National Construction Pipeline Report 2018

A Forecast of Building and Construction Activity

6th Edition

MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

BRANZ

Pacifecon
Building intelligence

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1 Introduction

1.1 Overview

The National Construction Pipeline Report 2018 (the report) provides a projection of national building and construction activity for the next six years, ending 31 December 2023. It includes national and regional[1] breakdowns of actual and *forecast* residential building, non-residential building and *infrastructure* activity. The report is based on building and construction forecasting by *BRANZ*, and *Pacifecon NZ Ltd (Pacifecon)* data on *researched*[2] non-residential building and infrastructure intentions.

1.2 Background

The report was commissioned by the *Ministry of Business, Innovation & Employment (MBIE)* and jointly prepared by BRANZ and Pacifecon. The report was first published in 2013, and this is the sixth edition.

1.3 Purpose and content

The report provides awareness of the expected pipeline of building and construction work, to support:

- planning by all sector participants
- scheduling of investment in skills and capital to meet the future needs of the sector
- coordination of construction procurement (particularly central and local government) to enable improved scheduling of construction projects.

Improvements in these areas could help moderate the *boom-bust cycles*[3] that have negative impacts on productivity, innovation, employment, skills levels and quality in the construction sector.

The report includes:

- a summary of the report's *key findings*
- *National* and *regional* forecasts of *residential buildings*, *non-residential buildings* and infrastructure activity
- a feature on the *Auckland* region exploring activity by geographic area
- a *comparison* of this year's forecasts against last year's
- appendices, including a *table of forecast and research* data

Queries and feedback can be emailed to feedback.pipeline@mbie.govt.nz

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[1] The regional areas reported: Auckland, Waikato/Bay of Plenty, Wellington, Canterbury and Rest of New Zealand (which includes all other regions not stated).
[2] Pacifecon's research data was termed 'known' in previous reports.
[3] Words in *blue italics* are links through to a relevant section of the report, or their definition in Appendix B.

1.4   Information presented in the report

This report is built from two independent, but complementary sources of information on national building and construction activity.

Forecast

The forecasting values in this report, produced by BRANZ, are based on Statistics New Zealand's *Gross Fixed Capital Formation* data series, which is a subset of Gross Domestic Product. The Gross Fixed Capital Formation measure includes all types of construction (whether a building consent is required or not), providing a common measure across the three fixed asset classes:

- residential building
- non-residential building
- infrastructure construction.

It is a more comprehensive measure than 'contract value' supplied with a *building consent* or the Statistics New Zealand Value of building work put in place data series, as it takes into account the final cost of the construction to the final user including:

- costs prior to the application for consent, such as any feasibility studies and professional fees
- outlying costs, including subdivision works, costs of financing, legal/real estate fees, and any developer profit.

BRANZ forecasting methodology overview:

- Building forecasts are based on modelling of historical building consent and related economic data.
- *Dwelling* unit forecasts are based on Statistics New Zealand household formation data[4], which forms estimates of the number of new dwellings required based on population estimates.
- *Infrastructure* activity forecasts are based on modelling of the historic trends for industry commissioning (and ownership) of assets and expected growth.
- Market constraints and sector consultation also inform the forecasting.

Research

Research used in this report refers to Pacifecon's construction project intentions database, which contains expected costs over time for non-residential building and infrastructure projects. Information is collected by Pacifecon on pre-construction project intentions. It is an extensive, although not complete, list of non-residential and infrastructure construction intentions across New Zealand.

A more detailed explanation of BRANZ's forecasting methodology and Pacifecon's known project intentions database can be found in *Appendix C*.

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[4] Statistics NZ March 2017 household formation release.

1.5   A note on KiwiBuild

The Government's KiwiBuild programme launched in July 2018 aims to deliver 100,000 quality, affordable homes for first home buyers over the next decade, with 50,000 of these homes to be built in Auckland. The Government has established KiwiBuild in order to address the imbalance in demand and supply of affordable homes for first home buyers in New Zealand.

The BRANZ residential building and dwelling forecasts used in this report do not differentiate between KiwiBuild and non-KiwiBuild dwelling construction. The dwelling unit forecasts are based on Statistics New Zealand's December 2017 household formation data, which provides estimates of the number of new dwellings required derived from population estimates. This information provides estimates of the number of new dwellings required to meet both expected population growth and to remedy already existing housing shortages.

Timing of the data and forecasting for this report preceded some of the more recent clarifications and definition provided for the KiwiBuild programme – the report is based on the information available at the time.

KiwiBuild is expected to provide greater certainty of the forward pipeline of construction work and allow the sector greater ability to manage constraints and scale up to provide year-on-year increases in dwelling numbers into the future.

1.6 Understanding the graphs and data

Different graphs are used throughout this report to illustrate relevant information. The majority of graphs have the key features shown in the example graph below.

Figure 0-1   Example graph
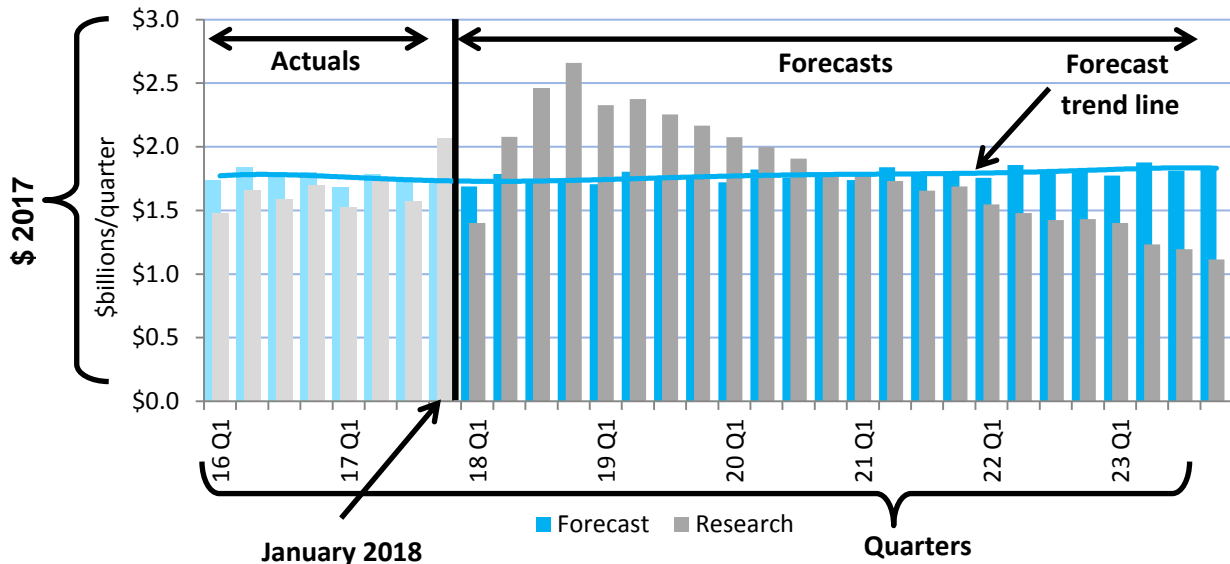
Source: Pacifecon/BRANZ

- Values are in constant December 2017 dollars and are expressed in $billions (*b*) per quarter or per year, unless otherwise stated. Inflation has been removed from all dollar values.
- *Forecast* refers to forecast data provided by BRANZ. The *forecast period* is for six years, from 1 January 2018 to 31 December 2023. Trend lines have been included to demonstrate the general direction the forecasts are heading.
- *Research* refers to construction project intentions data provided by Pacifecon.
- *Actuals* are the actual values or activity from official statistics. The year beginning January 2016 is used as the base year for the actual data in the report. A vertical line on the graphs indicates the start of a forecast. Actuals are to the left of the vertical line and are generally shown in a faded color shade.
- *Years* are calendar years – the 12 months beginning January.
- *Quarters* refer to parts of the calendar year as follows:
  - o   Q1 = 1 January to 31 March
  - o   Q2 = 1 April to 30 June
  - o   Q3 = 1 July to 30 September
  - o   Q4 = 1 October to 31 December.
- Where *rolling years* are used, each point on the graph represents the total of the 12 months immediately preceding that point, eg 2018 Q2 represents July 2017 through to June 2018.

2   Key findings

This section discusses the five major findings in the report:

1. Sustained growth is forecast for building and construction nationally.
2. National dwelling consents are expected to exceed historic highs with 43,000 in 2023.
3. *Multi-unit dwellings* overtook detached house consents in Auckland in 2017.
4. Non-residential building growth is expected for Auckland, Waikato and Bay of Plenty.
5. Wellington experienced the strongest total construction growth in 2017.

2.1   Sustained growth is forecast for building and construction nationally

For the first time since the report was initiated in 2013 a peak in total construction value is not expected within the *forecast period*. Instead a more moderate sustained growth is forecast for the next six years. The 2017 report forecast a peak in total construction value of $42b in 2020. This year's forecast is for activity to remain at current elevated levels until the end of 2020, with growth expected from 2021 to over $41b in 2023. The forecast of sustained growth reflects strong researched project intentions nationally.

Figure 2-1   All building and construction nationally, by value
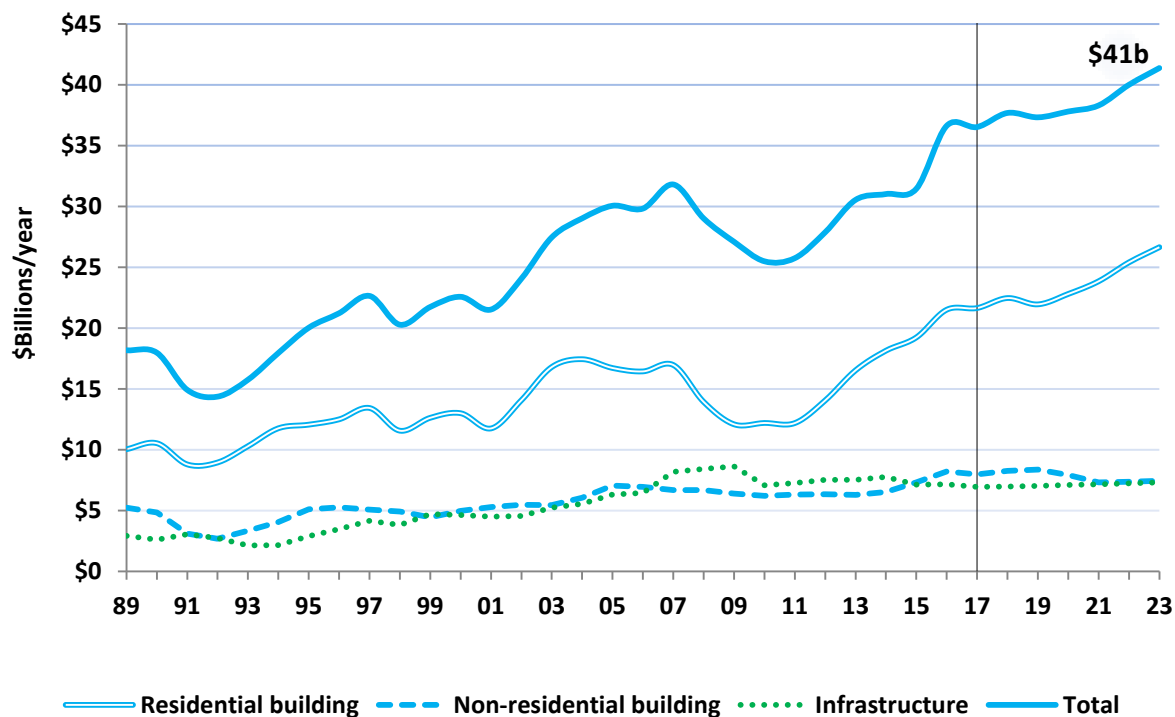
Source: BRANZ/Pacifecon/Statistics New Zealand

2.2   National dwelling consents expected to exceed historic highs with 43,000 in 2023

Over the next six years the number of dwelling units consented is forecast to increase by 39% to a forecast high of 43,000 dwelling units in 2023. In 2018[5], dwelling unit consents are expected to go past the 2004 peak (31,423 dwellings) and grow year-on-year throughout the forecast period. This is considerably higher and longer term dwelling growth than was forecast in the 2017 report.

Figure 2-2   Dwelling units consented nationally, 2017 and 2018 comparison of forecasts
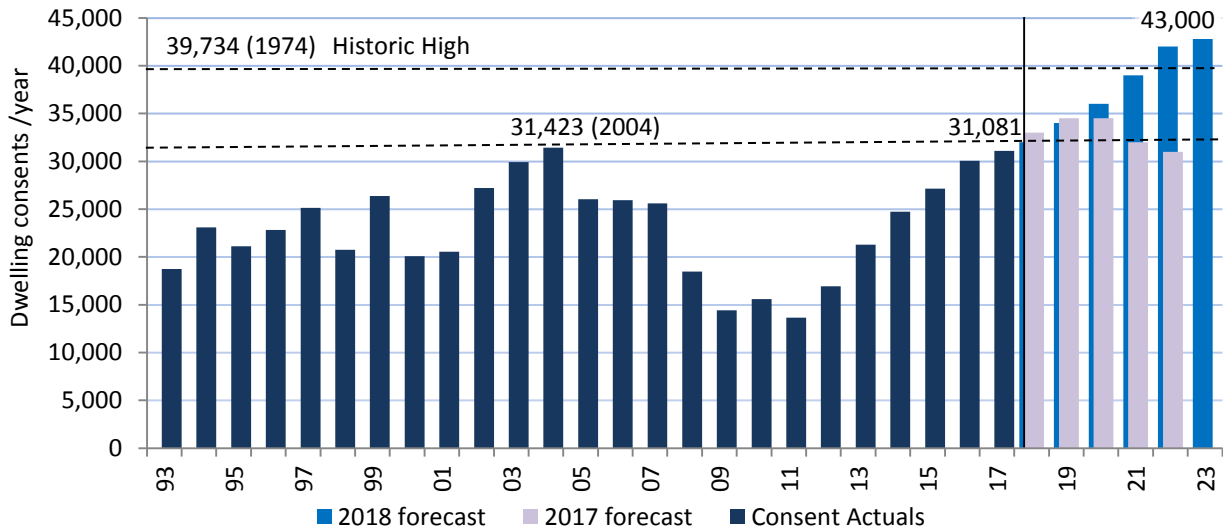
Source: BRANZ/Statistics New Zealand

2.3   Multi-unit dwellings overtook detached house consents in Auckland in 2017

In 2017 51% of dwellings consented in Auckland were *multi-unit dwellings*, the 2017 report did not expect more than 50% multi-unit consents to occur until 2022. The proportion of multi-units consented is now forecast to increase further to 60% of all dwellings in 2023, including 51,000 of the near 90,000 multi-unit dwellings consents forecast for Auckland between 2018 and 2023.

Figure 2-3   Auckland dwelling unit consents, by type
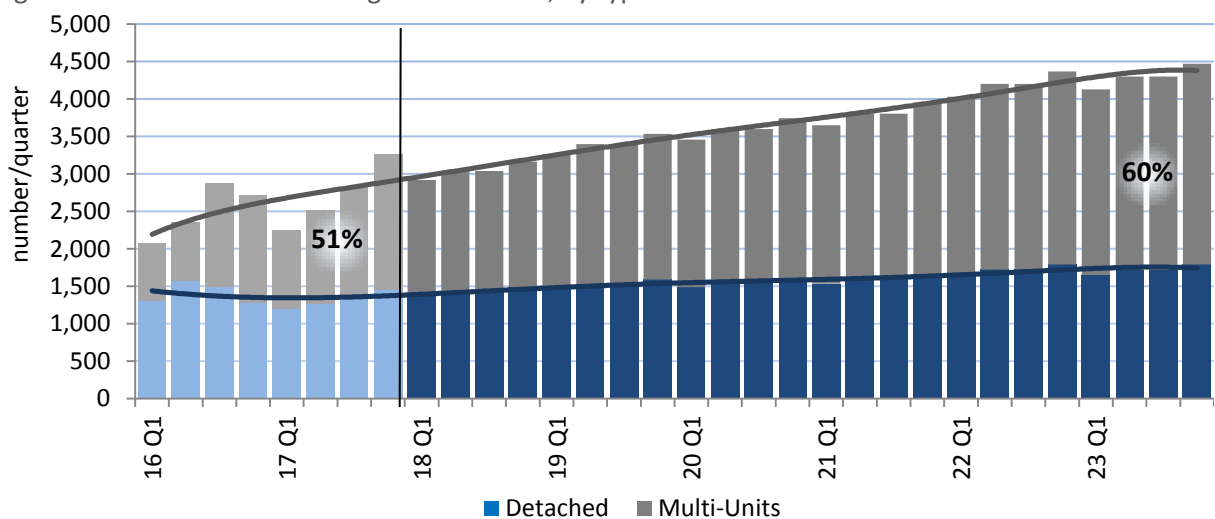
Source: BRANZ

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[5] Dwelling units consented nationally for the year ended May 2018 reached 32,628.

2.4 Non-residential building growth expected for Auckland, Waikato and Bay of Plenty

Non-residential building growth is expected in 2018 for Auckland and the Waikato/Bay of Plenty regions, with high activity levels expected to remain in these regions to 2023. These regions are forecast to make up 61% of non-residential building value in 2023. Non-residential building in the Rest of New Zealand, Wellington and Canterbury regions is expected to slowly decrease from current levels throughout the forecast period.

Figure 2-4   Value of non-residential buildings, by region
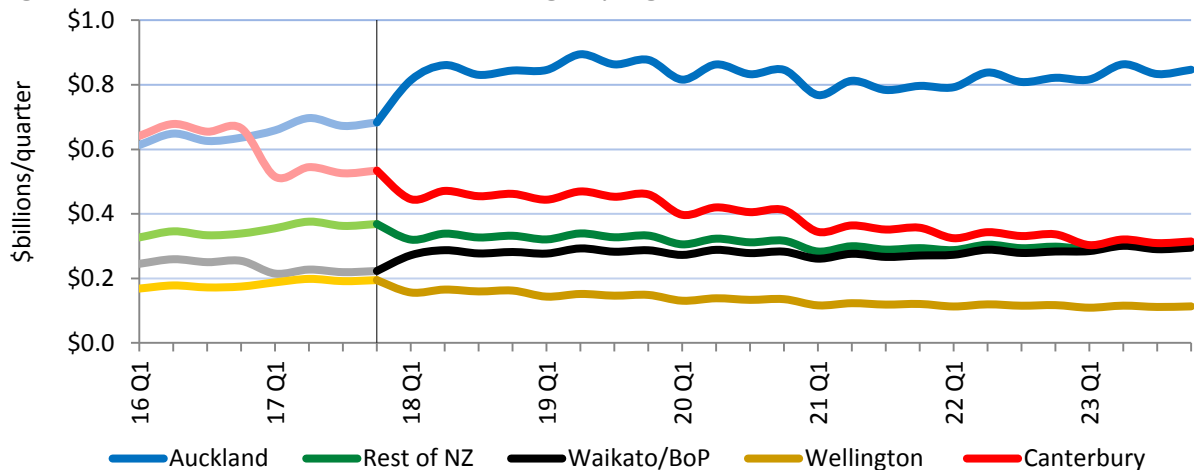
Source: BRANZ

2.5 Wellington experienced the strongest total construction growth in 2017

Other regions of New Zealand sustained or declined, but Wellington experienced strong construction value growth in 2017 (11%), formed by a combination of residential and non-residential building growth. Wellington is forecast to see the strongest residential growth (65%) of any region, to over $2.5b by 2023. Non-residential is forecast to decrease over the next few years from current high levels.

Figure 2-5   All construction in Wellington, by type
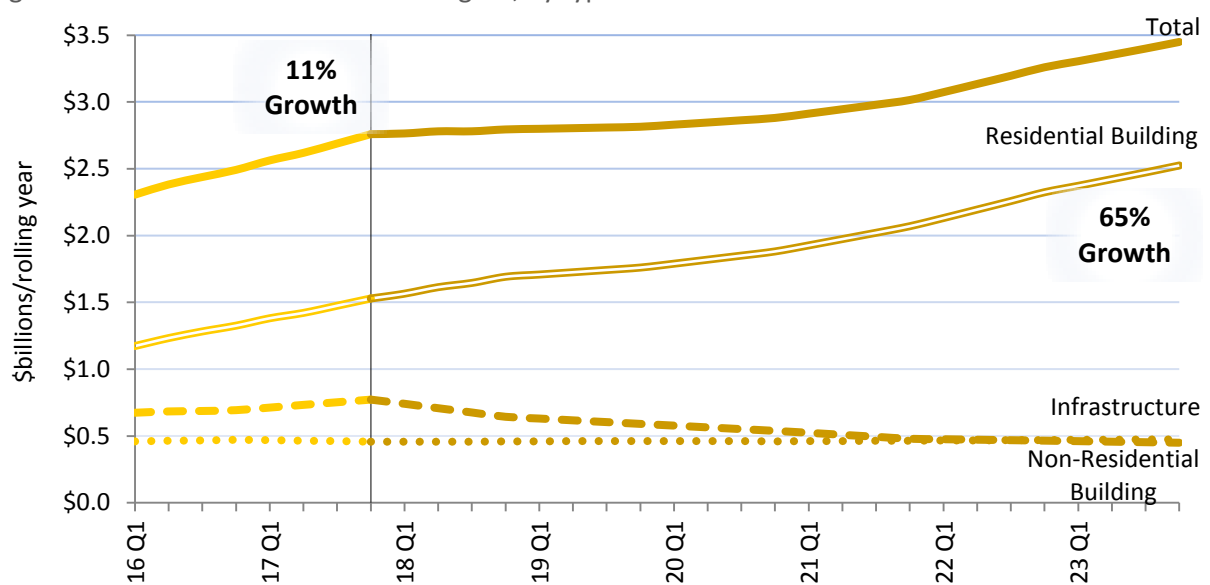
Source: BRANZ/Pacifecon

3   National forecast

In this report, building and construction is split into three activity types:
- *residential building* – detached and multi-unit dwellings
- *non-residential building* – structures of a building type (vertical), other than residential, eg hotels, offices, retail outlets and industrial buildings
- *infrastructure* – structures of a non-building type (horizontal), eg roads, subdivisions, infrastructure and civil works. Infrastructure projects do not typically require a *building consent*

This section includes national forecasts for each activity type as well as:
- a breakdown of non-residential building and infrastructure by type and initiator
- regional comparisons

3.1   National construction, by value

New Zealand's total construction value has remained just under $37b for each of the last two years. This year's forecast is for a continuation of this trend, with total construction value expected to grow by 3% to the end of 2020. Stronger growth is forecast from 2021 with a 9% increase to over $41b in 2023.

For the first time since the report was initiated a peak in total construction value is not expected within the forecast period. Instead moderate sustained growth is forecast to 2023.

Figure 3-1   All construction nationally, by value
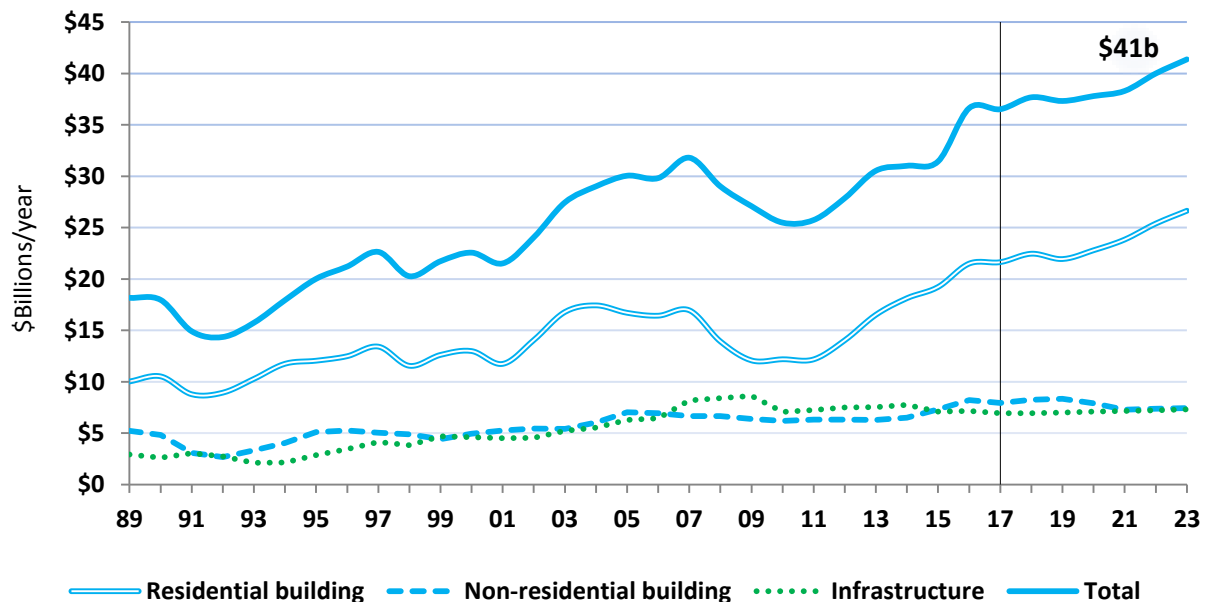
Source: BRANZ/Pacifecon/Statistics New Zealand

3.2 National construction, by activity

Residential building activity is the largest contributor to national construction, accounting for 59% of total construction value in 2017. Residential building value is expected to grow moderately from 2020, reaching $26.6b in 2023. Non-residential building value (22% of current total value) is forecast to grow to a peak of $8.4b in 2019. Infrastructure activity (19% of total current value) is forecast to moderately increase to reach $7.3b in 2023.

Figure 3-2   All construction nationally, by activity
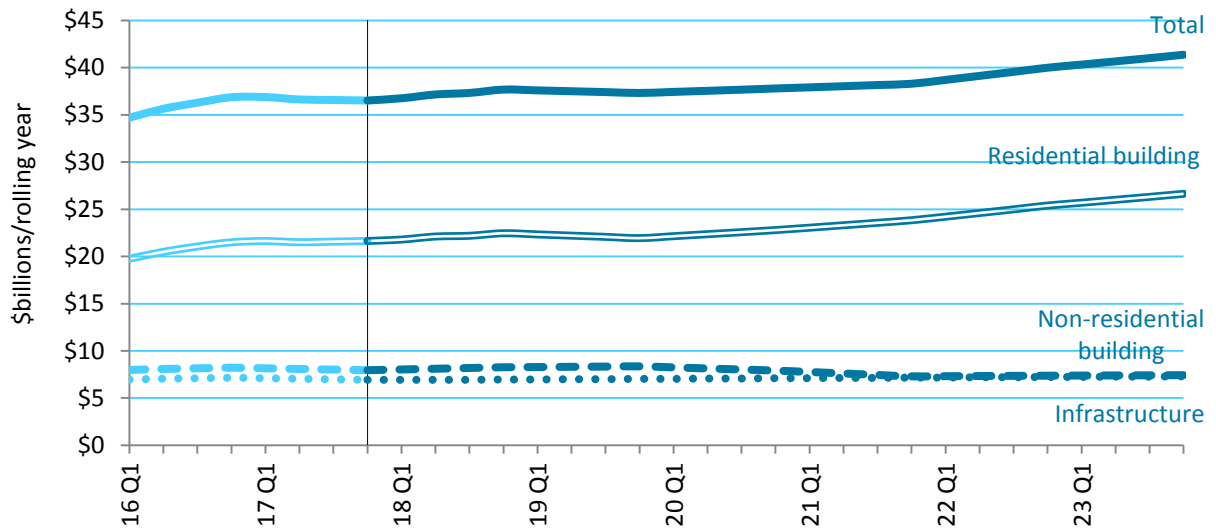
Source: BRANZ

3.3 National residential building, by dwelling number

The number of dwelling units consented nationally grew 3%, to over 31,000 in 2017, slowing from the previous year's growth[6]. National dwelling unit consents are now forecast to exceed historic highs[7], with strong growth expected throughout the forecast. Over 220,000 dwellings are expected to be consented between 2018 and 2023, 43,000 annually by 2023. The proportion of multi-unit dwellings consented nationally is also expected to increase from 32% in 2017 to 38% in 2023.

Figure 3-3   Dwelling units consented nationally[8]
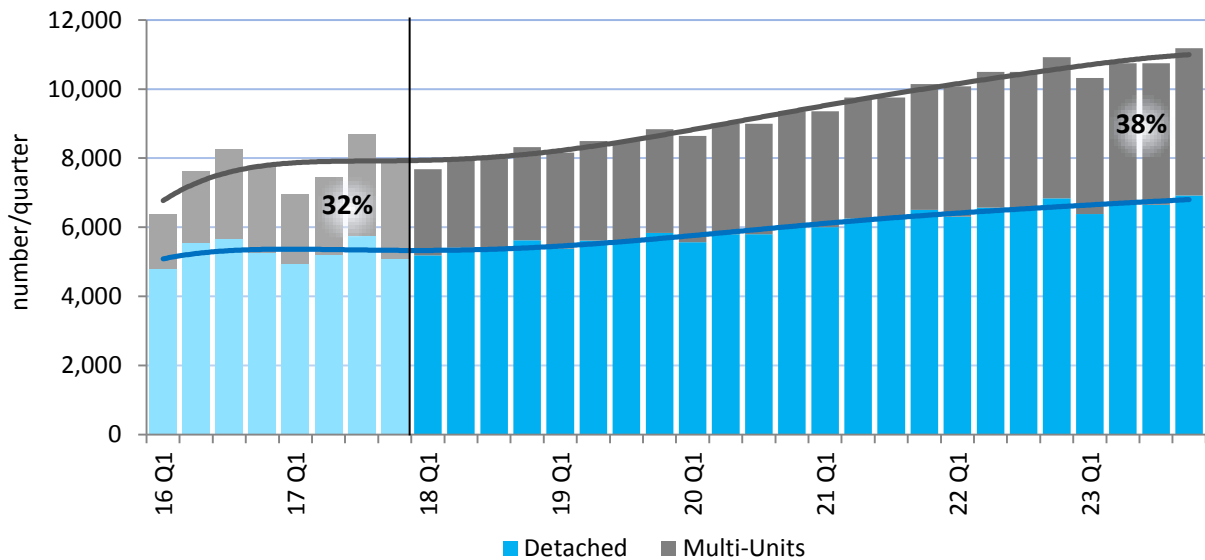
Source: BRANZ

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[6] National dwelling growth was 11% in 2016 and 10% in 2015.
[7] Dwelling numbers reached highs of 31,423 in 2005 and 39,734 in 1974.
[8] A table of annual total dwelling units, actual and forecast, is provided in *Appendix F.*

3.4   National non-residential building

Non-residential building value nationally is forecast to grow 5% to a peak of $8.4b in 2019. Non-residential building activity in Canterbury continues to reduce while Wellington and the Rest of New Zealand are expected to have peaked in 2017. Auckland is expected to drive the national peak in 2019. The high value of Pacifecon's researched project data indicates strong national non-residential building project intentions.

Figure 3-4   Non-residential building activity nationally
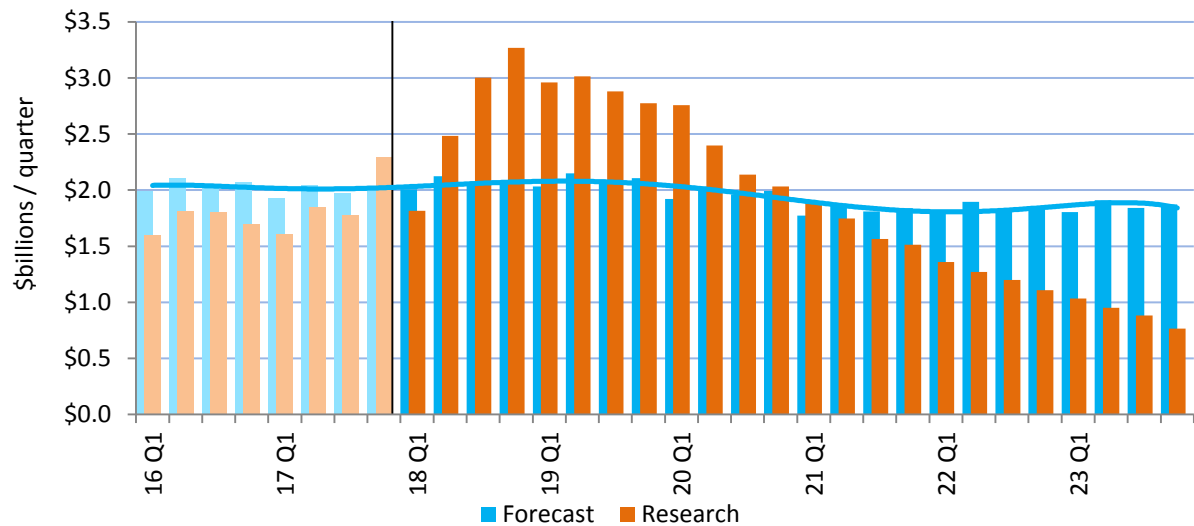
Source: BRANZ/Pacifecon

3.5   Types of non-residential building projects

Commercial projects dominate non-residential building work anticipated to start in the year to December 2018, contributing 50% of the total number of projects and 56% of total value. Education has a larger number of projects (21%) contributing only 13% to total non-residential building value. All other types of non-residential projects contribute more by value than proportion of project numbers.

Figure 3-5   Non-residential building types anticipated to start in 2018[9], by number and value
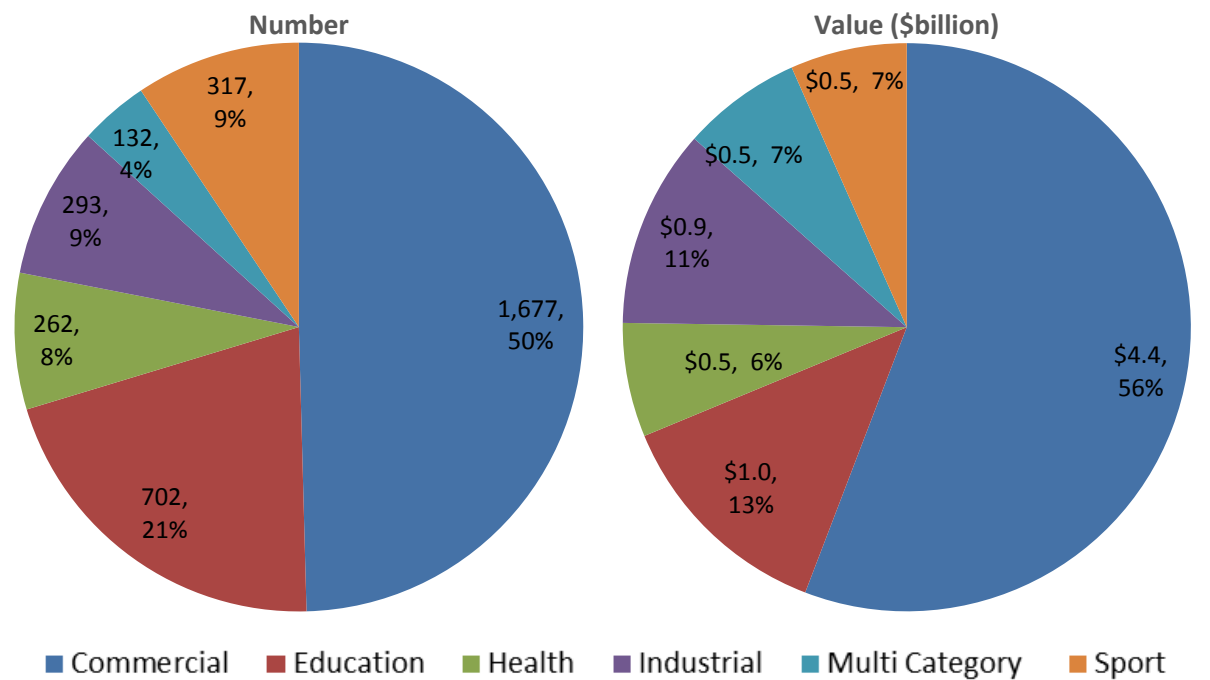
Source: Pacifecon

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[9] 2018 includes the year to December 2018

3.6   Project initiators for non-residential building, by sector

The private sector is the biggest initiator of non-residential building, contributing 70% of the value of intentions in 2018, while central and local government make up 20% and 10% respectively. New non-residential building intentions for all sectors are forecast to peak towards the end of 2018. Central and local government-initiated projects benefit from having good long-term visibility of funding, which means intentions tend to remain strong throughout the forecast period. Private sector intentions are more heavily skewed towards the short term due to *optimism bias* and more variable private funding, which can result in intentions falling away in the medium term as there is less certainty and project visibility known.

Figure 3-6   Non-residential building intentions, by sector initiator and start date
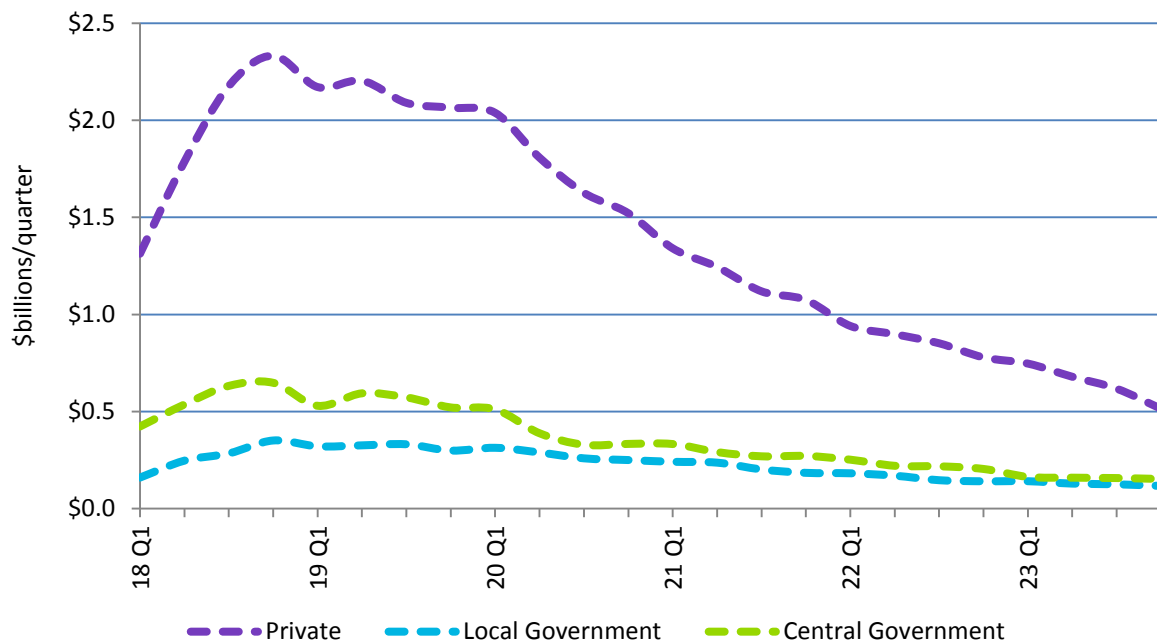
Source: Pacifecon

3.7 National infrastructure activity

In 2017, national *infrastructure* activity represented roughly a fifth of total building and construction value, and national infrastructure value reduced 3% to $6.9b. Activity is forecast to increase from current levels to reach $7.3b in 2023. The high value of Pacifecon's research data indicates that there are strong sector intentions to initiate new infrastructure projects nationally.

Figure 3-7   Infrastructure activity nationally
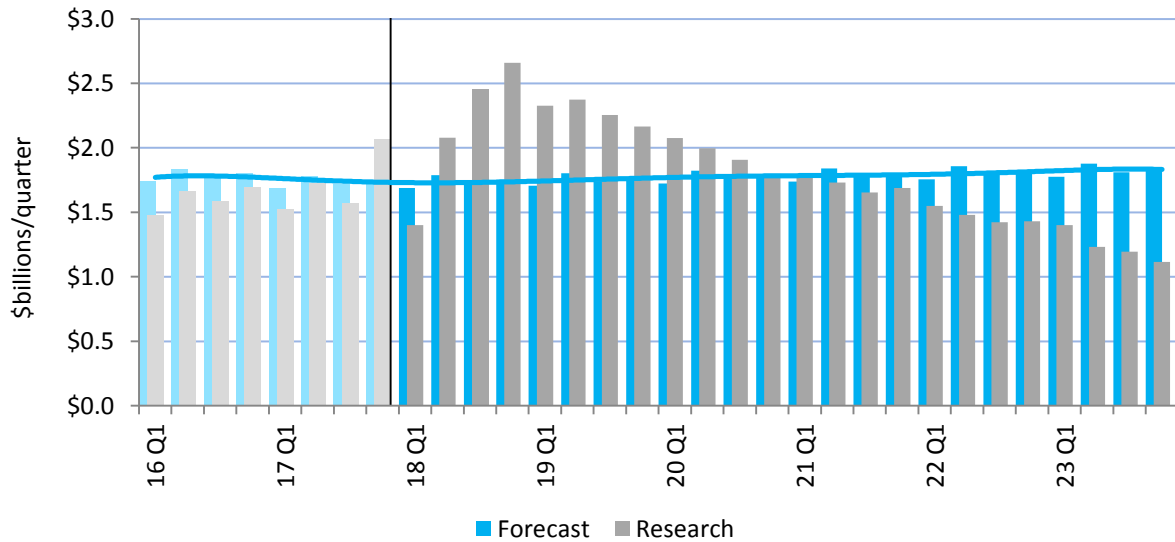
Source: BRANZ/Pacifecon

3.8   Types of infrastructure construction

Transport, water and subdivision projects are set to dominate new infrastructure activity in 2018, contributing 84% of the projects and 87% of the total value. Subdivisions, in particular, are high-value projects contributing a much higher proportion of value (32%) than the number of projects (23%).

Figure 3-8   Infrastructure project types anticipated to start in 2018[10], by number and value
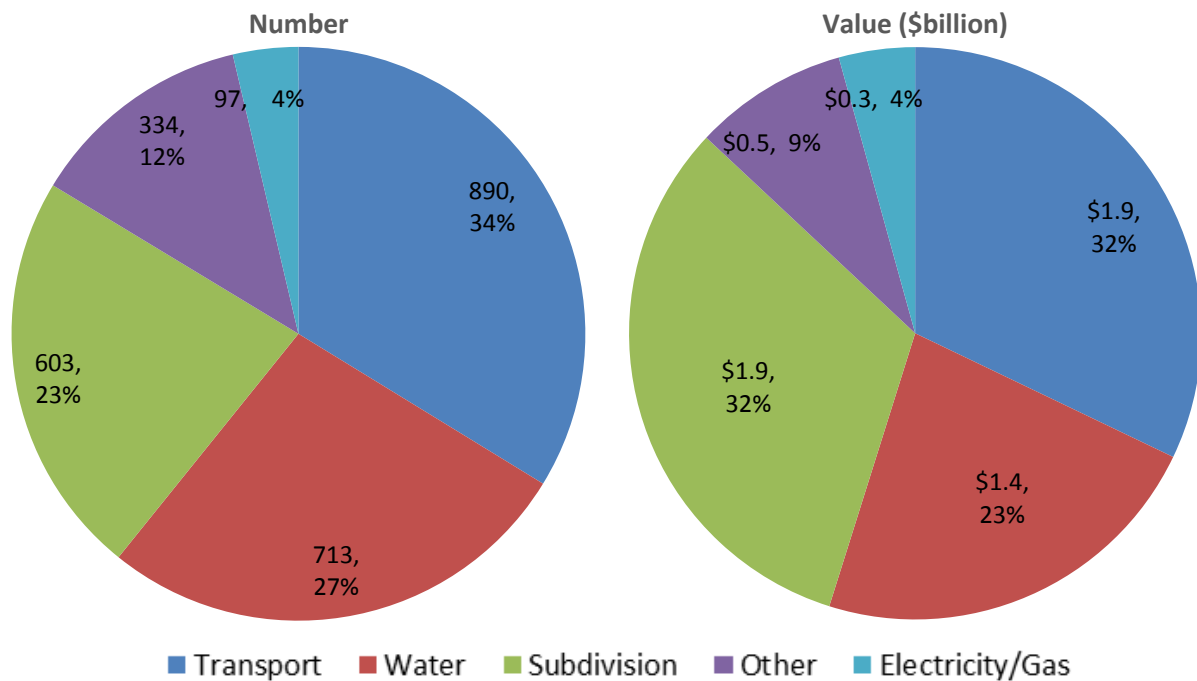
Source: Pacifecon

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[10] 2018 includes the year to December 2018.

3.9 Project initiators for infrastructure projects, by sector

Local government is the main initiator of infrastructure projects, contributing 47% of projects initiated over the forecast period. Central government (29%, mostly transport) and the private sector (24%, mostly subdivisions) initiate a similar value of infrastructure projects. A large value of infrastructure projects is expected to commence toward the third quarter of this year.

Figure 3-9   Project initiators for infrastructure projects by sector
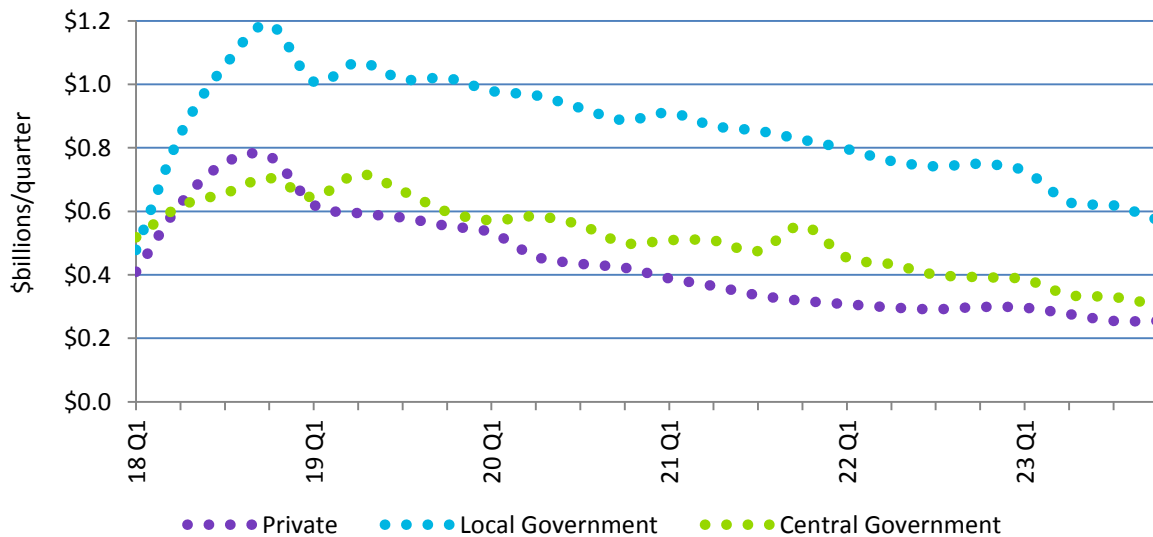
Source: Pacifecon

3.10 Regional comparisons

This section examines the differences in the forecast values for residential buildings, non-residential buildings and infrastructure activity across the regions[11] defined in the report. The individual regions are discussed in more detail in Section 4.

Total building and construction value regional comparison

The Wellington region saw the strongest growth in total construction value in 2017, up 11% on the previous year. The combined Rest of New Zealand region was the only other region to experience any growth in 2017, up 8%. Auckland and the Waikato/Bay of Plenty regions experienced slight decreases in total construction values, down 1% and 3% respectively. Canterbury, having passed the peak of rebuild activity in 2014, decreased 11% in 2017.

All regions (except Canterbury) are expected to grow consistently over the forecast period. Auckland, Waikato/Bay of Plenty and Wellington are forecast to see strong growth, increasing by 26%, 22% and 25% respectively. The Rest of New Zealand region is expected to grow by 10% over the forecast period, and Canterbury to reduce by 18% to level out at just below $6b from 2020.

Figure 3-10   Value of total building and construction, by region
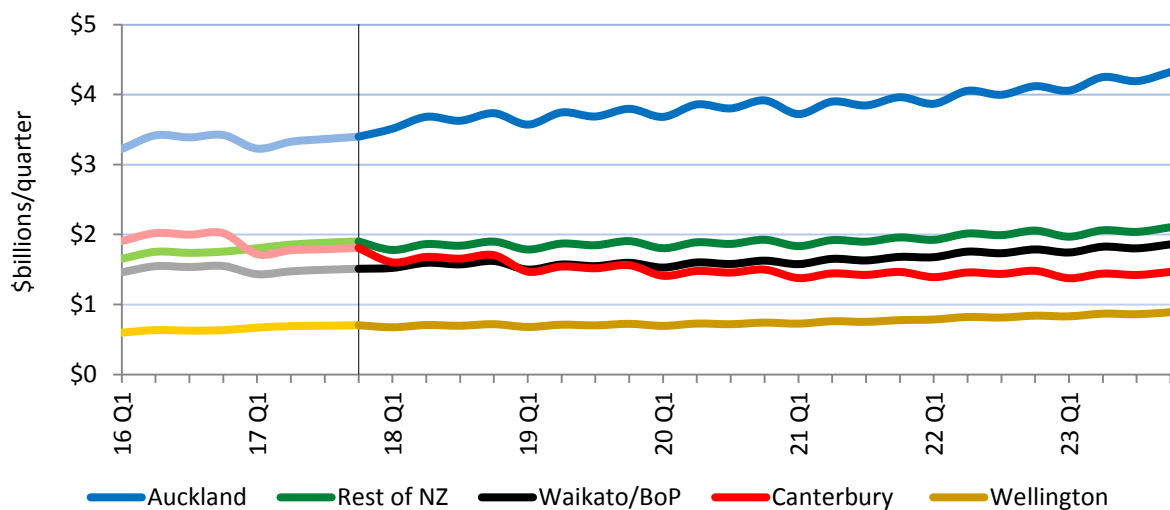
Source: BRANZ/Pacifecon

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[11] Report's regions: Auckland, Waikato/Bay of Plenty, Wellington, Christchurch and the Rest of New Zealand.

Residential building regional comparison

Wellington, the smallest region by residential building value, is expected to see strong growth increasing 65% from $1.5b per annum in 2017 to $2.5b in 2023. Auckland is forecast to have the largest residential building growth by value, increasing by 33% to reach over $10b in 2023. The Waikato/Bay of Plenty (24%) and the Rest of New Zealand (20%) are also set to experience sustained year-on-year growth. Residential building value in the Canterbury region is expected to continue slowly reducing throughout the forecast period.

Figure 3-11   Value of residential buildings, by region
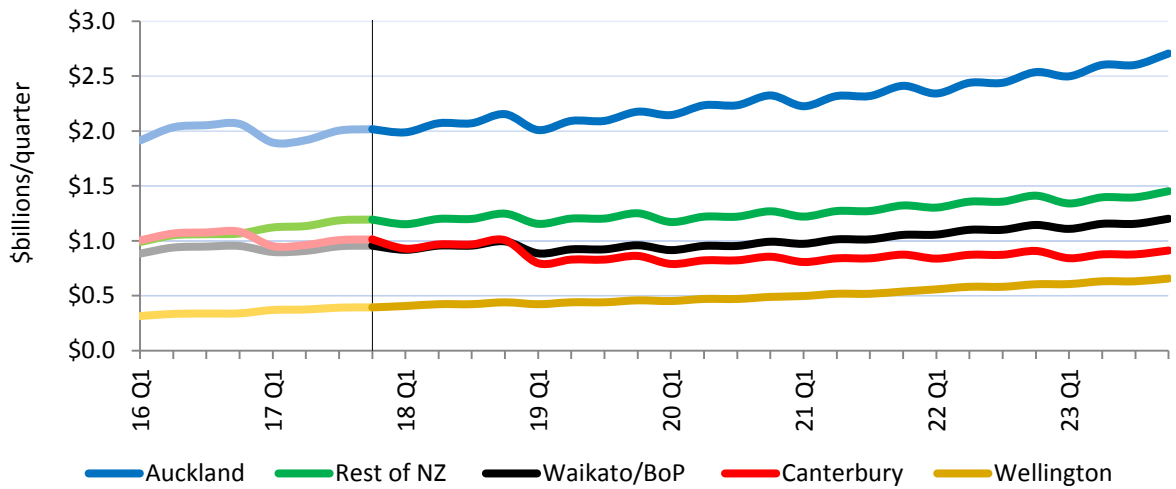
Source: BRANZ

Non-residential building regional comparison

Auckland grew 7% to $2.7b in 2017 to overtake Canterbury, which has reduced by 20% to $2.1b, as the biggest contributor to non-residential building nationally. Wellington and the Rest of New Zealand grew in 2017, by 11% and 19% respectively, in what is forecast to be the peak year for non-residential building value in these regions. The Waikato/Bay of Plenty was the only other region to show a reduction in value, down 12% to $0.9b in 2017.

Auckland non-residential building value is forecast to increase 28% from the current level to peak at $3.5b in 2019 and sustain at this elevated level to 2023. The Waikato/Bay of Plenty region is also expected to grow steadily, increasing 32% from current levels to $1.2b in 2023. Non-residential building value across all other regions (Canterbury, Wellington and the Rest of New Zealand) is expected to reduce from current elevated levels. A steady decrease is expected for Canterbury of 41% to 2023, while Wellington and Rest of New Zealand are expected to decrease by 30% and 14% respectively to 2020 before levelling out to 2023.

Figure 3-12   Value of non-residential building, by region
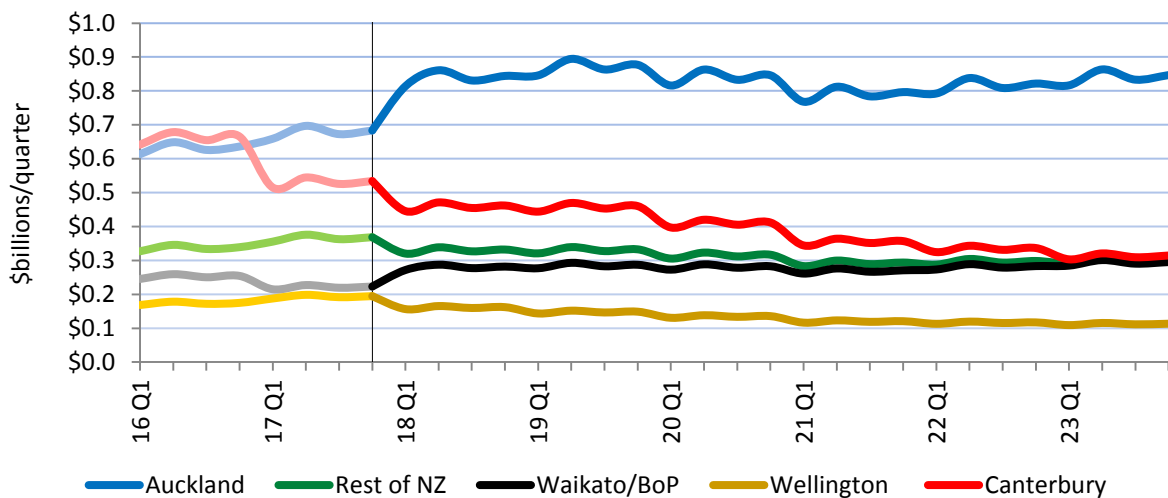
Source: BRANZ

Infrastructure activity regional comparison

Infrastructure activity reduced nationally in 2017. Infrastructure forecasts overall are for steady growth throughout the forecast period. This growth is driven by transport and subdivisions. The following growth is expected between 2017 and 2023: Auckland 10%, Waikato/Bay of Plenty 9%, Wellington 4%, Rest of New Zealand 3%. Canterbury is expected to reduce by 9%.

Figure 3-13   Value of infrastructure activity, by region
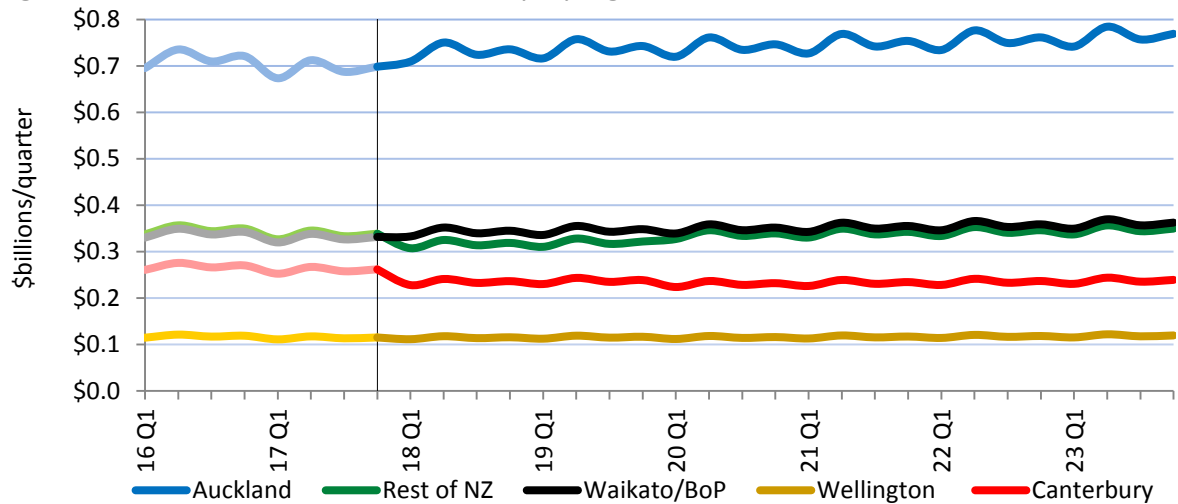
Source: BRANZ/Pacifecon

4 Regional forecast

4.1 Auckland[12]

Auckland is New Zealand's largest building and construction region, contributing 36% of total national construction value and 35% of dwelling unit consents in 2017. There is strong demand for construction of all types in Auckland and the region is forecast to grow to represent 41% of total national construction and 40% of dwelling unit consents in 2023.

Auckland's total construction value reduced slightly to $13.3b in 2017. However the forecast for Auckland is for sustained year-on-year growth until the end of the forecast period reaching nearly $17b in 2023, a 26% increase on current activity.

Non-residential building was the only construction type to increase in value in 2017, with residential building and infrastructure activity falling slightly. Auckland's future growth is expected to be driven to 2019 by non-residential building forecast to peak at $3.5b in 2019, and by the end of the forecast period by strong residential building demand expected to reach $10.4b in 2023.

Figure 4-1-1   All construction in Auckland, by value
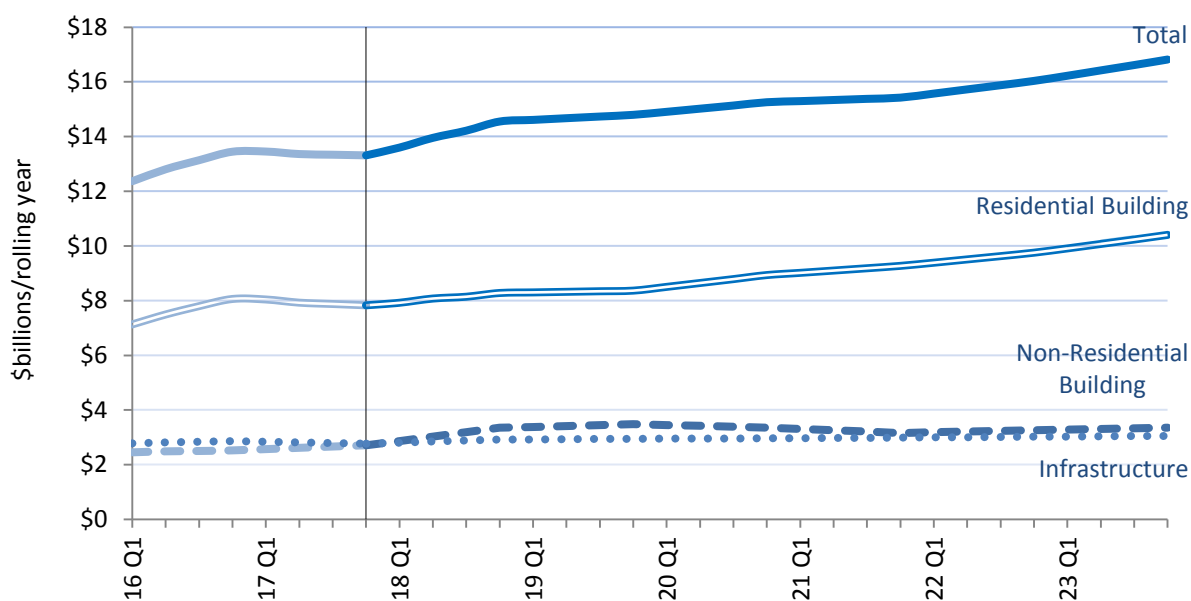
Source: BRANZ/Pacifecon

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[12] The area covered by Auckland Council.

Auckland dwelling consent activity

The number of dwelling units consented in Auckland grew by 8% to just short of 11,000 in 2017. Dwelling unit consents are forecast to exceed the previous 2002 peak in 2019[13], with strong year-on-year growth expected until the end of the forecast period. A 58% increase in dwelling unit consents is forecast, from current levels to a high of over 17,000 in 2023. This is a significant increase on last year's forecast peak of 13,000 dwelling unit consents in 2020 resulting in almost 90,000 dwelling units expected to be consented in the six years from 2018 to 2023.

Figure 4-1-2   Dwelling units in Auckland, 1993 to 2023
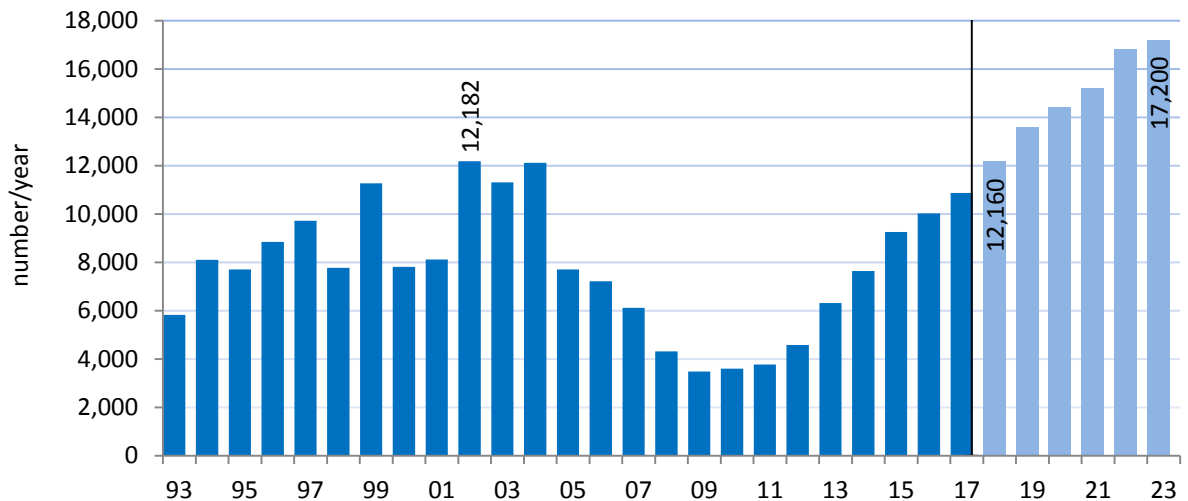
Source: BRANZ/Statistics New Zealand

Auckland multi-unit consents

Dwelling growth in Auckland is being driven by multi-unit consents. In 2017 the number of *multi-unit dwellings* consented exceeded the number of detached[14], contributing 51% of the 10,867 dwellings consented. This share is expected to increase further with 57% of the almost 90,000 dwellings to be consented by 2023 being multi-unit.

Figure 4-1-3   Dwelling units in Auckland
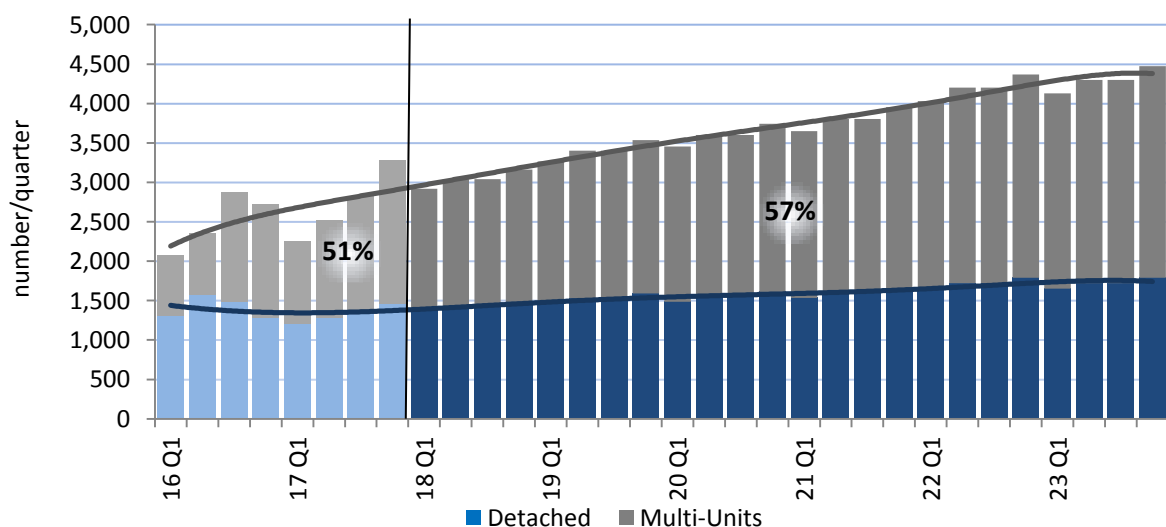
Source: BRANZ/Pacifecon

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[13] Dwelling units consented in Auckland for the year ended May 2018 reached 12,274.

[14] The 2017 report did not forecast Auckland multi-unit dwelling consents to exceed detached until 2022.

Dwelling consents, by Auckland geographic[15] area

Auckland dwelling consents experienced a low of 3,500 dwelling units consented in 2009. Since then dwelling unit consents have increased significantly to 10,900 in 2017, however not all geographic areas of Auckland have experienced the same type or degree of growth.

The North has seen the greatest increase in dwelling consent numbers, increasing from approximately 1,200 consents at the 2009 low to over 4,000 in 2017. This well surpasses the previous peak of 2,900 consents in 2002. The South and City have also seen strong dwelling growth, with both consenting around 2,000 more dwelling units in 2017 than during the 2009 low. West Auckland has lower numbers and also experienced slower growth than the other areas.

Figure 4-1-4   Dwelling units consented in Auckland, by geographic area, last decade
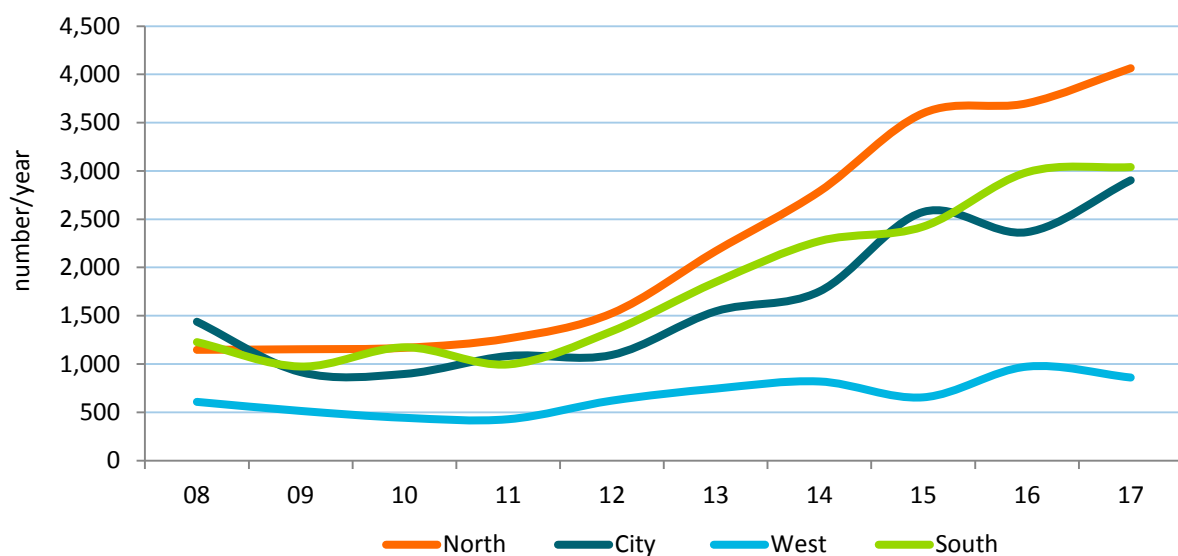
Source: Statistics New Zealand

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[15] Auckland geographic areas in the report are divided using the 13 Auckland wards as follows: North (Albany, Rodney and North Shore), City (Waitemata and Gulf, Maungakiekie-Tamaki, Albert-Eden-Roskill and Orakei), West (Waitakere and Whau), and South (Manurewa-Papakura, Franklin, Howick and Manukau).

Detached dwellings consents, by Auckland geographic area

Detached dwelling consents have experienced strong growth rates in the North and South in the last decade, with more than 2,000 detached dwellings consented in both of these regions in 2017. The West and City areas have seen relatively constant levels of around 500 consents per year.

Figure 4-1-5   Auckland detached dwelling consent by geographic area, last decade
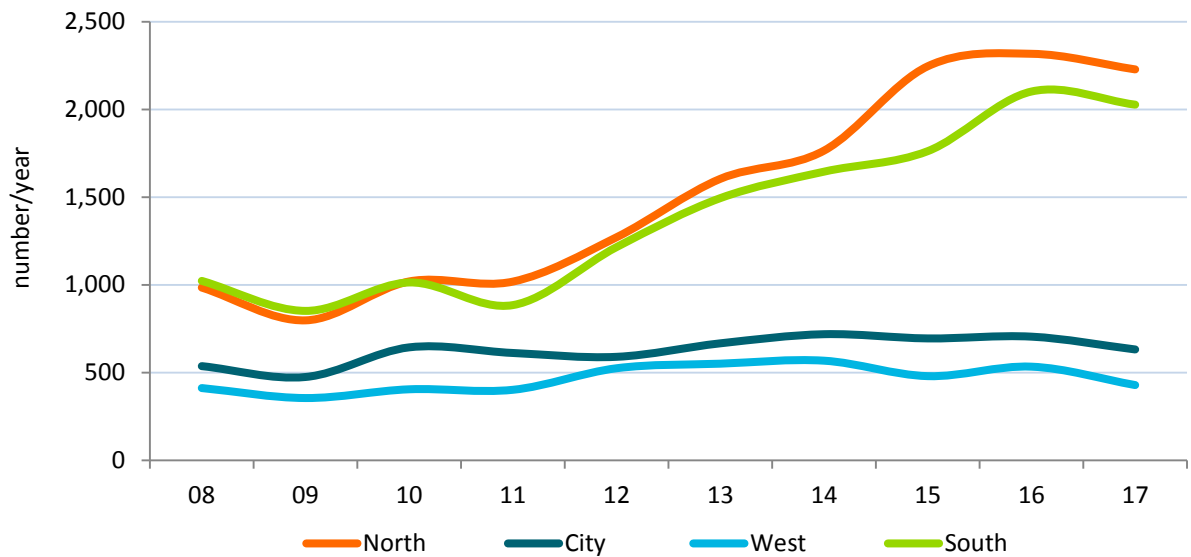
Source: Statistics New Zealand

Townhouse unit consents, by Auckland geographic area

Townhouse unit[16] consent growth in Auckland started to pick up around 2012 with particularly strong growth in the North and South with 1,348 and 666 units respectively in 2017. A modest level of growth in townhouse consents has also occurred in the City and West areas in the last few years.

Figure 4-1-6   Auckland townhouse dwelling unit consents by geographic area, last decade
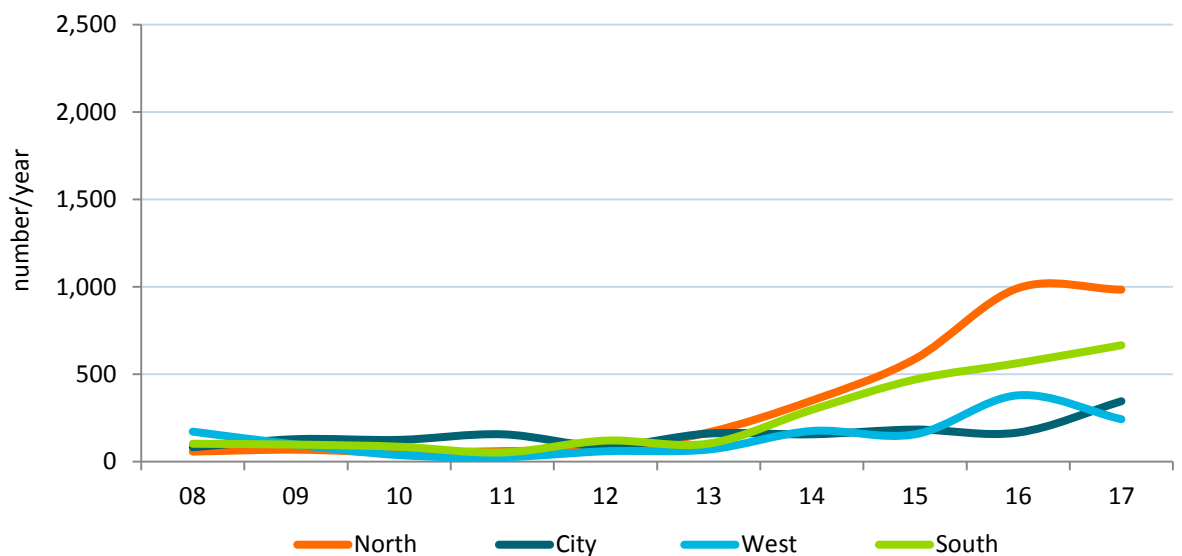
Source: Statistics New Zealand

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[16] Townhouse units include townhouses, flats, units and other dwellings as recorded by Statistics New Zealand. Townhouses are side-by-side attached dwellings, such as terraced housing.

Apartment units consents, by Auckland geographic area

Apartment consents have experienced strong growth in the City over the last decade reaching 1,603 units in 2017, with moderate growth in apartment numbers also beginning in the North with 487 units consented in 2017.

Figure 4-1-7   Auckland apartment units consents by geographic area, last decade
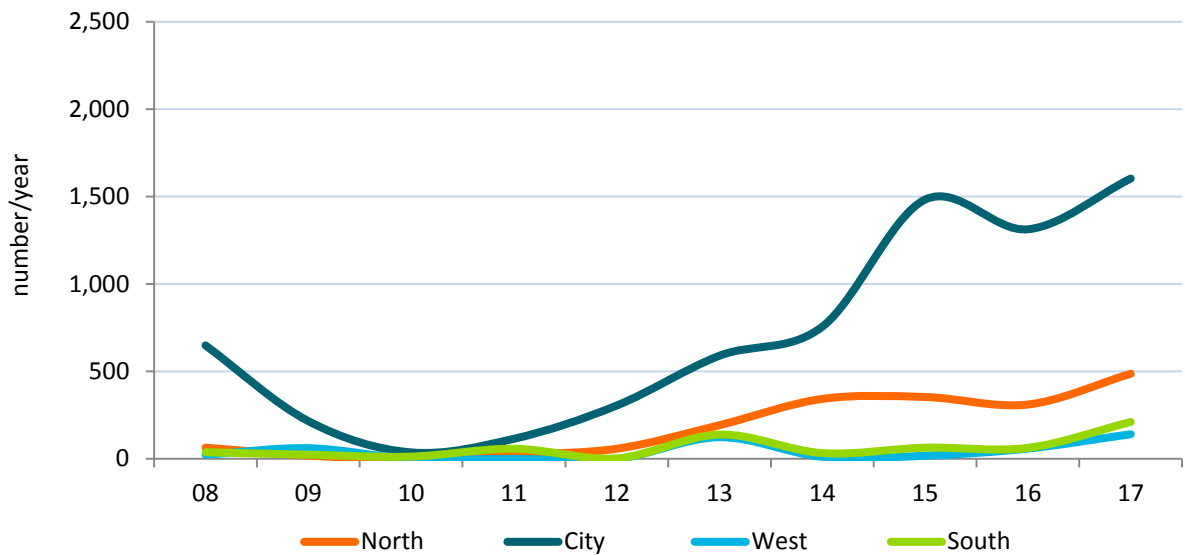
Retirement village units consents, by Auckland geographic area

Retirement village unit consent numbers have grown in Auckland from a total of 272 in 2008 to 868 in 2017. The North has consent the largest volume of units over the last decade at 2,070 units, followed by City with 1,629 units and South with 1,048 units, with only 47 units total for the West.

Figure 4-1-8   Auckland retirement village unit consents by geographic area, last decade
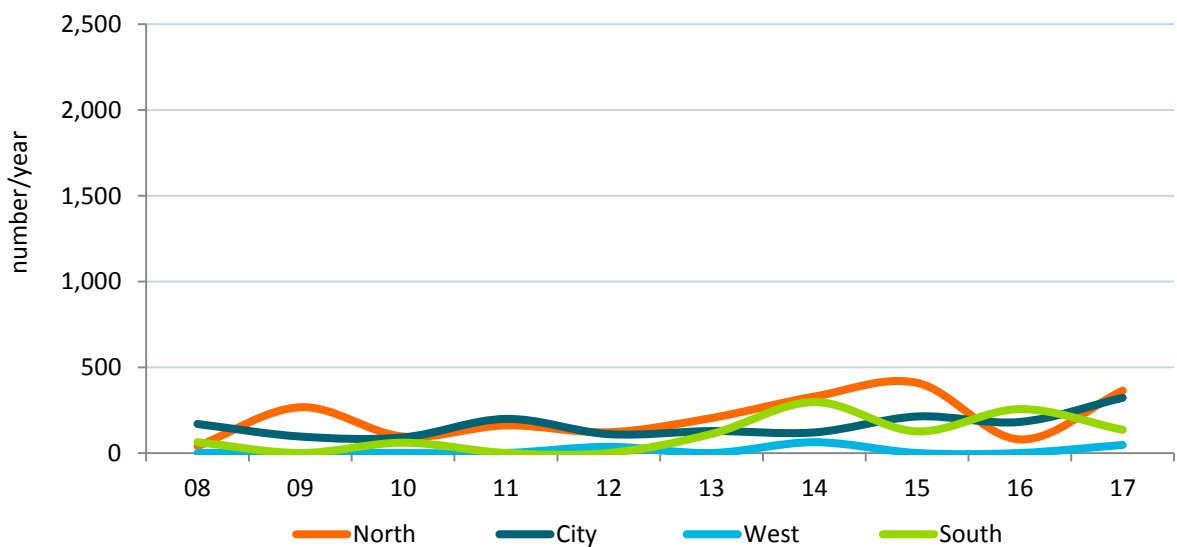
Auckland non-residential building activity

Non-residential building activity in Auckland grew by 7% in 2017 and is forecast to increase another 28% to peak at $3.5b in 2019. This coincides with a peak in research values over the next two years that indicate strong non-residential building intentions for the region.

Figure 4-1-9   Auckland non-residential building activity
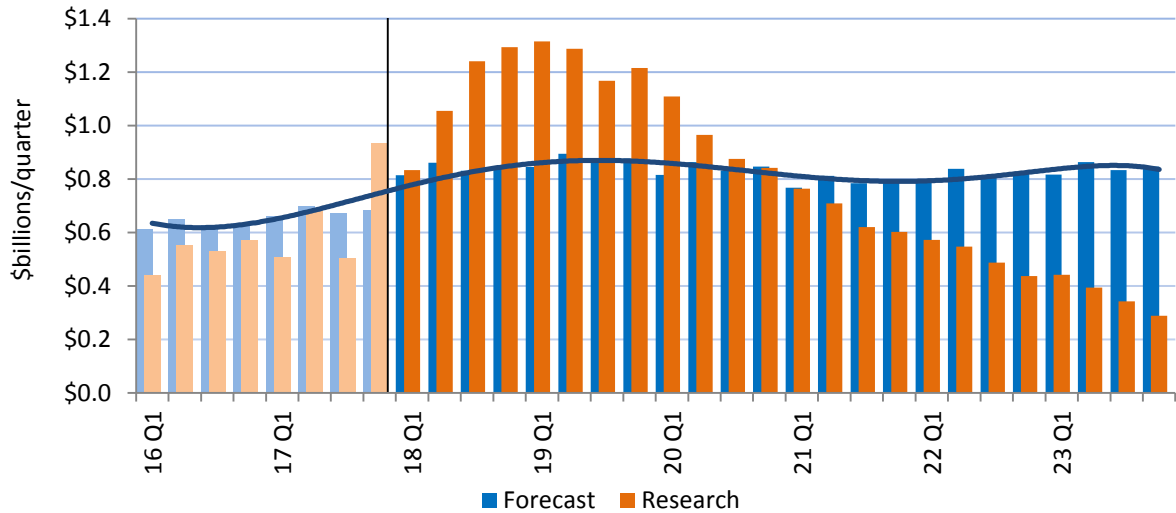
Source: BRANZ/Pacifecon

The private sector commissions the majority of non-residential building work[17], which includes a degree of *optimism bias*. The major value of non-residential building is expected to occur in the City, with research data peaking at $0.8b per quarter at the start of 2019. The South has the second highest known intentions, peaking at $0.4b per quarter towards the end of 2019, while research data for the North area holds relatively steady through the forecast.

Figure 4-1-10 Research project intentions for non-residential buildings in Auckland, by area
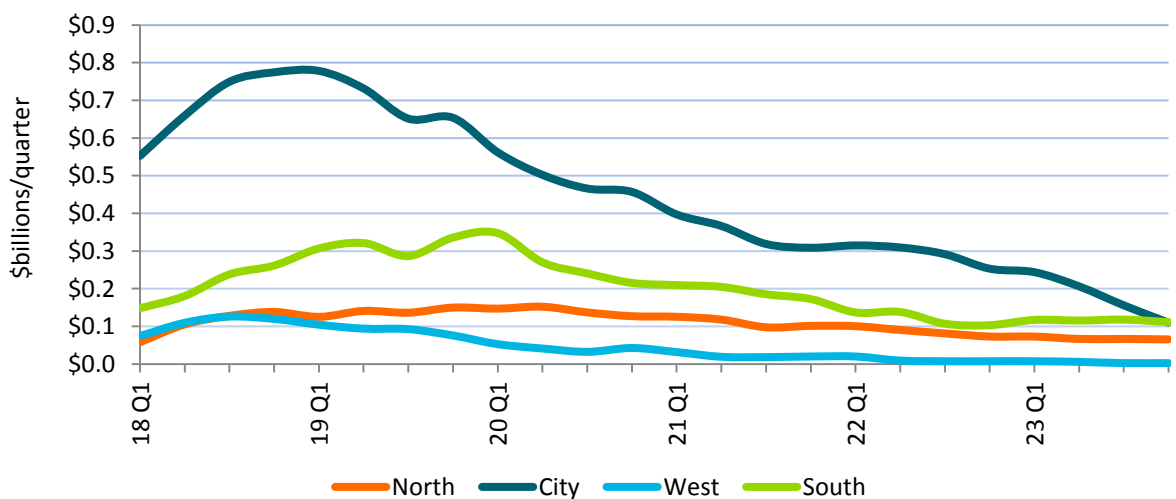
Source: Pacifecon

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[17] Refer to Section 3.8 for more detail on non-residential building initiators.

Auckland infrastructure activity

Infrastructure activity in Auckland decreased by 3% in 2017 to $2.8b, and is forecast to increase by 10%, to over $3b by 2023. The research data shows a high value of known infrastructure project intentions throughout the forecast period, typical for these often large projects that are planned well in advance.

Figure 4-1-11 Auckland infrastructure activity
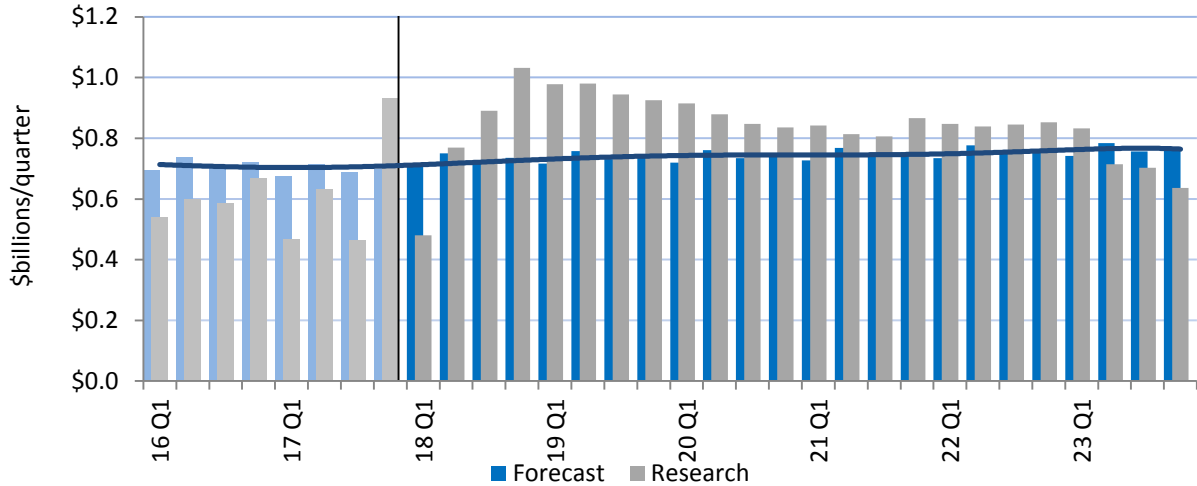
Source: BRANZ/Pacifecon

There are strong infrastructure intentions across all four Auckland areas to 2023. Significant Auckland-wide infrastructure projects include the City Rail Link and residential subdivisions[18]. Initially the South has the highest new infrastructure intentions, peaking in 2018[19]. The City is expected to see strong activity, particularly around 2022.

Figure 4-1-12 Research project intentions for infrastructure activity in Auckland, by area
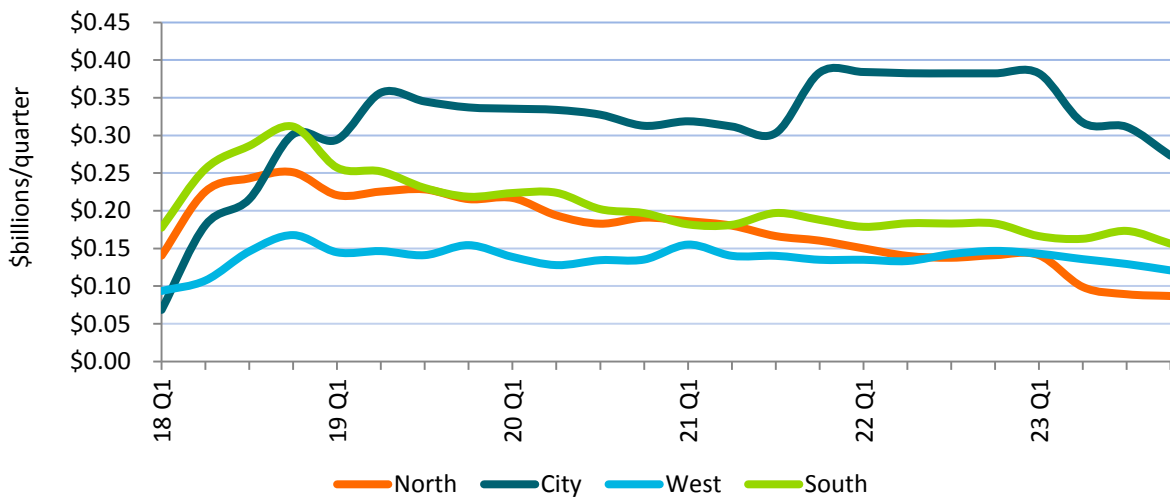
Source: Pacifecon

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[18] For more information refer to Appendix D.
[19] Research project intentions are lower in 2018 than subsequent years because they don't carry forward as much work from the past.

Planned non-residential buildings and infrastructure work for Auckland includes[20]:
- accommodation for tourists
- transport/subdivisions to support growth in residential building
- Three Waters expansion
- expansion at the airport (both hotels and infrastructure).

<div align="right">Source: Pacifecon</div>

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[20] For more information refer to Appendix D.

4.2 Canterbury[21]

Construction value in the Canterbury region reduced 11% to $7.1b in 2017, the result of decreasing values across all three construction types. Non-residential building value peaked at $2.6b in 2016 and is expected to reduce 41% more to $1.2b in 2023. Residential building value reduced 7% in 2017 and is expected to further reduce to 2020 while infrastructure remains at $0.9b per year to 2023.

Figure 4-2-1   All construction in Canterbury, by value
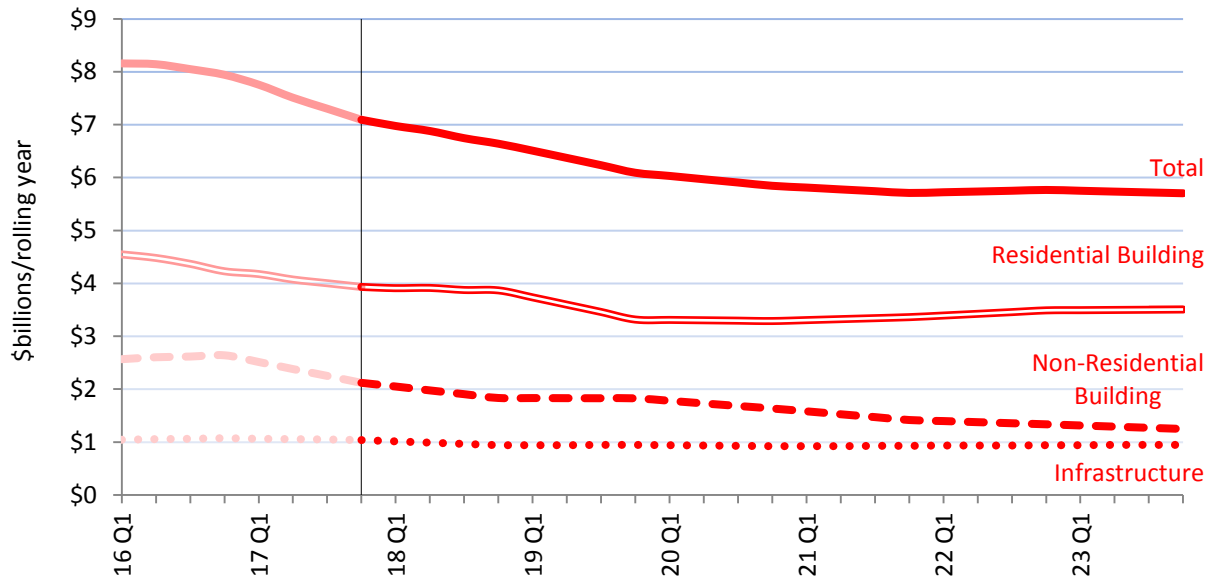
Source: BRANZ/Pacifecon

Canterbury dwelling consent activity

The number of dwellings consented in Canterbury reduced 15% in 2017, slightly more than previously forecast, driven mostly by a 34% decrease in the number of multi-unit dwellings consented. It is forecast that the number of dwelling consents will remain around current levels to the end of the forecast period.

Figure 4-2-2   Dwelling units in Canterbury
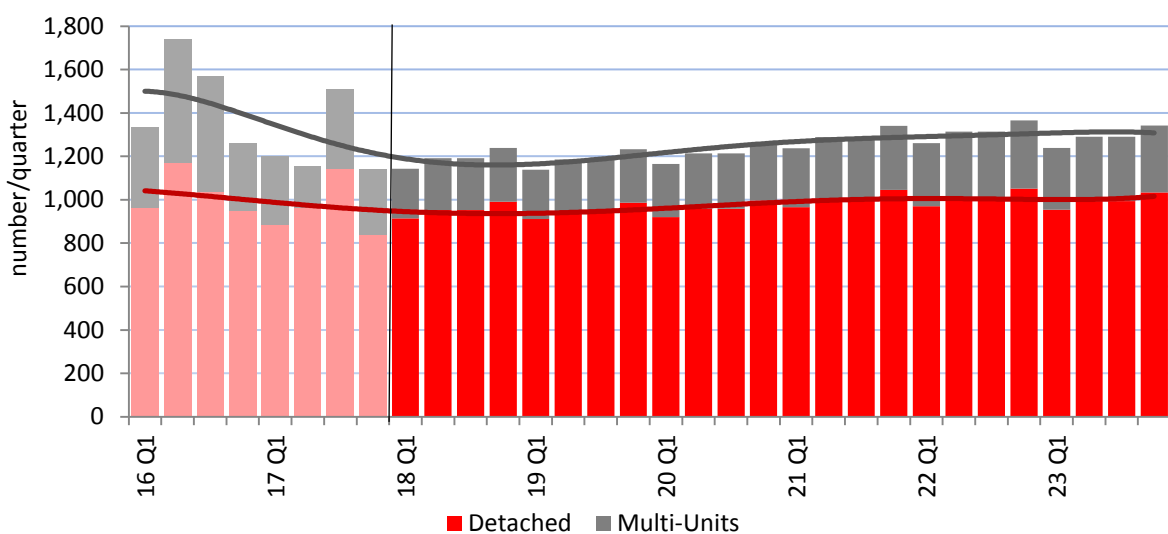
Source: BRANZ

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[21] Canterbury includes: Ashburton, Christchurch City, Hurunui, Mackenzie, Selwyn, Timaru, Waimakariri, Waimate and Kaikoura districts.

Canterbury non-residential building activity

Non-residential building activity has reduced by 20% in 2017, slightly faster than previously forecast. Canterbury non-residential building is expected to continue to reduce over the next four years before levelling out around $1.3b in 2022.

Figure 4-2-3   Canterbury non-residential building
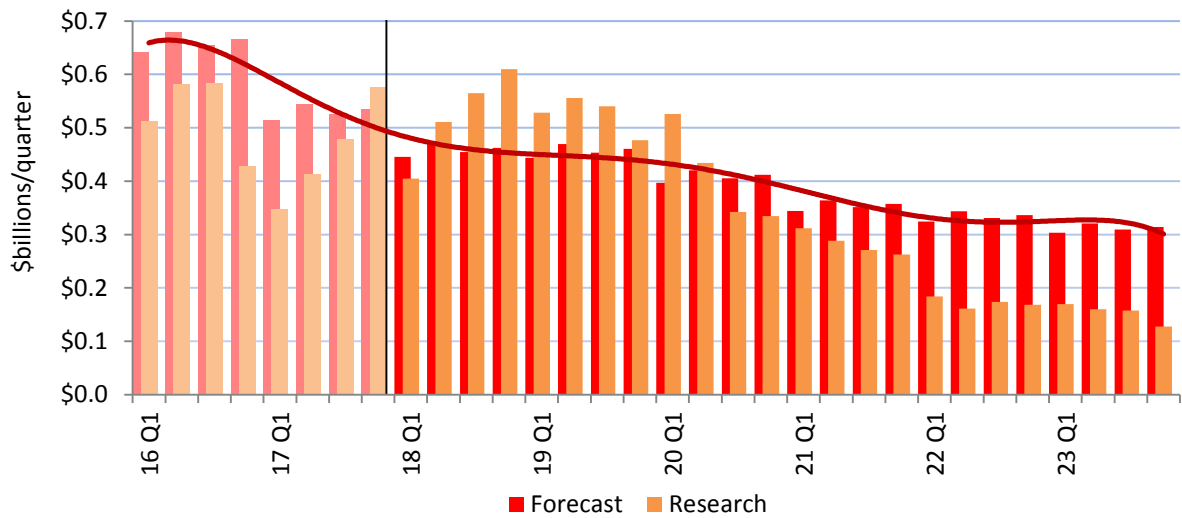
Source: BRANZ/Pacifecon

Canterbury infrastructure activity

Infrastructure activity in Canterbury reduced 3% to $1b in 2017. Infrastructure value is forecast to decrease further to $0.9b in 2018, where it is expected to hold steady for the rest of the forecast period.

Figure 4-2-4   Canterbury infrastructure activity
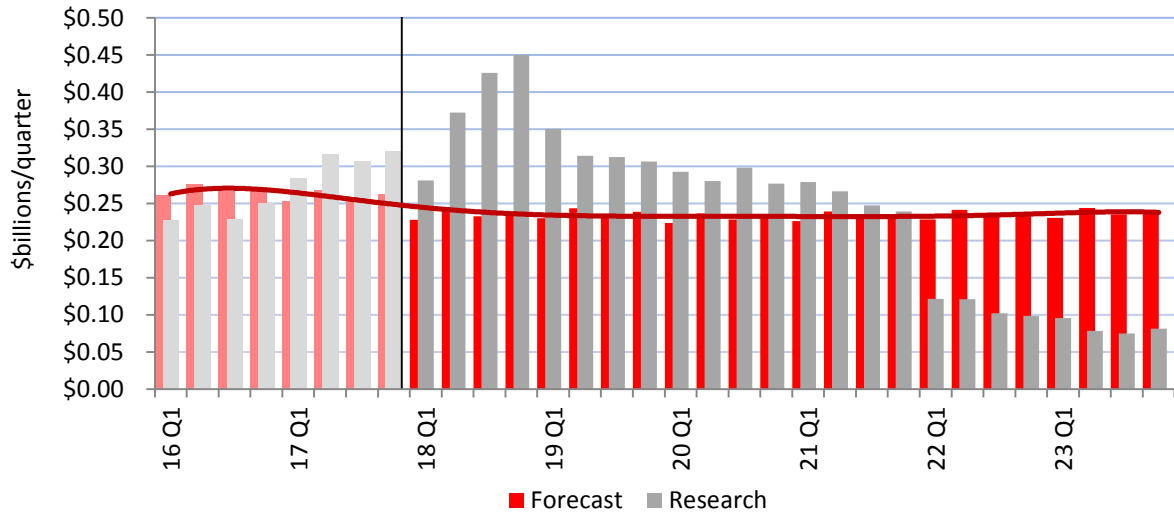
Planned non-residential buildings and infrastructure work for Canterbury includes:
- education and sports facilities
- dairy processing plants
- commercial buildings
- port dredging, residential subdivisions and Kaikoura earthquake repair work.

4.3   Waikato/Bay of Plenty[22]

Total value of construction in the Waikato/Bay of Plenty reduced slightly (3%) in 2017, to $5.9b. Non-residential building is forecast to grow by 26% in 2018, and remain at this level until 2023. Residential building is forecast to remain around current levels until 2020, before experiencing sustained growth of around 7% per year reaching $4.6b in 2023. Infrastructure activity experienced a slight drop in 2017 (3%) but is expected to remain around $1.4b per year through to 2023.

Figure 4-3-1   All construction in Waikato/Bay of Plenty regions, by value
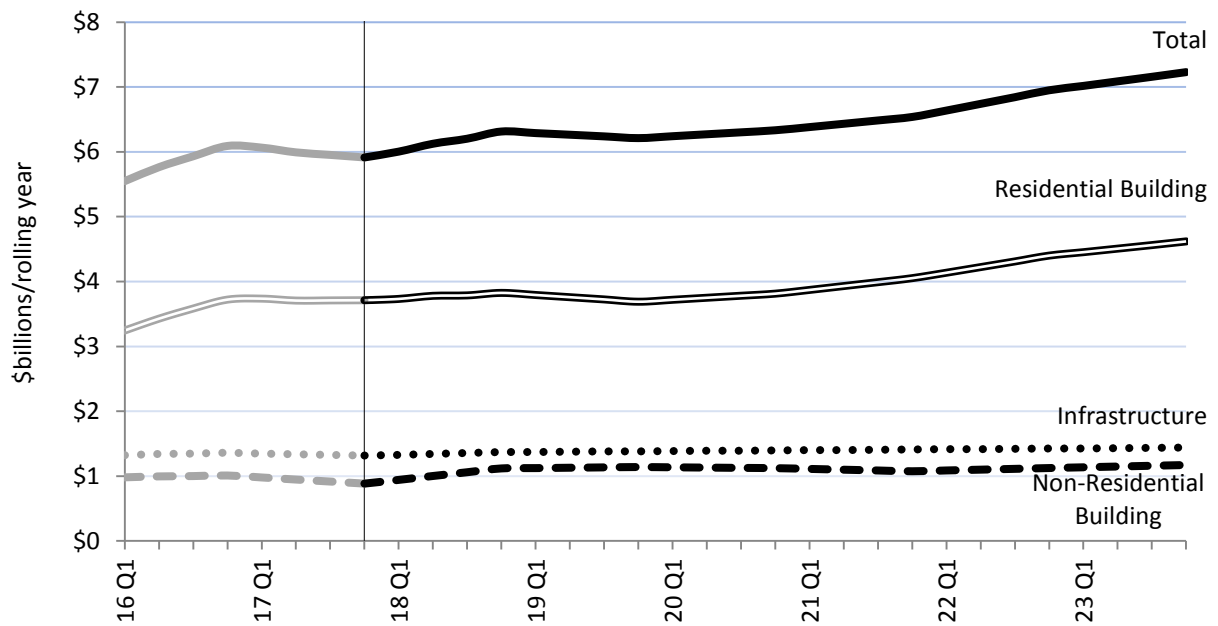
Source: BRANZ/Pacifecon

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[22] The Waikato/Bay of Plenty region includes: Tauranga City, Hamilton City, Taupo (Turangi and Mangakino), Western Bay of Plenty, Rotorua, Kawerau, Whakatane, Opotiki, Waikato, Waipa, Otorohanga, Waitomo, Thames-Coromandel, Hauraki, Matamata-Piako and South Waikato districts.

Waikato/Bay of Plenty dwelling consent activity[23]

The Waikato/Bay of Plenty regions experienced strong dwellings growth in previous years, but levelled out in 2017. Dwelling consent numbers are expected to reduce to below 6,000 in 2018, with growth expected grow 31% from 2019 to 2023 with 8,100 dwelling units forecast for 2023. The forecast growth includes 42,000 dwellings consented from 2018 to 2023 and is driven by increases in both detached and multi-unit dwelling consents. Waikato/Bay of Plenty is expected to consent the second largest number of multi-unit dwellings after Auckland between 2018 and 2023, with 25% of all dwelling consents in the region expected to be for multi-units by 2023.

Figure 4-3-2   Dwelling units in Waikato/Bay of Plenty

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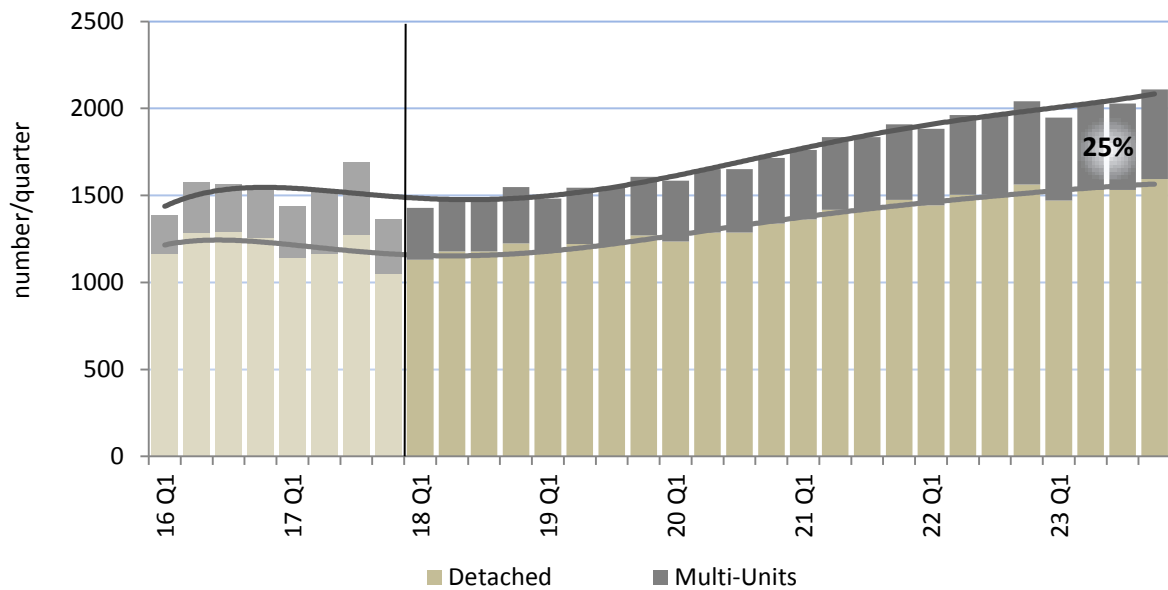
[23] See the National Construction Pipeline Report 2016 for a historic comparison of dwelling consent activity for Waikato and Bay of Plenty separately.

Waikato/Bay of Plenty non-residential building activity

The Waikato/Bay of Plenty region was the only region (other than Canterbury) to experience a decrease in non-residential building value, falling 12% in 2017 to $0.9b. Non-residential building activity is, however, expected to increase by 26% in 2018, and remain around $1.2b per year to 2023.

Figure 4-3-3   Non-residential building activity for Waikato/Bay of Plenty
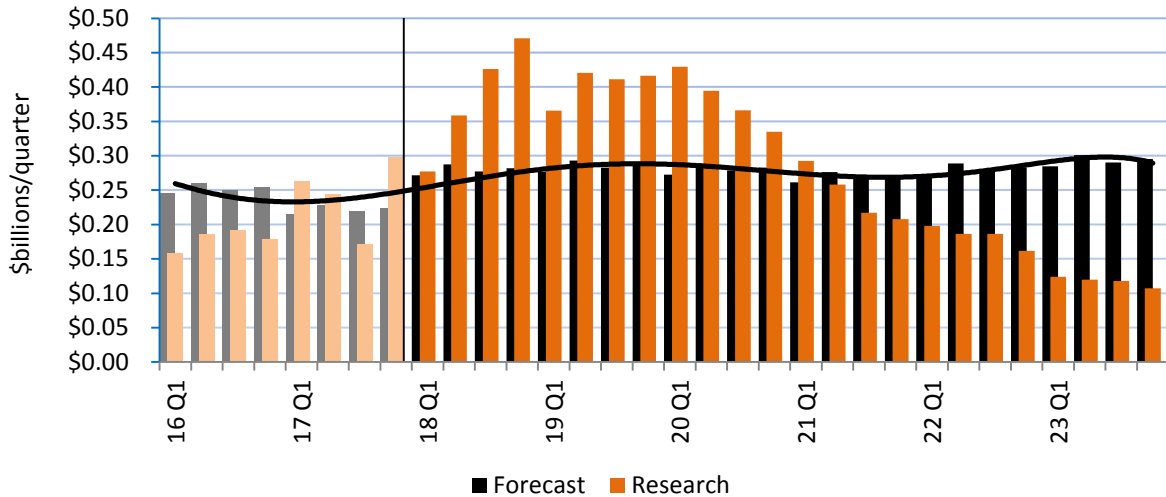
Source: BRANZ/Pacifecon

Waikato/Bay of Plenty infrastructure activity

Infrastructure activity in the Waikato/Bay of Plenty region decreased 3% in 2017 to $1.3b. Infrastructure activity in the Waikato/Bay of Plenty is expected to gradually increase 9% to around $1.4b in 2023.

Figure 4-3-4   Infrastructure activity for Waikato/Bay of Plenty
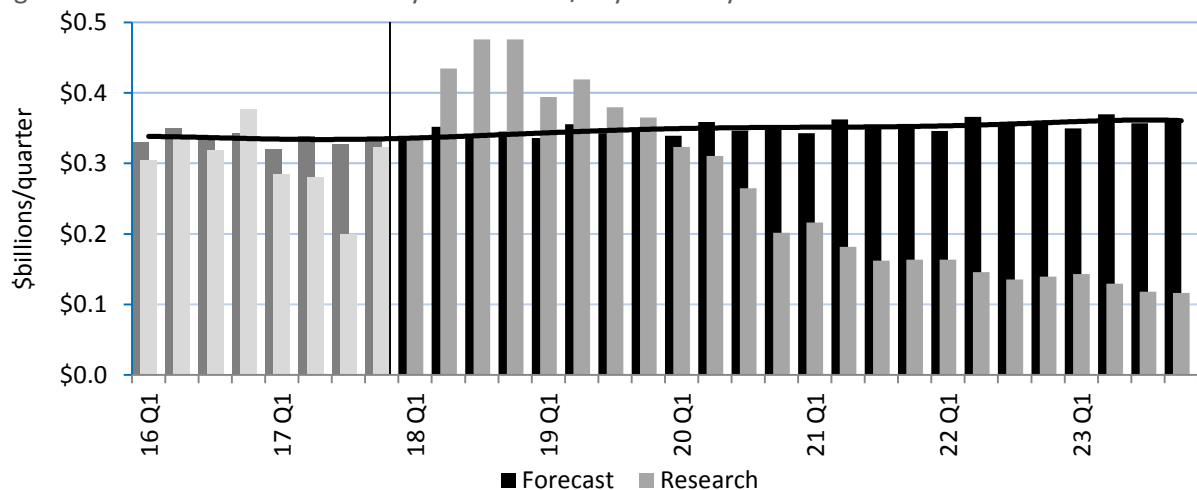
Source: BRANZ/Pacifecon

Planned non-residential building and infrastructure work for the Waikato/Bay of Plenty includes:
- dairy and processing plants
- industrial subdivisions
- civil projects including roads and electricity.

4.4 Wellington[24]

In 2017 the Wellington region had the strongest growth of any of the regions featured in this report, with total construction value increasing 11% to $2.8b. Wellington's total construction value is forecast to remain at this elevated level before growing again in 2020 by 20% to $3.4b in 2023. Residential building activity is expected to drive growth in Wellington. Residential building values rose 15% in 2017 and strong growth is forecast, with an increase of 65% to $2.5b expected in 2023. Non-residential building activity is expected to reduce slowly from the $0.8b in 2017 to around $0.5b in 2020.

Figure 4-4-1   All construction in Wellington, by value
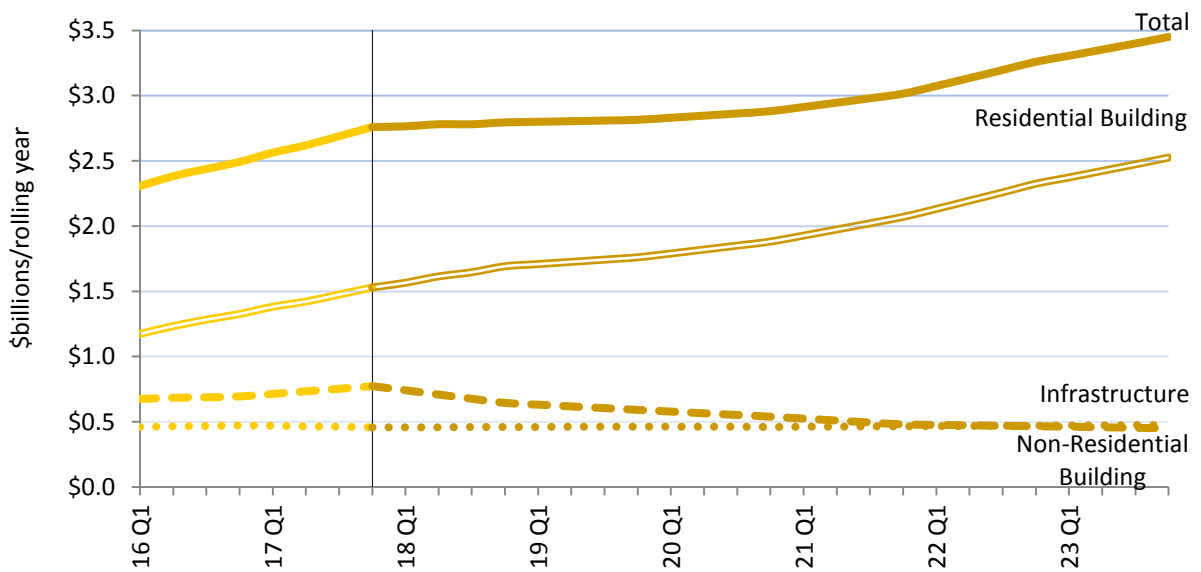
Source: BRANZ/Pacifecon

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[24] Wellington includes: Carterton, Kapiti Coast District, Lower Hutt, Masterton, Porirua City, South Wairarapa Districts, Upper Hutt, and Wellington City.

Wellington dwelling consent activity

Strong dwelling growth is forecast for the Wellington region with 19,200 dwelling units expected to be consented between 2018 and 2023. Wellington dwelling numbers increased 15% in 2017 and similar year-on-year growth is forecast to 4,100 dwellings in 2023. Dwelling growth is expected to be driven by both strong detached (68%) and multi-unit (97%) dwelling consent growth to 2023. The proportion of multi-units (41%) forecast for Wellington in 2023, is second only to Auckland (60%).

Figure 4-4-2   Dwelling units in Wellington
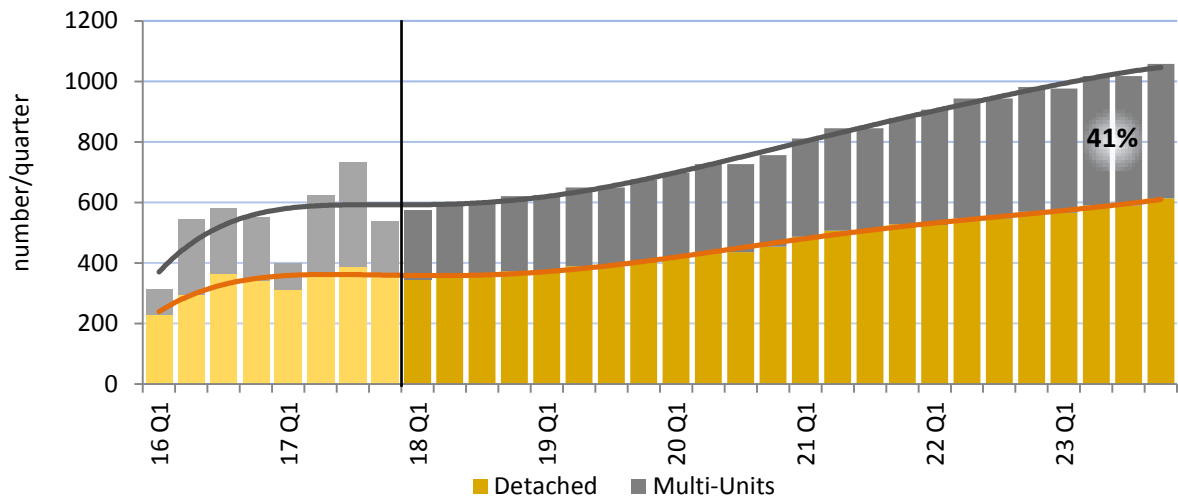
Source: BRANZ

Wellington non-residential building activity

Non-residential building activity in Wellington in 2017 at $0.8b was higher than previously forecast. A reduction from the current elevated level is anticipated with non-residential building activity expected to reduce by 30% to $0.5b in 2020 and then level out to 2023.

Figure 4-4-3   Non-residential building activity for Wellington
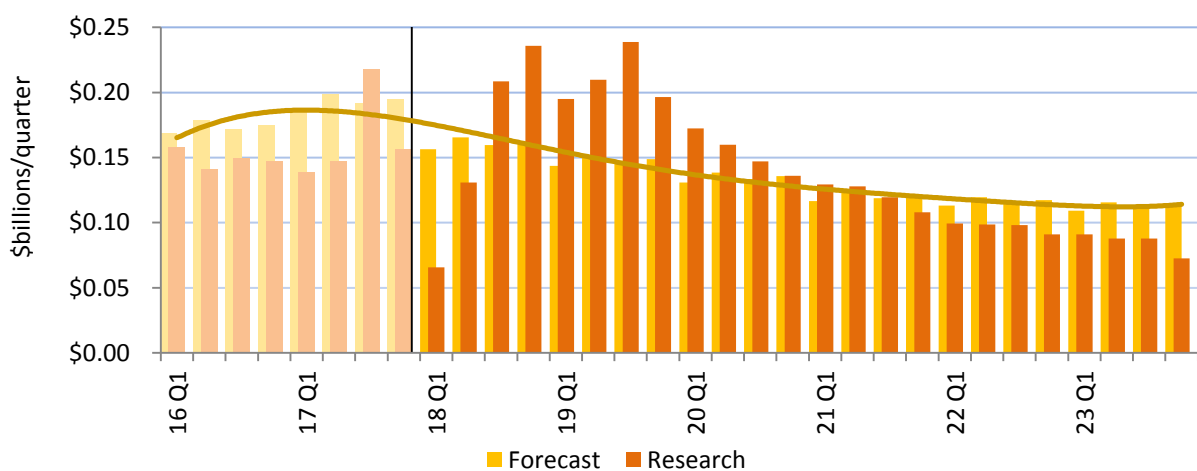
Source: BRANZ/Pacifecon

Wellington infrastructure activity

Wellington infrastructure activity has remained around $0.5b per annum since 2015. This trend is expected to continue until 2023. The high value of research data indicates strong infrastructure project intentions in the region.

Figure 4-4-4   Infrastructure activity in Wellington
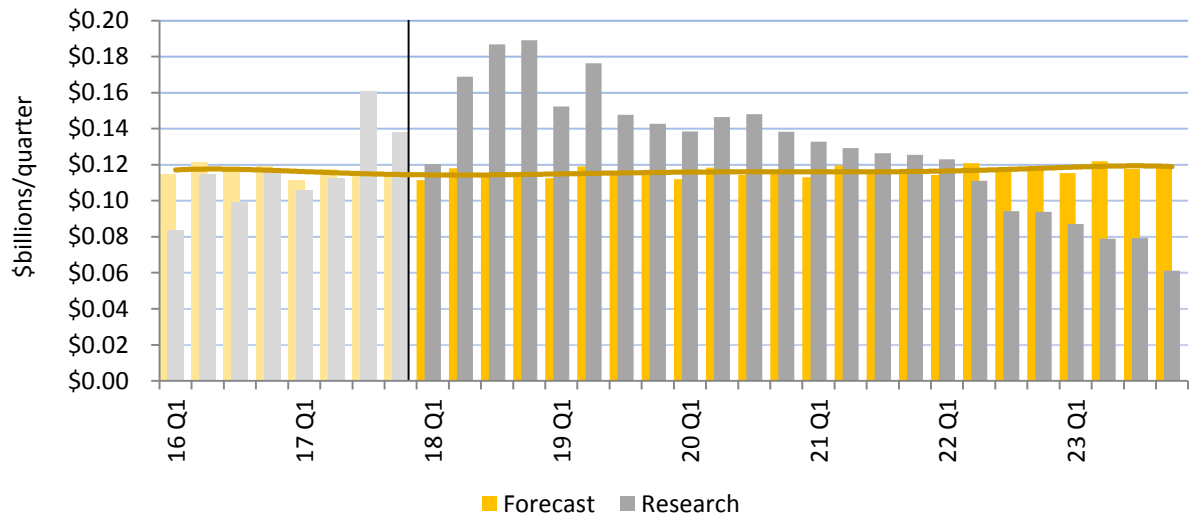
Planned non-residential and infrastructure work for Wellington includes:
-    conference centres, retail and entertainment
-    hospitals
-    non-residential building work arising from the Kaikoura earthquake[25] – demolitions, reinstatements, repairs and ongoing earthquake strengthening
-    reservoirs.

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[25] Building and construction work resulting from the November 2016 earthquakes centred near Kaikoura.

4.5   Rest of New Zealand

The Rest of New Zealand group contains the remaining 11 regions of New Zealand. These regions individually generally have a lower value of total construction activity and populations[26] than the other regions considered in this report. The Rest of New Zealand group contains the following regions: Gisborne, Hawke's Bay, Manawatu-Whanganui, Marlborough, Nelson, Northland, Otago, Southland, Taranaki, Tasman and the West Coast.

For the Rest of New Zealand total construction value grew 8% to $7.4b in 2017, the second strongest growth after Wellington. This growth was driven by increases in both residential building (11%) and non-residential building values (9%). Total construction value for the Rest of New Zealand group is forecast to sustain around current levels until 2021 before increasing by 9% to $8.2b in 2023.

Figure 4-5-1   All construction in the Rest of New Zealand, by value
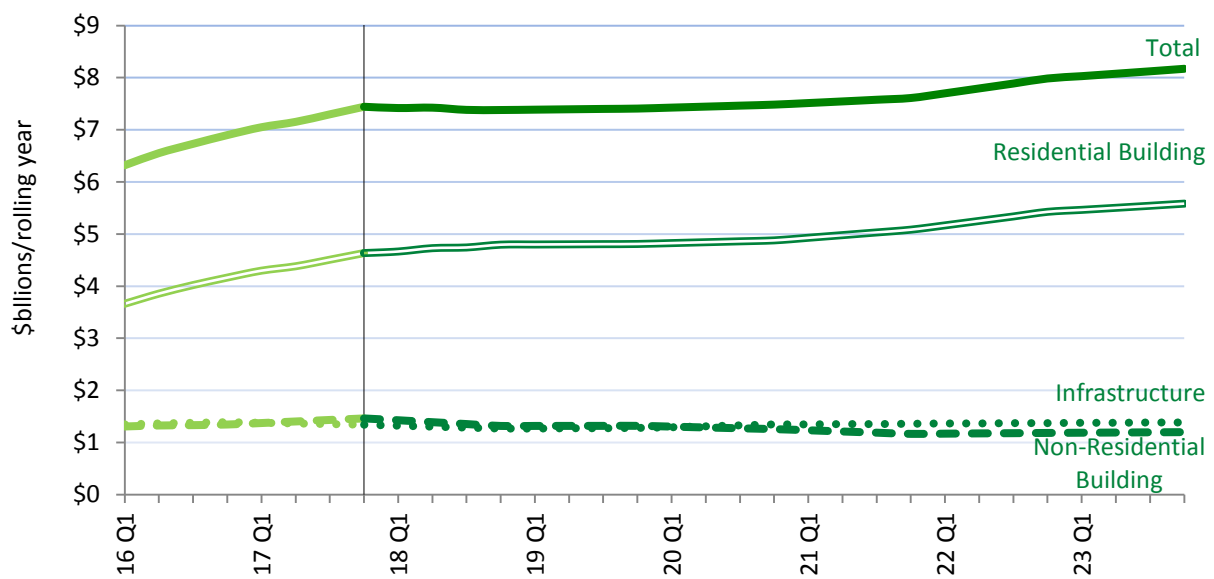
Source: BRANZ/Pacifecon

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[26] Some regions have static or decreasing populations.

Rest of New Zealand dwelling consents

Dwelling consents in the Rest of New Zealand grew by 14% to just short of 7,000 in 2017, the second strongest growth for any region after Wellington. Dwelling unit consents are forecast to stay at current levels for the next two years before experiencing sustained growth until the end of the forecast period. Over 45,000 dwelling unit consents are forecast between 2018 and 2023 with 8,500 dwelling units expected in 2023, a 22% increase from 2017.

Figure 4-5-2   Dwelling units consented in the Rest of New Zealand
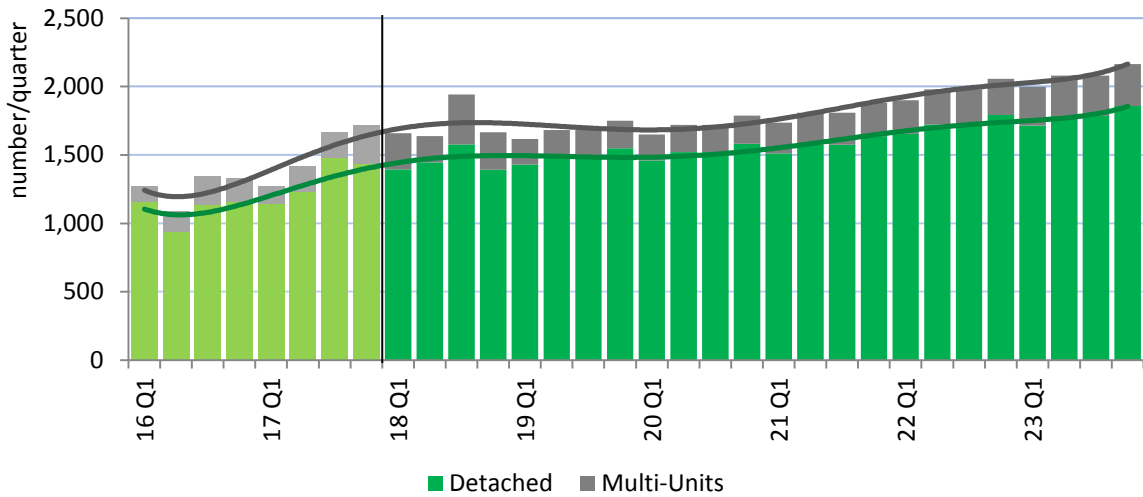
Source: BRANZ/Pacifecon

Rest of New Zealand non-residential building activity

The Rest of New Zealand's non-residential building activity increased 9% to $1.5b in 2017. Non-residential building value is forecast to decrease gradually to $1.2b in 2021, where it is anticipated to level off to 2023. The very high value of research data indicates that there are strong intentions for non-residential buildings in the Rest of New Zealand region.

Figure 4-5-3   Non-residential building activity for the Rest of New Zealand
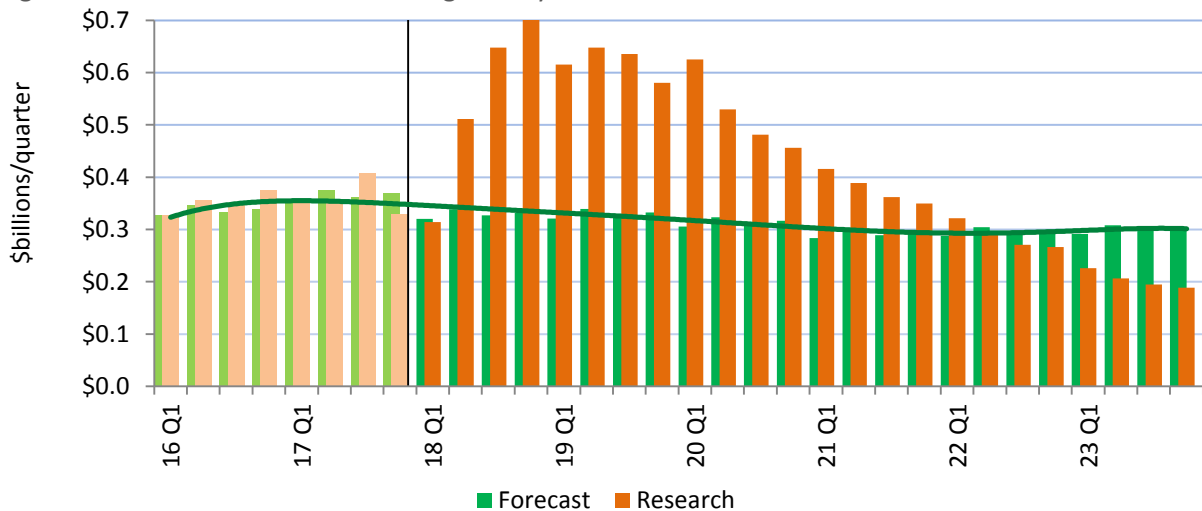
Source: BRANZ/Pacifecon

Rest of New Zealand infrastructure activity

Infrastructure activity in the Rest of New Zealand region decreased slightly to $1.3b in 2017. Infrastructure activity is forecast to remain relatively constant over the forecast period with a gradual 3% increase from the current level to $1.4b in 2023.

Figure 4-5-4   Infrastructure activity for the Rest of New Zealand
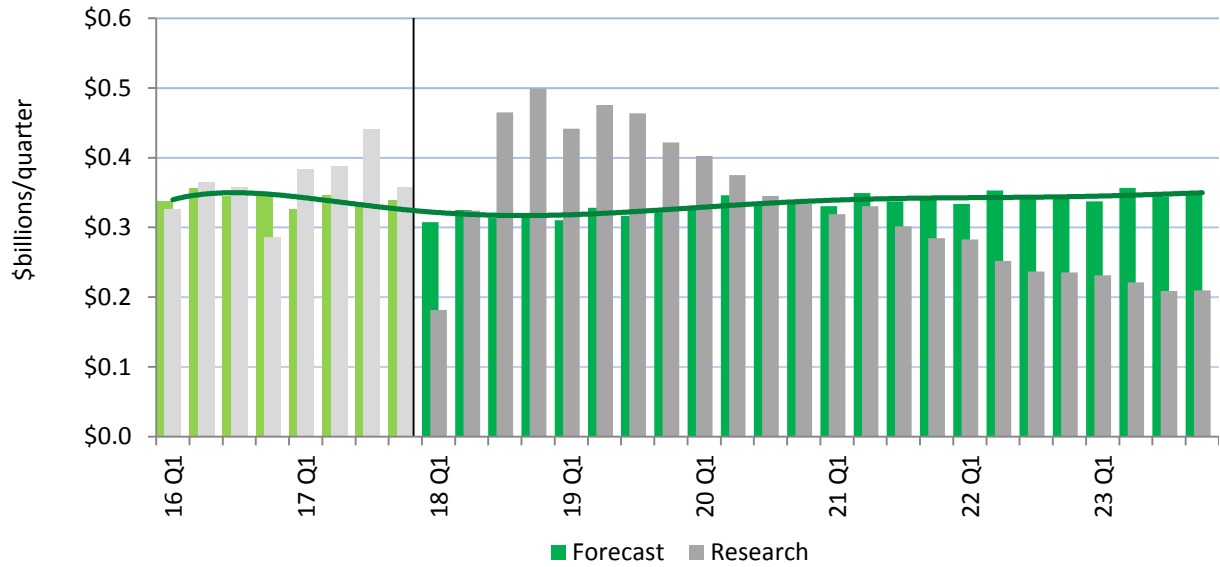
Source: BRANZ/Pacifecon

The Otago region

Otago has grown significantly since the 2013 report. It is the largest region[27] in the Rest of New Zealand group and contributes a third of the group's dwelling unit consents. The Otago region has closed the gap on Wellington (the fourth largest region[28]), with Pacifecon's research data indicating a higher value of known non-residential building intentions and BRANZ forecasting indicating only marginally lower residential building value expected for 2018. Wellington has been included in Table 4-1 below for comparison.

Table 4-1   All building and construction in the year 31 December 2018 for the Rest of New Zealand and Wellington, by region and construction type

Region	Residential Building ($m)	Anticipated non-residential building ($m)[29]	Anticipated infrastructure activity ($m)
Wellington	$1,692	$567	$466
Otago	$1,643	$773	$359
Northland	$816	$209	$273
Manawatu/Whanganui	$579	$169	$149
Hawke's Bay/Gisborne	$539	$226	$228
Nelson/Marlborough	$385	$159	$284
Taranaki	$355	$120	$49
Southland	$179	$82	$52
West Coast	$63	$93	$64
NZ wide[30]	-	$359	$25
Total	**$4,559**	**$2,191**	**$1,483**

Source: BRANZ/Pacifecon

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[27] By total construction value and number of new dwelling consents.

[28] For this report the Waikato/Bay of Plenty is group together as one region.

[29] Values in red are from Pacifecon's database of anticipated project values and are subject to optimism bias.

[30] NZ wide is used in Pacifecon's dataset to define work that covers all of New Zealand, eg ultra-fast broadband rollout.

5   Comparison with the 2017 National Construction Pipeline Report

5.1   Adjustments to data from the 2017 report

The following adjustments have been made to the forecast data from the 2017 report to enable a closer comparison with actuals and forecasts in this report:

- Conversion from December 2016 dollars to December 2017 dollars to account for inflation as follows:
  - o   Residential building   6.0%
  - o   Non-residential building   5.6%
  - o   Infrastructure construction   3.1%
- Adjustments for Statistics New Zealand's revisions to the December 2016 *Gross Fixed Capital Formation* data[31]:
  - o   Residential building   -3.8%
  - o   Non-residential building   -5.7%
  - o   Infrastructure construction   3.8%

5.2   How did MBIE do with the 2017 forecast?

The revised[32] total construction forecast for the period 2017 to 2023 is for moderate and sustained growth. The higher and earlier construction peak, which was forecast for 2020 in last year's report, is expected to give way to long-term growth. This year's forecast is lower than previously forecast. Actual national growth decreased by 0.3% in 2017, whereas the 2017 report had expected 10% growth. All three construction types (residential buildings, non-residential buildings and infrastructure construction) grew less than expected. Long-term growth is now forecast showing continued growth to 2023. This is unique compared with all previous reports, which have all forecast a peak at some point in their six-year views.

Figure 5-1   All construction nationally, last four years of forecasts compared
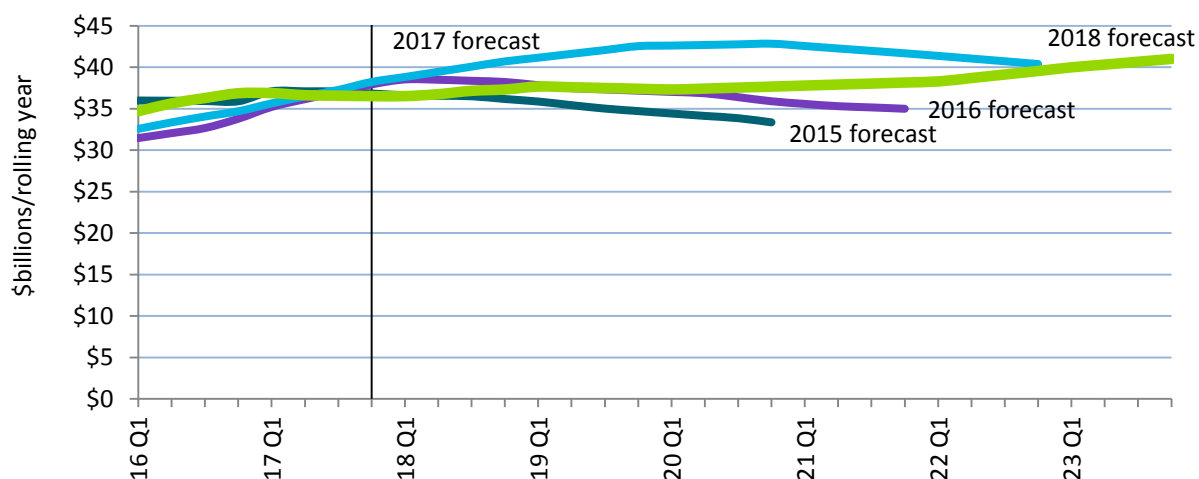
Source: BRANZ

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[31] Statistics New Zealand adjusts the Gross Fixed Capital Formation data following its initial release for a couple of years. It is likely this data will be adjusted again, either up or down, in the next 12 months.
[32] All previous reports have been adjusted to 2017 dollars for comparison.

Residential building forecast comparison

Residential building is the major contributor to total national growth towards the end of the 2018 forecasts. The 2017 report forecast 11% residential building growth for 2017 nationally while actual recorded growth was much lower at 0.6%. Residential building is now forecast to increase more gently by 23% over the six-year forecast to almost $27b by 2023.

Figure 5-2   All residential building nationally, 2017 and 2018 forecasts compared
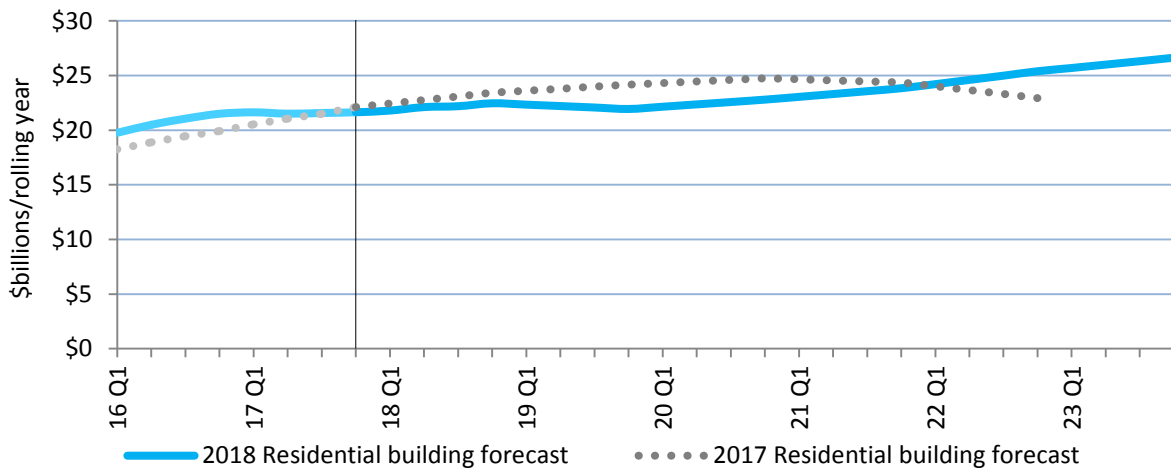
Source: BRANZ

Dwelling unit forecast comparison

Over the next six years the number of dwelling units consented is forecast to increase by 39% to a forecast high of 43,000 dwelling units in 2023. Dwelling unit consents are expected to go past the 2004 peak (31,423 dwellings) in 2018[33] and grow year-on-year throughout the forecast period. This is considerably higher and longer term dwelling growth than was forecast in the 2017 report.

Figure 5-3   Dwelling units consented nationally, 2017 and 2018 comparison
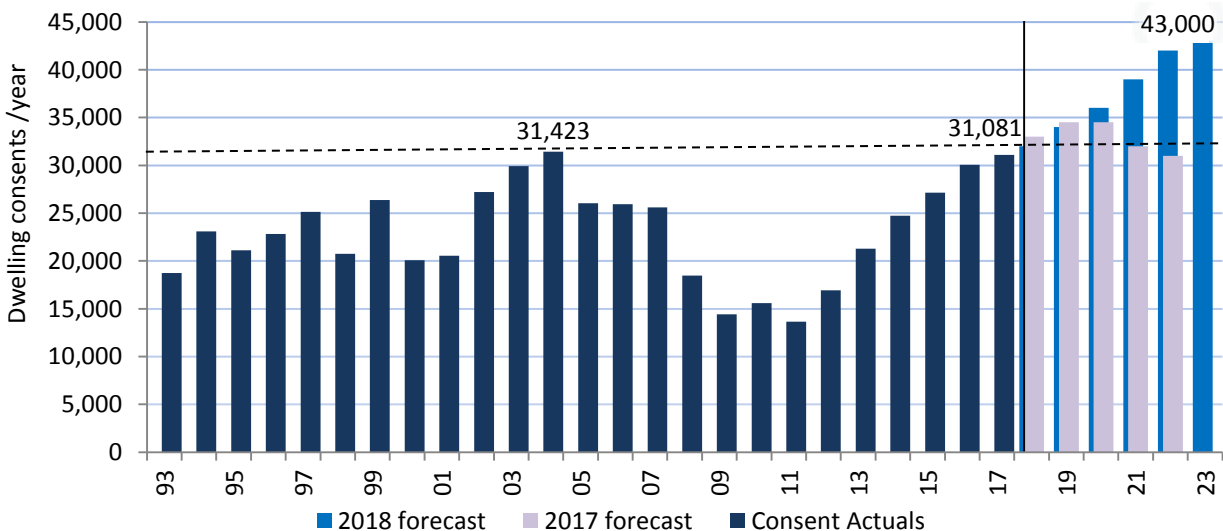
Source: BRANZ/Statistics New Zealand

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[33] Dwelling units consented nationally for the year ended May 2018 reached 32,628.

Non-residential building forecast comparison

This year's report forecasts a lower non-residential building peak in 2019, the same time as the peak forecast previously. The 2017 report forecasted 12% non-residential building growth for 2017 nationally while actual recorded growth was much lower at -3%.

Figure 5-4   Non-residential building nationally, 2017 and 2018 forecasts compared
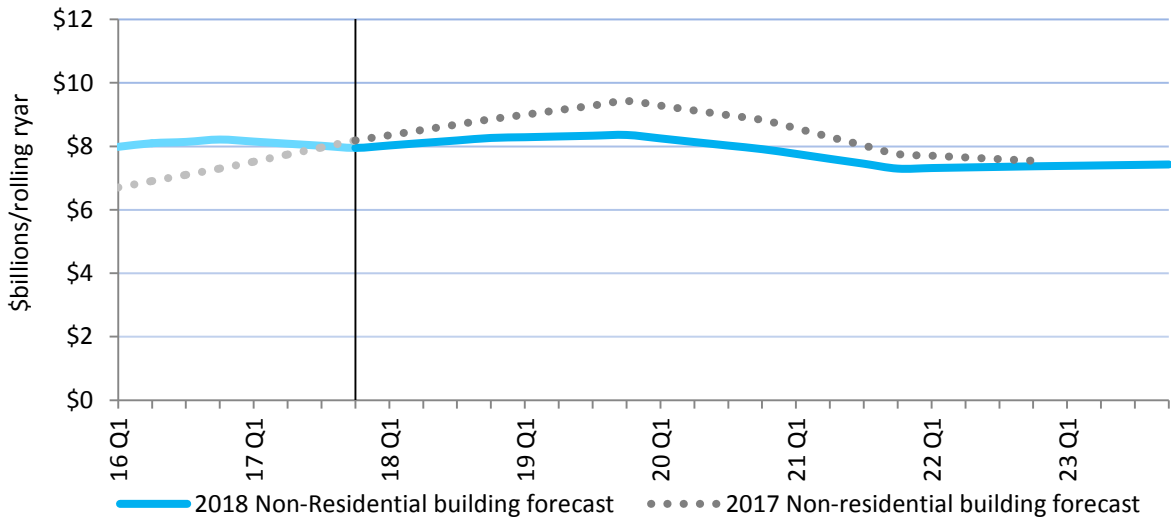
Infrastructure construction forecast comparison

Infrastructure activity nationally is expected to grow by less than previously forecast. Last year's report expected 6% infrastructure growth, where actual recorded activity was a 3% decrease. National infrastructure values are historically more consistent year-on-year than residential or non-residential building activity values.

Figure 5-5   Infrastructure activity nationally, 2017 and 2018 forecasts compared
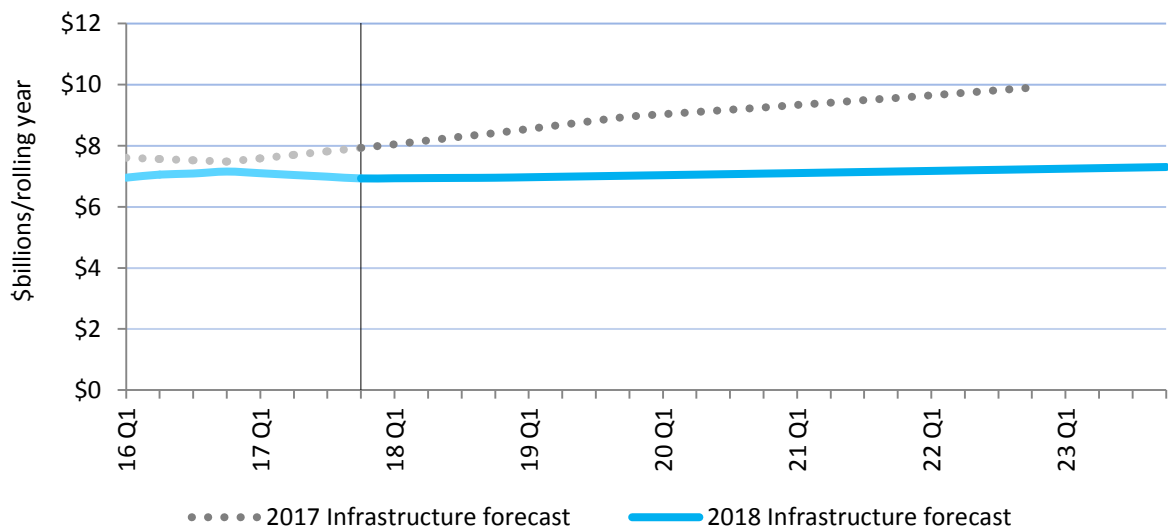
5.3 Comparison of Pacifecon's 2018 research data with previous reports

Pacifecon's research dataset contains anticipated values and start dates for non-residential buildings and infrastructure construction projects. This section compares Pacifecon's 2018 research data with the data used in preceding reports. This section compares how the value and timeline of Pacifecon's researched project intentions have varied across reports.

The research data shows strong intentions towards the end of 2018. Other than a larger volume the research data for the 2017 and 2018 reports show reasonably similar curves representing a greater volume of intentions in the pipeline than any previous reports. This has been highlighted throughout the report where the research data has indicated strong known project intentions for non-residential and infrastructure projects throughout the forecast period.

Figure 5-6   Value of all Pacifecon known non-residential and infrastructure project intentions data, by report year
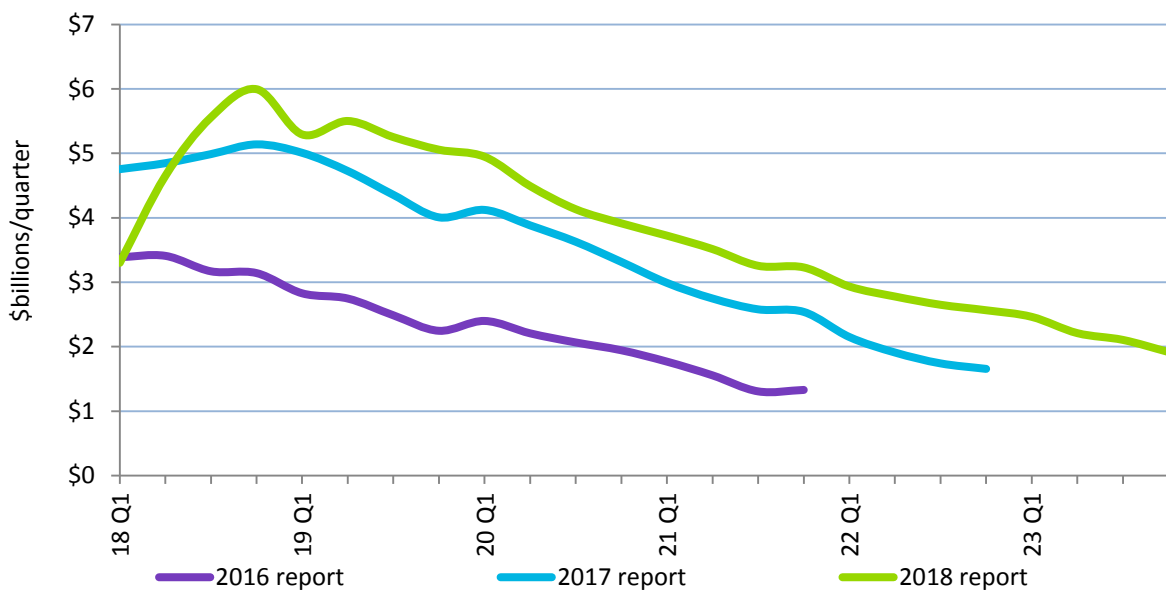
Source: Pacifecon

5.4 Comparison of previous reports project intentions with project outcomes

Pacifecon's dataset shows an increase in the number of projects totaling over $100m anticipated to start each year. The total number of $100m projects in the database expected to start in 2017 (36) was the highest number recorded since the reports initiation. This indicates a growth in very large non-residential building and infrastructure projects over the coming years. *Section 5.5* describes the *optimism bias* that ultimately occurs with specific project intentions. Comparing the projections with what actually happens over time helps to inform how to accurately adjust for this bias.

Table 5-1 compares what was projected and what actually happened over the previous five reports. There were 36 known projects (non-residential building and infrastructure construction) valued at $100m or more included in the 2017 report that were anticipated to start between 1 April 2017 and 31 March 2018. Half of these projects, 18 out of 36, started as anticipated. The number of known projects valued at over $100m expected to start between 1 April 2018 and 31 March 2019 has grown to 47 projects (25 non-residential building and 22 infrastructure projects).

Table 5-1   Outcome of projects valued $100 million and over anticipated to start in the current year across the current and previous reports

Outcome	Number of projects set to be initiated				
	2013 report	2014 report	2015 report	2016 report	2017 report
Started as anticipated	17	9	15	15	18
Anticipated to start within the coming year	5	8	3	10	9
Anticipated to start in beyond 1 years' time	7	3	0	4	9
Cancelled since previous report	1	0	2	0	0
Total	**30**	**20**	**20**	**29**	**36**
Additional projects starting[34]	3	11	8	7	10
Number of projects started in time frame	**20**	**20**	**26**	**22**	**28**

Source: Pacifecon

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[34] Additional projects starting since 2017 report: three projects new to Pacifecon, five projects values increased to over $100 million prior to commencing, two projects were accelerated so they started within the April 2017–March 2018 time period.

5.5 Construction intentions and 'optimism bias'

All intentions in building and construction come with some level of overconfidence, as many projects may lag behind their original timelines or are occasionally cancelled – this is termed *optimism bias*. This optimism bias of non-residential building and infrastructure construction intentions in the Pacifecon dataset can be seen in the raw (un-'smoothed') known intentions data. This shows in a higher than expected number of projects over the next few years, and a lower than expected number of projects over the longer term.

Figure 5-7   All non-residential and infrastructure construction intentions, raw (un-'smoothed') data

Forecast (non-residential building + infrastructure)

Research (unsmoothed non-residential building + infrastructure)
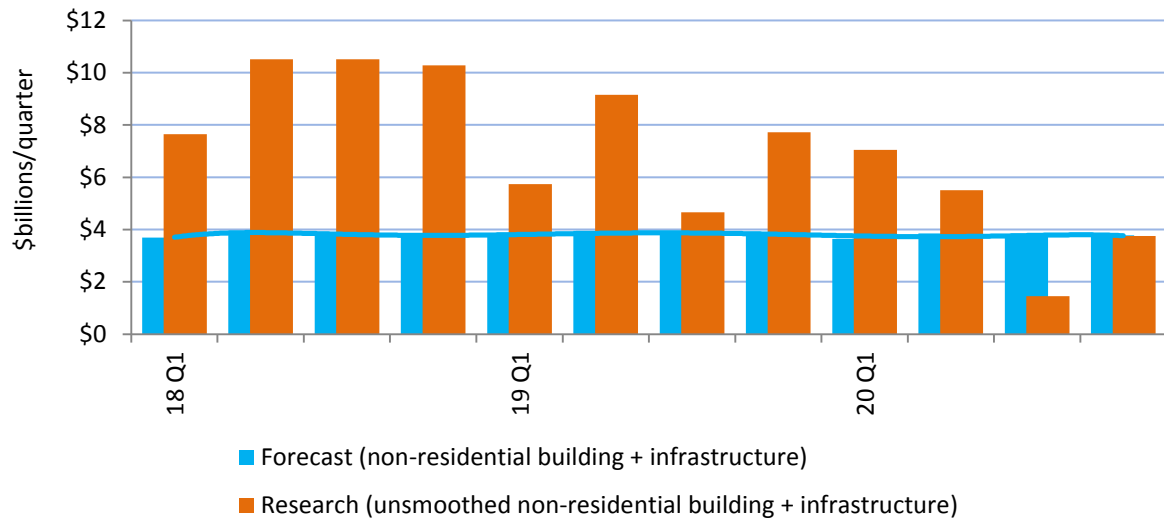
5.6   Pacifecon's refinement of the 'smoothing' process

The total number of projects reported by Pacifecon has increased from over 6,000 in the first report to over 8,000 projects in the current report. When using researched project intentions to forecast activity, Pacifecon needs to account for optimism bias. Not all projects that are in the planning process will progress to actual constructions at the intended value or proposed timeframes. To account for this optimism bias in the dataset, Pacifecon undertakes a *smoothing process* to prepare the data for the report.

Pacifecon has consistently refined its smoothing process by studying the highest value projects to ascertain the most likely allocation of their value of work over time.

- First report (2013): projects over $100 million were individually scrutinised
- Second report (2014): projects over $90 million were scrutinised.
- Third report (2015): projects over $75 million.
- Fourth report (2016): projects over $60 million.
- Fifth (2017) and current report (2018): all projects over $50 million were scrutinised.

The thousands of lower value projects in the research data are smoothed as follows:

- projects greater than $50 million in value (and back in time to January 2011) are examined and value of work spread out over the researched number of quarters
- $30m to <$50m projects, value of work is spread over six quarters
- $5m to <$30m projects, value of work spread over four quarters
- <$5m projects, value of work allocated to one quarter.

6   Disclaimer

All reasonable care has been taken in gathering, compiling and producing the information specified in this report. Pacifecon (NZ) Ltd, BRANZ and MBIE will not be responsible for errors, omissions or inaccuracies; or liable for any claims, actions or suits arising directly or indirectly therefrom.

Pacifecon (NZ) Ltd does not typically use its database for the type of analysis produced in this report. This has required additional data manipulation and changes to its database and processes. Over time, the techniques and processes used have been refined and may be further refined in future reports.

Advice has been sought from a variety of sources and it is believed that the methodology used in this report is a sound basis for future reporting.

Queries and feedback can be emailed to feedback.pipeline@mbie.govt.nz

7   Appendices

7.1   Appendix A – About the parties involved in preparing this report

Pacifecon was established in 1982. It is a wholly New Zealand-operated business focusing exclusively on the New Zealand and Pacific Islands construction industry. Pacifecon provides business intelligence in the form of future residential and non-residential project information to its client base.

Pacifecon uses a nationwide team of over 30 people to liaise with key decision makers in the construction industry (in both the private and public sectors) to compile thorough, timely and accurate information on building projects from the earliest planning stages. Newspapers, journals, industry publications and websites are checked for relevant information, as well as consents. Information is also held on projects that may have a work start date far beyond 2023.
www.pacifecon.co.nz

BRANZ is an independent and impartial research, testing and consulting organisation inspiring the building and construction industry to provide better buildings for New Zealanders.

This is achieved by transforming insightful research into accessible actionable knowledge.

BRANZ is focused on:
- researching and investigating the design, construction and performance of buildings that impact on the built environment in New Zealand, and
- enabling the transfer of knowledge from the research community into the residential and commercial building and construction industry.
 www.branz.co.nz

Ministry of Business, Innovation & Employment (MBIE)'s purpose is to 'grow New Zealand for all'. MBIE does this by helping businesses become more productive and internationally competitive, and by increasing opportunities for all New Zealanders to contribute to the economy. This means providing more jobs and increasing the opportunities for New Zealanders to participate in more productive and higher paid work. Growth for all also means providing better quality housing that is safe and affordable for New Zealanders.
www.mbie.govt.nz

7.2 Appendix B – Terminology, abbreviations and definitions used in this report

Actuals   Documented historical values that have been realised

Apartment   Any dwelling unit that is attached to another dwelling unit above or below it, or that is part of a commercial building is considered an apartment. Apartments in retirement villages are not included.

b   Billion (1,000,000,000 or 10^9)

Boom-bust cycle   A process of economic expansion (boom) and contraction (bust) that occurs repeatedly

Building consent   A formal approval from a building consent authority to construct or alter a building

Detached dwelling   A detached dwelling is any stand-alone dwelling unit that is not attached to any other unit (ie a typical house on its own section)

Dwelling   A building that is used for the purpose of human habitation. Dwellings include detached and multi-unit dwellings

Forecast   Forecast data provided by BRANZ

Forecast period   The six years from 1 January 2018 to 31 December 2023 for which building and construction activity is forecast in this report

Gross Fixed Capital Formation   Net/gross increase in physical assets (investment minus disposals) within the measurement period. It does not account for the consumption (depreciation) of fixed capital, or the cost of land purchases. It is a component of the expenditure approach to calculating gross domestic product (expenditure). This report uses Gross Fixed Capital Formation. Routine maintenance is not included. Alterations and additions that significantly extend the life or capacity of an asset are included (ie all work done with an addition and alteration building consent)

Infrastructure   Infrastructure covers all construction that is not a building, including:
- transport – roads, rail, bridges, tunnels, runways, harbours, marinas, reservoirs, shelters, parking and lighting
- ground works – residential, commercial and industrial subdivisions, earthmoving, landscaping, parks, landfill
- amenities – telecommunications, water and energy services
- mining and energy – wind, thermal, hydro, oil and gas
  Infrastructure is termed 'other construction' in Statistics

m	Million (1,000,000 or 10^6)
Multi-unit dwelling	Separate occupancy dwelling with a wall, ceiling and/or floor in common with another building. This category includes apartments, townhouses and retirement village units
Non-residential buildings	Values include new construction, additions and alterations to vertical structures, including: shopping centres and retail outlets, hotels, motels, conference centres, theatres, libraries, museums, offices, welfare homes, hostels, laboratories, telecommunications and electronics, churches, clubs, bars, restaurants, defence, law, security, police stations, prisons and camp grounds
Optimism bias	Overconfidence that is associated with building and construction intentions
Quarters	Q1: Jan-Mar, Q2: Apr-Jun, Q3:Jul-Sep, Q4: Oct-Dec
Research	Refers to Pacifecon's known construction project intentions data
Residential buildings	Includes houses and multi-unit dwellings. Value of residential buildings includes the value of additions and alterations. The number of dwelling consents excludes additions and alterations
Retirement village units	All retirement village units from detached houses to apartments and rooms are included in this category. The common areas are captured as non-residential buildings.
Rolling years	The aggregation of values from the 12 months immediately preceding a particular point in time (e.. 2018 Q2 is the aggregate of the values from July 2017 to June 2018)
Smoothing process	Process of spreading the total cost of a project over its intended construction duration and adjusting for *optimism bias*
Townhouse	Townhouse refers to Statistics New Zealand category of townhouses, flats, units and other dwellings. All dwellings that are attached side-by-side to another dwelling unit are included in this category. A 'terraced house' is included in this category as is a minor dwelling or 'granny flat'
Years	The 12 months ending 31 December of the year referred to

7.3 Appendix C – Methodology, data, statistics and assumptions used in this report

Forecasting methodology

The forecasting that provides the basis for this report was completed on 1 June 2018, based on the Statistics New Zealand March 2018 release of 2017 Gross Fixed Capital Formation data.

Residential methodology

The residential building sector forecasts in this report are produced by BRANZ. They are based on modelling of historical building consents and economic forecast indicators. This sector has much shorter lead-times than the non-residential sector.

Key assumptions include:

- 'value of work' which includes detached houses, multi-unit dwellings and additions and alterations to existing buildings. Value of work is based on residential building (new dwellings and alteration and additions) consent values, multiplied by 1.54[35] to allow for variations after the consent has been issued and other costs included in the fixed capital formation measure. The multiplication factor is calculated from historic ratios of fixed capital formation/consents values.
- residential building demand is based on Statistics New Zealand December 2015 household formation sub-national projections, using a scenario between their high and medium scenario. This gives a net new household formation of 28,000 per year through to 2023
- BRANZ has assumed a direct relationship between an increase in household formation and demand for new dwelling construction
- BRANZ has assumed zero unsatisfied residential building demand at the 2013 census.
- Demolition replacements are assumed to be 1,000 per year
- new, occasionally occupied dwellings (holiday homes) are assumed to be 500 per year
- the net result is an average of 35,250[36] dwellings per annum through to 2023
- a nine-month time lag is assumed between the building consent issue and value of work completed
- historic consents are first published data and there may be subsequent changes in some locations. Usually these revisions are minor.

Changes in residential methodology from the 2017 report

Assumptions used to forecast residential building fixed capital formation have changed from the 2017 report. Changes include:

- the 2017 report used a midway scenario between the high (50%) and medium (50%) weighting of household formation sub-national projections. The 2018 report use a weighting of 75% medium and 25% high
- the new household formation estimate was 25,240 dwellings through to 2023
- the distribution of work across quarterly seasons has been adjusted, based on changes in previous seasonal distribution of work
- assumptions have been made around where KiwiBuild houses are likely to be built based on the estimated need from Statistics New Zealand household formation data.

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[35] This factor was higher (1.74) in the 2017 report and has been steadily reducing over the reports history.
[36] This was 33,000 dwellings in the 2017 report.

All non-residential building and infrastructure

The non-residential building and infrastructure forecasts are based on BRANZ forecasts and charted alongside researched project intention data held by Pacifecon throughout the report.

Non-residential building methodology

BRANZ forecasts of non-residential buildings are based on forecasts of non-residential building consent values provided by Statistics New Zealand. The consent values are multiplied by a factor of 1.25 for fixed capital formation using historic ratios between consents and fixed capital formation value, and allowing for an average 12-month time lag between building consent issue and value of work completed.

Ten categories of non-residential building consents are forecast based on the Statistics New Zealand data. Single equation regression models have been developed for most of the categories.

Infrastructure methodology

BRANZ forecasts for infrastructure are based on modelling the historic trends for industry commissioning (and ownership) of assets and expected growth in the five main sectors of:

- mining (about 12% of other construction fixed capital formation)
- electricity/gas/water sectors (30%)
- transport (41%)
- telecommunications (6%)
- other (11%).

Real growth is based on historic trends and planned work (eg the Government Policy Statement on Land Transport Funding). Real growth in fixed capital formation for the five sectors is assumed to be -2% per year for mining, 1% for electricity/gas/water, 2% for transport, 0.5% for telecommunications, and 1% per year for other infrastructure works.

Research data

Pacifecon's anticipated non-residential projects

A data set of over 8,000 researched future projects known to Pacifecon has been used in this report. The data is up to date as at 18 February 2018. Smoothed data as at 18 May 2018 has been used in this report. The Pacifecon data set of project values shows the value of all projects, smoothed across future quarters for the duration of the project (as far as this is known or estimated). Work on all high value (over $50m) non-residential construction initiated since the beginning of 2011, and which is still in progress, is also included. The data set includes both non-residential building and infrastructure.

Pacifecon's data used in this report consists of projects which are at pre-construction stages, from the very earliest planning through to tendering. This real project activity data is collected and retained by Pacifecon.

7.4 Appendix D – Projects likely to start within the year valued over $100m

Table 7-4-1   Non-residential building projects likely to start within the year[37] valued over $100m[38]

Region	Type	Project Initiator
Auckland		
Precinct Plan	Town Centre	Local Govt
Hobson Street Hotel	Commercial Building	Private
Gaunt Street Hotel	Commercial Building	Private
Auckland Airport Hotel	Commercial Building	Private
Halsey Street Hotel	Commercial Building	Private
Albert Street Hotel	Commercial Buildings	Private
Mangere Hotel	Commercial Building	Private
Hobson Street Hotel	Commercial Building	Private
Symonds Street Hotel Extension	Commercial Building	Private
Auckland Airport Terminal Integration, Phase 5	Airport	Private
Auckland Airport Expansion Phase 6	Airport	Private
Dairy Factory	Industrial Buildings	Private
Canterbury		
Metro Sports Facility	Sports Facility EQ	Local Govt
Lincoln University Hub Stage 1	University	Central Govt
Dairy Processing Plant	Industrial Buildings	Private
Dairy Processing Plant	Industrial Buildings	Private
Business Park	Commercial Buildings	Private
Waikato/Bay of Plenty		
Te Rapa Gateway Industrial Stage 2	Industrial Subdivision	Private
Dairy Processing Plant	Industrial Building	Private
Processing Plant	Industrial Building	Private
Wellington		
Conference Centre & Movie Museum	Commercial Buildings	Local Govt/Private
Wakefield Hospital	Hospital	Private
Johnsonville Shopping Centre	Commercial Buildings	Private
Rest of New Zealand		
Te Arai South Development	Mixed-Use including Civil	Private
Queenstown Hotel	Commercial Building	Private

Source: Pacifecon

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[37] Year is the 12 months ending 31 March 2019.
[38] Inclusion of a project does not mean it will proceed to the scale and timeframe indicated above. It is, however, the best available picture at this point in time (18 May 2018). Pacifecon's building and construction information is constantly updated.

Table 7-4-2   Infrastructure projects likely to start within the year[39] valued at over $100m[40]

Region	Type	Project Initiator
Auckland		
City Rail Link Stations/Tunnels	Railway	Local Govt
City Rail Link Linewide Systems	Railway	Local Govt
Northern Interceptor Stage 1	Wastewater	Local Govt
AMETI Panmure Corridor Phase 2	Roads	Local Govt
Warkworth & Snells-Algies Wastewater Servicing	Wastewater	Local Govt
Americas Cup Syndicate Bases	Americas Cup Facilities	Local Govt
Cycling Investment Programme	Cycleways	Local Govt
Upper Harbour Highway Motorway to Motorway	Roads	Central Govt
Clevedon Quays	Subdivision	Private
Murphys Park Subdivision Stage 2	Subdivision	Private
Canterbury		
Lyttelton Port Co Ltd	Channel Dredging	Local Govt
Rolleston SHA	Subdivision	Private
Waikato/Bay of Plenty		
Tauranga Northern Link	Roads	Central Govt
Mt Messenger Bypass	Roads	Central Govt
Waikato & Coromandel	Electricity	Private
Bay of Plenty	Electricity	Private
Wellington		
Kaitoke Reservoir	Reservoir	Local Govt
Rest of New Zealand		
Northland Transportation Alliance (NTA)	Roads	Local Govt
Egmont Roads Maintenance	Roads	Local Govt
National Noise Wall Programme	Noise Wall	Central Govt
Junction Road Power Station	Power Station	Private
Port of Napier	Wharf & Dredging	Private

Source: Pacifecon

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[39]   Year is the 12 months ending 31 March 2019.
[40]   Inclusion of a project does not mean it will proceed to the scale and timeframe indicated above. It is, however, the best available picture at this point in time (18 May 2018). Pacifecon's building and construction information is constantly updated.

7.5 Appendix E – Forecast and known data table

Table 7-5   Forecast and known data ($ billions) by region – annual totals[41][42]

	Actual		Forecast						
Residential	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**Total**
Auckland	8.1	7.8	8.3	8.4	8.9	9.3	9.8	10.4	70.9
Canterbury	4.2	3.9	3.9	3.3	3.3	3.4	3.5	3.5	29
Waikato/BoP	3.7	3.7	3.8	3.7	3.8	4.1	4.4	4.6	31.8
Wellington	1.3	1.5	1.7	1.8	1.9	2.1	2.3	2.5	15.1
Rest of NZ	4.2	4.6	4.8	4.8	4.9	5.1	5.4	5.6	39.4
TOTAL	**21.5**	**21.6**	**22.5**	**21.9**	**22.8**	**23.8**	**25.4**	**26.6**	**186.2**
Non-residential Building									
Auckland	2.5	2.7	3.4	3.5	3.4	3.2	3.3	3.4	25.2
Canterbury	2.6	2.1	1.8	1.8	1.6	1.4	1.3	1.2	14.1
Waikato/BoP	1	0.9	1.1	1.1	1.1	1.1	1.1	1.2	8.6
Wellington	0.7	0.8	0.6	0.6	0.5	0.5	0.5	0.5	4.6
Rest of NZ	1.3	1.5	1.3	1.3	1.3	1.2	1.2	1.2	10.3
TOTAL	**8.2**	**8**	**8.3**	**8.4**	**7.9**	**7.3**	**7.4**	**7.4**	**62.8**
Infrastructure									
Auckland	2.9	2.8	2.9	2.9	3	3	3	3	23.5
Canterbury	1.1	1	0.9	0.9	0.9	0.9	0.9	0.9	7.7
Waikato/BoP	1.4	1.3	1.4	1.4	1.4	1.4	1.4	1.4	11.1
Wellington	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	3.7
Rest of NZ	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4	10.7
TOTAL	**7.2**	**6.9**	**7**	**7**	**7.1**	**7.2**	**7.2**	**7.3**	**56.8**
All construction									
Auckland	13.4	13.3	14.6	14.8	15.3	15.4	16	16.8	119.6
Canterbury	7.9	7.1	6.6	6.1	5.8	5.7	5.8	5.7	50.8
Waikato/BoP	6.1	5.9	6.3	6.2	6.3	6.5	6.9	7.2	51.6
Wellington	2.5	2.8	2.8	2.8	2.9	3	3.3	3.4	23.5
Rest of NZ	6.9	7.4	7.4	7.4	7.5	7.6	8	8.2	60.4
TOTAL	**36.9**	**36.5**	**37.7**	**37.3**	**37.8**	**38.3**	**40**	**41.4**	**305.8**
Researched non-residential building									
Auckland	2.1	2.6	4.4	5	3.8	2.7	2	1.5	24.1
Canterbury	2.1	1.8	2.1	2.1	1.6	1.1	0.7	0.6	12.2
Waikato/BoP	0.7	1	1.5	1.6	1.5	0.9	0.7	0.4	8.7
Wellington	0.6	0.7	0.6	0.8	0.6	0.5	0.4	0.3	4.6
Rest of NZ	1.4	1.5	2.2	2.5	2.1	1.5	1.2	0.8	12
TOTAL	**6.9**	**7.5**	**10.9**	**12.0**	**9.7**	**6.8**	**4.5**	**3.7**	**62.5**
Researched infrastructure									
Auckland	2.4	2.5	3.2	3.8	3.5	3.3	3.4	2.9	24.9
Canterbury	1	1.2	1.5	1.3	1.1	1	0.4	0.3	7.9
Waikato/BoP	1.3	1.1	1.7	1.6	1.1	0.7	0.6	0.5	8.7
Wellington	0.4	0.5	0.7	0.6	0.6	0.5	0.4	0.3	4
Rest of NZ	1.3	1.6	1.5	1.8	1.5	1.3	1	0.9	10.9
TOTAL	**6.4**	**6.9**	**8.6**	**9.1**	**7.8**	**6.9**	**5.8**	**4.9**	**56.4**

[41] Any differences between figures within Appendix E and other tables and charts in this report are due to rounding to two significant figures.

[42] Source: Pacifecon/BRANZ.

7.6 Appendix F – Residential dwelling consents actual and forecast data table

Table 7-6   Residential dwelling numbers actual consented and forecast, by region – annual totals[43]

Detached	Actual		Forecast						
	2016	2017	2018	2019	2020	2021	2022	2023	Total
Auckland	5,660	5,318	5,700	6,100	6,200	6,400	6,900	6,900	49,200
Canterbury	4,119	3,829	3,800	3,900	3,800	4,000	4,000	4,000	31,400
Waikato/BoP	5,005	4,626	4,700	4,900	5,100	5,700	6,000	6,100	42,100
Wellington	1,233	1,432	1,400	1,600	1,700	2,000	2,200	2,400	14,000
Rest of NZ	5,290	5,811	6,000	6,100	6,300	6,900	7,100	7,300	50,800
TOTAL	**21,307**	**21,016**	**21,600**	**22,600**	**23,100**	**25,000**	**26,200**	**26,700**	**187,500**
Multi-Units									
Auckland	4,366	5,549	6,400	7,500	8,200	8,800	9,900	10,300	61,000
Canterbury	1,784	1,175	950	950	1,000	1,100	1,200	1,200	9,400
Waikato/BoP	1,067	1,387	1,200	1,300	1,500	1,700	1,800	2,000	12,000
Wellington	759	862	1,000	1,000	1,200	1,400	1,600	1,700	9,500
Rest of NZ	780	1,092	770	790	940	1,000	1,200	1,200	7,800
TOTAL	**8,756**	**10,065**	**10,300**	**11,500**	**12,800**	**14,000**	**15,700**	**16,400**	**99,600**
All dwellings									
Auckland	10,026	10,867	12,100	13,600	14,400	15,200	16,800	17,200	110,200
Canterbury	5,903	5,004	4,750	4,850	4,800	5,100	5,200	5,200	40,800
Waikato/BoP	6,072	6,013	5,900	6,200	6,600	7,400	7,800	8,100	54,100
Wellington	1,992	2,294	2,400	2,600	2,900	3,400	3,800	4,100	23,500
Rest of NZ	6,070	6,903	6,800	6,900	7,200	7,900	8,300	8,500	58,600
TOTAL	**30,063**	**31,081**	**31,920**	**34,140**	**35,940**	**39,000**	**41,900**	**43,100**	**287,100**

Source: BRANZ/Statistics New Zealand

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[43]   Any differences between figures within Appendix F and other tables and charts in this report are due to rounding to nearest 100.

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