregate, limestone, clay, dolomite, pumice, salt, serpentinite, zeolite and bentonite. In addition, there are resources or potential for deposits of titanium (Ilmenite beachsands), sulphur, phosphate, silica, platinum and mercury. Source: GNS science.
Seafloor mineral deposits within New Zealand’s Exclusive Economic Zone could be worth up to $500 billion. This value of marine mineral resources is at this stage an estimate based on incomplete information and further exploration is required to confirm the quantum of resources. Source: The Centre for Advanced Engineering.

There is potential for administrative functions and support industries to be based in Christchurch.

Environmental sustainability

Ensuring the environment is managed sustainably is of primary importance when considering natural resources. The value of ecosystem services needs to be captured in decisions relating to the use of natural resources for economic gain if we are to develop the economy in a sustainable manner that ensures a better quality of life for present and future generations. Ecosystem services are categorised as ‘provisioning’, such as food, timber and freshwater; ‘regulating’, such as air quality, climate and pest regulation; ‘cultural’ such as recreation and sense of belonging; and ‘supporting’, such as soil quality and natural habitat resistance to weeds. The protection of ecosystem and natural values is a key element supporting our tourism visitor economy, which trades to a large extent off New Zealand’s natural beauty.

Environmental sustainability is also an important factor supporting a high quality of life for residents, making Christchurch an attractive place to live and work. A sustainable development approach also helps to address future environmental threats such as changes in climate or sea level rise and avoid costly remediation in the future.

5.11 Institutions and Networks

Greater Christchurch institutions

Christchurch City’s local government body is the Christchurch City Council (CCC). The Big City Quality of Life Survey 2016 shows that 47 percent of Christchurch respondents have confidence the Council makes decisions in the best interests of their city (agree or strongly agree). This has decreased following the earthquakes, as is anticipated following a natural disaster, but is an improvement from the 2014 survey.

Selwyn is governed by the Selwyn District Council and Waimakariri by the Waimakariri District Council. The regional council, Environment Canterbury, administers the Resource Management Act and covers all three districts and the wider region.

In the post-earthquake environment these councils were supported by the Canterbury Earthquake Recovery Authority (CERA) and the Christchurch City Development Unit (CCDU). CERA’s purpose was to oversee recovery following the earthquakes. The CCDU was tasked with master planning the redevelopment of Christchurch’s central city. A new joint entity, Regenerate Christchurch, was announced in 2015. This organisation, a partnership of the Crown and Christchurch City Council, is tasked with overseeing the long-term development and enhancement of the central city, Residential Red Zone, New Brighton and other potential regeneration zones.

Otakaro was launched post CERA as the Crowns delivery vehicle for the remaining Anchor Projects.

The key business support and networking organisations include Canterbury Development Corporation, Canterbury Employers’ Chamber of Commerce, Christchurch and Canterbury Tourism, New Zealand Manufacturers and Exporters Association and Institute of Directors.
Signalled in 2016 was a merger of Canterbury Development Corporation, Christchurch and Canterbury Tourism and Councils Major Events function and the International Education joint venture in the City.

**Funding sources in Canterbury include:**

- Canterbury Community Trust, which invests in communities
- Red Cross
- Vodafone Foundation Canterbury Fund
- New Zealand Trade and Enterprise and the Ministry of Business, Innovation and Employment
- Canterbury Economic Development Fund
- Various academic trusts to support the work of the universities
6.0 Risks

Economies are subject to a range of risks that can push an economy off its growth path. While it is not possible to fully mitigate for every risk it is useful to consider what events may occur which would have a significant impact.

Possible events that could occur in greater Christchurch include:

- Biosecurity
- Flood/ Fire/ Climate risk
- Tsunami
- Seismic Activity
- Unexpected change to population profile (such as age breakdown)
- Euro collapse, or other fallout from international political events (e.g. Brexit)
- Oil price shock
- Natural disaster occurring outside Christchurch
- Major growth outside Christchurch (e.g. Auckland)
- War

Some of the potential implications of three different events are given in the table below.

<table>
<thead>
<tr>
<th>Event</th>
<th>Immediate Effects</th>
<th>Long Term or Common Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further Seismic Activity</td>
<td>- Property damage</td>
<td>- Decreased risk appetite for a period</td>
</tr>
<tr>
<td></td>
<td>- Infrastructure damage (potentially long-term power issues if alpine fault)</td>
<td>- Business failure</td>
</tr>
<tr>
<td></td>
<td>- Population Flight</td>
<td>- Decreased exports</td>
</tr>
<tr>
<td></td>
<td>- Insurance Issues</td>
<td>- Decreased employment</td>
</tr>
<tr>
<td></td>
<td>- Loss of Wealth</td>
<td>- Decreased reputation</td>
</tr>
<tr>
<td></td>
<td>- Capital Flight</td>
<td>- Decreased production</td>
</tr>
<tr>
<td></td>
<td>- Capital Raising Problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Decreased health and wellbeing of citizens</td>
<td></td>
</tr>
<tr>
<td>Flood or Drought</td>
<td>- Infrastructure damage (such as fencing, roads and irrigation)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Housing damage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Loss of crops</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Loss of land</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Loss of export reputation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Market risk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Insurance Risk</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Decreased land values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Farm conversions</td>
<td></td>
</tr>
</tbody>
</table>
Appendices

a. Sector Profiles

The following table summarises the Christchurch and Canterbury economies across 19 sector classifications, which vary slightly from the six key sectors profiled.

<table>
<thead>
<tr>
<th>Employees (2016)</th>
<th>Christchurch City</th>
<th>Canterbury Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, Forestry and Fishing</td>
<td>1,900</td>
<td>15,100</td>
</tr>
<tr>
<td>Mining</td>
<td>270</td>
<td>420</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>22,900</td>
<td>35,400</td>
</tr>
<tr>
<td>Electricity, Gas, Water and Waste Services</td>
<td>1,050</td>
<td>1,850</td>
</tr>
<tr>
<td>Construction</td>
<td>23,000</td>
<td>31,000</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>11,900</td>
<td>14,700</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>21,400</td>
<td>29,600</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>13,700</td>
<td>19,800</td>
</tr>
<tr>
<td>Transport, Postal and Warehousing</td>
<td>9,800</td>
<td>12,900</td>
</tr>
<tr>
<td>Information Media and Telecommunications</td>
<td>2,950</td>
<td>3,750</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>4,700</td>
<td>5,400</td>
</tr>
<tr>
<td>Rental, Hiring and Real Estate Services</td>
<td>3,400</td>
<td>4,350</td>
</tr>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>18,400</td>
<td>21,500</td>
</tr>
<tr>
<td>Administrative and Support Services</td>
<td>12,700</td>
<td>14,800</td>
</tr>
<tr>
<td>Public Administration and Safety</td>
<td>8,300</td>
<td>12,000</td>
</tr>
<tr>
<td>Education and Training</td>
<td>15,300</td>
<td>21,600</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>24,100</td>
<td>30,100</td>
</tr>
<tr>
<td>Arts and Recreation Services</td>
<td>3,750</td>
<td>5,100</td>
</tr>
<tr>
<td>Other Services</td>
<td>7,200</td>
<td>9,300</td>
</tr>
<tr>
<td>Total</td>
<td>206,700</td>
<td>288,800</td>
</tr>
</tbody>
</table>

Six composite sectors have been identified as being of particular note to the Christchurch economy, either due to scale, growth potential or because the city has a specialisation. Details on these six sectors are given in the section below, including trends and initiatives. Note that these sectors are
considered "composite" as they may not match perfectly with industry classifications used by Statistics New Zealand shown in the table above. These sectors are manufacturing, agriculture, technology, services, visitor and public.

Manufacturing

Overview

Christchurch’s diverse manufacturing sector is the second largest in New Zealand. It is headquarters to iconic New Zealand companies such as Hamilton Jet; Tait Communications; Skope; Dynamic Controls; and Skellerup. Christchurch also hosts operations for a number of multi-national manufacturing companies such as Pratt & Whitney, General Cable, Schneider Electrical, TE Connectivity, Moffat, Trimble, Eaton and Hewlett Packard. These companies are in turn supported by a sophisticated supply chain of local component manufacturers that include light and heavy engineering, plastics, rubber and composite materials, electronics and electrical equipment companies supplying sub-assemblies, components and parts to a diverse range of industrial markets. Key sub-sectors include:

Food product manufacturing

Christchurch plays a key role in adding value to primary food products harvested in the region. Food and beverage is the largest manufacturing sub-sector in Christchurch. There are more than 300 companies, ranging from small artisan producers supplying the local market to large processing factories operating on the global stage.

Machinery and equipment manufacturing

Christchurch has a strong history as a centre for machinery and equipment manufacturers. These are engineering companies that specialise in developing products for global niche markets. Many evolved from servicing the rural hinterland and collectively they produce a diverse array of equipment and machinery for the primary sector. The sub-sector has diversified into other specialised areas, with global leading companies in areas such as electronics, water jet propulsion and the production of food processing equipment. Christchurch’s electronics and electrical equipment manufacturers, for example, collectively contribute about 30 percent of New Zealand’s total electronics output.

Fabricated metal product manufacturing

Supporting the wider manufacturing sector is a sophisticated supply chain of component manufacturers that includes a high number of metal fabrication companies. This is the third-largest manufacturing sub-sector in the city, supplying sub-assemblies, components and parts to local, national and international customers in a diverse range of industrial markets.

Polymer product and rubber product manufacturing

There are about 80 plastics manufacturers in Christchurch. Unlike most countries, no polymer resins are manufactured in New Zealand; they are all imported. The industry produces a large range of specialised products, including a high proportion of packaging products supporting the primary and food manufacturing industries.

| Manufacturing Sector Employment Breakdown, 2016 |
### Source: Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Product Manufacturing</td>
<td>4,150</td>
<td>18.1%</td>
</tr>
<tr>
<td>Beverage Manufacturing</td>
<td>290</td>
<td>1.3%</td>
</tr>
<tr>
<td>Textile, Leather, Clothing and Footwear Manufacturing</td>
<td>1,250</td>
<td>5.4%</td>
</tr>
<tr>
<td>Wood Product Manufacturing</td>
<td>1,350</td>
<td>5.9%</td>
</tr>
<tr>
<td>Converted Paper Product Manufacturing</td>
<td>330</td>
<td>1.4%</td>
</tr>
<tr>
<td>Printing</td>
<td>1,100</td>
<td>4.8%</td>
</tr>
<tr>
<td>Petroleum and Coal Product Manufacturing</td>
<td>60</td>
<td>0.3%</td>
</tr>
<tr>
<td>Basic Chemical and Chemical Product Manufacturing</td>
<td>770</td>
<td>3.4%</td>
</tr>
<tr>
<td>Polymer Product and Rubber Product Manufacturing</td>
<td>1,250</td>
<td>5.4%</td>
</tr>
<tr>
<td>Non-Metallic Mineral Product Manufacturing</td>
<td>1,250</td>
<td>5.4%</td>
</tr>
<tr>
<td>Primary Metal and Metal Product Manufacturing</td>
<td>370</td>
<td>1.6%</td>
</tr>
<tr>
<td>Fabricated Metal Product Manufacturing</td>
<td>3,100</td>
<td>13.5%</td>
</tr>
<tr>
<td>Transport Equipment Manufacturing</td>
<td>2,450</td>
<td>10.7%</td>
</tr>
<tr>
<td>Machinery and Equipment Manufacturing</td>
<td>4,300</td>
<td>18.7%</td>
</tr>
<tr>
<td>Furniture and Other Manufacturing</td>
<td>950</td>
<td>4.1%</td>
</tr>
<tr>
<td><strong>Total Industry</strong></td>
<td><strong>22,900</strong></td>
<td></td>
</tr>
</tbody>
</table>

### Trends

**Capacity constraints**

Across the manufacturing sector capacity utilisation rates are tightening in response to the long-term impacts of the GFC (global financial crisis), the continuing high New Zealand dollar and the resource requirements of the Christchurch earthquake rebuild. Manufacturers are focussing on productivity improvements and staff retention in response to this unique set of challenges. Initiatives like Lean and its related methodologies are being employed to drive continuous improvements in production operations, as well as the implementation of Enterprise Resource Planning (ERP) systems to support management decision-making.

**Investment in equipment and machinery**

Manufacturers continue to introduce new and increasingly sophisticated technologies, such as robotics; the latest high-capacity, multi-axis computer-controlled tools; and Ultra-Fast Broadband in order to compete globally by improving quality and productivity and reducing labour costs.

**Greater flexibility and scalability**
There has also been a trend towards the adoption of flexible manufacturing systems. This provides scalability from prototyping and small batch runs to modest production runs. It enables quick responses to customer needs and market changes while still controlling costs and quality.

Skills availability

Access to a skilled workforce is one of the key requirements for growth for manufacturers. However, the sector has faced challenges to retain staff because of the increased mobility of the workforce globally; the social impacts of the earthquakes; and an ageing workforce. Locally, resource requirements of the earthquake rebuild drove a shift from manufacturing to the construction sector among certain job categories, as higher wages were being offered to fill the shortage of construction workers. There are indications that this pressure is easing as construction sector employment has plateaued.

Competition from low-cost Asian economies

Like many manufacturers globally, Christchurch manufacturers face increasing pricing competition from low-cost, long-run manufacturers operating in Asia. Many local manufacturers are responding by moving into niche markets and specialising in short production runs, such as prototyping.

Initiatives

New Zealand Food Innovation (South Island Ltd)

CDC has established a subsidiary company, New Zealand Food Innovation (South Island Ltd) (FoodSouth), to provide specialised business growth advice, market entry and pilot production facilities for innovative food companies. FoodSouth is part of a nationwide initiative that aims to establish facilities for companies to carry out product development, testing and evaluation at a local level.

Productivity and performance improvement

CDC is co-ordinating a range of initiatives to drive productivity improvement in the sector. This includes funding and access to systemic business improvement processes and staff training through the NZQA (New Zealand Qualifications Authority) Competitive Manufacturing framework.

Sector workforce plan

To address manufacturers’ increasing workforce needs and issues, CDC and the New Zealand Manufacturers’ and Exporters’ Association are developing a Manufacturing Workforce Plan. This plan has been developed to respond to challenges identified in the way the manufacturing workforce is functioning and the pressures it will face for the next five to 10 years. The plan falls under the MBIE Labour Market Recovery Programme. To accurately reflect the issues and priorities of the manufacturing sector, a steering group has been formed. It is made up of senior management from Christchurch’s leading manufacturers. The plan provides better linkages with government agencies and training organisations to deliver programmes to both attract staff (from school programmes and career clustering to offshore recruitment) and retain staff (for example, through staff training, secondment and loyalty programmes).

New product development

For a number of years CDC has provided linkages with universities and public research organisations (PROs) to support manufacturers’ new product development, along with facilitating access to government R&D funding initiatives.

Industry Capability Network
The Industry Capability Network (ICN) is a service delivered by New Zealand Trade and Enterprise (NZTE). ICN’s role is to help New Zealand companies increase their strike-rate in large contracts and complex supply chains, including government procurement. Specialists work directly with suppliers and purchasers, connecting them to relevant projects in New Zealand and Australia. These are typically in the areas of health, energy, oil and gas, education, defence and government, and currently have a focus on the rebuild of Christchurch.

In a related initiative, ICN is collaborating with CDC, NZTE and the Canterbury Employers’ Chamber of Commerce (CECC) to develop a local industry participation programme. It aims to maximise local content supplying the Christchurch rebuild by ensuring local and domestic companies are fully represented and integrated into the procurement processes of the major project management offices (see Construction Sector Initiatives). A longer-term objective is to grow the long-term capacity and capability of local companies supplying the construction sector and to develop legacy opportunities as companies develop long-term competitive advantage from resilient products and technologies.

Machine maintenance and reliability

Machine maintenance and reliability is fundamental to manufacturers. This CDC initiative will help determine just how much of an impact poorly maintained and unreliable plant has on Christchurch manufacturers, with an aim to developing specific short-course training for operators of such equipment.

Agriculture (Agribusiness/Primary sector)

Overview

Christchurch is at the centre of Canterbury, a world-renowned food-growing region. The region produces, among other things, meat products, seafood, dairy products and wine for domestic consumption and export. The city plays an essential role in this production, supplying goods and services to producers, and developing primary products for export. For information on food and beverage manufacturing, see Manufacturing.

Canterbury is a hub for agribusiness research and agritech innovations, undertaken by the private sector and by globally-recognised research institutes such as Lincoln University, FoodSouth, Landcare Research, Plant and Food Research, and AgResearch. These activities add value to this sector and are strong because of the strong role agricultural activities play in the region’s economy.

Agribusiness/Primary Sector Employment Breakdown, 2016

Source: Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>1,400</td>
<td>21.1%</td>
</tr>
<tr>
<td>Agriculture, Forestry and Fishing Support Services</td>
<td>390</td>
<td>5.9%</td>
</tr>
</tbody>
</table>
Aquaculture, Forestry, Fishing, Hunting and Trapping 146 2.2%
Food and Beverage Product Manufacturing 4,440 66.8%
Mining 270 4.1%
Total 6,646

Trends

Central government policy and regulation

Central government policy and regulation plays a large role in shaping the agriculture sector. The following areas of policy are being discussed and/or have been the subject of recent regulation:

- Water use, water quality and environmental impact management.
- Supporting R&D in the agriculture sector and the uptake of technologies in primary land-based production systems.
- Free Trade Agreements (FTAs) to increase market access.
- Ensuring robust biosecurity systems to protect New Zealand’s food exports, image and reputation.
- Emissions Trading Scheme (ETS) and its impact on farm practices, production costs and technologies.

Environmental protection and standards

Land users are increasingly required to meet standards relating to the impact of their activities on the natural environment. Standards and regulations are set for a number of reasons; for example, to protect human health and drinking water supply; protect the carrying capacity of natural systems or reduce climate change impacts. The most significant changes in regulation for the agriculture sector that have been established in the last few years relate to the management of freshwater.

Changing export growth markets

The target markets for primary products are changing. The focus is moving away from English-speaking nations in the west (Australia, Europe and the United States) to emerging markets in the east. The current growth markets for New Zealand primary products are in Asia, South America and Africa.

Workforce attraction and retention becoming harder

The agriculture sector has recognised there are increasing challenges in the attraction and retention of people to work in the sector. These challenges are across all levels, from farm staff and farm managers to the agricultural sciences and related disciplines.

Technology take-up constraints
The level of on-farm technology deployment and management is a recognised productivity constraint and a barrier to the further adoption of new technologies.

Corporate farming

There is a gradual shift away from the traditional family and generational business model to one of corporate farming and family equity models, where economies of scale are used to reduce marginal costs and improve efficiency and margins.

The rise of dairy farming

There has been an increase in land-use conversions from sheep, beef and grain farming to higher-value and process-driven dairy farming in recent years. This shift has seen dairy farming development in areas that have not traditionally been used for this and has resulted in sophisticated water and effluent management solutions being implemented to alleviate environmental issues.

Irrigation

There has been a steady increase in irrigation in Canterbury over many decades, with around 445,000 hectares of land currently irrigable. There is potential to increase this area by a further 200,000 hectares as a number of new irrigation schemes are at various stages of development. Expansion of existing schemes through efficiency gains, use of technology and resource management practices on farm is also providing significant incremental increases in the area being irrigated in Canterbury.

Initiatives

Managing Canterbury’s water

Water is a critical resource for Canterbury’s agriculture sector. Canterbury has the largest area of irrigated land in New Zealand and there is the potential to expand this further. Environment Canterbury (ECan) is leading a collaborative programme to deliver the Canterbury Water Management Strategy for the Canterbury Mayoral Forum, which includes putting in place appropriate regulations and projects to support increased production whilst working towards community goals for the resource.

Precision Agriculture NZ Inc

Precision Agriculture is a farm management concept that involves studying and managing in-field variations within farms that can affect crop yield. It relies on new technologies like sensing technology, satellite imagery, information technology and geospatial tools such as GPS, which enable farmers to accurately manage soil or crop characteristics on their land.

CDC is one of the partners in the establishment of New Zealand’s first dedicated Precision Agriculture organisation, the Precision Agriculture Association of NZ Inc (PAANZ). Its primary role is to enable land users to be more productive, efficient and sustainable, and therefore competitive, by providing a platform for information sharing, networking, investment and innovation in the development and implementation of relevant Precision Agriculture technologies and systems.

FoodSouth innovation hub

FoodSouth is the South Island hub of the New Zealand Food Innovation Network, with its pilot plant at Lincoln University. It houses local food and beverage businesses and provides them with access to product development services, expertise and equipment to accelerate the development of new.
innovative, high-value products. The goal of FoodSouth is to increase the value of food and beverage exports, which aligns as a key focus in the CDC Agribusiness Strategy.

Technology

Overview

Christchurch is New Zealand’s third-largest region for technology businesses and boasts some of Australasia’s most inventive and successful software, hardware, electronic, telecommunication and service companies. These encompass local firms which have now become global leaders such as Jade Software, Tait Communications and Dynamic Controls. Christchurch is also home to multi-nationals such as SunGard; Trimble; TE Connectivity; Eaton; Vodafone; and Hewlett Packard; as well as listed companies SLI, Orion Health and Diligent.

Supporting these larger companies is a significant number of smaller, niche businesses. These businesses foster an industry culture of entrepreneurship and innovation, with products such as the Yike Bike and the Martin Jetpack being developed within the city.

The Christchurch technology composite sector incorporates software, telecommunications and high-tech manufacturing. These businesses generate solutions for all sectors of the economy from supermarkets and clothing to health and farm services. Their solutions are used in New Zealand and exported around the world.

Computer system design is a subsector of ICT which includes software development, and has undergone sustained growth, with employment expanding 7 percent on average annually since 2000. High-tech manufacturing is undergoing a similar transition to the broader manufacturing sector, with lower value functions such as product assembly and technical support being relocated offshore and local operations focussing on higher value areas such as product design.

Technology Sector Employment Breakdown, 2016

Source: Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-tech manufacturing</td>
<td>3,180</td>
<td>40%</td>
</tr>
<tr>
<td>Information Communications Technology (ICT)</td>
<td>4,710</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,890</strong></td>
<td></td>
</tr>
</tbody>
</table>

Trends

Growth in mobile technology

Mobile broadband is a very high-growth segment of the telecommunications industry. The rapid adoption of smartphones and introduction of increasingly portable devices such as tablet computers, along with the digitisation of media (discussed above), is driving growth in demand for cellular and Wi-Fi traffic. Growth in data demand is doubling roughly every two years.
Cloud computing

Cloud computing allows businesses to access and transmit their data held off-site through the internet. This allows companies to scale up or down their storage capacity as demand changes. It is also a risk management tool for companies holding data off-site. The implication for this sector is a significant increase in demand for electronic storage services.

Software as a Service

Software as a Service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the internet. This is becoming an increasingly common delivery model for online businesses and is changing the face of some industries. Typically, customers pay based on the amount they use, rather than a one-off purchase fee. This trend provides a range of growth opportunities in this sector.

Increasingly complex use of data

Data use is revolutionising society and business in the 21st Century. Using data and technology to manage complex problems and combining datasets to solve problems in innovative ways is changing the business landscape. Data use offers improved insight and decision-making. Professional and technical service providers are integral in delivering these solutions and tools to the business community and consumers.

Losing market share

Christchurch’s technology sector has historically been strong, however it’s growth has lagged the rest of New Zealand since the earthquakes. In 2016, growth was similar to peers in Wellington and Auckland but there is still a loss of market share to be made up.

Initiatives

Ultra-Fast Broadband – Fibre Network

The Government partnered with Christchurch City Council subsidiary Enable Networks to rollout Ultra-Fast Broadband (UFB) based on fibre optic technology to urban schools, businesses and households in Greater Christchurch. Over 90 percent of business premises have been able to connect since late 2015. It is expected this next generation connectivity will spur the development of bandwidth-intensive software solutions, for instance high-resolution medical imagery.

Rural broadband initiative

The Rural Broadband Initiative (RBI) is a five-year project that began in mid-2011. The Government is implementing the project to address the specific broadband infrastructure needs of rural New Zealand. It will bring broadband via mobile technology to 86 percent of rural houses and businesses, providing access to broadband peak speeds of at least 5Mbps. This is expected to generate opportunities for Christchurch companies producing precision agriculture applications as it enables a widespread data collection and user access.

Sector workforce plan

The shortage of skilled workers is a key issue for several technology sub-sectors, including communications. CDC has worked with a sector leadership group to develop a workforce plan. A number of activities are being delivered to attract people to consider employment opportunities and develop a career in the sector. One such initiative, Nurturing Home Grown Talent, aims to promote tech as a career for local students to grow the pipeline of talented people progressing through education and into the tech sector.
Health Precinct

The Health Precinct is a collaborative precinct involving organisations delivering medical research, services, education and commercialisation functions near Christchurch Hospital. The precinct is likely to be a key part of the Christchurch central city redevelopment.

Christchurch Innovation Precinct

As part of the central city recovery, public and private sector initiatives with a focus on innovation and technology are co-locating. The precinct incorporates the existing EPIC building, which house high-tech businesses of various sizes, and the GreenHouse innovation hub for digital and ICT startups. Other tenants with developments underway include Wynyard Group, Vodafone, Kathmandu and the South Island ICT Graduate School.

Canterbury Tech Cluster

The Canterbury Tech Cluster is a non-profit organisation aimed at helping the Canterbury’s tech sector succeed at home and worldwide. It has a broad-based member community – some of New Zealand’s most innovative companies and successful entrepreneurs based in a region renowned globally for tech excellence.

Services

Overview

The services sector, which is a composite of five sub-sectors, was particularly impacted by dislocation as a result of the Canterbury earthquakes as many services businesses were located within the central city area. Fortunately, many of these businesses were highly mobile and able to re-establish themselves reasonably quickly, although sometimes in less than ideal conditions. Many businesses that re-located are now looking to move back into the CBD as it is rebuilt.

The sub-sectors listed under services are:

- Professional, scientific and technical services

Businesses in this sub-sector rely on expertise and skills in their labour force for their products or service delivery. They are specialised businesses that sell their expertise. In most cases, equipment and materials are not major inputs. The activities undertaken generally require a high level of knowledge, training and formal (usually tertiary level) qualifications.

These services include scientific research; architecture; engineering; computer systems design; law; accountancy; advertising; market research; management and other consultancy; veterinary science and professional photography.

- Personal services

Personal services capture a broad range of services including: religious services, civic and interest group services; some repair and maintenance activities; and the employment of staff by private households. Businesses are mainly engaged in providing: personal care services, such as hair, beauty, diet and weight management; funeral services; repairing household items; promoting or administering religious events or activities; or promoting and defending the interests of their members.

- Administrative services
This sub-sector includes businesses that are mainly engaged in performing routine support activities for the day-to-day operations of other businesses or organisations.

This includes businesses providing administrative support services such as office administration; hiring and placing personnel for others; preparing documents; taking orders for clients by telephone; providing credit reporting or collecting services; arranging travel and travel tours. Other types of support services relate to activities such as building management and cleaning services; pest control services; gardening services; and packaging products for others.

This sub-sector plays an integral role in supporting all other sectors of the economy and can, therefore, provide services to a variety of clients.

- Financial and insurance services

The sub-sector includes units mainly engaged in transactions involving the creation, liquidation or change in ownership of financial assets. This includes activities such as banking, monetary control, investment management; underwriting insurance and annuities; managing retirement funds; as well as the regulation of financial activities.

- Rental, hiring and real estate

Includes companies that rent, hire or otherwise allow the use of assets (except copyrights). The assets may be tangible, such as real estate or equipment, or intangible, such as patents and trademarks. Companies that provide real estate services such as selling, renting and/or buying real estate for others; managing real estate for others; and appraising real estate; are also included.

### Services Sector Employment Breakdown, 2016

**Source:** Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural, Engineering and Technical Services</td>
<td>6,300</td>
<td>14%</td>
</tr>
<tr>
<td>Computer System Design and Related Services</td>
<td>3,300</td>
<td>7%</td>
</tr>
<tr>
<td>Other Professional, Scientific and Technical Services</td>
<td>8,880</td>
<td>19%</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>4,700</td>
<td>10%</td>
</tr>
<tr>
<td>Personal and Household Services</td>
<td>7,200</td>
<td>15%</td>
</tr>
<tr>
<td>Employment Services</td>
<td>6,800</td>
<td>15%</td>
</tr>
<tr>
<td>Travel and Other Administrative Services</td>
<td>5,900</td>
<td>13%</td>
</tr>
<tr>
<td>Rental, Hiring and Real Estate Services</td>
<td>3,400</td>
<td>7%</td>
</tr>
<tr>
<td>Total</td>
<td>46,480</td>
<td></td>
</tr>
</tbody>
</table>

**Trends**

Exporting of services
With technology reducing barriers to doing business internationally this sector is increasingly able to export its services, thanks to New Zealand firms offering labour at competitive wages as well as time-zone advantages. Presently we cannot capture the value of this activity, but anecdotally we are aware of a number of firms exporting architectural, financial, management, engineering and scientific services offshore.

Clustering

After the earthquakes, many firms were displaced from the CBD and had to relocate to the suburbs. This has added challenges to the sector as it reduces the collaboration between firms and disciplines that was characterised by their presence in the CBD. There were, however, other areas on the fringe of the CBD that have enabled collaboration for firms while the CBD is rebuilt.

Rebuild

The rebuild has provided the sector a unique opportunity to attract global experts from around the world that would not otherwise come to the city in a business as usual environment. A number of engineers, architects, lawyers, accountants and finance/employment specialists have moved to the city as the rebuild has progressed. This will result in the development of the local workforce and the attraction of new talent to the city. Additionally, many of the firms are involved in projects that will significantly increase their capacity to compete for offshore work in the future.

Growth in Agriculture Sector

Agriculture is a key driver of the city’s service sector. This sector is both a beneficiary and enabler in helping the development of land and water resources and commercialisation of IP (intellectual property) that will assist in generating revenue and productivity in the sector.

Initiatives

Sector workforce plan

The shortage of skilled workers is an issue for some services sub-sectors. Many of these people work in businesses providing the professional, scientific and technical services, including communications. CDC has worked with a sector leadership group to develop a workforce plan. A number of activities are being delivered to attract people to consider employment opportunities and develop a career in the sector.

South Island ICT Graduate School

Known as the South Island Graduate Network and Lab (SIGNAL), this collaboration between seven South Island tertiary institutes aims to meet the growing talent needs of the ICT industry through graduate level training with strong industry integration.

Visitor

Overview

In 2013, the Christchurch visitor economy including leisure, business visitors and international students contributed $1.26b (excluding air services, education services and GST) to city-wide GDP, supporting employment across a diverse range of businesses including transport, accommodation, education, hospitality and entertainment. Visitors help to underpin amenities enjoyed by residents and businesses too, such as cultural attractions and business function facilities and create socio-economic benefits such as excitement, confidence and pride in the city.
Business

Business visitors, including trade delegations, are provided opportunities to make deals, exchange knowledge, expand networks and promote Christchurch as a place to do business with.

International Education

Traditionally Canterbury was a popular destination for international students in New Zealand. Between 2003 and 2010, around 17 percent of international students in New Zealand chose to study in the Canterbury region. This was across schools (primary, intermediate and secondary); tertiary institutions (polytechnics, universities and wananga); and private training establishments (such as English language schools). This fell to around 8 percent in the post-quake environment, although student numbers are trending upwards, with 14 percent growth between 2014 and 2015. Alongside the direct economic contribution of international students, they are an important pool of internationally connected, talented people for the Christchurch economy.

Vacation

Christchurch has a dual role in vacation travel, as both a destination itself and as a gateway to the South Island.

Visitors of all types consume services such as short-term accommodation like hotels, motels and backpackers. It also includes hospitality, food and beverage services that provide meals, snacks and beverages to be consumed either on the premises or at another venue, such as a café, restaurant, bar or take-away service.

- Accommodation and Food Services

This sector underpins visitor activities in the city. Tourism is an important export income earner for Christchurch. The city has traditionally been seen as the gateway for tourism in the South Island for international visitors. Christchurch Airport (CIAL) is second only to Auckland in terms of international arrivals to New Zealand. These sectors also support domestic visitors and people travelling to the city for business.

- Arts and Recreation Services:

Enterprises that produce original artistic works and/or live performances, events or exhibits intended for public viewing. It also includes museums and facilities or services that enable participation in sporting, amusement or recreational activities.

As the gateway city to the South Island, and second-largest city in New Zealand, Christchurch has historically had a significant offering of arts and recreation services. This ranges from galleries and museums to health and fitness centres and sports venues.
• Retail trade

This is the purchase and on-selling of goods to the general public, without significant transformation of the goods being sold. The retail trade sector is one of the biggest employers in Christchurch city, employing 20,000 people. The sector responds to economic growth -- as opposed to driving it -- and has retracted in recent years as a result of the economic recession and the earthquakes. The retail trade sector is sometimes useful to evaluate the success of an economy as people generally reflect an increase in disposable income and/or confidence through spending.

Visitor Sector Employment Breakdown, 2016
Source: Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation</td>
<td>2,500</td>
<td>7%</td>
</tr>
<tr>
<td>Cafes, Restaurants and Takeaway Food Services</td>
<td>9,300</td>
<td>24%</td>
</tr>
<tr>
<td>Pubs, Taverns and Bars</td>
<td>1,400</td>
<td>4%</td>
</tr>
<tr>
<td>Arts and Recreation</td>
<td>3,750</td>
<td>10%</td>
</tr>
<tr>
<td>Food Retailing</td>
<td>6,700</td>
<td>17%</td>
</tr>
<tr>
<td>Other Retailing</td>
<td>14,700</td>
<td>38%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>38,350</strong></td>
<td></td>
</tr>
</tbody>
</table>

Trends

Earthquakes

The earthquakes had a significant impact on the accommodation and food services sector and related tourism activities. For example, the central city – where many accommodation and food sector businesses were located – suffered major damage and destruction and there was a subsequent decline in visitor numbers. Today, the number of cafes, restaurants and takeaway services and bars has recovered and now surpasses pre-quake levels – a great sign for the city’s capacity for visitors.

The arts and recreation services sector saw decreased demand as a result of reduced visitor numbers and physical damage to premises, many of which were located in the significantly-damaged CBD. Guest nights are slowly recovering, helping those businesses which are currently open. The re-opening and development of the central city area should see more visitor, tourist and recreation-related establishments begin to reopen or rebuild, but it will be some years before the sector is fully recovered.

Occupancy rates have reached record highs in the post-earthquake period, with average occupancy of 56 percent throughout 2016, much of this is driven by the lower number of facilities available; the inflow of recovery workers after the earthquakes; and some remaining displaced residents (home repairs). This sector is likely to feel pressure for some time but, as the rebuild continues and the new central city is developed, should be boosted by people wanting to experience the new Christchurch, including its new or re-opened hotels and eateries.
Before the earthquakes, Christchurch hosted a large number of international visitors. In 2014 there were 1,970 international guest nights. These visitors spend more money in the city than domestic visitors. This is up from a post-earthquake low of 1,553 (in 2012). International travel has also been hindered by the global financial slow-down, which has reduced disposable income for many people.

International Education is also a key part of the visitor economy and has been recovering strongly following the adverse impact of the earthquakes. The number of international students in Canterbury grew 14 percent between 2014 and 2015, up from 8,225 to 9,340.

The earthquakes pushed retail businesses out of the central city and damaged many retail premises in the city and the eastern suburbs. Many retail businesses have successfully re-established in the suburbs; in vacant units; repaired or new retail premises; or even out of the owner’s home. Some have failed to continue operating as a result of the disruption. The temporary Re:START container mall in Cashel Street started the process of re-establishing the central city as a retail destination. Over time the mall is being replaced with permanent retail buildings, which should provide new opportunities for retailers to establish in the city centre.

Gateway Position

Christchurch has traditionally acted as, and been viewed as, the natural gateway to the South Island. Increasing demand for adventure, wine and nature tourism, and the other activities that the wider South Island has to offer, reinforces the need for this industry to support visitor attraction. These activities also help maintain the value of Christchurch International Airport (CIAL), helping it to continue to attract airlines and hold its position against other airports in the South Island such as Queenstown. Singapore Airlines has increased the number of trips it makes across the busy summer season, and China Airlines has recently added another route connecting Taipei and Christchurch as visitor demand from China increases. However, there are risks for Christchurch as Queenstown has capitalized on the earthquakes to capture some of the air based traffic that Christchurch lost post-quake, and Auckland airport is investing in Queenstown further to develop capacity for the competitive trans-Tasman market.

Developing markets

Despite a global slow-down, large populations live in economies that are becoming more affluent and, in the future, Christchurch should see increased visitors from these markets. Growth in visitor numbers is expected particularly from China, India and South Korea, as well as Australia, which has seen strong growth over the decade and provides a lot of repeat visitors.
Changing geography of retailers

Historically, much retail activity was based around the centre of the city. In Christchurch, as in most cities, an increase in the number and size of suburban malls and big-box retail has drawn business and retail activity away from the city over the last few decades. While the central city retains the large department store, Ballantynes, and some specialist retailers, most employees are based in the suburbs across the seven major malls (Westfield Riccarton; Northlands; The Palms; Eastgate; Hornby; Barrington; and the Bush Inn Centre) and at the big-box retailers such as Tower Junction and Northwood.

Internet Sales

A global trend in the retail sector has been an increase in online retailing. Following the earthquakes, a number of retailers in Christchurch developed an online presence when physical locations were problematic. This has opened new markets for Christchurch retailers and now has the potential to be a niche growth sector for Christchurch. However, the internet effectively enables residents to purchase goods from anywhere in the world and the largest growth in online shopping is purchases from overseas retailers, potentially undermining the local retail sector.

Initiatives

Central City Recovery Plan

A plan for the central city was released by the Christchurch Central Development Unit (CCDU) on 30 July 2012. This plan will contribute significantly to the regeneration of the city visitor economy. This includes a green urban frame, the Avon River precinct, retail precinct, a new convention centre, a multi-purpose stadium and a performing arts and music precinct.

Performing Arts Precinct

The Performing Arts Precinct is one of the anchor projects proposed for the rebuild of the central city. It will offer facilities for theatre, music, dance and other expressive forms.

Stadium

A new stadium within the central city to replace the earthquake-damaged AMI Stadium in Waltham is included as an anchor project in the Christchurch Central Recovery Plan. The stadium’s main purpose will be to host rugby union, rugby league and football to an international level, but it will also provide a venue for concerts and other entertainment. The stadium will have capacity for 35,000 people, including 4,300 demountable seats to allow for staging and scaling of events and room for 4,000 in corporate suites and lounge spaces.

Metro Sports Facility

The Metro Sports Facility is one of the anchor projects proposed for the rebuild of the central city. It will be a venue and centre of excellence, accessible to people of all ages, abilities and sporting skills for recreational, educational, or high-performance sport. Its aquatic and indoor facilities will offer a great environment for players and spectators alike and will scale up to hosting national and international events.

Arts Centre

All but one of the 23 heritage buildings making up the Arts Centre experienced significant damage in the 2010 and 2011 earthquakes. Due to the scale of the work the rebuild is being split into phases,
with different buildings being re-opened at different times. Eight buildings will be opened by the end of 2016, with the remainder opened by 2019.

Canterbury Museum

Canterbury Museum has reopened since the earthquakes. However, it currently does not meet international museum standards for storing its collections or hosting international exhibitions, and is at visitor capacity. A business case is being developed to redevelop Canterbury Museum including undertaking earthquake strengthening, upgrading systems, increasing storage capacity and improving the visitor capacity and experience.

Central City Retail Precinct

A world-class shopping, dining and cultural experience designated under the Christchurch Central Recovery Plan is currently under construction, underpinned by four significant private-sector led developments. In the vicinity of the existing RE:START mall, a unique and distinctive shopping precinct is expected to open towards the end of 2016.

Science Alive!

Science Alive! is a not-for-profit science and technology centre that lost its building in the aftermath of the earthquakes. Since then it has been working within the community without a public base. A new site will be erected within the central city, next to Victoria Square, and will have double the space of its former base at 5500 sqm. The centre will include a full dome 3D theatre to be used as a planetarium. The first stage of the centre is scheduled to open in early 2018, with the rest to open later that year.

Public Sector

Overview

The public sector has a significant presence in the city, delivering services for Christchurch residents and administering services for New Zealand as a whole. While this sector does not drive growth, it is important in providing a well-functioning business environment and amenity for residents. There are significant advantages to the city in hosting functions of regional and central government agencies. The public sector is a significant employer of skilled workers, generates demand for professional services and produces commercial spinoffs from research activities.

The sector has a highly qualified workforce, with an estimated 44 percent of employees having a degree qualification. This leads to the estimated relatively high productivity of the sector.

Public Sector Employment Breakdown, 2016

Source: Statistics New Zealand

<table>
<thead>
<tr>
<th>Sub-sector</th>
<th>Employee count</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Administration and Safety</td>
<td>8,300</td>
<td>17%</td>
</tr>
<tr>
<td>Preschool and School Education</td>
<td>9,700</td>
<td>20%</td>
</tr>
</tbody>
</table>
Tertiary Education
Adult, Community and Other Education
Hospitals
Medical and Other Health Care Services
Residential Care Services
Social Assistance Services
Total Industry

<table>
<thead>
<tr>
<th>Service</th>
<th>Students</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Tertiary Education</td>
<td>4,200</td>
<td>9%</td>
</tr>
<tr>
<td>Adult, Community and Other Education</td>
<td>1,300</td>
<td>3%</td>
</tr>
<tr>
<td>Hospitals</td>
<td>9,400</td>
<td>20%</td>
</tr>
<tr>
<td>Medical and Other Health Care Services</td>
<td>7,000</td>
<td>15%</td>
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<tr>
<td>Residential Care Services</td>
<td>5,700</td>
<td>12%</td>
</tr>
<tr>
<td>Social Assistance Services</td>
<td>2,100</td>
<td>4%</td>
</tr>
<tr>
<td>Total Industry</td>
<td>47,700</td>
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</tr>
</tbody>
</table>

Administration

The Christchurch City Council (CCC) is a major employer in the city and the authority responsible for the natural resources of the region. Environment Canterbury, is headquartered in the city.

Central government also has a significant presence in Christchurch, including: the Accident Compensation Corporation (ACC); Inland Revenue Department (IRD); Housing New Zealand Corporation (HNZ); New Zealand Transport Agency (NZTA); Ministry of Social Development (Work and Income) (MSD); Ministry of Education (MinEdu); Immigration New Zealand (INZ); Ministry of Business, Innovation and Employment (MBIE); Statistics New Zealand; Department of Conservation (DoC); Land Information New Zealand (LINZ); and the Canterbury Earthquake Recovery Authority (CERA) (up until 2016, followed by organisation such as Ōtākaro Limited and Regenerate Christchurch); as well as Crown Research Institutes (CRIs). The New Zealand Army has a base just outside Christchurch at Burnham.

Education

Christchurch has a strong and diverse education sector, comprising public and private institutions from preschool to tertiary level. Christchurch is the tertiary education hub of the South Island, with competing institutes offering a wide range of courses and qualifications. There are two universities (University of Canterbury, or UC, and Lincoln University); one Institute of Technology and Polytechnic (Ara); Private Training Establishments (PTEs); Industry Training Organisations (ITOs); and community training programmes, as well as the University of Otago Christchurch School of Medicine. University of Canterbury is recognised for its research and programmes in engineering and the sciences, and Lincoln University in land-based research.

The three largest institutions — University of Canterbury, Lincoln University and Ara — earn approximately $95 million of domestic student tuition fees annually; more than $37 million in performance based research funding; and approximately $42 million in international student revenue. In 2015, 11,931 equivalent full time students were enrolled at the University of Canterbury, 2,394 enrolled at Lincoln University, and 6,709 at CPIT (now Ara).

Quacquarelli Symonds (QS) ranks the University of Canterbury at 214 and Lincoln University at 319 in their world university rankings. The universities of Auckland and Otago rank 82 equal and 151 respectively, and nine Australian universities sit within the worldwide top 200.

The economic impact of international students on the Canterbury region, which includes tuition, living and entertainment expenditure, was estimated to be $291 million in 2015. International education is a key contributor to the local economy. The sector brings in valuable revenue from tuition fees, expenditure from students and from family visits. It also creates valuable, long-term links
to overseas networks and many students choose to stay in the city, contributing their valuable skills to local businesses.

The international education sector has recovered strongly following a loss in student numbers after the earthquakes. The number of full fee-paying international students in the region grew 14 percent between 2014 and 2015, to 9,340 from 8,225; however, this is still below pre-earthquake levels.

Healthcare

Christchurch is the main healthcare hub for the South Island, providing a large range of medical services. Christchurch Hospital is the largest tertiary, teaching and research hospital in the South Island, providing the highest level of specialist care as well as teaching and research activities.

A crucial requirement for the provision of these services is a supply of practitioners with the requisite expertise and qualifications. Therefore, the health sector’s contribution to the region’s economy is significant. Firstly, as an employer that attracts highly qualified staff and, secondly, because of its reach into education and research and development activities.

Trends

Changing demographics

The nature of demand for health and social services is being impacted by two key demographic factors. The first is the ageing population trend and the expectation that medical care and social assistance will need to be increasingly geared towards the aged. The second is the changing diversity of New Zealand’s population and the cultural and medical needs that are culture-specific.

Technology and medicine interface

The New Zealand health sector is evolving into medical research and development, commercialisation and using new technologies to improve information systems, service quality and reduce costs of production. Examples include the integration of medical records between service providers and the use of simulation and internet technology in training.

Accessibility and flexibility

More and more students are working, caring for children or have other major commitments while studying. Attracting students both domestically and internationally is partly influenced by how studying fits in with their lifestyle. More courses are being offered in part, or in some cases fully, online. Courses (particularly study for degrees) are becoming shorter so people can complete them more quickly.

Education to workplace pathways

Central government policy focused on building pathways from high school into tertiary education or work, and tertiary into work is encouraging stronger alignment and co-operation between high schools, tertiary providers and the business community.

Initiatives

Christchurch schools redevelopment programme

The Government has committed $1.37 billion to a programme to rebuild or refurbish 115 Christchurch schools over 10 years. Thirteen schools will be built on new sites and 10 rebuilt on existing sites. A
total of 34 schools will be fully redeveloped and 58 moderately redeveloped in the programme, which affects 80 percent of Greater Christchurch’s classrooms.

Youth Futures Canterbury

Youth Futures Canterbury is a collection of government agencies, tertiary institutions, Industry Training Organisations (ITOs) and school leaders who have come together to improve educational outcomes for youth in Greater Christchurch. The group aims to stem the flow of young people falling into the NEET (Not in Education, Employment or Training) trap. This has become even more important following the earthquakes, given the contribution education will make to recovery in Greater Christchurch.

New Zealand Health Innovation Hub

CDC is contributing $1 million over five years to the commercialisation of research and development in the health sector, in partnership with the Canterbury District Health Board (CDHB). The Health Innovation Hub is part of a national network.

Hospital investment

Redevelopment of Christchurch and Burwood hospital, worth $550 million in total, is currently underway to construct new buildings and overhaul existing buildings.

Health Precinct

The Health Precinct is a collaborative precinct involving organisations delivering medical research, services, education and commercialisation functions near Christchurch Hospital. The precinct is likely to be a key part of the Christchurch central city redevelopment.

Returning to the central city

Construction is underway at several central city locations to accommodate government workers that vacated their central city premises following the earthquakes. The government is building a Justice and Emergency Services Precinct, to accommodate up to 2000 workers and visitors daily. A further 1100 civil servants will be accommodated in leased office buildings currently under construction. This is expected to help drive the re-establishment of private sector businesses in the CBD.

Christchurch Educated

Christchurch Educated is a collaboration of universities, the Polytechnic and Private Training Establishments (PTEs) to grow international student recruitment through sharing resources and joint offshore projects. Currently Christchurch Educated is the distribution vehicle for funding from Education New Zealand (ENZ) to help rebuild the region’s international student numbers.

B. Methodology for Projections and Benchmarking

Methodology for GDP Projections

Aspects of the city’s economy captured in CEDS have been categorised as ‘step change’ or ‘keeps us competitive’. The value of the five big ‘step change’ activities has been estimated to provide a band of economic growth above the baseline achievable if the city successfully completes the ‘keeps us competitive’ activities. The methodology of the calculation of the various projections is detailed below.
Step Change

The factors that are likely to make a difference to the Christchurch and Canterbury economies include:

- **An attractive city for people, business, investment and visitors:** Christchurch attracts and retains people, it has amenity and a profile that residents are proud of.
- **Effective land use and nutrient management under the Canterbury Water Management Strategy:** The region makes the technological and behaviour leap that ensures increasing productivity from agricultural land is not at the expense of the environment.
- **Realising the full commercial value of innovation:** Greater economic benefits are generated from the innovation eco-system by increasing the successful commercialisation rate from innovation.
- **A connected and functioning central city:** The city centre evolves into something that attracts new businesses and people and improves productivity of the city as a whole.
- **International connectedness for commercialisation and growth:** Improving exports, commercialisation and the flow of ideas, investment and intellect through connectedness and networks.

These factors, if done well, can move the economy off the projected baseline growth path.

Other projects are likely to keep us competitive with other cities, matching our historical growth path. Large step changes in GDP are unlikely to result from these projects.

The areas included are:

- Workforce
- Making it easier to do business
- Investment vehicles
- Infrastructure and land use
- Industry development
- Business development

**Representation of city economic goals**

To graphically and numerically represent the concept of activities that ‘step change’ versus ‘keeps us competitive’, both within and outside CDC and CEDS, an approach has been developed with three trajectories. The methodologies for calculating each of these projections are explained in this paper. They include:

1. **Baseline** A scenario in which the city maintains competitiveness, comprising of projected rebuild activity and underlying (non-construction) growth at historic rates.
2. **Declining Economy** Two scenarios in which population loss drives a decline in GDP.
3. **Upper Band** An upper band which delivers the baseline plus strong success at ‘step change’ (‘game changer”).

The goals are focused on Christchurch’s population and GDP, but also includes Canterbury’s GDP to reflect the agricultural influences. The methodology for each of these is shown in this document. All GDP Projections are in $m, 2010 to show real growth.
1. Baseline projection

Underlying Growth

The baseline projection indicates the business-as-usual or ‘keeping the city competitive’ scenario. In the short term this is based on the underlying growth that would have occurred without the earthquake, in addition to projected rebuild activity. In the long term, it is based on historic growth alone. There is also an adjusted in both timeframes to account for the expected impact of nitrate leaching constraints on agriculture.

- Rebuild

An estimated $43 billion will be spent on rebuild and business as usual construction projects between 2011 and 2024 (42 percent of this has already been done between 2011 and 2016). The baseline includes the proportion of work remaining that is very likely to occur, which varies depending on the type of work. This has been assumed by CDC at 100 percent for all work forecast for 2016-2017. For residential work, 90 percent of work scheduled between 2018 and 2020 is assumed to be definite, and 80 percent from 2021 to 2024. For commercial and civil work, 80 percent of work scheduled between 2018 and 2020 is assumed to be definite, and 70 percent from 2020 to 2024. The remainder will depend on building a successful city, which keeps residents and commercial activity in the city and is incorporated into the step change scenario. In order to calculate the annual impact on GDP, the following steps were undertaken:

» The proportion of expenditure in each of the three categories was estimated based on current MBIE forecasts – Residential – 47 percent, Commercial – 33 percent, and Infrastructure – 20 percent.

» Expenditure is deflated from 2012 to 2010 dollars.

» Expenditure is apportioned to Christchurch based on its share of Canterbury building consents by value between July 2013- June 2016 – 59 percent of residential, 78 percent of non-residential. The non-residential split is assumed to represent both commercial and infrastructure projects. For Canterbury baseline forecasts, the entire spend was included.

» Each year’s expenditure is multiplied by the Value-Added:Output ratio for the relevant sectors (residential construction, non-residential building construction and non-building construction), which accounts for the reallocation of resources from one sector in to another.

» This was then multiplied by the relevant Type 1 multiplier to include indirect flow-on effects. This gives an annual amount of addition to value added over the period of the rebuild.

- Underlying Growth

To calculate the underlying baseline growth projections, the historical growth rate for Canterbury’s and Christchurch’s GDP between 2001 and 2010 has been used (Infometrics’ estimates). This gives an average growth rate of 2.7 percent per annum for Canterbury and 2.4 percent for Christchurch, which is used to estimate the underlying growth that would have occurred without the earthquake and rebuild.

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48 Market Economics, Economic Futures Model 2009
In estimating future output, it is assumed the Canterbury region will implement regulation to limit nitrate leaching by 20 percent over the next 20 years. The CAMEO model from the Agribusiness and Economic Research Unit (AERU) at Lincoln University indicates, in the absence of new agricultural practices and technological solutions, this will decrease the direct, indirect and induced GDP contribution from agriculture by 29 percent over this period. Given agriculture’s contribution to Canterbury’s GDP, this indicates that GDP will be 5 percent lower in 2031 than historic trends would indicate.

The impact on Christchurch is estimated in two parts; firstly, the direct impact based on direct contribution of agriculture to Christchurch’s GDP and secondly, the indirect and induced impact, which is based on Christchurch’s share of Canterbury’s historical farm expenditure of 20 percent. Altogether, this indicates that Christchurch’s GDP will be 0.85 percent lower than historic trends would indicate. The impact is apportioned equally over the projection period.

2. Declining Economy

Loss of population can drive a declining economy as it leads to lower economies of scale, which reduces GDP per capita. A regression analysis of population and per capita GDP for comparable New Zealand regions (Canterbury, Wellington, Waikato) over 2000–2015 using MBIE regional GDP data indicates that a loss of 1000 residents is associated with a reduction in per capita GDP of $59. Two declining economy scenarios have been modelled, one in which the immediate post-earthquake decline of 2011/12 is sustained into the future and a second, in which the decline occurs after the rebuild from 2020 onwards. The immediate post-earthquake decline scenario has not occurred and is improbable given the city’s strong recovery, but it is illustrative of a worst-case scenario decline.

3. Step change band

The step change growth band indicates where GDP might perform if success is achieved in all of the following five of the ‘step change’ projects. If we perform significantly better than expected in each project, it is possible to move beyond the upper band. If we complete only some of the projects, Canterbury GDP may sit between the baseline and the upper band. The band is intended to represent a range of possible scenarios likely through success with most of the ‘step change’ projects.

Land and water resource management

AERU estimates the value to Canterbury of irrigation schemes for various irrigation scenarios. The upper band is set at 60 percent uptake of 607,773 hectares. Even though regulation limiting nitrate leaching will act as a constraint, this scenario assumes a technological leap with a high rate of uptake that allows for increased value added from production. The AERU report assumes 60 percent uptake.
would be achieved from 2014 to 2018, although development of irrigation schemes has been slower than initially thought so this has been assumed to take ten years from 2014 to 2025 at a constant annual rate of uptake.

To estimate the impact on Christchurch city, the average of the ratio of employees and geographic units in Christchurch and Canterbury in Agriculture, Agriculture, Forestry and Fishing Support Services, and Agricultural Machinery and Equipment Manufacturing54 were used to attempt to estimate the proportion of direct and upstream effects taking place in the city. Note that geographic units were used as well as employees to reflect the large number of owner-operators in the agricultural sector. This resulted in Christchurch experiencing around 11 percent of the benefits. It is likely there will be downstream benefits to the city as well, such as distribution, but these have not been modelled.

Innovation

CDC’s innovation benchmarking research55 indicated Canterbury has a relatively high level of innovation inputs (R&D investment, skilled people) and is relatively efficient at converting these into innovation outputs (employment in knowledge/technology intensive industries, patents). Despite this, the region’s economic output (per capita GDP) is lower than other regions with a similar level of innovation outputs. If Canterbury improves its conversion of innovation outputs to economic outputs to the average of its peers, it is estimated that per capita GDP will increase by 3.2% percent. This has been modelled as occurring by 2031, with a linear increase from 2016 onwards.

Central city rebuild

The current blueprint shows a vibrant, organised central city that is much smaller than before. The impact of a successful rebuild is modelled through the economic stimulus of new building construction, which will be driven by a vibrant CBD that provides confidence to investors. The baseline includes the proportion of rebuild activity that is very likely to occur. The upper band includes the remainder of projects actually occurring (i.e. 100 percent of rebuild projects completed as planned). This represents projects that are not guaranteed to occur, and may only occur if an attractive investment proposal is offered and the maximum amount of government and private investment is made. The same process is used to convert to value added is used for the baseline.

International connections

Export growth is built in to the baseline. Additional growth, as compared to what has occurred historically, may cause a step-change in growth as a result of superior initiatives that maximise free trade agreements and offshore distribution networks as examples.

This is approximated by an increase in exports of goods and services (including tourism) as a share of GDP, from 30 percent to 40 percent by 2025, consistent with the Government’s Business Growth Agenda. From 2025 onwards, the 40 percent share of GDP is maintained. The impact on GDP for the purple line is based on the impact multipliers for our export sectors.

Attractive city

If Christchurch recovers well and builds a world-class, vibrant city, it could attract an increasing number of migrants. The methodology for calculating the increased population is given below. The ratio of the ‘attractive city’ population, both in Christchurch and Canterbury, to the population

54 Statistics New Zealand 2011 Business Demography Tables
55 Benchmarking of Canterbury against similar Australasian regions using data covering the period 2011-2014.
Methodology for Population Projections

Baseline projection
The baseline population is based on Statistics New Zealand subnational population projection medium scenario.

Declining population growth rate
Two declining economy scenarios have been modelled. The first one, initially reported in the 2013 edition of CEDS, is based on the initial post-earthquake population loss of 2011/12 continuing at a rate of -0.5 percent per year from 2013 onwards. The second one, produced in 2016, reflects that the city is locked into the baseline scenario, and therefore population decline is not an imminent possibility. However, if the city fails to do its ‘keep competitive’ projects, that is, it loses competitiveness, then population loss may occur after rebuild activity subsides. This is modelled as population loss of -0.5 percent per year from 2020 onwards. This scenario indicates a more aggressive decline than the Statistics New Zealand low population growth scenario – with Christchurch’s 2031 population 4.5 percent lower, and Canterbury’s 2031 population 4.6 percent lower.

Upper Band
The upper band population growth projection is based on Statistics New Zealand population projection high scenario. This is consistent with Christchurch becoming a world-class, vibrant city, with an expanded workforce driven by strong positive net migration.

c. Methodology for Innovation benchmarking

Obtain reference regions
The first step to regional benchmarking (and benchmarking exercises in general) is to find regions to compare with. Who to compare with does not need to be a different region although we opted to follow this option. A region could also be compared with targets set on itself and with oneself over time. The most important requirement when comparing one region to others is comparison should be analogous/similar (“apples with apples”). Based on this principle we have chosen reference regions according to the following indicators which were grouped into four blocks:

- **Size, demographic and location indicators**: Population; population density and ageing rate (percentage of the population 65 years-old or more).
- **The economy’s industry structure**: Distribution of employment (employees) among economic sectors.
- **Industrial specialisation**: Industrial specialisation of the manufacturing sector.
- **Technological specialisation**: Percentage of patent applications by field of research.
Ideally, for calculating composite indicators the individual indicators should follow a normal distribution. Most of the indicators are fractional indicators with values between 0 percent and 100 percent and most of these follow a normal distribution. Some indicators are unbound indicators, where values are not limited to an upper threshold. These indicators can have skewed data distributions (where most regions show low performance levels and a few regions show exceptionally high performance levels). We used a histogram analysis, Q-Q plot analysis and applied the usual normality tests (i.e. Jarque-Bera, Shapiro-Wilks, Chi-Square test) to test for normality. As all indicators data have been transformed using a square root (power) transformation with power N if the degree of skewness of the raw data exceeds (fall behind) 1 such that the skewness of the transformed data is below \(56\). This transformation was applied after the imputation of missing data and outliers.

Variables were then normalised using the min-max method and re-scaled\(^57\), so all values fall between 0 and 10.

The following equation was used:

\[
X_{i,0-100} = \frac{(X_i - X_{min})}{(X_{max} - X_{min})} \times 100 \tag{1}
\]

Where \(X_i\) represents each data point, \(X_{min}\) is the minima among all data points, \(X_{max}\) is the maxima among all data point for the variable \(X\).

We have chosen to give equal weight to the variables and to each block.

\[
W_v = \frac{1}{(V_b)} \rightarrow \sum_{v=1}^{(V_b)} W_v = 1 \quad ; \quad W_b = \frac{1}{B} \rightarrow \sum_{b=1}^{B} W_b = 1
\]

where \(W_v\) is the weight given to variable \(v\) and \(W_b\) is the weight given to the block \(b\).

Hence, total distance between two regions would be calculated through the following formula (Navarro et al., 2011) to obtain a distance matrix:

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\(^{56}\) This is only for cases where the excess of skewness is positive. When negative, a square root transformation would make it worse. Then other type of transformation must be used (e.g. antilog \((x)\)).

\(^{57}\) By re-scaling the data we obtain a composite indicator (index) for each variable for all regions. Then, distances are calculated between regions and all the others.
\[ d (i, i') = \sum_v W_v (x_{i v} - x_{i' v})^2 \]

where \( v \) is the variable, \( i \) is the first region, \( i' \) the second region and \( W_v \) is the weight assigned to the variable.

As we are particularly interested in Canterbury, we have set Canterbury as the "centre of the universe". Then all distances are expressed in terms of Canterbury and Canterbury's total distance is zero (0).

**Calculate innovation performance and regional economic performance**

Having identified reference regions for benchmarking, the following step consists in identifying, among them, those regions that exhibit better performances.

The following indicators are used:

- Level of economic performance: GDP per capita, employment rate and labour productivity
- Level of innovation output: Patent applications (per million inhabitants), employment in high and medium-high technology manufacturing industries (percent of total industry) and employment in knowledge intensive services (percent of total industry).

As with the variables used to identify similar regions, the values corresponding to the performance indicators are subject to some treatments in order to correct for outliers, asymmetries and kurtosis, and their values are standardised and weighted to obtain performance indicators.

**Inputs for the innovation process**

Next step is to explain the reasons for the disparities in performance. In particular, we want to identify which factors could potentially explain the better performance of some regions.

We have defined four types of innovation inputs: Human Resources, R&D, Connectivity and "Other".
Here we differ slightly from Navarro’s paper where people between 25-64 years-old is considered.

- Level of human resources: Share of working age population with post school qualification; International post-graduate students as percentage of all enrolled working-age students; Share of people with a bachelor degree or higher\(^{58}\).
- Level of R&D: Business expenditure on R&D (percent of GDP); Government expenditure on R&D (percent of GDP) – allocated according to share of skilled workers in the region.
- Level of connectivity: Families with broadband access (percent); Permanent and long-term migration (percent of total migration).
- Other: Share of business births in knowledge intensive industries.

After selecting the indicators, data was standardised and weighted to construct indices and compare the inputs used to the outputs generated/created to obtain a measure of an innovation system’s efficiency. These inputs and outputs are then brought together in a composite index for Australasian regions.

**D. References and further reading**

Unless otherwise stated statistics are drawn from Statistics New Zealand and licensed by Statistics New Zealand for re-use under the Creative Commons Attribution 3.0 New Zealand license.

*Other sources of data include:*
Australian Bureau of Statistics
Colliers International
Education Counts
HSBC
Infometrics Ltd
Intellectual Property Office NZ
Market Economics
OECD
2014 Big Cities Survey

\(^{58}\) Here we differ slightly from Navarro’s paper where people between 25-64 years-old is considered.
Articles, publication and organisations referenced in this document include:

Agriculture and Economic Research Unit
CDC Australasian Population Hierarchy
Centre for Advanced Engineering
Dion O’Neale and Shaun Hendy, “The regional structure of technical innovation” (2014)
Environment Canterbury
INSEAD, “The Global Talent Competitiveness Index – Talent Attraction and International Mobility” (2015-16)
International Monetary Fund (2007)
Land Information New Zealand
National Business Review (August 17, 2012)
NZCBD Office Report 2015
OECD PCT Patent Applications per year
PWC, “Opening up the South” (2015)