



**Greater Christchurch
Partnership**

Te Tira Tū Tahī
One Group, Standing Together

Greater Christchurch Housing Capacity Assessment: Reports 1 - 4

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Greater Christchurch Housing Capacity Assessment - Report 1: An Overview of Housing Demand

26 February 2018

DRAFT

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Executive Summary

Policy B1 of the NPS-UDC requires local authorities to on at a least a three-yearly basis, carry out a housing development capacity assessment that (*inter alia*) "...a) estimates the demand for dwelling, including the demand for different types of dwellings, locations and price points, and ...c) the supply of development capacity to meet that demand, in the short, medium and long-terms; and assess interactions between housing and business activities and their impacts on each other". Policy B2 directs the assessment to use demand information, including that on demographic change, by using the most recent Statistics New Zealand population projections as a starting point together with market indicator information (as required under policies B6 and B7). The Housing Demand Assessment (HAD) will form the benchmark for determining if there is a sufficient feasible supply of housing, and whether this supply is of the appropriate type, at the right price point and in the most appropriate locations.

A comprehensive report on the demand profile for housing in Greater Christchurch was commissioned as part of the capacity assessment¹. The report disaggregates the Greater Christchurch and territorial authority data into thirteen sub-market areas and projects demand for housing in different groups within the population (age, household composition, income); different household groups translates into demand for different housing typologies (stand-alone homes; multi-unit dwellings; and apartments); private owner occupier dwellings, private rented dwellings, and social housing (rented); and housing typologies as distributed across broad locations and price points. Key findings of the demand assessment together with other research and information are as follows.

Proportionally, Christchurch City is projected to accommodate 54% of the total growth to 2048, with 27% occurring in Selwyn district sub-areas and 19% in the Waimakariri district sub-areas. The sub-areas which are projected to experience the highest percentage growth rates are those in include Selwyn and Waimakariri districts, and the south-west sub area in Christchurch. The level of owner occupation like the rest of the country has declined in recent decades. This trend is expected to continue, particularly in younger age groups, where the rate of owner occupation will reduce from 67.9% as at 2013 (i.e. the percentage of households that owned their own home) to 60.7% by 2048, a 7.2% fall. Conversely the number of renter households will rise significantly over the same period.

Greater Christchurch's aging population will be reflected in significant growth in the number of one person and couple only households, resulting in a significant increase in the demand for smaller and multi-unit dwellings. Multi-unit demand is typically for units with fewer bedrooms. Renters have and will continue to have a higher propensity to rent multi-unit dwellings relative to standalone dwellings. Of the total projected demand from owner occupiers it is estimated 66% of this will be for standalone dwellings (predominantly with three or more bedrooms). Similarly, of the total renter household demand it is estimated that 56% will be for standalone dwellings.

Total '*renter housing need*' has been assessed by encapsulating those financially stressed private renter households, together with those who are homeless or living in crowded dwellings, with those whose housing requirements are met by social, third sector and emergency housing providers. The relative level of housing need is expected to increase across Greater Christchurch, but this demand will be significantly greater in Christchurch City. There will be significant challenges ahead for both public agencies and the private development market to meet this particular type of housing demand. Social housing assessment for example project that there will be demand for 200 to 230 additional social housing dwellings per annum if the current ratio of social renter dwellings to total housing need is maintained.

Information gathered further indicates that demand for social housing, and certainly lower cost housing, may be proportionally higher for some ethnicities. The 2013 Census data shows that 74% of the Maori population does not own a dwelling, and other ethnic groups such as Pacific and Middle Eastern/Latin American/African (MELAA) are also disproportionately represented. Maori, Pacific, Asian and MELAA groups are also disproportionately represented in terms of household crowding.

Ngā Papatipu Rūnanga of Canterbury Ngāi Tahu currently have aspirations to have more members living in suitable housing on current and former Māori Reserve lands owned, or formerly owned by the members. It is envisaged that Papakainga/Kāinga-Nohoanga provisions will generate some demand for usage on currently owned lands, and generate demand for acquisition of land-packages within the former reserves extents. An

¹ *Housing Demand in Greater Christchurch* (November 2017) prepared by Livingston Associates

estimated 1260 hectares of lands within former reserves extents may be made available for Papakainga/Kāinga-Nohoanga style-living, i.e. whānau groups, cluster housings, community centres, hostels, businesses and other developments. Such provisions might also extend to lands and properties purchased by the iwi then devolved to Papatipu Rūnanga.

Further in regard to resident's preference for particular locations, demand for new neighbourhoods (i.e. greenfield development) has always been consistently strong in Christchurch City, and in more recent years within the Selwyn and Waimakariri districts. Conversely, the growth (and therefore assumed demand) for new housing with the existing urban area (i.e. through infill and intensification), has been lower and faced a notable drop after the 2010 and 2011 earthquakes. There is however evidence that housing demand for Central City living is increasing. Whilst after the earthquakes the number of people living within the central city decreased significantly from 7650 to 4900, since 2014 there has been an increased interest in residents wanting to live in the central city, and in 2016 the central city population had increased to 5,600.

More detailed survey work is however required to better understand housing demand in Greater Christchurch, in particular with regard to the choices people make and drivers for these decisions, now and into the future. This will not only help the Greater Christchurch Partnership better understand household preferences, but it will also engage residents and give them the opportunity to understand and contribute to the development of the Future Development Strategy.

Definitions

The following table defines commonly used acronyms and abbreviations in this document.

Term	Definition
CCC	Christchurch City Council
CEDS	Christchurch Economic Development Strategy
CRPS	Canterbury Regional Policy Statement
CUA	Christchurch Urban Area
Development Capacity	As defined in the NPS-UDC, means: in relation to housing and business land, the capacity of land intended for urban development based on: <ol style="list-style-type: none"> a) the zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and b) the provision of adequate development infrastructure to support the development of the land.”
Development Infrastructure	As defined in the NPS-UDC, means: network infrastructure for water supply, wastewater, stormwater, and land transport as defined in the Land Transport Management Act 2003, to the extent that it is controlled by local authorities.
GC	Greater Christchurch
GIS	Geographical Information System
HH/Ha	Households per Hectare
Infill	Is the addition of a dwelling, generally to the back of a site, whilst keeping the original dwelling.
Intensification	As defined in the CRPS, means: An increase in the residential household yield within existing areas. It includes infill and comprehensive redevelopment.
LTP	Long Term Plan
LURP	Land Use Recovery Plan
NPS-UDC	National Policy Statement on Urban Development Capacity
NZTA	NZ Transport Authority
Other Infrastructure	As defined in the NPS-UDC, means: <ol style="list-style-type: none"> a) open space; b) community infrastructure as defined in the Local Government Act 2002; c) land transport as defined in the Land Transport Management Act 2003, that is not controlled by local authorities; d) social infrastructure such as schools and healthcare; e) telecommunications as defined in the Telecommunications Act 2001; f) energy; and g) other infrastructure not controlled by local authorities.
UDS	Urban Development Strategy
Version	

1. Overview and Methodology

1.1 NPS-UDC Requirements

The National Policy Statement on Urban Development Capacity (NPS-UDC) applies a number of policies specific to medium and high growth urban areas. The Christchurch Urban Area (CUA) is a high growth area and includes most of the urbanised land within the boundaries of Christchurch City Council, part of Selwyn District Council, and part of Waimakariri District Council. The application of these policies is not however restricted to the boundaries of the urban area, and for the purposes of this report the urban area being assessed is that which is defined as Greater Christchurch².

Policy B1 of the NPS-UDC requires local authorities to on at a least a three-yearly basis, carry out a housing development capacity assessment that (*inter alia*) "...a) estimates the demand for dwelling, including the demand for different types of dwellings, locations and price points, and ...c) the supply of development capacity to meet that demand, in the short, medium and long-terms; and assess interactions between housing and business activities and their impacts on each other". Policy B2 directs the assessment to use demand information, including that on demographic change, by using the most recent Statistics New Zealand population projections as a starting point together with market indicator information (as required under policies B6 and B7).

This report, together with a supporting demand assessment prepared by Livingston and Associates Limited, provide a demand assessment to meet the requirements of policies B1 and B2. It follows the direction and approaches contained within the *National Policy Statement on Urban Development Capacity: Guide to Evidence and Monitoring*. Where the demand assessment deviates or goes beyond the recommended approaches under this guide, this is documented and a rationale provided.

The Housing Demand Assessment (HAD) will form the benchmark for determining if there is a sufficient feasible supply of housing, and whether this supply is of the appropriate type, at the right price point and in the most appropriate locations (being requirements of other policies including g PB3 to PB5). Estimated changes in demand projected over time will help inform the planning response of Council's to ensure that housing supply adequately meets the patterns of demand in the future.

The guidance contained within the *National Policy Statement on Urban Development Capacity: Guide to Evidence and Monitoring*, suggests that the assessment shall provide the following (Section 2.3 - underline emphasis added):

1. A projected number of dwellings required in the short, medium and long term for the study area and the constituent local authorities.
2. Estimates either side of this projection, with discussion of the key drivers of these estimates.
3. A quantitative documentation of the current consumption patterns of different household and/or population groups with respect to dwelling type, location and price.
4. Information and analysis about potential unmet demands in the current housing market.
5. Information and analysis about potential future broad demand patterns of different household and /or population groups with respect to dwelling type, location and price.
6. A description of the methods and data used to derive these assessments and the limit of these.

Livingstone and Associates Limited were engaged to prepare a report on the current and future housing demand in Great Christchurch, to assist with the obligations under the NPS-UDC. The Livingstone report provides a detailed analysis of the housing demand in Greater Christchurch (GC) by a range of demographic characteristics, including tenure, age, household composition and typology, and in accordance with the requirements of the NPS, the demand estimates have been presented for the following timeframes, short term (0 to 3 years), medium term (4 to 10 years), and long term (11 to 31 years). The Livingstone report should be read in conjunction with this overview report and its key findings have been summarised in section 2 of this report.

² The boundaries of the Greater Christchurch area is set out under the Canterbury Regional Policy Statement on Map A. It is also defined in the CER Act as "...the districts of Christchurch, Selwyn District and Waimakariri District Councils, and the coastal marine area adjacent to these districts. Metropolitan greater Christchurch, as referenced in the LURP, is a small area comprising the city and the towns and rural areas between Rangiora and Rolleston and Lincoln".

Section 3 of this report provides an overview of the current consumption patterns of different household and/or population groups with respect to dwelling type, location and price. Section 4 of this report provides information and discussion of the potential future broad demand patterns, drawn from other known research and studies. Section 5 identifies what future work is required to better understand housing demand, in particular having closer regard to the changing composition of the population, social needs, financial constraints, market opportunities and constraints, and improving the accuracy and limitations that are inevitably faced when estimating housing demand over a 30 year period.

1.2 Methodology

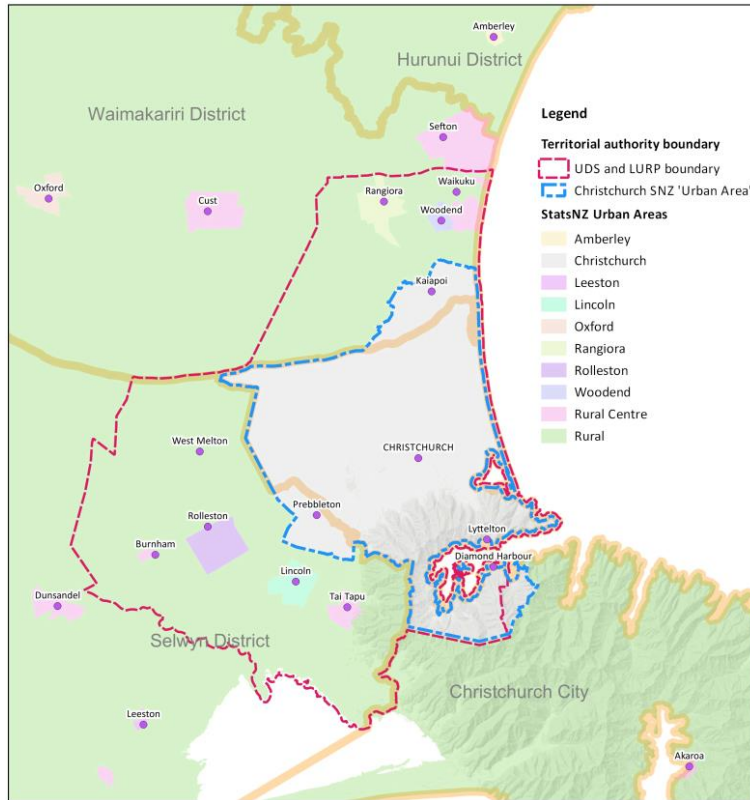
The methodology for undertaking the assessment of housing demand is contained in a supporting report titled “Greater Christchurch Urban Development Capacity Assessment – Housing Capacity Assessment Methodology, dated 23 February 2018” and within the supporting demand assessment undertaken by Livingston and Associates Limited (refer to section 2 of this report). Following are excerpts from the methodology that have been summarised to provide important context for this demand report.

As suggested by the NPS-UDC, the starting point for the demand assessment is the growth projections calculated by StatsNZ. The Greater Christchurch Partnership have agreed, based on historical trends and take-up rates, that for Christchurch City the medium growth projections be used and for the districts of Selwyn and Waimakariri the medium-high Growth projections be used. The NPS UDC guidance suggests that Local Authorities also need to consider the implications on demand of population projections being under and over that projected by StatsNZ. For Christchurch City the *under* projection shall be medium-low and the *over* projection shall be Medium-High and for SDC and WDC the *under* projection shall be medium and the *over* projection shall be High. The Livingston and Associates Limited report incorporates a section that outlines the results of this sensitivity testing.

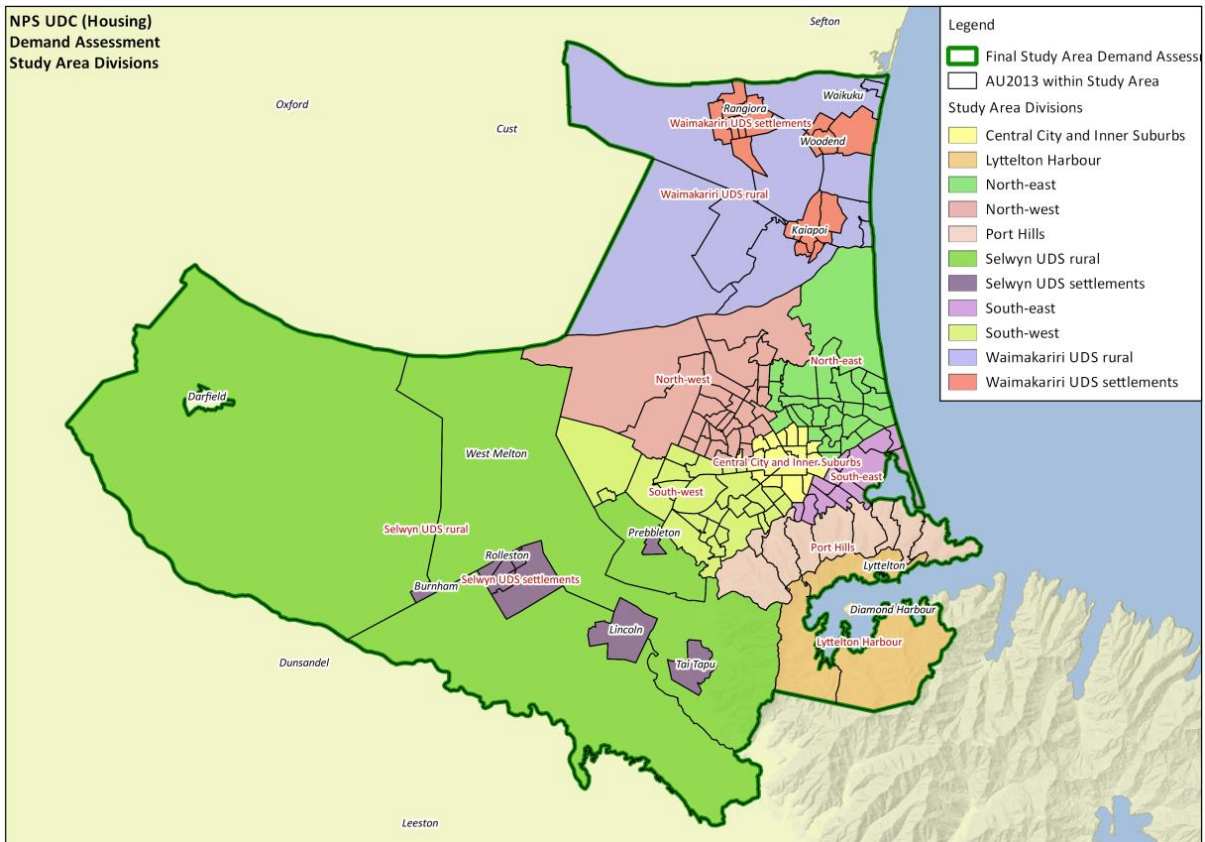
The Christchurch Urban Area (CUA) is defined as a high growth urban area under the NPS-UDC. The CUA comprises Christchurch City (including the Lyttelton Harbour basin settlements) but excludes the less urbanised parts of Banks Peninsula. The CUA also encompasses the closely located urbanised areas of Prebbleton (being within the SDC), Kaiapoi and Pines Beach (being within the WDC). Given the inclusion of these additional areas, all the high growth related policies of the NPS-UDC apply to all three local authorities (CCC, WDC and SDC). The UDS boundary encompasses most of the StatsNZ Christchurch Urban Area (refer to Map 1) that qualifies as a high growth area. As the UDS area is where the bulk of the historic population growth has occurred and where most future growth is anticipated to occur, the demand assessment has been applied to the UDS bounded area.

The NPS UDC: *Guide on Evidence and Monitoring*, provides flexibility in how information is disseminated and allows a *broad brush* approach. Specifically in regards to locations, divisions can be based on lifestyle areas (e.g. CBD, suburban) and/or simple direction-based divisions. The approach agreed by the UDS partner local authorities is for a mixed approach. This approach divides Christchurch City into the following nine sub-areas, the Central City, closely surrounded by the Inner-East and Inner-West areas. Next, the more suburban areas separated into North-East, South-East, South-West, and North-West, and finally, recognising their distinct characteristics, the Port Hills and Lyttelton Harbour areas. Selwyn and Waimakariri Districts are divided between settlements within the UDS boundary and rural land within the UDS boundary. All divisions shown on Map 2 are constructed from StatsNZ Area Units 2013.

A number of issues were encountered in using the Stats NZ Area Unit as the basis of the housing demand analysis, which are documented in the methodology section. Many of these issues will be addressed in advance of the next NPS Capacity Assessment as Stats NZ finalise the recently developed SA2 categories. This will ensure that that the projections used as the basis for quantifying housing demand for future assessments will better align with the urban boundaries of townships contained within the GC boundary.



Map 1: Comparison of Territorial Authority boundaries, the UDS/LURP boundary and the Stats NZ Urban Areas boundaries.



Map 2: Study Area and divisions (West Melton to be defined)

2. Assessment Results from the Livingston and Associates Housing Demand Assessment

2.1 Overview

The Livingstone and Associates Limited demand assessment considers the following aspects of housing demand in Greater Christchurch:

- Demand for housing in different groups within the population (age, household composition, income)
- Demand in different household groups translates into demand for different housing typologies (Stand-alone homes of two, three and four beds; multi-unit two, three and four beds; and apartments)
- The typologies are divided between private owner occupier, private rented, and social housing rented
- Demand for housing typologies is distributed across broad locations and price points

In undertaking this analysis, a number of important assumptions were made (refer to Livingston and Associates Limited Housing Demand in Greater Christchurch, Appendix 2 Overview of modelling methodology). These include:

- Christchurch City's population increases in line with Statistics New Zealand's medium growth scenario. Waimakariri and Selwyn Districts' populations increase in line with Statistics New Zealand's medium – high population growth scenario;
- Underlying change in age structure and family composition changes associated with Statistic New Zealand's population projections hold true;
- There are no significant unexpected changes to greater Christchurch's and the National economies over the projection period;
- There are no significant changes to the institutional and structural settings in the local housing markets.

The methodology applied by Livingston Associates Limited relies upon Stats NZ unconstrained population projections where externalities such as planning interventions, capital works improvements, Government policy, unforeseen global and social change and future technologies are unable to be factored into the 30 year projections. This differs from the Selwyn and Waimakariri Capacity for Growth Models developed by Market Economics Limited to inform the respective District Plan Reviews, where housing demand is constrained based on the amount of zoned and serviced land available within each township. It is also important to note that the projections are subject to modelling variations where the difference between the actual and modelled demand estimates become increasingly uncertain over time. Following is a summary of the key results of this assessment. The results have been illustrated in both table and graph format to assist readability.

2.2 High Level and Sub-Area Demand Estimates

Table 2.2.1 and Graph 2.2.1 present the projected change in the total number of households living in Waimakariri, Christchurch City and Selwyn GCP areas from 2017³ to 2048.

³ The number of households as at 2017 is modelled from the population and household projections available from Statistics New Zealand although with their population estimates available at the time the report was written.

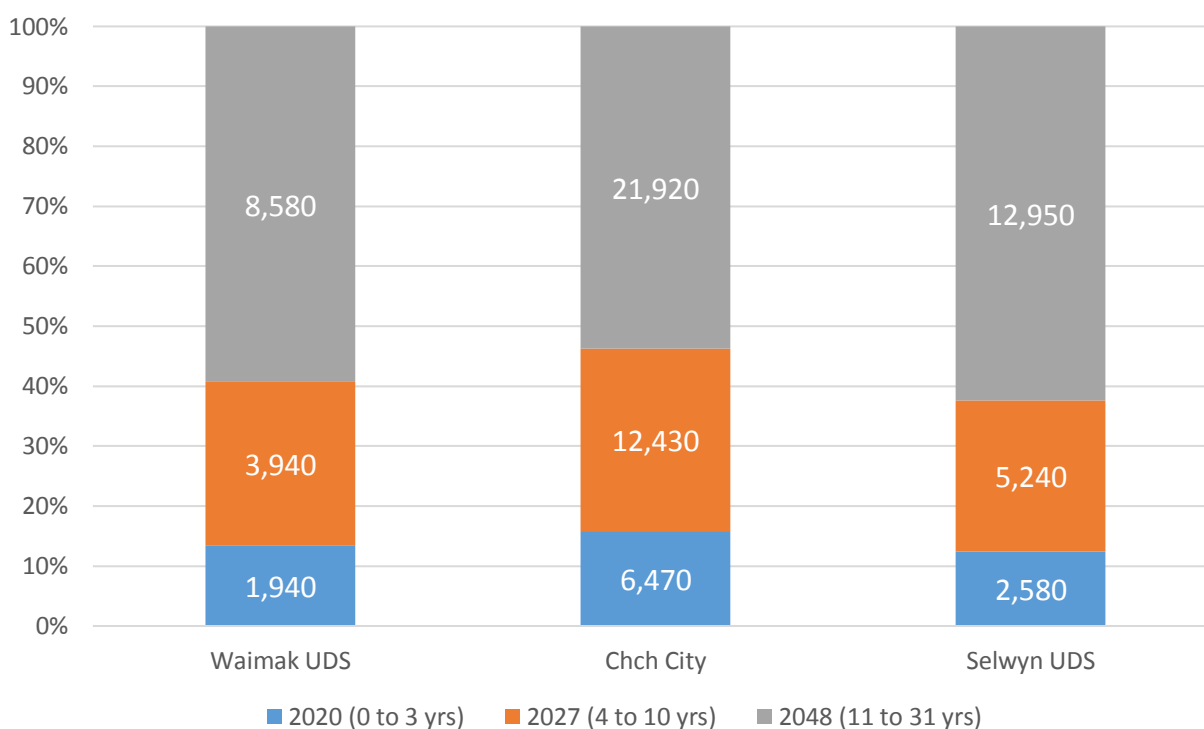
Table 2.2.1: The projected number of households in Waimakariri, Christchurch City and Selwyn UDS areas 2017 to 2048

(Model based on data from Statistics New Zealand)

Year	Number of households			Total change in the number of households			Annual average change in households		
	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS
2017	18,080	147,020	16,590						
2020 (0 to 3yrs)	20,020	153,490	19,170	1,940	6,470	2,580	650	2,160	860
2027 (4 to 10yrs)	23,960	165,920	24,410	3,940	12,430	5,240	560	1,780	750
2048 (11 to 31yrs)	32,540	187,840	37,360	8,580	21,920	12,950	410	1,040	620
June 2017 – June 2048	+14,460	+40,820	+20,770						

Graph 2.2.1: Projected household demand in Waimakariri, Christchurch City and Selwyn UDS areas 2017 to 2048

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 4, Table 1.1)



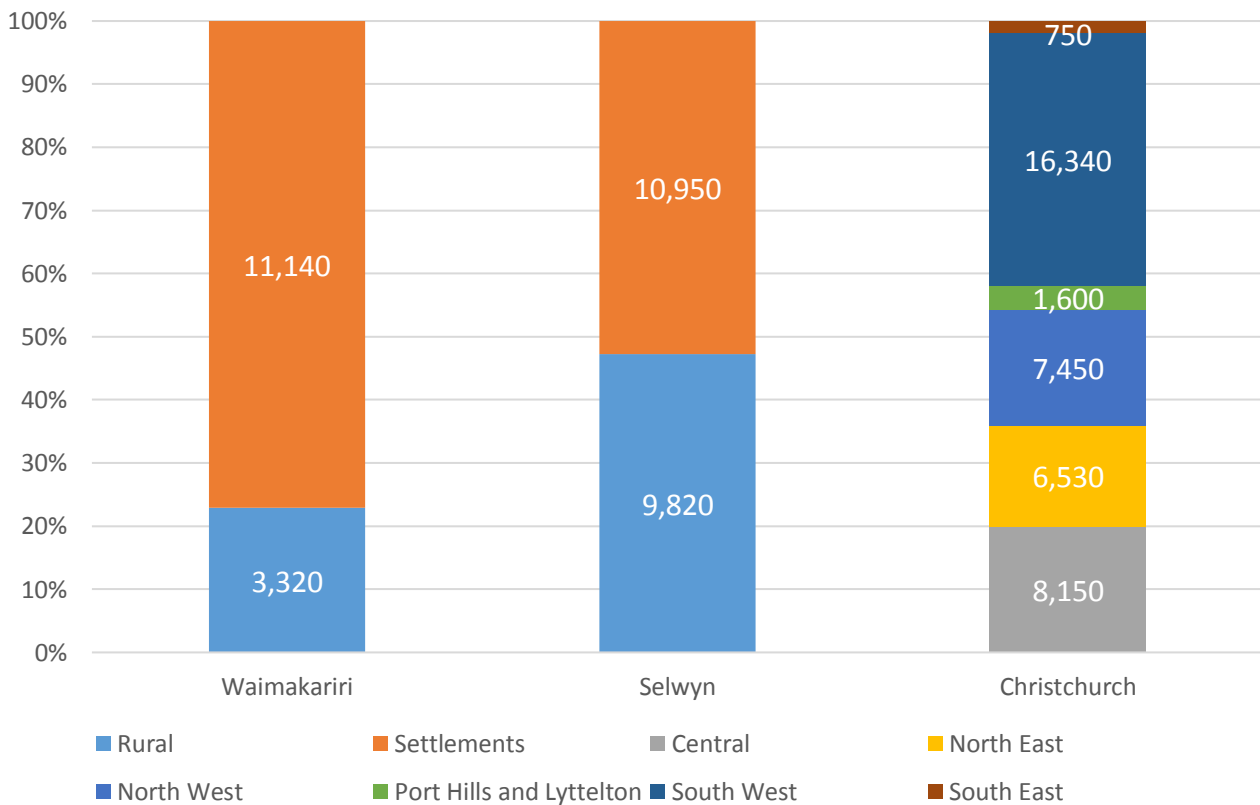
When broken down into the sub-markets within the Greater Christchurch area, the projections indicate that:

- Selwyn rural and settlements are expected to grow by 140% (or 9,820 households) and 114% (or 10,950 households) respectively.
- Waimakariri rural and settlement submarket are projected to experience strong growth increasing by 71% (or 3,320 households) and 83% (or 11,140 households) respectively.
- Christchurch south west submarket is projected to be the fastest growing sub market in Christchurch City increasing by 40% (or 16,340 households) between 2017 and 2048.
- Christchurch City submarkets are projected to accommodate 54% of the total growth between 2017 and 2048 with 27% occurring in Selwyn UDS submarkets and the balance 19% being located in Waimakariri UDS submarkets.

Table 2.2.2 Projected growth in households by submarket between 2017 and 2048
 (Model based on data from Statistics New Zealand)

	Waimakariri UDS		Selwyn UDS		Christchurch City UDS						
	Rural	Settlemts	Rural	Settlemts	Central	North East	North West	Port hills	South East	Lyttelton	South West
2017	4,670	13,410	7,000	9,590	21,540	30,910	35,280	9,560	14,870	2,180	32,680
2020	5,080	14,940	8,000	11,170	23,120	31,980	36,240	9,810	15,160	2,230	34,950
2027	6,000	17,960	10,440	13,970	25,840	33,990	38,460	10,280	15,640	2,330	39,380
2048	7,990	24,550	16,820	20,540	29,690	37,440	42,730	10,900	15,620	2,440	49,020
Total hh growth between 2017 to 2048	+3320	+11,140	+9,820	+10,950	+8150	+6,530	+7,450	+1,340	+750	+260	+16,340

Graph 2.2.2 Projected growth in households by submarket between 2017 and 2048
 (Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 25, Table 3.6)



The level of owner occupation like the rest of the country has declined and this trend is expected to continue, particularly in younger age groups. The rate of owner occupation will erode from 67.9% as at 2013 (i.e. the percentage of households that owned their own home) to 60.7% by 2048, a 7.2% fall. Conversely the number of renter households will rise. The demand for renter households between 2017 and 2048 is projected to be:

- up by 143% in Waimakariri rural submarket,
- up by 130% in the Waimakariri settlements submarket,
- up by 237% in Selwyn rural submarket, and
- up by 216% in the Selwyn settlement submarket; and
- Demand will be strong across all Christchurch submarkets, in particular Christchurch Central, North-East, North-West and South-West.

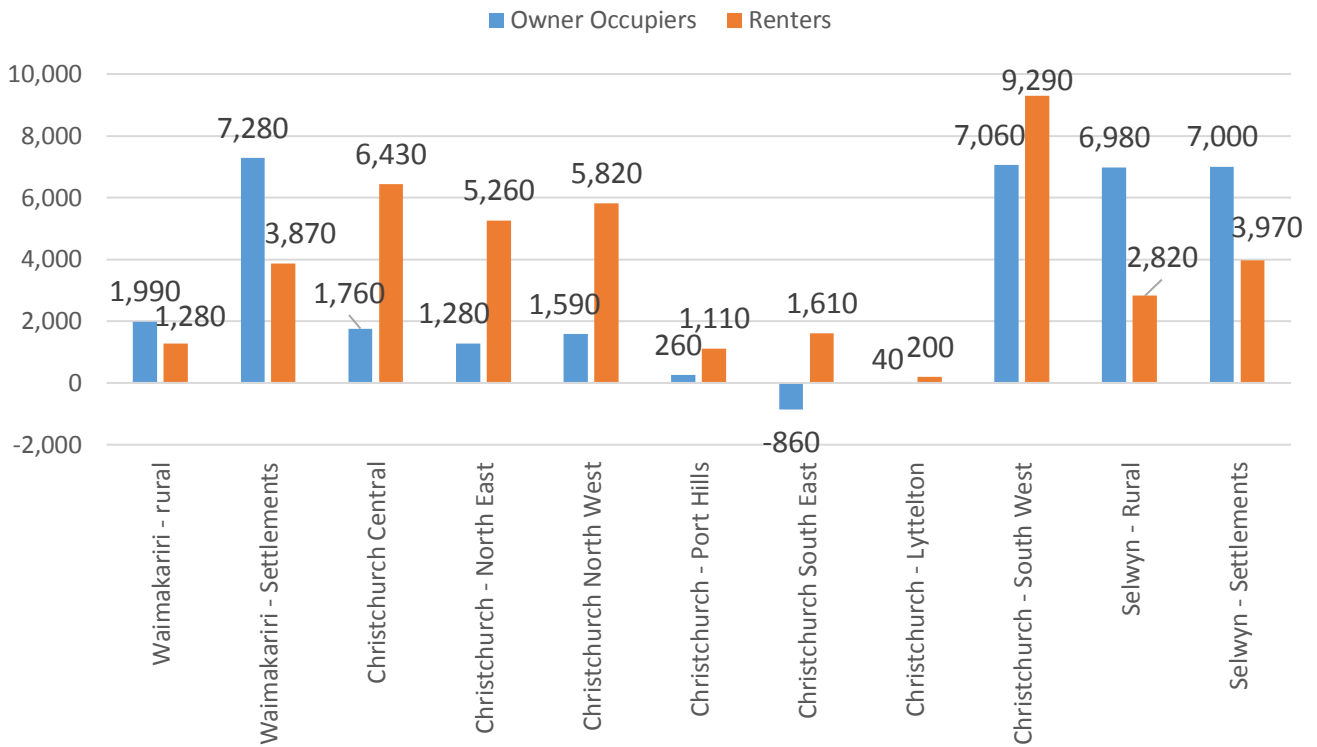
Table 2.2.3: The projected change in demand (growth and/or decline) in the number of households by tenure and submarket

(Model based on data from Statistics New Zealand)

	Owner Occupiers 2017 to 2048	Renters 2017 to 2048
Waimakariri - rural	+1,990	+1,280
Waimakariri - Settlements	+7,280	+3,870
Christchurch Central	+1,760	+6,430
Christchurch - North East	+1,280	+5,260
Christchurch North West	+1,590	+5,820
Christchurch - Port Hills	+260	+1,110
Christchurch South East	-860	+1,610
Christchurch - Lyttelton	+40	+200
Christchurch - South West	+7,060	+9,290
Selwyn - Rural	+6,980	+2,820
Selwyn - Settlements	+7,000	+3,970

Graph 2.2.3: The projected change in demand (growth and/or decline) in the number of households by tenure and submarket

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 26, Table 3.7)



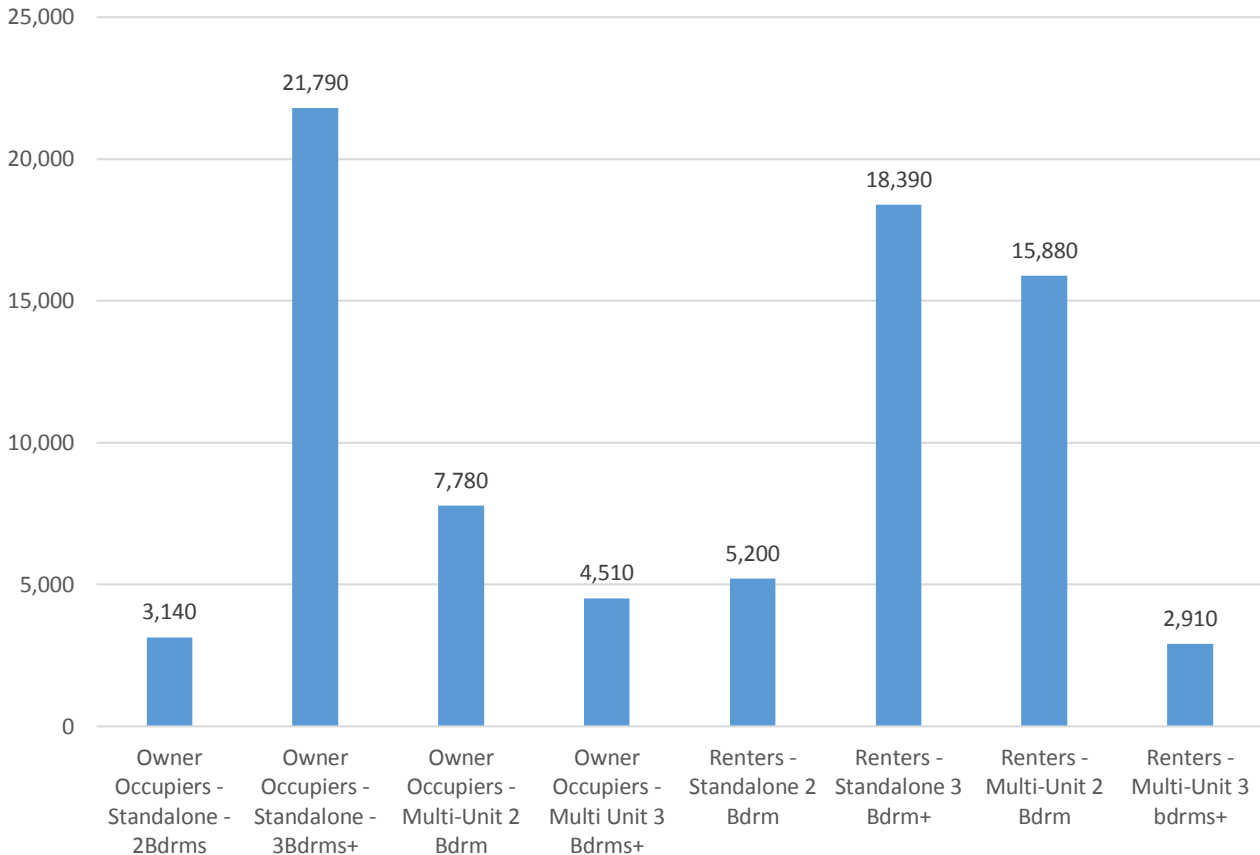
2.3 Estimated Housing Demand by Typology

In terms of housing typology, the report identified the following key points:

- Greater Christchurch’s aging population will be reflected in significant growth in the number of one person and couple only households, resulting in a significant increase in the demand for smaller and multi-unit dwellings.
- In addition, demand for 200 to 230 additional social housing dwellings per annum will be required if the current ratio of social renter dwelling to total housing need is maintained.
- Standalone dwellings account for 66% of the projected growth from owner occupiers and 56% of the renter household growth. Demand for standalone dwellings is predominately for units with three or more bedrooms.
- Multi-unit demand is typically for units with fewer bedrooms. Renters have a higher propensity to rent multi-unit dwellings relative to standalone dwellings, however this may be influenced by other factors such as lower rents and proximity to central city.

Graph 2.3.1: Implications of the household projections on demand by dwelling typology and tenure in Greater Christchurch between 2017 and 2048

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 32, Table 3.11)



2.4 Estimated Housing Demand by Price

In terms of housing demand by price, the report states that:

- The rate of owner occupation will erode to 60.7%, a 7.2% point fall, between 2013 and 2048. Conversely, the number of renter households are projected to increase by 41,660, or 69%, over the same time.
- For owner-occupied dwellings the strongest long term growth is predicted to occur in the Waimakariri rural and settlements (up 52% and 70% respectively) and Selwyn rural and settlement (up 120% and 90% respectively) submarkets.
- Christchurch central and south west submarkets are also expected to grow by 22% and 33% respectively.
- Renter households are projected to experience stronger growth in all submarkets, the strongest sub-areas being Waimakariri rural and settlements (up 143% and 130% respectively) and Selwyn rural and settlement (up 237% and 216% respectively), due to the rapid rise in house prices relative to household incomes⁴.

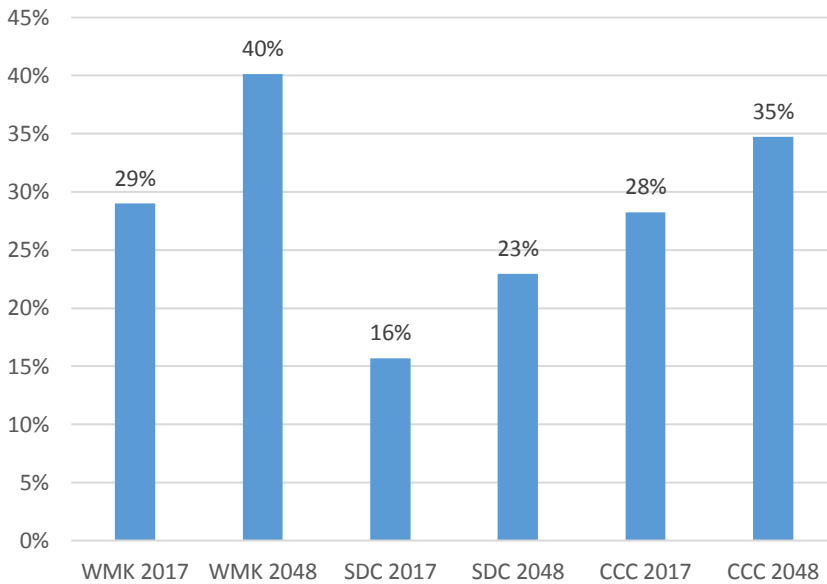
An assessment was also undertaken to estimate the demand for affordable housing, and in doing so provide insight into how the requirement for social housing might change over the next 30 years. Total ‘*renter housing need*’ is assessed by encapsulating those financially stressed private renter households, together with those who are homeless or living in crowded dwellings, with those whose housing requirements are met by social, third sector and emergency housing providers. The relative level of housing need is expected to increase across Greater Christchurch, but it will be significantly greater in Christchurch City. This is a reflection of the low income renters and social renters living in the city and projected to continue to live in the city, comparative to the outer districts. Between 2017 and 2048 total housing need (i.e. by those aforementioned groups) is

⁴ Between 1991 and 2013, median house prices increased 334% in Waimakariri District, 380% in Christchurch City and 547% in Selwyn District. Over the same time period household incomes increased by approximately one third of the rate (121% in Waimakariri District, 110% in Christchurch City, and 140% in Selwyn District).

projected to increase by 20,970 household or 63% in the Christchurch’s UDS submarkets, 3,030 households or 256% in Selwyn’s UDS submarkets and 2,910 households (or 141%) in Waimakariri UDS submarkets. This analysis is significant in highlighting the huge challenges (and arguably opportunities) that are ahead for both the public and private development market to meet this particular type of housing demand. Graphs 2.5 and 2.6 further illustrate the changing trend in regard to housing affordability and renter housing need.

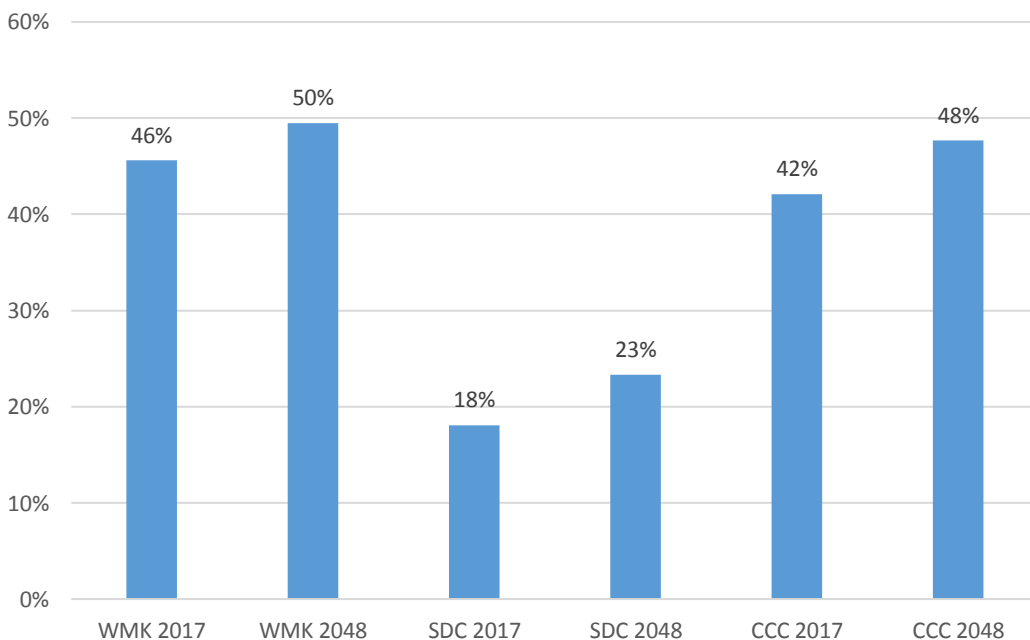
Graph 2.4.1: The projected proportion of owner occupied households who are unable to buy a house over \$250,000 - 2017 to 2048 (using 2017\$)

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 43, Table 4.5)



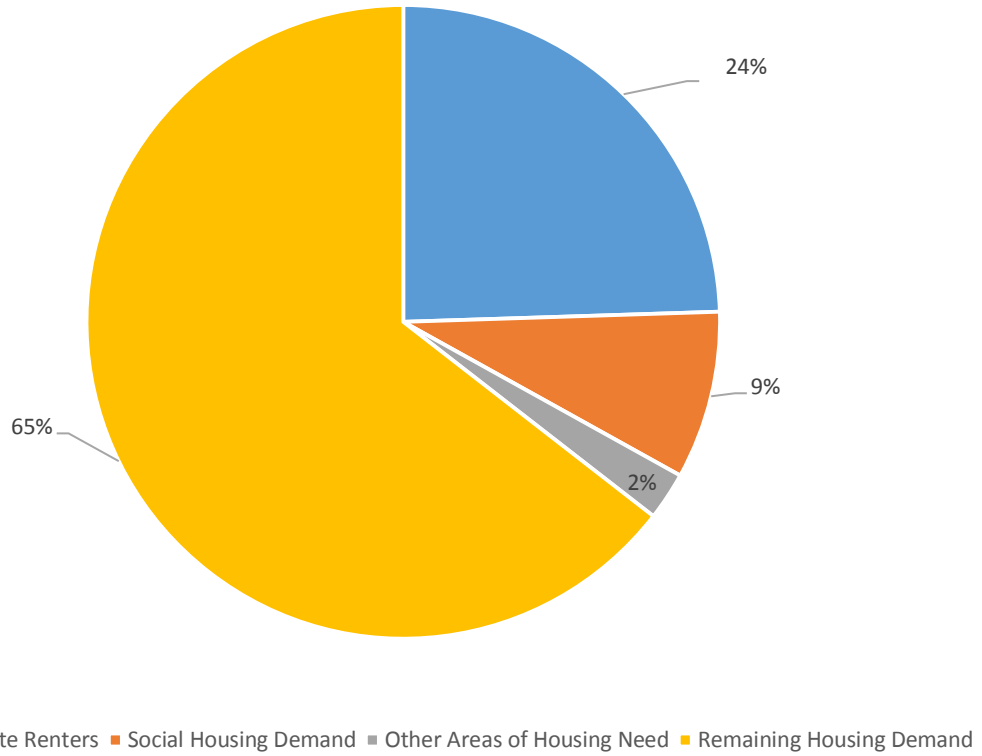
Graph 2.4.2: The projected proportion of renter households unable to affordably pay more than \$300 per week for rent – 2017 to 2048 (using 2017\$)

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 9, Table 1.3)



In terms of the projected annual household demand for Greater Christchurch (being 2,450 households), 36% of this will fall within the category of stressed renters/social housing and other areas of housing needs (870 households). Only 64% is remaining for all other housing demand (1580 households).

Graph 2.4.3: Implications of housing affordability and needs trends on the demand for social housing (Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, Page 55, Table 4.13)



3. Current consumption patterns of household and population groups.

The NPS-UDC guide on evidence and monitoring states that a good assessment would start with an analysis of current and past patterns of consumption for housing, such as to reveal preferences of existing households within the current market (refer to section 2.2 of the NPS-UDC Guide to Evidence and Monitoring, page 30). The guidance recommends the development of a model to identify the current likelihood of different types of households to reside in different types of dwellings in different locations with the local authority area. Importantly, this type of analysis must be based on 2013 Census data as opposed to Statistics New Zealand's population projections, as the outputs from this analysis is of 'actual realised' information opposed to 'estimations or predictions'. Between the Census year of 2013 and until the next 2018 Census (plus the time awaiting results from this census), it is possible to track take-up rates for housing. However, current monitoring is limited to the following for each territorial authority;

- median dwelling price
- number of dwellings sold
- housing affordability; and
- land value as a percentage of capital value.

Historically data that has been collected by Councils in terms of housing, has been very limited or absent in terms of typology, sub-areas, and by different household types (i.e. age groups). Tracking recent trends in terms of take-up rates, and then assumed current demand for 'different types of households to reside in different types of dwellings in different locations', can only be drawn from a comparison between Census years. How the GC Council's undertake its monitoring, such to better meet the NPS-UDC requirements, is expected to fall as part of recommendations and key findings arising from the Housing Capacity Assessments.

3.1 Greater Christchurch Urban Development Indicators - Quarterly Monitoring Report (No.2) September 2017

Whilst monitoring on housing trends within Greater Christchurch is notably limited, the following findings from the September 2017 Quarterly Monitoring Report are of some relevance to housing demand. The 2017 September Monitoring Report reiterates the significant impact on the housing market the Canterbury earthquakes had, in particular with regard to locational preference, which in recent time may have been more heavily influenced by market availability. Whilst growth in building consents granted was reasonably consistent within each district, following the earthquakes it contributed to significant growth in Selwyn, with building consents largely increasing in direct correlation with the growth that occurred in the District (as the earthquakes did not affect this area to the extent of the other areas). For Waimakariri, there was a significant increase in building consents yet this did not correlate with growth as many of these consents were because of the rebuilding of dwellings and relocation of households affected by the red zoning in the District. The City suffered the largest impact from the earthquakes with negative growth directly after the earthquakes and then as the City recovered, the correspondingly the number of building consents (re-builds and new builds) increased.

The report does indicate an emerging trend towards smaller household sizes than historically offered within the housing market. In the Selwyn district over the last ten years the average household size has decreased by 34m² (where in 2007 the average floor size was 240m² and in 2017 was recorded as 206m²). This change is likely to be reflective of the greater number of 1-2 bedroom units built within more recent greenfield developments, where the household density is achieving 12 households per hectare as opposed to the older greenfield areas which only achieved 8-10 hh/ha. This change is even more apparent in the Waimakariri District where the average household size decreased from 234m² in 2007 to 177m² in 2017, again reflecting the wider choice of housing typology (i.e. more smaller dwellings of 1-2 bedroom) within more recent greenfield developments. Within Christchurch City whilst similarly there has been a decreased in average household size (from 173m² in 2007 to 164m² in 2017), this has not been as significant change due to the higher density of housing areas established and provided for under its District Plan.

3.2 Developing a Current Housing Consumption Model

In response to the gap in more detailed information on current housing consumption (as a measure of current housing demand), following is the beginnings of a 'current housing consumption model'. This has been based solely on the 2013 Census data, but follows the construct of the Livingston and Associates Demand Assessment tables that break down housing typologies, sub-areas, and household types. This approach has been followed such to enable comparisons to be drawn between the respective findings on housing demand (actual and projected) and supply (plan-enabled and commercially feasible).

Table 3.2.1 Number of households living in Greater Christchurch by tenure and age of the household reference person

(Source: Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A1)

Number of households living in Greater Christchurch by tenure and age of the household reference person	Number of households					Total
	Less than 30 yrs	30 to 39 yrs	40 to 49 yrs	50 to 64 yrs	65 yrs & over	
Owners 2013 Census	4,900	15,590	25,080	36,620	30,080	112,270

Table 3.2.2 - Number of households by tenure and submarket

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A5)

Number of households by tenure and submarket	Waimakariri - rural	Waimakariri - Settlements	Christchurch Central	Christchurch - North East	Christchurch - North West	Christchurch - Port Hills	Christchurch - South East	Christchurch - Lyttelton	Christchurch - South West	Selwyn - Rural	Selwyn - Settlements
Owner Occupiers 2013 Census	3,500	9,090	7,460	20,170	24,110	7,410	9,320	1,680	19,660	4,840	5,310

Table 3.2.3 - Number of households by household composition and submarket 2013 Census

(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A4)

Number of households by household composition and submarket 2013 Census	couple only	couple with children	one parent	one person	Other	Total
Waimakariri - rural	1380	1370	80	380	220	3430
Waimakariri - Settlements	3,230	2,750	480	1,730	670	8,860
Christchurch Central	1,990	1,570	510	2,610	760	7,440
Christchurch - North East	5,920	6,500	1,370	4,240	2,160	20,190
Christchurch North West	7,580	7,550	1,590	5,120	2,260	24,100
Christchurch - Port Hills	2,870	2,510	300	1,320	430	7,430
Christchurch South East	2,570	2,560	710	2,450	1,040	9,330

Christchurch - Lyttelton	690	500	60	380	50	1680
Christchurch - South West	6,020	5,540	1,270	4,340	2,500	19,670
Selwyn - Rural	1,840	2,040	110	400	360	4,750
Selwyn - Settlements	1,600	2,670	200	500	420	5,390

Table 3.2.4 - Number of households by age of the reference person and submarket 2013 Census
(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A3)

Number of households by age of the reference person and submarket 2013 Census	Less than 40 years	40 to 49yrs	50 to 64 years	65 yrs and over
Waimakariri				
Rural	660	1190	1560	750
Settlements	2320	2450	3070	3410
Christchurch City				
Central	8040	3750	4670	3200
North East	7850	6500	8310	6340
North West	8410	6900	9740	9020
Port Hills	1410	2130	3250	2330
South East	3920	3060	4170	3210
Lyttelton	320	520	810	450
South West	9410	5820	7550	6640
Selwyn				
Rural	1040	1540	2140	950
Settlements	1930	2040	1740	900

Table 3.2.5 - Dwelling typology and tenure in Greater Christchurch
(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A5)

Dwelling typology and tenure in Greater Christchurch	Owner occupiers					
	Standalone dwellings			Multi-unit dwellings		
	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total
2013 Census	10,230	91,170	101,400	8,070	3,290	11,360

Table 3.2.6 - Demographic characteristics and tenure by typology and submarket 2013 Census
(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A5)

Demographic characteristics and tenure by typology and submarket 2013 Census	Owner occupiers		Renters	
	Standalone dwelling	Multi-unit dwelling	Standalone dwelling	Multi-unit dwelling
Waimakariri				
Rural	3,380	120	730	0
Settlements	8,240	850	2,000	410
Christchurch City				
Central	4,530	2,930	3,100	9,110
North East	18,510	1,660	6,860	1,970
North West	216,620	2,490	7,190	2,830
Port Hills	7,020	390	1,280	400
South East	8,370	950	3,760	1,290
Lyttelton	1,680	0	410	50
South West	18,150	1,510	6,890	2,830
Selwyn				
Rural	4,780	60	940	0
Settlements	5,310	180	1,170	0

Table 3.2.7 - Total dwellings by typology and tenure
(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table A5)

Total dwellings by typology and tenure	Owner occupiers						Renters					
	Standalone dwellings			Multi-unit dwellings			Standalone dwellings			Multi-unit dwellings		
	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total
2013 Census	10,230	91,170	101,400	8,070	3,290	11,360	5,930	28,230	34,160	15,790	3,290	19,080

Table 3.2.8 - Median sale price, rents and household income
(Livingston and Associates Limited, Research Report Housing Demand in Greater Christchurch, 2017, Table 1.2)

Median sale price March 2013	
Waimakariri	\$395,000
Christchurch City	\$408,000
Selwyn	\$485,000

4. Other influences of housing demand

This section provides further context to better understand housing demand in Greater Christchurch. It outlines historical patterns of demand, current trade-offs people make when choosing a home; discusses potential influences on future patterns of growth including international trends; outlines unmet (latent) demand, and describes other influences of demand such as social deprivation, the location of education facilities, and increasing diversity within the resident population due to strong immigration rates.

4.1 Historical patterns of housing demand

A supporting report titled “Greater Christchurch Urban Development Capacity Assessment – Report 4: Business and Housing Interactions” provides insight into historical patterns of housing demand. This report discusses how the settlement pattern of Greater Christchurch has principally been shaped from the creation and expansion of the colonial settlements laid down in the nineteenth Century. Whilst once focused around a strong Central City, during the 20th century the urban area (residential and business areas) expanded outwards and around a number of nodes, this development being largely enabled by the change in dominant transport mode from foot, bicycle and tram to the private car. The availability of significant areas of flat land that were relatively easy to subdivide and service, resulted in traditionally lower urban densities than other New Zealand cities. More recently, the impacts of the earthquakes has seen a relocation of households and businesses from the more damaged eastern side of the City and eastern Kaiapoi to areas to the west.

4.2 Locational preferences and trade-offs

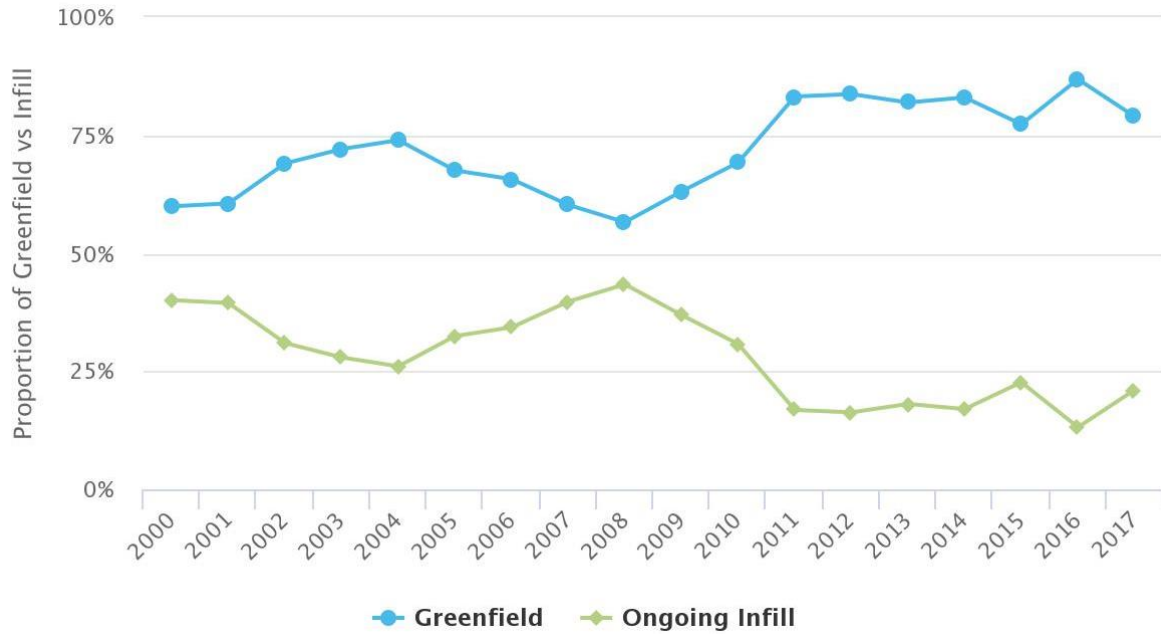
The dynamics of the housing market are complex, and there are many factors that contribute to why any particular area experiences strong or weak demand and consequently growth. Locational preference may be driven by many reasons, including lifestyle, financial circumstances, and at least in part, to where people want to go, and how often these trips needs to be taken. Importantly for Greater Christchurch as relative to other major cities, most housing settlement areas are highly accessible to places of work, leisure and education. Transport modelling undertaken indicates that people are quite willing to travel some distance from home to work. As a consequence, ease of travel is unlikely to have been a strong influencer in where people have chosen to live.

Where people have chosen to live has to a large part been dictated by where housing markets have been enabled (through rezoning) and when major infrastructure has been constructed (for example the sewage network) and an area has been developed (as decided and determined by property developers). The demand for new neighbourhoods (i.e. greenfield development) has always been consistently strong in Christchurch City, as illustrated by the following graph where the proportion of greenfield growth has been historically higher than what is apportioned to infill⁵. While Selwyn and Waimakariri don't currently monitor the level of infill development, based on observations of new developments it would suggest that the trend is the same, if not more strongly indicating a locational preference for greenfield areas.

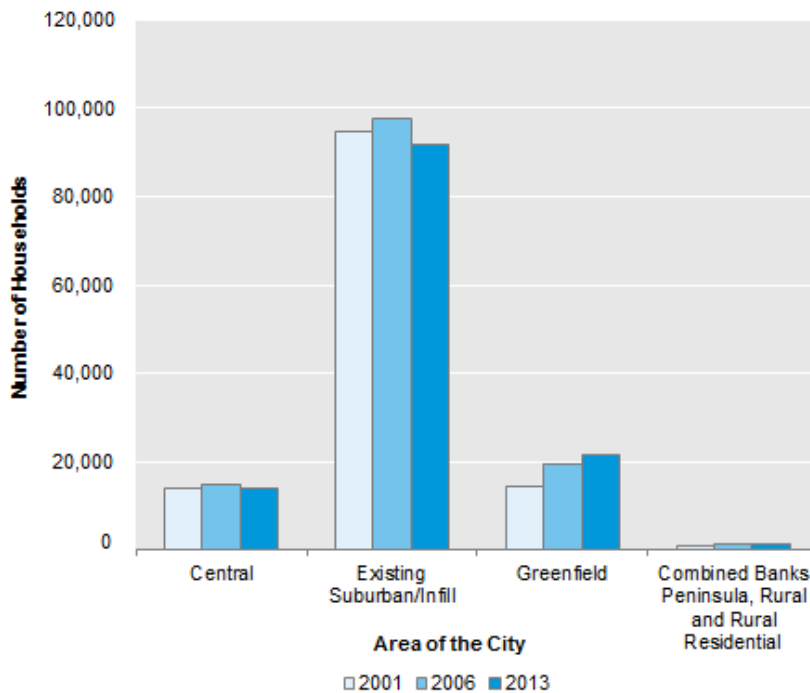
Even prior to the earthquakes, proportionally there was more new dwellings being consented in greenfield areas and correspondingly less within the existing urban area. This could have been the impact of significant rezoning of greenfield land for new neighbourhoods in 2000, thus attracting existing and new residents to these areas. This general trend has continued since 2011, although infill development proportions did improve in 2008, which may have been attributed to greenfield developments nearing their capacity. Further market analysis is however required on the relationship between greenfield and infill development (namely whether one offsets the other) to draw any further conclusions on what specifically has driven the historical demand for new neighbourhoods (i.e. house design, section size, price, and/or amenity) and whether these greenfield area drivers are the same or different between spatial areas (i.e. a new subdivision within Waimakariri compared to new neighbourhoods in Selwyn or Christchurch City). Furthermore, whether the greenfield area demand drivers are the same or different than for redevelopment areas, or do some demand aspects such as proximity to schools, come more into play.

⁵ The term 'infill' used in figure 4.2.1 is representative of all intensification that occurs within the existing urban area.

Graph 4.2.1 Proportion of Greenfield vs Infill Development
 (Based on data from Christchurch City Council Building Consent Records, 2017)



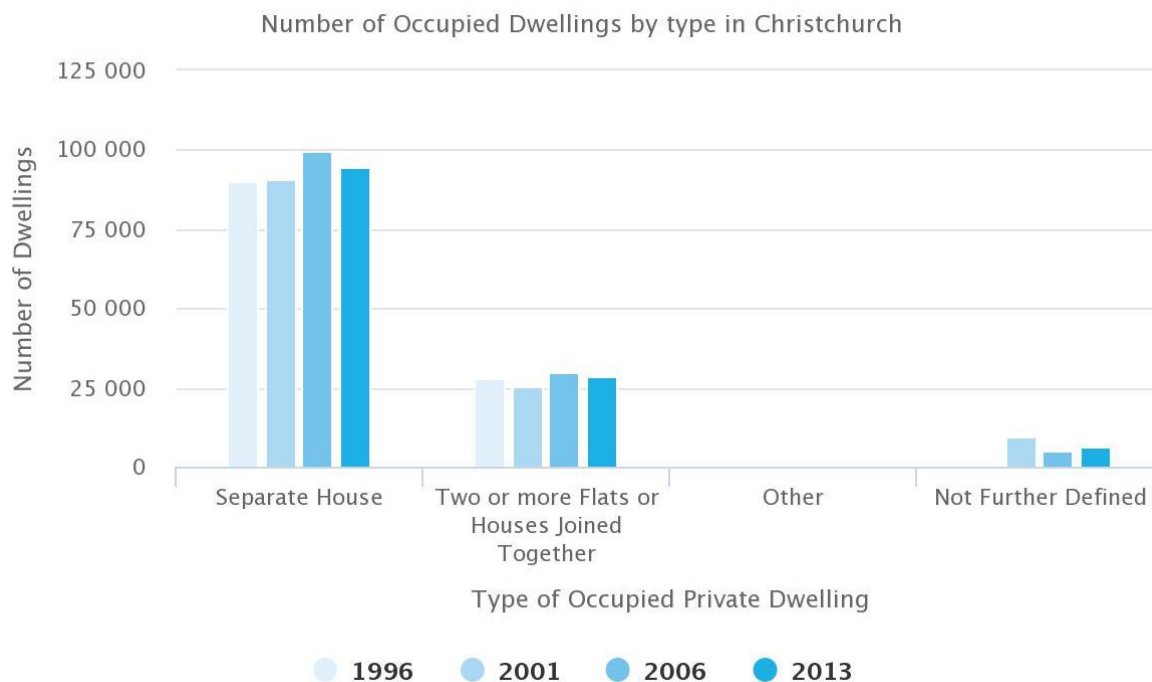
Graph 4.2.2: Total Number of Households by UDS Area
 (Based on data from Christchurch City Council Building Consent Records, 2017)



Research has been undertaken that may provide some insight as to why the demand for greenfield development has been consistently strong. A study carried out by Kusumastuti and Nicholson (2017) on mixed-use development in Christchurch, pointed out a similar trend. Surveyed residents wanted to live near supermarkets and parks, but less so near offices. Both studies show that people want a balance between housing features and location.

Graph 4.2.3: Occupied dwellings Christchurch City by Type between 1996-2013

(Based on data from Christchurch City Council Building Consent Records, 2017)



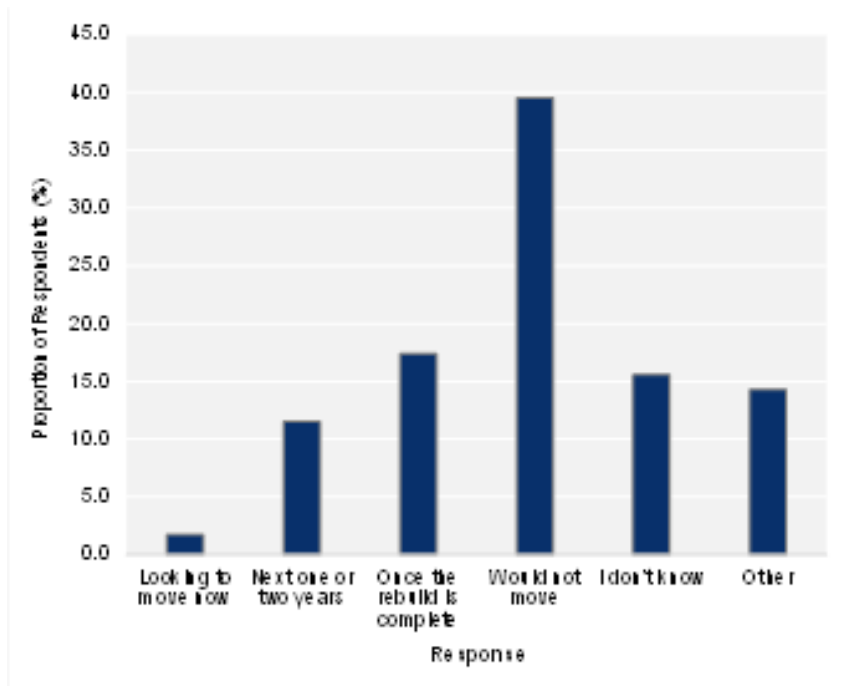
Graph 4.2.3 shows the trend of housing typologies of occupied dwellings in Christchurch City as per the census information from 1996 to 2013. This information was collected and graphed as part of the Liveable City survey by the Christchurch City Council. The graph shows consistent increase in separate housing as well as multi-units, with a preference being shown for stand-alone housing as opposed to multi-units. There was a decrease of 4734 stand-alone houses and 1383 multi-units from 2006-2013. This decrease however could be attributed to the 2011 earthquake which did impact housing in Christchurch City and resulted in the demolition of many older existing houses and their rebuilding, in many cases by replacing the existing home with two or more new dwellings (being enabled through changes to the Christchurch District Plan under the Land Use Recovery Plan - Te Mahere Whakahaumanu Taone). Thus drivers of demand since the earthquakes have been understandably different and caution needs to be taken to presume more recent locational preferences (trends) will continue.

The housing market may also well be at the cusp of a change in housing demand, not just in terms of locational preference, such as a preference for greenfield over redevelopment areas, but also in terms of house type. For example, historically in Central City Christchurch there was an upward trend of people living in the central city however after the 2011 earthquakes, this number had decreased significantly from 7650 to 4900. Since 2014, there has been an increased interest in residents wanting to live in the central city, and in 2016 the central city population had increased to 5,600. The majority of dwellings in the central city are townhouses, flats or apartments, with separate houses representing only a fifth of the central city's dwellings. Research undertaken to date, principally the annual Life in Christchurch: Central City survey, has provided some useful insight into housing demand (influencers) in the central city.

The 2017 Annual Life in Christchurch Survey drew 3,000 responses from a range of suburbs in Christchurch. A large portion of those responses came from residents living in the Central City (6%), St Albans, Cashmere and Halswell. In regard to moving to the Central City:

- Around 2% of respondents were thinking about moving to the Central City at the time.
- 11% were looking to move into the Central City in the following 1 or 2 years.
- 17% reported that they would consider a move to the Central City once the rebuild is complete.

Graph 4.2.4: Percentage of respondents considering moving to new house (2017)
(Based on data from Life in Christchurch Survey, 2017)



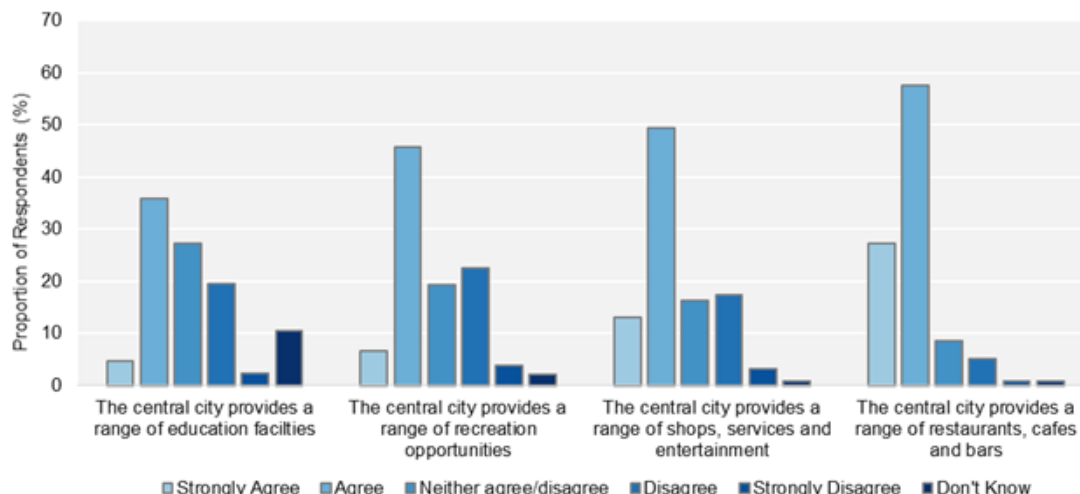
In terms of housing choice:

- 32% of respondents said that they believed there was a range of housing in the Central City.
- Half of the people said that there was no affordable housing options in the Central City.

In terms of what may drive housing demand, specifically services and facilities, the local environment, and transport:

- More than 90% of respondents had visited the Central City in the previous 12 months to the survey.
- 65% thought there was a range of things for families to do in the Central City.
- More than 80% of people said that there was a range of restaurants, cafes and bars.
- 63% of people were satisfied with the look and feel of new buildings.
- 50% of respondents did not think that the city was free of litter or vandalism.
- The Botanic Gardens was identified as the top spot for making the Central City distinctive and unique.
- People primarily travelled to the Central City by car to get to: work (53%), shopping (75%) and social trips (77%).
- 65% of people who had travelled to the Central City in the last 12 months did not think it was easy to travel by car.
- A further 30% thought it was easy to travel by bicycle in the Central City.
- 90% of respondents felt safe in the Central City during the day, while 30% felt a bit unsafe at night.

Graph 4.2.5: Services and facilities provided in the Central City
 (Based on data from Life in Christchurch Survey, 2017)



A further Christchurch Central City survey is currently being undertaken for 2018 asking a number of questions including what type of housing (and price range) people are seeking in the central city and again would they be willing to relocate to the central city.

This information aside, within the Greater Christchurch area we do not know emphatically, what the trade-offs are that people make when choosing where they live, and further whether these choices will still dominate in years to come. For instance, whilst traditionally the market has supplied stand-alone houses, as housing need changes (see section 2 of this report), will the preference for different typologies correspondingly change? What do we know about different groups in the community and any differences in the trade-offs they make? Are their demands for different typologies, price point and locations matched? Further what is the price range for those different types of dwellings at different locations? What are the attributes of the existing dwelling stock that is potentially affordable for low income households? Within the range of housing options that are affordable (i.e. below \$500,000 for dwelling and section), what typology can be provided and in what locations, and will these meet locational and typology preferences. Section 5 of this report recommends where future research work could be undertaken to close this information gap.

4.3 National and International Trends

It is useful to understand what other cities are experiencing in terms of housing demand, and whether similar findings might be applicable to Greater Christchurch, if not in the short term, but the longer term. There is a range of information regarding what other cities are doing in order to meet the growing population. Tension around development in Sydney and Melbourne show that this issue is not unique to New Zealand. There are several key points that relate to Greater Christchurch. A two part study in Melbourne and Sydney, carried out by the Grattan Institute illustrates that housing stock and housing demand do not meet. There is a large shortage of semi-detached homes and apartments in the middle and outer areas. In the study, when people were asked to choose anything they want, then they chose a large detached house near the centre of the city, which is an unlikely outcome and it is acknowledged that there are trade-offs in real life (specifically price). In this study, closeness to work did not rank highly and people were more concerned with the number of bedrooms, garage and living space provided, and for families, the location of schools was important.

In Sydney 7.4% would choose semi-detached, as per the Grattan Institute study, however only 2.8% are supplied, and therefore there is a shortfall of 4.6%. Furthermore, recent studies indicate that the average size of houses is increasing in New Zealand, and much more quickly than Australia or the USA. The average size of a dwelling has increased from 125m² in 1989 to 198m² in 2013, which is nearly twice as large as the average new house in Europe (Coleman, PSA, 2017).

These national and international trends were reflected in an Auckland-wide housing demand survey in 2015. Auckland Council’s Research and Evaluation Unit commissioned a study to investigate what is important to Auckland households when choosing a place to live and to explore the housing that residents would choose to live in, if it was available (Yeoman et al. 2016). This research provided an understanding of the demand of housing, in both, an unconstrained and income constrained context. The key findings indicate that the choice

of housing types favoured medium and large sized dwellings, 61% and 26% respectively. While the largest group chose detached housing as their final choice (52%), the research shows that there is also a willingness to live in other housing types such as attached housing and apartments (48%).

This is especially the case where it means that residents are able to live in the location of their choice. However, the Choice Modelling data indicates that residents were more likely to choose attached dwellings and apartments over stand-alone dwellings and were also willing to trade-off their preferred location when dwelling sizes were larger (as determined by the number of bedrooms). This means that, in general, people prefer larger dwellings. The report concludes that while there is a demand for more 'higher density' dwelling types in Auckland, there is clearly a mismatch between the current supply of dwelling typologies and the housing demand as per the survey. Data regarding the type and location of the housing stock in GC needs to be collected and documented, so as to determine whether we might expect future housing demand to mirror what is being experienced in Auckland and Australia.

4.4 Affordable Housing

The Livingston and Associates Limited Demand Assessment highlights the deterioration in housing affordability. In addition to this reports findings, there is other information that supports the conclusion that there is an ever increasing demand for more affordable housing options.

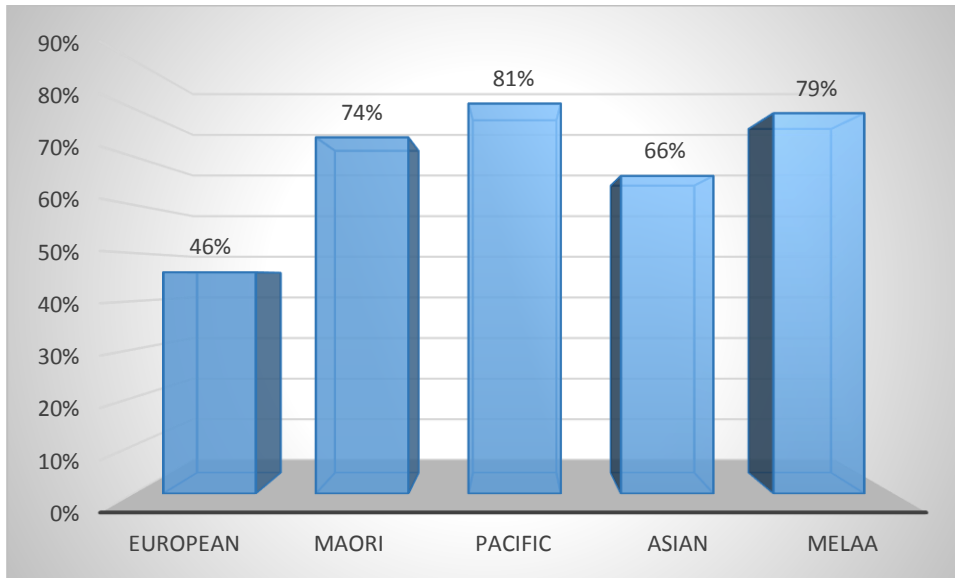
In 6 months, between December 2016 and June 2017, there was a 2%, 10% and 5% increase in the Average Value per residential building in Selwyn, Waimakariri and Christchurch respectively (monitoring report, p14). Average house sizes have reduced and the average construction costs have increased over the last 10 years. The Monitoring Report (Report 1, June 2017) noted that that when additional land was supplied for development, housing affordability improved as per the MBIE measure. However, the measure does not take into consideration that sales prices for dwellings increased over the same period and that a large percentage of the existing housing stock was impacted by the earthquake. Therefore, while the improvement in housing affordability is positive, it is small against the significant increase in land supply enabled over the last 10 years. Further consideration of the relationship between this indicator and the others contained in this group needs to be better understood to determine the exact situation in the housing market (whether it be by comparing between local authorities or the wider Greater Christchurch area).

The affordability measure also shows trends that suggest that rental affordability has improved overall between 2011 and 2016. However, these numbers do not entirely correlate with the data trend for rents. From September 2010 to March 2015, rents increased by 41% to 44% throughout the Greater Christchurch area due to the shortfall of rental properties as a result of the Canterbury earthquakes, and income levels did not increase at the same level.

Massey University's home affordability report for the September to November quarter of 2017 shows median house prices increasing in all parts of New Zealand over the previous twelve months. The report's author notes that despite the occasional improvement in affordability, the long term trend is rising house prices and decreasing affordability (Press, 31-01-2018). Falling home ownership rates have also resulted in the average age at which people become home owners has increased across younger to middle aged cohorts in recent decades. Trends of rising house prices result in housing inequality and by short extension, wealth inequality. As the 2017 Briefings to Incoming Ministers note, high house prices transfer wealth to existing land owners, and appear to be the major cause of the observed increase in wealth inequality. The value of New Zealand's homes rose \$141 billion or 16 percent from 2015 to 2016 to \$1.014 trillion (Hickey, 2017).

There are also emerging trends that indicate housing affordability is more prevalent for some population groups. Graph 4.4.1 shows the proportion of people aged 15 years and over in specific ethnic groups who do not own or partly own their usual residence in Greater Christchurch. On note is that 74% of the Maori population do not own a dwelling, and similarly Pacific and MELAA are also disproportionately represented.

Graph 4.4.1: Home Ownership by Ethnicity: Percentage of residents who do not own a home
(Based on data from Statistics New Zealand)



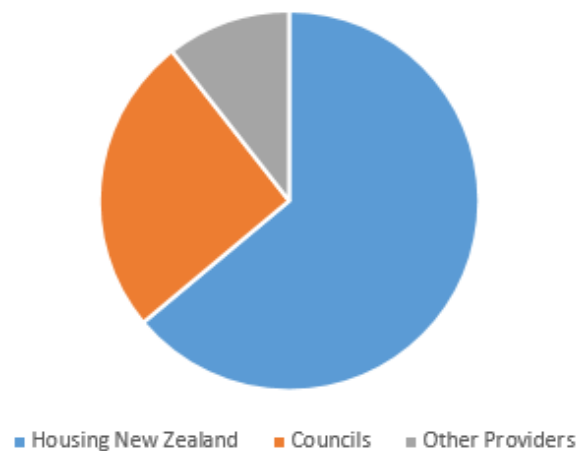
*MELAA households - Middle Eastern/Latin American/African

Another population group where demand is high for more affordable housing, is older persons. It is estimated that by 2043 a quarter of the Greater Christchurch area’s population will be aged 65 and over, leading to possible housing issues (Cooper, 2017). Housing in the Greater Christchurch area was hit hard by the 2010 and 2011 Christchurch Earthquakes. 8,061 houses were red-zoned, and 167,000 houses were damaged, with 26,000 houses considered as ‘seriously damaged’ (Canterbury District Health Board, 2016). For many older people who lost their homes, Government pay-outs were based on the 2007 value of their property, which were very low. Subsequently, the pay-out was not enough to afford any other house in the Greater Christchurch areas, with many elderly being forced to take out high loans in order to afford a house (Davey & Neale, 2013). Since 2011, a multitude of other market factors have impacted older peoples housing, making it unaffordable. As of 2016, 20% of the CCC Social Housing stock is occupied by residents aged 65 and over (Christchurch City Council, 2015).

4.5 Social Housing

Demographic, tenure, employment and welfare trends, i.e. the ‘perfect storm’ of an ageing population, falling home ownership, less secure employment, and restricted access to welfare, are drivers for the current and projected increase in demand for social housing. The Salvation Army released a report in August 2017 analysing the future need for social housing in New Zealand⁶. The report states that current capacity of Social Housing in New Zealand is ‘just over 82,000’ units, with the majority owned by Housing New Zealand (62,500 units). Of this NZ total, Greater Christchurch has 9,500 social housing units. These are mostly provided for by central government through Housing New Zealand (64%), local government (25%) and other NGO providers (11%)⁷. The vast majority (95%) of these units are located within Christchurch. The report also addresses the future need for social housing. The report identifies two groups of growing need:

Graph 4.5.1: Social Housing in Christchurch
(Model based on data from Statistics New Zealand)



⁶ Johnson, Alan (2017); *Taking Stock, the demand for Social Housing in New Zealand*; www.salvationarmy.org.nz/TakingStock

⁷ Housing New Zealand has capacity of 6,048, with 140 within Waimakariri, 9 in Selwyn and 5,899 in Christchurch (<https://www.hnzc.co.nz/assets/Publications/Research/Housing-Statistics-Managed-stock/Managed-Stock-Territorial-Local-Authority-June-2017.pdf>). Christchurch City Council, through the Ōtautahi Community Housing Trust, has 2,300 units (<https://ocht.org.nz/about/>), while Waimakariri has 112 units (<https://www.waimakariri.govt.nz/community/council-housing>). NGO’s and others provide for approximately 350 units through providers such as Comcare (60 units), Christchurch Methodist Mission (59 units), Salvation Army (100 units).

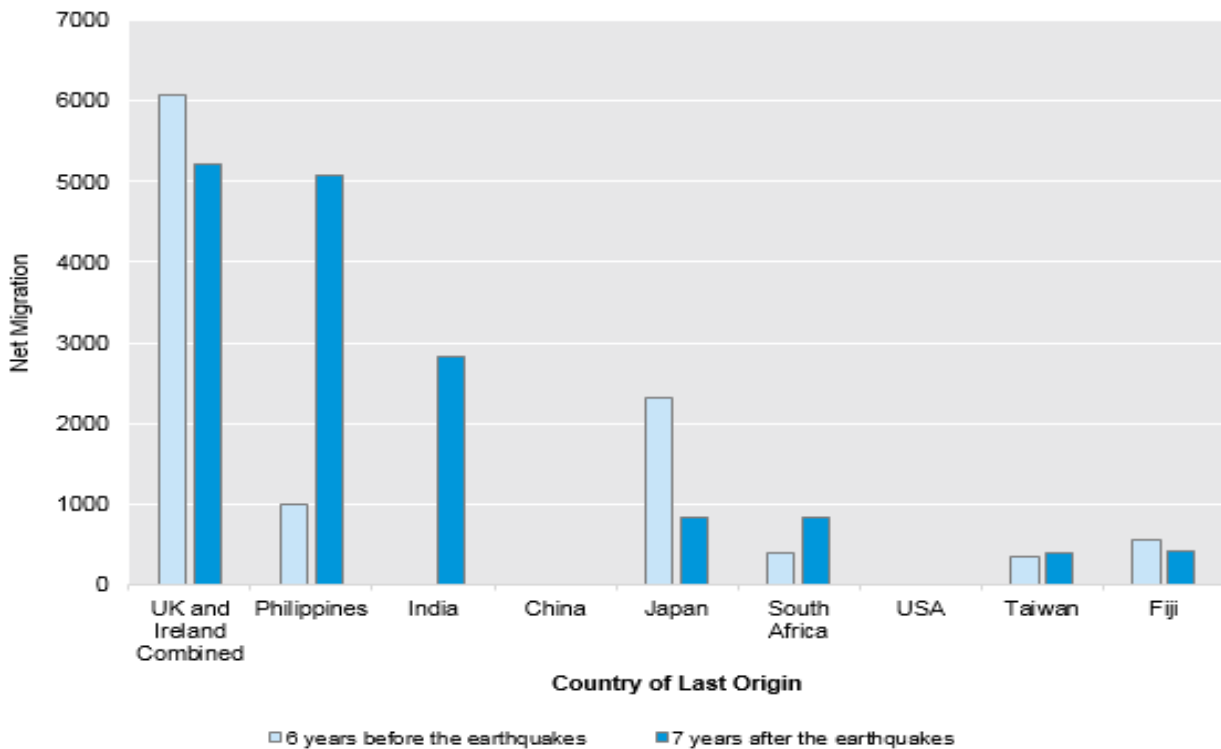
people with health or disabilities; and, older people who don't own a home and rely on superannuation. Currently, within Canterbury, there are 17,200 people receiving benefits, 5,600 health condition benefit and 11,600 on supported living benefit. There are currently 4,200 older people who don't own a home and rely on superannuation and this number is expected to grow by 155% (6,500) to the year 2030. Whilst these numbers do not represent social housing demand, they do indicate broad demand from people who are more likely to require long-term social housing support.

Based on the current GC supply of only 9,500 social housing units, there appears to be a deficit in the supply of social housing units and an increasing demand into the future. Several sources (Salvation Army forecasts, MBIE's 2013 housing market assessment, and the Livingston and Associates Limited GC Demand Assessment 2017) have estimated the demand for social housing over the next twenty to thirty years. These analyses converge on a figure of approximately 170 units per annum of additional social housing being required to meet expected demand based on current levels of provision in relation to housing need.

4.6 Migrant Demand

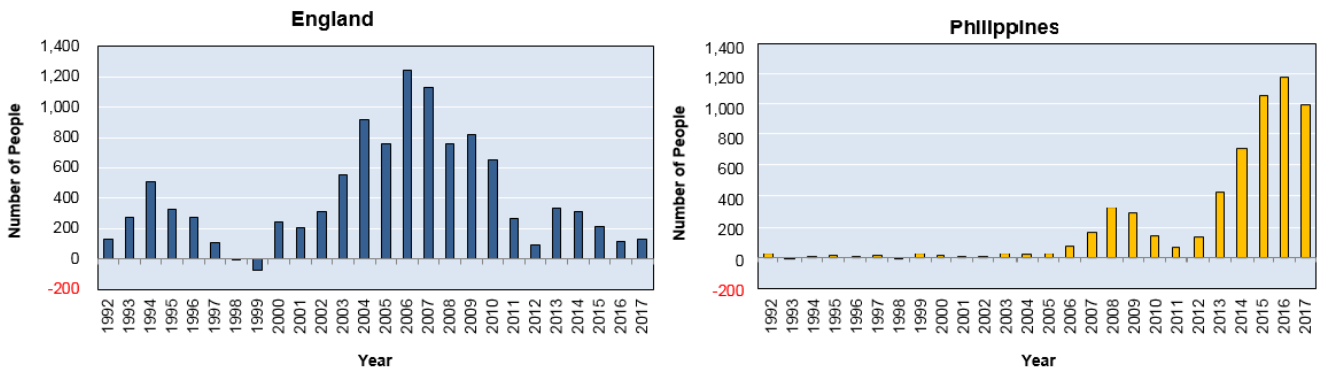
The expected net migration for Greater Christchurch is included in the Stats NZ projections, however the type of migrants has changed and this could influence future housing demand. Since the 2011 earthquakes, Greater Christchurch has seen a growth in migrants from South Asia, especially the Philippines and India. However, there has been a decrease in the number of migrants from Japan, the UK and Ireland.

Graph 4.6.1: Net Migration to Christchurch by Country of Origin
(Based on data from Statistics New Zealand)



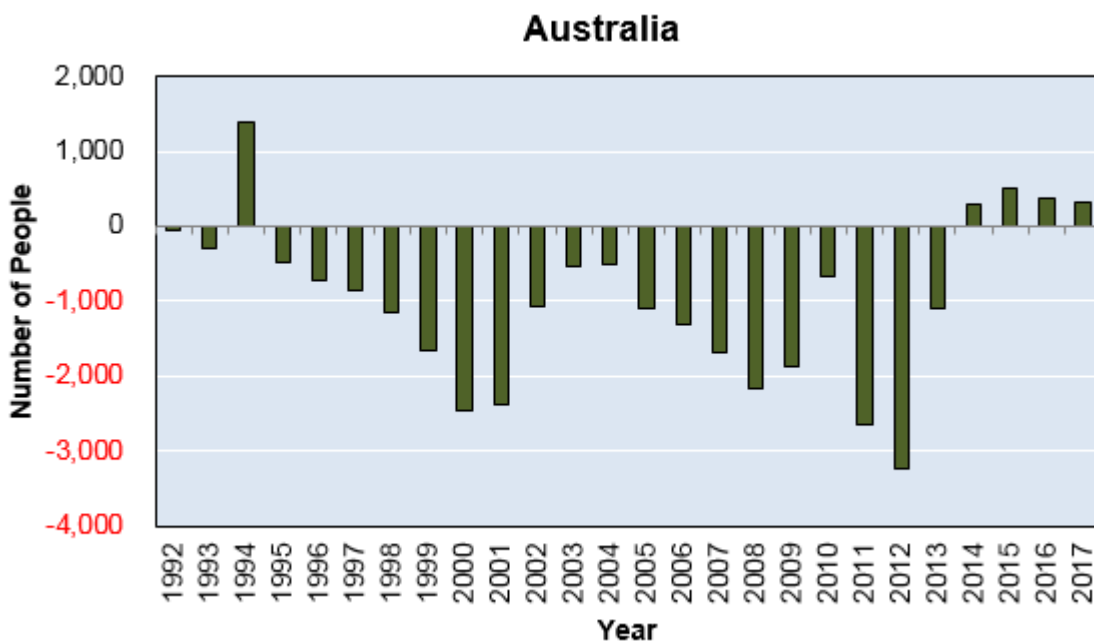
Graph 4.6.2 show the change in migration from England and the Philippines. As seen in the graphs, the number of immigrants from England has dropped, while the number of immigrants migrating to Christchurch from the Philippines has seen a sharp increase. The graphs illustrate that this change in migration occurred after the 2011 earthquakes.

Graph 4.6.2: Net migration to Christchurch from England v Philippines (1992-2017)
(Based on data from Statistics New Zealand)



As seen in graph 4.6.3, net migration from Australia has been positive (more people arriving than leaving) in the last 4 years following nearly 20 years of high negative net migration.

Graph 4.6.3: Net Migration in Christchurch from Australia (1992-2017)
(Based on data from Statistics New Zealand)



The origin of foreign arrivals affects the housing market. A 1000-person increase in monthly European/UK arrivals raises real house prices by 8 percent after 2 years, whereas a 1000-person increase in monthly Asian arrivals raises real house prices by around 6 percent.

People who come to New Zealand can be diverse. People arriving from Asia (often from countries with much lower incomes than New Zealand) are likely to be quite different in terms of wealth and housing preferences to people coming from Europe. As such, they might have different effects on the housing market. Arrivals from Asia and Europe/UK made up 39 and 29 percent respectively of non-New Zealand citizen arrivals in 2013. Further research is however required in regard to links between ethnicity and housing demands, particularly impact on future housing demand trends.

4.7 Household Crowding

The size of households is an important driver to consider as residents will buy or rent dwellings based on the number of bedrooms provided. If appropriate housing is not supplied by the market, crowding occurs. The Canadian National Occupancy Standard (CNOS), used by the New Zealand Government as a core housing indicator, was developed by the Canada Mortgage and Housing Corporation to determine the number of bedrooms a dwelling should have to provide freedom from crowding. The CNOS is based on the number, age, sex and interrelationships of household members. The CNOS states that:

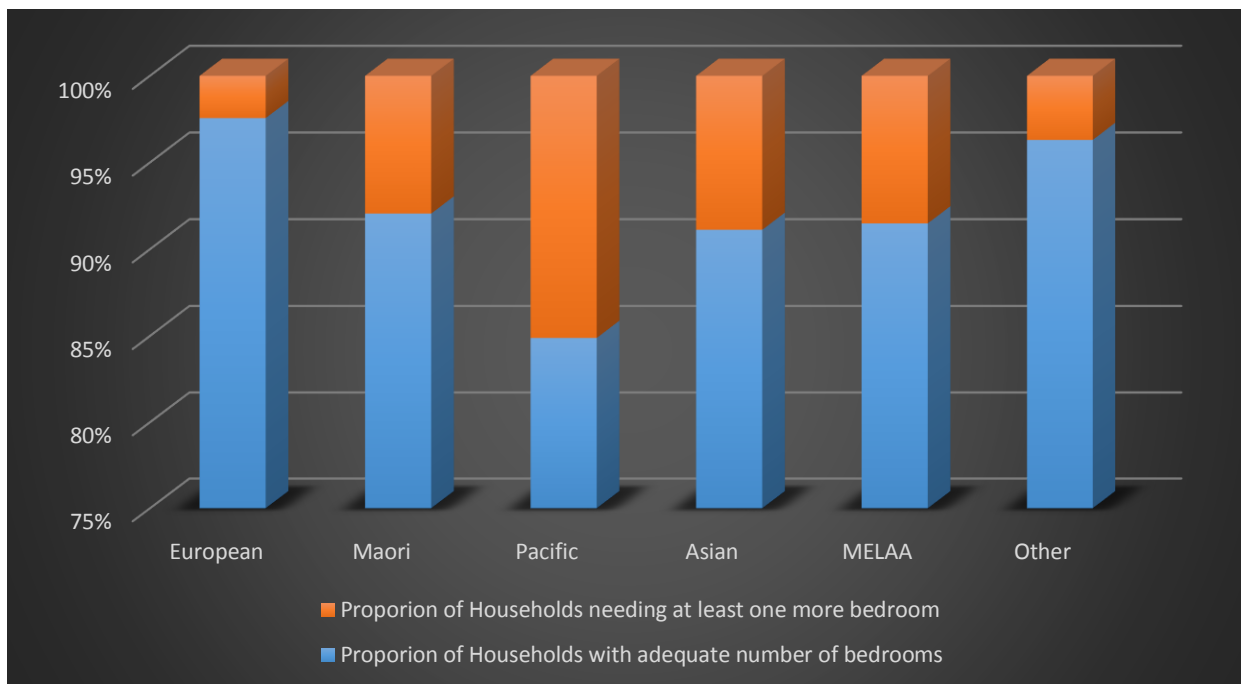
- No more than two people shall share a bedroom
- Parents or couples may share a bedroom
- Children under 5 years, either of the same sex or opposite sex may share a bedroom
- Children under 18 years of the same sex may share a bedroom
- A child aged 5 to 17 years should not share a bedroom with a child under 5 of the opposite sex
- Single adults 18 years and over and any unpaired children require a separate bedroom⁸

Housing plays a critical role in the social structure, as it provides a place for meetings, traditions, rituals, and other cultural expressions⁹. Māori and Pacific households often have culturally specific requirements and preferences in relation to dwelling design, which can influence their housing preferences, choices and trade-offs. New Zealand wide studies indicates that Pacific peoples often prefer to live in an extended family living situation, but it is also noted that this could be a strategy to cope with the high costs of accommodation¹⁰. This tendency for extended family living arrangements should be taken into consideration as there will be a requirement for dwelling types that house a larger than average number of people.

Graph 4.7.1 shows the household crowding in Greater Christchurch by ethnicity. The graph shows that Maori, Pacific, Asian and MELAA groups are disproportionately represented. Further research and analysis needs to be carried out in order to determine the size and types of dwellings that need to be supplied to provide freedom from crowding for all ethnic groups. This trend suggests that the market needs to supply a range of housing, which will give all households a range of opportunities to buy or rent dwellings within their budget and preferred location.

Graph 4.7.1: Household Crowding by Ethnicity - Proportion of households needing at least one more bedroom

(Source: Statistics New Zealand, Census of Population and Dwellings, 2013)



⁸ Statistics New Zealand, http://archive.stats.govt.nz/tools_and_services/nzdotstat/tables-by-subject/housing-quality-tables/crowding-occupancy-rate.aspx, 2018

⁹ Housing Choice and Preference: A review of Literature, Wildish Bianca, Auckland Council, 2015

¹⁰ Housing Choice and Preference: A review of Literature, Wildish Bianca, Auckland Council, 2015

Table 4.7.1: Household Crowding

(Source: Statistics New Zealand, Census of Population and Dwellings, 2013)

Ethnicity	Total population	Households needing at least one more bedroom	Percentage
European	134,094	3348	2.50%
Maori	15,936	1374	8.62%
Pacific	4248	756	17.80%
Asian	12,291	1197	9.74%
MELAA	1,743	162	9.29%
Other	5,004	192	3.84%

*MELAA households (Middle Eastern/Latin American/African)

4.8 Demand for Visitor Accommodation

The NPS-UDC Guide on evidence and monitoring (p28-29) identifies key sources of information that provide a proxy for analysing whether visitor demand is numerically and proportionally significant. This is done by comparing Greater Christchurch to the national average. These are: census counts of dwellings and households; and the proportion of dwellings unoccupied on census night.

Tables 4.8.1 and 4.8.2 outline the ratio of dwellings for every household and the percentage of households unoccupied on Census night. It is important to note that at the time of the census (2013) there was potentially a significant number of unoccupied dwellings counted that were signalled for demolition and this will increase the numbers for Greater Christchurch. For a breakdown by council, see appendix.

Table 4.8.1 Census Counts of Dwellings and Households

(Source: Statistics New Zealand, Census of Population and Dwellings, 2013)

Area	Ratio
New Zealand	1.13
Greater Christchurch Councils	1.17
Queenstown-Lakes	1.47

Table 4.8.2 Proportion of Dwellings Unoccupied on Census Night

(Source: Statistics New Zealand, Census of Population and Dwellings, 2013)

Area	Percentage
New Zealand	11%
Greater Christchurch Councils	13%
Queenstown-Lakes	28%

Table 4.8.1 shows that Greater Christchurch is just above the New Zealand average. The data in Table 4.8.2 shows that, taking into account the unoccupied dwellings for demolition, Greater Christchurch is consistent with the national average. Overall the tables show that visitor demand is consistent with national averages and therefore not numerically and proportionally significant to require an increase in the household projection. Further, this could be inflated by the displacement of population from the earthquakes.

5. Future Work

Further survey work is required to understand housing demand in Greater Christchurch. The survey provided needs to present people with real choices and their different consequences. This will not only help the Greater Christchurch Partnership better understand household preferences, but it will also engage residents and give them the opportunity to understand and contribute to the development of the Future Development Strategy. A recommended scope for this further survey work is provided below, which includes the analysis and incorporation of survey work currently and/or planned to be undertaken.

5.1 Current and planned surveys

The Life in Christchurch - Communities survey which went out towards the end of last year asked questions about current housing in the city and the range and choice of housing in Christchurch. The survey focuses on Christchurch Central and aims to determine if residents who work, live or visit the city would consider moving to the Central city, what typologies they would consider living in and if they believe the housing options are affordable. The survey also asks how residents feel about the central city neighbourhood in terms of services, amenities, facilities and safety. The results of this survey will be available by April 2018.

The 2018 Census, which is being held on 6 March 2018, will ask questions relating to dwellings and housing quality. Census data can be broken down to a sub-city scale, and will indicate more accurately the current and future population trends. The Census will also ask respondents questions relating to tenure, crowding, housing quality and typology. Census data will be available from December onwards.

5.2 Identifying Gaps and Recommendation for future survey

- **Older people and changing typologies**

It is estimated that by 2043 almost a quarter of the Greater Christchurch area's population will be aged 65+, leading to possible housing issues (Cooper, Sam 2017¹¹). Retrospective data on the age distribution of net migration and net change also shows that some Unit Areas are older than others and this will affect the number and type of households in the Unit Areas (Jackson, Natalie, 2017¹²). Literature and surveys from other countries suggest that elderly persons will want to downsize to one or two bedroom dwellings, however, further collection and analysis of data is required in Greater Christchurch to confirm this assumption. A starting point for data gathering can be in community meetings in the following 11 suburbs, which as noted in the report by Sam Cooper, are common locations of residence of residents aged 50yrs and over,

- Rangiora
- Belfast
- Hornby
- Barrington
- Bishopdale
- Cashmere
- West Melton
- Shirely
- Redwood
- Sockburn
- Aorangi

- **Different ethnicities and changing typologies**

People who come to New Zealand can be diverse and are likely to have different housing preferences to people coming. Currently very little information is available on the population change and the effect it is having on housing demand in Greater Christchurch. It is anticipated that the Life in Christchurch 2018 survey results, will provide some data. However, it should be noted that the survey will be for

¹¹ Sam Cooper, Elder Persons Housing in the Greater Christchurch Area: The issues and options to meet future demands of the 65+ Age Demographic, 2017

¹² Natalie Jackson, Selwyn – review of Demographics – Townships, 2017

central city only and show a preference for some housing types, therefore further research is required to identify the future housing demand and trade-offs the current population in Greater Christchurch is willing to make.

- **Location: safety, amenities, services, schools**

Location features were identified as one of the most desirable features when looking for a house, as per the Grattan Institute Study (2011)¹³. These features included, but were not limited to, safety of people and property, attractiveness of the surrounding environment and convenience and access to work, healthcare services and schools. Very little, if any, information is available in Greater Christchurch about what are the current and possible future factors that drive where people choose to live. Research is required to identify the trade-offs residents are willing to make, such as how far people are willing to travel for work, in terms of location of house. Furthermore, whether these reasons are likely to change over time, for example as one ages, their financial circumstances change, and or other conditions change such as transport costs or major improvements to an area are completed, i.e. rebuild of the central city, revitalisation of older commercial centres, the Otakaro Avon River Corridor, and Kaiapoi regeneration areas, and operation of rapid public transit routes.

- **Size of housing – number of bedrooms vs typology**

Results from national and international studies indicate that residents give priority to the number of bedrooms when choosing a dwelling. The number of bedrooms required depends on the size of the household. There is currently a gap in information regarding the relationship and trade-offs between the size of the dwelling and the typology, made by different household groups.

- **Climate change impacts**

Greater Christchurch will be affected by climate change and this will have an effect on future housing demand, as well as the current housing stock. While data has been collected and analysed regarding some impacts of climate change, such as coastal inundation and ground water flooding, further analysis is required to ascertain how the current housing stock will be affected and where new housing should be built. Research needs to be carried out to determine public perception of climate change impacts and how this will affect future housing demand in Greater Christchurch.

¹³ The Housing We'd Choose, Grattan Institute, 2011

6. Reference Materials

Resource	Location
National Policy Statement Urban Development Capacity:	http://www.mfe.govt.nz/publications/towns-and-cities/national-policy-statement-urban-development-capacity-2016
National Policy Statement Urban Development Capacity: Guide on Evidence and Monitoring:	http://www.mfe.govt.nz/publications/towns-and-cities/national-policy-statement-urban-development-capacity-guide-evidence

A. Appendices

A1. Visitor Accommodation Data

Census Counts of Dwellings and Households

Area	Dwellings	Households	Ratio
Christchurch	148,794	126,450	1.18
Selwyn	16,743	14,736	1.14
Waimakariri	20,346	18,261	1.11
Total	185,883	159,447	1.17

<http://m.stats.govt.nz/Census/2013-census/profile-and-summary-reports/qstats-families-households.aspx>

Proportion of Unoccupied Households in Greater Christchurch

Area	Occupied	Unoccupied	Percentage
Christchurch	131,010	17,784	14%
Selwyn	15,228	1,515	10%
Waimakariri	18,696	1,650	9%
Total	164,934	20,949	13%

<http://www.stats.govt.nz/Census/2013-census/data-tables/population-dwelling-tables/canterbury.aspx>

A2. Census Demographics

Topic	Variables	ChCh Central	Lyttelton Harbour	North East	North West	Port Hills	South East	South West
Usually Resident Population	Census Usual Resident Population	48,318	5,196	71,466	83,364	22,458	35,241	72,399
Broad Age Groups	Under 15 Years	6,429	891	14,556	14,574	4,179	6,783	12,966
	15–64 Years	36,390	3,477	46,689	54,867	14,322	23,379	48,510
	65 Years and Over	5,514	828	10,200	13,929	3,960	5,067	10,932
	Total people	48,318	5,193	71,451	83,367	22,455	35,232	72,387
Labour Force Status	Employed Full-time	21,252	2,133	27,309	30,798	8,943	13,248	28,476
	Employed Part-time	5,118	723	8,079	10,731	3,153	3,843	8,136
	Unemployed	1,737	111	1,881	2,193	348	1,044	1,950
	Not in the Labour Force	11,088	1,125	17,163	23,271	5,199	8,832	18,561
	Total Stated, Labour Force Status	39,213	4,098	54,435	67,005	17,643	26,967	57,120
	Work and Labour Force Status Unidentifiable	2,685	207	2,466	1,788	627	1,485	2,304
	Total	41,889	4,305	56,892	68,796	18,276	28,455	59,439
Social Welfare Recipients (excl'd Super), population aged 15 years and over	Unemployment Benefit	1,299	42	1,197	1,044	138	666	1,179
	Sickness Benefit	1,308	72	1,386	1,002	156	867	1,158
	Domestic Purposes Benefit	984	57	1,509	1,014	150	954	1,206
	Invalids Benefit	1,563	57	1,929	1,374	168	1,110	1,770
	Student Allowance	1,821	57	1,194	2,793	300	624	2,040
	No Source of Income During That Time	2,064	216	3,090	4,569	900	1,572	3,318
	Total Stated, Source of Personal Income	38,283	4,044	53,412	65,814	17,511	26,364	55,791
	Not Stated	3,603	261	3,489	2,967	768	2,091	3,648
	Total	41,882	4,305	56,904	68,793	18,276	28,452	59,433
Tenure (for households in private occupied dwellings)	Dwelling owned or partly owned	5,697	1,317	14,532	15,522	4,410	7,203	14,118
	Dwelling not owned and not held in a family trust	11,829	435	7,536	8,511	1,551	4,464	8,304
	Dwelling held in a family trust	1,566	303	2,775	4,959	2,025	1,188	2,595
	Total Stated, Tenure of Household	19,095	2,058	24,858	28,992	7,980	12,858	25,026
	Not Elsewhere Included	1,647	111	1,497	1,071	360	900	1,320

	Total	20,733	2,172	26,358	30,051	8,331	13,761	26,364
Number of Motor Vehicles (for households, in private occupied dwellings)	No Motor Vehicle	2,823	84	1,830	1,656	222	1,203	1,941
	One Motor Vehicle	8,769	735	8,886	10,173	2,217	5,418	9,225
	Two Motor Vehicles	5,604	891	9,969	11,985	3,810	4,554	9,756
	Three or More Motor Vehicles	2,121	363	4,503	5,487	1,800	1,848	4,476
	Total Stated, Number of Motor Vehicles	19,314	2,073	25,206	29,292	8,058	13,029	25,383
	Not Elsewhere Included	1,422	96	1,158	759	273	738	957
	Total	20,733	2,169	26,364	30,054	8,340	13,758	26,358

Deprivation

Division	Deprivation Decile										Total Population
	1	2	3	4	5	6	7	8	9	10	
ChCh Central	2,007	0	2,325	2,706	0	7,509	9,147	13,506	11,118	0	48,318
Lyttelton Harbour	2,337	0	2,859	0	0	0	0	0	0	0	5,196
North East	7,203	8,745	2,574	10,035	10,326	11,169	0	15,780	1,824	3,810	71,466
North West	5,367	20,484	11,037	13,872	20,127	1,833	5,496	0	5,148	0	83,364
Port Hills	19,104	1,371	1,983	0	0	0	0	0	0	0	22,458
South East	2,442	4,155	0	6,297	0	0	5,652	8,910	7,785	0	35,241
South West	9,615	1,956	8,721	9,606	657	4,776	34,185	2,883	0	0	72,399

Version Control

Date: 26 February 2018
Version: Draft V3
Contributors: GC Housing Capacity Assessment Team
Purpose: Housing Demand information across the organisations
Owner: Greater Christchurch Partnership



RESEARCH REPORT

Housing Demand in Greater Christchurch

Attention: Ms S Oliver
The Greater Christchurch Partnership

November 2017

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Every effort has been made to ensure the soundness and accuracy of the opinions, information, and forecasts expressed in this report. Information, opinions and forecasts contained in this report should be regarded solely as a general guide. While we consider statements in the report are correct, no liability is accepted for any incorrect statement, information or forecast. We disclaim any liability that may arise from any person acting on the material within.



1. Summary of key findings

In accordance with your instructions we have prepared our report on the current and future housing demand in Greater Christchurch. This report has been prepared for The Greater Christchurch Partnership to assist them with their obligations under the National Policy Statement (NPS) on Urban Development Capacity 2016. In accordance with the requirements of the NPS the demand estimates are presented for the following timeframes short term (0 to 3 years), medium term (4 to 10 years), and long term (11 to 31¹ years). This report should not be used for any other purpose or by any other party.

The assignment's objective is to provide detailed analysis of housing demand by a range of demographic characteristics including:

- Tenure (owner occupiers, private renters and the need for social housing);
- Age of the household reference person;
- Household composition (household types will include couple only, couples with children, one parent, one person and other);
- Implications of the research on demand for different housing typologies; and
- Trends in the relative level of housing need.

Methodology overview

The demand projections presented in this report use population and household projections sourced from Statistics New Zealand although with property market data sourced from the Ministry of Business Innovation and Employment's (MBIE) urban development growth dashboard. The modelling methodology tracks household cohorts (by age, household composition and tenure) using a multi-dimensional data matrix approach to model the number of households by tenure age and household composition between 1991 and 2048. The marginal propensity of the household cohorts for different types of dwelling typologies are used to model demand for standalone and multi-unit dwellings.² All projections of future market trends are subject to modelling variations relative to actual outcomes. The further into the future the outcomes are projected the greater the likely variation between actual and modelled demand estimates. The demand estimates are not restricted by current policy settings and/or the provision of infrastructure which may limit utilisable development capacity within a submarket.

¹ A 31 year period was used in the context of this report to ensure the potential growth in demand over the NPS study period was fully encapsulated into the study.

² A more detailed overview of the methodology is presented in Appendix 2.



Household projections

Table 1.1 presents the projected change in the total number of households living in Waimakariri, Christchurch City and Selwyn UDS areas 2017³ and 2048.

Table 1.1: The projected number of households in Waimakariri, Christchurch City and Selwyn UDS areas 2017 to 2048

Year	Number of households			Total change in the number of households			Annual average change in households		
	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS
2017	18,080	147,020	16,590						
2020 (0 to 3 yrs)	20,020	153,490	19,170	1,940	6,470	2,580	650	2,160	860
2027 (4 to 10 yrs)	23,960	165,920	24,410	3,940	12,430	5,240	560	1,780	750
2048 (11 to 31 yrs)	32,540	187,840	37,360	8,580	21,920	12,950	410	1,040	620

Source: Modelled based on data from Statistics New Zealand

Demand by demographic characteristics and tenure

Greater Christchurch, like the rest of the country, has experienced a significant fall in the relative level of owner occupation particularly in younger aged cohorts. In addition to these demographic changes poor housing affordability is projected to result in the ongoing erosion of the rates of owner occupation in Greater Christchurch. For example, between 1991 and 2013, median house prices increased 334% in Waimakariri District, 380% in Christchurch City and 547% in Selwyn District. Over the same time period household incomes increased by approximately one third of the rate (121% in Waimakariri District, 110% in Christchurch City, and 140% in Selwyn District).

The rapid rise in house prices relative to household incomes has been partly offset by falling interest rates, increased availability of credit and more liberal bank lending policies. However, these trends (starting in the early 1990s) have resulted in a significant fall in the proportion of owner occupiers particularly for younger age cohorts. As the younger cohorts aged (from 1991 to 2013) they have reduced the average level of owner occupation across greater Christchurch.

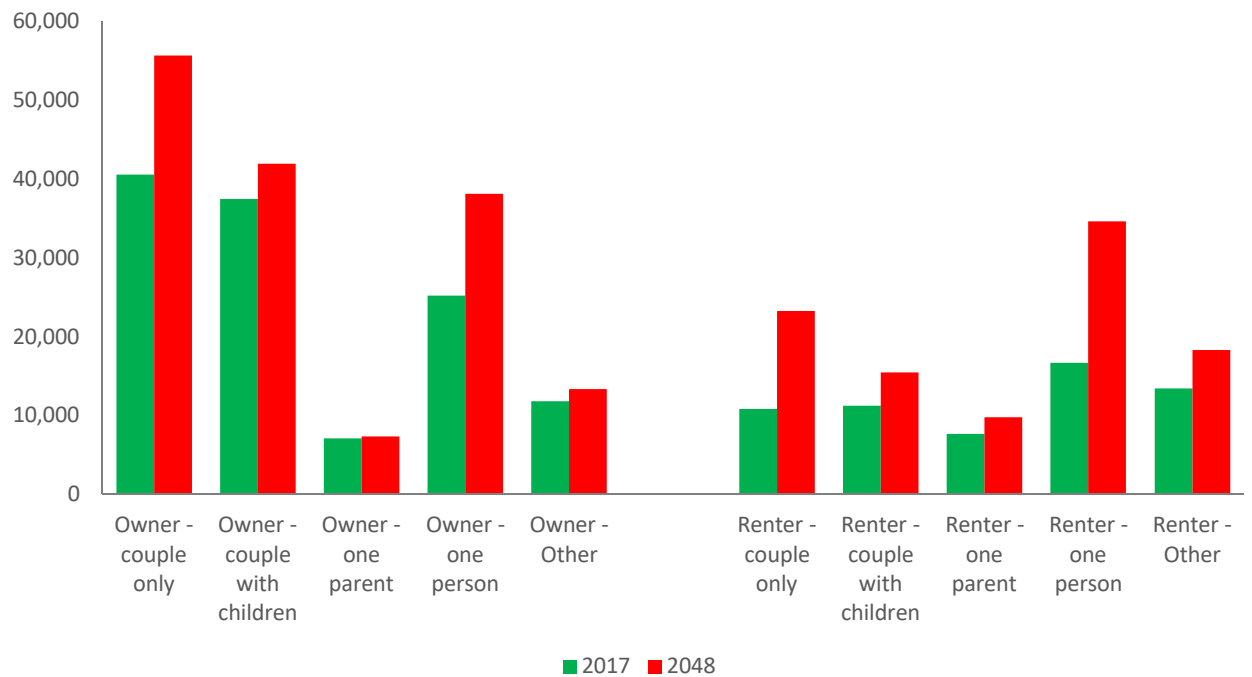
The tenure trend in cohorts by age and household composition are used as the basis for modelling future tenure trends. Greater Christchurch’s rates of owner occupation fell from 70.4% in 2001 to 67.9% in 2013. Tenure modelling projections indicate that the rate of owner occupation will erode to 60.7%, a 7.2 percentage point fall, between 2013 and 2048. This implies that the number of owner occupied households will increase by 34,370, or 28%, between 2017 and 2048 while the number of renter households are projected to increase by 41,660, or 69%, over the same time.

³ The number of households as at 2017 is modelled from the population and household projections available from Statistics New Zealand although with their population estimates available at the time the report was written.



Figure 1.1 presents the projected trend in the number of households living in Greater Christchurch by household composition and tenure between 2017 and 2048.

Figure 1.1: The projected number of households living in Greater Christchurch by tenure and composition 2017 to 2048



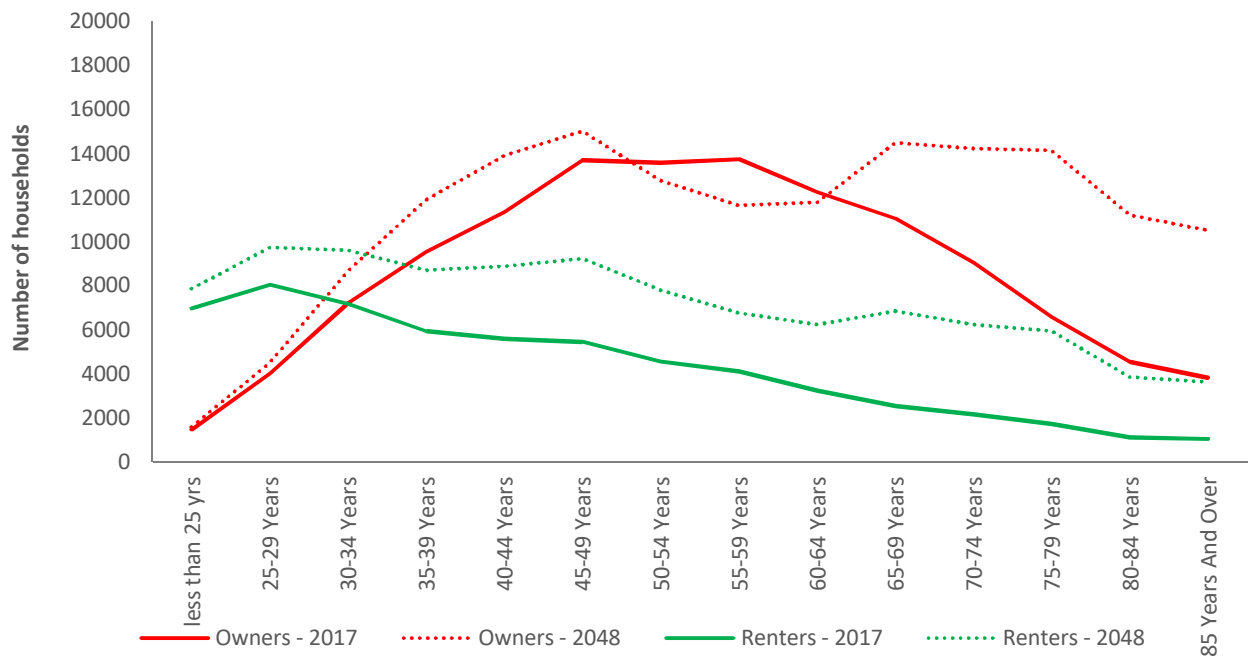
Source: Modelled based on data from Statistics New Zealand

Couple only renter households are projected to experience the strongest proportional growth increasing by 115% (or 12,450 households) between 2017 and 2048 and one person renter households are also projected to grow by 108% (or 17,950 households) over the same time period. Owner occupied households with couple only and one person compositions are also projected to experience strong growth increasing by 37% and 51% respectively between 2017 and 2048.



Figure 1.2 presents the projected trend in the number of households living in Greater Christchurch by tenure and age of the household reference person⁴ between 2017 and 2048.

Figure 1.2: The projected number of households living in Greater Christchurch by tenure and age of the household reference person 2017 to 2048



Source: Modelled based on data from Statistics New Zealand

Renter households are expected to increase across most age groups whilst the growth in owner occupied households is concentrated in those with household reference people aged 65 years and older.

Demand by dwelling typology

The implications of the demographic and tenure trends on the housing demand for dwellings by typology⁵ is presented in Figure 1.3. Figure 1.3 presents the projected growth in demand in Greater Christchurch between 2017 and 2048. Dwelling typology is divided into the following categories; standalone dwelling⁶ with two bedrooms or less; standalone dwelling with three bedrooms or more; multi-unit dwelling⁷ with two bedrooms or less; and multi-unit dwelling with three bedrooms or more.

⁴ The household reference person is the person who completes the census dwelling questionnaire. They are assumed to be representative of the age of the key people living in the dwelling.

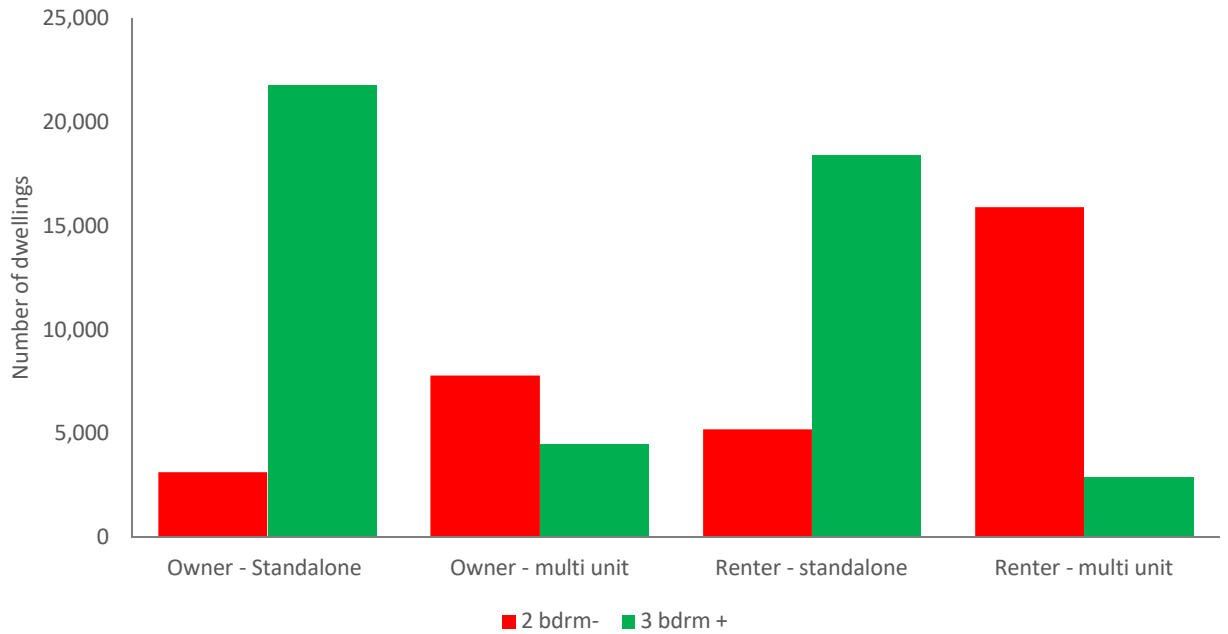
⁵ An overview of the methodology used is presented in Appendix 2 and assumes the propensity for households with different characteristics (age, household composition and tenure) for different dwelling typologies remains the same between 2017 and 2048.

⁶ A standalone dwelling is defined as a house which is free standing and not attached to any other dwelling.

⁷ A multi-unit dwelling are units in any building where two or more dwellings are attached. This category includes all dwellings that are not standalone and consequently includes duplexes, terraced housing and apartments.



Figure 1.3: The implication of demographic and tenure projections on the demand in Greater Christchurch by dwelling typology and tenure between 2017 and 2048.



Source: Modelled based on Statistics New Zealand data

Demand for standalone dwellings is predominately for units with three or more bedrooms whilst multi-unit demand is typically for units with fewer bedrooms. Renters have a higher propensity to rent multi-unit dwellings relative to standalone dwellings. Between 2017 and 2048 standalone dwellings account for 65% of the projected growth from owner occupiers and 56% of the renter household growth. These trends reflect the households' current propensity (by tenure, age and household composition) to live in the dwellings currently available within the Greater Christchurch housing market. These propensities can change over time particularly if developers innovate and provide different dwelling configurations at affordable prices.

Housing affordability

Housing affordability comes under pressure when housing costs increase at a faster rate than household incomes. Variations in interest rates can mask the underlying trends in first home buyer affordability in the short to medium term.

Table 1.2 presents the trend in median house sale prices, rents and household incomes between 1991 and 2013.



Table 1.2: Median house prices, median rents and median gross household incomes – 1991 to 2013

	Median sale price, rents and household income					% change 1991 to 2013	
	Mar-91	Mar-96	Mar-01	Mar-06	Mar-13	Total %	Annual Ave
House prices							
Waimakariri	\$91,000	\$130,000	\$145,000	\$280,000	\$395,000	334%	6.9%
Christchurch City	\$85,000	\$142,100	\$162,500	\$210,800	\$408,000	380%	7.4%
Selwyn	\$75,000	\$123,250	\$149,000	\$331,300	\$485,000	547%	8.9%
House rents							
Waimakariri	\$145	\$175	\$180	\$254	\$382	163%	4.5%
Christchurch City	\$180	\$200	\$210	\$300	\$410	128%	3.8%
Selwyn	\$123	\$175	\$175	\$305	\$450	266%	6.1%
Household incomes							
Waimakariri	\$31,100	\$34,700	\$39,700	\$50,900	\$68,800	121%	3.7%
Christchurch City	\$31,100	\$32,900	\$36,500	\$48,200	\$65,300	110%	3.4%
Selwyn	\$35,500	\$39,100	\$47,200	\$62,500	\$85,100	140%	4.1%

Source: Statistics New Zealand, MBIE and Corelogic

The deterioration in housing affordability is a result of housing costs increasing at a faster rate than household incomes. House prices have increased at over double the annual average compounded as household incomes whereas rents have increased at between 0.4 and 2.0 percentage points faster than household incomes. These trends have had an impact on key affordability measures over time. Between 1991 and 2013, house prices in Waimakariri UDS areas have increased at 3.2 percentage points faster per annum than household incomes. Over the same time period rents increased 0.8 percentage points faster than household incomes.

As housing costs increase faster than household incomes housing affordability has declined placing increased financial pressure on households. Christchurch City and Selwyn UDS areas experienced similar trends with house prices increasing faster than incomes (5.0 percentage points per annum in Christchurch City and 4.8 percentage points in Selwyn) and rents also increasing faster than incomes (0.4 percentage points per annum in Christchurch City and 2.0 percentage points per annum in Selwyn). The rapid increase in rents in Selwyn is likely to have placed significant financial pressure of the renter households particularly those with low incomes.

The higher growth in house prices and rents relative to household incomes has deteriorated the ability of households to rent or purchase suitable affordable dwellings. Table 1.3 summarises renter household’s ability to affordably⁸ rent or buy a dwelling as at 2017. The table presents the number of households in 2017 unable to affordably rent or buy a dwelling at key price points.

⁸ A household’s ability to affordably purchase or rent a dwelling assumes they spend no more than 30% of their gross household income on housing costs.



Table 1.3: The number of households unable to affordably rent or rent a dwelling at key price points in 2017

Expressed in 2017\$	Waimakariri UDS areas		Christchurch City UDS		Selwyn UDS areas	
	No of hhlds	Accumulative total	No of hhlds	Accumulative total	No of hhlds	Accumulative total
Rents (\$ per week)						
less than \$300	1,760	1,760	22,240	22,240	550	550
\$300 to \$350	320	2,080	3,150	25,390	130	680
\$350 to \$400	240	2,320	3,150	28,540	180	860
\$400 to \$450	240	2,560	2,820	31,360	180	1,040
\$450 to \$500	210	2,770	2,300	33,660	190	1,230
More than \$500	1,090	3,860	18,820	52,480	1,810	3,040
House prices						
less than \$300,000	2,150	2,150	26,820	26,820	740	740
\$300,000 to \$350,000	290	2,440	3,830	30,650	220	960
\$350,000 to \$400,000	290	2,730	3,740	34,390	230	1,190
\$400,000 to \$450,000	210	2,940	2,790	37,180	250	1,440
\$450,000 to \$500,000	210	3,150	2,800	39,980	250	1,690
More than \$500,000	720	3,870	12,830	52,810	1,370	3,060

Source: Modelled based on Statistics New Zealand data and MBIE

The key rental price points varies with 60% of renters unable to affordably rent at \$400 in Waimakariri UDS area, 54% in Christchurch City UDS areas, and 28% in Selwyn UDS areas. Key affordable purchase price points for renters also varies, with 71% of renters living in Waimakariri unable to affordably purchase a dwelling at \$400,000. Whereas, 65% of Christchurch city renters and 39% of Selwyn UDS renters are unable to affordably purchase a dwelling at \$400,000,

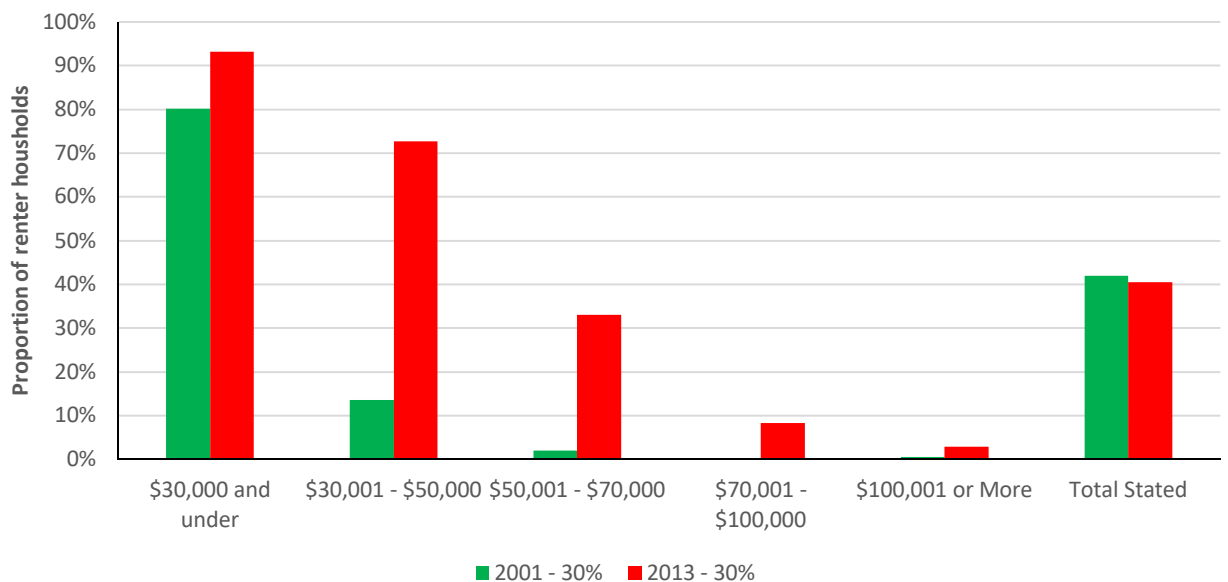
The deterioration in housing affordability has increased the number of private renter households experiencing housing stress⁹.

⁹ A renter household is defined as stressed when they are paying more than 30% of their gross household income in rent..



Figure 1.4 presents the trend relating to the level of housing stress between 2001 and 2013 by gross household income in Greater Christchurch.

Figure 1.4: Housing stress by gross household income 2001 and 2013 in Greater Christchurch



Source Statistics New Zealand

The proportion of households experiencing housing stress increased for renters earning \$30,000 to \$50,000 (from 14% to 73%) between 2001 and 2013. Over the same time period the proportion of households earning between \$50,000 and \$70,000 experiencing housing stress increased from 2% to 33%. Typically, private renter housing stress is higher for low income households. Modelling (taking into account recent market trends) estimates 25,180 private renter households are experiencing housing stress in 2017.

Housing need

Housing need is a measure of the total number of renter households within a community which require some assistance¹⁰ to meet their housing requirements. Total **‘renter housing need’** encapsulates a number of different groups of households and includes the following groups:

- Financially stressed private renter households;
- Those households whose housing requirements are met by social, third sector and emergency housing; and
- People who are homeless or living in crowded dwellings.

Total renter housing need = stressed private renter households + social housing tenants + others

¹⁰ Assistance can come in a number of ways. These can include financial assistance from central government topping up incomes with an allowance (such as the accommodation supplement), by the provision of subsidised housing stock by local and central government or community housing providers, and from emergency housing providers



‘Other need’ encapsulates those households who because of their circumstances have housing needs in addition to affordability. Other housing need is defined as the number of households, who because of their circumstances are in Housing New Zealand Corporation (HNZC), local authority, third sector and emergency housing, crowded households, or are homeless. Table 1.4 presents the analysis of total housing need as at 2017.

Table 1.4: Total housing need in Greater Christchurch as at 2017

	Financial Housing Stress (A)	Other Need			Total Housing Need (A + D)	% of All Renters	% of All Households
		Social Renters (B)	Other (C)	Total Other Need (B + C = D)			
Waimakariri UDS	1,670	250	130	380	2,050	53%	11%
Christchurch UDS	22,500	8,450	2,390	10,840	33,340	63%	23%
Selwyn UDS	1,010	10	160	170	1,180	39%	7%
Greater Christchurch	25,180	8,710	2,680	11,390	36,570	61%	20%

NB: Numbers are rounded to the nearest 10.

NB: The analysis is based on data from census, population projections (CCC & Statistics New Zealand), MBIE, and HNZC.

The overall level of housing need is greater in Christchurch City UDS submarkets than the balance of Greater Christchurch. This is a reflection of the higher number of low income renters and social renters living in the city. Greater Christchurch’s relative level of housing stress is slightly higher than Greater Wellington (54% of all renters) and lower than areas such as Porirua (68% of all renters) and Masterton (67% of all renters). Waimakariri and Selwyn UDS submarkets have relatively lower levels of housing need which is a reflection of the relative income distribution of the households living in their submarkets.

The relative level of housing need is expected to increase across Greater Christchurch. Between 2017 and 2048 total need is projected to increase by 2,910 households (or 141%) in Waimakariri UDS submarkets, 20,970 household or 63% in Christchurch’s UDS submarkets and 3,030 households or 256% in Selwyn’s UDS submarkets. A total of 79% of the projected increase in total need is expected to occur in Christchurch City’s UDS submarkets. Housing need as a proportion of all renters falls between Selwyn District and Christchurch City and consistent with the trend in the other areas is expected to experience an increase in the proportion of needy households over the next 31 years.

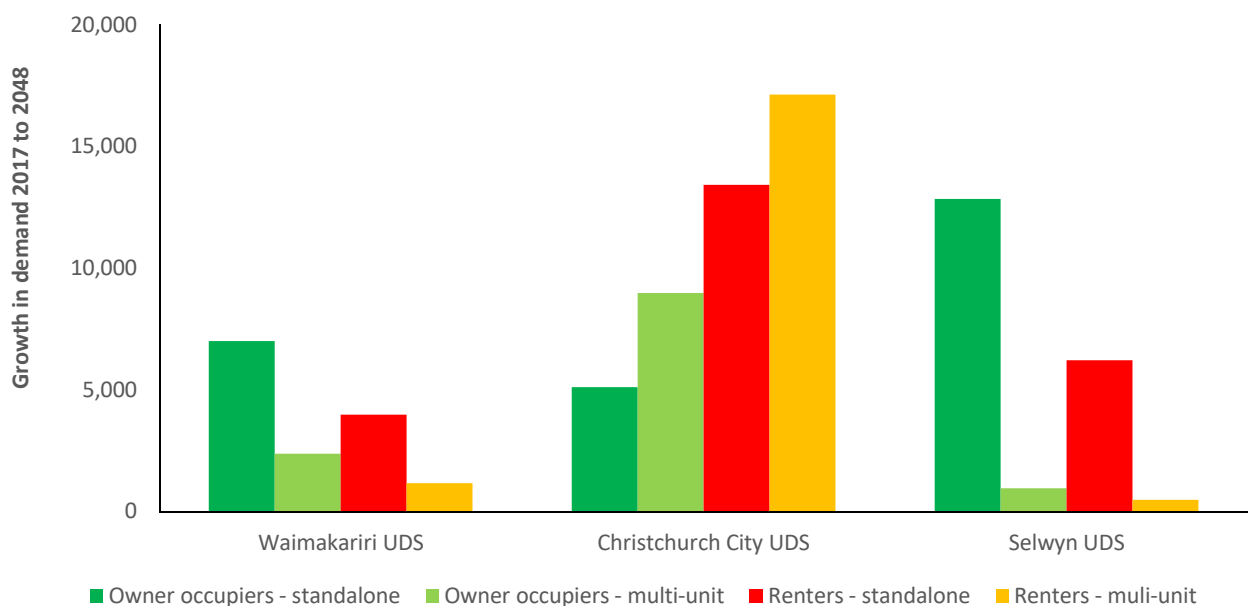
This is primarily a reflection of the projected increase in the number of older one person and couple only renter households aged 65 years and older. As these relatively fixed low income households increase as a proportion of all renter households the level of housing need increases.



In summary, the number of households living in Greater Christchurch is projected to increase by 42% increase over the next 30 years. However, the nature of the demand is likely to change reflecting the variation in the metropolitan area’s households by age of the household reference person and household composition. These trends combined with a fall in the proportion of owner occupiers is likely to have a significant impact on the nature of housing demand over the next thirty years. Greater Christchurch’s aging population will be reflected in significant growth in the number of one person and couple only households. If these demographic trends are reflected in households’ housing demand there will be a significant increase in the requirement for smaller and multi-unit dwellings.

Demand is projected to be unevenly distributed within Greater Christchurch. Figure 1.5 presents the projected growth by dwelling typology in Waimakariri, Christchurch City and Selwyn UDS areas between 2017 and 2048.

Figure 1.5: Projected growth in demand by dwelling typology between 2017 and 2048 in Waimakariri, Christchurch City and Selwyn UDS areas



Source: Modelled based on Statistics New Zealand data
NB: These projections assume the underlying demographic trends and changes in the proportion of owner occupied dwellings are reflected in housing demand estimates

The projected growth in demand in Waimakariri and Selwyn UDS areas is expected to be dominated by the demand for standalone dwellings. Between 2017 and 2048, demand is projected to increase by 10,980 for standalone dwellings and by 3,550 for multi-unit dwellings in Waimakariri UDS area. Selwyn UDS area is projected experience similar growth with the demand for standalone dwellings increasing by 19,040 while demand for multi-unit dwellings is projected to increase by 1,420. The pattern of growth is projected to be different in Christchurch UDS area driven in part by the higher proportion of renter households and an older population. Between 2017 and 2048, Christchurch UDS area is projected to experience growth in demand for an additional 18,520 standalone dwellings and 26,080 multi unit dwellings.



2. Introduction

In accordance with your instructions we have prepared our report on the current and future housing demand in Greater Christchurch. This report has been prepared for the Greater Christchurch Partnership to assist them with their obligations under the National Policy Statement (NPS) on Urban Development Capacity 2016. In accordance with the requirements of the NPS the demand estimates are presented for the following timeframes short term - 2017 to 2020 (0 to 3 years), medium term - 2020 to 2027 (4 to 10 years), and long term - 2027 to 2048 (11 to 31 years). The end date of 2048 was chosen to ensure total growth fully encapsulated housing demand during the long term 30 year horizon included in the NPS. This report should not be used for any other purpose or by any other party.

The assignment's objective is to provide detailed analysis of housing demand by a range of demographic characteristics including:

- Tenure (owner occupiers, private renters and the need for social housing);
- Age of the household reference person;
- Household composition (household types will include couple only, couples with children, one parent, one person and other); and
- Demand at different price points.

The implications of these trends in terms of the type and size of dwelling typology required for future growth are included. The range of dwelling typologies included in the analysis are standalone housing, multi-unit dwellings and apartments. In addition to the overall demand estimates, housing affordability trends for both owner occupier and renter households are presented.

The results of the analysis are summarised for the Greater Christchurch housing market with additional analysis provided for the following sub-markets¹¹. The submarkets in Christchurch City include:

- Central City;
- North-west;
- North-east;
- South-west;
- South-east;
- Port Hills; and
- Lyttelton Harbour.

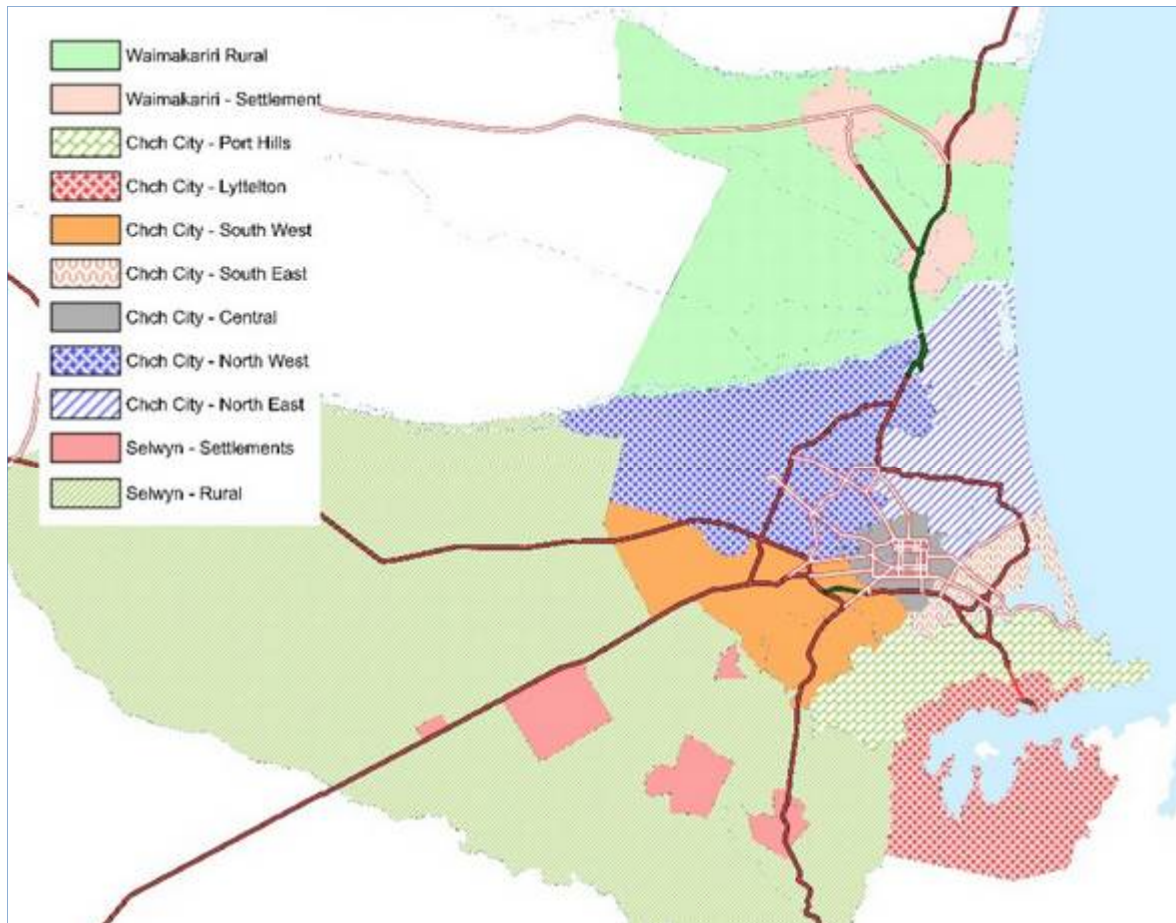
Selwyn District sub areas will include Selwyn UDS Settlements and Selwyn UDS Rural. Waimakariri District sub areas will include Waimakariri UDS Settlements and Waimakariri UDS Rural.

¹¹ Definition of the sub area boundaries is included in appendix 1.



Figure 2.1 presents the geographical boundaries of these sub-markets.

Figure 2.1: Sub-market boundaries



Note as agreed, West Mellon statistical area unit is included in Selwyn Rural submarket

The central city submarket is an amalgamation of 17 statistical area units. Initially our objective was to have a CBD submarket (including the following area units; 591500-Cathedral Square; 591600-Hagley Park and 591700-Avon Loop), however, the significant change in the area’s population caused by the 2010/2011 earthquakes caused sufficient disruption to the structure of these communities to make this impractical in terms of modelling future housing demand. Consequently, they were combined in with the surrounding inner- city suburbs to provide the central city submarket included in Figure 2.1.

Data sources used in this report include Statistics New Zealand’s census data, building consent information and their population estimates and projections. We note the different time frames and definitions used in these data sets adds to the complexity of modelling future housing demand and alignment these would be advantageous. For example, census have an effective March date whilst the population and household projections are as at 30th June. Census and population projections also have slightly different definition on usually resident people and households. We would recommend that MBIE consider aligning the dates within the National Policy Statement for Urban Development with the key dates used by Statistics New Zealand.



3. Housing demand by location and demographic characteristic

3.1 Introduction

The objective of this section of the report is to present the results of the housing demand analysis between 2017 and 2048 by demographic characteristic and tenure for Greater Christchurch and by sub-market. Demographic characteristics included in the analysis are age of the household reference person and household composition. The implications of these trends on demand by dwelling typology are also presented. An overview of the modelling methodology is presented in Appendix 2. Appendix 3 presents the demand projections in more detail. The demand projections have been rounded to the nearest 10 and in some cases, this may result in small differences in the totals between different tables.

The rationale for the adoption of the population projections used in this report was provided in the Greater Christchurch Partnerships Methodology for the Housing Capacity Assessment. The projections used assume Christchurch City's population increases in line with Statistics New Zealand medium population projection scenario. Selwyn's and Waimakariri's populations are assumed to increase in line with Statistics New Zealand's medium/high population growth scenario.

3.2 Greater Christchurch housing demand

Table 3.1 presents the projected change in the total number of households living in Greater Christchurch between 2017 and 2048. These projections are consistent with the population projections used in the Greater Christchurch Partnerships Methodology for the Housing Capacity Assessment. The projections used assume Christchurch City's population increases in line with Statistics New Zealand medium population projection scenario. Selwyn's and Waimakariri's populations are assumed to increase in line with Statistics New Zealand's medium/high population growth scenario. The number of households living in each area in 2017 is modelled from the population and household projections.

Table 3.1: Total projected number of households living in Greater Christchurch 2017 to 2048

Year	Number of households			Total change in the number of households			Annual average change in households		
	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS
2017	18,080	147,020	16,590						
2020 (0 to 3 yrs)	20,020	153,490	19,170	1,940	6,470	2,580	650	2,160	860
2027 (4 to 10 yrs)	23,960	165,920	24,410	3,940	12,430	5,240	560	1,780	750
2048 (11 to 31 yrs)	32,540	187,840	37,360	8,580	21,920	12,950	410	1,040	620

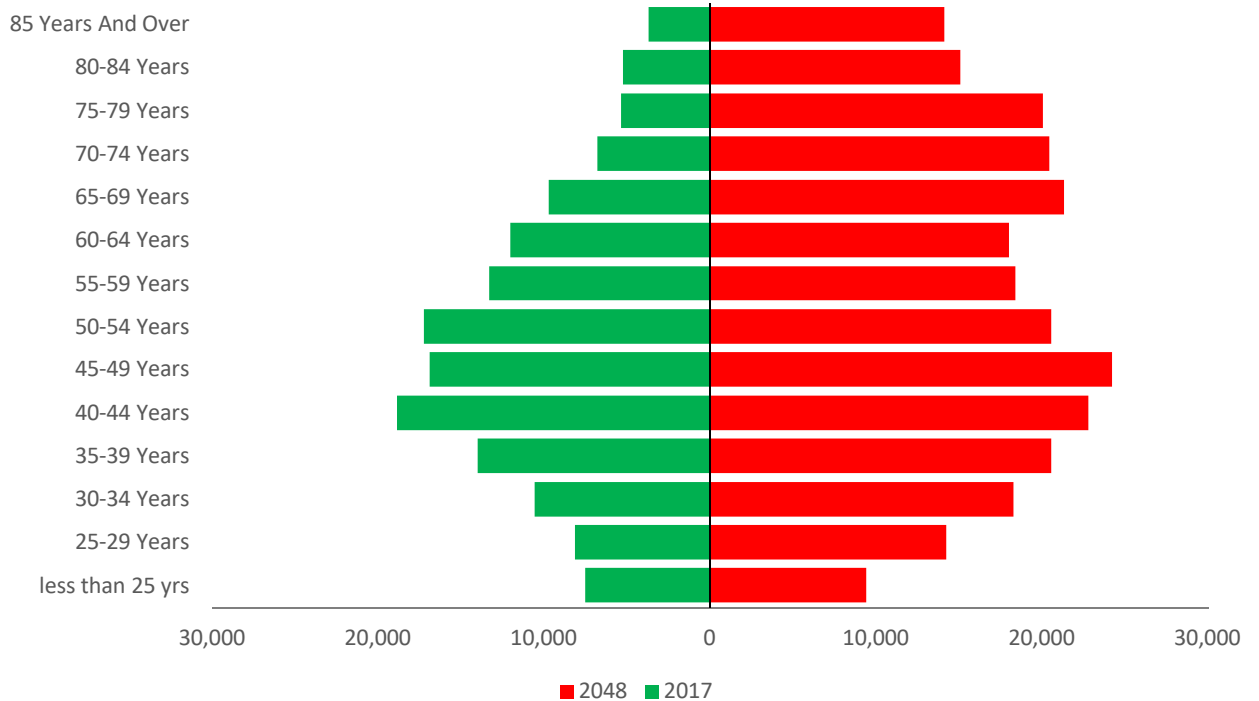
Source: Modelled based on data from Statistics New Zealand



Greater Christchurch’s population is expected to increase by 76,050 households, or 42%, between 2017 and 2048. The number of households in Selwyn is expected to experience the fastest growth increasing by 125% between 2017 and 2048 followed by 80% growth in Waimakariri and 28% in Christchurch city UDS areas over the same time period. At the same time the characteristics of Greater Christchurch’s population is expected to change. Like the rest of New Zealand, the projections demonstrate an aging of the population.

Figure 3.1 presents the number of households living in Greater Christchurch by the age of the household reference person¹² in 2017 and 2048.

Figure 3.1: Greater Christchurch’s households by age of the household reference person – 2017 and 2048



Source: Modelled based on data from Statistics New Zealand

¹² The household reference person is the person who completes the census dwelling questionnaire. They are assumed to be representative of the age of the key people living in the dwelling.



Table 3.2 presents the projected trend in the number of households living in Greater Christchurch by the age of the household reference person.

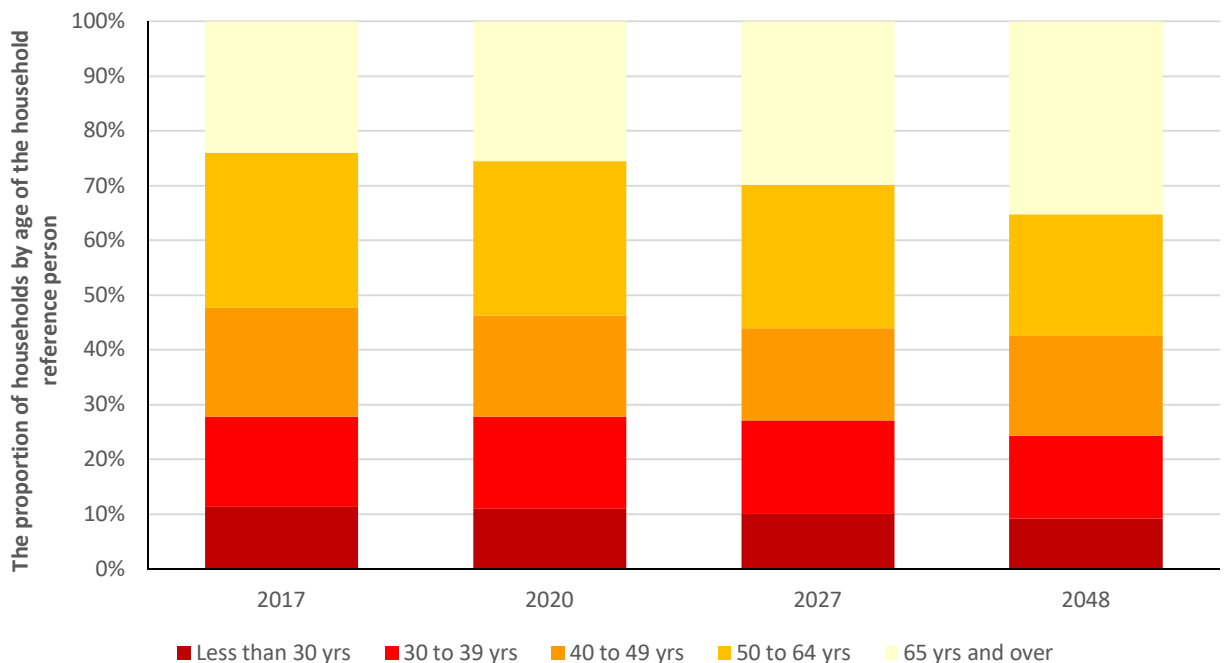
Table 3.2: Number of households living in Greater Christchurch by age of the household reference person – 2017 to 2048

	Less than 30 yrs	30 to 39 yrs	40 to 49 yrs	50 to 64 yrs	65 yrs and over	Total
2017	20,530	29,910	36,080	51,510	43,690	181,720
2020	21,150	32,400	35,470	54,350	49,330	192,700
2027	21,310	36,770	36,010	56,100	64,120	214,310
2048	23,700	38,900	47,060	57,020	91,070	257,750
Annual change						
2017 to 2020	210	830	-200	950	1,880	3,660
2020 to 2027	20	620	80	250	2,110	3,090
2027 to 2048	110	100	530	40	1,280	2,070

Source: Modelled based on data from Statistics New Zealand

Figure 3.2 presents the proportion of households living in Greater Christchurch by age of the household reference person between 2017 and 2048.

Figure 3.2: Proportion of households living in Greater Christchurch by age of the household reference person



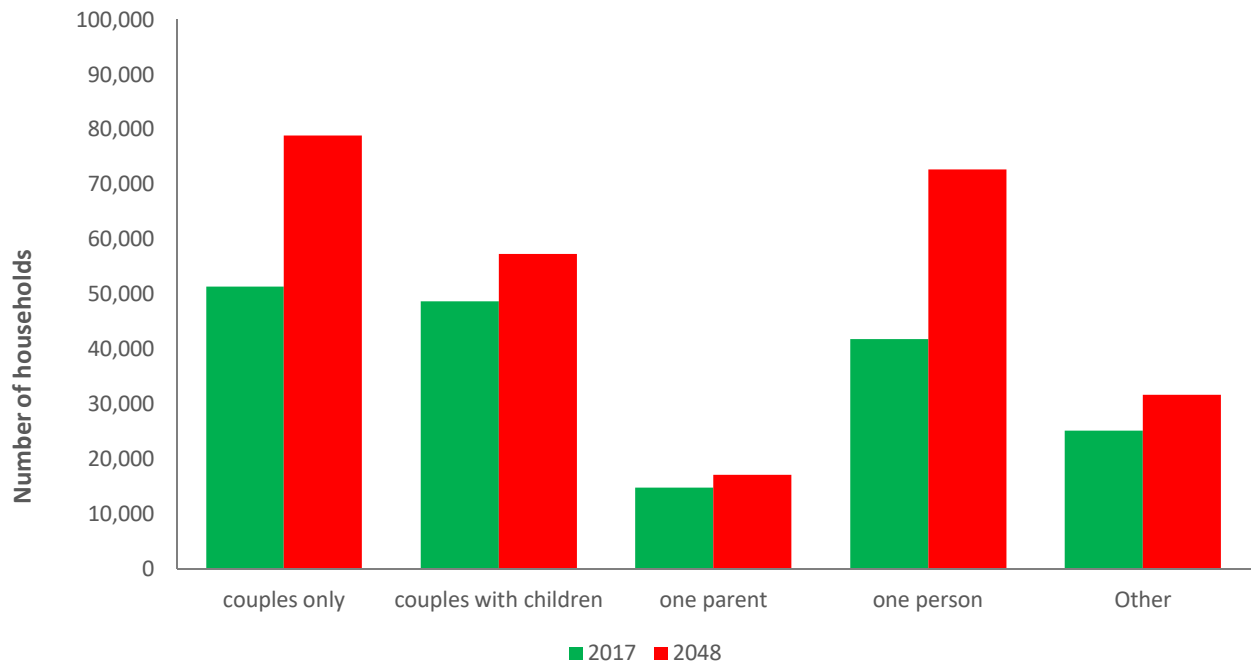
Source: Modelled based on Statistics New Zealand data

The proportion of households with reference people aged 65 years and older is projected to increase from 24% in 2017 to 35% by 2048.



Figure 3.3 presents the projected change in the number of households living in Greater Christchurch by household composition between 2017 and 2048.

Figure 3.3: Greater Christchurch’s households by household composition – 2017 and 2048



Source: Modelled based on data from Statistics New Zealand

Table 3.3 presents the projected trend in the number of households living in Greater Christchurch by household composition.

Table 3.3: Number of households living in Greater Christchurch by household composition – 2017 to 2048

Household Composition	Number of households				Annual change in the number of households		
	2017	2020	2027	2048	17 to 20	20 to 27	27 to 48
couple only	51,310	56,120	65,880	78,910	1,600	1,390	650
couple with	48,710	49,930	51,350	57,350	410	200	300
one parent	14,740	15,280	15,680	17,120	180	60	70
one person	41,840	45,500	54,180	72,750	1,220	1,240	930
Other	25,120	25,860	27,230	31,620	250	200	220
Total	181,720	192,690	214,320	257,750	3,660	3,090	2,170

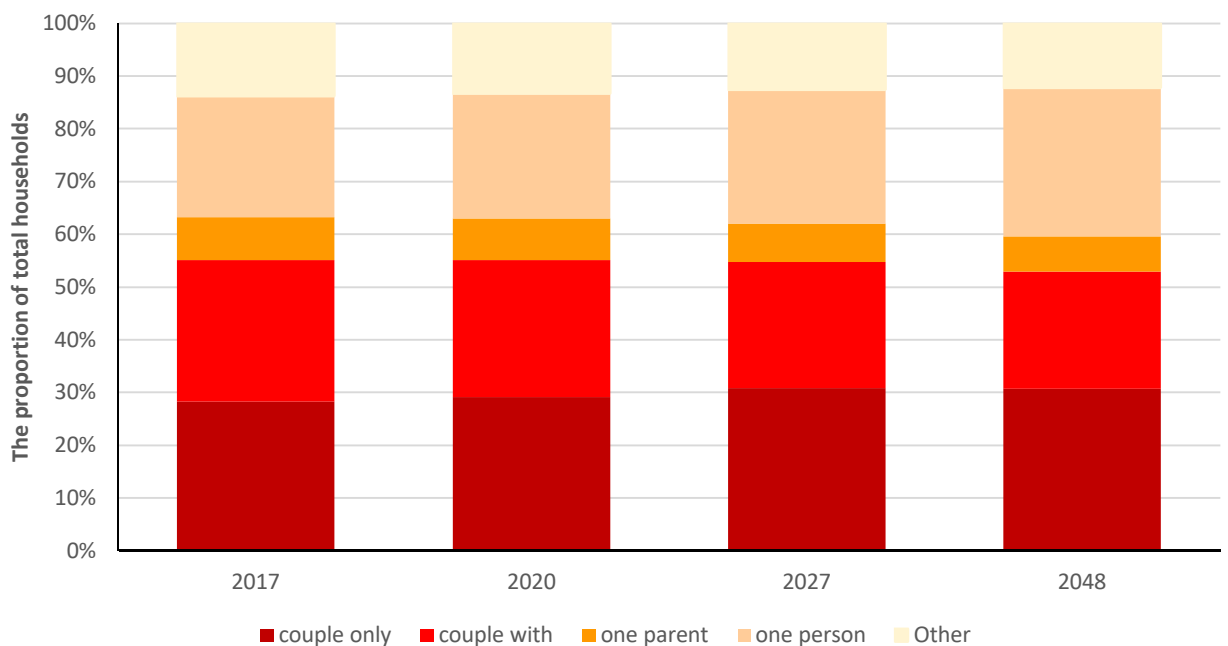
Source: Modelled based on data from Statistics New Zealand



The change in the age profile of Greater Christchurch’s population also has implications for the proportion of the types of households living in the area. Between 2017 and 2048, couple only and one person households are projected to experience the strongest growth increasing by 27,600 households (or 54%) and 30,910 households (or 74%), respectively. These trends are similar to the national trends.

Figure 3.4 presents the trend in the proportion of households by composition between 2017 and 2048 for Greater Christchurch.

Figure 3.4: The proportion of households living in Greater Christchurch by composition 2017 to 2048



Source: Modelled based on Statistics New Zealand data

As the population ages the proportion of couples without children and one person households increases. Between 2017 and 2048 couples without children are projected to increase by 27,600 or 54% and one person households by 30,910 or 74%. These household groups are projected to account for 77% of the total growth between 2017 and 2048. National trends are similar although the proportion of households are large for some household types. The proportion of couples with children is projected to decline by 5 percentage points in Greater Christchurch and 4 percentage pints nationally between 2017 and 2048. Over the same time period the proportion of one person households is expected to increase by 5 percentage points in both Greater Christchurch and nationally.

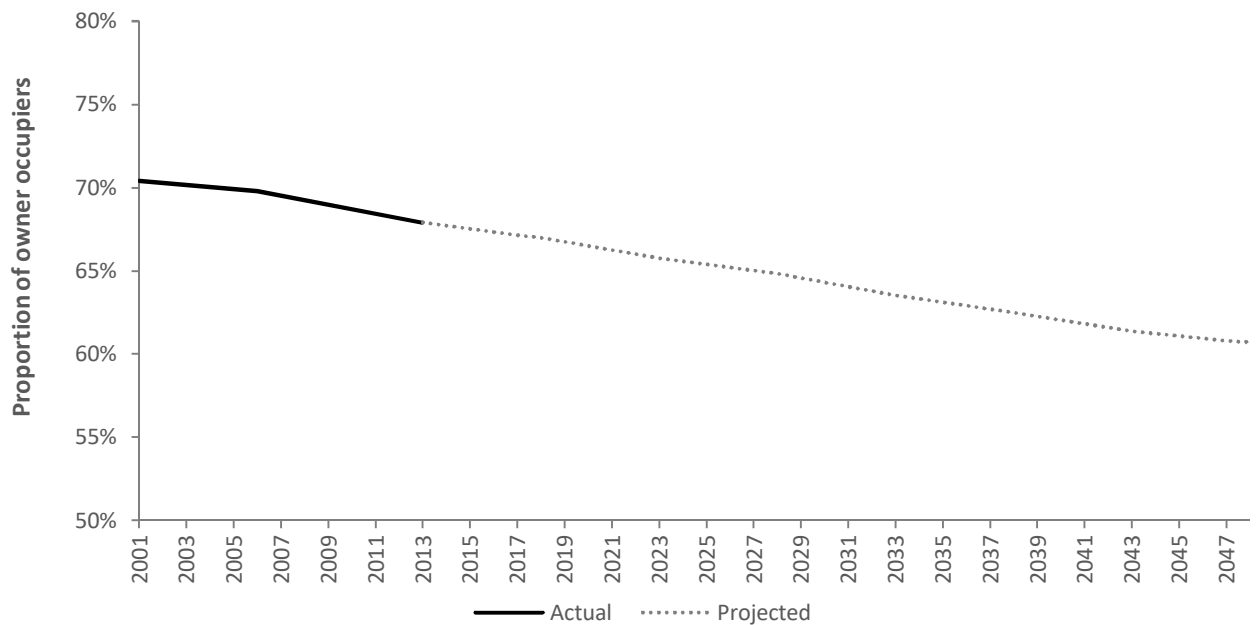
In addition to these demographic changes poor housing affordability is projected to result in the ongoing erosion of the rates of owner occupation in Greater Christchurch. For example, between 1991 and 2013, median house prices increased 334% in Waimakariri District, 380% in Christchurch City and 547% in Selwyn District. Over the same time period household incomes increased by approximately one third of the rate (121% in Waimakariri District, 110% in Christchurch City, and 140% in Selwyn District).



The rapid rise in house prices relative to household incomes has been partly offset by falling interest rates, increased availability of credit and more liberal bank lending policies. However, these trends (starting in the early 1990s) have resulted in a significant fall in the proportion of owner occupiers particularly for younger age cohorts. As the younger cohorts aged (from 1991 to 2013) they have reduced the average level of owner occupation across greater Christchurch.

Figure 3.5 presents the projected change in the rate of owner occupation in Greater Christchurch between 2017 and 2048.

Figure 3.5: Actual and projected rate of owner occupation in Greater Christchurch 2001 to 2048



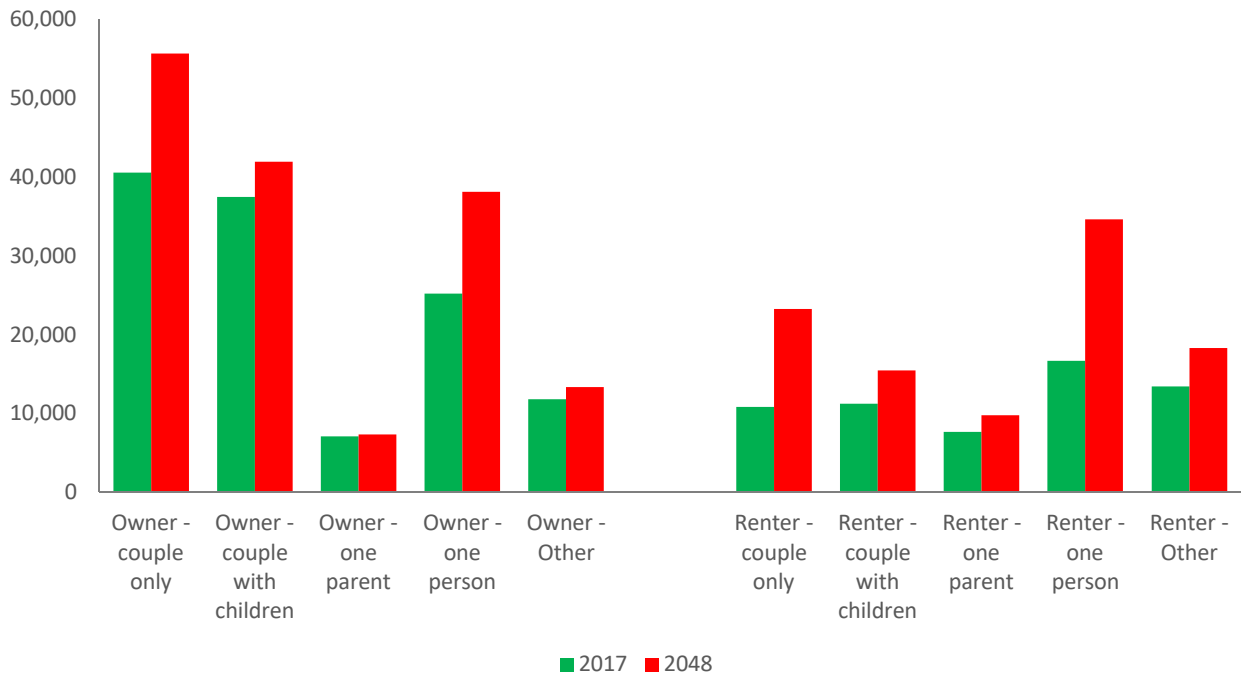
Source: Modelled based on data from Statistics New Zealand

Greater Christchurch’s rates of owner occupation fell from 70.4% in 2001 to 67.9% in 2013. Tenure modelling projections indicate that the rate of owner occupation will continue to fall to 60.7%, a 7.2 percentage point fall, between 2013 and 2048. This implies that the number of owner occupied households will increase by 34,370, or 28%, between 2017 and 2048 while the number of renter households are projected to increase by 41,660, or 69%, over the same time.



Figure 3.6 presents the projected trend in the number of households living in Greater Christchurch by household composition and tenure between 2017 and 2048.

Figure 3.6: The number of households living in Greater Christchurch by tenure and composition in 2017 and 2048



Source: Modelled based on data from Statistics New Zealand



Table 3.4 presents the projected trend in the number of households living in Greater Christchurch by tenure and household composition between 2017 and 2048.

Table 3.4: The number of households living in Greater Christchurch by tenure and household composition between 2017 and 2048

	Number of households				Annual change in the no. of households		
	2017	2020	2027	2048	17 to 20	20 to 27	27 to 48
Owners							
couple only	40,520	44,110	50,910	55,670	1,200	970	230
couple with	37,490	37,950	37,970	41,890	150	0	190
one parent	7,080	7,080	6,830	7,350	0	-40	20
one person	25,170	26,860	31,190	38,130	560	620	330
Other	11,740	12,050	12,380	13,330	100	50	50
Total	122,000	128,050	139,280	156,370	2,020	1,600	810
Renters							
couple only	10,790	12,010	14,970	23,240	410	420	390
couple with	11,220	11,980	13,380	15,460	250	200	100
one parent	7,660	8,200	8,850	9,770	180	90	40
one person	16,670	18,640	22,990	34,620	660	620	550
Other	13,380	13,810	14,850	18,290	140	150	160
Total	59,720	64,640	75,040	101,380	1,640	1,490	1,250

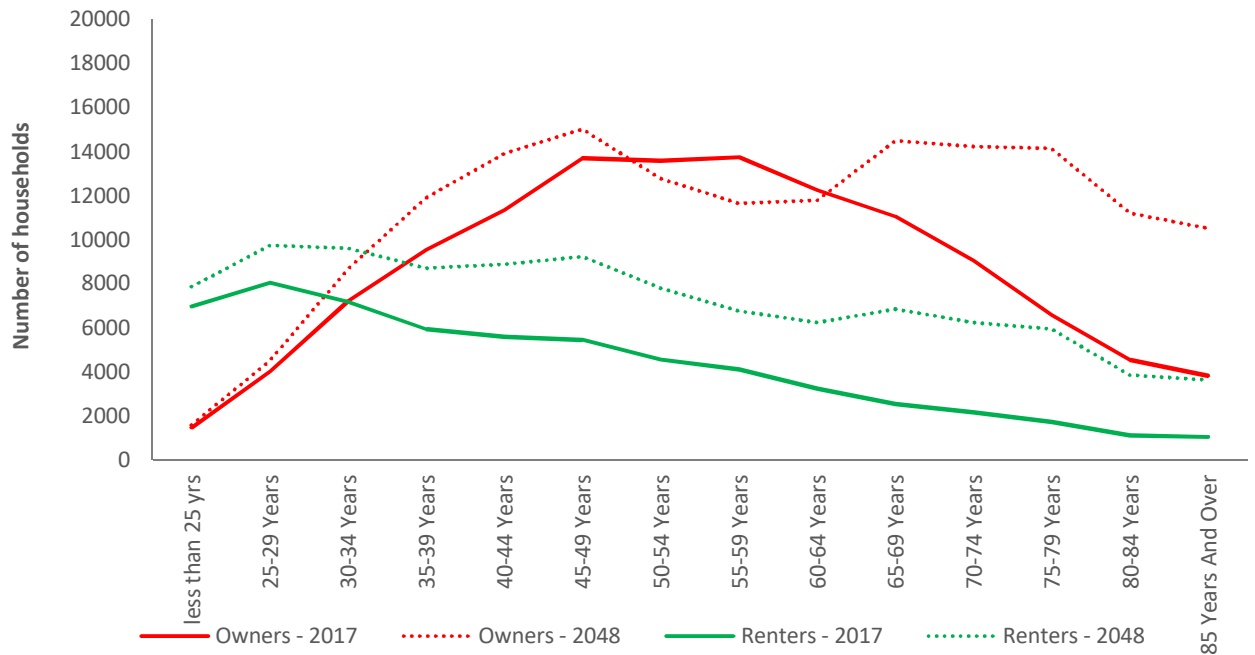
Source: Modelled based on data from Statistics New Zealand

Couple only renter households are projected to experience the strongest proportional growth increasing by 115% (or 12,450 households) between 2017 and 2048 and one person renter households are also projected to grow by 108% (or 17,950 households) over the same time period. Owner occupied households with couple only and one person compositions are also projected to experience strong growth increasing by 37% and 51% respectively between 2017 and 2048.



Figure 3.7 presents the projected trend in the number of households living in Greater Christchurch by tenure and age of the household reference person¹³ between 2017 and 2048.

Figure 3.7: Number of households living in Greater Christchurch by tenure and age of the household reference person in 2017 to 2048.



Source: Modelled based on data from Statistics New Zealand

Renter households are expected to increase across most age groups whilst the growth in owner occupied households is concentrated in those with household reference people aged 65 years and older.

¹³ The household reference person is the person who completes the census dwelling questionnaire. They are assumed to be representative of the age of the key people living in the dwelling.



Table 3.5 presents the trend in the number of households living in Greater Christchurch by tenure and the age of the household reference person between 2017 and 2048.

Table 3.5: Number of households living in Greater Christchurch by tenure and age of the household reference person 2017 to 2048

	Number of households						Annual change in the number of households				
	Less than 30 yrs	30 to 39 yrs	40 to 49 yrs	50 to 64 yrs	65 yrs & over	Total	Less than 30 yrs	30 to 39 yrs	40 to 49 yrs	50 to 64 yrs	65 yrs & over
Owners											
2017	5,500	16,790	25,040	39,580	35,070	121,980					
2020	5,640	17,780	24,080	40,940	39,640	128,080	50	330	-320	450	1,520
2027	5,510	19,490	23,160	40,430	50,670	139,260	-20	240	-130	-70	1,580
2048	6,100	20,580	28,940	36,200	64,550	156,370	30	50	290	-210	690
Renters											
2017	15,020	13,120	11,050	11,930	8,600	59,720					
2020	15,520	14,620	11,400	13,410	9,710	64,660	170	500	120	490	370
2027	15,810	17,270	12,850	15,660	13,440	75,030	40	380	210	320	530
2048	17,600	18,320	18,120	20,820	26,520	101,380	90	50	260	260	650

Source: Modelled based on data from Statistics New Zealand

Both renter and owner occupied households are projected to experience strong growth. Renter households with household reference people aged 65 years and older are projected to increase by 17,920 or 208% between 2017 and 2048. Over the same time period owner occupied households with household reference people aged 65 years and older are projected to increase by 29,480 or 84%. These age groups represent 43% of the total growth in the number of renter households and 86% of the total growth in the number of owner occupier households between 2017 and 2048.



3.3 Housing demand by submarket

The objective of this subsection of the report is to present the trends in the growth in the number of households by submarket, tenure, age of the household reference person and household composition. Appendix 1 presents the agreed submarket boundaries used in this report. The statistical area units in each submarket area are also presented in Appendix 1.

Table 3.6 presents the projected growth distributed across the submarkets within Greater Christchurch between 2017 and 2048.

Table 3.6: Projected growth in households by submarket between 2017 and 2048

	Waimakariri UDS		Selwyn UDS		Christchurch City UDS						
	Rural	Settlemts	Rural	Settlemts	Central	North East	North West	Port hills	South East	Lyttelton	South West
2017	4,670	13,410	7,000	9,590	21,540	30,910	35,280	9,560	14,870	2,180	32,680
2020	5,080	14,940	8,000	11,170	23,120	31,980	36,240	9,810	15,160	2,230	34,950
2027	6,000	17,960	10,440	13,970	25,840	33,990	38,460	10,280	15,640	2,330	39,380
2048	7,990	24,550	16,820	20,540	29,690	37,440	42,730	10,900	15,620	2,440	49,020
Ann Chge											
17 to 20	140	510	330	530	530	360	320	80	100	20	760
20 to 27	130	430	350	400	390	290	320	70	70	10	630
27 to 48	100	330	320	330	190	170	210	30	0	10	480

Source: Modelled based on Statistics New Zealand data

The submarkets with the highest levels of projected growth between 2017 and 2048 are Selwyn rural and settlements which are expected to growth by 140% (or 9,820 households) and 114% (or 10,950 households) respectively. Waimakariri rural and settlement submarket are also projected to experience strong growth increasing by 71% (or 3,320 households) and 83% (or 11,140 households) respectively. Christchurch south west submarket is projected to be the fastest growing sub market in Christchurch City increasing by 40% (or 16,340 households) between 2017 and 2048. Christchurch City submarkets are projected to accommodate 54% of the total growth between 2017 and 2048 with 27% occurring in Selwyn UDS submarkets and the balance 19% being located in Waimakariri UDS submarkets.

Table 3.7 presents the projected change in the number of households by tenure and submarket between 2017 and 2048.



Table 3.7: The projected change in the number of households by tenure and submarket

	Owner Occupiers					Renters				
	2017	2020	2027	2048	17 to 48	2017	2020	2027	2048	17 to 48
Waimakariri - rural	3,800	4,070	4,670	5,790	1,990	880	1,000	1,280	2,160	1,280
Waimakariri - Settlements	10,440	11,490	13,510	17,720	7,280	2,980	3,450	4,430	6,850	3,870
Christchurch Central	8,020	8,510	9,210	9,780	1,760	13,480	14,590	16,650	19,910	6,430
Christchurch - North East	21,210	21,670	22,480	22,490	1,280	9,700	10,300	11,550	14,960	5,260
Christchurch North West	24,440	24,720	25,440	26,030	1,590	10,860	11,520	13,040	16,680	5,820
Christchurch - Port Hills	7,670	7,800	7,960	7,930	260	1,890	2,020	2,340	3,000	1,110
Christchurch South East	9,510	9,560	9,650	8,650	-860	5,370	5,610	6,020	6,980	1,610
Christchurch - Lyttelton	1,710	1,750	1,780	1,750	40	480	500	580	680	200
Christchurch - South West	21,620	22,950	25,370	28,680	7,060	11,050	11,990	14,000	20,340	9,290
Selwyn - Rural	5,820	6,600	8,440	12,800	6,980	1,190	1,410	1,970	4,010	2,820
Selwyn - Settlements	7,750	8,920	10,770	14,750	7,000	1,840	2,260	3,170	5,810	3,970

Source: Modelled based on Statistics New Zealand data

Between 2017 and 2048 the strongest growth in the number of owner occupied households is projected to occur in Waimakariri rural (up 52%) and settlements (up 70%) and Selwyn rural (up 120%) and settlement (up 90%) submarkets. Christchurch central and south west submarkets are also expected to grow by 22% and 33% respectively. Renter households are projected to experience stronger growth in all submarkets. Those experiencing the strongest growth between 2017 and 2048 are Waimakariri rural (up 143%) and settlements (up 130%) and Selwyn rural (up 237%) and settlement (up 216%) submarkets.

Table 3.8 presents the projected growth in the number of households by household composition and submarket between 2017 and 2048.

Table 3.8: Projected growth in the number of households by household composition and submarket between 2017 and 2048

	couple only	couple with children	one parent	one person	Other	Total
Waimakariri - rural						
2017	1,820	1,630	150	780	320	4,680
2020	2,010	1,690	160	860	360	5,070
2027	2,480	1,780	180	1,070	440	5,950
2048	3,230	2,180	230	1,640	670	7,950
Waimakariri - Settlements						
2017	4,550	3,740	1,010	2,850	1,270	13,420
2020	5,180	3,990	1,090	3,240	1,430	14,940
2027	6,480	4,360	1,240	4,160	1,700	17,940
2048	8,570	5,300	1,580	6,500	2,620	24,570



Table 3.8: Projected growth in the number of households by composition & submarket between 2017 & 2048

	couple only	couple with children	one parent	one person	Other	Total
Christchurch Central						
2017	5,000	3,080	1,900	7,440	4,100	21,500
2020	5,520	3,170	2,000	8,240	4,160	23,100
2027	6,410	3,210	2,070	9,850	4,320	25,860
2048	6,960	3,210	2,120	12,460	4,810	29,540
Christchurch - North East						
2017	7,880	8,500	3,030	7,110	4,390	30,910
2020	8,380	8,470	3,080	7,580	4,460	31,970
2027	9,390	8,230	3,070	8,720	4,620	34,030
2048	10,070	8,130	3,160	10,960	5,130	37,450
Christchurch North West						
2017	9,760	9,720	3,010	7,720	5,090	35,300
2020	10,300	9,580	3,030	8,140	5,180	36,240
2027	11,480	9,290	3,010	9,380	5,310	38,480
2048	12,490	9,270	3,090	11,920	5,940	42,710
Christchurch - Port Hills						
2017	3,570	2,940	490	1,890	670	9,560
2020	3,750	2,890	500	2,000	690	9,820
2027	4,100	2,740	480	2,250	730	10,300
2048	4,270	2,620	500	2,720	820	10,930
Christchurch South East						
2017	3,590	3,400	1,570	4,080	2,250	14,880
2020	3,750	3,320	1,560	4,260	2,290	15,170
2027	4,020	3,080	1,490	4,700	2,380	15,670
2048	3,770	2,690	1,340	5,190	2,640	15,630
Christchurch - Lyttelton						
2017	850	570	120	570	90	2,190
2020	880	560	120	600	90	2,250
2027	950	530	120	660	90	2,360
2048	980	500	120	740	90	2,430
Christchurch - South West						
2017	8,660	7,910	2,860	7,660	5,590	32,670
2020	9,580	8,180	3,020	8,490	5,680	34,940
2027	11,400	8,510	3,170	10,430	5,870	39,370
2048	14,090	9,620	3,700	15,060	6,550	49,020
Selwyn - Rural						
2017	2,750	2,700	190	770	610	7,010
2020	3,250	2,970	210	910	670	8,010
2027	4,500	3,580	270	1,270	800	10,410
2048	7,400	5,460	430	2,490	1,030	16,810
Selwyn - Settlements						
2017	2,890	4,520	430	1,000	760	9,590
2020	3,500	5,130	500	1,200	840	11,180
2027	4,680	6,010	590	1,680	980	13,940
2048	7,070	8,360	850	2,970	1,310	20,560

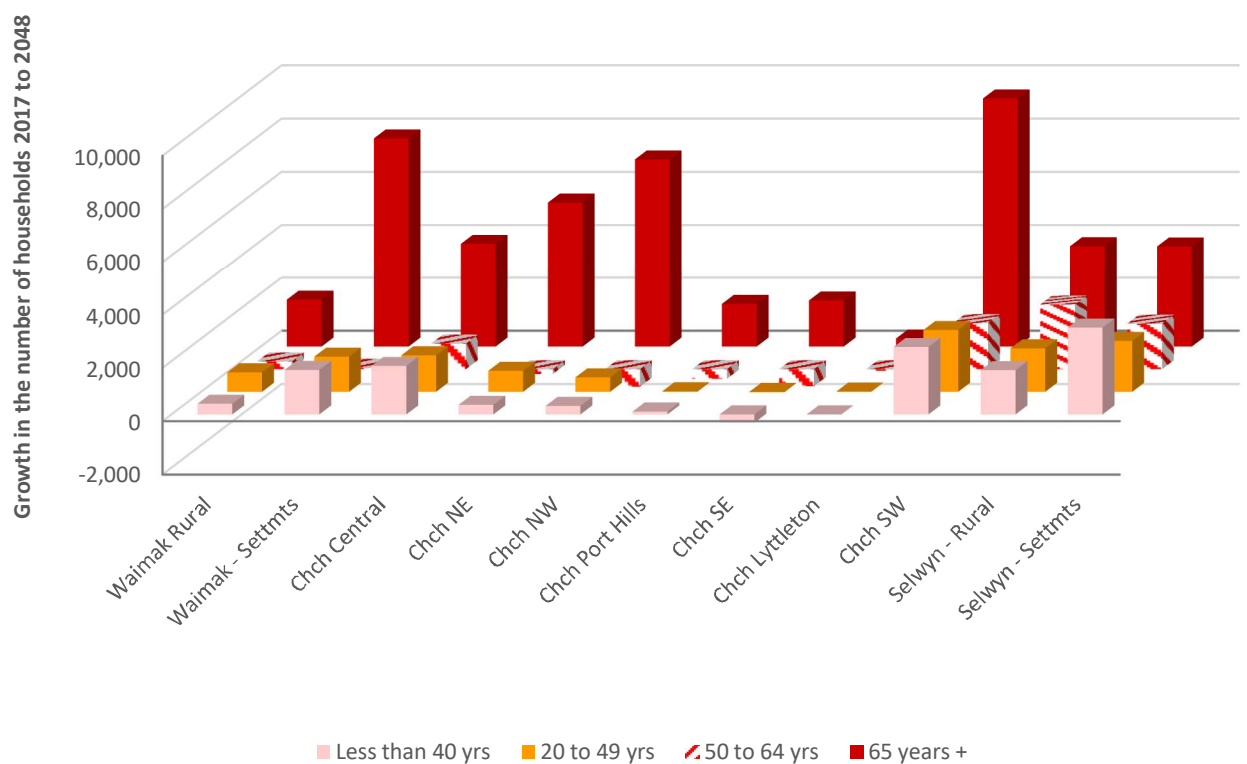
Source: Modelled based on Statistics New Zealand data



Growth in the number of households is concentrated in couple only and one person households in most submarkets.

Figure 3.8 presents the projected growth in the number of households by age of the reference person and submarket between 2017 and 2048.

Figure 3.8: Projected household growth by age and submarket



Source: Modelled based on Statistics New Zealand data

The strongest growth is projected to occur in households with reference people age 65 years and over between 2017 and 2048.

Table 3.9 presents the projected growth in the number of households by age of the reference person and submarket between 2017 and 2048.

Table 3.9: The projected growth in the number of households by age of the reference person and submarket between 2017 and 2048.

	Less than 40 years				40 to 49 years				50 to 64 years				65 yrs and over			
	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048
Waimakariri																
Rural	760	840	1,020	1,160	1,190	1,150	1,150	1,960	1,780	1,960	2,240	2,050	960	1,120	1,540	2,780
Settlements	2,810	3,180	3,910	4,390	2,510	2,440	2,360	3,760	3,640	4,030	4,400	3,650	4,450	5,280	7,270	12,520
Christchurch City																
Central	8,890	9,480	10,230	10,760	3,760	3,790	4,070	5,140	5,110	5,500	5,800	6,100	3,740	4,320	5,740	7,680
North East	8,510	8,810	9,100	8,870	6,340	6,110	6,060	7,130	8,840	9,080	8,900	8,660	7,230	7,960	9,970	12,670
North West	8,870	9,100	9,320	9,220	6,530	6,240	6,090	7,090	10,000	10,140	9,790	9,370	9,880	10,760	13,290	17,030
Port Hills	1,500	1,560	1,670	1,610	2,060	1,970	1,910	2,080	3,380	3,430	3,270	3,020	2,620	2,840	3,450	4,220
South East	4,130	4,220	4,230	3,820	2,900	2,760	2,660	2,880	4,280	4,320	4,080	3,640	3,560	3,880	4,680	5,290
Lyttelton	330	330	350	330	490	480	470	500	850	870	840	790	510	570	700	810
South West	10,530	11,160	11,990	13,160	5,880	5,850	6,160	8,260	8,350	8,880	9,250	10,160	7,910	9,040	11,980	17,440
Selwyn																
Rural	1,270	1,440	1,910	2,970	1,730	1,800	1,990	3,410	2,690	3,100	3,890	5,210	1,330	1,670	2,610	5,220
Settlements	2,830	3,360	4,340	6,190	2,700	2,880	3,080	4,670	2,570	3,030	3,620	4,340	1,490	1,910	2,900	5,360

Source: Modelled based on Statistics New Zealand data

The strongest growth is projected to occur in households with reference people age 65 years and over between 2017 and 2048.

Table 3.10 presents the change in the number of households, and the percentage change, living in each submarket by age of the household reference person between 2017 and 2048.

Table 3.10: Change in the number of households by age of the household reference person and submarket between 2017 and 2048

	Less than 40 yrs		40 to 49 years		50 to 64 years		65 yrs and over	
	Hhlds	% Chge	Hhlds	% Chge	Hhlds	% Chge	Hhlds	% Chge
Waimakariri								
Rural	400	53%	770	65%	270	15%	1,820	190%
Settlements	1,580	56%	1,250	50%	10	0%	8,070	181%
Christchurch City								
Central	1,870	21%	1,380	37%	990	19%	3,940	105%
North East	360	4%	790	12%	-180	-2%	5,440	75%
North West	350	4%	560	9%	-630	-6%	7,150	72%
Port Hills	110	7%	20	1%	-360	-11%	1,600	61%
South East	-310	-8%	-20	-1%	-640	-15%	1,730	49%
Lyttelton	0	0%	10	2%	-60	-7%	300	59%
South West	2,630	25%	2,380	40%	1,810	22%	9,530	120%
Selwyn								
Rural	1,700	134%	1,680	97%	2,520	94%	3,890	292%
Settlements	3,360	119%	1,970	73%	1,770	69%	3,870	260%

Source: Modelled based on Statistics New Zealand data

The strongest growth is projected to occur in households with household reference people aged 65 years and over in all submarkets. Selwyn and Waimakariri, Christchurch Central and South West are expected to experience stronger growth across all age groups.



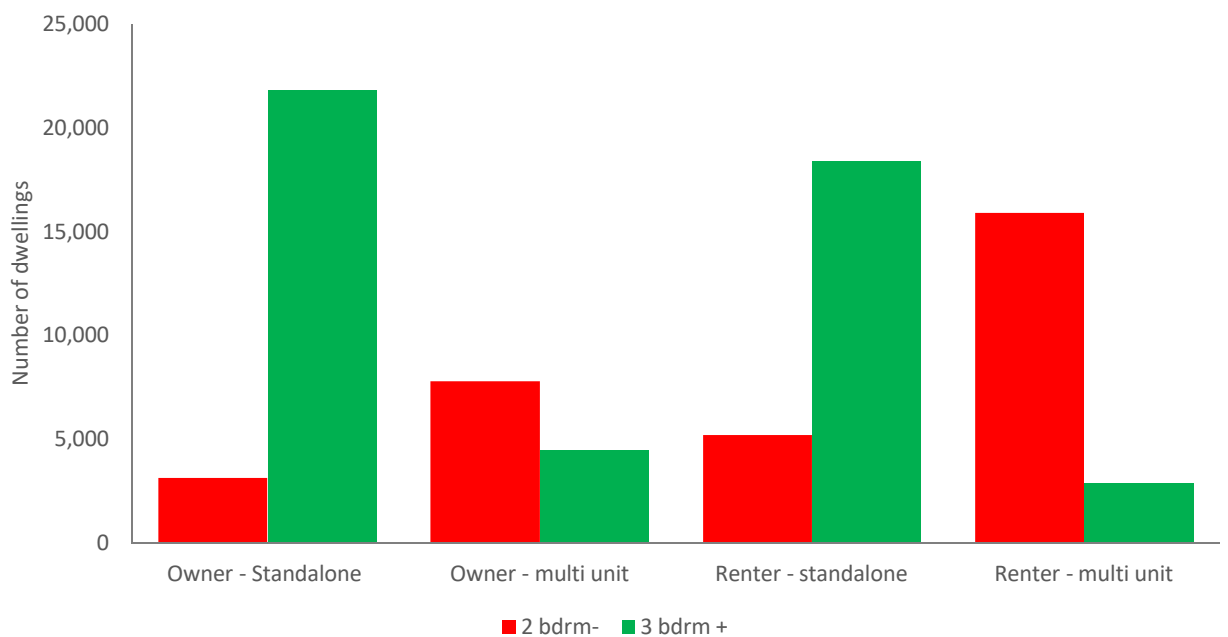
3.4 Greater Christchurch housing demand by dwelling typology

The objective of this section of the report is to present the results of the modelling of the implications of the demographic and tenure trends on the demand for dwellings by typology. An overview of the methodology used is presented in Appendix 2 and assumes the propensity for households with different characteristics (age, household composition and tenure) for different dwelling typologies remains the same between 2017 and 2048. Dwelling typology is divided into the following categories:

- Standalone dwelling¹⁴ with two bedrooms or less;
- Standalone dwelling with three bedrooms or more;
- Multi-unit dwelling¹⁵ with two bedrooms or less; and
- Multi-unit dwelling with three bedrooms or more.

Figure 3.9 presents implications of the projected growth in the number of households by demographic characteristics and tenure on demand by dwelling typology and tenure in Greater Christchurch between 2017 and 2048.

Figure 3.9: Implications of the household projections on demand by dwelling typology and tenure in Greater Christchurch between 2017 and 2048



Source: Modelled based on Statistics New Zealand data

¹⁴ A standalone dwelling is defined as a house which is free standing and not attached to any other dwelling.

¹⁵ A multi-unit dwelling are units in any building where two or more dwellings are attached. This category includes all dwellings that are not standalone and consequently includes duplexes, terraced housing and apartments.



Demand for standalone dwellings is predominately for units with three or more bedrooms whilst multi-unit demand is typically for units with fewer bedrooms. Renters have a higher propensity to rent multi-unit dwellings relative to standalone dwellings.

Table 3.11 presents the implications of the household projections by demographic characteristics on the demand for dwellings in Greater Christchurch by tenure and dwelling typology between 2017 and 2048.

Table 3.11: Implications of the household projections on demand by dwelling typology and tenure in Greater Christchurch between 2017 and 2048

	Owner occupiers						Renters					
	Standalone dwellings			Multi-unit dwellings			Standalone dwellings			Multi-unit dwellings		
	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total
2017	11,990	96,410	108,400	9,760	4,410	14,160	6,710	31,250	37,960	18,200	3,660	21,860
2020	12,770	99,950	112,720	10,940	5,120	16,060	7,210	33,360	40,570	20,140	3,980	24,120
2027	13,660	106,560	120,220	13,520	6,570	20,090	8,350	37,840	46,190	24,130	4,620	28,750
2048	15,130	118,200	133,330	17,540	8,920	26,460	11,910	49,640	61,550	34,080	6,570	40,650
Annual Change												
17 to 20	260	1,180	1,440	390	240	630	170	700	870	650	110	750
20 to 27	130	940	1,070	370	210	580	160	640	800	570	90	660
27 to 48	70	550	620	190	110	300	170	560	730	470	90	570

Source: Modelled based on Statistics New Zealand data

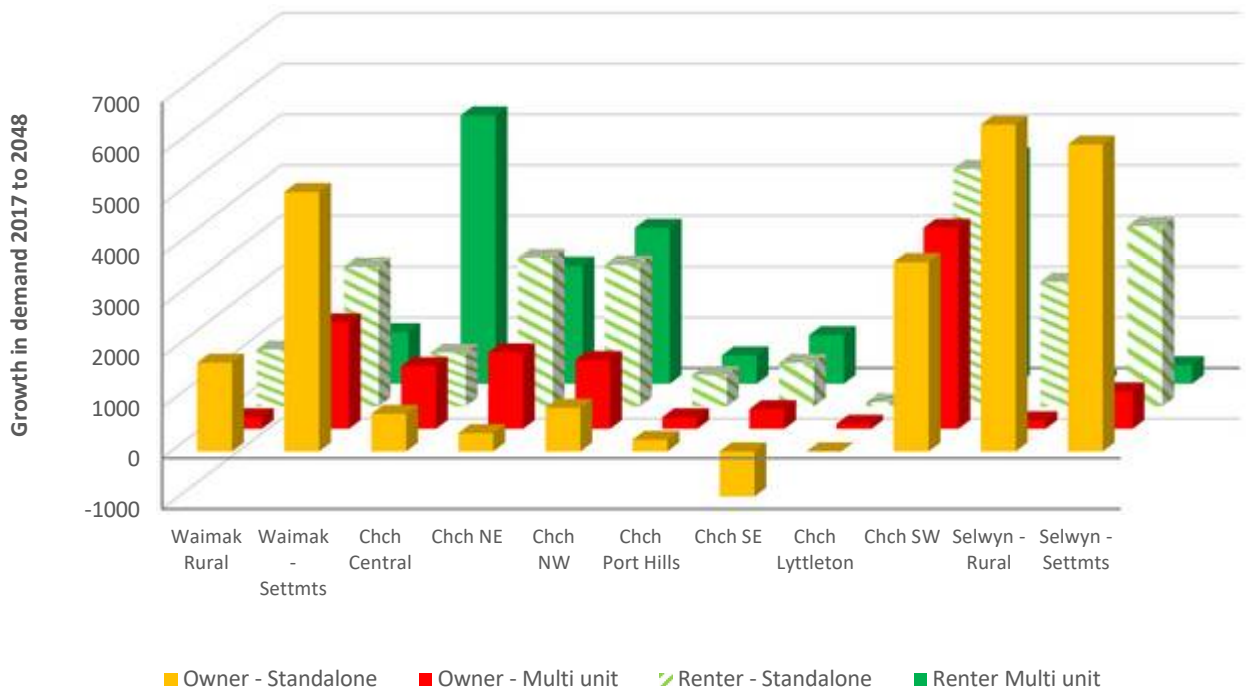
Between 2017 and 2048 standalone dwellings account for 66% of the projected growth from owner occupiers and 56% of the renter household growth.



3.5 Submarket housing demand by dwelling typology

Figure 3.10 presents the projected growth in the number of households by submarket, tenure and dwelling typology between 2017 and 2048.

Figure 3.10: The projected growth in the number of households by submarket, tenure and dwelling typology



Source: Modelled based on Statistics New Zealand data

Table 3.12 presents the implications of the household projections by demographic characteristics and tenure on the demand for dwellings by typology and by submarket between 2017 and 2048.

Table 3.12: The implication of the household projections by demographic characteristics and tenure on the demand for dwellings by typology and submarket between 2017 and 2048

	Owner occupiers								Renters							
	Standalone dwelling				Multi-unit dwelling				Standalone dwelling				Multi-unit dwelling			
	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048
Waimakariri																
Rural	3,700	3,940	4,500	5,480	120	140	190	350	880	1,000	1,260	2,030	0	10	30	130
Settlements	9,320	10,080	11,560	14,550	1,160	1,400	1,940	3,310	2,460	2,830	3,620	5,280	510	600	810	1,550
Christchurch City																
Central	4,590	4,780	5,100	5,350	3,420	3,740	4,180	4,670	3,340	3,540	3,840	4,420	10,140	11,040	12,700	15,510
North East	19,040	19,190	19,510	19,400	2,260	2,630	3,220	3,780	7,440	7,780	8,450	10,430	2,280	2,550	3,110	4,650
North West	21,760	21,970	22,240	22,620	2,800	2,950	3,460	4,200	7,600	7,920	8,720	10,490	3,320	3,620	4,320	6,450
Port Hills	7,160	7,270	7,340	7,380	550	590	720	780	1,350	1,400	1,600	1,980	550	620	750	1,120
South East	8,420	8,410	8,320	7,480	1,160	1,270	1,470	1,550	3,960	4,080	4,250	4,850	1,410	1,530	1,770	2,390
Lyttelton	1,650	1,670	1,680	1,660	60	90	100	170	390	390	430	470	110	130	160	190
South West	19,510	20,360	21,520	23,350	2,290	2,820	4,150	6,350	7,570	8,050	9,060	12,420	3,490	3,940	4,920	8,110
Selwyn																
Rural	5,720	6,450	8,240	12,330	80	100	140	260	1,200	1,410	1,930	3,760	0	0	0	100
Settlements	7,520	8,610	10,220	13,740	260	330	520	1,020	1,770	2,160	3,040	5,420	40	80	170	420

Source: Modelled based on Statistics New Zealand data

Table 3.13 presents the implication of the household projections by demographic characteristic and tenure on the change in the demand for the number of dwellings (and percentage change) by typology and submarket between 2017 and 2048.

Table 3.13: Implications of the household projections by demographic characteristic and tenure on the change in demand for dwellings by typology and submarket.

	Owner Occupied				Renters			
	Standalone		Multi-unit		Standalone		Multiunit	
	Number	% inc	Number	% inc	Number	% inc	Number	% inc
Waimakariri								
Rural	1,780	48%	230	192%	1,150	131%	130	-
Settlements	5,230	56%	2,150	185%	2,820	115%	1,040	204%
Christchurch City								
Central	760	17%	1,250	37%	1,080	32%	5,370	53%
North East	360	2%	1,520	67%	2,990	40%	2,370	104%
North West	860	4%	1,400	50%	2,890	38%	3,130	94%
Port Hills	220	3%	230	42%	630	47%	570	104%
South East	-940	-11%	390	34%	890	22%	980	70%
Lyttelton	10	1%	110	183%	80	21%	80	73%
South West	3,840	20%	4,060	177%	4,850	64%	4,620	132%
Selwyn								
Rural	6,610	116%	180	225%	2,560	213%	100	-
Settlements	6,220	83%	760	292%	3,650	206%	380	950%

Source: Modelled based on Statistics New Zealand data

The strongest projected growth is for multi-unit dwellings in Christchurch central submarket with a projected growth of 6,620 units between 2017 and 2048. Projected demand for multi-unit dwellings is also strong in Christchurch north east, north west and south west submarkets. These trends reflect the underlying projected change in the characteristics of the submarkets population with an increase in renter households and strong growth in older one person and couple only households.

It is important to note these projections reflect the implications of expected changes in the number of households by tenure and demographic characteristics between 2017 and 2047. Owner occupier households are typically slow to change their dwelling configuration to reflect their changing needs whilst renter households with their short occupation periods (average of typically between 11 and 13 months) reflect changes in their demographic characteristics at a faster rate.



3.6 High growth scenario

As agreed, a high growth scenario was also model. The high growth scenario is based on medium / high growth population statistics sourced from Statistics New Zealand for the submarkets in Christchurch City and the high growth population scenario of the sub markets located in Waimakariri and Selwyn Districts. Table 3.14 presents the high growth scenario for Greater Christchurch.

Table 3.14: Projected household growth in Greater Christchurch – Base and high growth scenario

Year	Number of households			Total change in the number of households			Annual average change in households		
	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS	Waimak UDS	Chch City	Selwyn UDS
Base Case									
2017	18,080	147,020	16,590						
2020 (0 to 3 yrs)	20,020	153,490	19,170	1,940	6,470	2,580	650	2,160	860
2027 (4 to 10 yrs)	23,960	165,920	24,410	3,940	12,430	5,240	560	1,780	750
2048 (11 to 31 yrs)	32,540	187,840	37,360	8,580	21,920	12,950	410	1,040	620
High growth									
2017	18,490	148,740	17,010						
2020 (0 to 3 yrs)	20,750	156,610	19,920	2,260	7,870	2,910	750	2,620	970
2027 (4 to 10 yrs)	25,500	172,400	25,940	4,750	15,790	6,020	680	2,260	860
2048 (11 to 31 yrs)	36,770	204,370	41,610	11,270	31,970	15,670	540	1,520	750

Source: Modelled based on Statistics New Zealand data

Note the number of households is based on projections provided by Statistics New Zealand. Consequently, since Statistics New Zealand’s projections have a base starting date of 2013 the high growth scenario figures for 2017 are higher than the base case as Christchurch is assumed to have grown at a faster rate between 2013 and 2017 under the high growth scenario.

Under the high growth scenario and additional 25,010 households will be created over the next 31 years, this is an additional 810 per annum.

Table 3.15 presents the implications of the high growth scenario on the projected growth in households by submarket.



Table 3.15: Projected growth in households by submarket – Base and high growth scenario

	Waimakariri		Selwyn		Christchurch City						
	Rural	Settlemts	Rural	Settlemts	Central	North East	North West	Port hills	South East	Lyttelton	South West
Base											
2017	4,670	13,410	7,000	9,590	21,540	30,910	35,280	9,560	14,870	2,180	32,680
2020	5,080	14,940	8,000	11,170	23,120	31,980	36,240	9,810	15,160	2,230	34,950
2027	6,000	17,960	10,440	13,970	25,840	33,990	38,460	10,280	15,640	2,330	39,380
2048	7,990	24,550	16,820	20,540	29,690	37,440	42,730	10,900	15,620	2,440	49,020
<i>Ann Chge</i>											
17 to 20	140	510	330	530	530	360	320	80	100	20	760
20 to 27	130	430	350	400	390	290	320	70	70	10	630
27 to 48	100	330	320	330	190	170	210	30	0	10	480
High											
2017	4,770	13,720	7,140	9,870	21,790	31,300	35,630	9,660	15,030	2,200	33,130
2020	5,260	15,490	8,260	11,660	23,610	32,660	36,880	9,990	15,440	2,270	35,760
2027	6,380	19,120	11,010	14,930	26,900	35,380	39,800	10,650	16,210	2,410	41,050
2048	9,030	27,740	18,490	23,120	32,250	41,040	46,170	11,830	17,110	2,650	53,320
<i>Ann Chge</i>											
17 to 20	160	590	370	600	610	450	420	110	140	20	880
20 to 27	160	520	390	470	470	390	420	90	110	20	760
27 to 48	130	410	360	390	250	270	300	60	40	10	580

Source: Modelled based on Statistics New Zealand data

All submarkets are expected to increase at a faster rate with Lyttelton experiencing only moderately higher growth. Submarkets expected to experience the largest increases in growth rates are Waimakariri and Selwyn submarkets along with Christchurch south west.



The high growth scenario also has an impact on the total number of standalone and multiunit dwellings required over the next 31 years. Table 3.16 presents the implications of the high growth scenario on the growth in demand for dwellings by tenure, dwelling typology and size.

Table 3.16: Implied demand by dwelling typology, size and tenure – high growth scenario

	Owner occupiers						Renters					
	Standalone dwellings			Multi-unit dwellings			Standalone dwellings			Multi-unit dwellings		
	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total	2 Bdrm-	3 Bdrm+	Total
2017	11,990	96,410	108,400	9,760	4,410	14,160	6,710	31,250	37,960	18,200	3,660	21,860
2020	13,020	101,920	114,940	11,160	5,220	16,380	7,350	34,020	41,370	20,540	4,060	24,600
2027	14,200	110,810	125,010	14,070	6,830	20,900	8,680	39,350	48,030	25,100	4,810	29,910
2048	16,320	127,560	143,880	18,940	9,620	28,560	12,850	53,570	66,420	36,790	7,100	43,890
Annual Change												
17 to 20	340	1,840	2,180	470	270	740	210	920	1,140	780	130	910
20 to 27	170	1,270	1,440	420	230	650	190	760	950	650	110	760
27 to 48	100	800	900	230	130	360	200	680	880	560	110	670

Source: Modelled based on Statistics New Zealand data

Under the high growth scenario households will require an additional 15,420 standalone dwellings and 5,340 multiunit dwellings over and above the base case scenario.



4. Housing affordability and need

4.1 Introduction

The objective of this section of the report is to present the trends in housing affordability in Greater Christchurch and discuss:

- Trends in housing affordability;
- Housing continuum;
- Renter housing stress;
- Location of where low-income renters live within the urban area; and
- Crowding and homelessness; and housing need.

4.2 Trends in housing affordability

Housing affordability varies with the movement in household incomes, interest rates, market rents and house prices. Housing affordability is considered compromised when housing costs (rents or the cost to service a mortgage plus other housing costs) exceed 30% of gross household income¹⁶. Housing affordability is typically measured as:

- Renter affordability – renters' ability to pay affordably the median market rent; and
- First home buyer affordability - renters' ability to purchase a dwelling at either the lower quartile or median dwelling sale price.

Housing affordability comes under pressure when housing costs increase at a faster rate than household incomes. Variations in interest rates can mask the underlying trends in first home buyer affordability in the short to medium term.

Table 4.1 presents the trend in median house sale prices, rents and household incomes between 1991 and 2013.

¹⁶ The affordability threshold of paying no more than 30% of gross household income is an internationally recognised measure of housing affordability.



Table 4.1: Median house prices, median rents and median gross household incomes – 1991 to 2013

	Median sale price, rents and household income					% change 1991 to 2013	
	Mar-91	Mar-96	Mar-01	Mar-06	Mar-13	Total %	Annual Ave
House prices							
Waimakariri	\$91,000	\$130,000	\$145,000	\$280,000	\$395,000	334%	6.9%
Christchurch City	\$85,000	\$142,100	\$162,500	\$210,800	\$408,000	380%	7.4%
Selwyn	\$75,000	\$123,250	\$149,000	\$331,300	\$485,000	547%	8.9%
House rents							
Waimakariri	\$145	\$175	\$180	\$254	\$382	163%	4.5%
Christchurch City	\$180	\$200	\$210	\$300	\$410	128%	3.8%
Selwyn	\$123	\$175	\$175	\$305	\$450	266%	6.1%
Household incomes							
Waimakariri	\$31,100	\$34,700	\$39,700	\$50,900	\$68,800	121%	3.7%
Christchurch City	\$31,100	\$32,900	\$36,500	\$48,200	\$65,300	110%	3.4%
Selwyn	\$35,500	\$39,100	\$47,200	\$62,500	\$85,100	140%	4.1%

Source: Statistics New Zealand, MBIE and Corelogic

The deterioration in housing affordability is a result of housing costs increasing at a faster rate than household incomes. House prices have increased at over double the annual average compounded as household incomes whereas rents have increased at between 0.4 and 2.0 percentage points faster than household incomes. These trends have had an impact on key affordability measures over time. Table 4.2 presents the ratio of median house sale price to median household income between 2001 and 2017.

Table 4.2: Median house price to median household income ratio by submarket between 2001 and 2017

	2001	2006	2013	2017	Change 01 to 17
Waimakariri					
Rural	-	7.5	7.2	7.1	-
Settlements	-	5.8	5.8	5.7	-
Christchurch City					
Central	5.0	6.6	5.8	6.4	1.4
North East	3.9	5.7	5.2	5.3	1.4
North West	4.5	6.0	5.8	6.4	1.9
Port Hills	4.6	6.4	5.5	6.1	1.5
South East	4.2	5.7	5.2	5.6	1.4
Lyttelton	4.6	7.2	6.4	6.1	1.5
South West	4.2	5.7	5.2	5.6	1.4
Selwyn					
Rural	5.5	7.2	7.0	6.7	1.2
Settlements	-	-	5.6	5.3	-

Source: Modelled based on Statistics New Zealand data and MBIE

NB: insufficient published data was available to complete the calculations in Waimakariri and Selwyn in 2001.



The ratio of median house prices to median household incomes have increased in all submarkets between 2001 and 2017. These trends reflect the high growth in house prices relative to incomes. The least affordable location in 2017 is Waimakariri rural submarket whilst the most affordable are Christchurch north east and Selwyn settlements submarkets.

Table 4.3 presents the median market rent as a percentage of the median gross household income between 2001 and 2017.

Table 4.3: Median rent to median household income ratio by submarket 2001 to 2017

	2001	2006	2013	2017	Change 01 to 17
Waimakariri					
Rural	18.4%	20.6%	20.9%	20.9%	2.5%
Settlements	23.3%	26.1%	29.9%	26.5%	3.2%
Christchurch City					
Central	28.3%	29.5%	28.9%	24.4%	-3.9%
North East	24.7%	28.1%	28.9%	24.0%	-0.7%
North West	26.3%	27.5%	29.3%	25.5%	-0.8%
Port Hills	18.8%	23.9%	23.1%	18.8%	0.0%
South East	26.8%	29.8%	30.5%	28.2%	1.4%
Lyttelton	20.4%	22.8%	25.8%	20.9%	0.5%
South West	26.8%	29.8%	30.5%	28.2%	1.4%
Selwyn					
Rural	-	12.9%	19.1%	20.0%	-
Settlements	-	-	23.4%	21.7%	-

Source: Modelled based on Statistics New Zealand data and MBIE

NB: Insufficient published data was available to complete the calculations in Selwyn District.

Median market rent to median household income ratio improved in all but one submarket between 2013 and 2017. This reflects a fall in market rents in most areas over this time period.

Table 4.4 presents the proportion of renter households that are unable to affordably¹⁷ pay the median market rent or buy a dwelling at the median market sale price.

¹⁷ A household can affordably rent or buy a dwelling if it spends no more than 30% of its gross household income on housing costs



Table 4.4: The proportion of renter households unable to affordably rent at the median market rent or buy a dwelling at the median market sale price in 2013 and 2017

	% of renters unable to affordably rent		% of renters unable to affordably purchase	
	2013	2017	2013	2017
Waimakariri				
Rural	58%	58%	90%	89%
Settlements	62%	56%	72%	71%
Christchurch City				
Central City	56%	48%	68%	72%
North East	63%	54%	69%	70%
North West	61%	54%	73%	78%
Port Hills	47%	38%	68%	73%
Lyttelton Harbour	52%	44%	74%	71%
South East	62%	58%	67%	70%
South West	54%	51%	58%	62%
Selwyn				
Settlements	44%	40%	71%	69%
Rural	42%	45%	84%	82%

Source: Modelled based on Statistics New Zealand data and MBIE.

In 2017 between 40% (Selwyn – settlements) and 58% (Waimakariri rural and Christchurch south east) of renter households are unable to affordably rent a dwelling at the median market rent. Between 62% (Christchurch south east) and 89% (Waimakariri – rural) of renters are unable to affordably buy a dwelling at the median market sale price.¹⁸

Table 4.5 presents the trend in key price points for owner occupied dwellings. These statistics reflect the projected trend in the number of owner occupied households that can affordably purchase a dwelling. Note the number of households unable to buy dwellings at low prices includes older retired households which may not have a mortgage along with relatively low household incomes. For example, in Waimakariri UDS (2017), 4,140 owner occupier households cannot affordably pay more than \$250,000 for a dwelling. A total of 1,000 owner occupier households living can affordably pay between \$250,000 and \$300,000 to buy a dwelling. A further 830 households can affordably pay between \$300,000 and \$350,000.

¹⁸ Assumes current market interest rates, a 10% deposit, and a 25 year term.



Table 4.5: The projected number of owner occupied households able to affordably buy by key price points – 2017 to 2048

Affordable house price range (2017\$)	Waimakariri UDS				Christchurch City UDS				Selwyn UDS			
	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048
\$0 to \$250000	4,140	4,760	6,220	9,440	26,590	28,330	32,520	36,610	2,130	2,610	3,760	6,320
\$250000 to \$300000	1,000	1,120	1,380	1,910	6,510	6,870	7,600	8,090	620	740	1,000	1,620
\$300000 to \$350000	830	900	1,030	1,250	5,910	6,090	6,340	6,430	600	690	870	1,290
\$350000 to \$400000	830	900	1,030	1,240	5,880	6,060	6,320	6,380	620	710	890	1,310
\$400000 to \$450000	900	960	1,050	1,180	5,540	5,640	5,730	5,640	870	990	1,190	1,620
\$450000 to \$500000	900	950	1,040	1,170	5,540	5,620	5,670	5,550	870	990	1,200	1,640
\$500000 to \$550000	900	940	1,040	1,170	5,540	5,640	5,700	5,580	870	990	1,200	1,630
\$550000 to \$600000	620	660	720	810	3,880	3,900	3,870	3,780	730	820	980	1,330
\$600000 to \$650000	510	530	570	650	3,150	3,170	3,110	3,020	660	740	860	1,160
\$650000 to \$700000	510	530	570	650	3,150	3,170	3,110	3,010	660	740	860	1,170
\$700000 to \$750000	510	540	580	660	3,150	3,130	3,080	2,990	660	740	860	1,150
\$750000 to \$800000	510	530	570	650	3,150	3,170	3,110	3,020	660	730	860	1,160
\$800000 to \$850000	480	500	540	620	3,050	3,060	3,000	2,920	660	740	860	1,160
\$850000 to \$900000	100	100	110	130	780	780	750	730	180	200	230	300
over \$900,000	1,540	1,630	1,710	1,990	12,380	12,360	11,960	11,580	2,800	3,110	3,580	4,690
Total households	14,280	15,550	18,160	23,520	94,200	96,990	101,870	105,330	13,590	15,540	19,200	27,550

Source: Modelled based on Statistics New Zealand data and MBIE

There is projected to be strong growth in the number of owner occupier households who are unable to affordably buy a dwelling at over \$300,000. For example, in Christchurch City the number of households unable to affordably buy a dwelling at \$300,000 accounts for nearly all the increase in owner occupied dwellings between 2017 and 2048. The comparable numbers in Waimakariri and Selwyn UDS areas are 67% and 37% respectively.

Table 4.6 presents the trend in key price points for renter households. These statistics reflect the projected trend in the number renter households that can affordably rent a dwelling at different price points.



Table 4.6: The projected number of renter households able to affordably pay by key price points – 2017 to 2048

Affordable rental Range (2017\$)	Waimakariri UDS				Christchurch City UDS				Selwyn UDS			
	2017	2020	2027	2048	2017	2020	2027	2048	2017	2020	2027	2048
\$0 to \$100	380	440	580	970	5,070	5,530	6,580	9,450	100	130	210	550
\$100 to \$150	420	490	640	1,070	5,570	6,090	7,230	10,360	110	140	220	600
\$150 to \$200	320	370	490	810	4,250	4,610	5,500	7,920	90	110	170	470
\$200 to \$250	310	360	470	780	3,580	3,840	4,360	5,710	120	140	190	330
\$250 to \$300	330	380	490	830	3,770	4,000	4,570	5,930	130	150	200	340
\$300 to \$350	320	370	470	780	3,680	3,950	4,440	5,760	130	160	220	380
\$350 to \$400	240	280	350	490	3,150	3,340	3,740	4,530	180	230	340	630
\$400 to \$450	240	280	350	490	3,150	3,370	3,730	4,540	180	230	340	630
\$450 to \$500	210	250	310	430	2,820	2,980	3,340	4,000	190	240	340	630
\$500 to \$550	170	200	250	340	2,300	2,450	2,700	3,170	210	250	340	620
\$550 to \$600	170	200	250	340	2,300	2,440	2,690	3,180	210	250	330	620
\$600 to \$650	170	200	250	340	2,300	2,450	2,700	3,170	210	250	340	620
\$650 to \$700	140	160	200	270	1,920	2,040	2,250	2,660	180	210	290	530
\$700 to \$750	50	60	70	100	920	970	1,060	1,240	80	100	130	230
over \$750	390	430	540	970	8,030	8,470	9,280	10,930	920	1,090	1,490	2,650
Total Renters	3,860	4,470	5,710	9,010	52,810	56,530	64,170	82,550	3,040	3,680	5,150	9,830

Source: Modelled based on Statistics New Zealand data and MBIE

Note that these statistics are accumulative. For example, in 2017, 1,760 Waimakariri UDS based renters (380 + 420 + 320 + 310 + 330) are unable to affordably pay a rent of more than \$300 per week. These households represent 46% of all renter households.

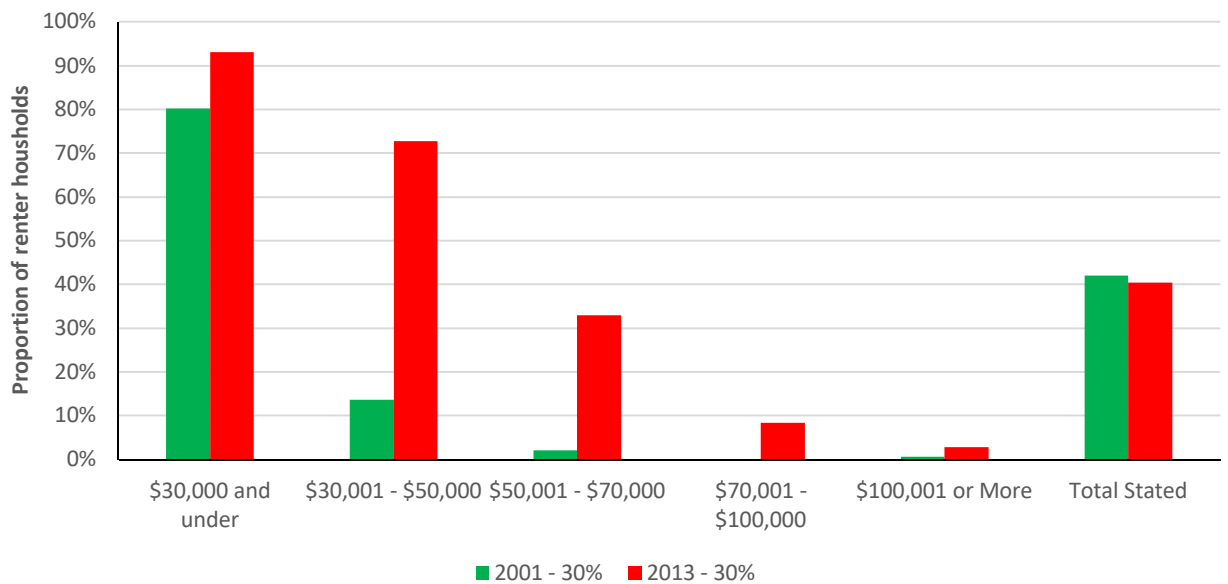
There is projected to be strong growth in the number of renter households who are unable to pay rents over \$300 per week. For example, in Christchurch City the number of households unable to affordably pay in excess of \$300 per week are expected to account for 58% of the total growth in renter households between 2017 and 2048. The comparable numbers in Waimakariri and Selwyn UDS areas are 53% and 26% respectively.



4.3 Trends in housing stress

Private renter housing stress¹⁹ is experienced by households that have insufficient income to pay their housing costs. This can occur because either housing costs are high relative to market norms or incomes in an area are low. Renter housing stress is defined as those households that are paying more than 30% of their gross household income in rent. Severe housing stress is those households paying more than 50% of their gross household income in rent. Figure 4.1 presents the trend on the level of housing stress between 2001 and 2013 by gross household income in Greater Christchurch.

Figure 4.1: Housing stress by gross household income 2001 and 2013 in Greater Christchurch



Source Statistics New Zealand

The proportion of households experiencing housing stress increased for renters earning \$30,000 to \$50,000 (from 14% to 73%) between 2001 and 2013. Over the same time period the proportion of households earning between \$50,000 and \$70,000 experiencing housing stress increased from 2% to 33%. Typically, private renter housing stress is higher for low income households.

¹⁹ Renter stress is significantly lower in social housing as current income rent policy limits the cost to 25% of income in eligible households. These households typically have needs beyond affordability although it is also important to note that if they rented their accommodation in the private market they would very likely to be stressed.



Table 4.7 presents the trend in renter housing stress for Waimakariri UDS areas, Christchurch City, Selwyn UDS areas and Greater Christchurch.

Table 4.7: The relative level of renter housing stress in 2013

Gross household income	Waimakariri UDS	Christchurch City UDS	Selwyn UDS	Greater Christchurch
Stressed (30%)				
Less than \$30,000	91%	93%	84%	93%
\$30,001 to \$50,000	72%	74%	64%	73%
\$50,001 to \$70,000	31%	33%	38%	33%
\$70,001 to \$100,000	5%	8%	24%	8%
\$100,000 to \$150,000	0%	3%	0%	3%
Overs \$150,000	0%	3%	0%	3%
Total	43%	41%	32%	40%
Severely stressed (50%)				
Less than \$30,000	68%	72%	70%	71%
\$30,001 to \$50,000	22%	16%	17%	16%
\$50,001 to \$70,000	0%	3%	0%	3%
\$70,001 to \$100,000	0%	1%	0%	1%
\$100,000 to \$150,000	0%	1%	0%	1%
Overs \$150,000	0%	2%	0%	2%
Total	13%	18%	20%	18%

Source Statistics New Zealand

The majority of households earning less than \$50,000 per annum are likely to be paying more than 30% of their gross household income in rent and a significant proportion of them will also be paying more than 50% in rent. These statistics reflect the level of market rents in each locality and how they are effectively allocated to different renter households. Selwyn UDS submarkets have the highest proportion of renters paying more than 50% of their household income in rent. They also have a high proportion of renters earning between \$70,000 and \$100,000 who are paying more than 30% of household income in rent. These households are less likely to be suffering from financial hardship as their residual income after paying their housing costs (in total dollars) is likely to be higher than lower income households. However, this is a reflection of an imbalance in the market between market rents and renters' household income. Selwyn's high housing stress statistics also are a reflection of the high market rents in the UDS area.

Table 4.8 presents the proportion of renter households experiencing housing stress by submarket between 2001 and 2013.



Table 4.8: The proportion of renter households experiencing housing stress by submarket

	2001	2006	2013	Change 01 to 13
Waimakariri				
Rural	34.5%	38.4%	36.7%	2.2%
Settlements	43.1%	47.1%	45.4%	2.3%
Christchurch City				
Central City	42.4%	42.1%	39.4%	-3.0%
North East	44.8%	44.1%	42.1%	-2.7%
North West	41.6%	43.6%	42.0%	0.4%
Port Hills	31.8%	36.0%	31.1%	-0.7%
Lyttelton Harbour	41.4%	42.3%	40.6%	-0.8%
South East	45.6%	45.0%	45.0%	-0.6%
South West	43.5%	42.7%	41.2%	-2.3%
Selwyn				
Settlements	38.5%	39.2%	37.5%	-1.0%
Rural	26.4%	27.2%	36.7%	10.3%
Greater Christchurch	41.9%	42.2%	40.4%	-1.5%

Source Statistics New Zealand

These trends reflect the movement in market rents, household incomes and the way in which the rental housing stock is allocated within the market. For example, the lowest cost rental accommodation is not always let to the lowest income renter households.

The highest proportion of renters experiencing housing stress live in Waimakariri – settlements and Christchurch’s south east submarkets. The greatest increase in the proportion of households experiencing housing stress occurred in Selwyn rural submarket. Anecdotally the increased demand for rental accommodation in Selwyn rural post-earthquakes has placed significant pressure on renter households. Median rents in this sub market increased from \$168 per week in 2006 to \$344 per week in 2013.



Table 4.9 presents the modelled number of stress private renter households at 2017.

Table 4.9: Number of stressed private renter households by sub region in 2017

	Modelled number of stressed private renters 2017
Waimakariri UDS	
Rural	310
Settlements	1,360
	1,670
Christchurch City UDS	
Central	5,020
North East	4,180
North West	4,700
Port Hills	520
South East	2,640
Lyttelton	190
South West	5,250
	22,500
Selwyn UDS	
Rural	330
Settlements	680
	1,010
Total Greater Christchurch	25,180

Source: Modelled on data sourced from Statistics New Zealand

The results of the modelling take into account the change in median market rents between 2013 and 2017 and also assumes household incomes continue to increase at the same rate between 2013 and 2017 as they did between 2001 and 2013. These results suggest that 89%²⁰ of the stressed private sector renters live in Christchurch city.

²⁰ Christchurch City submarkets' account for approximately 80% of Greater Christchurch's population.



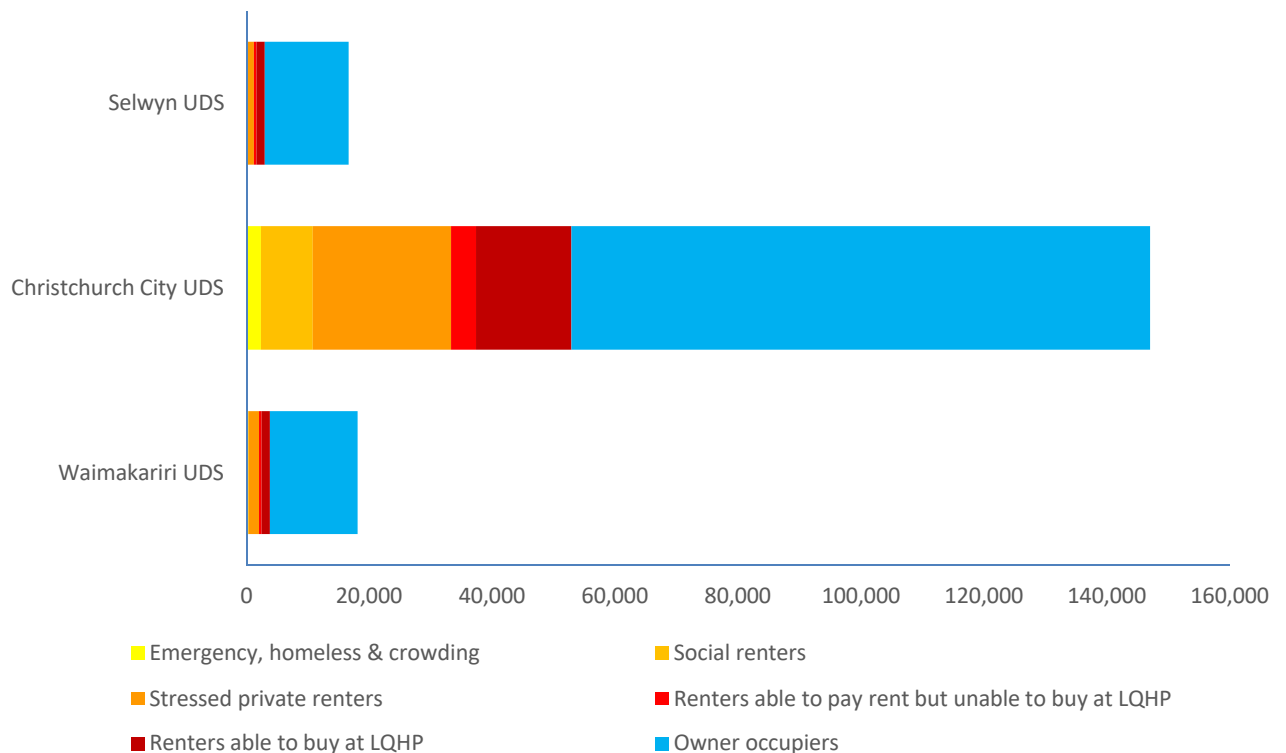
4.4 The housing continuum

Housing continuum provides insight into the relative sizes of the different housing sub-groups along a continuum which stretches from social renting through private sector renters to owner occupation. This progression can be summarised as:

- Social renters with housing needs in addition to financial affordability;
- Stressed private renters paying more than 30% of their household income in rent;
- Private renters paying less than 30% of their household income in rent but unable to affordably buy a dwelling at the lower quartile house sale price (LQHP);
- Private renters paying less than 30% of their household income in rent but unable to affordably buy a dwelling at the median house sale price;
- Private renter households with sufficient income to affordably buy a dwelling at the median house sale price; and
- Owner occupier households.

Changes in the relative size of these groups reflect the pressures within the continuum overtime. Figure 4.1 presents the modelled housing continuum as at 2017²¹ and Table 4.10 presents the numbers of households in each subgroup.

Figure 4.2: Housing Continuum 2017



²¹ These estimates assume the number of social housing units remains constant.



Table 4.10: Housing continuum by subgroup and submarket in 2017

	Renter households					Owner occupiers
	Emergency, homeless & crowding	Social renters	Stressed private	Can affordably rent but unable to buy at LQHP	Able to buy at LQHP	
Waimakariri UDS	130	250	1,670	390	1,420	14,240
Christchurch City UDS	2,390	8,450	22,500	4,020	15,470	94,180
Selwyn UDS	160	10	1,010	460	1,390	13,570

Source: Modelled based on Statistics New Zealand data, MBIE and HNZA

The largest group of renter households are categorised as stressed (paying more than 30% of their household income in housing costs). Christchurch also has a significant number of renters (29% of all renters) who have sufficient household income to purchase a dwelling at the lower quartile household if they chose.

4.5 Distribution of low income renter households within Greater Christchurch

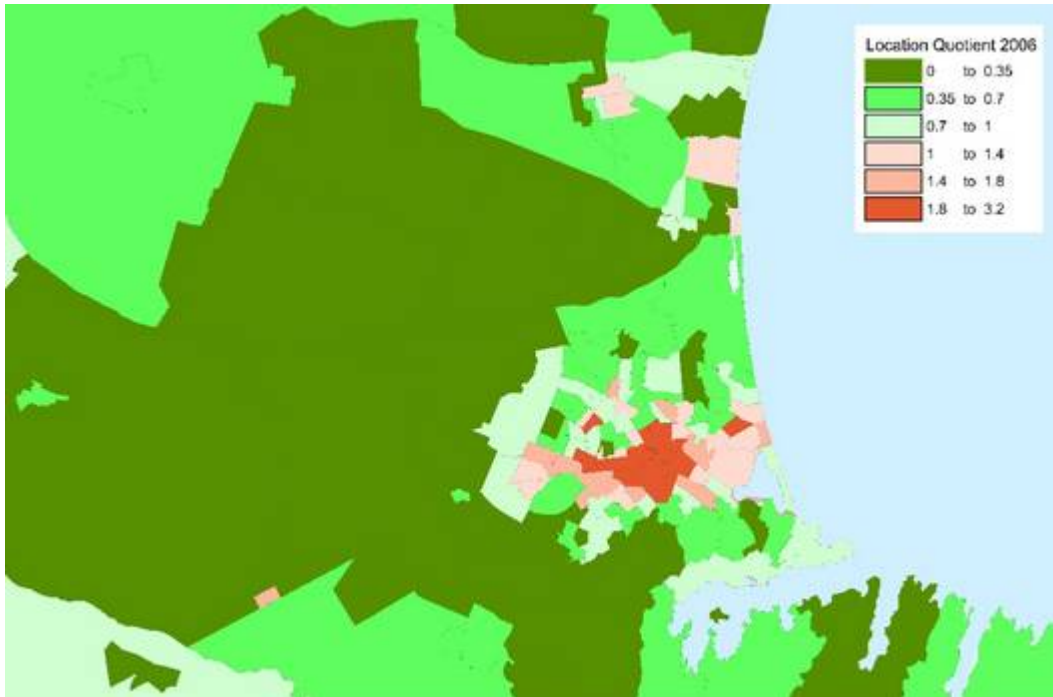
Figures 4.3 and 4.4 presents the distribution of low income (earning less than \$50,000 per annum) renters (both social and private renters combined) across Greater Christchurch in 2006 and 2013. Low income renter households are presented using a location quotient. The location quotient is calculated by the ratio of the density of low income renters in the area unit relative to the average across Greater Christchurch.²²

The location quotient provides a relative measure (compared to the average for Greater Christchurch) of the density of low income renters living in Greater Christchurch by statistical area unit.

²² Location quotient = ((the number of low income renters in the area unit/the total number of households in the area unit)/(the number of low income renters in Greater Christchurch/the total number of households in Greater Christchurch area))

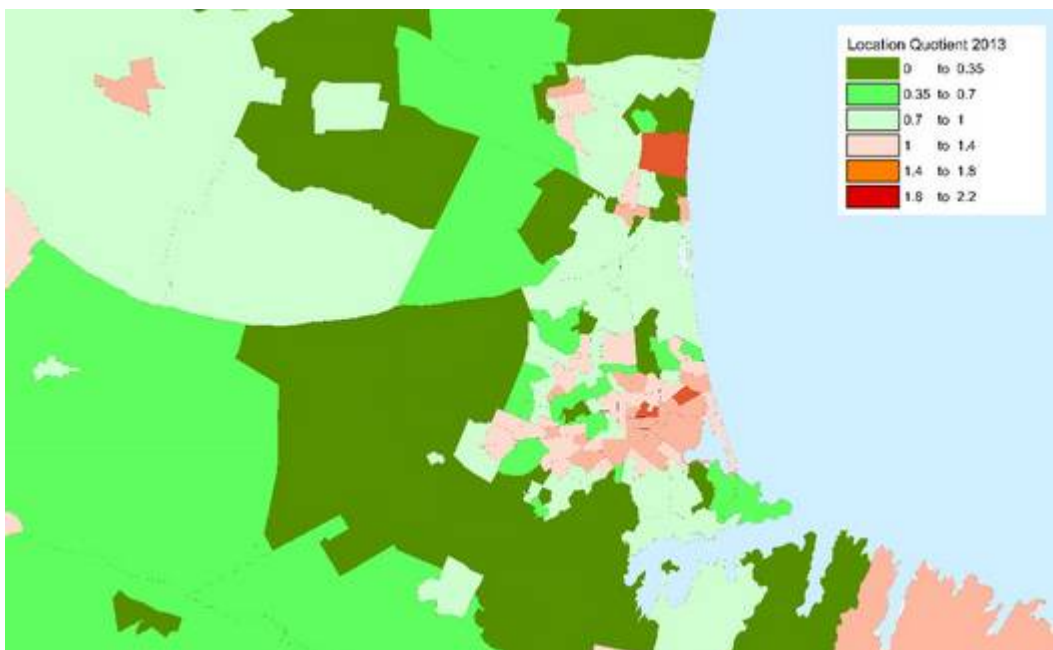


Figure 4.3: Low income location quotient 2006



Source: Modelled based on Statistics New Zealand data

Figure 4.4: Low income renter location quotients 2013



Source: Modelled based on Statistics New Zealand data



These trends reflect the changes that have occurred within the housing market and include variations in rents, the relative level of demand from different types of renters and changes in availability of housing rental stock. In 2006 low income renters were largely concentrated in the inner city. By 2013, they were much more dispersed over the urban area with higher concentrations developing in the north parts of Greater Christchurch (within Waimakariri District).

4.6 Housing need

Housing need is a measure of the total number of renter households within a community which require some assistance to meet their housing requirements. Total '**renter housing need**' encapsulates a number of different groups of households and includes the following groups:

- Financially stressed private renter households;
- Those households whose housing requirements are met by social, third sector and emergency housing; and
- People who are homeless or living in crowded dwellings.

Total renter housing need = stressed private renter households + social housing tenants + other need

'**Other need**' encapsulates those households who because of their circumstances have housing needs in addition to affordability. Other housing need is defined as the number of households, who because of their circumstances are in Housing New Zealand Corporation (HNZC), local authority, third sector and emergency housing, crowded households, or are homeless.

This section of the report presents analysis of:

- Current levels of housing need;
- Current need by household demographic characteristics;
- Projected growth in housing need; and
- Implications of the current and expected trends in housing need.

Estimates of current housing need build on the analysis presented in the previous sections of the report including the number of social tenants, levels of homelessness, and the number of stressed private renter households.



Table 4.11 presents the analysis of total housing need as at 2017 in Greater Christchurch.

Table 4.11: Total Housing Need as at 2017 in Greater Christchurch

	Financial Housing Stress (A)	Other Need			Total Housing Need (A + D)	% of All Renters	% of All Households
		Social Renters (B)	Other (C)	Total Other Need (B + C = D)			
Waimakariri UDS	1,670	250	130	380	2,050	53%	11%
Christchurch UDS	22,500	8,450	2,390	10,840	33,340	63%	23%
Selwyn UDS	1,010	10	160	170	1,180	39%	7%
Greater Christchurch	25,180	8,710	2,680	11,390	36,570	61%	20%

NB: Numbers are rounded to the nearest 10.

NB: The analysis is based on data from census, population projections (CCC & Statistics New Zealand), MBIE, and HNZC.

The overall level of housing need is greater in Christchurch City UDS submarkets than the balance of Greater Christchurch. This is a reflection of the higher number of low income renters and social renters living in the city. Greater Christchurch's relative level of housing stress is slightly higher than Greater Wellington (54% of all renters) and lower than areas such as Porirua (68% of all renters) and Masterton (67% of all renters). Waimakariri and Selwyn UDS submarkets have relatively lower levels of housing need which is a reflection of the relative income distribution of the households living in their submarkets.

The objective of this analysis is to attempt to provide an insight into how the requirement for social housing might change over the next 30 years as a result of the likely changes in the 'other need' category, relative to the existing social housing stock if the current relationship between social housing stock and total housing need over the next 30 years is maintained.

Table 4.12 presents analysis of the estimated growth in total housing need by financially stressed renter households and other need over the 2017 to 2048 period. These estimates assume:

- The growth in the level of 'other need' is proportionate to the growth in financially stressed renter households;
- Household incomes and market rents increase at approximately the same rate;
- There are no significant changes to the financial, structural and institutional environment in which the housing market operates over the next 30 years; and
- There are no unexpected corrections in the housing market over the next 30 years.



Table 4.12: Projected housing need – 2017 to 2048 in Greater Christchurch.

	Waimakariri UDS areas			Christchurch City UDS areas			Selwyn UDS areas		
	Total Need	Need as a % of		Total Need	Need as a % of		Total Need	Need as a % of	
		All renters	All hhlds		All renters	All hhlds		All renters	All hhlds
2017	2,050	53%	11%	33,340	63%	23%	1,180	39%	7%
2020	2,360	53%	12%	35,570	63%	23%	1,440	39%	8%
2027	3,070	54%	13%	40,860	64%	25%	2,080	40%	9%
2048	4,960	55%	15%	54,310	66%	29%	4,210	43%	11%
Change									
17 to 20	310	-0.1%	0.5%	2,230	-0.2%	0.5%	260	0.3%	0.4%
20 to 27	710	0.7%	1.1%	5,290	0.7%	1.4%	640	1.2%	1.0%
27 to 48	1,890	1.3%	2.4%	13,450	2.1%	4.3%	2,130	2.4%	2.7%
17 to 48	2,910	1.9%	3.9%	20,970	2.7%	6.2%	3,030	3.9%	4.2%

NB: Numbers are rounded to the nearest 10.

NB: These projections assume rents and household incomes increase at approximately the same rate between 2017 and 2048.

Source: Modelling housing outcomes based on data from census, population projections (Statistics New Zealand), MBIE, and HNZA.

The relative level of housing need is expected to increase across Greater Christchurch. Between 2017 and 2048 total need is projected to increase by 2,910 households (or 141%) in Waimakariri UDS submarkets, 20,970 household or 63% in Christchurch’s UDS submarkets and 3,030 households or 256% in Selwyn’s UDS submarkets. A total of 79% of the projected increase in total need is expected to occur in Christchurch City’s UDS submarkets. Housing need as a proportion of all renters falls between Selwyn District and Christchurch City and consistent with the trend in the other areas is expected to experience an increase in the proportion of needy households over the next 31 years.

This is primarily a reflection of the projected increase in the number of older one person and couple only renter households aged 65 years and older. As these relatively fixed low income households increase as a proportion of all renter households the level of housing need increases.



4.7 Implications of housing affordability and need trends on the demand for social housing

The objective of this section of the report is to discuss the implications of the current and projected level of housing need on the demand for additional social renter dwellings. Table 4.13 presents the potential increase in demand if the level of social renters relative to the total level of housing need remained constant between 2017 and 2048. In addition, the table also presents the implied growth in other areas of housing need and the growth in the number of stressed private renter households. This analysis does not imply the current ratio of social renters to total need is appropriate rather this is a policy decision and beyond the scope of this project.

Table 4.13: Implication of the projected growth in total need by type of need including the demand for social housing units in Greater Christchurch 2017 to 2048

	Projected total need		Implied growth in stressed private renters		Implied growth in social housing demand		Implied growth in other areas of housing need	
	Households	Annual ave growth	Households	Annual ave growth	Households	Annual ave growth	Households	Annual ave growth
2017	36,570		25,180		8,710		2,680	
2020	39,370	930	27,100	640	9,380	220	2,890	70
2027	46,010	950	31,680	650	10,960	230	3,370	70
2048	63,480	830	43,710	570	15,120	200	4,650	60

Source: Modelled based on data from Statistics New Zealand and MBIE
 NB: Numbers are rounded to the nearest 10.

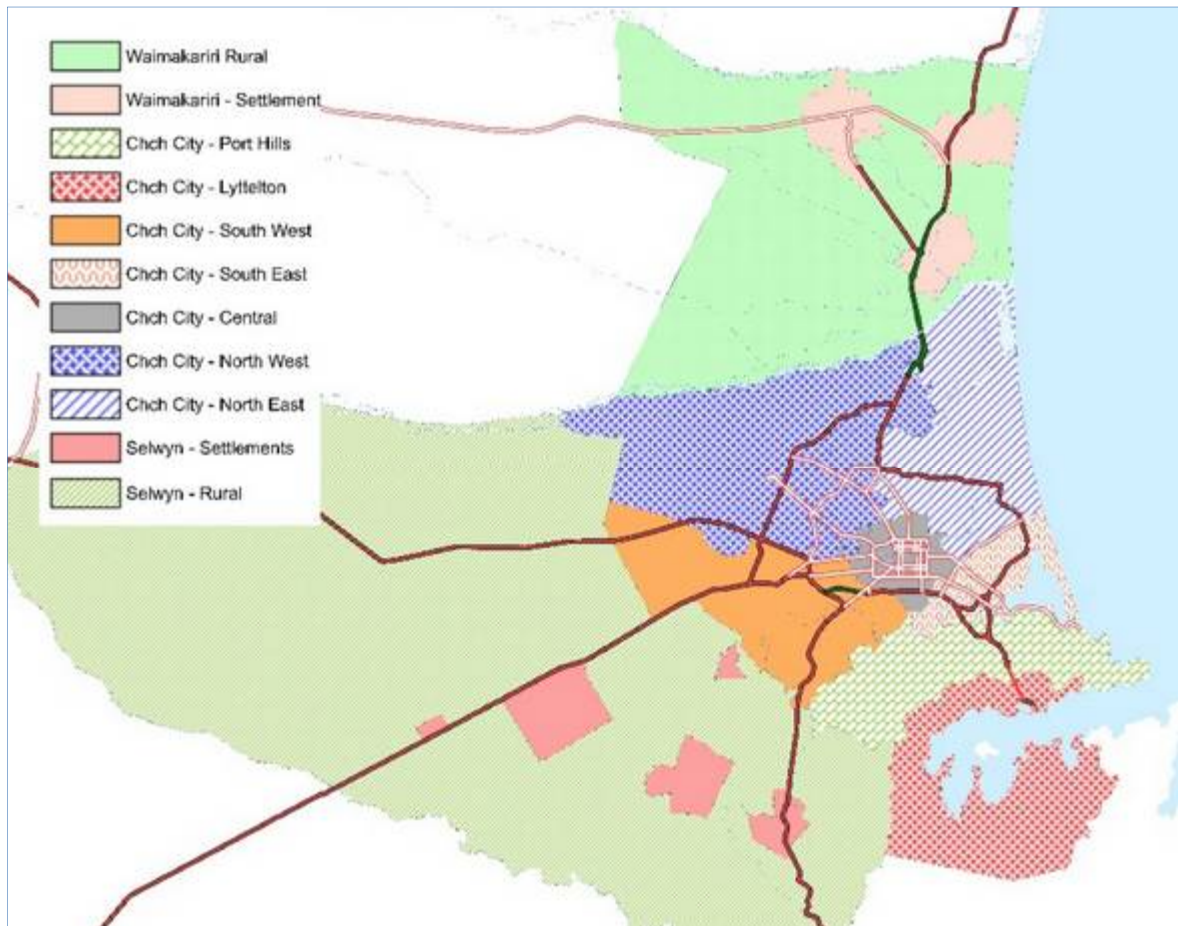
This analysis implies there will be additional demand for 200 to 230 extra social housing dwellings per annum between 2017 and 2048 if the current ratio of social renter dwelling to total housing need is maintained. In addition the geographical distribution of the additional social dwellings required is also a policy issue. Ideally these would be located in mixed tenure communities close to major employment centres, transport routes and with access to a range of social services.



Appendix 1
Submarket Definition



Appendix 1: Submarket boundary definitions



Statistic area units allocated to each submarket are:

1: Chch - Lyttelton Harbour

- 596400-Lyttelton
- 596502-Diamond Harbour
- 596503-Governors Bay

2: Chch Central

- 591500-Cathedral Square
- 591600-Hagley Park
- 591700-Avon Loop
- 592600-Edgware
- 593300-Richmond South
- 593501-Linwood
- 593502-Phillipstown
- 594600-Sydenham
- 594500-Waltham



592402-St Albans East
592401-St Albans West
592200-Merivale
589300-Holmwood
590701-Mona Vale
594700-Addington
590800-Riccarton
590900-Riccarton South

3: Chch - North East

590603-Waimairi Beach
590604-Styx
592820-Travis
595600-North Beach
592500-Mairehau
588101-Redwood North
588102-Redwood South
590501-Travis Wetland
590504-Mairehau North
590505-Westhaven
590506-Highfield Park
590507-Prestons
590602-Parklands
592300-Rutland
592701-Shirley West
592702-Shirley East
592811-Burwood
592812-Dallington
592900-Avondale
593000-Wainoni
593100-Aranui
593200-Richmond North
593400-Avonside
593600-Linwood North
595700-Rawhiti

4: Chch - North West

588300-Casebrook
589400-Fendalton
589602-Merrin
590400-Belfast
587811-Yaldhurst
588200-Styx Mill
588700-Bishopdale
587902-Mcleans Island
589800-Avonhead West
588401-Belfast South
588402-Sawyers Arms
588500-Bishopdale North



588600-Harewood
588800-Russley
588900-Burnside
589000-Wairarapa
589100-Jellie Park
589200-Bryndwr
589900-Avonhead
589500-Deans Bush
589601-Hawthornden
589700-Westburn
590000-Ilam
590100-Upper Riccarton
591800-Northcote
591900-Papanui
592000-Aorangi
592100-Strowan

5: Chch - Port Hills

596200-Sumner
587844-Westmorland
587903-Kennedys Bush
591101-Cashmere West
591102-Cashmere East
591200-Rapaki Track
591300-Heathcote Valley
596000-Mt Pleasant
596102-Moncks Bay

6: Chch - South East

594100-Woolston South
593700-Linwood East
593800-Bexley
593900-Bromley
594010-Woolston West
594020-Ferrymead
594200-Ensors
594300-Opawa
594400-St Martins
595500-Beckenham
595800-New Brighton
595900-South Brighton

7: Chch - South west

587303-Oaklands West
587830-Islington
590200-Wharenui
590702-Riccarton West
595400-Somerfield
587400-Hornby North



587701-Sockburn
587500-Hornby South
587302-Halswell South
587304-Oaklands East
587702-Wigram
587812-Broomfield
587821-Paparua
587822-Templeton
587842-Halswell West
587845-Aidanfield
587846-Halswell Domain
587847-Hendersons Basin
590300-Middleton
594800-Barrington North
594900-Barrington South
595000-Spreydon
595100-Hoon Hay
595200-Hoon Hay South
595300-Hillmorton

8: Selwyn Rural-

587010-Kirwee
597512-Springston
587849-Trents-Ladbrooks
587904-West Melton

9: Selwyn - Settlements

587020-Burnham Military Camp
597200-Lincoln
597507-Rolleston North West
597508-Rolleston Central
597509-Rolleston North East
597510-Rolleston South West
587848-Prebbleton
587905-Taitapu
597513-Rolleston South East

10: Waimakariri UDS rural

586126-Woodend Beach
586001-Camside
586002-Pines-Kairaki Beach
586112-Waikuku
586121-Fernside
586127-Coldstream
586129-Tuahiwi
586603-Mandeville
586604-Ohoka
586501-Clarkville

-



11: Waimakariri UDS settlements

- 586122-Lehmans
- 586504-Silverstream
- 586303-Rangiora East
- 586304-Southbrook
- 586305-Kingsbury
- 586306-Rangiora North
- 586120-Woodend
- 586307-Rangiora West
- 586124-Pegasus
- 586308-Rangiora Central
- 586128-Ravenswood
- 586130-Woodend West
- 586403-Kaiapoi South
- 586404-Mansfield
- 586405-Courtenay
- 586407-Kaiapoi East
- 586408-Kaiapoi North West
- 586409-Kaiapoi North East
- 586503-Kaiapoi West



Appendix 2

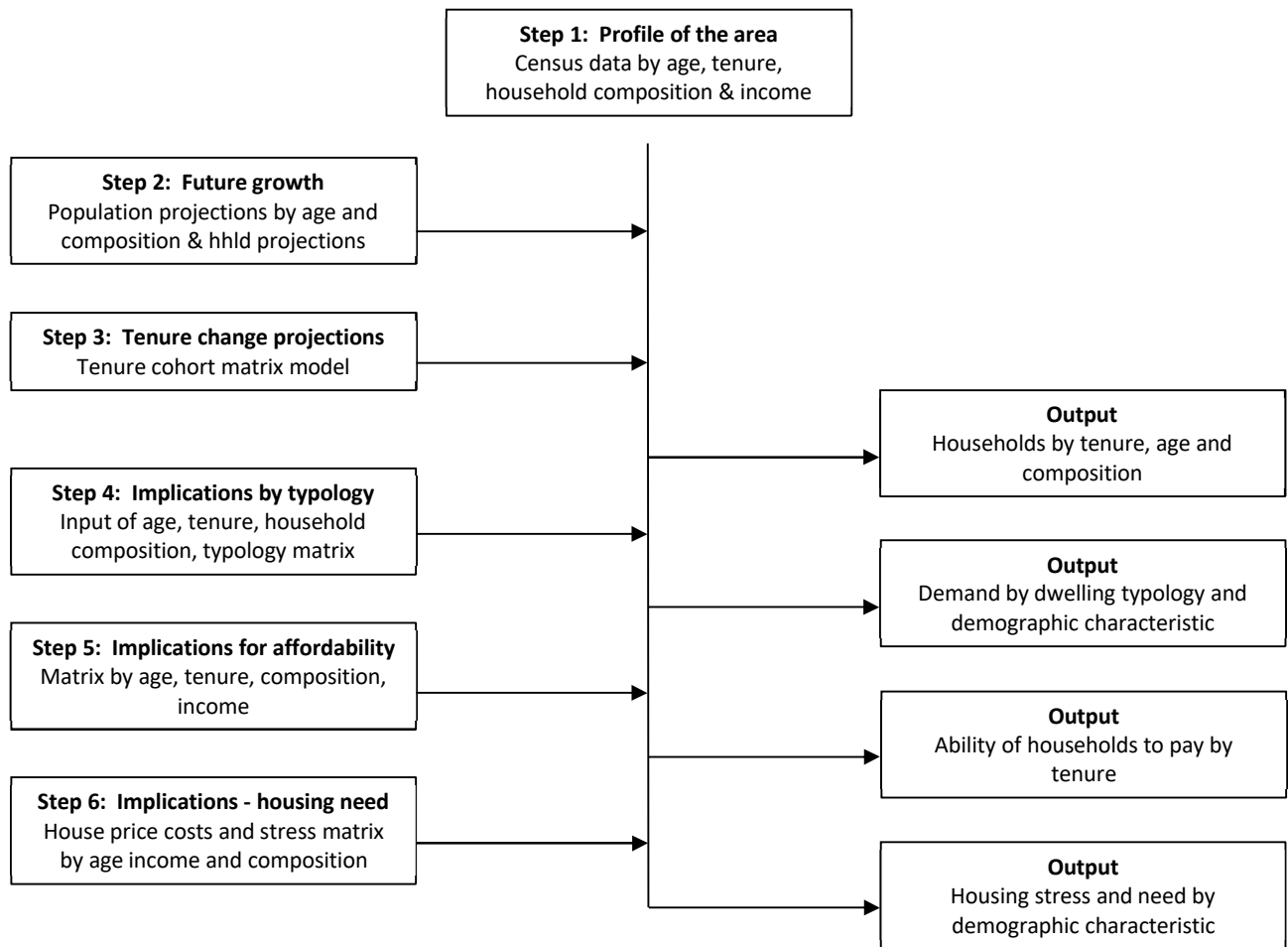
Overview of the modelling methodology



Appendix 2: Overview of modelling methodology

The objective of this appendix is to provide a high level overview of the modelling methodology . An overview of the different stages in the modelling methodology is presented in Figure 1.

Figure 1: Overview of the modelling methodology



The approach adopted has a number of key assumptions and these include:

- As agreed, Christchurch City’s population increases in line with Statistics New Zealand’s medium growth scenario. Waimakariri and Selwyn Districts’ populations increase in line with Statistics New Zealand’s medium – high population growth scenario;
- Underlying change in age structure and family composition changes associated with Statistic New Zealand’s population projections hold true;
- There are no significant unexpected changes to greater Christchurch’s and the National economies over the projection period;
- There are no significant changes to the institutional and structural settings in the local housing markets.



Description of each stage follows:

Step 1: Submarket household profile

Census results are used to provide a profile of the usually resident households in each submarket by age of the reference person, household composition, household income and tenure.

Step 2: Household projections by submarket and demographic characteristic

Statistics New Zealand population projections by age and family composition are combined with their household projection data and population projections by area unit to model the projected growth in the number of usually resident households living in each submarket by age of the reference person and household composition. These results are cross referenced with the 2013 census results to form a common reference point.

Step 3: Household projections by tenure

Tenure projections (split between owner occupied dwellings and renter households) are modelled using a tenure cohort multi-dimensional matrix approach. This approach tracks individual cohorts (by age and household composition) between 1991 and 2013 by the rate of owner occupation. These trends are projected forward with reference to the tenure change of other cohorts (by age and household composition). The rate of owner occupation matrix (by age and household composition) is combined with the household projections (by age and household composition from stage 2) to provide the projected number of households by age, household composition and tenure.

Step 4: Implications of the projections by age household composition and tenure on the demand by dwelling typology

Step 4 builds on the household projection modelled in step 4. Census data is used to develop a matrix (the dwelling typology matrix) which reflects the propensity of different cohorts (by age, household composition and tenure) to live in different types of dwellings. Dwelling typology is categorised as:

- Standalone dwellings of two bedrooms or less;
- Standalone dwellings of three bedrooms or more;
- Multi-unit dwellings of two bedrooms or less; and
- Multi-unit dwellings of three bedrooms or more.

The dwelling typology matrix (reflecting the propensity of different age groups, household composition and tenure households to live in different dwelling typologies) is combined with the household projections (by tenure, age and household composition) to provide projections of the demand for different dwelling typologies by the demographic characteristics of households.

Step 5: Affordability Statistics

Customised census outputs are used to develop a profile of the usually resident households by age of the reference person, household composition, tenure and household income. This profile is used to profile household income distribution in future years in 2013 dollars assuming the underlying structure of the submarket's income profile by age, household composition and tenure remains constant. Thus, as the



proportion of different groups within the submarkets population change over time so does its overall income profile.

The submarkets' income profiles are combined with housing cost data sourced from MBIE's urban development dashboard to provide a range of affordability measures.

Step 6: Implications for housing need

Housing need is defined as those renter households that need assistance in providing appropriate housing to meet their requirements. Housing need in the context of this report is measured as the total number of renter households within a community which require some assistance to meet their housing requirements and encapsulates a number of different groups of households and includes the following groups:

- Financially stressed private renter households;
- Those households whose housing requirements are met by social, third sector and emergency housing; and
- People who are homeless or living in crowded dwellings.

Total renter housing need = stressed private renter households + social housing tenants + other need

'Other need' encapsulates those households who because of their circumstances have housing needs in addition to affordability. Other housing need is defined as the number of households, who because of their circumstances are in Housing New Zealand Corporation (HNZC), local authority, third sector and emergency housing, crowded households, or are homeless.

This section of the report presents analysis of:

- Current levels of housing need;
- Current need by household demographic characteristics;
- Projected growth in housing need; and
- Implications of the current and expected trends in housing need.

Secondary data sources combined with a series of semi structured interviews with social and emergency housing providers will be used to provide an estimate of the number of households in social and emergency housing and homeless people. Data on the relative level of crowded households is sourced from customised data from Statistics New Zealand.

Financially stressed households are measured using the income profile data (by household composition, household composition, tenure and income) developed in the previous stage and data from statistics New Zealand about the relative level of housing stress by these different household cohorts. The modelled output provides estimates of the number of financially stressed private renters. When combined with different scenarios of variations in key housing costs estimates of future levels of housing stressed can be modelled. The output from this stage of the analysis is the total level of renter housing need combined with projection of future need under a range of assumptions.



Appendix 3
Detailed Demand Outputs



Table A1: Greater Christchurch household projections by tenure, age and household composition

	Owners						Renters					
	less than 30 yrs	30 to 40	40 to 50	50 to 64	65 yrs +	Total	less than 30 yrs	30 to 40	40 to 50	50 to 64	65 yrs +	Total
2013												
Couples only	1,420	2,560	3,080	14,140	14,490	35,690	2,750	1,730	990	2,020	1,660	9,150
Couples with	1,610	9,340	14,590	8,920	1,100	35,560	1,990	3,960	3,190	1,320	110	10,570
One parent	210	720	2,460	2,500	790	6,680	1,320	1,820	2,300	1,220	310	6,970
One person	270	1,220	2,620	6,950	12,410	23,470	1,120	1,810	2,470	4,010	4,580	13,990
Other	1,390	1,750	2,330	4,110	1,290	10,870	6,010	2,310	1,870	1,820	460	12,470
Total	4,900	15,590	25,080	36,620	30,080	112,270	13,190	11,630	10,820	10,390	7,120	53,150
2018												
Couples only	1,660	2,860	3,050	16,080	18,080	65,380	3,410	2,080	1,090	2,490	2,130	22,400
Couples with	1,880	10,410	14,720	9,600	1,360	74,580	2,420	4,390	2,990	1,440	140	22,760
One parent	310	690	2,450	2,700	1,030	13,330	1,470	2,120	2,450	1,450	340	15,660
One person	340	1,250	2,420	7,230	14,350	36,830	1,350	2,220	2,820	5,120	5,830	34,680
Other	1,470	1,880	2,390	4,710	1,510	22,410	6,830	2,680	1,750	1,810	540	27,220
Total	5,660	17,090	25,030	40,320	36,330	124,430	15,480	13,490	11,100	12,310	8,980	122,720
2023												
Couples only	1,680	3,170	2,750	17,360	22,720	95,360	3,630	2,710	1,210	3,270	2,410	26,460
Couples with	1,820	11,290	13,530	9,730	1,550	75,840	2,470	5,480	3,120	1,650	170	25,780
One parent	360	850	2,010	2,440	1,270	13,860	1,460	2,220	2,710	1,950	420	17,520
One person	380	1,480	2,210	7,460	17,240	57,540	1,380	2,690	3,040	6,260	7,220	41,180
Other	1,350	2,020	2,140	4,880	1,790	24,360	6,630	3,210	1,770	1,940	560	28,220
Total	5,590	18,810	22,640	41,870	44,570	133,480	15,570	16,310	11,850	15,070	10,780	69,580
2028												
Couples only	1,690	3,240	2,830	17,120	26,840	103,440	3,730	2,940	1,380	3,780	3,570	30,800
Couples with	1,760	11,920	13,790	8,790	1,720	75,960	2,430	5,790	3,450	1,630	200	27,000
One parent	350	850	2,000	2,180	1,430	13,620	1,450	2,240	2,840	1,840	500	17,740
One person	370	1,600	2,380	7,250	20,190	63,580	1,430	3,030	3,460	6,510	9,160	47,180
Other	1,320	2,060	2,290	4,740	2,020	24,860	6,820	3,510	1,970	2,050	680	30,060
Total	5,490	19,670	23,290	40,080	52,200	140,730	15,860	17,510	13,100	15,810	14,110	76,390
2033												
Couples only	1,700	3,130	2,930	16,000	29,430	106,380	3,920	2,900	1,710	4,480	4,960	35,940
Couples with	1,860	11,900	15,270	8,320	1,820	78,340	2,350	5,390	3,810	1,450	190	26,380
One parent	350	910	2,140	1,830	1,510	13,480	1,470	2,110	3,100	2,000	620	18,600
One person	370	1,580	2,750	6,780	22,410	67,780	1,480	3,020	4,150	6,950	11,370	53,940
Other	1,360	2,020	2,570	4,490	2,110	25,100	7,120	3,490	2,530	2,210	780	32,260
Total	5,640	19,540	25,660	37,420	57,280	145,540	16,340	16,910	15,300	17,090	17,920	83,560



Table xx: Greater Christchurch household projections by tenure, age and household composition continued

	Owners						Renters					
	less than 30 yrs	30 to 40	40 to 50	50 to 64	65 yrs +	Total	less than 30 yrs	30 to 40	40 to 50	50 to 64	65 yrs +	Total
2038												
Couples only	1,790	3,120	2,990	15,070	31,680	77,620	4,000	2,930	1,890	4,960	6,250	40,060
Couples with	1,950	12,000	15,810	8,510	1,830	78,370	2,410	5,420	4,250	1,550	230	27,720
One parent	350	900	2,360	1,730	1,620	12,300	1,460	2,070	3,000	2,160	710	18,800
One person	440	1,600	2,990	6,400	24,230	47,090	1,510	3,040	4,560	7,360	13,350	59,640
Other	1,400	2,030	2,770	4,390	2,180	23,360	7,300	3,590	2,830	2,430	850	34,000
Total	5,930	19,650	26,920	36,100	61,540	150,140	16,680	17,050	16,530	18,460	21,390	90,110
2043												
Couples only	1,800	3,190	3,020	14,860	32,200	110,140	4,110	3,010	2,050	5,460	7,250	43,760
Couples with	1,940	12,220	16,220	8,470	1,890	81,480	2,500	5,630	4,520	1,750	250	29,300
One parent	350	900	2,580	1,660	1,670	14,320	1,480	2,080	2,880	2,290	750	18,960
One person	460	1,670	3,170	6,470	24,970	73,480	1,610	3,230	4,830	7,860	14,950	64,960
Other	1,460	2,080	2,950	4,380	2,220	26,180	7,530	3,620	3,110	2,570	910	35,480
Total	6,010	20,060	27,940	35,840	62,950	152,800	17,230	17,570	17,390	19,930	24,110	96,230
2048												
Couples only	1,840	3,260	3,080	14,800	32,690	111,340	4,160	3,060	2,140	5,740	8,140	46,480
Couples with	1,980	12,530	16,850	8,610	1,920	83,780	2,580	5,930	4,750	1,940	260	30,920
One parent	360	900	2,660	1,760	1,670	14,700	1,500	2,170	2,960	2,300	840	19,540
One person	470	1,760	3,320	6,680	25,900	76,260	1,680	3,370	5,100	8,190	16,280	69,240
Other	1,450	2,130	3,030	4,350	2,370	26,660	7,680	3,790	3,170	2,650	1,000	36,580
Total	6,100	20,580	28,940	36,200	64,550	156,370	17,600	18,320	18,120	20,820	26,520	101,380

Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
Standalone																								
2013																								
Couples only	200	1,130	340	2,100	370	2,610	1,230	12,700	1,780	11,870	3,920	30,410	460	760	280	660	200	450	340	1,110	310	760	1,590	3,740
Couples with	100	1,520	460	8,970	420	14,430	220	8,860	10	1,110	1,210	34,890	200	1,320	240	2,930	130	2,520	20	1,110	0	100	590	7,980
One parent	20	190	10	670	0	180	60	630	110	2,400	200	4,070	130	650	190	1,140	130	780	270	1,060	20	1,760	740	5,390
One person	30	190	220	660	80	1,450	1,360	3,770	2,820	5,500	4,510	11,570	160	310	310	330	360	470	690	720	830	880	2,350	2,710
Other	50	1,250	70	1,610	70	2,250	180	3,860	20	1,260	390	10,230	230	3,930	130	1,610	100	1,360	140	1,240	60	270	660	8,410
Total	400	4,280	1,100	14,010	940	20,920	3,050	29,820	4,740	22,140	10,230	91,170	1,180	6,970	1,150	6,670	920	5,580	1,460	5,240	1,220	3,770	5,930	28,230
Multi-Unit																								
Couples only	80	30	140	50	170	40	410	390	980	460	1,780	970	1,370	140	660	100	290	40	430	100	520	40	3,270	420
Couples with	30	10	150	190	120	250	60	130	0	0	360	580	330	80	490	210	220	240	70	90	10	0	1,120	620
One parent	0	0	50	10	100	100	110	80	0	0	260	190	420	100	330	140	400	240	250	80	50	0	1,450	560
One person	50	0	290	0	470	130	1,210	460	3,390	720	5,410	1,310	620	30	1,110	50	1,460	50	2,310	90	2,700	30	8,200	250
Other	50	50	50	40	40	40	90	110	30	0	260	240	790	960	290	240	220	140	330	100	120	0	1,750	1,440
Total	210	90	680	290	900	560	1,880	1,170	4,400	1,180	8,070	3,290	3,530	1,310	2,880	740	2,590	710	3,390	460	3,400	70	15,790	3,290



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2018																								
Standalone																								
Couples only	250	1,320	460	2,440	460	2,680	1,840	14,950	2,780	15,510	5,790	36,900	640	1,070	350	870	240	520	430	1,340	390	930	2,050	4,730
Couples with	180	1,830	800	10,300	850	14,970	540	9,830	60	1,400	2,430	38,330	250	1,700	290	3,300	180	2,360	40	1,170	0	120	760	8,650
One parent	60	230	50	650	40	270	80	610	190	2,480	420	4,240	170	760	230	1,350	160	900	330	1,290	30	1,890	920	6,190
One person	40	220	70	220	280	750	580	1,510	1,980	3,700	2,950	6,400	190	400	260	290	340	480	540	590	950	1,030	2,280	2,790
Other	100	1,320	130	1,760	130	2,370	370	4,590	90	1,540	820	11,580	340	4,600	170	1,940	100	1,290	150	1,240	70	340	830	9,410
Total	630	4,920	1,510	15,370	1,760	21,040	3,410	31,490	5,100	24,630	12,410	97,450	1,590	8,530	1,300	7,750	1,020	5,550	1,490	5,630	1,440	4,310	6,840	31,770
Multi-Unit																								
Couples only	150	60	180	80	180	50	510	510	1,260	590	2,280	1,290	1,600	170	750	130	320	40	580	150	780	40	4,030	530
Couples with	40	10	190	220	160	290	80	170	0	0	470	690	380	100	580	250	270	270	100	110	20	0	1,350	730
One parent	10	20	50	10	120	110	130	90	0	0	310	230	450	100	380	160	450	260	300	100	80	0	1,660	620
One person	90	0	380	50	530	210	1,550	690	4,370	1,300	6,920	2,250	720	30	1,340	50	1,630	80	2,950	160	3,500	60	10,140	380
Other	110	90	80	70	50	60	130	150	30	0	400	370	860	1,060	320	260	210	130	320	110	140	0	1,850	1,560
Total	400	180	880	430	1,040	720	2,400	1,610	5,660	1,890	10,380	4,830	4,010	1,460	3,370	850	2,880	780	4,250	630	4,520	100	19,030	3,820



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2023																								
Standalone																								
Couples only	260	1,310	500	2,670	380	2,410	1,970	16,190	3,450	19,520	6,560	42,100	650	1,170	460	1,140	250	590	570	1,820	420	1,020	2,350	5,740
Couples with	160	1,780	840	11,190	780	13,770	540	9,990	100	1,620	2,420	38,350	240	1,770	340	4,180	180	2,470	40	1,370	0	150	800	9,940
One parent	80	270	50	800	50	310	100	760	150	2,040	430	4,180	170	770	240	1,420	160	900	330	1,340	30	2,110	930	6,540
One person	50	240	70	240	330	900	540	1,380	2,030	3,820	3,020	6,580	210	400	250	280	430	580	560	610	1,170	1,260	2,620	3,130
Other	90	1,210	140	1,920	120	2,120	360	4,770	110	1,830	820	11,850	340	4,510	210	2,340	110	1,320	160	1,330	80	340	900	9,840
Total	640	4,810	1,600	16,820	1,660	19,510	3,510	33,090	5,840	28,830	13,250	103,060	1,610	8,620	1,500	9,360	1,130	5,860	1,660	6,470	1,700	4,880	7,600	35,190
Multi-Unit																								
Couples only	170	80	240	130	190	70	640	640	1,680	860	2,920	1,780	1,710	190	1,000	180	340	40	770	210	940	50	4,760	670
Couples with	60	30	260	310	220	330	130	190	20	20	690	880	380	110	730	340	270	290	110	160	20	0	1,510	900
One parent	20	20	70	10	120	100	140	100	0	0	350	230	450	100	430	170	490	300	430	140	110	0	1,910	710
One person	100	0	450	60	500	190	1,580	730	5,220	1,570	7,850	2,550	740	30	1,640	70	1,780	90	3,610	180	4,390	90	12,160	460
Other	100	100	90	80	60	60	150	180	60	30	460	450	870	1,060	400	330	230	140	350	130	150	0	2,000	1,660
Total	450	230	1,110	590	1,090	750	2,640	1,840	6,980	2,480	12,270	5,890	4,150	1,490	4,200	1,090	3,110	860	5,270	820	5,610	140	22,340	4,400



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2028																								
Standalone																								
Couples only	260	1,340	490	2,760	400	2,490	1,900	15,950	4,020	23,080	7,070	45,620	690	1,200	500	1,280	290	660	670	2,160	660	1,600	2,810	6,900
Couples with	150	1,710	880	11,830	810	14,020	470	9,050	110	1,800	2,420	38,410	250	1,780	390	4,490	190	2,760	60	1,360	0	170	890	10,560
One parent	60	270	50	810	40	310	100	760	150	2,030	400	4,180	170	770	240	1,430	160	900	320	1,360	30	2,200	920	6,660
One person	50	240	80	220	340	980	570	1,480	1,970	3,730	3,010	6,650	210	430	260	310	470	670	640	710	1,210	1,370	2,790	3,490
Other	90	1,170	150	1,950	120	2,270	350	4,650	110	2,070	820	12,110	360	4,650	210	2,580	120	1,480	180	1,440	100	410	970	10,560
Total	610	4,730	1,650	17,570	1,710	20,070	3,390	31,890	6,360	32,710	13,720	106,970	1,680	8,830	1,600	10,090	1,230	6,470	1,870	7,030	2,000	5,750	8,380	38,170
Multi-Unit																								
Couples only	170	80	250	140	210	100	740	730	2,180	1,220	3,550	2,270	1,750	200	1,060	220	410	40	870	250	1,340	90	5,430	800
Couples with	70	50	370	410	320	430	180	230	30	30	970	1,150	380	120	760	360	300	320	110	150	30	0	1,580	950
One parent	10	20	70	20	140	110	140	110	30	30	390	290	450	100	440	170	520	320	390	130	120	0	1,920	720
One person	90	0	490	70	540	210	1,550	690	6,060	1,770	8,730	2,740	770	30	1,850	80	2,050	120	3,710	200	5,560	150	13,940	580
Other	110	90	110	100	80	80	180	210	70	40	550	520	900	1,090	440	380	240	170	370	130	170	0	2,120	1,770
Total	450	240	1,290	740	1,290	930	2,790	1,970	8,370	3,090	14,190	6,970	4,250	1,540	4,550	1,210	3,520	970	5,450	860	7,220	240	24,990	4,820



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2033																								
Standalone																								
Couples only	270	1,370	480	2,690	430	2,570	1,800	14,960	4,420	25,470	7,400	47,060	740	1,270	500	1,270	360	840	800	2,650	930	2,320	3,330	8,350
Couples with	160	1,830	890	11,860	920	15,590	480	8,560	110	1,910	2,560	39,750	240	1,730	370	4,240	220	3,070	50	1,230	0	160	880	10,430
One parent	60	270	50	860	40	310	100	810	160	2,170	410	4,420	170	800	240	1,370	160	910	320	1,290	40	2,410	930	6,780
One person	40	230	80	230	340	980	650	1,700	1,850	3,520	2,960	6,660	220	460	280	320	490	700	810	860	1,330	1,530	3,130	3,870
Other	90	1,210	150	1,910	150	2,580	330	4,430	110	2,170	830	12,300	410	4,900	250	2,590	170	1,910	210	1,570	110	480	1,150	11,450
Total	620	4,910	1,650	17,550	1,880	22,030	3,360	30,460	6,650	35,240	14,160	110,190	1,780	9,160	1,640	9,790	1,400	7,430	2,190	7,600	2,410	6,900	9,420	40,880
Multi-Unit																								
Couples only	190	100	240	150	220	100	730	710	2,440	1,370	3,820	2,430	1,840	220	1,040	220	510	80	990	300	1,780	160	6,160	980
Couples with	90	60	380	440	370	510	190	210	40	40	1,070	1,260	360	130	700	360	360	360	100	140	30	0	1,550	990
One parent	10	20	70	20	140	120	120	100	30	30	370	290	450	100	420	170	580	360	430	160	130	0	2,010	790
One person	90	0	480	70	610	240	1,460	680	6,730	2,050	9,370	3,040	780	30	1,830	80	2,460	150	3,970	260	6,830	230	15,870	750
Other	110	110	110	100	90	100	180	210	70	40	560	560	960	1,150	430	370	330	240	390	140	220	0	2,330	1,900
Total	490	290	1,280	780	1,430	1,070	2,680	1,910	9,310	3,530	15,190	7,580	4,390	1,630	4,420	1,200	4,240	1,190	5,880	1,000	8,990	390	27,920	5,410



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2038																								
Standalone																								
Couples only	270	1,450	470	2,690	440	2,630	1,710	14,140	4,740	27,560	7,630	48,470	760	1,330	500	1,330	410	990	890	2,990	1,190	3,050	3,750	9,690
Couples with	180	1,910	880	11,980	960	16,160	510	8,760	110	1,920	2,640	40,730	240	1,790	370	4,330	240	3,490	60	1,300	0	200	910	11,110
One parent	60	270	50	850	40	310	100	810	160	2,400	410	4,640	170	780	230	1,350	160	910	310	1,290	40	2,340	910	6,670
One person	50	270	90	280	340	990	730	1,870	1,750	3,320	2,960	6,730	230	470	290	330	510	700	900	980	1,440	1,630	3,370	4,110
Other	100	1,250	160	1,920	170	2,790	330	4,330	130	2,260	890	12,550	430	5,060	250	2,680	190	2,180	220	1,740	110	520	1,200	12,180
Total	660	5,150	1,650	17,720	1,950	22,880	3,380	29,910	6,890	37,460	14,530	113,120	1,830	9,430	1,640	10,020	1,510	8,270	2,380	8,300	2,780	7,740	10,140	43,760
Multi-Unit																								
Couples only	210	100	250	150	220	110	730	690	2,740	1,550	4,150	2,600	1,880	230	1,050	230	540	80	1,090	340	2,200	210	6,760	1,090
Couples with	90	60	430	470	470	550	220	260	40	40	1,250	1,380	390	130	700	350	380	380	120	150	30	0	1,620	1,010
One parent	10	20	80	30	160	150	110	100	40	40	400	340	460	110	420	170	580	350	480	160	150	0	2,090	790
One person	100	0	480	70	670	270	1,380	650	7,280	2,230	9,910	3,220	800	40	1,850	100	2,700	170	4,250	300	7,980	290	17,580	900
Other	140	120	130	110	110	110	200	220	90	50	670	610	1,000	1,190	460	400	360	260	450	170	230	0	2,500	2,020
Total	550	300	1,370	830	1,630	1,190	2,640	1,920	10,190	3,910	16,380	8,150	4,530	1,700	4,480	1,250	4,560	1,240	6,390	1,120	10,590	500	30,550	5,810



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2043																								
Standalone																								
Couples only	260	1,450	480	2,760	460	2,670	1,690	13,950	4,820	28,110	7,710	48,940	810	1,380	530	1,380	430	1,100	990	3,310	1,360	3,640	4,120	10,810
Couples with	180	1,900	890	12,220	980	16,610	510	8,770	120	1,990	2,680	41,490	260	1,860	400	4,520	270	3,730	80	1,490	0	220	1,010	11,820
One parent	70	270	50	850	50	310	100	810	200	2,630	470	4,870	180	810	240	1,360	180	930	340	1,300	50	2,250	990	6,650
One person	50	280	90	300	350	1,050	780	2,010	1,770	3,370	3,040	7,010	260	500	320	350	520	760	960	1,040	1,540	1,730	3,600	4,380
Other	120	1,310	160	1,980	200	2,990	340	4,330	140	2,310	960	12,920	480	5,210	250	2,710	200	2,410	240	1,840	140	580	1,310	12,750
Total	680	5,210	1,670	18,110	2,040	23,630	3,420	29,870	7,050	38,410	14,860	115,230	1,990	9,760	1,740	10,320	1,600	8,930	2,610	8,980	3,090	8,420	11,030	46,410
Multi-Unit																								
Couples only	230	110	260	160	250	120	750	740	2,900	1,660	4,390	2,790	1,940	240	1,070	250	590	90	1,180	390	2,510	310	7,290	1,280
Couples with	90	60	480	510	550	620	230	280	50	40	1,400	1,510	410	140	730	370	420	410	140	180	30	0	1,730	1,100
One parent	20	30	90	30	190	150	110	100	50	40	460	350	460	110	440	170	560	340	500	180	150	10	2,110	810
One person	100	0	490	80	700	270	1,430	660	7,560	2,320	10,280	3,330	880	40	1,960	110	2,860	180	4,560	310	8,920	370	19,180	1,010
Other	140	120	140	130	130	130	210	220	100	60	720	660	1,050	1,250	480	410	400	280	460	190	240	10	2,630	2,140
Total	580	320	1,460	910	1,820	1,290	2,730	2,000	10,660	4,120	17,250	8,640	4,740	1,780	4,680	1,310	4,830	1,300	6,840	1,250	11,850	700	32,940	6,340



Table A2: Household demand by tenure, age of the household reference person, dwelling typology, number of bedrooms and household composition continued

	Owner Occupier												Renters											
	30 yrs -		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total		30 yrs-		30 to 40 yrs		40 to 50 yrs		50 to 64 yrs		65 yrs +		Total	
	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+	2 brm-	3brm+
2048																								
Standalone																								
Couples only	260	1,490	480	2,830	450	2,730	1,670	13,880	4,870	28,610	7,730	49,540	810	1,410	550	1,420	450	1,170	1,030	3,530	1,530	4,210	4,370	11,740
Couples with	190	1,940	920	12,530	1,030	17,270	520	8,910	120	2,020	2,780	42,670	270	1,940	430	4,780	300	3,950	80	1,650	0	230	1,080	12,550
One parent	70	280	50	840	50	320	100	810	210	2,720	480	4,970	190	830	260	1,420	180	960	340	1,380	60	2,330	1,030	6,920
One person	60	290	90	310	380	1,100	790	2,100	1,820	3,480	3,140	7,280	260	530	330	370	550	790	1,030	1,130	1,620	1,840	3,790	4,660
Other	110	1,300	160	2,030	200	3,070	350	4,300	140	2,460	960	13,160	490	5,350	270	2,850	210	2,490	260	1,920	160	630	1,390	13,240
Total	690	5,300	1,700	18,540	2,110	24,490	3,430	30,000	7,160	39,290	15,090	117,620	2,020	10,060	1,840	10,840	1,690	9,360	2,740	9,610	3,370	9,240	11,660	49,110
Multi-Unit																								
Couples only	230	120	270	170	250	130	790	780	3,050	1,800	4,590	3,000	1,970	270	1,090	270	610	100	1,230	430	2,770	330	7,670	1,400
Couples with	100	70	550	570	610	700	260	320	50	40	1,570	1,700	430	150	790	410	450	450	140	200	30	0	1,840	1,210
One parent	20	30	90	40	200	180	130	110	50	40	490	400	460	110	460	190	570	350	510	180	160	10	2,160	840
One person	100	0	520	80	740	280	1,470	680	7,800	2,380	10,630	3,420	910	40	2,060	110	3,000	190	4,780	350	9,670	420	20,420	1,110
Other	140	130	160	140	140	140	220	230	120	70	780	710	1,090	1,280	510	420	410	290	490	200	270	10	2,770	2,200
Total	590	350	1,590	1,000	1,940	1,430	2,870	2,120	11,070	4,330	18,060	9,230	4,860	1,850	4,910	1,400	5,040	1,380	7,150	1,360	12,900	770	34,860	6,760



Table A3: Submarket demand by age group

	less than 25 yrs	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55-59 Years	60-64 Years	65-69 Years	70-74 Years	75-79 Years	80-84 Years	85 Years and Over	Total
Waimakariri - rural															
2013	80	80	170	330	580	610	570	520	470	340	220	120	40	30	4,160
2018	120	130	210	330	520	670	640	650	540	420	290	180	60	50	4,810
2023	130	150	270	390	530	580	710	760	680	490	370	250	100	70	5,480
2028	130	150	300	470	600	550	640	840	790	600	440	320	130	110	6,070
2033	130	150	300	530	740	640	610	770	860	670	550	370	160	160	6,640
2038	130	150	310	540	810	770	680	750	790	740	630	460	190	220	7,170
2043	130	150	320	540	870	900	740	720	680	780	680	540	220	270	7,540
2048	130	150	330	550	930	1,030	800	690	560	830	740	630	250	330	7,950
Waimakariri settlements															
2013	270	470	650	930	1,240	1,210	1,150	970	950	970	870	710	520	340	11,250
2018	360	740	880	960	1,150	1,370	1,350	1,290	1,140	1,230	1,210	1,090	670	520	13,960
2023	370	880	1,190	1,120	1,110	1,210	1,500	1,470	1,430	1,420	1,500	1,500	1,000	700	16,400
2028	410	890	1,320	1,380	1,250	1,120	1,270	1,550	1,580	1,680	1,690	1,820	1,340	1,030	18,330
2033	420	930	1,300	1,490	1,500	1,220	1,180	1,310	1,640	1,810	1,960	2,030	1,610	1,460	19,860
2038	440	940	1,390	1,520	1,660	1,480	1,320	1,250	1,440	1,910	2,150	2,420	1,850	1,940	21,710
2043	460	940	1,460	1,530	1,810	1,710	1,440	1,170	1,220	1,970	2,290	2,750	2,050	2,380	23,180
2048	480	940	1,530	1,540	1,960	1,950	1,570	1,090	990	2,020	2,420	3,050	2,230	2,800	24,570
Christchurch - central															
2013	2,130	2,230	1,950	1,730	1,890	1,860	1,730	1,610	1,330	1,030	750	600	410	410	19,660
2018	2,250	2,710	2,300	1,840	1,760	2,000	1,760	1,910	1,560	1,260	970	740	420	480	21,960
2023	2,290	2,770	2,780	2,220	1,910	1,920	1,960	2,020	1,940	1,570	1,250	1,040	560	570	24,800
2028	2,370	2,710	2,680	2,520	2,150	1,980	1,750	2,110	1,920	1,820	1,420	1,250	740	700	26,120
2033	2,480	2,740	2,610	2,420	2,450	2,240	1,810	1,870	2,000	1,800	1,620	1,410	900	920	27,270
2038	2,400	2,920	2,640	2,360	2,360	2,550	2,050	1,940	1,770	1,850	1,580	1,600	1,030	1,160	28,210
2043	2,460	3,000	2,690	2,390	2,430	2,590	2,110	1,990	1,850	1,910	1,640	1,650	1,050	1,200	28,960
2048	2,500	3,030	2,780	2,450	2,500	2,650	2,170	2,040	1,890	1,980	1,680	1,690	1,090	1,240	29,690



Table A3: Submarket demand by age group

	less than 25 yrs	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55-59 Years	60-64 Years	65-69 Years	70-74 Years	75-79 Years	80-84 Years	85 Years and Over	Total
Christchurch North East															
2013	1,010	1,700	2,270	2,870	3,310	3,190	3,190	2,730	2,390	2,010	1,460	1,130	960	780	29,000
2018	1,060	2,010	2,610	3,000	2,980	3,310	3,130	3,140	2,700	2,360	1,860	1,380	970	880	31,390
2023	1,020	1,890	2,870	3,260	2,970	2,870	3,160	3,030	3,040	2,640	2,190	1,780	1,190	940	32,850
2028	1,030	1,820	2,700	3,570	3,250	2,870	2,750	3,100	2,960	3,000	2,480	2,110	1,550	1,140	34,330
2033	1,070	1,810	2,560	3,360	3,610	3,180	2,800	2,700	3,010	2,910	2,790	2,380	1,850	1,490	35,520
2038	1,050	1,910	2,540	3,200	3,400	3,560	3,100	2,740	2,630	2,950	2,680	2,680	2,100	1,840	36,380
2043	1,060	1,950	2,540	3,220	3,460	3,600	3,140	2,770	2,670	2,990	2,730	2,740	2,150	1,880	36,900
2048	1,070	1,960	2,600	3,260	3,500	3,650	3,190	2,800	2,700	3,060	2,770	2,780	2,190	1,920	37,450
Christchurch North West															
2013	1,710	1,870	2,260	2,570	3,310	3,590	3,660	3,230	2,850	2,470	2,110	1,790	1,480	1,170	34,070
2018	1,740	2,160	2,500	2,590	2,860	3,580	3,450	3,540	3,080	2,770	2,570	2,070	1,420	1,270	35,600
2023	1,680	2,020	2,760	2,820	2,850	3,080	3,460	3,370	3,440	3,040	2,990	2,620	1,740	1,340	37,210
2028	1,710	1,940	2,600	3,080	3,080	3,060	2,980	3,390	3,290	3,410	3,340	3,070	2,250	1,600	38,800
2033	1,760	1,940	2,490	2,880	3,390	3,350	2,980	2,940	3,320	3,270	3,720	3,420	2,660	2,050	40,170
2038	1,710	2,050	2,460	2,750	3,190	3,730	3,280	2,960	2,870	3,280	3,560	3,840	3,020	2,510	41,210
2043	1,740	2,080	2,460	2,780	3,210	3,780	3,320	2,990	2,920	3,330	3,640	3,910	3,120	2,620	41,900
2048	1,780	2,090	2,520	2,830	3,260	3,830	3,370	3,030	2,970	3,420	3,700	4,000	3,210	2,700	42,710
Christchurch – Port Hills															
2013	100	210	410	690	1,010	1,120	1,180	1,090	980	800	580	380	300	270	9,120
2018	100	240	470	710	900	1,140	1,130	1,220	1,070	920	730	440	300	300	9,670
2023	100	240	520	770	890	970	1,110	1,170	1,180	1,020	840	550	360	320	10,040
2028	100	240	490	840	960	960	940	1,170	1,120	1,150	920	640	460	380	10,370
2033	110	250	470	790	1,050	1,050	940	1,000	1,130	1,110	1,040	720	530	500	10,690
2038	110	270	460	760	980	1,140	1,040	1,000	990	1,110	990	800	600	610	10,860
2043	100	270	460	770	980	1,120	1,020	1,020	980	1,130	1,010	810	610	620	10,900
2048	100	270	470	770	980	1,100	1,020	1,030	970	1,150	1,010	820	620	620	10,930



Table A3: Submarket demand by age group

	less than 25 yrs	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55-59 Years	60-64 Years	65-69 Years	70-74 Years	75-79 Years	80-84 Years	85 Years and Over	Total
Christchurch – South East															
2013	630	850	1,170	1,270	1,500	1,560	1,600	1,400	1,170	1,000	760	590	490	370	14,360
2018	650	990	1,290	1,250	1,300	1,560	1,510	1,540	1,260	1,150	940	680	480	410	15,010
2023	630	930	1,390	1,330	1,270	1,330	1,500	1,450	1,380	1,260	1,080	850	580	430	15,410
2028	630	880	1,280	1,430	1,360	1,320	1,280	1,440	1,310	1,400	1,180	980	740	500	15,730
2033	640	860	1,200	1,310	1,490	1,430	1,270	1,240	1,320	1,330	1,300	1,080	860	620	15,950
2038	620	900	1,150	1,210	1,360	1,570	1,370	1,210	1,140	1,310	1,220	1,180	940	740	15,920
2043	630	900	1,160	1,170	1,380	1,540	1,330	1,200	1,150	1,300	1,190	1,160	930	740	15,780
2048	620	880	1,170	1,150	1,360	1,520	1,320	1,180	1,140	1,300	1,180	1,150	930	730	15,630
Christchurch - Lyttelton															
2013	0	20	100	200	250	270	290	270	250	210	110	60	60	10	2,100
2018	0	20	110	200	230	260	290	300	270	240	140	80	60	10	2,210
2023	0	20	120	210	230	240	290	290	300	260	170	100	80	10	2,320
2028	0	20	120	210	240	230	260	280	290	290	190	120	100	10	2,360
2033	0	20	120	200	260	250	260	250	300	290	220	140	120	10	2,440
2038	0	20	120	190	240	260	290	250	270	300	220	160	140	10	2,470
2043	0	20	120	190	240	260	280	250	260	280	220	160	140	10	2,430
2048	0	20	120	190	240	260	280	250	260	280	220	160	140	10	2,430
Christchurch South west															
2013	1,780	2,160	2,700	2,770	3,010	2,810	2,780	2,490	2,280	2,010	1,600	1,170	1,040	820	29,420
2018	1,900	2,660	3,230	3,020	2,850	3,050	2,860	2,980	2,720	2,480	2,150	1,510	1,110	970	33,490
2023	1,870	2,610	3,740	3,480	3,000	2,770	3,070	3,050	3,250	2,940	2,700	2,070	1,450	1,110	37,110
2028	1,940	2,550	3,610	3,950	3,400	2,860	2,760	3,210	3,250	3,440	3,130	2,520	1,940	1,380	39,940
2033	2,030	2,590	3,550	3,830	3,890	3,260	2,870	2,870	3,400	3,410	3,620	2,910	2,360	1,850	42,440
2038	2,000	2,820	3,630	3,780	3,810	3,770	3,280	3,010	3,040	3,540	3,560	3,380	2,760	2,360	44,740
2043	2,080	2,910	3,760	3,930	4,010	3,920	3,430	3,150	3,170	3,740	3,760	3,580	2,930	2,540	46,910
2048	2,140	3,000	3,940	4,080	4,180	4,080	3,580	3,270	3,310	3,950	3,940	3,760	3,100	2,690	49,020



Table A3: Submarket demand by age group

	less than 25 yrs	25-29 Years	30-34 Years	35-39 Years	40-44 Years	45-49 Years	50-54 Years	55-59 Years	60-64 Years	65-69 Years	70-74 Years	75-79 Years	80-84 Years	85 Years and Over	Total
Selwyn - rural															
2013	90	190	250	510	700	840	800	730	610	420	320	110	80	20	5,670
2018	110	300	340	570	730	1,050	1,020	990	810	570	510	190	120	40	7,350
2023	120	350	460	690	760	1,080	1,220	1,220	1,080	750	700	300	210	60	9,000
2028	140	430	540	880	900	1,130	1,230	1,450	1,310	970	930	420	330	100	10,760
2033	150	490	600	970	1,080	1,320	1,250	1,410	1,490	1,130	1,170	540	450	160	12,210
2038	150	550	710	1,100	1,200	1,610	1,430	1,440	1,490	1,310	1,410	700	600	260	13,960
2043	160	610	770	1,200	1,330	1,810	1,560	1,570	1,630	1,460	1,560	770	670	290	15,390
2048	170	670	830	1,300	1,450	1,960	1,720	1,710	1,780	1,610	1,710	840	740	320	16,810
Selwyn - Settlements															
2013	180	330	540	880	1,090	950	730	540	470	400	210	160	70	60	6,610
2018	260	630	940	1,230	1,410	1,450	1,110	890	780	700	390	320	120	110	10,340
2023	320	770	1,240	1,490	1,460	1,460	1,310	1,090	1,010	920	530	490	190	160	12,440
2028	370	890	1,390	1,820	1,670	1,450	1,250	1,240	1,180	1,160	670	660	290	270	14,310
2033	390	1,020	1,540	1,930	1,960	1,600	1,220	1,170	1,320	1,320	810	810	380	440	15,910
2038	390	1,080	1,750	2,130	2,110	1,890	1,350	1,140	1,250	1,470	930	1,000	480	650	17,620
2043	420	1,170	1,880	2,290	2,300	2,080	1,460	1,230	1,350	1,610	1,010	1,100	530	710	19,140
2048	450	1,250	2,020	2,470	2,450	2,220	1,570	1,320	1,450	1,730	1,090	1,190	580	770	20,560

Table A4: Households by submarket, tenure and household composition

	2013	2018	2023	2028	2033	2038	2043	2048
Waimakariri - rural								
Owners								
couple only	1380	1630	1890	2140	2260	2400	2450	2480
couple with	1370	1440	1490	1520	1600	1690	1730	1790
one parent	80	90	100	110	120	130	140	150
one person	380	450	540	610	690	770	820	870
Other	220	280	330	370	400	430	460	500
Total	3430	3890	4350	4750	5070	5420	5600	5790
Renters								
couple only	190	250	330	400	500	580	660	750
couple with	160	210	250	280	300	320	360	390
one parent	60	60	80	70	80	80	80	80
one person	280	350	400	490	580	650	690	770
Other	40	50	70	80	110	120	150	170
Total	730	920	1130	1320	1570	1750	1940	2160
Waimakariri - settlements								
Owners								
couple only	3,230	4,100	4,960	5,600	5,930	6,340	6,560	6,790
couple with	2,750	3,230	3,410	3,510	3,590	3,800	3,980	4,150
one parent	480	550	560	570	620	670	720	760
one person	1,730	2,050	2,530	2,980	3,390	3,760	4,080	4,410
Other	670	900	1,020	1,110	1,240	1,370	1,500	1,610
Total	8,860	10,830	12,480	13,770	14,770	15,940	16,840	17,720
Renters								
couple only	470	660	850	1,050	1,240	1,470	1,650	1,780
couple with	590	620	800	890	940	1,020	1,080	1,150
one parent	390	490	620	680	710	750	770	820
one person	600	920	1,120	1,310	1,490	1,720	1,930	2,090
Other	340	440	530	630	710	810	910	1,010
Total	2,390	3,130	3,920	4,560	5,090	5,770	6,340	6,850
Christchurch - central								
Owners								
couple only	1,990	2,210	2,620	2,730	2,730	2,720	2,700	2,690
couple with	1,570	1,490	1,510	1,450	1,450	1,440	1,440	1,460
one parent	510	580	570	540	520	520	530	550
one person	2,610	2,870	3,310	3,540	3,650	3,810	3,880	4,030
Other	760	1,020	1,000	1,000	1,010	1,020	1,030	1,050
Total	7,440	8,170	9,010	9,260	9,360	9,510	9,580	9,780
Renters								
couple only	2,430	2,930	3,490	3,750	4,010	4,130	4,240	4,280
couple with	1,400	1,610	1,770	1,750	1,690	1,710	1,710	1,760
one parent	1,230	1,350	1,520	1,520	1,550	1,560	1,550	1,570
one person	4,040	4,770	5,820	6,490	7,180	7,710	8,170	8,530
Other	3,120	3,130	3,190	3,350	3,480	3,590	3,710	3,770
Total	12,220	13,790	15,790	16,860	17,910	18,700	19,380	19,910



Table A4: Households by submarket, tenure and household composition continued

	2013	2018	2023	2028	2033	2038	2043	2048
Christchurch – north east								
Owners								
couple only	5,920	6,580	7,160	7,570	7,520	7,440	7,250	7,150
couple with	6,500	6,530	6,180	6,010	6,110	5,990	5,860	5,870
one parent	1,370	1,490	1,400	1,350	1,310	1,340	1,330	1,340
one person	4,240	4,590	4,970	5,400	5,640	5,760	5,790	5,900
Other	2,160	2,280	2,260	2,280	2,240	2,220	2,220	2,230
Total	20,190	21,470	21,970	22,610	22,820	22,750	22,450	22,490
Renters								
couple only	1,210	1,490	1,690	1,950	2,320	2,610	2,820	2,920
couple with	1,900	2,000	2,190	2,190	2,020	2,110	2,200	2,260
one parent	1,480	1,580	1,710	1,710	1,790	1,770	1,770	1,820
one person	2,240	2,680	3,070	3,500	4,020	4,440	4,820	5,060
Other	1,980	2,170	2,220	2,370	2,550	2,700	2,840	2,900
Total	8,810	9,920	10,880	11,720	12,700	13,630	14,450	14,960
Christchurch								
Owners								
couple only	7,580	8,130	8,870	9,260	9,240	9,250	9,120	9,020
couple with	7,550	7,480	7,050	6,780	6,840	6,810	6,750	6,770
one parent	1,590	1,540	1,400	1,340	1,310	1,350	1,350	1,350
one person	5,120	5,040	5,400	5,860	6,110	6,310	6,420	6,530
Other	2,260	2,330	2,310	2,300	2,290	2,330	2,340	2,360
Total	24,100	24,520	25,030	25,540	25,790	26,050	25,980	26,030
Renters								
couple only	1,550	1,790	2,000	2,370	2,810	3,060	3,290	3,470
couple with	2,370	2,190	2,400	2,480	2,330	2,350	2,420	2,500
one parent	1,340	1,490	1,650	1,660	1,730	1,690	1,690	1,740
one person	2,170	2,780	3,230	3,710	4,250	4,670	5,040	5,390
Other	2,540	2,830	2,900	3,040	3,260	3,390	3,480	3,580
Total	9,970	11,080	12,180	13,260	14,380	15,160	15,920	16,680
Christchurch – Port Hills								
Owners								
couple only	2,870	3,220	3,470	3,600	3,620	3,560	3,500	3,420
couple with	2,510	2,520	2,360	2,240	2,260	2,260	2,190	2,180
one parent	300	250	220	210	220	230	230	230
one person	1,320	1,330	1,420	1,500	1,580	1,620	1,630	1,660
Other	430	410	430	430	400	400	420	440
Total	7,430	7,730	7,900	7,980	8,080	8,070	7,970	7,930
Renters								
couple only	420	420	450	550	670	760	810	850
couple with	440	410	460	480	420	410	440	440
one parent	170	250	270	270	270	270	270	270
one person	440	590	680	790	890	970	1,030	1,060
Other	220	270	280	300	360	380	380	380
Total	1,690	1,940	2,140	2,390	2,610	2,790	2,930	3,000



Table A4: Households by submarket, tenure and household composition continued

	2013	2018	2023	2028	2033	2038	2043	2048
Christchurch – south east								
Owners								
couple only	2,570	2,770	2,950	3,010	2,920	2,810	2,640	2,520
couple with	2,560	2,450	2,240	2,120	2,120	2,030	1,910	1,850
one parent	710	730	680	660	610	590	580	570
one person	2,450	2,500	2,610	2,770	2,800	2,780	2,700	2,640
Other	1,040	1,110	1,090	1,110	1,080	1,090	1,090	1,070
Total	9,330	9,560	9,570	9,670	9,530	9,300	8,920	8,650
Renters								
couple only	800	870	960	1,040	1,140	1,200	1,260	1,250
couple with	920	930	970	930	830	820	840	840
one parent	820	840	870	820	850	820	760	770
one person	1,410	1,640	1,830	1,990	2,230	2,350	2,490	2,550
Other	1,080	1,170	1,210	1,280	1,370	1,430	1,510	1,570
Total	5,030	5,450	5,840	6,060	6,420	6,620	6,860	6,980
Waimakariri - Lyttelton								
Owners								
couple only	690	750	810	800	820	830	780	780
couple with	500	460	470	430	440	430	430	430
one parent	60	70	60	60	50	40	50	50
one person	380	380	400	420	450	450	420	440
Other	50	60	60	60	50	50	50	50
Total	1,680	1,720	1,800	1,770	1,810	1,800	1,730	1,750
Renters								
couple only	100	110	120	160	170	180	200	200
couple with	80	100	90	90	80	70	70	70
one parent	60	50	60	60	70	80	70	70
one person	140	200	220	250	270	300	320	300
Other	40	30	30	30	40	40	40	40
Total	420	490	520	590	630	670	700	680
Christchurch – south west								
Owners								
couple only	6,020	7,120	8,310	9,020	9,300	9,480	9,580	9,720
couple with	5,540	6,020	6,110	6,130	6,410	6,500	6,590	6,750
one parent	1,270	1,430	1,450	1,450	1,420	1,480	1,540	1,580
one person	4,340	4,960	5,780	6,460	6,950	7,360	7,670	8,020
Other	2,500	2,580	2,560	2,600	2,550	2,550	2,600	2,610
Total	19,670	22,110	24,210	25,660	26,630	27,370	27,980	28,680
Renters								
couple only	1,440	1,840	2,200	2,600	3,130	3,590	4,010	4,370
couple with	1,930	2,000	2,290	2,400	2,290	2,440	2,650	2,870
one parent	1,280	1,510	1,680	1,730	1,870	1,940	2,030	2,120
one person	2,330	2,940	3,580	4,240	4,990	5,690	6,410	7,040
Other	2,770	3,090	3,150	3,310	3,530	3,710	3,830	3,940
Total	9,750	11,380	12,900	14,280	15,810	17,370	18,930	20,340



Table A4: Households by submarket, tenure and household composition continued

	2013	2018	2023	2028	2033	2038	2043	2048
Selwyn Rural								
Owners								
couple only	1,840	2,530	3,250	4,000	4,490	5,090	5,460	5,830
couple with	2,040	2,350	2,640	2,990	3,280	3,660	3,990	4,330
one parent	110	140	150	170	190	210	240	280
one person	400	600	780	970	1,140	1,360	1,520	1,680
Other	360	470	540	580	630	640	670	680
Total	4,750	6,090	7,360	8,710	9,730	10,960	11,880	12,800
Renters								
couple only	290	380	510	680	880	1,100	1,350	1,570
couple with	250	450	580	680	770	890	990	1,130
one parent	50	60	80	100	100	130	150	150
one person	190	210	280	350	470	570	690	810
Other	140	160	190	240	260	310	330	350
Total	920	1,260	1,640	2,050	2,480	3,000	3,510	4,010
Selwyn Settlements								
Owners								
couple only	1,600	2,690	3,390	3,990	4,360	4,730	5,030	5,270
couple with	2,670	4,000	4,460	4,800	5,070	5,490	5,870	6,310
one parent	200	310	340	350	370	400	450	490
one person	500	820	1,030	1,280	1,490	1,680	1,810	1,950
Other	420	520	580	590	660	670	710	730
Total	5,390	8,340	9,800	11,010	11,950	12,970	13,870	14,750
Renters								
couple only	250	460	630	850	1,100	1,350	1,590	1,800
couple with	530	860	1,090	1,330	1,520	1,720	1,890	2,050
one parent	90	150	220	250	280	310	340	360
one person	150	260	360	470	600	750	890	1,020
Other	200	270	340	400	460	520	560	580
Total	1,220	2,000	2,640	3,300	3,960	4,650	5,270	5,810



Table A5: Demand by tenure, submarket, typology and size

	Owner Occupied Dwellings						Renters households					
	Standalone			Multi-Unit			Standalone			Multi-Unit		
	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total
Waimakariri Rural												
2013	210	3170	3380	50	70	120	150	580	730	0	0	0
2018	240	3540	3780	60	60	120	190	730	920	0	0	0
2023	260	3930	4190	80	90	170	240	870	1110	20	0	20
2028	310	4270	4580	100	100	200	270	1030	1300	30	0	30
2033	330	4530	4860	120	130	250	350	1180	1530	50	10	60
2038	360	4800	5160	120	130	250	400	1290	1690	50	10	60
2043	400	4930	5330	170	170	340	430	1430	1860	80	20	100
2048	420	5060	5480	170	180	350	450	1580	2030	110	20	130
Waimakariri Settlements												
2013	730	7510	8240	620	230	850	210	1790	2000	380	30	410
2018	840	8750	9590	890	350	1240	360	2220	2580	550	-10	540
2023	970	9850	10820	1150	490	1640	420	2790	3210	690	-10	680
2028	1070	10670	11740	1410	600	2010	470	3250	3720	830	10	840
2033	1150	11340	12490	1630	680	2310	520	3590	4110	950	30	980
2038	1260	12120	13380	1950	740	2690	570	4010	4580	1130	50	1180
2043	1310	12650	13960	2230	840	3070	650	4290	4940	1380	50	1430
2048	1390	13160	14550	2420	890	3310	700	4580	5280	1500	50	1550
Christchurch - Central												
2013	750	3780	4530	2120	810	2930	980	2120	3100	7380	1730	9110
2018	770	3840	4610	2530	1010	3540	1080	2320	3400	8520	1880	10400
2023	910	4130	5040	2910	1140	4050	1240	2500	3740	9980	2030	12010
2028	930	4180	5110	3050	1160	4210	1290	2580	3870	10790	2100	12890
2033	940	4230	5170	3110	1220	4330	1370	2650	4020	11580	2160	13740
2038	940	4200	5140	3250	1240	4490	1460	2780	4240	12210	2280	14490
2043	970	4290	5260	3300	1260	4560	1510	2820	4330	12710	2340	15050
2048	990	4360	5350	3420	1260	4680	1540	2880	4420	13120	2400	15520
Christchurch – North East												
2013	2280	16230	18510	1180	480	1660	1250	5610	6860	1690	280	1970
2018	2670	16500	19170	1630	780	2410	1420	6160	7580	2020	340	2360
2023	2670	16530	19200	1950	1000	2950	1520	6550	8070	2380	450	2830
2028	2820	16770	19590	2190	1100	3290	1680	6870	8550	2690	490	3180
2033	2870	16810	19680	2310	1170	3480	1880	7170	9050	3090	550	3640
2038	2900	16650	19550	2390	1200	3590	2040	7520	9560	3430	600	4030
2043	2950	16450	19400	2430	1240	3670	2230	7870	10100	3710	680	4390
2048	2950	16450	19400	2470	1320	3790	2300	8130	10430	3920	730	4650



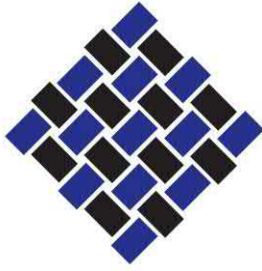
Table A5: Demand by tenure, submarket, typology and size continued

	Owner Occupied Dwellings						Renters households					
	Standalone			Multi-Unit			Standalone			Multi-Unit		
	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total
Christchurch – North west												
2013	1770	19850	21620	1630	860	2490	980	6210	7190	2280	550	2830
2018	2350	19440	21790	1840	1040	2880	1130	6570	7700	2810	630	3440
2023	2570	19650	22220	1970	1090	3060	1230	7020	8250	3200	700	3900
2028	2570	19670	22240	2250	1310	3560	1370	7460	8830	3620	800	4420
2033	2710	19760	22470	2360	1360	3720	1510	7820	9330	4180	950	5130
2038	2800	19850	22650	2490	1430	3920	1590	8010	9600	4570	1010	5580
2043	2830	19810	22640	2540	1480	4020	1700	8300	10000	4970	1160	6130
2048	2840	19780	22620	2640	1560	4200	1830	8660	10490	5250	1210	6460
Christchurch – Port Hills												
2013	560	6460	7020	270	120	390	240	1040	1280	380	20	400
2018	720	6480	7200	360	230	590	250	1120	1370	500	90	590
2023	780	6600	7380	370	210	580	270	1190	1460	570	100	670
2028	770	6560	7330	460	290	750	320	1320	1640	650	120	770
2033	800	6620	7420	480	280	760	350	1370	1720	750	170	920
2038	820	6580	7400	480	280	760	360	1460	1820	810	180	990
2043	860	6550	7410	490	280	770	400	1510	1910	850	190	1040
2048	870	6510	7380	490	290	780	420	1560	1980	900	230	1130
Christchurch South East												
2013	1100	7270	8370	670	280	950	710	3050	3760	1100	190	1290
2018	1310	7120	8430	820	390	1210	820	3190	4010	1220	220	1440
2023	1360	7010	8370	920	450	1370	870	3330	4200	1390	280	1670
2028	1360	6950	8310	1010	490	1500	880	3380	4260	1520	280	1800
2033	1360	6830	8190	1030	500	1530	1020	3460	4480	1650	290	1940
2038	1320	6640	7960	1040	510	1550	1050	3520	4570	1800	330	2130
2043	1330	6390	7720	1040	510	1550	1090	3620	4710	1900	370	2270
2048	1290	6190	7480	1030	520	1550	1130	3720	4850	1970	420	2390
Christchurch Lyttelton												
2013	310	1370	1680	0	0	0	160	250	410	50	0	50
2018	310	1330	1640	40	40	80	130	250	380	110	10	120
2023	320	1400	1720	50	50	100	150	260	410	120	20	140
2028	310	1360	1670	50	50	100	160	280	440	140	30	170
2033	310	1410	1720	50	60	110	180	320	500	160	40	200
2038	310	1380	1690	70	70	140	180	310	490	180	40	220
2043	290	1330	1620	70	70	140	170	310	480	170	30	200
2048	300	1360	1660	80	90	170	160	310	470	160	30	190



Table A5: Demand by tenure, submarket, typology and size continued

	Owner Occupied Dwellings						Renters households					
	Standalone			Multi-Unit			Standalone			Multi-Unit		
	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total	2 Bdrm or less	3 Bdrm or more	Total
Christchurch – South West												
2013	2260	15890	18150	1290	220	1510	1130	5760	6890	2380	450	2830
2018	2790	17070	19860	1840	640	2480	1300	6440	7740	3080	580	3660
2023	2900	18210	21110	2380	960	3340	1460	7050	8510	3670	700	4370
2028	2940	18680	21620	3000	1350	4350	1650	7530	9180	4250	810	5060
2033	2980	19150	22130	3300	1540	4840	1880	8050	9930	4930	940	5870
2038	3020	19460	22480	3630	1770	5400	2060	8660	10720	5610	1040	6650
2043	3070	19810	22880	3900	1930	5830	2340	9250	11590	6230	1170	7400
2048	3130	20210	23340	4170	2180	6350	2530	9890	12420	6820	1290	8110
Selwyn - Rural												
2013	200	4580	4780	40	20	60	140	800	940	0	0	0
2018	250	5700	5950	60	30	90	160	1110	1270	0	0	0
2023	300	6890	7190	70	50	120	230	1410	1640	0	0	0
2028	410	8090	8500	90	60	150	290	1710	2000	0	0	0
2033	450	9010	9460	100	60	160	340	2010	2350	0	0	0
2038	510	10110	10620	120	90	210	430	2380	2810	20	30	50
2043	560	10940	11500	120	100	220	490	2780	3270	30	60	90
2048	610	11720	12330	140	120	260	580	3180	3760	40	60	100
Selwyn - Settlements												
2013	70	5240	5310	80	100	180	30	1140	1170	0	0	0
2018	180	7900	8080	140	140	280	50	1870	1920	30	20	50
2023	230	9180	9410	190	210	400	70	2460	2530	70	50	120
2028	270	10150	10420	280	270	550	130	3030	3160	120	60	180
2033	280	10950	11230	340	340	680	170	3580	3750	140	110	250
2038	320	11830	12150	410	420	830	200	4170	4370	180	100	280
2043	320	12620	12940	470	470	940	240	4680	4920	230	120	350
2048	340	13400	13740	510	510	1020	270	5150	5420	290	130	420



**Greater Christchurch
Partnership**

Te Tira Tū Tahi
One Group, Standing Together

Greater Christchurch Housing Capacity

Report 2: Housing Development Capacity – An Assessment of Plan-Enabled and Infrastructure Serviced Capacity

9 February 2018 - Draft Version 3

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Executive Summary

The National Policy Statement on Urban Development Capacity (NPS-UDC) requires local authorities to carry out a housing and business development capacity assessment (Policy PB1) that estimates the demand for dwellings and the supply of development capacity to meet that demand in the short (Three years), medium (Ten years) and long (Thirty years) term. This report is the second in a series prepared by the Greater Christchurch Partnership to meet the policy requirements of the NPS-UDC, specifically Policy PB3 (a) and (b). Its purpose is to assess the capacity of land intended for housing development based on:

- a) the zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and
- b) the provision of adequate development infrastructure to support the development of the land.

The first step requires an assessment of plan-enabled capacity to determine the effect this will have on opportunities for development to be taken up. This has been calculated following two approaches:

- a) 'theoretical' - being what the plan enables and
- b) 'modified' - being what has historically been developed within the different zones, or as determined by a spatial parcel specific analysis (as undertaken for the Selwyn and Waimakariri growth models), or through a more detailed development potential analysis (i.e. to ground truth the district plan provisions at a site and/or block level to be applied across the zoned area).

The rationale for preparing a modified, more ground-truthed, scenario, is to provide a better understanding of what may be a more realistic quantum of plan-enabled capacity and therefore what the actual opportunities are for development to be taken-up. Table 1 provides a summary of the 'theoretical' and 'modified' scenarios, which will be used as part of the housing capacity.

Table 1: Plan-enabled housing capacity – theoretical and modified scenarios

Local Authority	Theoretical	Modified
Christchurch	236,968	51,106
Selwyn ¹	12,120	9,717
Waimakariri	7,820	4,188
Greater Christchurch	256,908	65,011

For urban land to be deemed as having 'development capacity', it not only needs to be zoned for such purpose and either be serviced or planned to be serviced with development infrastructure (i.e. network infrastructure for water supply, wastewater, stormwater, and land transport). An infrastructure assessment was undertaken and concludes that of the plan-enabled capacity within the Selwyn district and Waimakariri district, development of any zoned urban land is not precluded over the short, medium or long term.

For Christchurch City, as a consequence of its recent review of its Christchurch District Plan, there has been a significant change to zone provisions, in particular those zones that apply to the existing urban area (i.e. non-greenfield areas). The result is that the now operative district plan offers significant redevelopment opportunities (through a process of intensification of land use), however current and planned infrastructure programmes have not been, nor will be, updated to provide for all plan-enabled capacity. This is neither fiscally achievable nor necessary, based on past and more recent population projections under medium and high growth scenarios. The Christchurch City Council's infrastructure programme under the 2016 Long Term Plan does provide for the servicing of all planned greenfield areas (zoned Residential New Neighbourhood) in the medium term. Further, in the short term most greenfield areas infrastructure can be developer led. It also provides substantial capacity to accommodate redevelopment opportunities across almost all of the existing urban area (excluding the Shirley and Aranui vacuum sewer catchments, approximately 3,666 households) to the extent signalled under the Land Use Recovery Plan and the Greater Christchurch Urban Development Strategy 2007.

For Selwyn District Council and Waimakariri District Council, both district plans have been operative for some time and are undergoing reviews. The plans have incorporated provisions to give effect to Chapter 6 of the CRPS and infrastructure programming and upgrades have aligned with growth. A large proportion of

¹ This data is reported off an initial iteration of the SCGM – Version 5 received on the 24th November 2017 – The results are interim pending review and sensitivity testing.

subdivision has occurred under this framework that helps determine uptake to be quantified and therefore, a relatively high degree of confidence can be placed in the modified supply estimates.

Definitions

The following table defines commonly used acronyms and abbreviations in this document.

Term	Definition
CCC	Christchurch City Council
CEDS	Christchurch Economic Development Strategy
CRPS	Canterbury Regional Policy Statement
Development Capacity	As defined in the NPS-UDC, means: in relation to housing and business land, the capacity of land intended for urban development based on: <ol style="list-style-type: none"> a) the zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and b) the provision of adequate development infrastructure to support the development of the land.”
Development Infrastructure	As defined in the NPS-UDC, means: network infrastructure for water supply, wastewater, stormwater, and land transport as defined in the Land Transport Management Act 2003, to the extent that it is controlled by local authorities.
GC	Greater Christchurch
GIS	Geographical Information System
HH/Ha	Households per Hectare
Infill	Is the addition of a dwelling, generally to the back of a site, whilst keeping the original dwelling.
Intensification	As defined in the CRPS, means: An increase in the residential household yield within existing areas. It includes infill and comprehensive redevelopment.
LTP	Long Term Plan
LURP	Land Use Recovery Plan
NPS-UDC	National Policy Statement on Urban Development Capacity
NZTA	NZ Transport Authority
Other Infrastructure	As defined in the NPS-UDC, means: <ol style="list-style-type: none"> a) open space; b) community infrastructure as defined in the Local Government Act 2002; c) land transport as defined in the Land Transport Management Act 2003, that is not controlled by local authorities; d) social infrastructure such as schools and healthcare; e) telecommunications as defined in the Telecommunications Act 2001; f) energy; and g) other infrastructure not controlled by local authorities.
UDS	Urban Development Strategy
Version	

1. Overview and Methodology

1.1 NPS-UDC requirements regarding the sufficiency of development capacity

This report is second in a series of reports prepared to meet the requirements of the National Policy Statement on Urban Development Capacity (NPS-UDC), specifically in relation to housing. It follows a housing demand assessment prepared for the Greater Christchurch area (refer to the report titled Greater Christchurch Housing Capacity: Report 1 Housing Demand Assessment, dated 6 February 2017) but focuses on the supply of housing to meet the projected demand. In accordance with the NPS-UDC, Policy PA1, it forms the first stage of the housing supply assessment required to demonstrate that at any one time there is sufficient housing development capacity over the short, medium and long term. The more specific focus of this report is to meet the NPS-UDC policy requirements of PB1 and PB3 below [our emphasis underlined].

“PB1: Local authorities shall, on at least a three-yearly basis, carry out a housing and business development capacity assessment that:

- a. *Estimates the demand for dwellings, including the demand for different types of dwellings, locations and price points, and the supply of development capacity to meet that demand, in the short, medium and long-terms; and*
- b. *Estimates the demand for the different types and locations of business land and floor area for businesses, and the supply of development capacity to meet that demand, in the short, medium and long-terms; and*
- c. *Assesses interactions between housing and business activities, and their impacts on each other.*

“PB3: The assessment under policy PB1 shall estimate the sufficiency of development capacity provided by the relevant local authority plans and proposed and operative regional policy statements, and Long Term Plans and Infrastructure Strategies prepared under the Local Government Act 2002, including:

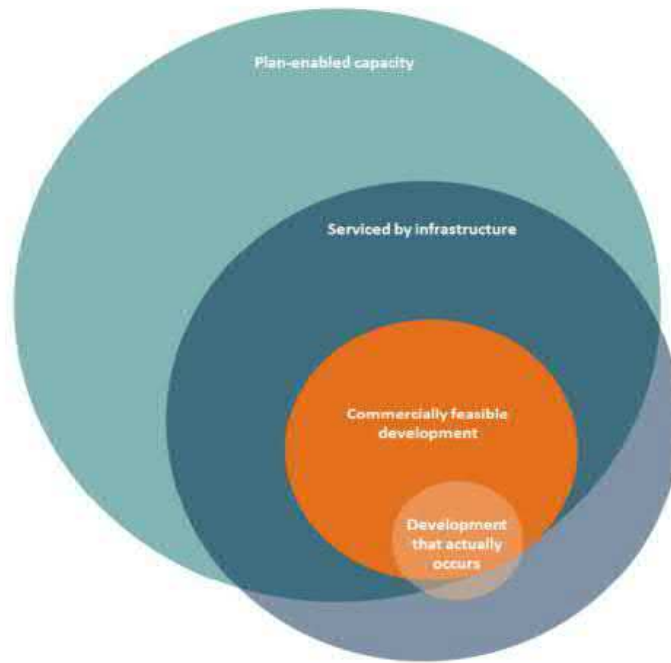
- a. *The cumulative effect of all zoning, objectives, policies, rules and overlays and existing designations in plans, and the effect this will have on opportunities for development being taken up;*
- b. *The actual and likely availability of development infrastructure and other infrastructure in the short, medium and long term as set out under PA1;*
- c. *The current feasibility of development capacity;*
- d. *The rate of take up of development capacity, observed over the past 10 years and estimated for the future; and*
- e. *The market’s response to planning decisions, obtained through monitoring under policies PB6 and PB7.*

“PB4: The assessment under policy PB1 shall estimate the additional development capacity needed if any of the factors in PB3 indicate that the supply of development capacity is not likely to meet demand in the short, medium or long term.”

Whilst the report will provide a useful understanding of potential capacity within locational (geographical) sub-areas (refer to the NPS-UDC Greater Christchurch Housing Capacity Assessment Methodology, section 6.2) it will not directly address whether the plan-enabled supply meets the estimated demand for different types of dwellings (i.e. stand alone or multi-unit housing developments). The report does not assess capacity in terms of price points by location either. The test of housing sufficiency (including price points) will draw from the housing supply work undertaken to assess the feasibility of land for housing developments (refer to the GC Housing Capacity Assessment Report 3 – Development feasibility and assessment of sufficient capacity). The outputs from this report will however provide a useful benchmark to compare against the outputs from the feasibility assessment, which in turn may help to inform a planning response, for example to remove planning constraints on density and building restrictions and to enable and/or incentivise further housing supply.

1.2 Methodology

The approach to determining plan-enabled and infrastructure serviced capacity follows the direction and approaches contained within the *National Policy Statement on Urban Development Capacity: Guide to Evidence and Monitoring*. The following figure (found on pg35 of the guide) illustrates the approach. Where the supply assessment deviates or goes beyond the recommended approaches under this guide, this is documented and a rationale provided.



The stepped approach to assessing plan-enabled and infrastructure serviced capacity is set out in the supporting report titled NPS-UDC Greater Christchurch Housing Capacity Assessment Methodology, specifically sections 8 and 9. In following this methodology the results are as follows.

2. Plan Enabled Capacity

As required under NPS-UDC Policy PB3a, this section discusses and tabulates the cumulative effect of all zoning, objectives, policies, rules and overlays and existing designations in the Greater Christchurch district plans. Capacity is determined from an assessment of both vacant and built land, incorporating redevelopment and intensification potential. The assessment begins with a discussion of what land and zones or overlays are included, an outline and explanation of the density used, and then provides a total theoretical and modified capacity for Greater Christchurch. Essentially theoretical capacity is as if all land was built to the maximum potential anticipated in the zone as permitted or restricted discretionary development disregarding existing development and cadastral boundaries (i.e. considering urban blocks as if it was one vacant land development parcel with one owner). For Christchurch City, the modified capacity is based on the average or realised density of existing zones, extrapolated and projected to all similarly zoned areas.

The approaches for each district are different as they have different areas of emphasis. While the approach to the greenfield capacity assessment is consistent across the three districts, the approach to assessing additional capacity within the existing urban areas reflects the different emphasis on intensification and capacity for intensification within each district. Christchurch City is focused on redevelopment or intensification of existing multiple land parcels as comprehensive development. Capacity as suburban infill in Christchurch City (i.e. subdividing the vacant rear part of an existing allotment) is limited, with most opportunities for this having already been taken-up. In terms of redevelopment opportunities in Selwyn and Waimakariri, capacity is focused more on greenfield uptake and backfill capacity in suburban zones, with less focus on comprehensive site redevelopment. This is due to a combination of a number of factors including market forces, the age of existing housing stock, past patterns of development, and the size and form of the townships. The Canterbury Regional Policy Statement (CRPS) policy direction signals that only limited infill development is anticipated in Selwyn and Waimakariri.

2.1 Land and Zones/Overlays included

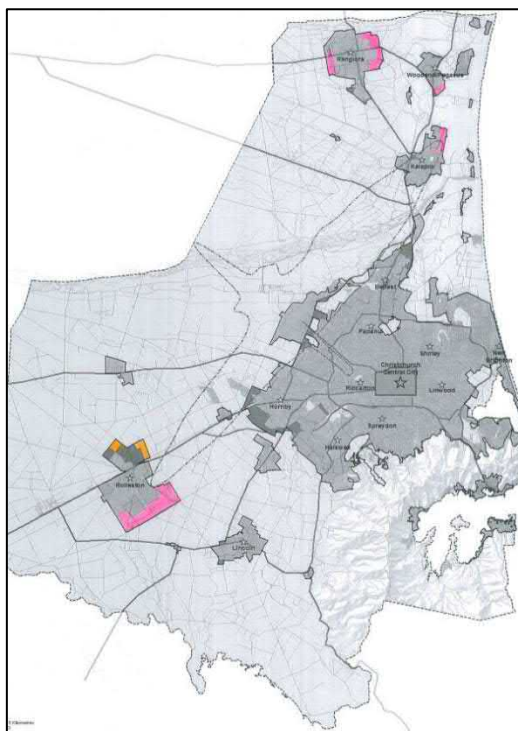
The initial step to estimating development capacity is to evaluate what land is to be included within the assessment. The NPS-UDC limits this to land intended for urban development based on zoning, objectives and policies. Land zoned for urban development is identified within each Council's district plan, including all areas identified as existing zoned or greenfield residential land for development under Chapter 6 of the CRPS, specifically Map A.

It is noted that whilst Map A (refer to Appendix 7 of this report) clearly defines housing and business greenfield priority areas, it also includes a "Projected Infrastructure Boundary" encompassing rural land beyond these greenfield priority areas in Rangiora, Woodend/Pegasus, Kaiapoi and Rolleston. The CRPS does not have a corresponding objective or policy identifying this rural land within the projected infrastructure boundary as being intended for urban development. The background to consideration of these additional areas as future potential greenfield urban areas, stems from Proposed Change 1 (PC1) to the CRPS. When the LURP took effect on 6 December 2013 it made changes to the CRPS (including the insertion of Chapter 6 - Recovery and Rebuilding of Greater Christchurch) and revoked PC1.

In developing the LURP these areas were excluded from being rezoned as their need was (at the time) assessed as being beyond the 2028 'recovery' timeframe. Given that the objective and policy framework of the CRPS seeks to avoid urban development outside of existing urban areas or greenfield priority areas (regardless of whether it is within the Projected Infrastructure Boundary), this report has not included it within the assessment of development capacity.

However, land identified in a prescribed Housing Accord Area² is included as essentially this supersedes the underlying rural zoning where resource consents have been issued under the Housing Accords and Special Housing Areas Act 2013. The following sections outline the process for identifying the amount of zoned land (in hectares) by zone and overlay for each council.

² Housing Accord Areas created through the Housing Accords and Special Housing Areas Act 2013 allow a streamline process to enhance housing affordability by facilitating an increase in land and housing supply.



2.1.1 Christchurch Zoned Land

The starting point for the assessment is the areas defined by the Christchurch District Plan as residential zones. Included as part of Appendix 6 is a map that shows the distribution of the residential zones. Roads under the District Plan are separately zoned, effectively confining the residential zones to a series of distinct urban blocks. Analysis of theoretical and modified capacity was therefore at a block-by-block level. The appropriate type code was either the zone or, if there was an overlay, the overlay. The capacity for each block was then truncated (rounded down) to the nearest whole number. Other determinants were as follows:

- Land zoned Residential Guest Accommodation was excluded as it is anticipated that this is used for hotels and not housing. Also, land within the accommodation and community facilities overlay was excluded as currently it is used for accommodation (which could provide around 600 additional households). The District Plan encourages this activity in the overlay and discourages it elsewhere. Therefore this land is excluded.
- Land within the High Flood Hazard area was not considered as having additional capacity as the District Plan seeks to avoid development within these areas due to the flood risk. Therefore this land is excluded.
- Commercial Zones (outside the Central City): The Commercial Core, Commercial Local, Commercial Banks Peninsula, and Commercial Mixed Use Zones all permit residential activity located either above or at the rear of a development site. Assessment of residential activity within these zones shows that take-up is negative (see appendix 3). Since the earthquakes, more residential units located within commercial areas have been removed than have been built. So while there is potential capacity within these areas, the recent evidence suggests it is not occurring and, therefore, is not included within this capacity assessment.
- Commercial Central City: While areas such as the 'Frame' and the Central City Mixed Use zone have been included in the assessment, the potential within the Commercial Central City Business Zone, which permits housing above the ground floor, requires more work to determine its potential capacity. Therefore this land is currently excluded.
- Papakāinga/Kāinga Nohoanga Zone: There is one Papakāinga zone located within Greater Christchurch (within Christchurch City), located in Rāpaki. The Papakāinga zone allows contiguous Māori land (identified through Te Ture Whenua Maori Act 1993) to be treated as one site and has no site density controls. This provides potential for a wide variation in density. Four residential

houses have been built since 2012. More work needs to be done to determine the potential capacity of this zone and therefore, this land is currently excluded from the capacity assessment.

2.1.2 Selwyn and Waimakariri zoned land

Within Selwyn and Waimakariri districts, zoned land is identified by township and the various Living or Residential zones contained within them. This is inclusive of the Selwyn District Plan Living 3 (Rural Residential) or Waimakariri District Plan Residential 4a and 4b zones that are located on the edge of or near existing townships and enabled through Councils adopted Rural Residential Strategies and Policy 6.3.9 of the CRPS (see Appendix 6). This evaluation excludes rural zones and Existing Development Areas/Small Settlements under both district plans that are historic lifestyle living/residential zones which are in most cases located within the rural environment in isolation of townships. The two Special Housing Accord Areas in Selwyn are included as plan enabled capacity, which include the South Faringdon and Geddes/Dryden Trust development areas³.

Housing supply for Selwyn and Waimakariri has been reported from the Selwyn Capacity for Growth Model (SCGM) and Waimakariri Capacity for Growth Model (WCGM), both models having been prepared by Market Economics Limited. These two models assess capacity at a site specific level.

For the SCGM this estimates housing supply at a site specific level by combining geospatial data with District Plan subdivision density standards, permitted activity bulk and location rules and accounting for 'vacant' (where there are no consented buildings on the site) and 'vacant potential' (where potential exists to subdivide based on the subdivision standards) land to determine the Theoretical Capacity of each property⁴. The WCGM follows a similar approach however does not model the bulk and location rules. The SCGM is therefore a slightly more refined assessment.

For both the SCGM and WCGM the following assumptions have been applied:

- 'Undevelopable' lots have been removed, including roads and railways, hydrological features, vested roads and reserves and designated sites;
- Dwelling typology is assumed to be what the District Plans enable;
- Estimates are rounded down to the nearest whole number;
- Amalgamation of parcels is not accounted for;
- Intensification is only assumed where the zone density rules enable five or more dwellings to be accommodated on the parcel;
- That 25% of land area is set aside for infrastructure;
- That no commercial buildings will be constructed in residential zones⁵.

This parcel specific information has been aggregated up to the zone level for each township for reporting the theoretical capacity in table 2.3.1.

2.2 Density and yield for capacity analysis

For Greater Christchurch, two approaches to estimating plan enabled capacity were used; theoretical capacity, and modified capacity. Theoretical capacity is the maximum plan enabled capacity derived from what is permitted, controlled or restricted discretionary residential activity within the relevant district plans and applies the densities as set in the CRPS (see Appendix 7). It essentially provides an estimate or upper ceiling of plan-enabled capacity that is close to the maximum capacity allowable under the rules of the District Plans. For Christchurch City the specific approach to calculating density and yield disregards current development and existing property boundaries and calculates the maximum capacity enabled. The approach taken under the SCGM and WCGM applies a parcel specific evaluation. For Selwyn this has included the use of GIS modelling of bulk and location rules under the district plan.

Modified capacity calculations differ between Christchurch City and the Selwyn and Waimakariri Models. This is because the policy direction for intensification in Christchurch is focused more on comprehensive development rather than, as in Selwyn and Waimakariri, providing for infill capacity. For Christchurch, the

³ Uptake monitoring data on the Rolleston Special Housing Areas is available on Selwyn District Council's Website - <http://www.selwyn.govt.nz/services/planning/special-housing-areas/selwyn-district-council-monitoring-report>

⁴ Refer to the SCGM and WCGM Technical Reports respectively and note that the Theoretical capacity is defined as 'Theoretical Plan Enabled Capacity' in the Growth Models

⁵ Home office/small business can cohabitate within residential dwellings

modified capacity is based on the average density of past development in each residential zone or an assessment of the average of previously realised density for intensification development in higher density zones. For Selwyn and Waimakariri, as part of their respective growth models, a spatial analysis of capacity for infill in the existing urban area was conducted to establish the modified capacity to determine what densities and level of uptake has been realised in each zone.

2.2.1 Christchurch

The Christchurch District Plan introduced several overlays that either constrain or enable development. For the calculation of an area that was identified within an overlay, the density calculation ignored the zone density and used an overlay figure; in other words the overlay figure included the total households per hectare not just the addition or reduction of the zone figure. The density used for each zone and overlay and District Plan reference is set out in Appendix 1 or discussed below.

Non-residential activities in residential zones: Currently 2.7% of residential sites are occupied by non-residential activities, including halls, education and community facilities. This adjusts the theoretical capacity by 2%, while the modified capacity incorporates non-residential activities in the household per hectare calculation⁶.

Residential Medium Density Zone: The Theoretical capacity applied is based on modelling of the zone standards, as found in Appendix 8. The modelling shows that a density of 120hh/ha is possible. The Modified density applied is based on the study of achieved density that occurred for redevelopment sites in the Riccarton area since 1995⁷. This showed that over 2/3 of all medium-density development achieved in excess of 30 hh/ha. More recent developments (since 2000) have generally achieved higher densities, about 40% of developments above 40 hh/ha, as well as 30% of developments between 35-40 hh/ha. The modified density of 40hh/ha represents this trend towards greater density.

Residential Central City Zone: This provides for high density housing, with a higher height limit than the Medium Density Zone resulting in a theoretical potential yield of 100 hh/ha. The 100hh/ha theoretical yield is based on the range of housing typologies (and thus densities) set out in the guide 'Exploring New Housing Choices'. This guide provides examples of five storey courts (typology 11) reaching 124 hh/ha and a walk-up corner (typology 9) reaching 80 hh/ha⁸. The guide acknowledges that "...In some cases this approach highlights typologies which are acknowledged as not complying with current District Plan rules (at the time of writing in August 2010)" - refer to page 28 of the 'Exploring New Housing Choices', document. Since 2010 the District Plan has been changed, first to give effect to the Central City Recovery Plan and further through the recent review of the Christchurch District Plan. Key changes include changes to and removal of site density and increased height standards. Therefore, the guide is relevant in that it provides a modelled assessment about what is possible on typical sites within Central City and a range of typologies that can be achieved broadly within the District Plan. Modified density is based on the current average density.

Commercial Mixed Use Zone and East Frame: The District Plan recently permitted residential and commercial activities within the Mixed Use Zone. CCC recently undertook a land use survey within part of the Mixed Use zone to determine the proportional split of ground floor activities. This survey indicates that housing occupies approximately five percent of ground floor activity. This equates to about five hectares of residential capacity. The East Frame is consented for development of 900 houses.

Residential Suburban Density Transition Zone: Within the Christchurch District Plan there is approximately 781 hectares zoned RSDT. This zone is generally located between the medium density surrounding the city centre and the suburban zone or near Key Activity Centres (identified in the CRPS). The zone allows for either suburban development on smaller sites or comprehensive development of multi-unit complexes of up to four units. The provision for multi-unit development in the zone has only been operative since 2015. Therefore there is very limited data with which a theoretical or modified density could be determined. Notwithstanding this, as part of the Christchurch City Council's evidence under the District Plan Review, a comparative modelling

⁶ CCC Monitoring and Research information using valuation rating data

⁷ <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2016/04/CCC-Rebuttal-evidence-Sarah-Oliver-22-06-16.pdf> Pg13. Also, this study area was an area with a 2 storey height limit and could be an underestimation of potential capacity.

⁸ <https://www.ccc.govt.nz/assets/Documents/The-Council/Plans-Strategies-Policies-Bylaws/Urban-Design/Exploring-New-Housing-Choices.pdf>

analysis was undertaken of the potential for the Residential Suburban, Residential Suburban Transition Density, and Residential Medium Density zones to facilitate multi-unit development. A summary overview of this analysis is provided in Appendix 8 of this report⁹. Further, the RSDT site size analysis shows that there are approximately 171ha of sites that are vacant and/or larger than 1000m². There are 404ha of sites between 600m² and 1000m². Based on this information, for theoretical capacity, the assumption is that it will yield 60hh/ha (5 dwellings on an 809m² site). For modified density, the average existing density is used, therefore does not take account of the potential uptake of multi-unit development available through the new District Plan provisions. Under the theoretical capacity assessment, intensification within the RSDT zone therefore provides for an additional 15,525 multi-unit households above the 18,975 calculated based on single unit density.

Minor Residential Units, Retirement Villages within all Residential Zones: Within the Christchurch District Plan minor residential units are permitted activities within the Residential Suburban Zone. This allows for small, independent units to be built on sites greater than 450m². As such for all Residential Suburban zoned sites greater than 450m² there is capacity for an additional unit. The provision for Minor Residential Units is new in the District Plan¹⁰. Consequently it is not possible to accurately make an assessment of the likely update of Minor Residential Units in the Christchurch City 'Modified' capacity. Additionally, retirement villages are permitted activities throughout the Residential Suburban Zone and could also increase the total theoretical capacity, however more detailed analysis work is required to understand and identify future potential retirement village locations and significance on capacity. Therefore, retirement villages are currently excluded from the capacity assessment density calculation.

Enhanced Development Mechanism (EDM): The EDM allows for comprehensive development if it meets certain criteria. This again could provide for greater housing densities and overall capacity; however likely development or uptake is limited. This additional potential yield has therefore been excluded from the capacity calculation.

2.2.2 Selwyn and Waimakariri

The Selwyn and Waimakariri growth models utilise parcel based information to determine the modified capacity¹¹. This adjusts the theoretical capacity in recognition that the market rarely provides for housing to the densities and typologies enabled by District Plan subdivision standards and land use rules. It also accounts for the reality that there will be a range of lot sizes as a consequence of natural features, demand profiles and infrastructure needs.

The modified capacity is an estimate of the contemporary level of development that is being produced by the market within sample areas using spatial data to determine the extent to which the realised subdivision density is consistent with the underlying zones. The modified capacity outputs outlined in Table 2.3.2 have been aggregated up to the township level for the purposes of reporting.

2.3 Plan Enabled Capacity – Results of analysis

This section tabulates the theoretical (refer to Table 2.3.1) and modified (refer to Table 2.3.2) plan enabled capacity for each council and across the sub-areas. For Christchurch City this entails a simple calculation based on zoned land, identified in Section 2.1, multiplied by density (households per hectare), identified in Section 2.2. Capacity is grouped by sub-areas and then zone (see Appendix 5), for comparison.

Capacity is reported as additional to the households currently there. Current households is based on address points (not on vacant land) which indicates (broadly) what the current land use is (i.e. whether there is an existing dwelling) to provide a calculation for net capacity (i.e. additional capacity). Address points are sourced from Land Information New Zealand's official national record (used for electoral purposes), which is required (through legislation) to be updated by TA's and meet a national standard. This is the best record of the number of current households. Net capacity is, therefore, the additional housing capacity over and above what already exists.

⁹ Full analysis can be sourced at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2016/04/CCC-RMD-hearing-Sarah-Oliver-Appendices-G-H-9-6-16.pdf>

¹⁰ The superseded Christchurch City Plan contained provision for family flats. This provision had a similar development outcome to Minor Residential Units, however a family flat was restricted to specific tenure. The provisions are therefore not directly comparable.

¹¹ Refer to the SCGM and WCGM Technical Reports respectively and note that modified capacity in the SCGM is referred to as 'Modified Development Potential'.

Table 2.3.1 – Summary of Theoretical Plan Enabled Capacity

Sub-areas	Zone(s)	Net Capacity
ChCh North West	<i>Residential Suburban</i>	17,263
	<i>Residential Suburban Density Transition</i>	554
	<i>Residential Medium Density</i>	5,432
	<i>Community Housing Redevelopment Mechanism</i>	4,579
	<i>Residential New Neighbourhood</i>	4,672
	Total	32,500
ChCh North East	<i>Residential Suburban</i>	13,763
	<i>Residential Suburban Density Transition</i>	1,379
	<i>Residential Medium Density</i>	4,452
	<i>Community Housing Redevelopment Mechanism</i>	5,216
	<i>Residential New Neighbourhood</i>	4,103
	<i>Residential Small Settlement</i>	436
Total	29,349	
ChCh South East	<i>Residential Suburban</i>	5,882
	<i>Residential Suburban Density Transition</i>	1,923
	<i>Residential Medium Density</i>	2,840
	<i>Community Housing Redevelopment Mechanism</i>	849
	<i>Residential Hills</i>	565
	Total	12,059
ChCh South West	<i>Residential Suburban</i>	14,808
	<i>Residential Suburban Density Transition</i>	4,007
	<i>Residential Medium Density</i>	7,126
	<i>Community Housing Redevelopment Mechanism</i>	2,561
	<i>Residential New Neighbourhood</i>	8,309
	<i>Residential Hills</i>	22
	<i>Residential Large Lots</i>	44
Total	36,877	
ChCh City & Inner Suburbs	<i>Residential Suburban</i>	1,027
	<i>Residential Suburban Density Transition</i>	1,763
	<i>Residential Medium Density</i>	28,254
	<i>Residential Central City</i>	5,437
	<i>The Frame (East and North)</i>	900
	<i>Commercial Central City Mixed Use</i>	500
Total	37,881	
ChCh Port Hills	<i>Residential Suburban</i>	2,275
	<i>Residential Suburban Density Transition</i>	141
	<i>Residential Medium Density</i>	528
	<i>Residential Hills</i>	9,123
	<i>Residential Large Lots</i>	821
Total	12,888	
ChCh Lyttelton Harbour	<i>Residential Banks Peninsula</i>	4,097
	<i>Residential Large Lots</i>	732
	<i>Residential Small Settlements</i>	24
Total	4,853	
TOTAL CHRISTCHURCH	<i>RSMT Intensification</i>	15,525
	<i>Minus 2% uptake of non-residential activities</i>	-3,964
	<i>Minor Residential Units</i>	59,000
	Total combined Christchurch	236,968
Selwyn GCP Settlements ¹²	<i>Rolleston</i>	6,862
	<i>Lincoln</i>	3,891
	<i>Prebbleton</i>	914
	<i>West Melton</i>	391
	<i>Tai Tapu</i>	62
	Total	12,120
Waimakariri GCP	<i>Kaipoi</i>	1,590
	<i>Rangiora</i>	1,403
	<i>Woodend/Ravenswood</i>	3,467
	<i>Pegasus</i>	1,043
	<i>Existing Zoned Land – Small Settlements</i>	317
	Total	7,820
GRAND TOTAL		256,908 households

¹² This data is reported off an initial iteration of the SCGM – Version 5 received on the 24th November 2017 – The results are interim pending review and sensitivity testing

Table 2.3.2 – Summary of Modified Plan Enabled Capacity

Sub-areas	Zone(s)	Net Capacity
ChCh North West	<i>Residential Suburban</i>	904
	<i>Residential Suburban Density Transition</i>	34
	<i>Residential Medium Density</i>	1,983
	<i>Community Housing Redevelopment Mechanism</i>	4,579
	<i>Residential New Neighbourhood</i>	4,672
	Total	12,172
ChCh North East	<i>Residential Suburban</i>	689
	<i>Residential Suburban Density Transition</i>	54
	<i>Residential Medium Density</i>	1,949
	<i>Community Housing Redevelopment Mechanism</i>	5,216
	<i>Residential New Neighbourhood</i>	4,103
	<i>Residential Small Settlement</i>	34
	Total	12,045
ChCh South East	<i>Residential Suburban</i>	424
	<i>Residential Suburban Density Transition</i>	57
	<i>Residential Medium Density</i>	915
	<i>Community Housing Redevelopment Mechanism</i>	849
	<i>Residential Hills</i>	43
	Total	2,288
ChCh South West	<i>Residential Suburban</i>	1,487
	<i>Residential Suburban Density Transition</i>	55
	<i>Residential Medium Density</i>	2,153
	<i>Community Housing Redevelopment Mechanism</i>	2,561
	<i>Residential New Neighbourhood</i>	8,309
	<i>Residential Hills</i>	1
	<i>Residential Large Lots</i>	0
	Total	14,566
ChCh City & Inner Suburbs	<i>Residential Suburban</i>	196
	<i>Residential Suburban Density Transition</i>	29
	<i>Residential Medium Density</i>	5,053
	<i>Residential Central City</i>	92
	<i>The Frame</i>	900
	Total	6,270
ChCh Port Hills	<i>Residential Suburban</i>	306
	<i>Residential Suburban Density Transition</i>	0
	<i>Residential Medium Density</i>	116
	<i>Residential Hills</i>	2,035
	<i>Residential Large Lots</i>	137
	Total	2,594
ChCh Lyttelton Harbour	<i>Residential Banks Peninsula</i>	806
	<i>Residential Large Lots</i>	24
	<i>Residential Small Settlements</i>	341
	Total	1,171
TOTAL CHRISTCHURCH	Total combined Christchurch	51,106
Selwyn GCP Settlements ¹³	<i>Rolleston</i>	5,728
	<i>Lincoln</i>	3,020
	<i>Prebbleton</i>	761
	<i>West Melton</i>	146
	<i>Tai Tapu</i>	62
	Total	9,717
Waimakariri UDS	<i>Kaiapoi</i>	488
	<i>Rangiora</i>	1,251
	<i>Woodend/Ravenswood</i>	1,658
	<i>Pegasus</i>	474
	<i>Existing Zoned Land – Small Settlements</i>	317
	Total	4,188
GRAND TOTAL		65,011 households

¹³ This data is reported off an initial iteration of the SCGM received on the 13th October 2017 – The results are interim pending review and sensitivity testing

Summary

The total theoretical capacity within Greater Christchurch is 236,968 households and modified capacity is 65,458 households, being a difference of some 171,510 households. This is largely due to the difference in theoretical and modified density counts for Christchurch and the spatial analysis for Selwyn and Waimakariri. In Christchurch, the largest difference is in the Residential Medium Density, Residential Central City, Residential Suburban Density Transition and Residential Suburban zones, as what is enabled is significantly more than what densities have historically and are currently being achieved through redevelopment. For the RSDT zone, this difference is primarily the result of the recent enabling (through the Christchurch District Plan review) of multi-unit development (up to four units) as a permitted activity.

While this difference is significant, the important test under the NPS-UDC requirements will be whether the development capacity is feasible, and finally whether the feasible development capacity meets housing demand in the short, medium and long term.

3. Availability of Infrastructure

This section summarises the actual and likely availability of development infrastructure and other infrastructure in the short, medium and long term, as required under Policy PB3 (b) of the NPS-UDC, to support the development of residential land. The infrastructure assessment considered whether any area currently zoned for residential activity is: serviced or not by infrastructure necessary for development, or; is to be serviced through a council Long Term Plan (LTP) funding, or; identified within a council infrastructure strategy, and; whether the infrastructure has a specified constraint on development. The definitions of development capacity, development infrastructure and other infrastructure outlined in the NPS-UDC, and stated at the beginning of the report, specify what is required. The explicit capacity of development infrastructure is difficult to do as infrastructure models are designed to meet household projections. The current LTP timeframe for each TA is 2015 to 2025, however these LTP's will be reviewed in 2018 (every three years). This may change whether infrastructure is available in the medium term, to 2028.

3.1.1 Methodology

The approach to identifying the availability of infrastructure was to determine any areas where a lack of development infrastructure or other infrastructure would impede or prohibit the potential development of a site or sites for housing. Areas that require additional development costs, such as on-site stormwater storage capacity, were identified but not excluded from the capacity as these do not impede development directly (but do add costs). These additional costs of development will be quantified, and the impacts considered, within the housing feasibility assessment. Selwyn and Waimakariri's evaluations are prioritised to the Living/Residential zones that have remaining 'greenfield' development capacity, which includes both undeveloped or partially developed outline development plan areas and zoned land.

3.1.2 Summary of development infrastructure constrained land

Generally, no zoned land is prohibited or impeded in such a way that would make development or intensification impossible. This is principally because land identified within the CRPS (through Chapter 6, which was inserted by LURP with a timeline of 2028) required infrastructure and therefore was programmed for servicing. There are no identified infrastructure constraints for the balance of the Living/Residential Zones that would preclude intensification to the densities prescribed in either the Selwyn or Waimakariri District Plan. The following summarises potential infrastructure concerns for Greater Christchurch (see Appendix 2 for more detail).

The following table shows what capacity is currently constrained:

Area	Short Term	Medium Term	Long Term
Christchurch	6,566	3,666	0
Selwyn	0	0	0
Waimakariri	0	0	0
Total	6,566	3,666	0

Of the land zoned within Christchurch, additional household capacity of 6,566 is constrained in the short term while 3,666 is constrained in the medium term. This equates to 13% of Christchurch's modified capacity in the short term and 7% in the medium term.

Christchurch

Within some spatial areas in Christchurch there are wastewater capacity constraints that limit the additional household capacity in the short and medium term. These areas include the Shirley and Aranui vacuum sewer catchment areas and three greenfield areas. However, in all other areas development infrastructure is in place or is programmed to be as part of upgrades under the current LTP. Further, other areas where development infrastructure is planned, there is potential for it to be developer led, therefore aside from commercial feasibility factors, are not considered to be constrained.

Area	Short Term	Medium Term	Long Term
Greenfield	2,900		
Intensification	3,666	3,666	

Wastewater - There are no major wastewater constraints to residential development of most areas within Christchurch over the long term. There are however some areas across the city where capacity is limited (as shown in Appendix 2), namely the vacuum sewer catchment areas of Shirley and Aranui. These areas currently have no additional capacity until a solution is developed and could constrain development capacity by an estimated 3666 additional households. There are some other constrained areas, (as shown in Appendix 2) that require alternative solutions for connections and therefore impact upon development costs (and so feasibility) but do not preclude development capacity. Alternative solutions allow development without exacerbating overflow issues and further compromising Council's ability to meet its consented overflow conditions. All wastewater capacity constraints will be resolved by 2028 following the completion of planned upgrades under the current LTP. Prior to 2028, there are three greenfield areas (SE Halswell, Highfield and Hawthornden) providing for approximately 2,900 household sites, that require either the planned upgrades to be completed, or alternatively the required infrastructure is developer led (such to advance land development prior to 2028).

Water Supply - There are no water supply constraints to development within the Christchurch area, as all required major upgrades have either been undertaken in recent years or are planned to be undertaken within the next seven to ten years in the current LTP. In greenfield areas (RNN Zone), water supply can be developer led or is programmed for upgrades by 2028.

Stormwater - Throughout Christchurch, stormwater capacity is not identified as a significant restraint to residential development, as sites have the ability to mitigate effects on site. Land development is therefore not precluded, rather for certain sites there will be an increased development cost associated with providing on-site mitigation infrastructure.

Transport - Throughout Christchurch, all existing and planned urban areas have access to core transport links, corridors and public transport. Identified areas of future growth (RNN) have led to upgrades to transport links to be programmed. These upgrades include Cashmere Rd, Lincoln Rd and Whiteleigh Ave, public transport and cycleway improvements. Areas of intensification around the city are supported through various transport programmes, notably improvements to the public transport and cycling network, which become more viable through intensification.

However, growth is also likely to lead to reductions in the level of service and capacity on the transport network, which will result in increasing delays and congestion. This could have a constraining impact on economic growth. The Future Development Strategy will consider this.

Selwyn

Wastewater - The East Selwyn Sewer Scheme has capacity, with additional upgrades planned and undertaken when population thresholds are met or where developers need to extend sewer mains and install lateral connections at the time of subdivision. Further, master planning and supporting Development Contribution policies are in place in the 2015-25 LTP.

Water Supply - Generally, bulk water infrastructure is planned and will be constructed as required, with developers needing to extend water mains and install lateral connections to the primary network at the time of subdivision. Further, master planning and supporting Development Contribution policies in place in the 2015-25 LTP. Some development areas in Lincoln, Rolleston, and Prebbleton require water supply and utility upgrades, which are programmed for upgrades by 2028. Developers have an option to progress these upgrades privately within a shorter timeframe in response to the timing and sequencing of development.

Stormwater - Generally, stormwater capacity is available or possible for all sites that have been zoned for development with an Integrated Stormwater Management System established in Lincoln.

Transport - Urban areas have access to transport links, including the Main Trunk and Midland Lines and State Highway 1, 73 and 75. The Southern Motorway extension and Four-Laning State Highway 1 to Rolleston is under construction as a Road of National Significance. Future growth are enabled through progressive upgrades to transport links, which have been either undertaken or are programmed to ensure there is sufficient capacity within the strategic transport network to accommodate growth needs over time.

Waimakariri

Wastewater - Generally, there is wastewater capacity across the urban areas. Several rural-residential areas require upgrade and ongoing work to increase capacity is either underway or programmed for works.

Water Supply - Generally, there is water supply capacity. Several rural-residential areas require upgrade and ongoing work to increase capacity is either underway or programmed for works.

Stormwater - Generally, there are no stormwater constraints. Areas, such as East Rangiora and Ravenswood will require Stormwater Management Plans for development.

Transport - Generally, throughout Waimakariri, urban areas have access to transport links, including the Main Trunk (State Highway 1 and 71). The Northern and Western Corridor improvements is under construction as part of the Roads of National Significance improvements. Identified areas of future growth are aligned to upgrades to transport links, which have been either undertaken or programmed to integrate development in the strategic transport network.

4. Future Work

The following areas have been identified throughout the report as requiring additional work for the next housing capacity assessment in three years. These are:

- Consolidating each TA monitoring and information management systems to ensure consistency
- Investigation of the potential for a GC growth model
- Monitoring the location, density and uptake of multi-unit development within the RSDT zone.
- Monitoring the uptake of minor residential units to estimate the potential of these units to provide for capacity
- Refine the vacant land available by mapping the intentions of vacant sites. Monitor the uptake and density of Commercial Central City land for housing capacity.
- Spatially assess large subdividable RS zoned land for backfill capacity, looking at the likelihood of access.
- Monitor the location and uptake of retirement villages throughout Christchurch.
- Monitor the use and density achieved through the EDM.
- Assess potential capacity for Rāpaki Papakāinga Zone.
- Additional analysis of the impact of AirBnB, Bookabach and other sites offering short term rentals on overall capacity.

This work will continue to help refine the housing capacity and better understand the choice and range of housing available.

5. Alternative approaches

This section discusses what alternative approaches could have been used in determining plan-enabled capacity. For Christchurch City an alternate approach could be to start at the site level and assess the potential additional capacity. This would require the mapping of potential built form bulk and location and an assessment of the viability of each site's housing typology. However, this alternative "infill" approach does not consider the potential of site amalgamation and comprehensive residential development (which is occurring in redevelopment areas). Further work would be required to identify adjoining vacant land that could be amalgamated to provide additional infill. This could lead to capacity being underestimated. Further this alternative approach could be done with a three-dimensional element included, taking into account the recession plane and height limitations. This alternative approach is not possible for this first assessment due to time constraints to develop a tool to assess each site and map the bulk and location.

A. Appendices

A.1 Density Table

Christchurch

The modified density count is the average existing density, based on past development, unless stated.

Zone / Overlay	Theoretical (hh/ha)	Modified (hh/ha)	Reason
Zones			
Residential Suburban	25	15.9	Theoretical - 400m ² minimum lot size – DPR 14.4.1.3 RD1
Residential Suburban Density Transition	60	20.6	Theoretical - Potential from RSDT and RMD modelling, see Appendix 8
Residential Medium Density	120	40	Theoretical - Potential from RSDT and RMD modelling, see Appendix 8 Modified - Potential from Riccarton evidence (discussed above)
Residential New Neighbourhood	15	15	Theoretical and Modified - Residential Policy – 14.2.1.1 a. iv.
Residential Central City	100	37.5	Theoretical - 200m ² minimum lot size – DPR 14.6.2.11, however comprehensive development possible
Residential Hills	17	9.6	Theoretical - 585m ² minimum lot size – DPR 14.7.1.3 RD1
Residential Large Lot	7	2.8	Theoretical - 1350m ² minimum lot size – DPR 14.9.1.3 RD2
Residential Banks Peninsula	25	11.9	Theoretical - 400m ² minimum lot size – DPR 14.8.2.1 a. i.
Residential Small Settlement	10	6.6	Theoretical - 1000m ² minimum lot size – DPR 14.10.2.1 a. i.
Overlays			
Community Housing Redevelopment Mechanism	40	40	Based on density achieved by Housing NZ
East Frame	900 households	900 households	Based on consent data for housing units and the master plan
RS - Existing Rural Hamlet Overlay	5	5.7	2000m ² minimum lot size – DPR 14.4.3.2.1 b. ii.
RS - Peat Ground Condition Constraint	5	5.1	2000m ² minimum lot size – DPR 14.4.3.2.1 b. ii.
RS - Stormwater Capacity Constraint Overlay	52 households	52 households	Existing allotments at June 1995 – DPR 14.4.3.2.1 b. ii.
RMD - Medium Density (Higher Height Limit and Individual Site Density) Overlay	120	40	Theoretical - Potential from RSDT and RMD modelling, see Appendix 8 Modified - Potential from Riccarton evidence (discussed above)
RMD - Residential Medium Density Lower Height Limit Overlay	120	40	Theoretical - Potential from RSDT and RMD modelling, see Appendix 8 Modified - Potential from Riccarton evidence (discussed above)
RH - Residential Hills Density Overlay	13	3.7	Theoretical - 765m ² minimum lot size – DPR 14.7.1.3 RD1
RH - Residential Mixed Density Overlay – 86 Bridle Path Rd	9 households	9 households	Stated households – DPR 14.7.2.1 a. iv.
RH - Residential Mixed Density Overlay – Redmund Spur	400 households	400 households	Stated households – DPR 14.7.2.1 a. iii.

RLL - Residential Large Lot Density Overlay	3	1.9	Theoretical - 2700m ² minimum lot size – DPR 14.9.1.3 RD2
RLL - Residential Large Lot Density Overlay Allandale	24 households	24 households	Lots identified on ODP – 8.10.13
RLL - Residential Large Lot Density Overlay Samarang Bay	8 households	8 households	Lots identified on ODP – 8.10.12
RBP - Diamond Harbour Density Overlay	16	7.4	Theoretical - 600m ² minimum lot size – DPR 14.8.2.1 a. ii.
RSS - Kainga Overlay 1 and 2	22	8.2	Theoretical - 450m ² minimum lot size – DPR 14.10.2.1 a. v.

Selwyn¹⁴

Town	Zone	Infrastructure %	Theoretical	Theoretical HH/Ha	Modified Lot	Modified HH/Ha
Rolleston	Living Z	0.25	500	15.00	630	11.90
	Living Z Deferred	0.25	500	15.00	600	12.50
	Living 1	0.25	750	10.00	765	9.80
	Living 1A	0.25	300	25.00	360	20.83
	Living 1B	0.25	1,200	6.25	1,200	6.25
	Living 1C	0.25	2,000	3.75	2,000	3.75
	Living 2	0.25	5,000	1.50	5,000	1.50
	Living 3	0.25	5,000	1.50	5,000	1.50
	Living 2A	0.25	10,000	0.75	10,000	0.75
Lincoln	Living Z	0.25	500	15.00	680	11.03
	Living 1A3	0.25	500	15.00	600	12.50
	Living 1	0.25	650	11.54	780	9.62
	Living 1A2	0.25	650	11.54	780	9.62
	Living 1A1	0.25	650	11.54	780	9.62
	Living 1A	0.25	850	8.82	1,020	7.35
	Living 1A4	0.25	1,500	5.00	1,500	5.00

¹⁴ These results have been compiled by SDC officer's using reporting outputs from ME's SCGM applying the following methodological basis: 1. Theoretical is plan enabled and reflect the minimum average allotment sizes for a Restricted Discretionary subdivision consent under SDP Rule 12.1 Table C12.1 - <http://eplan.selwyn.govt.nz/#!/Rules/0/32/1/0+>. For Living Z where this has medium densities a middle point has been taken between the Low density and medium density enabled by the plan; 2. It is assumed that 25% of the developable land is lost to infrastructure; 3. Given 2. above that leaves 7,500m² available per hectare for residential development, and; 4. The 7,500m² available for development has been divided by the lot size to find the households/hectare number for both Theoretical and Modified

	Living X	0.25	2,000	3.75	2,000	3.75	
	Living 2	0.25	3,000	2.50	3,000	2.50	
	Living 3	0.25	5,000	1.50	5,000	1.50	
Prebbleton	Living Z	0.25	500	15.00	713	10.52	
	Living 1A6	0.25	600	12.50	720	10.42	
	Living X	0.25	800	9.38	960	7.81	
	Living 1A1	0.25	800	9.38	960	7.81	
	Living 1	0.25	800	9.38	960	7.81	
	Living 1A4	0.25	800	9.38	960	7.81	
	Living 1A2	0.25	800	9.38	960	7.81	
	Living 1A3	0.25	800	9.38	960	7.81	
	Living 1A5	0.25	800	9.38	960	7.81	
	Living 1A	0.25	1,000	7.50	1,000	7.50	
	Living 2A	0.25	5,000	1.50	5,000	1.50	
	Living 2A (Blakes Road)	0.25	20,000	0.38	2,000	0.38	
	Living 3	0.25	5,000	1.50	5,000	1.50	
	West Melton	Living WM	0.25	3,000	2.50	1,625	4.62
		Living 1	0.25	1,000	7.50	1,000	7.50
Living 1B		0.25	2,800	2.68	2,800	2.68	
Living 2		0.25	5,000	1.50	5,000	1.50	
Living 2A		0.25	10,000	0.75	10,000	0.75	
Springston	Living 1	0.25	800	9.38	960	7.81	
	Living 1A	0.25	800	9.38	886	8.47	
Tai Tapu	Living 1A	0.25	800	9.38	800	9.38	
	Living 2A	0.25	5,000	1.50	5,000	1.50	
	Living 3	0.25	5,000	1.50	5,000	1.50	

Waimakariri

To add

A.2 Infrastructure Summary

Wastewater and Water Supply

Geographic Area		Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
Address Point	Hectares	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
Christchurch City Council							
Shirley vacuum sewer catchment area		N	No spare capacity until solution found	N	No spare capacity until solution found	Y	
Aranui vacuum sewer catchment area		N	No spare capacity until solution found	N	No spare capacity until solution found	Y	
SW Greenfield (except SE Halswell)		Y	Potential for infrastructure to be developer led	Y	Upgrade works programmed by 2028	Y	
SE Halswell		N		Y	Upgrade works programmed by 2028		
Belfast Greenfield		Y	Potential for infrastructure to be developer led	Y	Upgrade works programmed by 2028	Y	
Highfield		N		Y	Upgrade works programmed by 2028	Y	
Hawthornden		N		Y	Upgrade works programmed by 2028	Y	
South-West Hornby (Appendix 16.8.1)		Y	Wastewater not to exceed 0.09l/s/ha	Y	Wastewater not to exceed 0.09l/s/ha	Y	Potential upgrade possible
Waimakariri District Council							
Ravenswood		Y	WS – Additional source capacity required for bulk of development (alternative source) WW – Will require a dedicated rising main through to the treatment plant				
Freeman		Y	WS – Some network upgrades required				

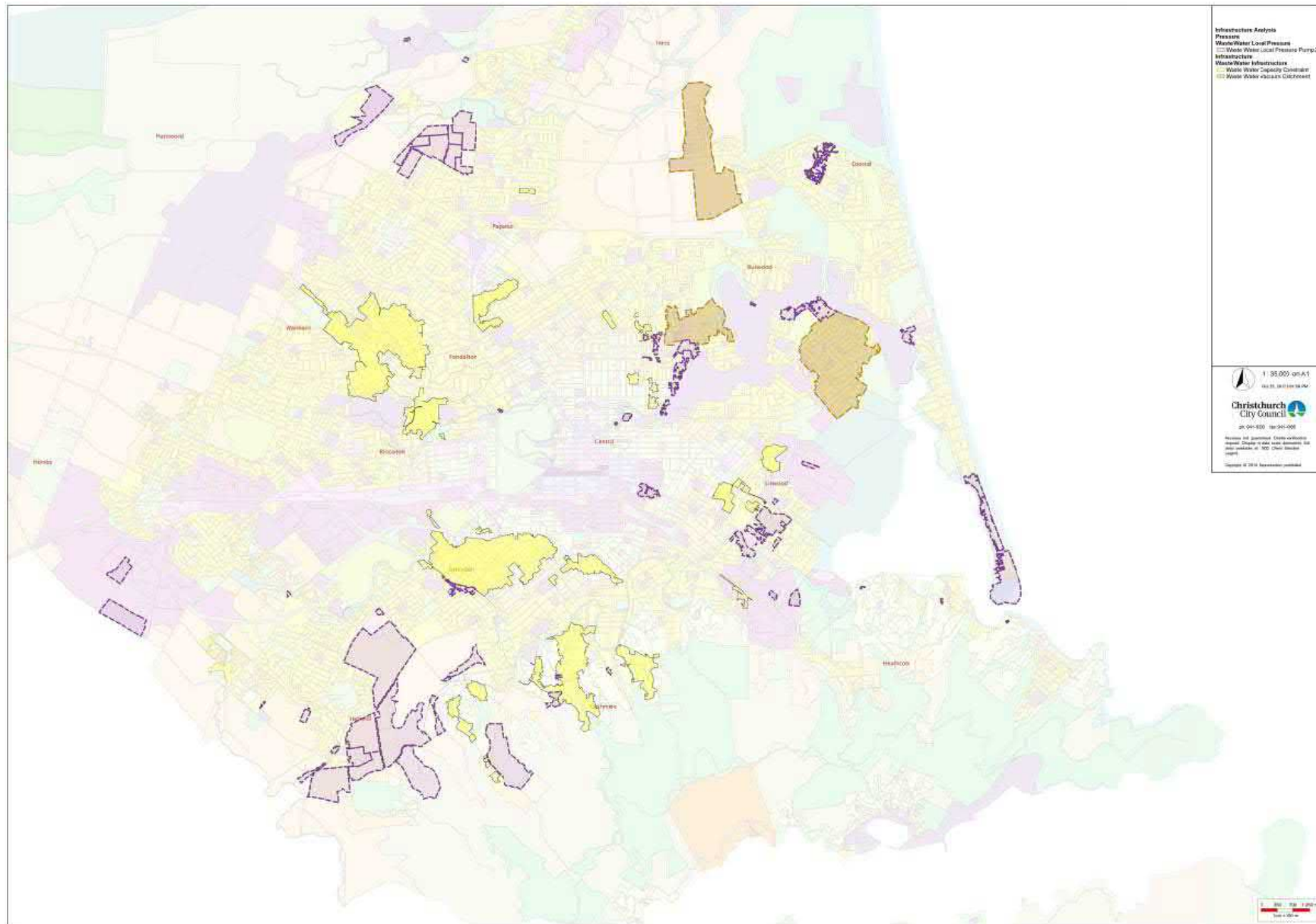
Geographic Area		Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
Address Point	Hectares	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
			WW – Some network / pump station upgrades required				
East Woodend		Y	WS – Some network upgrades required WW – Some network / pump station upgrades required				
Scouts Land Williams Street		Y	WW – Some network / pump station upgrades required				
Silverstream		Y	WS – Some network upgrades required				
Waikuku		Y	WS – Some capacity issues. Scheme source capacity being increased				
Waikuku Beach		Y	WS – Some capacity issues. Scheme source capacity being increased				
Woodend Beach		Y	WS – Would require extension of Woodend scheme along Woodend Beach Road				
River Road Res 4B Rangiora		Y	WS – Some network upgrades required WW – Some network upgrades required for connection				
NW Kaiapoi Res 4B		Y	WS – Some network upgrades required WW – No sewer. Current means of disposal is onsite septic tank				
Res 4A NW Rangiora		Y	WW – May need a pump station. May need additional capacity high density				
West Eyreton Res 4B		Y	WW – No sewer. Current means of disposal is onsite septic tank				
Fernside Res 4B		Y	WW – Only partially served by sewer. Other properties means of disposal is onsite septic tank. Alternatively scheme would need to connect to Rangiora in order to be extended				

Geographic Area		Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
Address Point	Hectares	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
Waikuku Res 4A		Y	WS – Some capacity issues. Scheme source capacity being increased.				
Waikuku Res 4B		Y	WS – Requires extension to Waikuku Beach or Pegasus WW – No sewer. Current means of disposal is onsite septic tank. Requires extension to Waikuku Beach or Pegasus				
Waiora lane Res 4B		Y	WS – No water, current means supply likely to be private bore WW – No sewer. Current means of disposal is onsite septic tank				
Fernside RRDP Evansvale		Y	WS – Requires connection to Mandeville, underway WW – Requires scheme to be connected to Rangiora in order to be extended				
South East Kaiapoi RRDP		Y	WS – Will require extension of Kaiapoi WW – Private lateral will need to be upgraded and changed to a public main				
Waikuku RRDP		Y	WS – Requires extension to Waikuku Beach or Pegasus WW – Requires extension to Waikuku Beach or Pegasus				
SE Rangiora RRDP		Y	WS – Network upgrades required WW – Additional pump station/s require to connect to treatment plant				
Selwyn District Council							
General		Y	Bulk water capacity planned and constructed as required. ESS wastewater capacity planned and constructed as required.	Y	Master planning and supporting Development Contribution policy in place and being updated for 2018-28 LTP.	Y	Area covered in 30Yr

Geographic Area		Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
Address Point	Hectares	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
			Master planning and supporting Development Contribution policy in place for 2015-25 LTP.				Infrastructure Strategy
Lincoln – ODP 3 Rosmerryn & Flemington (includes vacant neighbourhood centre)	160	Y	Final stage of ODP will require WW extension through to ODP 2				
Lincoln – ODP 5	12.5	Y	WS –Water main extension required WW – Pump Station and pumping main required (DC as part of 2018-28 LTP). Connection to trunk main available				
Lincoln – ODP 8	11	Y	WS –Water main extension required through ODP 5. WW – Pump Station and pumping main required as part of ODP 5 (DC as part of 2018-28 LTP)				
Rolleston – ODP 4	11	Y	WS –Water main extension required. WW - Sewer extension required.				
Rolleston - ODP 9	24.5	Y	WW - Sewer extension required (in part) currently underway.				
Rolleston - ODP 10	28	Y	WS – Water main extension required, budgeted 2017/18.				
Rolleston – ODP 12	56	Y	WS – Water main extension required, budgeted 2017/18.				
Rolleston – SHA – Chelsea Green (includes neighbourhood centre)	90	Y	WS –Water main extension required. Connection to trunk main available.				
Rolleston RR - Holmes	91	Y	WS –Water main extension required. Restricted water supply.				

Geographic Area		Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
Address Point	Hectares	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
			WW – Wastewater main extension required. Low pressure sewer.				
Rolleston RR - Skellerup	72	Y	WS –Water main extension required. Restricted water supply. WW – Wastewater main extension required. Low pressure sewer.				
Prebbleton – ODP 4	25.5	Y	WS –Water main extension required. WW – Wastewater main extension required along with other network upgrades.				
Prebbleton RR- Conifer Grove	12	Y	WS –Water main extension required. Restricted water supply. WW – Wastewater main extension required. Low pressure sewer.				
Prebbleton RR - Stratford	16	Y	WS –Water main extension required. Restricted water supply. WW – Wastewater main extension required. Low pressure sewer.				
Prebbleton RR – Trents/Shands Rd	9	Y	WS –Water main extension required. Restricted water supply. WW – Wastewater main extension required. Low pressure sewer.				
Tai Tapu – Living 2A (vacant land)		Y	WS - Restricted water supply. WW – Low pressure sewer.				
Tai Tapu RR – Hauschilds Road		Y	WS - Restricted water supply.				

Christchurch Wastewater constraints



Stormwater

Geographic Area	Short Term (Serviced)		Medium Term (in LTP)		Long Term (In Strategy)	
	Yes/No	Capacity	Yes/No	Capacity	Yes/No	Capacity
Christchurch City Council						
General	Stormwater capacity not identified as a significant restraint as sites have the ability to self-mitigate.					
Hill land	Required to provide controlled discharge without the use of large detention basins					
Flood hazard areas	Compensatory flood storage needed for displacement of flood waters					
Waimakariri District Council						
East Rangiora	Y	Inch may need own SMA as may not be able to discharge into Horncastle SMA.				
Ravenswood	Y	Requires extended detention to prevent downstream flooding. Requires realignment of Taranaki Stream				
Freeman	Y	Requires own SMA				
Scouts Land Williams Street	Y	Likely to require own SMA before discharge to Kaikanui Stream				
Beach Grove	Y	Some challenges with current system and later stages.				
Selwyn District Council						
General	Stormwater discharge to a mixture of ground and surface water.					

Other Infrastructure

<p>Open Space</p> <p>The provision of open space is through the collection of development contributions. Greenfield Outline Development Plans identify generally the location of parks that are defined through the subdivision process. Intensification development is rarely of the scale to provide a new park within the development so the contributions collected goes towards the general open space programme of acquiring new parks.</p>
<p>Community Infrastructure</p> <p>Through the Area Plan work, the location of new facilities was considered. Generally community infrastructure follows development and is not prohibitive to development. Other community infrastructure, such as public toilets, are directed through the Public Toilets Policy, locating them in malls and parks.</p>
<p>Telecommunications</p> <p>The Broadband network improvements are continuing and will be completed near the end of 2030. This will provide ultrafast broadband to most of the county though currently not programmed to cover the red zone. The mobile network covers all urban areas.</p>
<p>Energy</p> <p>Ongoing work is continuing to strengthen and expand the network.</p>

A.3 Residential Activity within Business Zones

Since the earthquakes, residential units within commercial zones are generally not being replaced. The rate of take-up is negative. However, there are a few examples of new mixed-use buildings within local centres (see below).

Zone	2012	2013	2014	2015	2016	2017	Total
Commercial Banks Peninsula	0	0	-1	1	0	0	0
Commercial Core	-5	-6	-2	-6	6	0	-13
Commercial Local	-1	-5	0	9	7	-1	9
Commercial Mixed-Use	-1	-3	0	0	0	0	-4
Commercial Office	0	0	0	0	0	0	0
Commercial Retail Park	-2	-3	-1	0	-1	0	-7
Industrial General	-6	-12	-14	-9	5	-5	-41
Industrial Heavy	-4	-1	-2	1	3	2	-1
Industrial Park	0	0	0	0	0	1	1
Total	-19	-30	-20	-4	20	-3	-56

Table: Building Consents showing Net New Housing within the Commercial Zones

Note: Negative numbers mean a residential unit has been removed and not replaced



Figure: Mixed-Use building with retail on ground floor and apartment living above - <http://naiharcourts.co.nz/HHC3917>

A.4 Central City Potential

The Commercial Central City Business and Commercial Central City Mixed Use Zones permit residential activity¹⁵. The Commercially zoned area of the Central City is approximately 56 hectares, while the Mixed Use Zone is approximately 96ha. However, since the earthquakes, the number of residential building consents across all of the Central City commercial zones has been minimal. This leaves a large amount of high density capacity without enough evidence to project additional capacity.

In the last few years that there has been a positive growth in housing, seen in the table below.

Zone	2012	2013	2014	2015	2016	2017	Total
Central City Business	0	-4	-3	-6	12	52	51
Central City Mixed Use	-3	-6	-4	-4	100	0	83
Central City South Frame	0	0	0	0	-1	-1	-2
Total	-3	-10	-7	-10	111	51	132

Table: Building Consents showing Net New Housing within the Central City Commercial Zones

Note: Negative numbers mean a residential unit has been removed and not replaced

For the Central City Mixed Use Zone, recent survey work shows around 5% of mixed use zone having residential on the ground floor. This also helps reconcile the housing and business assessments.

ADD REFERENCE TO BUSINESS ASSESSMENT

The provision of residential units varies. A few sites offer a ground floor commercial space with several levels of residential living above (example pictured below), while others offer one unit on top of a small scale commercial building. This requires ongoing spatial monitoring to provide a better understanding of the expected density.

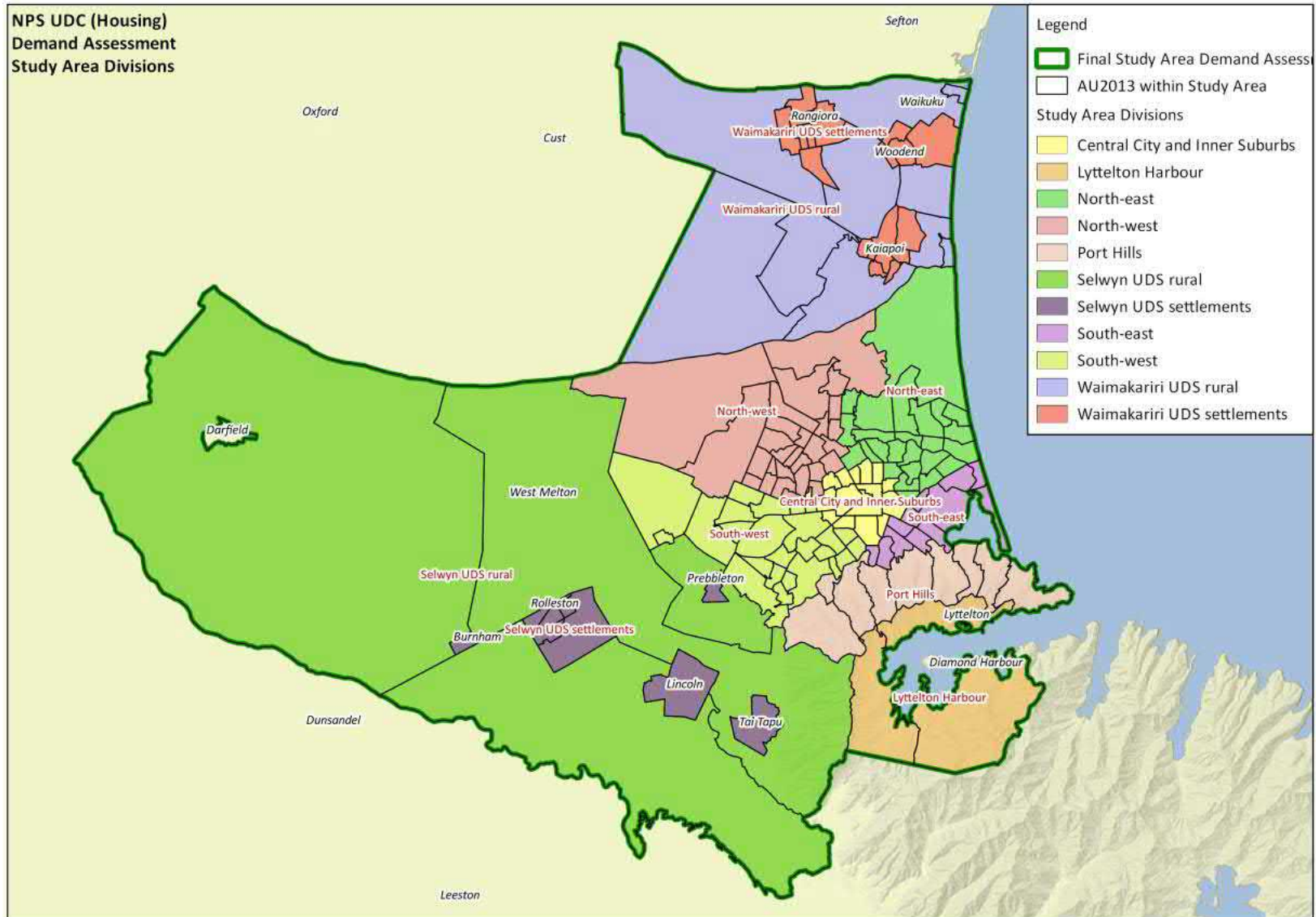


Figure: Apartment building - <http://www.dgmgroupp.co.nz/west-kilmore/>

¹⁵ CCCMU Zone permits residential activity at ground floor level. The CCCB Zone permits residential activity predominately at upper levels.

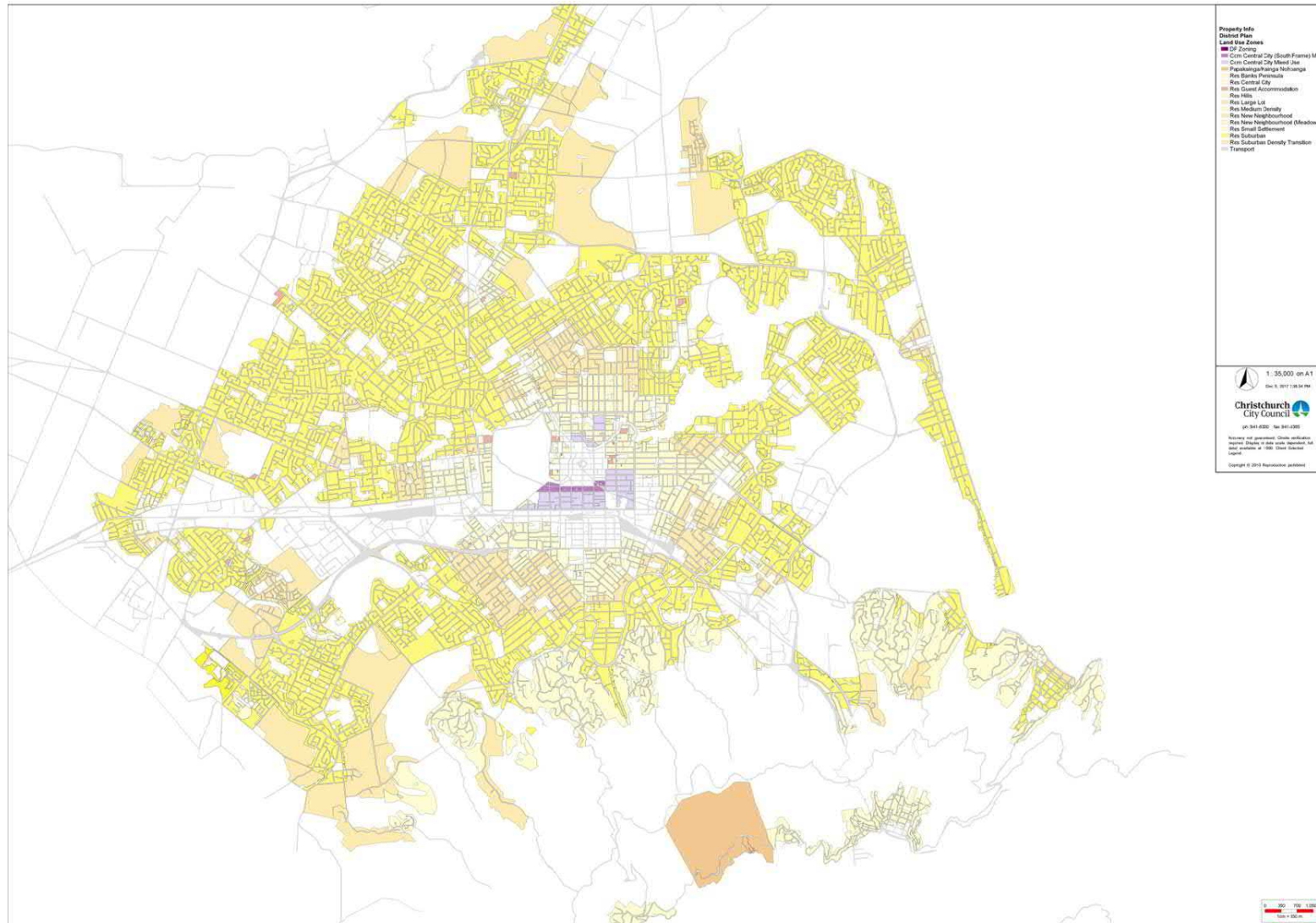
A.5 Map of Sub-Areas

This map shows the sub-areas or sub-areas of Greater Christchurch identified for comparison.



A.6 Map of Residential Zoned Land

Christchurch

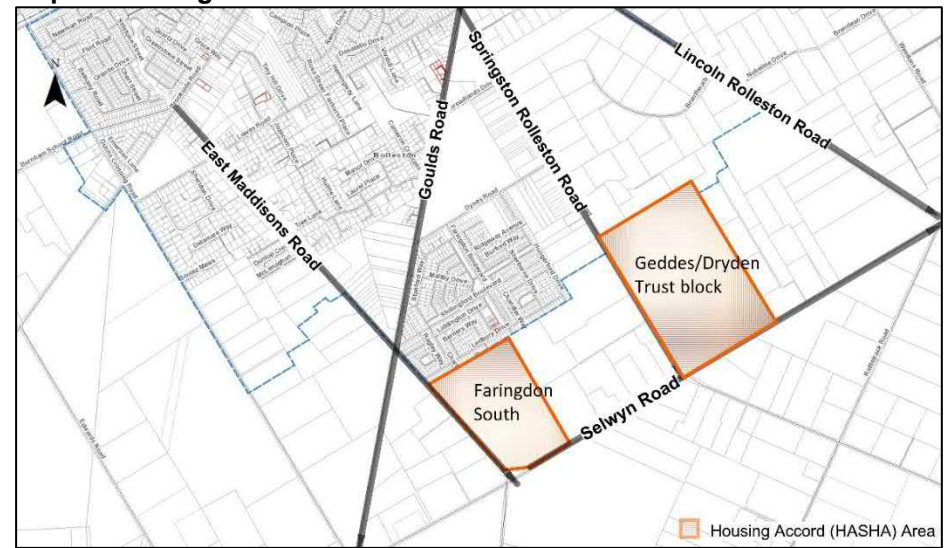


Selwyn

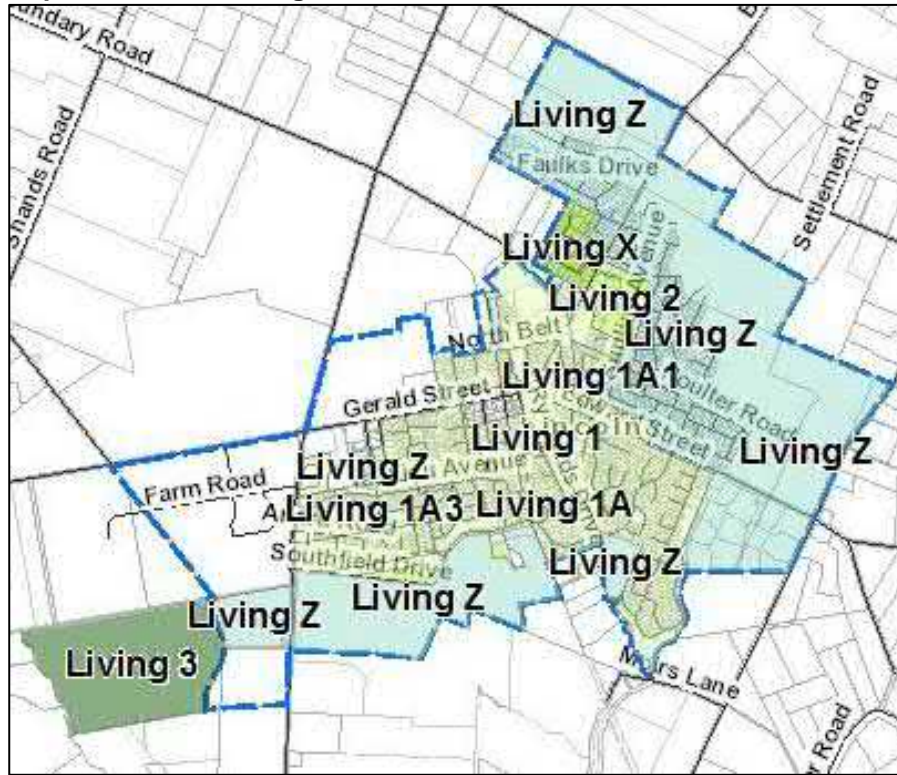
Map 1: Rolleston Housing Land



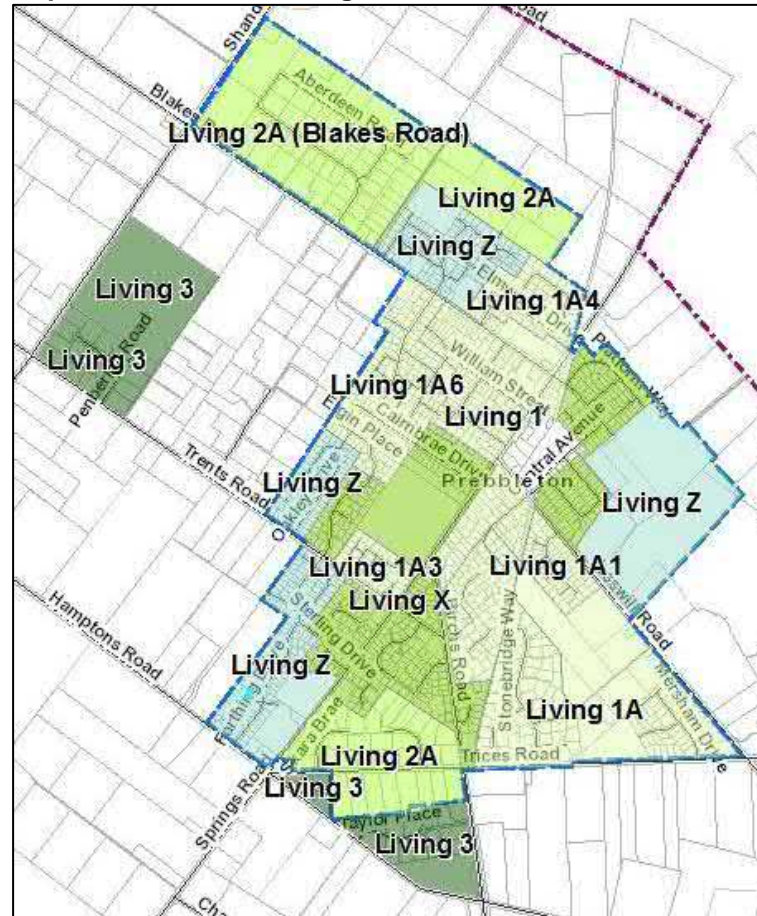
Map of Housing Accord Areas



Map 2: Lincoln Housing Land



Map 3: Prebbleton Housing Land



Map 4: West Melton Housing Land



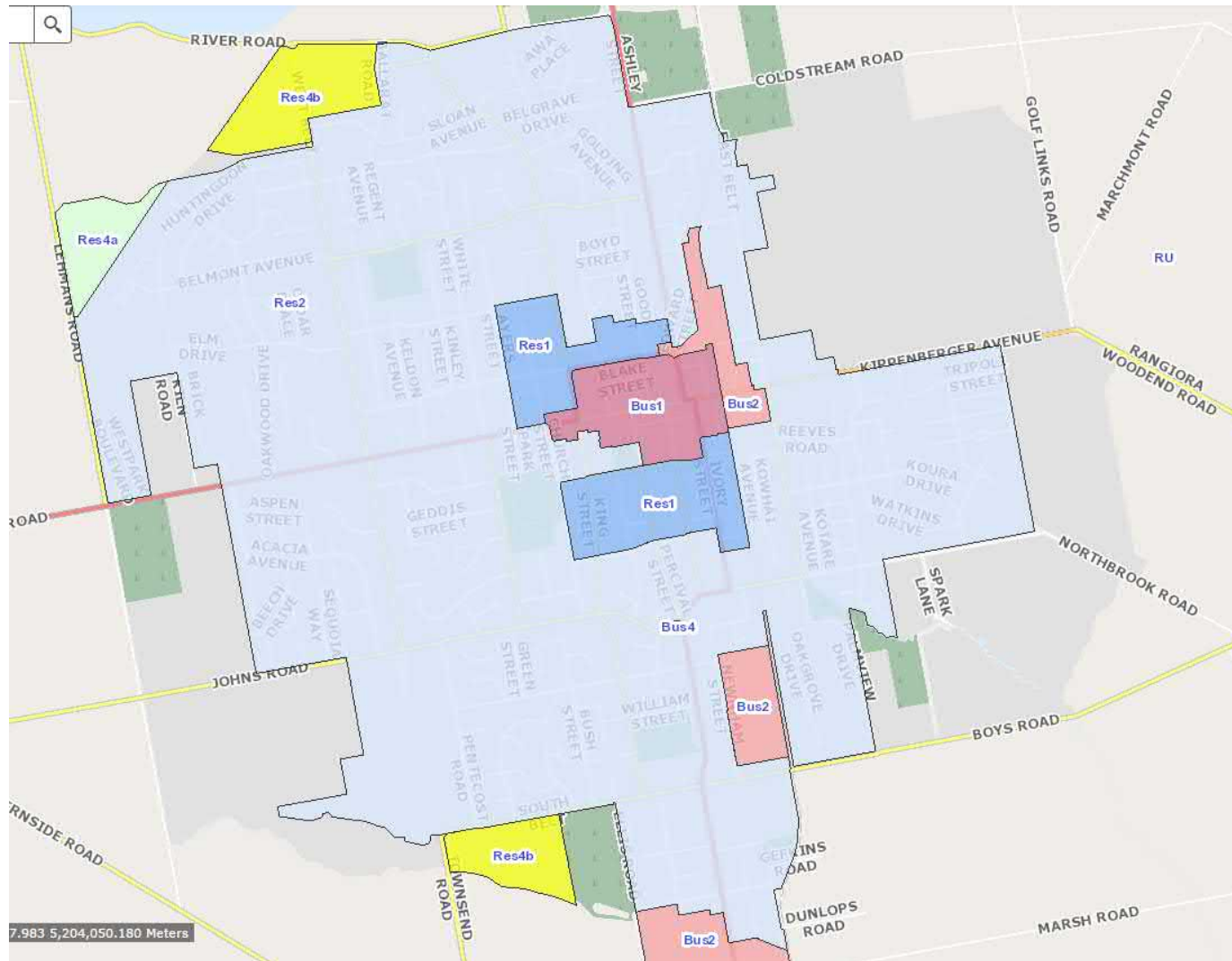
Map 5: Tai Tapu Housing Land



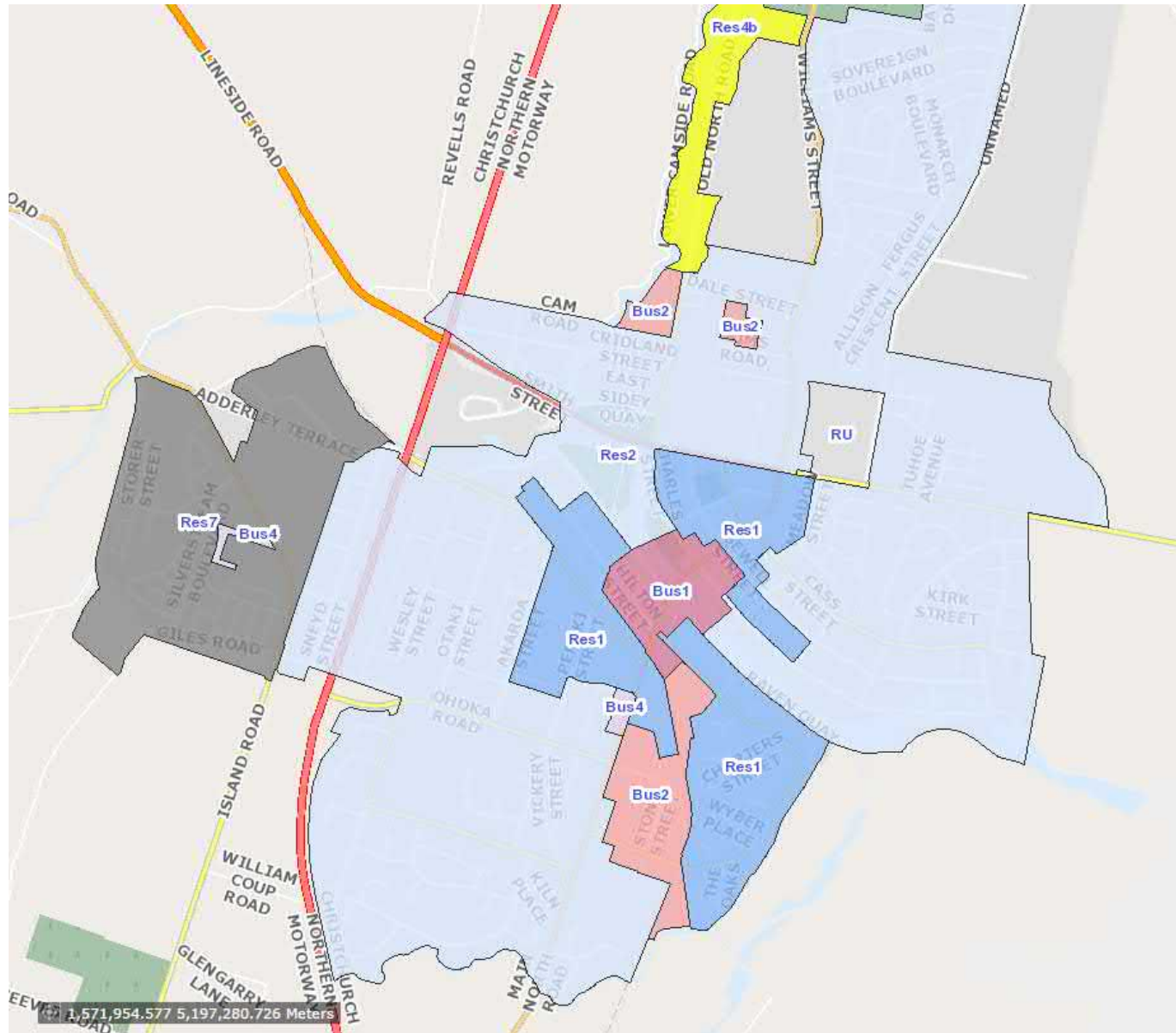
Map 6: Springston Housing Land



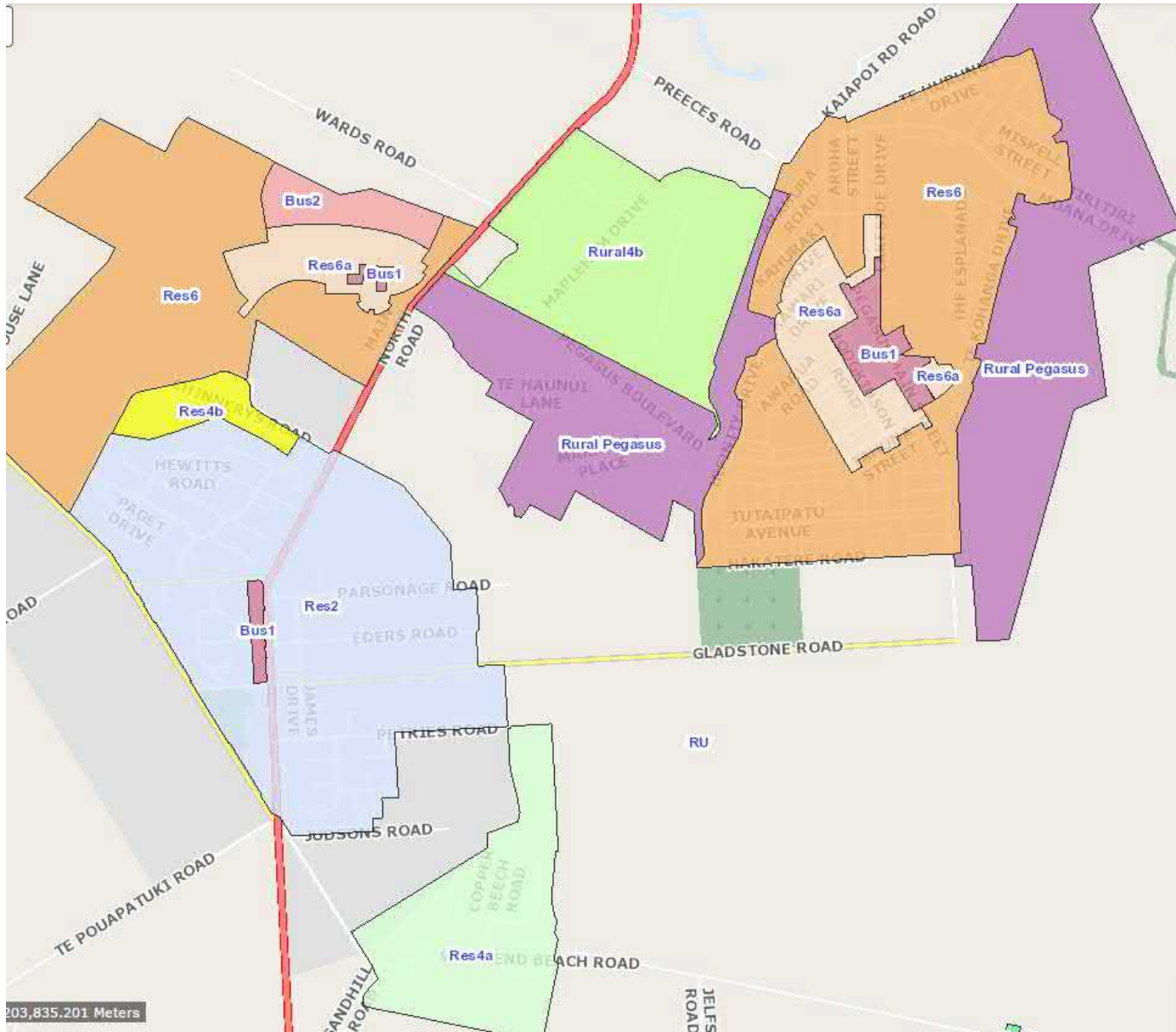
Waimakariri
Rangiora



Kaiapoi



Woodend / Pegasus / Ravenswood



A.7 Canterbury Regional Policy Statement Densities and Chapter 6 Map A

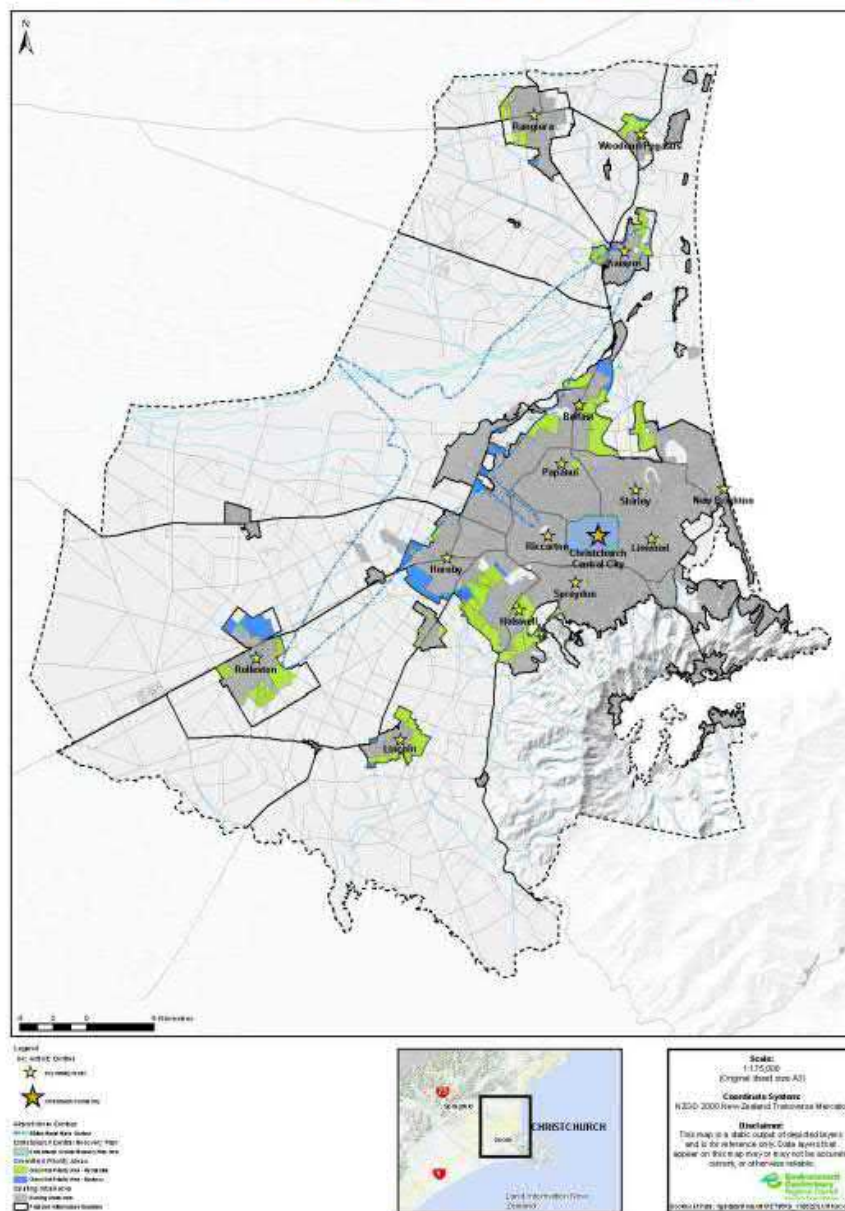
Canterbury Regional Policy Statement Densities

Policy 6.3.7 – Residential location, yield and intensification outlines densities in relation to Greater Christchurch as:

3. ...shall achieve at least the following residential net densities:
 - (a) 10 household units per hectare in greenfield areas in Selwyn and Waimakariri District; and
 - (b) 15 household units per hectare in greenfield areas in Christchurch City;
4. Intensification development within Christchurch City to achieve an average of:
 - (a) 50 household units per hectare for intensification development within the Central City;
 - (b) 30 household units per hectare for intensification development elsewhere.

Canterbury Regional Policy Statement 2013

Map A - Greenfield Priority Areas (viewable in more detail at www.ecan.govt.nz)



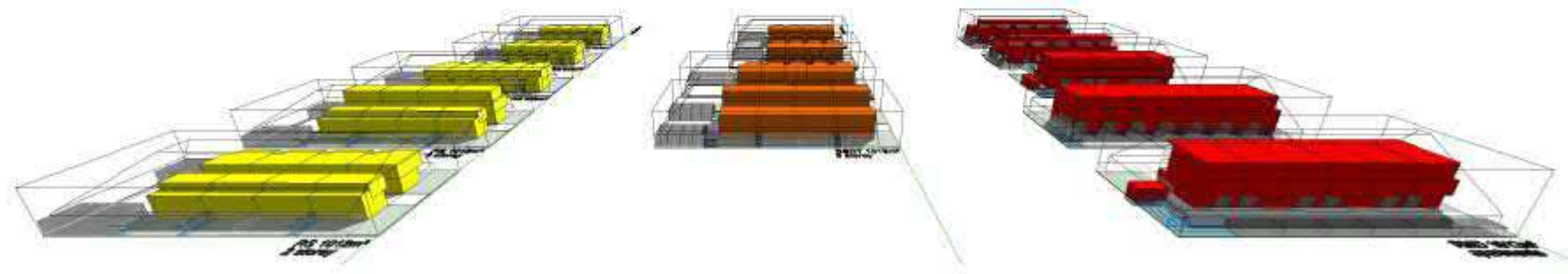
A.8 RSDT Model overview

Below is a summary of different typologies possible in the RSDT zone of the Christchurch District Plan zoned provisions and potential capacity for multi-unit development within the Residential Suburban, Residential Suburban Density Transition and Residential Medium Density Zones.

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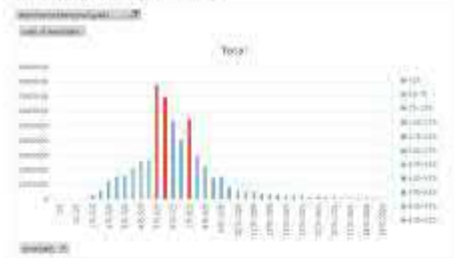
built form standard modelling
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RESIDENTIAL ZONE
ZONE 54

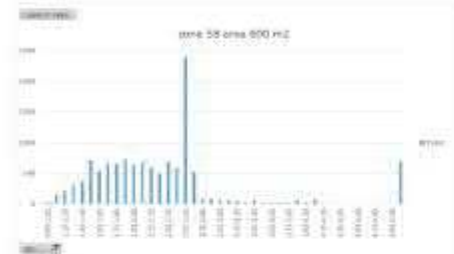
TOTAL AREA OF LOTS DEVELOPED BY SECTION SIZE



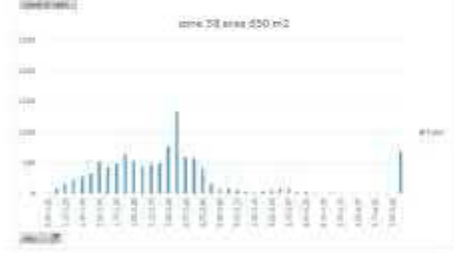
Peak section sizes observed at 400m², 500m² and 600m².
Note total lot area is 70,000m² of 1027 lots and 7800 units.

COUNT OF LOT BOUNDARY PROPORTIONS - WIDTH/LENGTH

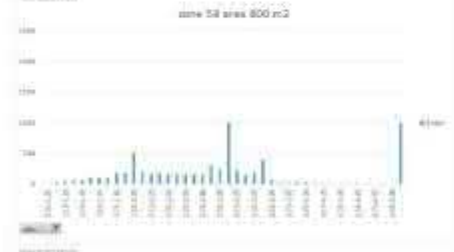
Note: Boundary ratios greater than 1 are due to irregularly shaped subdivisions.



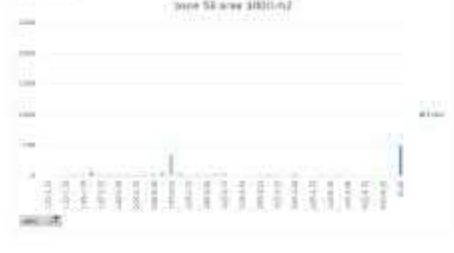
For 600m² section peak is length/width ratio 2.01
Equivalent to 15 x 30m site (2.5 x 2.5 shape)



For 500m² section peak is length/width ratio 2.01
Equivalent to 15 x 30m site (2.5 x 2.5 shape)



For 400m² section peak is length/width ratio 2.11
Equivalent to 16 x 25m site (2.5 x 2.5 shape)



For 300m² section peak is length/width ratio 2.51
Equivalent to 20 x 15m site (1 x 2.5 shape)

RESIDENTIAL SUBURBAN DENSITY TRANSITION ZONE
ZONE 57

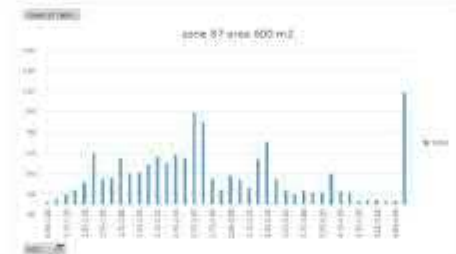
TOTAL AREA OF LOTS DEVELOPED BY SECTION SIZE



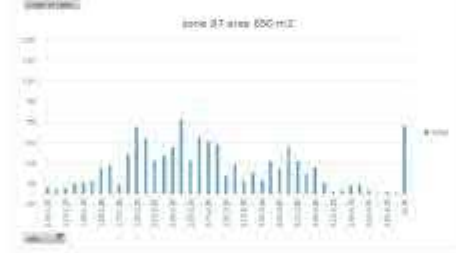
Peak section sizes observed at 400m² and 500m².
Lower peak at 1000m² (2%)

COUNT OF LOT BOUNDARY PROPORTIONS - WIDTH/LENGTH

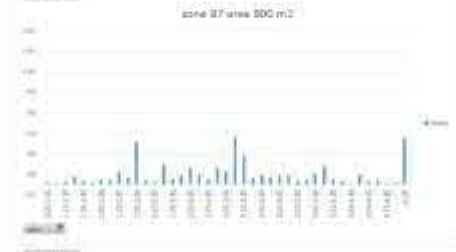
Note: Boundary ratios greater than 1 are due to irregularly shaped subdivisions.



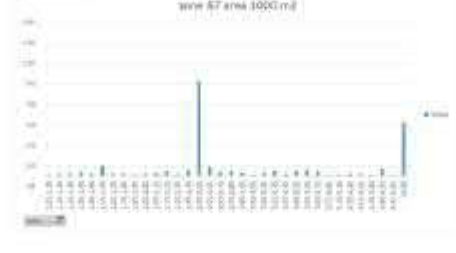
For 600m² section peak is length/width ratio 2.01
Equivalent to 15 x 30m site (2.5 x 2.5 shape)



For 500m² section peak is length/width ratio 2.01
Equivalent to 15 x 30m site (2.5 x 2.5 shape)



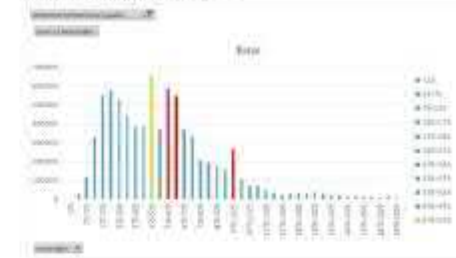
For 400m² section peak is length/width ratio 2.11
Equivalent to 16 x 25m site (2.5 x 2.5 shape)



For 1000m² section peak is length/width ratio 2.51
Equivalent to 20 x 50m site (1 x 2.5 shape)

RESIDENTIAL MEDIUM DENSITY
ZONE 56

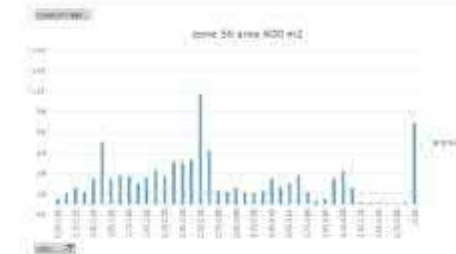
TOTAL AREA OF LOTS DEVELOPED BY SECTION SIZE



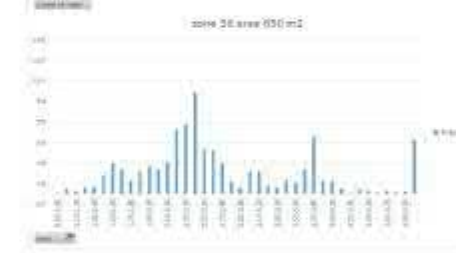
Peak section sizes observed at 500m², 600m² and 800m².
Lower peak at 1000m² (2%)
Significant number of lots are 300m² due to subdivision of quarter acre lots into sections.
Equivalent number of lots with the same area to half acre of lots to reduce density requirements.

COUNT OF LOT BOUNDARY PROPORTIONS - WIDTH/LENGTH

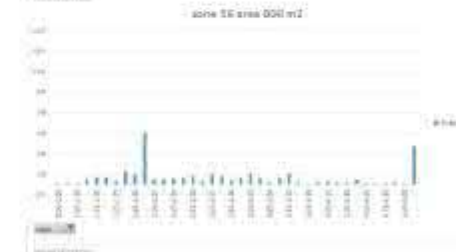
Note: Boundary ratios greater than 1 are due to irregularly shaped subdivisions.



For 600m² section peak is length/width ratio 2.01
Equivalent to 15 x 40m site (2.5 x 2.5 shape)



For 500m² section peak is length/width ratio 2.01
Equivalent to 15 x 30m site (2.5 x 2.5 shape)



For 400m² section peak is length/width ratio 2.11
Equivalent to 16 x 25m site (2.5 x 2.5 shape)



For 1000m² section peak is length/width ratio 2.51
Equivalent to 20 x 50m site (1 x 2.5 shape)



RESIDENTIAL SECTION ANALYSIS BY ZONE
built form standard modelling
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scale: a3

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**DISTRICT PLAN M ODELLING
RESIDENTIAL ZONE BUILT FORM STANDARD COMPARISONS**

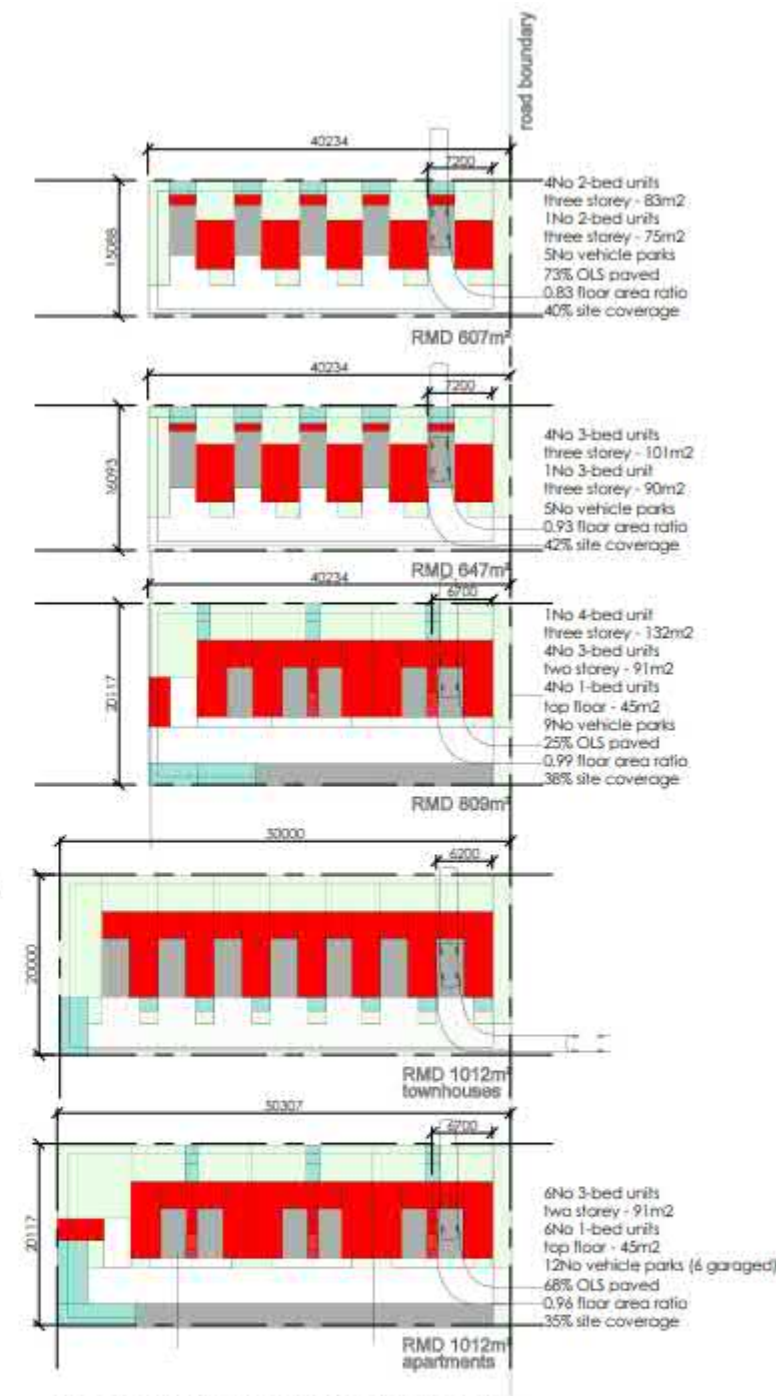
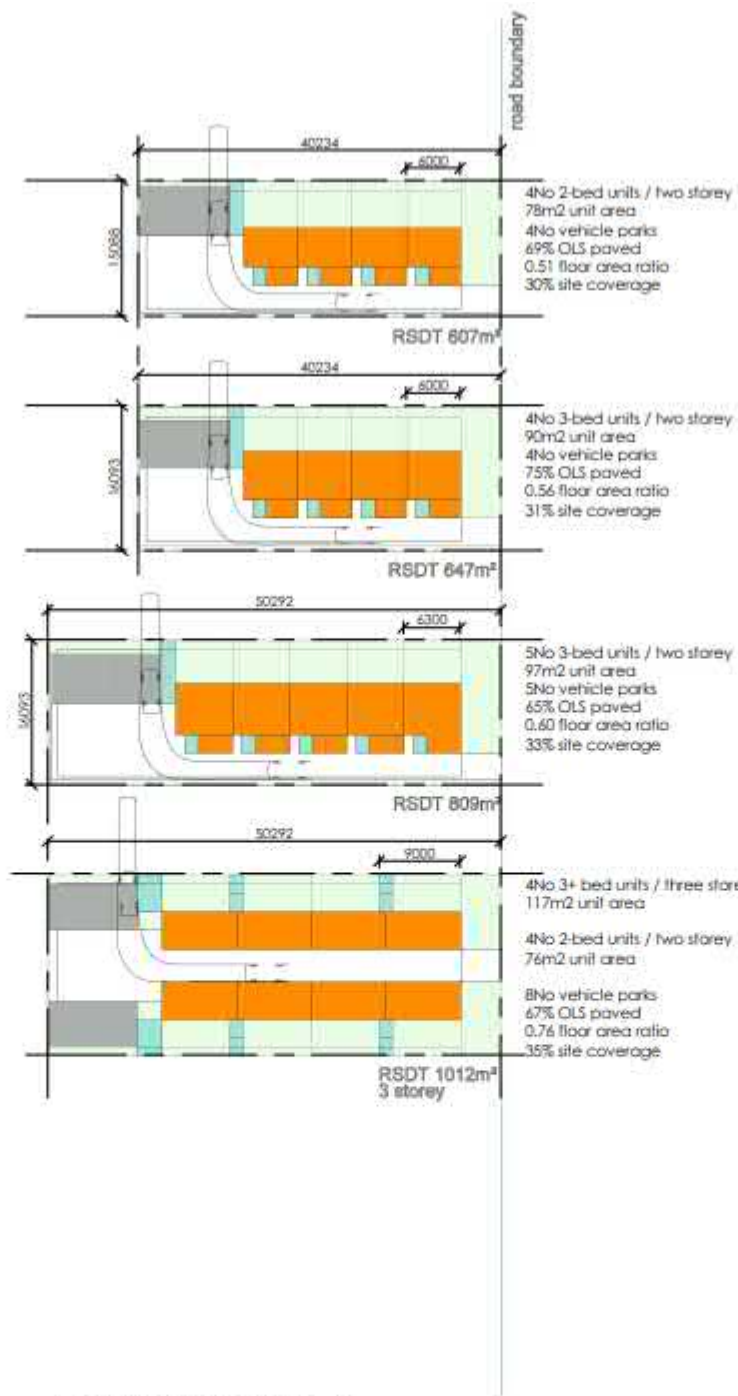
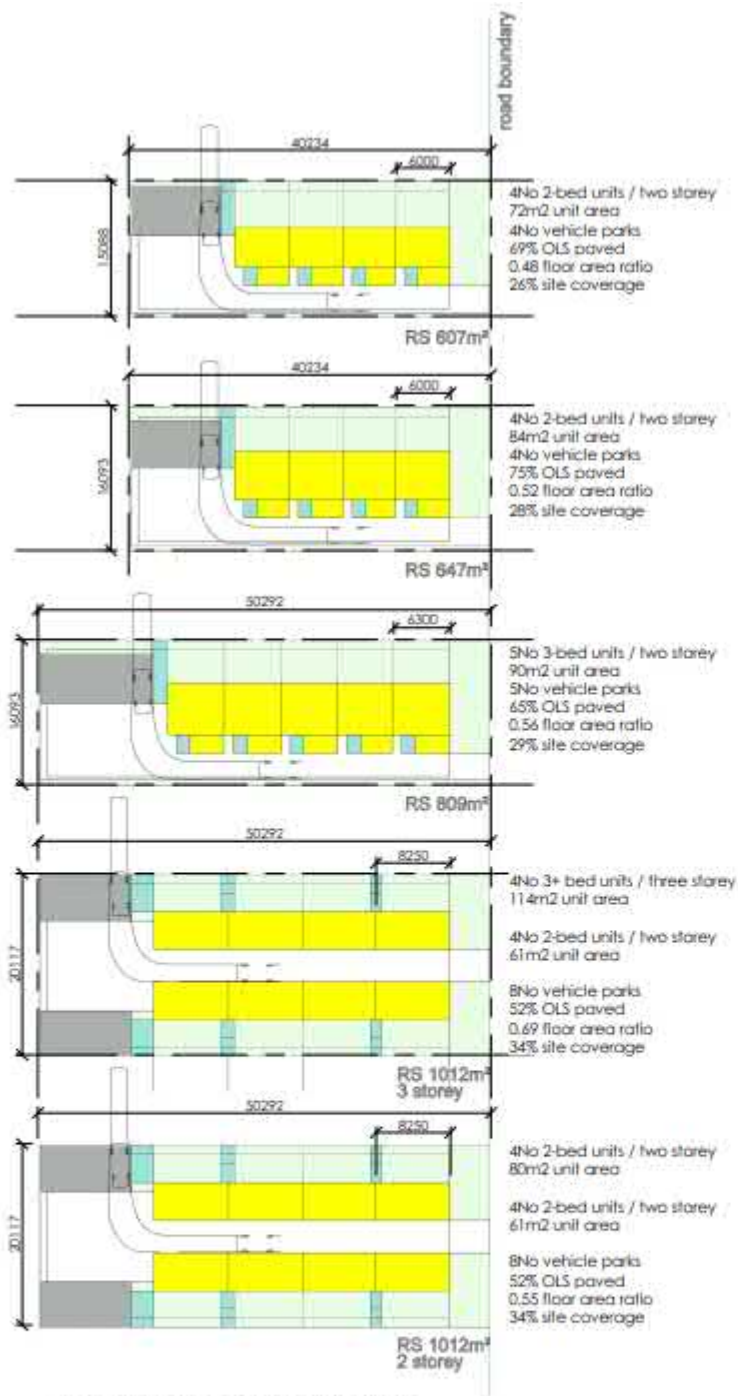
Rule authority - as considered for typical multi-unit residential development
 Social housing (SH) - Quarter areas etc rules are included as these are a specific situation rule.
 Factors not affecting site / mass planting for feasibility studies are included for simplicity (ie number of trees, form & proximity of existing buildings adjacent etc).
 Rules are for provision generic situations, not specific site configurations - an overview pertaining to multi-unit residential bulk and location constraints.

#	RULE	RESIDENTIAL SUBURBAN	RESIDENTIAL SUBURBAN - DENSITY TRANSITION <i>(reference to R2 only shown)</i>	RESIDENTIAL MEDIUM DENSITY	RESIDENTIAL MEDIUM DENSITY - LOWER HEIGHT LIM IT OVERLAY <i>(reference to R2 only shown)</i>
1	site density	14.2.3.1 450e2 Each unit to be contained within its own separate site No minimum for multi-unit residential complexes	14.2.3.1 200e2 Each unit to be contained within its own separate site No minimum for multi-unit residential complexes	14.2.3.1 0e2 No site density standard	14.2.3.1 0e2 No site density standard
2	tree and garden planting	14.2.3.2 Min 20% of site for landscaping	14.2.3.2 Min 20% of site for landscaping	14.2.3.2 Min 20% of site for landscaping	14.2.3.2 Min 20% of site for landscaping
3	building height	0m 5.2m generally minor dwelling units (single storey only)	14.2.3.3 0m 5.2m generally minor dwelling units (single storey only)	11m max 3 stories	14.2.3.3 0m 10m - lower height limit overlay (note other higher limits to specific overlays)
4	site coverage	14.2.3.4 maximum net site area covered by buildings includes balconies above ground where 40e2 for one site generally multi-unit residential complexes	14.2.3.4 maximum net site area covered by buildings includes balconies above ground where 40e2 for one site generally multi-unit residential complexes	14.2.3.4 maximum net site area covered by buildings generally for multi-unit calculate over entire complex	14.2.3.4 maximum net site area covered by buildings generally for multi-unit calculate over entire complex
5	outdoor living space	14.2.3.5 each unit to provide outdoor living space in a continuous area a 30m ² min area 30m ² min area 4m min dim b min area to be readily accessible from living area c may be occupied by accessory building 40e2	14.2.3.5 each unit to provide outdoor living space in a continuous area a 30m ² min area 30m ² min area 4m min dim b min area to be readily accessible from living area c may be occupied by accessory building 40e2	14.2.3.5 two or more bed-rooms - provide for each unit min total area 16m ² min private area 4m min dim private area at DPL 1.5m min dim private balcony if least one private OLS accessible from a living area in each unit 4m min dim communal space min OLS or OPL within site one bedroom unit at GPL - each unit min private area 4m min dim private area at DPL one bedroom unit at upper level - can be mix of private & communal at the level min area private balcony 8m ² min area private balcony 1.5m min dim private balcony	14.2.3.5 two or more bed-rooms - provide for each unit min total area 16m ² min private area 4m min dim private area at DPL 1.5m min dim private balcony if least one private OLS accessible from a living area in each unit 4m min dim communal space min OLS or OPL within site one bedroom unit at GPL - each unit min private area 4m min dim private area at DPL one bedroom unit at upper level - can be mix of private & communal at the level min area private balcony 8m ² min area private balcony 1.5m min dim private balcony
6	daylight recession planes	14.2.3.6 a 50° north boundary 30° east & west 20° south	14.2.3.6 a 50° north boundary 40° east & west 30° south	14.2.3.6 a 50° north boundary 50° east & west 30° south	14.2.3.6 a 50° north boundary 50° east & west 30° south
7	minimum building setbacks from internal boundaries	14.2.3.7 minimum building setback from internal boundaries are to be generally (not listed below) 1.1m accessory building <10.1m length within 1m of boundary 2.0m deck at or below GPL 3.0m buildings that share a common wall along an internal boundary 5.1m buildings where internal boundary adjoins access 6.4m sites adjacent railway lines, buildings, balconies and decks	14.2.3.7 minimum building setback from internal boundaries are to be generally (not listed below) 1.1m accessory building <10.1m length within 1m of boundary 2.0m buildings that share a common wall along an internal boundary 5.1m buildings where internal boundary adjoins access 6.4m sites adjacent railway lines, buildings, balconies and decks	14.2.3.7 minimum building setback from internal boundaries are to be generally (not listed below) 1.1m where building adjoins has OPL window of habitable space within 1m of boundary 2.1m accessory building <10.1m length within 1m of boundary 3.0m buildings that share a common wall along an internal boundary 4.0m buildings where internal boundary adjoins access 5.1m sites adjacent railway lines, buildings, balconies and decks 6.4m	14.2.3.7 minimum building setback from internal boundaries are to be generally (not listed below) 1.1m where building adjoins has OPL window of habitable space within 1m of boundary 2.1m accessory building <10.1m length within 1m of boundary 3.0m buildings that share a common wall along an internal boundary 4.0m buildings where internal boundary adjoins access 5.1m sites adjacent railway lines, buildings, balconies and decks 6.4m
8	min setback - living area windows / balconies facing internal boundaries	14.2.3.8 a 0.4m min setback from int boundary for living area windows / balconies at RPL b 1.4m from int boundary, any living space windows at RPL to be permanently obscured	14.2.3.8 a 0.4m min setback from int boundary for living area windows / balconies at RPL b 1.4m from int boundary, any living space windows at RPL to be permanently obscured	14.2.3.8 a 0.4m min setback from int boundary for living area windows / balconies at RPL b 1.4m from int boundary, any living space windows at RPL to be permanently obscured	14.2.3.8 a 0.4m min setback from int boundary for living area windows / balconies at RPL b 1.4m from int boundary, any living space windows at RPL to be permanently obscured
9	road boundary building setback	14.2.3.9 the road boundary building setback shall be a 4.2m all buildings (except garages and character areas) 5.2m where a garage has a vehicle door that faces a road or shared access except where a garage side wall parallel to road <8.5m length wall facing road has window min 0.6m access to side boundary with landscape strip 0.6m wide to boundary 2m landscaping to road boundary b garage in single garage with door facing road accessed from local road with max 3.0m (with limitations on door type)	14.2.3.9 the road boundary building setback shall be a 4.2m all buildings (except garages and character areas) 5.2m where a garage has a vehicle door that faces a road or shared access except where a garage side wall parallel to road <8.5m length wall facing road has window min 0.6m access to side boundary with landscape strip 0.6m wide to boundary 2m landscaping to road boundary b garage in single garage with door facing road accessed from local road with max 3.0m (with limitations on door type)	14.2.3.9 the road boundary building setback shall be a 2m for all buildings not listed below 4.2m garage door facing road - does not tilt or swing outward 5.2m garage door facing road - tilt or swing out 7m garage door facing shared access way - does not tilt or swing outward 8m garage door facing shared access way - tilt or swing out b habitable space front facade 1.2m garages / accessory buildings facing road to be set back further than front facade of GP habitable space	14.2.3.9 the road boundary building setback shall be a 2m for all buildings not listed below 4.2m garage door facing road - does not tilt or swing outward 5.2m garage door facing road - tilt or swing out 7m garage door facing shared access way - does not tilt or swing outward 8m garage door facing shared access way - tilt or swing out b habitable space front facade 1.2m garages / accessory buildings facing road to be set back further than front facade of GP habitable space
10	street scene amenity & safety - fences	14.2.3.10 a 1.5m maximum height of fence within setback from road boundary b does not apply to internal boundaries	14.2.3.10 a 1.5m maximum height of fence within setback from road boundary b does not apply to internal boundaries	14.2.3.10 a 1.5m maximum height of any fence in the setback from a local road boundary b where 20% of structure is transparent 1m where less than 20% of structure is transparent c 1.5m from any collector or arterial road d does not apply to internal boundaries e parking areas to be separated from road / conservation / open space / residential amenity fencing/creosote a above	14.2.3.10 a 1.5m maximum height of any fence in the setback from a local road boundary b where 20% of structure is transparent 1m where less than 20% of structure is transparent c 1.5m from any collector or arterial road d does not apply to internal boundaries e parking areas to be separated from road / conservation / open space / residential amenity fencing/creosote a above
11	building overhang	NORULE	NORULE	14.2.3.11 no internal floor areas to project more than 600mm beyond gross floor at GPL	14.2.3.11 no internal floor areas to project more than 600mm beyond gross floor at GPL
12	minimum unit size	NORULE	NORULE	14.2.3.12 a 20e2 studio 40e2 1 bedroom 60e2 2 bedrooms 90e2 3 or more bedrooms	14.2.3.12 a 20e2 studio 40e2 1 bedroom 60e2 2 bedrooms 90e2 3 or more bedrooms
13	ground floor habitable space	(effectively required by 14.2.3.3.b above)	(effectively required by 14.2.3.3.b above)	14.2.3.13 a where permitted height is 11m or less 1 res unit facing road to have habitable space at GPL b 50% of res units in development to have habitable space at GPL c each GP habitable space to be internally accessible and shall have min area 3m min internal dimension d where permitted height >11m, min of 20% GFA occupied by habitable space or indoor communal living space (not open to lifts / stairs etc)	14.2.3.13 a where permitted height is 11m or less 1 res unit facing road to have habitable space at GPL b 50% of res units in development to have habitable space at GPL c each GP habitable space to be internally accessible and shall have min area 3m min internal dimension d where permitted height >11m, min of 20% GFA occupied by habitable space or indoor communal living space (not open to lifts / stairs etc)
14	service storage & waste management	14.2.3.14 a 2.55e2 GFL waste / recycling space 1.5m min dim 3m ² GFL washing / iron space 1.5m min dim can be aggregated for communal provision	14.2.3.14 a 2.55e2 GFL waste / recycling space 1.5m min dim 3m ² GFL washing / iron space 1.5m min dim 4e2 single in-unit storage space 1m min dim b 1.5m screen height to waste management space c waste management space can be aggregated for communal provision min outdoor service space 4e2 3m ² d communal waste management to be used / accessible if for purpose	14.2.3.14 a 2.55e2 GFL waste / recycling space 1.5m min dim 3m ² GFL washing / iron space 1.5m min dim 4e2 single in-unit storage space 1m min dim b 1.5m screen height to waste management space c waste management space can be aggregated for communal provision min outdoor service space 4e2 3m ² d communal waste management to be used / accessible if for purpose	14.2.3.14 a 2.55e2 GFL waste / recycling space 1.5m min dim 3m ² GFL washing / iron space 1.5m min dim 4e2 single in-unit storage space 1m min dim b 1.5m screen height to waste management space c waste management space can be aggregated for communal provision min outdoor service space 4e2 3m ² d communal waste management to be used / accessible if for purpose

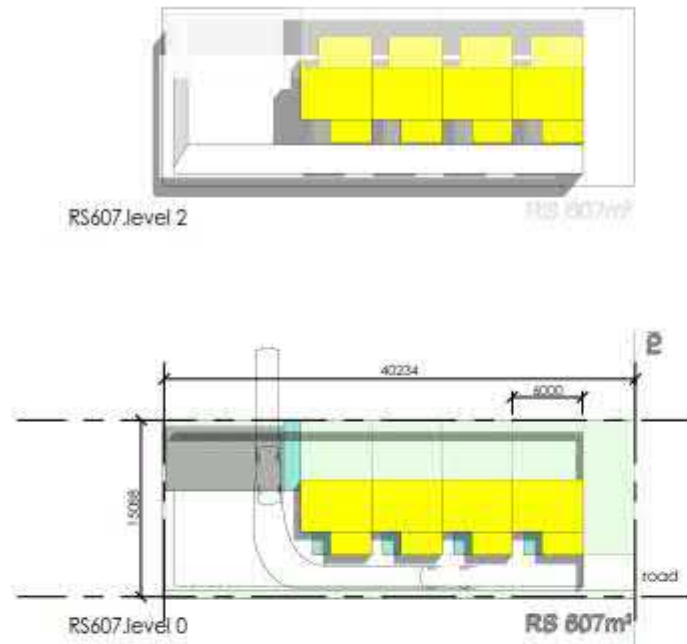


BUILT FORM STANDARD COMPARISONS
 built form standard modelling
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 scale: a3

REVISED 21/03/18 AM



180.0401 (4.2.05) 5/16/14



RESIDENTIAL SUBURBAN ZONE - 607m2

DESIGN RESPONSE

- 4No 2-bed units / two storey
- 72m2 unit area
- 4No vehicle parks
- 69% OLS paved
- 0.48 floor area ratio
- 26% site coverage

Form determined predominantly by parking requirements:

- Lot width 15m
- Driveway formation 3.6m
- Garage setback to shared access 5.5m
- If attached garage provided to each unit then 5.9m long garage hard against north boundary required to achieve driveway width / shared access setback rules

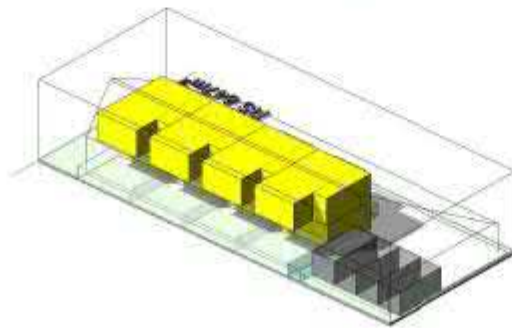
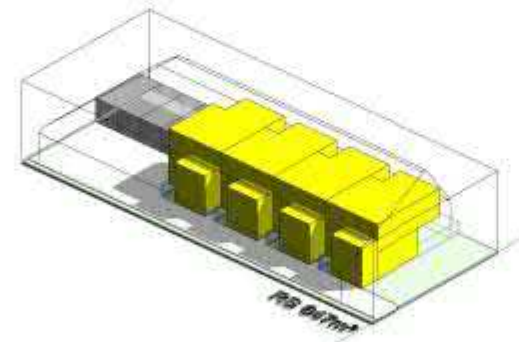
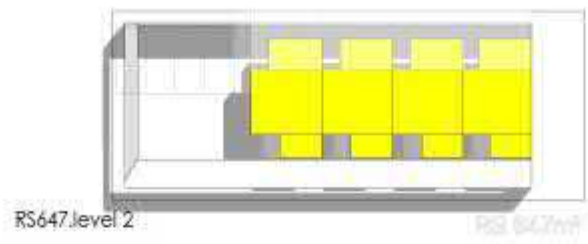
Turning circle (at depth) loses 2.5m of width of each GF unit adjacent shared access
 Garaging needs to be wider where recessed deep in plan cw aggregated parking / carport
 Distribution of garaging over length of complex (rather than aggregating) means first floor areas extend through recession plane at end of site, reducing number of units (4.5m recession plane FF setback)

Minimise parking numbers, as each vehicle takes up 37-44m2 of vehicle parking / manoeuvring excluding shared access (depending on garaging / carport / parking)
 Therefore, create larger units (2-3beds) in lieu of smaller units (studio/1bed) to maximise floor area ratios

Provide aggregated carparking at rear of site where recession planes are low and thus restrict 2 storey development
 Build two storey, as wide as possible between rear carparking and front boundary setback, and as close to north boundary as outdoor living space area requirements allow

Mass Type	Level	Floor Area	% site area
car parking	Level 0	55.0 m ²	9.1
landscaping	Level 0	84.1 m ²	13.9
outdoor living	Level 0	122.1 m ²	20.1
paving	Level 0	191.3 m ²	31.5
service+waste	Level 0	21.0 m ²	3.5
		473.4 m ²	78.0
res-sub.yellow	Level 1	133.6 m ²	22.0
		133.6 m ²	22.0
res-sub.yellow	Level 2	155.4 m ²	25.6
		155.4 m ²	25.6
RS607		762.4 m²	125.6

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RESIDENTIAL SUBURBAN ZONE - 647m²

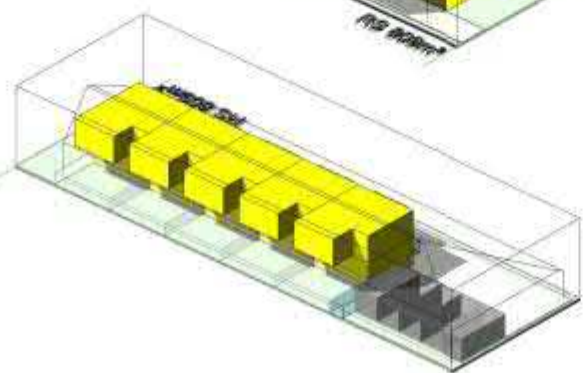
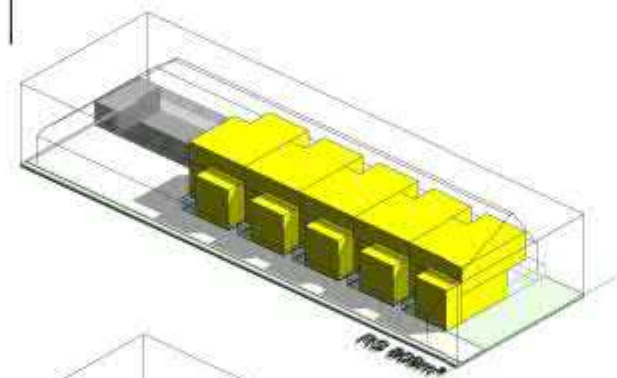
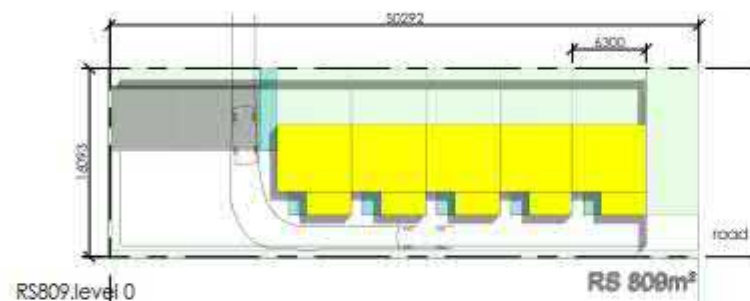
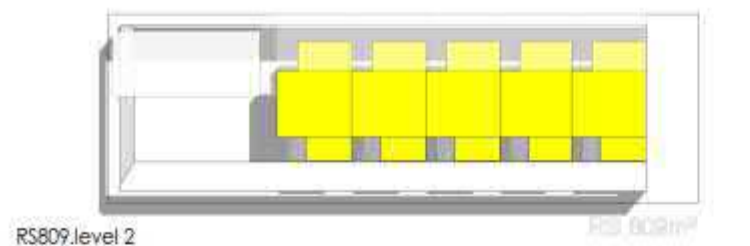
DESIGN RESPONSE

- 4 No 2-bed units / two storey
- 84m² unit area
- 4 No vehicle parks
- 75% OLS paved
- 0.52 floor area ratio
- 38% site coverage

As per 607m² Residential suburban design
 Depth of unit increased to generate additional floor area
 Outdoor Living Space maintained at minimum

Mass Type	Level	Floor Area	% site area
car parking	Level 0	55.0 m ²	8.5
landscaping	Level 0	98.9 m ²	15.3
outdoor living	Level 0	122.2 m ²	18.9
paving	Level 0	191.3 m ²	29.6
service+waste	Level 0	22.5 m ²	3.5
res-sub,yellow	Level 1	489.9 m ²	75.7
res-sub,yellow	Level 2	157.6 m ²	24.4
res-sub,yellow	Level 2	157.6 m ²	24.4
res-sub,yellow	Level 2	179.4 m ²	27.7
res-sub,yellow	Level 2	179.4 m ²	27.7
RS647		826.9 m ²	127.8

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RESIDENTIAL SUBURBAN ZONE - 809m2

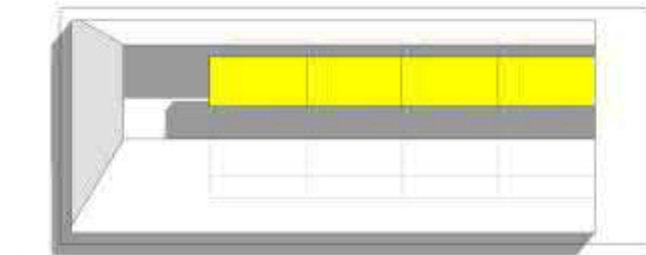
DESIGN RESPONSE

5 No 3-bed units / two storey
 90m2 unit area
 5 No vehicle parks
 65% OLS paved
 0.56 floor area ratio
 29% site coverage

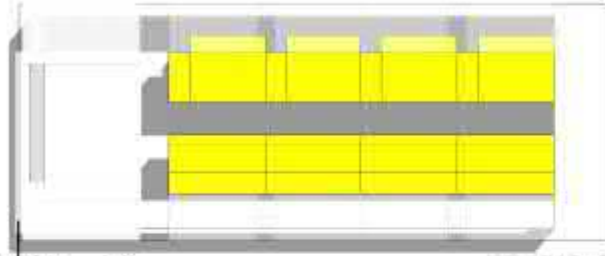
As per 647m2 Residential suburban design
 Additional unit added due to additional site depth
 Outdoor Living Space maintained at minimum

Mass Type	Level	Floor Area	% site area
car parking	Level 0	68.8 m²	8.5
landscaping	Level 0	109.6 m²	13.5
outdoor living	Level 0	151.0 m²	18.7
paving	Level 0	237.0 m²	29.3
service+waste	Level 0	25.5 m²	3.1
res-sub.yellow	Level 1	217.6 m²	26.9
		217.6 m²	26.9
res-sub.yellow	Level 2	233.6 m²	28.9
		233.6 m²	28.9
RS809		1042.9 m²	128.9

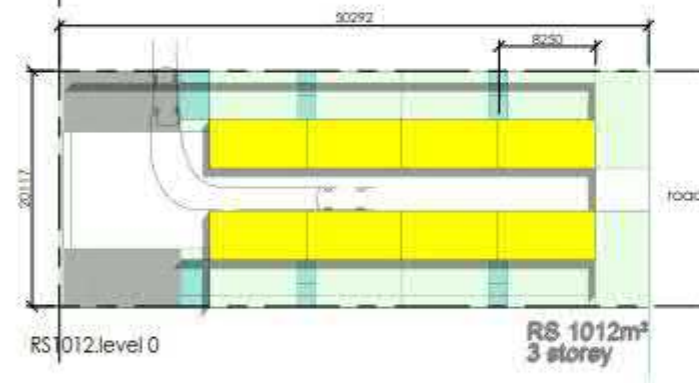
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RS1012.level 3

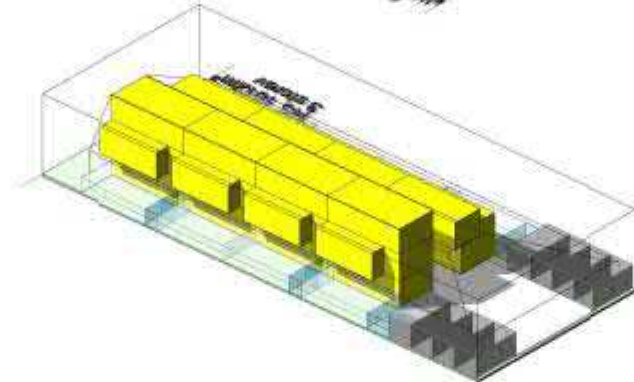
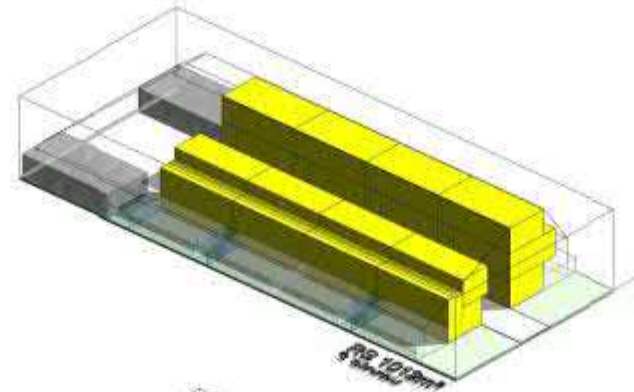


RS1012.level 2



RS1012.level 0

RS 1012m²
3 storey



RESIDENTIAL SUBURBAN ZONE - 1012m²

DESIGN RESPONSE

4No 3+ bed units / three storey
114m² unit area

4No 2-bed units / two storey
61m² unit area

8No vehicle parks
52% OLS paved
0.69 floor area ratio
34% site coverage

Form determined predominantly by parking requirements

Lot width 20m
Driveway formation 3.6m
Garage setback to shared access 5.5m
If attached garage provided to each unit then 5.9m long garage hard against north boundary required to achieve driveway width / shared access setback rules

Turning circle (at depth) loses 2.5m of width of each GF unit adjacent shared access
Garaging needs to be wider where recessed deep in plan cw aggregated parking / carport
Distribution of garaging over length of complex (rather than aggregating) means first floor areas extend through recession plane at end of site, reducing number of units (4.5m recession plane FF setback)

Keep the number of units to 8 or less to prevent shared vehicle access width of 5.0m requirement (loss of 70m² of developable space)
Lot width of 20m allows shared maneuvering space between 2 opposing bays of parking, so long as shared access is central to allow one maneuver into parking space

Therefore, create 8No larger units (2-3beds) in lieu of smaller units (studio/1bed) to maximise floor area ratios

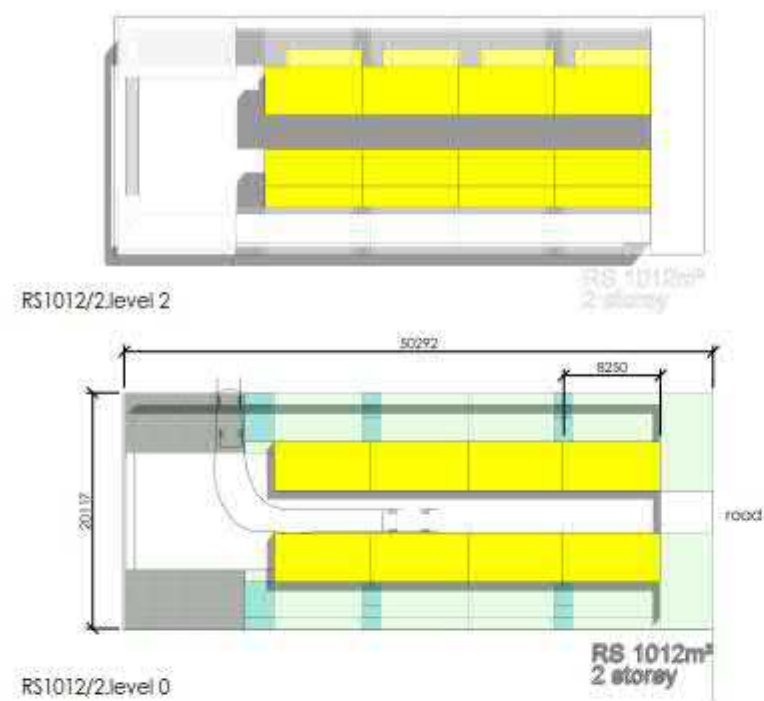
Provide aggregated carparking at rear of site where recession planes are low and thus restrict 2 storey development

Build two - three storey, as wide as possible between rear carparking and front boundary setback, and as close to north boundary as outdoor living space area requirements allow

20m width allows three storey construction if top storey stud height is reduced to 2.3m to allow 100mm crossfall on "flat" roof (assuming 250mm interstorey structural depth per storey / GF slab on grade)

Mass Type	Level	Floor Area	% site area
car parking	Level 0	101.2 m ²	12.5
landscaping	Level 0	85.2 m ²	10.5
outdoor living	Level 0	243.5 m ²	30.1
paving	Level 0	260.0 m ²	32.1
service+waste	Level 0	44.6 m ²	5.5
		734.5 m ²	90.8
res-sub,yellow	Level 1	277.2 m ²	34.3
		277.2 m ²	34.3
res-sub,yellow	Level 2	282.9 m ²	35.0
		282.9 m ²	35.0
res-sub,yellow	Level 3	138.6 m ²	17.1
		138.6 m ²	17.1
RS1012		1433.2 m ²	177.1

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RESIDENTIAL SUBURBAN ZONE - 1012m² / TWO STOREY

DESIGN RESPONSE

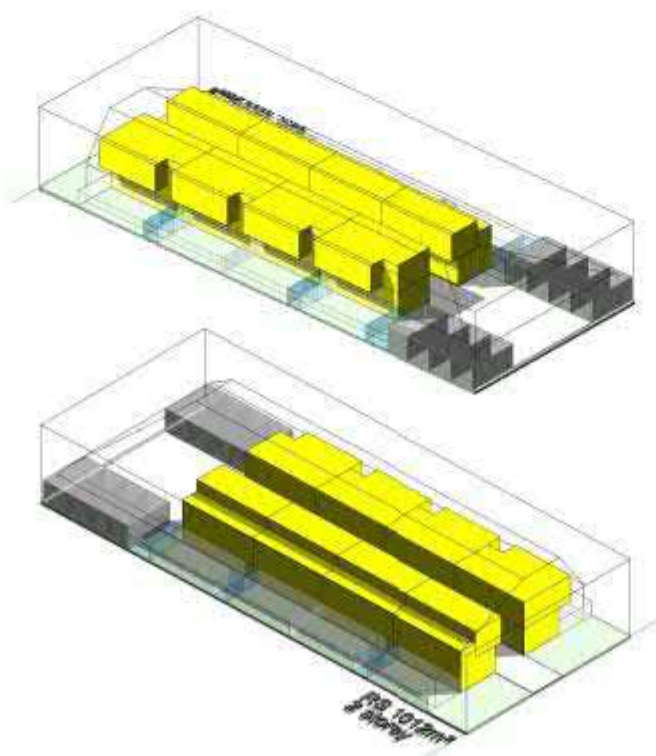
4No 2-bed units / two storey
80m² unit area

4No 2-bed units / two storey
61m² unit area

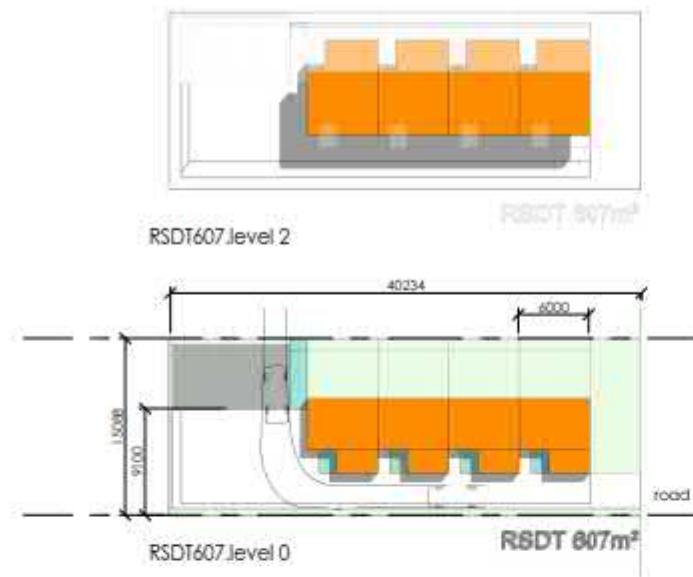
8No vehicle parks
52% OLS paved
0.55 floor area ratio
34% site coverage

Two storey version of 1012m² Residential Suburban development for comparison

Mass: Type	Level	Floor Area	% site area
car parking	Level 0	101.2 m ²	12.5
landscaping	Level 0	85.2 m ²	10.5
outdoor living	Level 0	243.5 m ²	30.1
paving	Level 0	260.0 m ²	32.1
service+waste	Level 0	44.6 m ²	5.5
		734.5 m ²	90.8
res-sub,yellow	Level 1	277.2 m ²	34.3
res-sub,yellow	Level 2	277.2 m ²	34.3
		282.9 m ²	35.0
		282.9 m ²	35.0
RS1012/2		1294.6 m ²	160.0



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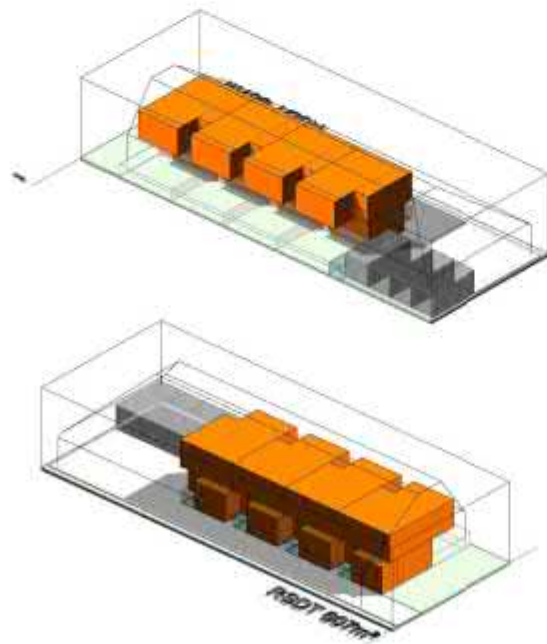
RESIDENTIAL SUBURBAN DENSITY TRANSITION ZONE - 607m2

DESIGN RESPONSE

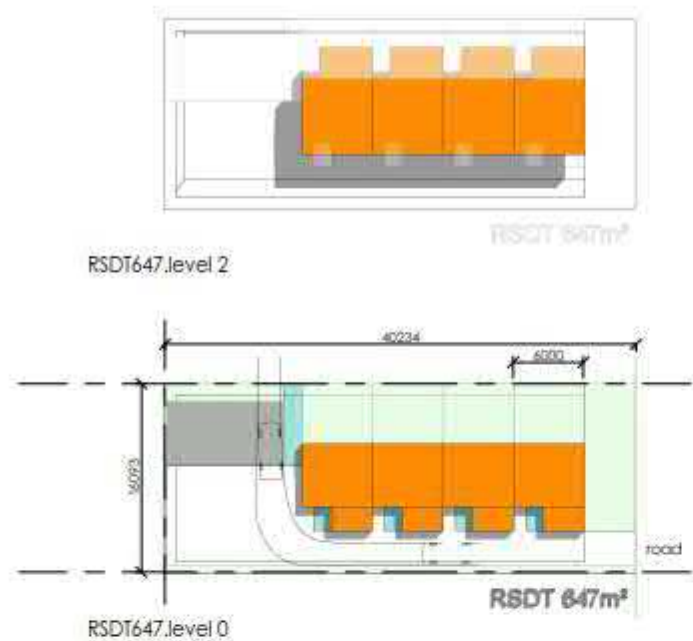
- 4No 2-bed units / two storey
- 78m2 unit area
- 4No vehicle parks
- 69% OLS paved
- 0.51 floor area ratio
- 30% site coverage

As per 607m2 Residential suburban design
 Depth of unit increased at first floor level due to steeper recession planes, generating additional floor area
 Outdoor Living Space maintained at minimum

Mark	Mass Type	Level	Floor Area	% site area
RSDT607	car parking	Level 0	55.0 m²	9.1
RSDT607	landscaping	Level 0	84.1 m²	13.9
RSDT607	outdoor living	Level 0	122.1 m²	20.1
RSDT607	paving	Level 0	191.3 m²	31.5
RSDT607	service+waste	Level 0	21.0 m²	3.5
			473.4 m²	78.0
RSDT607	res-trans.orange	Level 1	133.6 m²	22.0
			133.6 m²	22.0
RSDT607	res-trans.orange	Level 2	179.4 m²	29.6
			179.4 m²	29.6
RSDT607			786.4 m²	129.6



R14/02/18/3/0009/004



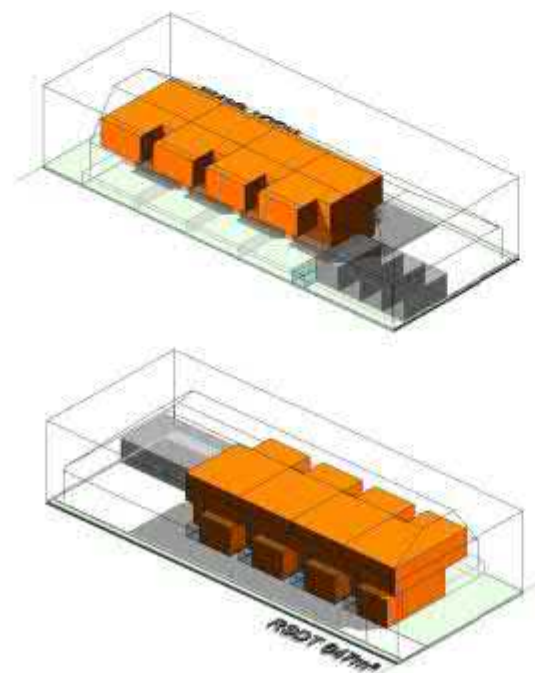
RESIDENTIAL SUBURBAN DENSITY TRANSITION ZONE - 647m²

DESIGN RESPONSE

4 No 3-bed units / two storey
 90m² unit area
 4 No vehicle parks
 75% OLS paved
 0.56 floor area ratio
 31% site coverage

As per 647m² Residential suburban design
 Depth of unit increased at first floor level due to steeper recession planes, generating additional floor area
 Outdoor Living Space maintained at minimum

Mark	Mass Type	Level	Floor Area	% site area
RSDT647	car parking	Level 0	55.0 m²	8.5
RSDT647	landscaping	Level 0	98.9 m²	15.3
RSDT647	outdoor living	Level 0	122.2 m²	18.9
RSDT647	paving	Level 0	191.3 m²	29.6
RSDT647	service+waste	Level 0	22.5 m²	3.5
RSDT647	res-trans.orange	Level 1	489.9 m²	75.7
RSDT647	res-trans.orange	Level 1	157.6 m²	24.4
RSDT647	res-trans.orange	Level 2	157.6 m²	24.4
RSDT647	res-trans.orange	Level 2	203.1 m²	31.4
RSDT647	res-trans.orange	Level 2	203.1 m²	31.4
RSDT647			850.6 m²	131.5

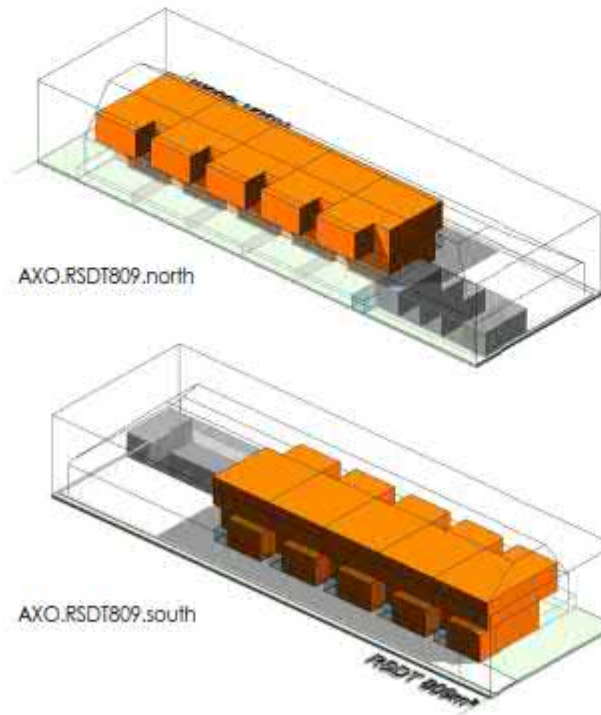


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RSDT809,level 2

RSDT809,level 0



RESIDENTIAL SUBURBAN DENSITY TRANSITION ZONE - 809m2

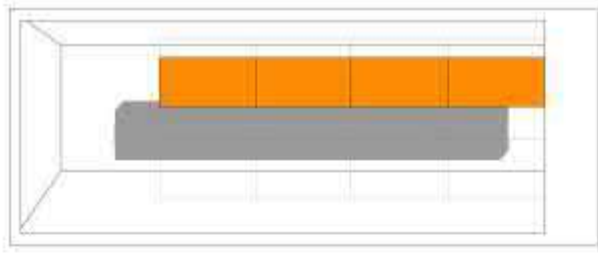
DESIGN RESPONSE

- 5No 3-bed units / two storey
- 97m2 unit area
- 5No vehicle parks
- 65% OLS paved
- 0.60 floor area ratio
- 33% site coverage (41% if garaging provided)

As per 809m2 Residential suburban design
 Depth of unit increased at first floor level due to steeper recession planes, generating additional floor area
 Outdoor Living Space maintained at minimum

Mark	Mass Type	Level	Floor Area	% site area
RSDT809	car parking	Level 0	68.8 m ²	8.5
RSDT809	landscaping	Level 0	109.6 m ²	13.5
RSDT809	outdoor living	Level 0	151.0 m ²	18.7
RSDT809	paving	Level 0	237.0 m ²	29.3
RSDT809	service+waste	Level 0	25.5 m ²	3.1
			591.8 m ²	73.1
RSDT809	res-trans.orange	Level 1	217.6 m ²	26.9
			217.6 m ²	26.9
RSDT809	res-trans.orange	Level 2	265.1 m ²	32.8
			265.1 m ²	32.8
RSDT809			1074.4 m ²	132.8

RSDT1012.001 PLAN

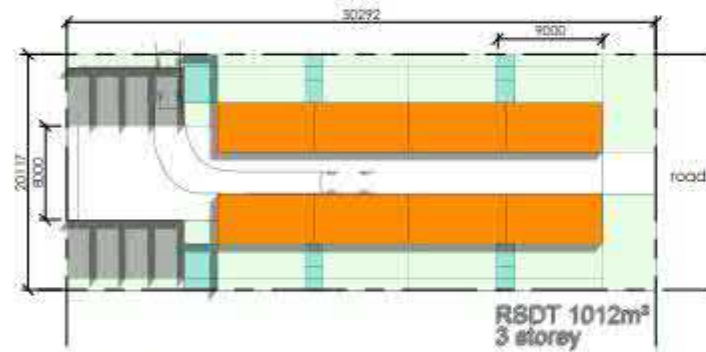


RSDT1012.level 3



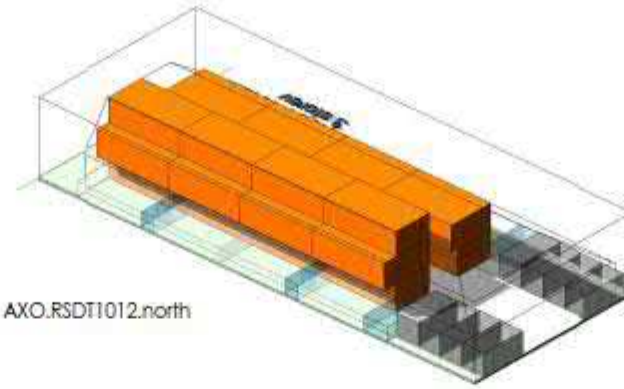
RSDT1012.level 2

RSDT 1012m²
3 storey

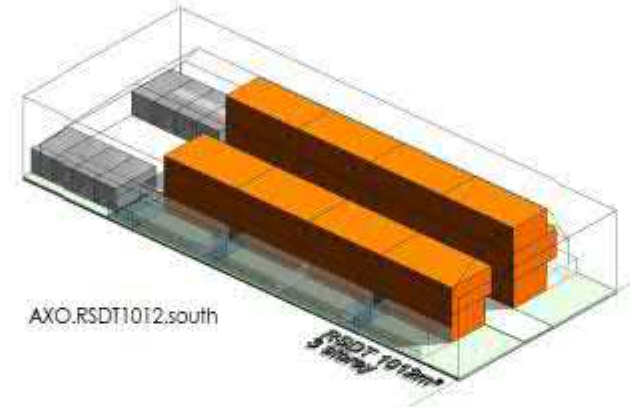


RSDT1012.level 0

RSDT 1012m²
3 storey



AXO.RSDT1012.north



AXO.RSDT1012.south

RESIDENTIAL SUBURBAN DENSITY TRANSITION ZONE - 1012m²

DESIGN RESPONSE

4No 3+ bed units / three storey
117m² unit area

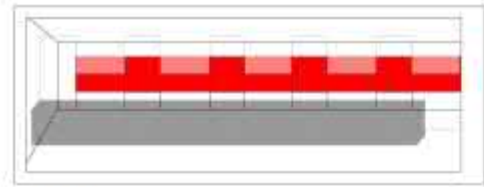
4No 2-bed units / two storey
76m² unit area

8No vehicle parks
61% OLS paved
0.76 floor area ratio
35% site coverage (45% if garaging provided)

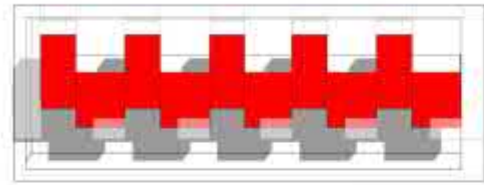
As per 1012m² Residential suburban design
Depth of unit increased at first floor level due to steeper recession planes, generating additional floor area
Outdoor Living Space maintained at minimum

Mark	Mass Type	Level	Floor Area	% site area
RSDT1012	car parking	Level 0	100.0 m ²	12.4
RSDT1012	landscaping	Level 0	106.7 m ²	13.2
RSDT1012	outdoor living	Level 0	243.5 m ²	30.1
RSDT1012	paving	Level 0	237.3 m ²	29.3
RSDT1012	service+waste	Level 0	47.0 m ²	5.8
			734.5 m ²	90.8
RSDT1012	res-trans.orange	Level 1	277.2 m ²	34.3
			277.2 m ²	34.3
RSDT1012	res-trans.orange	Level 2	353.1 m ²	43.6
			353.1 m ²	43.6
RSDT1012	res-trans.orange	Level 3	138.6 m ²	17.1
			138.6 m ²	17.1
RSDT1012			1503.4 m ²	185.8

RMD607 16.2.061 4.4.4

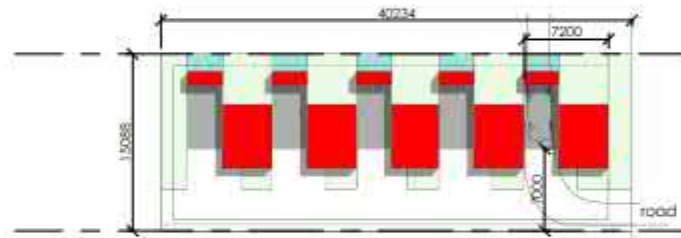


RMD607.level 3



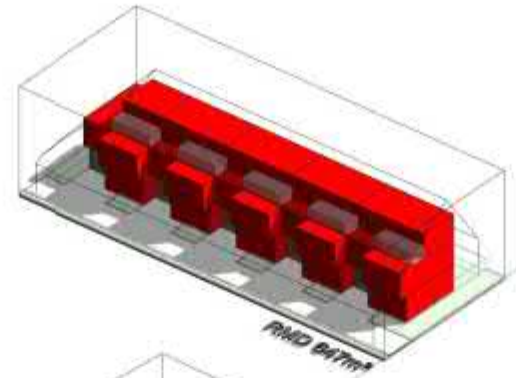
RMD607.level 2

RMD 607m²

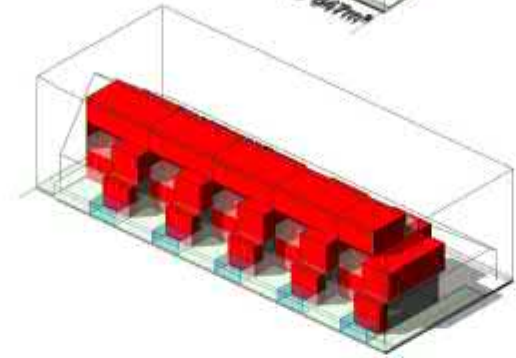


RMD607.level 0

RMD 607m²



RMD 607m²



RESIDENTIAL MEDIUM DENSITY ZONE - 607m2

DESIGN RESPONSE

4No 2-bed units
three storey - 83m2
1No 2-bed units
three storey - 75m2

5No vehicle parks (5No garaged)
73% OLS paved

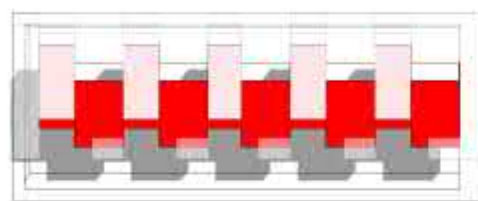
0.83 floor area ratio (excluding balconies)
40% site coverage (including attached garaging)

Mass Type	Level	Floor Area	% site area
landscaping	Level 0	96.9 m²	16.0
outdoor living	Level 0	90.0 m²	14.8
paving	Level 0	185.2 m²	30.5
service+waste	Level 0	22.4 m²	3.7
		394.5 m²	65.0
building	Level 1	129.9 m²	21.4
car parking	Level 1	82.5 m²	13.6
		212.4 m²	35.0
building	Level 2	193.4 m²	31.9
outdoor living	Level 2	31.4 m²	5.2
		224.7 m²	37.0
building	Level 3	99.0 m²	16.3
outdoor living	Level 3	31.5 m²	5.2
		130.5 m²	21.5
RMD607		962.1 m²	158.5

RMD647 1:500 1/14/14

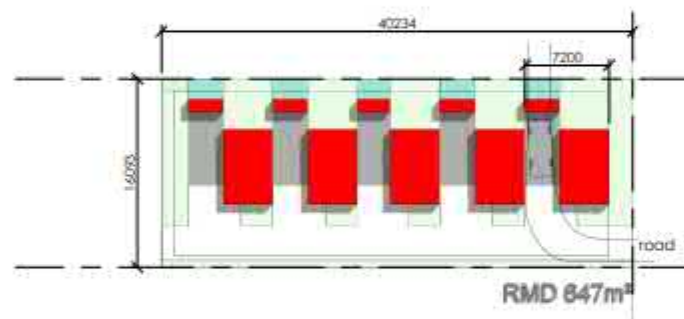


RMD647.level 3



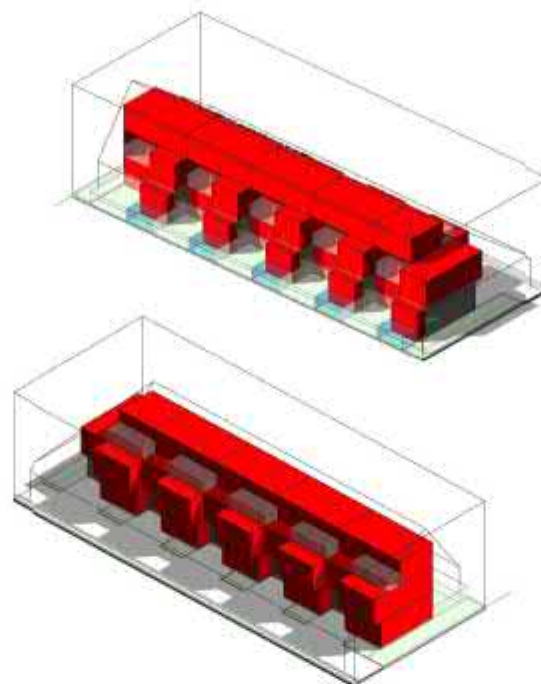
RMD647.level 2

RMD 647m²



RMD647.level 0

RMD 647m²



RESIDENTIAL MEDIUM DENSITY ZONE - 647m2

DESIGN RESPONSE

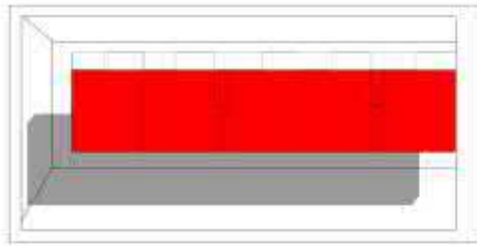
4No 3-bed units
three storey - 101m²
1No 3-bed unit
three storey - 90m²

5No vehicle parks (5No garaged)
66% OLS paved

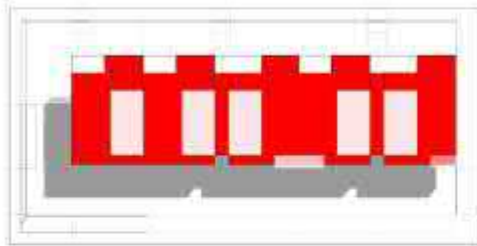
0.93 floor area ratio (excluding balconies)
42% site coverage (including attached garaging)

Mass: Type	Level	Floor Area	% site area
landscaping	Level 0	99.1 m ²	15.3
outdoor living	Level 0	90.2 m ²	13.9
paving	Level 0	185.2 m ²	28.6
service+waste	Level 0	26.3 m ²	4.1
		400.7 m ²	61.9
building	Level 1	150.9 m ²	23.3
car parking	Level 1	93.7 m ²	14.5
		244.5 m ²	37.8
building	Level 2	225.5 m ²	34.9
outdoor living	Level 2	30.8 m ²	4.8
		256.3 m ²	39.6
building	Level 3	132.0 m ²	20.4
outdoor living	Level 3	31.5 m ²	4.9
		163.5 m ²	25.3
RMD647		1065.0 m²	164.6

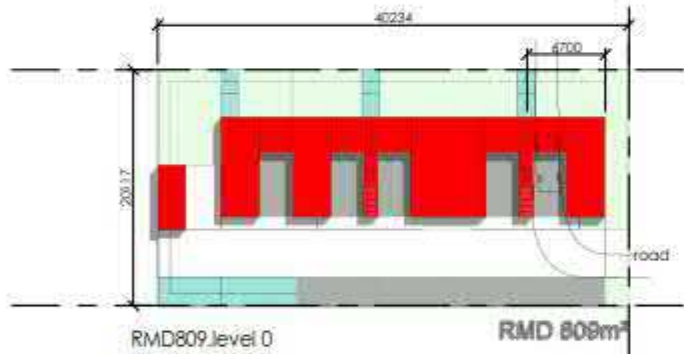
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RMD809.level 3

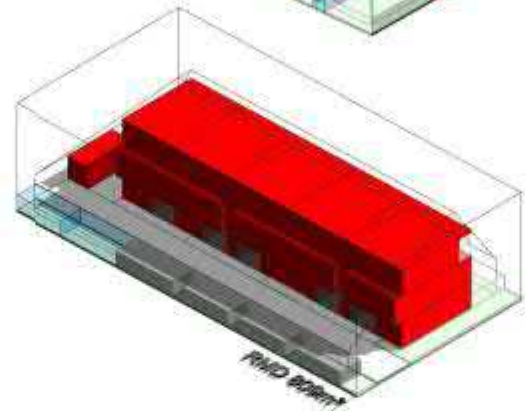
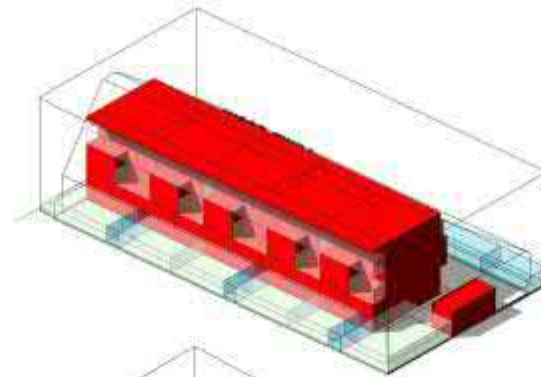


RMD809.level 2



RMD809.level 0

RMD 809m²



RESIDENTIAL MEDIUM DENSITY ZONE - 809m²

DESIGN RESPONSE

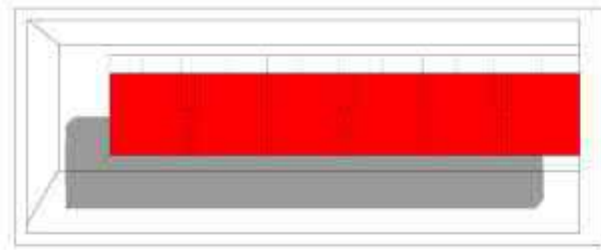
1 No 4-bed unit
 three storey - 132m²
 4 No 3-bed units
 two storey - 91m²
 4 No 1-bed units
 top floor - 45m²

9 No vehicle parks (5 No garaged)
 25% OLS paved

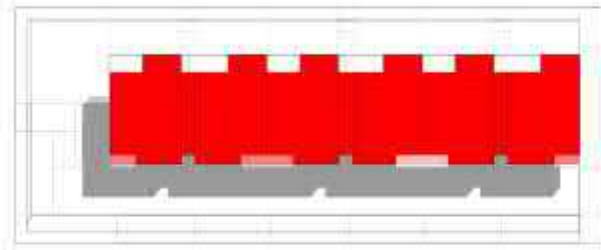
0.99 floor area ratio (excluding balconies)
 38% site coverage (including attached garaging)

Mass Type	Level	Floor Area	% site area
car parking	Level 0	66.0 m ²	8.2
driveway	Level 0	206.3 m ²	25.5
landscaping	Level 0	44.1 m ²	5.4
outdoor living	Level 0	157.4 m ²	19.4
service-waste	Level 0	47.6 m ²	5.9
		521.4 m ²	64.4
building	Level 1	215.5 m ²	26.6
car parking	Level 1	77.0 m ²	9.5
		292.5 m ²	36.1
building	Level 2	279.5 m ²	34.5
outdoor living	Level 2	24.6 m ²	3.0
		304.1 m ²	37.6
building	Level 3	230.3 m ²	28.5
outdoor living	Level 3	49.4 m ²	6.1
		279.7 m ²	34.6
RMD809		1397.6 m²	172.7

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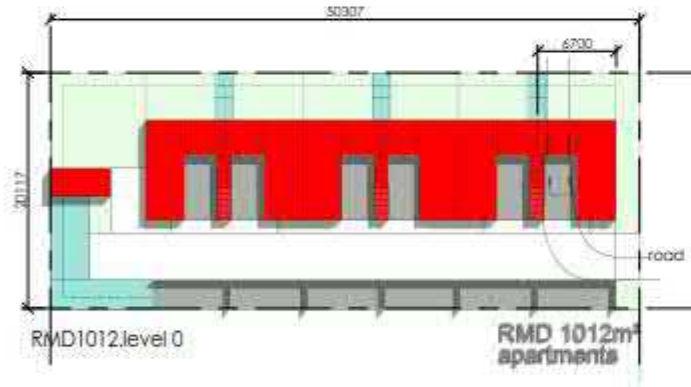


RMD1012.level 3



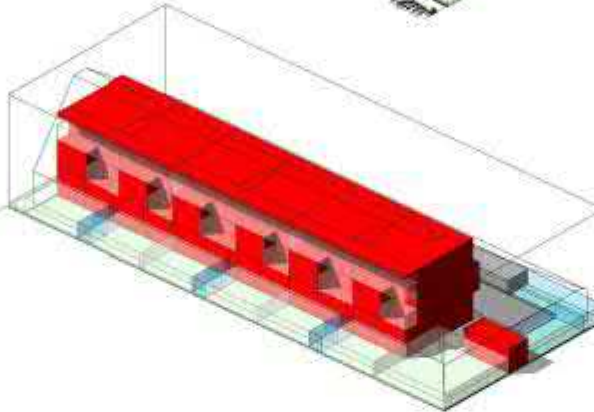
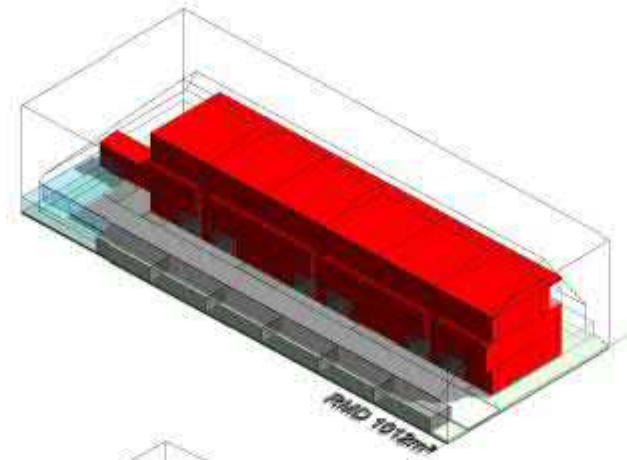
RMD1012.level 2

RMD 1012m² apartments



RMD1012.level 0

RMD 1012m² apartments



RESIDENTIAL MEDIUM DENSITY ZONE - 1012m²

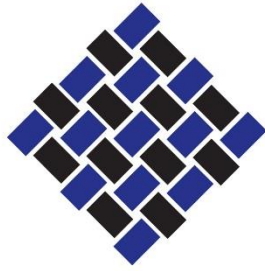
DESIGN RESPONSE

- 6No 3-bed units
- two storey - 91m²
- 6No 1-bed units
- top floor - 45m²
- 12No vehicle parks (6No garaged)
- 30% OLS paved
- 20% of site landscaped
- 0.96 floor area ratio (excl balconies)
- 37% site coverage

Mass Type	Level	Floor Area	% site area
car parking	Level 0	99.0 m ²	9.8
driveway	Level 0	234.2 m ²	23.1
landscaping	Level 0	57.0 m ²	5.6
outdoor living	Level 0	209.2 m ²	20.7
service+waste	Level 0	63.1 m ²	6.2
		662.5 m ²	65.5
building	Level 1	261.5 m ²	25.8
car parking	Level 1	92.4 m ²	9.1
		353.9 m ²	35.0
building	Level 2	340.4 m ²	33.6
outdoor living	Level 2	30.6 m ²	3.0
		371.0 m ²	36.7
building	Level 3	281.4 m ²	27.8
outdoor living	Level 3	60.3 m ²	6.0
		341.7 m ²	33.8
RMD1012		1729.1 m²	170.9

Version Control

Date: 9 February 2018
Version: Draft V3
Contributors: Housing Capacity Team, CCC, ECAN, SDC and WDC
Purpose: Housing Development Capacity Assessment – NPS-UDC
Owner: GCP



**Greater Christchurch
Partnership**

Te Tira Tū Tahi
One Group, Standing Together

Report 3 of the Greater Christchurch Housing Capacity Assessment

A Christchurch City Council Technical Report on Housing Feasibility and Sufficiency

31 October 2018

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Definitions and Abbreviations

The following table defines commonly used terms, acronyms and abbreviations in this document.

Term	Definition
CCC	Christchurch City Council
Development Capacity	As defined in the NPS-UDC, means: in relation to housing and business land, the capacity of land intended for urban development based on: <ol style="list-style-type: none"> a) the zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and b) the provision of adequate development infrastructure to support the development of the land.
Feasible or Feasibility	As defined in the NPS-UDC, means: That development is commercially viable, taking into account the current likely costs, revenue and yield of developing. In this report, feasibility is has been reported to 10% and 20% profit margins.
GC	Greater Christchurch
GCP	Greater Christchurch Partnership
GIS	Geographical Information System
MBIE/MfE feasibility tool	Refers to the feasibility tool provided in excel format to the Greater Christchurch Partnership. The reference may be to part of the tool, indicated as (land development) or (building development).
MBIE-LDM	MBIE/MfE Land development tool
MBIE-BDM	MBIE/MfE Build development tool
NPS-UDC	National Policy Statement on Urban Development Capacity
NPS-UDC Guidance	Refers to the NPS-UDC Guide to Evidence and Monitoring
QV	Quotable Value
Redevelopment	A development site that is, or has been previously, used for residential purposes (excluding greenfield sites in the RNN zone). Generally, redevelopment implies an intensification of land use activity (i.e. an increase in the number of dwellings on a site).
RV	Rateable value, as recorded by Councils' for rating purposes.
UDS	Urban Development Strategy

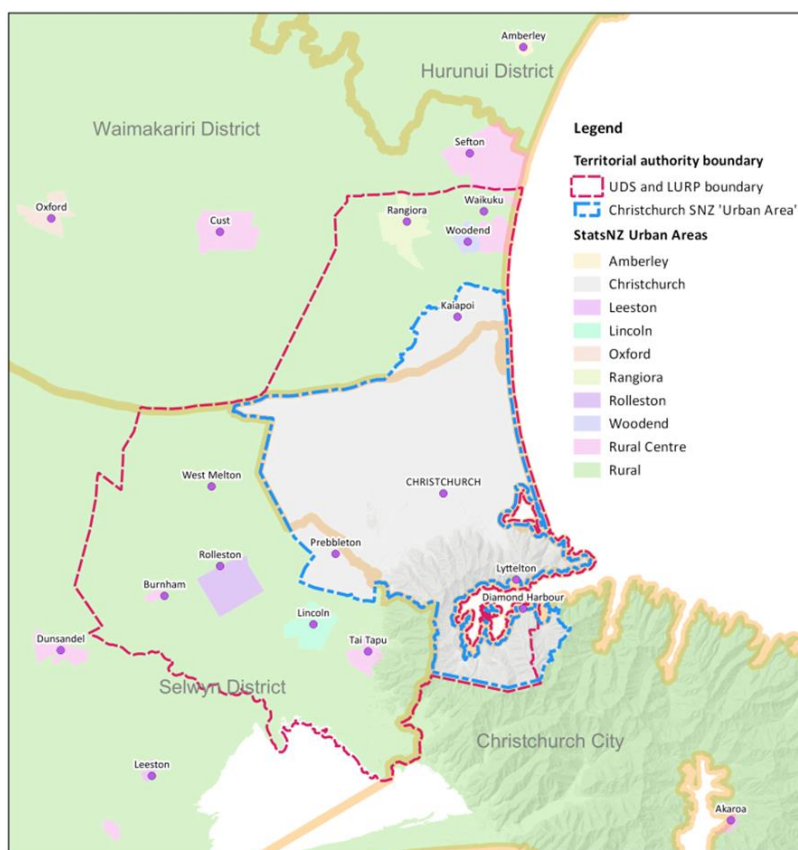
1. Background

The National Policy Statement on Urban Development Capacity (NPS-UDC) requires local authorities to complete a housing and business development capacity assessment that estimates the demand for dwellings and the supply of development capacity to meet that demand in the short (three years), medium (ten years) and long (thirty years) term. This technical report has been prepared by the Christchurch City Council to meet the policy requirements of the NPS-UDC, specifically Policy PB3 (c) and (d). Its purpose is to assess the feasibility of housing in terms of land development and redevelopment, to support an assessment of housing sufficiency¹.

Feasibility, as defined in the NPS-UDC, is *'development is commercially viable, taking into account the current likely costs, revenue and yield of developing'*. Fundamentally, an assessment of *'commercial viability'*² involving a determination of the probability of profit gained such to be sufficient to mitigate development risk.

The spatial area to which this assessment applies, includes those Christchurch City areas within the Greater Christchurch area and the Christchurch Statistics New Zealand 'Urban Area' (the identified high growth area) (refer to Figure 1). This area assessed is wider than the Greater Christchurch area due to discrepancies and misalignment with the boundaries of the Area Units required for statistical analysis (Figure 2). The assessed area was further divided into a series of study area divisions.

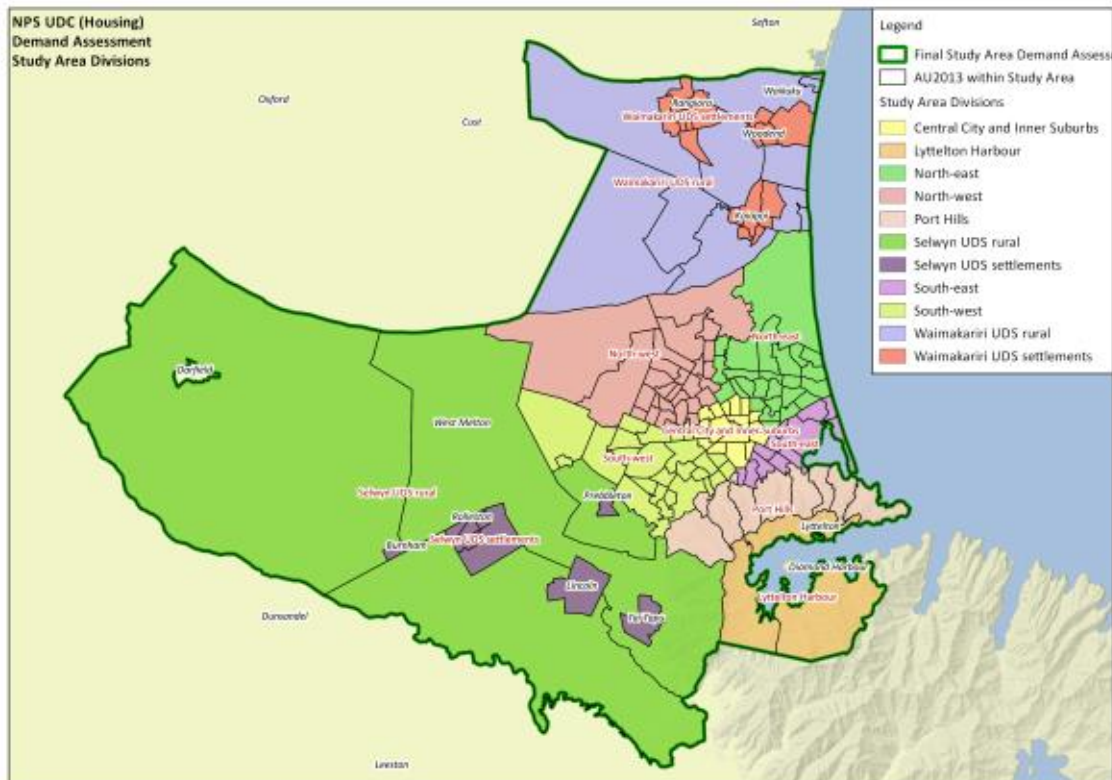
Figure 1: Christchurch City sub areas included within the feasibility assessment.



¹ See the National Policy Statement on Urban Development Capacity Policy PB3 and requirement to estimate the sufficiency of development capacity provided by the relevant local authority plans and proposed and operative regional policy statements, and Long Term Plans and Infrastructure Strategies prepared under the Local Government Act 2002.

² Noting that the term *'commercially viable'* is not further defined in the NPS-UDC.

Figure 2: Greater Christchurch Housing Capacity Assessment – Sub Areas for capacity assessment



The report is structured as follows:

- ❖ Section 2 of this report sets out specifically the caveats and context to which the assessment (specifically the modelled results) must be considered.
- ❖ Section 3 provides an overview of the modelling results.
- ❖ Section 4 provides an assessment of the sufficiency of development capacity to meet the projected demand for housing to 2048.
- ❖ Section 5 includes an assessment of housing sufficiency when compared against historical take-up rates.
- ❖ Section 6 includes further detail of the modelling approach undertaken.
- ❖ Section 7 recommends the future work required to refine and advance feasibility assessments.
- ❖ Appendix 1 sets out the methodology to the Christchurch City feasibility assessment.

2. Caveats and context to the feasibility assessment

The following contextual information and caveats to the feasibility assessment are important to understand and take account of, particularly in using the results in the assessment of housing sufficiency and to base planning and policy responses to the conclusions. Whilst the results may provide a broad indication of commercial feasibility of dwellings in present day economic conditions, they may not be indicative of medium to long-term feasibility. Given the following factors, the modelling results are likely to represent a conservative assessment of commercially viable housing, particularly for redevelopment areas. It is strongly recommended that the figures presented in this report be read in conjunction with the Housing Capacity Assessment (HCA) Project Methodology contained in Appendix 1 of this report.

The caveats and contextual considerations are as follows:

- I. The modelled results provide a range of possible scenario outcomes. They are not however the exhaustive output of all scenario possible outcomes. Other scenarios, using different model inputs may be considered and therefore the context of each scenario (the parameters of the model run) should be understood and carefully considered.
- II. In general, the approach to modelling is that of the NPS-UDC Guidance document, specifically the MBIE/MfE feasibility tool has been utilised. There are other modelling approaches to the assessment of commercial feasibility that may produce different results.
- III. A number of generalisations and assumptions have necessarily been made for the model to work across a wide variety of sites and site conditions. Ideally, a comprehensive and site specific assessment of feasibility would consider all costs and fees tailored to individual site conditions, and a sales price based on a detailed assessment of current localised market conditions for each site. It is not practical to complete such an assessment across a large number of sites. As with any model, the outputs of this modelling process should not be considered a definitive statement of development capacity. They are an estimate of probable development capacity based on a range of pre-determined parameters and values applied to the known and measurable physical, spatial and locational characteristics of development sites, at a single point in time and for a specific set of those inputs.
- IV. For the purposes of establishing a base assessment approach, the MBIE guidance recommends an approach where a commercial viable development is one that achieves a 20% profit margin using the residual valuation approach to feasibility assessment. However, as set out in this report, in reaching a conclusion on feasibility and housing sufficiency, variations to the 20% profit margin approach have been developed to better recognise local and actual market parameters. Where a 20% profit margin is reached, it is more likely that the tested development will be realised. However, this approach does not necessarily mean that development scenarios where a lesser profit margin is achieved will and are not already being realised (built).
- V. The figures presented in this report are formulated on a modelling approach based on the current likely development feasibility. The term '*current likely*' is not defined in the NPS-UDC and for the Christchurch City assessment a literal definition has been applied (i.e. belonging to the present time or occurring now). As the baseline modelling undertaken applies present day "*costs, revenue and yield of development*"³, it has important implications for the modelling

³ As they were in early 2018 for costs. Revenue is based on property sales in 2016 and 2017.

outcomes for the medium to long term assessment of feasibility. Present costs, revenue and yield of development will certainly not be the same as what will eventuate in the future, with market feasibility changing and likely improving over time.

- VI. Estimating a price for finished dwellings across a large range of size and typology is fraught with opportunity for error resulting in over or understating dwelling prices. Sales data provides a useful starting point but does not contain the resolution of detail, particularly around quality of build. Dwelling size is recorded in sales data but again this is only an indicative measure that does not account for shared space or how a dwelling may be set-out (e.g. to determine the number of bedrooms). Where the rules of the plan have recently changed to allow for new development typologies in a zone there is a deficit of data from which estimate price of like for like development (simply put, there are few examples that have been completed).
- VII. Every development site will have attributes that are either not captured in the data used for the modelling approach, or possess site characteristics that alter existing attribute values beyond those estimated in the model. These may facilitate or inhibit development but may be only quantifiable through site-specific assessment, which it is not practicable to do across the number of potential development sites considered.
- VIII. The model is largely a financial tool that uses some spatial attributes of sites to determine the value of some model inputs. It is a two dimensional assessment that does not account fully for the effects of three dimensional development constraints. These include, for example, the effects of slope across a development site or between development sites. The impact of slope is particularly significant for development sites in the Residential Hills and Residential Banks Peninsula zones. Consequently, the feasible capacity results for the Port Hills and Lyttelton Harbour study area divisions should be considered to have a significant margin of error. The effect of recession planes has been estimated using a simplified spatial modelling approach.
- IX. Build costs have been estimated and applied to all developments. In reality, the square metre build costs will vary within typologies as well as between typologies. For example, all other factors being equal, the relationship between wall area and roof area is such that an apartment block on a regular shaped square site will be cheaper to construct than a similarly sized apartment block on an irregular shaped or thinner, rectangular shaped site. As modelled, the feasibility assessment does not take site shape into account, only site size. To do so would require a more complex spatial model and further work to estimate a wider range of estimated costs to match a wider variety of building size, typology and site shape scenarios.
- X. The analysis has not been able to consider likely improvements to commercial viability achieved through site amalgamation and the use of the Community Housing Redevelopment Mechanism (which provides for medium density developments across the city where it meets certain criteria). Comprehensive developments (which have and continue to be developed) on larger sites typically yield a higher number of units allowing for land development and build cost reductions. It is recommended that as part of future feasibility assessments significant additional work is undertaken to determine additional potential housing yield achieved through site amalgamation. This assessment has also not assessed the commercial viability of minor residential and older persons housing units enabled in most Christchurch residential zones and which in some locations have been a common development of recent years.
- XI. The skills, attributes and capacity of the developer are also a significant factor in development. The model does not differentiate across different scales of development companies or

account for different types of construction techniques or processes that a developer may be able to bring to a project. Some developers may be able to reduce or minimise certain costs where economies of scale may be realised or some functions are undertaken in-house, in so doing helping to reduce fees or professional costs. Other developers may be in the position to minimise borrowing costs or minimise the additional cost of capital that must be applied to various components of development through, for example, the minimisation of contingencies through project management and cost controls. Ultimately, these factors may translate into a reduced profit margin expectation at project outset.

- XII. Modelling of the rules of the Christchurch City District Plan was restricted to permitted, controlled or restricted discretionary activities. Effectively this assumes and applies a probability filter to developments within some zones, removing some developments from consideration in the model (i.e. essentially categorising them probably not commercially viable due to higher risk). For example, within the Residential Suburban (RS) Zone a multi-unit residential complex is a discretionary activity. This typology has therefore has not been considered as 'plan enabled' nor tested under the feasibility model for the RS zone. Whilst such developments are less likely to happen based on the need for a riskier, higher cost consent process, it does not mean they are impossible. Future modelling could test for multi-unit typology in the RS zone, possibly adding a premium to the project costs to cover additional consenting and additional months for time related holding costs. Consent risk could be addressed through modelling single storey multi-units only (a typology, which based on the abundance of Elderly Persons Housing Units built under previous Christchurch City Plan Living 1 Zone rules, has been commercially feasible).

3. An Overview of the Christchurch City Feasibility Modelling

Feasibility modelling has been completed for residential greenfield areas and for redevelopment of the existing urban area. A version of the MBIE–LDM was used for greenfield areas and tailored to reflect Christchurch market and land values. A model was also developed based on the process steps of the MBIE-BDM for redevelopment areas, albeit with some modification to allow for bulk processing of development sites. Land value and sales price information was sourced from Council databases and other sources of information on sales and valuations, including information published by developers. A brief summary of the assessment methodology is provided in section 4.1. A detailed explanation of the approach, process steps and information collation is set out in Appendix 1 containing the *NPS-UDC Greater Christchurch Housing Capacity Assessment Methodology, dated 31 October 2018*.

The feasibility modelling results varied considerably based on different inputs and parameters. Two model parameters that have significant effect on the results are the profit margin expectation and the alignment of revenue with sales price. Where a 20% profit margin is set with a sales value at the medium price the modelling produces a low number (see Section 2 and the methodology included under Appendix 1 for a discussion on the limitations with sales price data). Conversely, when a 10% profit margin and sales value above the medium price a much higher number results. A review of recent sales for new townhouses only, indicate values are often higher than the median sales price thus suggesting that giving weight to the median sales price may avoid under estimating commercially viable development.

To demonstrate the difference in modelling outputs, a range of set parameter or scenarios were tested for redevelopment and greenfield areas. For the redevelopment model, inputs were held constant while adjusting margin expectation to 10% and 20%, and then adjusting revenue alignment to within 10%, 20% and 30% of median house prices in each area (median house prices based on the sale of all dwellings, old and new).

Table 3.1 shows the output of modelling at different margins expectations and for alignment with prices. In addition, the table also provides the same overall figures separated into ‘flat land’ areas and the Hills/Banks Peninsula areas of the City. The greatest potential for development is found in the ‘flat land’ zones (Residential Central City, Residential Medium Density, Residential Suburban Density Transition, and the Residential Suburban), hence it is in these zones that the greatest impact is observed here when altering two model parameters.

Table 3.1 Redevelopment sites and dwellings generated under changing profit and price range parameters				
All sites				
		Price range alignment %		
		10	20	30
Margin %	20	5568	12445	23360
	10	8559	20207	36491
"Flat Land" divisions				
		Price range alignment %		
		10	20	30
Margin %	20	4645	11022	21589
	10	7569	18622	34596

Port Hills and Lyttelton divisions				
		Price range alignment %		
		10	20	30
Margin %	20	923	1423	1771
	10	990	1585	1895

For Table 3.1 the other inputs in the model were as follows:

- Site dwelling yield is calculated net of existing dwelling(s).
- Low specification build costs.
- Estimated build time as provided by Quantity Surveyor.
- Weighted Cost of Capital (i.e. finance costs) is set at 10%.
- Where there is more than one feasible development per site, that with the highest profit is selected.
- Car parking is provided to the Permitted Development standard for each zone.
- Dwelling size is fixed to 50, 75, 100, 125, 150m² only.
- Recession plane deductions on upper level floor space has been estimated.
- Minimum subdivision size for each zone applies (where appropriate).
- Demolition costs based on existing building(s) footprint in each parcel.
- The site is cleared (i.e. not infill development and no existing structures are retained).
- For the RSDT zone, a dwelling limit is applied (Permitted Development is four dwellings maximum)⁴

Specific exclusions from the totals in Table 3.1 are:

- Sites over >5000m² (reported separately).
- Sites with no recorded Capital Value.
- Sites that do not provide a building allotment (i.e. very narrow sites).
- Sites with multiple existing rating units (e.g. retirement villages).

Table 3.2 summarises the results from the greenfield land assessment. The two reported scenarios are for where the sales price for completed sections was either set based on low observed sale prices or high observed sales prices. The other parameter to be tested was the land cost, being either set at a lower value (based on a detailed analysis of land holdings and improvements) or a higher value (based on the recorded rating valuation). As with the redevelopment assessment, the profit margin target was tested at 10% and 20% for greenfield areas. Although having some impact, this change was not sufficient to overcome the difference between either low or high land values or, low or high price expectations. Table 3.2 is with the margin set at 20%.

Table 3.2 Greenfield subdivision Comparison to current sales 20% profit margin expectation	High land value	Low land value
Low-end sales price range:	900	1405
High-end sales price range:	14,300	14,300

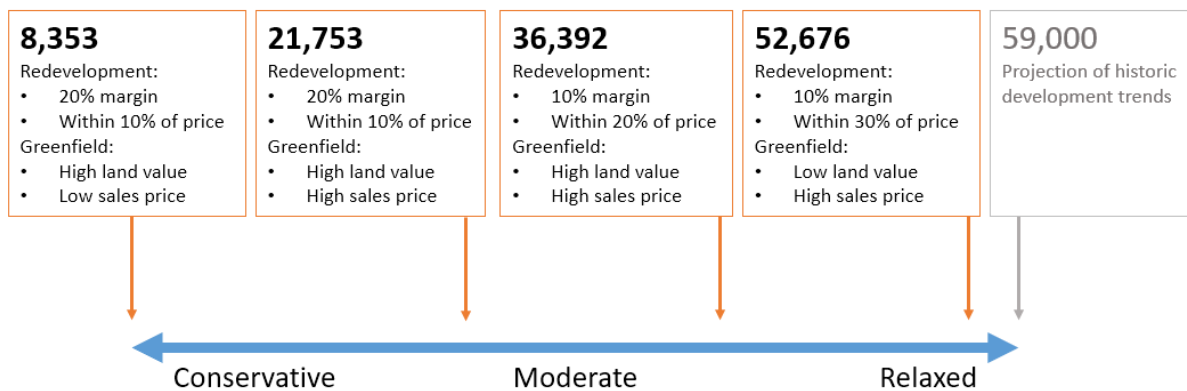
⁴ Developments in the RSDT zone can be for more than four dwellings with recourse to a Restricted Discretionary consent. It is likely therefore that the feasible dwelling capacity for the RSDT has been understated.

Large development sites were assessed separately. The yield was added to the redevelopment figure.

Large redevelopment sites	Estimated yield
Low and medium constrained sites	1,885
Highly constrained sites	Not assessed

As depicted in the Figure 3.1 below, when greenfield and redevelopment modelling is combined, the results range from approximately 8,300 dwellings under conservative parameter values, to approximately 52,000 dwellings under more relaxed parameter settings.

Figure 3.1 Modelling results – a range of outcomes



4 Housing Sufficiency

Given the range of modelling results, the issue arises what number should be relied on to inform an assessment of housing sufficiency in accordance with policy PB3 of the NPS-UDC. Policy PB requires Council to:

...estimate the sufficiency of development capacity provided by the relevant local authority plans and proposed and operative regional policy statements, and Long Term Plans and Infrastructure Strategies prepared under the Local Government Act 2002, including:

- a) The cumulative effect of all zoning, objectives, policies, rules and overlays and existing designations in plans, and the effect this will have on opportunities for development being taken up;*
- b) The actual and likely availability of development infrastructure and other infrastructure in the short, medium and long term as set out under PA1;*
- c) The current feasibility of development capacity;*
- d) The rate of take up of development capacity, observed over the past 10 years and estimated for the future; and*
- e) The market's response to planning decisions, obtained through monitoring under policies PB6 and PB7.*

In consideration of all the above matters, Christchurch City has more than sufficient development capacity to meet housing demand (based on Stats NZ medium population projections) in the short, medium and long term, including the additional 20% margin required in the medium term (2018-2028) and 15% margin in the long term (2028-2048).

As noted within the Greater Christchurch Housing Capacity Report 2 (dated 9 February 2018), Christchurch City has a significant amount of plan-enabled capacity, potentially for approximately 236,000 new dwellings. Of this quantum, development infrastructure is, or planned to be, in place to service at least 60,000 new dwellings (noting that it is neither necessary nor financially viable to provide development infrastructure to service all plan-enabled capacity). When consideration is given to historical development rates of both greenfield and redevelopment areas (in particular medium and higher density zones) and assuming these development rates continue across the remaining undeveloped residential zoned areas, a quantum of near 60,000 dwellings (specifically reported as 59,393⁵) is expected (or probable) to be commercially viable.

Table 4.1 sets out the housing demand projections for the medium term and Table 4.2 for the long term, assessed against an aggregate number of commercially viable dwellings when taking account of policy matters under PB3. This position considers the results of the feasibility modelling (with recognition of the many limitations and assumptions made) but also historical take-up rates and future expected yields from recently upzoned⁶ residential areas. The development capacity figure of near 60,000 dwellings (specifically 59,939) is not far beyond the modelled range of feasibility scenarios, albeit with acceptance of more relaxed model parameters (but considered appropriate given the models limitations and required assumptions). Adopting the lower feasibility figures do not accord with levels of housing development that has, and is currently occurring, in the market, evidenced by the rates of take-up set out in section 5 of this report.

⁵ The numbers reported in Tables 4.1 and 4.2 increase to near 60,000 over time (i.e from 53,373 to 56,273 to 59,393) as development infrastructure constraints are removed. These figures are drawn from the Greater Christchurch Housing Capacity Report 2: Housing Development Capacity – An Assessment of Plan-Enabled and Infrastructure Serviced Capacity, dated 9 February 2018 (refer to section 2.3 and Tables 2.3.1 and 2.3.2 of Report 2).

⁶ The term 'upzoned' means the increased provision within the residential zoning for multi-unit residential complexes, minor residential units and older persons housing units.

Table 4.1: Christchurch City short to medium term (2018 to 2028) sufficiency of feasible development capacity for based on comparative historical development										
Area	short term 2018-2021	medium term 2021-2028	10 Year 2018-2028	including additional margin 20% 2018-2021	including additional margin 20% 2021-2028	Total 10 Year 2018-2028	Feasible development capacity 2018-2021	Feasible development capacity 2018-2028	Sufficiency within the 2018 to 2021	Sufficiency within the 2018 to 2028
Christchurch (medium)	5,100	9,400	14,500	6,200	11,200	17,400	53,373	56,273	+47,173	+38,873

Table 4.2: Christchurch City long term (2018-2048) sufficiency of feasible development capacity for based on comparative historical development										
Area	short term 2018-2021	medium term 2021-2028	long term 2028-2048	30 Year 2018-2048	including additional margin 20% 2018-2021	including additional margin 20% 2021-2028	including additional margin 15% 2028-2048	Total 30 Year 2018-2048	Feasible development capacity	Sufficiency within the 2018 to 2028 period
Christchurch (medium)	5,100	9,400	25,200	39,700	6,200	11,200	29,000	46,400	59,939	+13,539

5 Historical take-up rates for housing and sufficiency

This section summaries the rates of take-up over the past 10 years as the basis to then estimate future rates of take-up, as required under policy PB3(d). This also informs whether the additional margin of feasible development, outlined in NPS-UDC policy PC1 is appropriate or if a higher margin is needed (as required under NPS-UDC policy PC2). Policy PC1 sets out additional margin of feasible development capacity of 20% in the short and medium term, and 15% in the long term. This allows a greater supply of feasible development, which provides for housing choice and for a buffer of feasible development capacity to accommodate where feasible development opportunities are not realised. This additional margin is added to demand before it is compared with capacity.

The 2011 earthquakes significantly affected take-up rates for Christchurch City, particularly in terms of redevelopment of the existing urban area (i.e. new dwellings achieved through intensification). Consequently, using the Christchurch 10 year average take-up rates will produce abnormal results and therefore a 15 year average take-up rate has been used to smooth out inconsistencies. A comparison of the 10 year and 15 year take-up rates are provided in Table 5.1 below, together with the take-up rate for the last year (2017-2018) which is showing a strengthening of household growth in Christchurch.

Table 5.1: Average net new dwelling take up rates over the past 10 and 15 year periods and for the previous financial year			
Area	10 Year Rate of Take up (Per Year)	15 Year Rate of Take up (Per Year)	Rate of Take up (2017/18)
Christchurch City	1577	1702	2043

Recent building consent information indicates that the proportion of new dwellings achieved through intensification is growing, particularly in areas surrounding the Central City, which has population growth above the projections. Growth in many greenfield areas is falling below projections (see Figure 5 below).

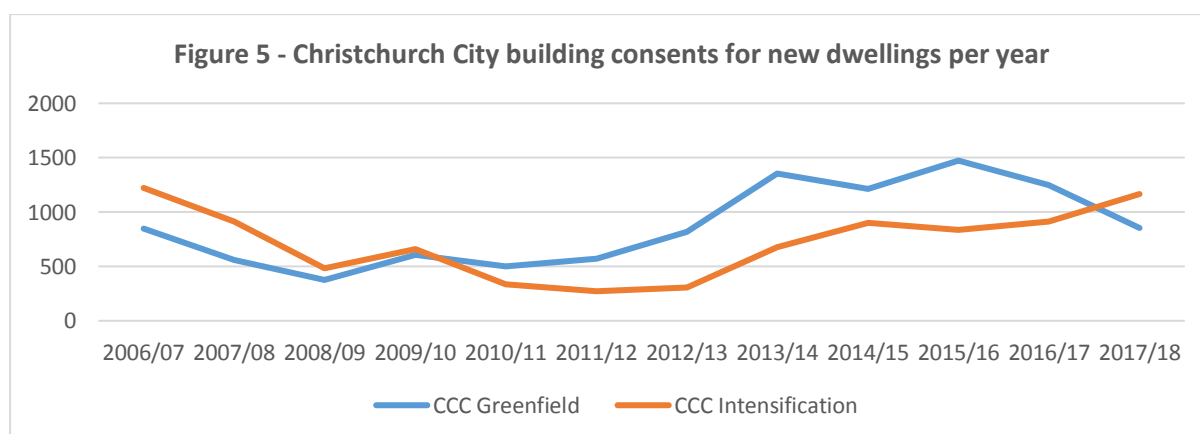


Table 5.2 compares the household demand estimated from population projections, with a projected potential demand based on historical take up rates. The take up rates based on the 15 year average and the previous year are both higher. The additional margins set out in the NPS-UDC policy PC1 are therefore considered appropriate for Christchurch to meet. The monitoring of rates of take-up will

continue to ensure the correct projections are being applied and to inform subsequent capacity assessment. For Christchurch City the medium population projections remains relevant.

Table 5.2: 30yr (2018 to 2048) Household Projections for Christchurch City considered against potential housing demand based on historical take up rates (without NPS-UDC PC1 additional margin)			
Timeframe	Total Household Projection	Potential housing demand based on 15yr average	Potential housing demand based on previous year take up
Short to Medium Term (2018-2028)	14,500	17,020	20,430
Long Term (2028-2048)	25,200	34,040	40,860
30 year period (2018-2048)	39,700	51,060	61,290

Consideration of the historical rates of take-up against the supply of commercially viable dwellings is also important. If take-up rates for Christchurch continue to strengthen, it may signal a potential shortfall of development capacity in the long term (i.e. comparing the Table 5.2 demand figure of 61,290 against the feasible development capacity supply figure of 59,393 under Table 4.2). This is not however of immediate issue. Future monitoring and housing capacity assessments will provide a better indication of shifting trends and the responses that may be required.

6 The feasibility modelling in more detail

This section provides a concise summary of the feasibility modelling for Christchurch City; for greenfield development and for redevelopment in the existing urban area. More detail of the modelling approach is contained within the Methodology document that accompanies this report.

6.1 Land Development Feasibility

The feasible capacity assessment considered all greenfields in Christchurch City identified by Outline Development Plans in the Christchurch City District Plan where development has not commenced, or where substantial areas of the ODP remain to be developed⁷. Seventeen greenfield ODP areas were included in the assessment⁸.

The following core data was used in the land development model:

1. Costs Data: was provided by Harrison Grierson (2018) study of each of the greenfield locations.
2. Council Data: was used for the land area, capital value, last sale value, District Plan rules and likely area on non-developable land (roads, reserves, stormwater etc.).
3. Lot Sale Price: was developed using sales data for Christchurch City⁹. The sales price was further informed using local developer information (published price expectations) and recent property sales listings.

The assessment was completed using a modified version of the MBIE/MfE feasibility assessment tool (land development module). Seventeen greenfield areas within Christchurch City were assessed, these areas having a plan enabled potential development capacity of over 15,000 house-development ready sections (and therefore, a corresponding number of new dwellings¹⁰). The critical model inputs were: anticipated section size, subdivision costs (such as land clearance, civil works, fees and contingency; land value), section size, and section price. Anticipated sections size is based on the average size of sections in order to meet the Canterbury Regional Policy Statement target of 15hh/ha for Christchurch City greenfields, which is on average 480 square meters per site net. The average site area is based on the net ODP area (excluding major roads, reserves and stormwater management areas, which typically account for approximately 28 percent of the net land area. This being the typical pattern of development observed for recently completed greenfield areas).

The higher housing density requirement for greenfields in Christchurch City, at 15 households per hectare (compared to 10 elsewhere in Greater Christchurch), necessitates that a mix of housing typologies be provided. Typically, the bulk of development sites are medium to large sections, with a component of medium-density developments on smaller sections. Though some ODP areas may identify where medium density development is more appropriate, the specific section layout and size is not specified in the ODP and is only determined later in the development process. This is likely beyond the point where a feasibility for development assessment has been completed. Modelling only an average section size to calculate profit may not be the profit maximising position for Christchurch

⁷ For greenfield ODP areas that have been substantially developed, a legal opinion obtained by the GCP has advised that where existing greenfield developments have begun subdivision or applied for RMA S224c, they can be deemed commercially feasible and do not need to be further assessed.

⁸ See Methodology report for further detail. Some greenfield areas contain more than one ODP. The modelling results for 16 greenfield areas were actually used. Riccarton Park was assessed, however given the recent rapid progress of the development it was deemed as feasible rather than using the model output.

⁹ The sales data is that collected by Councils for all property sales for the purposes of keeping the rating database current.

¹⁰ Refer to Greater Christchurch Housing Capacity Assessment: Report 2 Housing Development Capacity – An Assessment of Plan-enabled and Infrastructure Serviced Capacity

greenfield areas as it produces smaller sections and fewer full size sections than may in reality eventuate.

Land value was identified as a factor in determining development cost and ultimately commercial feasibility. However, the process for determining land value is complex for greenfield areas in Christchurch. By in large they are divided into multiple land holdings of different sizes, containing a variety of improvements or remaining in rural use. The value of each land holding within a typical greenfield can vary dependent on the size of the lot and the proximity to existing urbanised areas. A standardised land value (at square metre) for each greenfield is generally not consistent across the various land parcels in each greenfield. For example, a land parcel with an existing house is generally worth more per square metre than a land parcel without a dwelling. Smaller land parcels also trend towards a higher square metre value than larger land parcels.

For land value, two approaches were ultimately taken, the first of these simply assumed the capital value was the land value. A second approach applied a land value calculated from examining the pattern of historic subdivision in one example greenfield area (this being the South Halswell Outline Development Plan Area – refer to Christchurch District Plan, Chapter 8 Appendix 8.10.20). The land value was then adjusted to account for the proportion of the parcel occupied by an existing dwelling and/or ancillary buildings. The improvement value component was subtracted from the capital value of the land parcel as a whole and assigned to a smaller section encompassing the improvement. The capital value of the remainder of the land parcel then better reflected the actual land cost to developers (essentially the improvement value component of the purchase could be sold again, albeit on a smaller section thereby cancelling out some the cost). In almost all Christchurch greenfield developments, the rural dwelling and surrounds are subdivided off prior to or part of the land development. The result being that on average the land value input equated to only 75 percent of the overall recorded capital value for any one land parcel in a greenfield area.

6.2 Redevelopment feasibility modelling and assessment

The assessment of feasible capacity in the existing urban area started with the MBIE/MfE model as base to build a bulk feasibility assessment model. Specifically, the inputs, processes and calculations of the MBIE-BDM were used. Whilst the building component of the MBIE-BDM feasibility tool is useful to assess the feasibility of an individual site, it is less appropriate for undertaking a bulk assessment of a large number of potential redevelopment sites. The outputs that have been presented in this report are generated from a first version of the Christchurch feasibility model. Further refinement and development of the model has been identified for future feasibility assessments, recognising that there has been limited time to resolve all the issues and complete more area specific assessments to account for a greater spatial variation in input costs.

Redevelopment sites in Christchurch City are the existing cadastral boundaries of sites (as they were in late 2017) within the residential zoned areas of the City. The redevelopment model did not include an assessment of land development costs. All development sites were considered to be acceptable to develop for housing without the need for land development work (e.g. sites are serviced for infrastructure and do not require earthworks for stormwater attenuation), although site preparation work is assumed to be required (e.g. removal of existing dwellings and other structures, site clean-up). The feasibility assessment did not make allowance for ground characteristics, the extent of which may be revealed only by a site-specific assessment (e.g. localised contamination of land or existing structures requiring specialist remediation). However, an allowance was made for each parcel's Technical Category in relation to foundation costs.

The assessment was confined to Christchurch City District Plan's Residential Zones (except for New Neighbourhood). Specifically: the Residential Suburban Zone, Suburban Density Transition Zone,

Medium Density Zone, Residential Hills Zone, Residential Banks Peninsula Zones, and the Residential Central City Zone. Capacity for residential dwellings exists outside these zones, however this represents a limited potential contribution to overall supply. Residential development outside these zones is confined to low density development (e.g. lifestyle blocks) or where residential development is incidental to the main purpose of zones. An exception is the Central City Mixed Use Zone which in theory, could supply a significant number of dwellings at medium to high density. However, the interaction between factors influencing business land development and residential development requires a separate approach outside the current scope of the model (and the MBIE model from which it was derived). The capacity of the Central City Mixed Use Zone has therefore only been assessed for commercial development feasibility.

There are approximately 150,000 potential redevelopment sites contained within the City's residential zoned areas. Only plan enabled¹¹ sites were considered for redevelopment and consequently the potential 'pool' of sites was reduced to approximately the 45,000 sites that meet the minimum net site size criteria for subdivision or minimum developable site of the zone which applies. The distribution of plan enabled development sites across the residential zones is approximately:

- Residential Medium Density (RMD): 12,000
- Residential Suburban Density Transition (RSDT): 11,000
- Residential Suburban (RS): 19,000
- Residential Hills (RH): 1,000
- Residential Banks Peninsula (RBP): 900
- Residential Central City (RCC): 1,500

Some sites identified as plan enabled for modelling lack one or more crucial pieces of information required to complete a feasibility assessment (e.g. no separate rating valuation). For this reason, only approximate numbers are given for the total of sites processed.

The bulk assessment model considered the rules of each of the planning zones to determine the parameters for building on any one site (essentially by calculating the maximum floor space permitted by the rules of the Plan, including an allowance for recession planes on upper floors). In effect, this part of the model is a further assessment of plan-enabled capacity applied to individual sites. Once the maximum build area was established, the number of potential dwellings was calculated based on the parameters of the typology being tested. Build costs were then applied to this information and combined with fixed costs, land costs and fees to determine the overall cost of development. The revenue required to meet the margin target could then be determined and used to establish a sales price per dwelling, which can be compared for alignment with sales of existing dwellings.

Detail on data preparation and processing is provided in the methodology under Appendix 1 of this report.

The redevelopment base scenario tested the following housing typologies by zone, with a number of variations across dwelling size and car parking provision, for a total of thirty typologies tested:

- Detached houses in the RS, RH and RBP zones.
- Town house/Terrace houses in the RSDT and RMD zones.
- Town house/Terrace houses and Low-rise apartments in the RMD zone.
- Terrace house, Low and Mid-rise apartments in the RCC zone.

¹¹ Plan enabled is limited to Permitted, Controlled and Restricted Discretionary activities. Potentially all 150,000 residential sites may be considered for redevelopment if a resource consent is sought.

Results were processed to remove any large sites and/or sites with multiple existing dwellings contained within one lot (i.e. in excess of two). These sites are typically already developed as multi-unit, retirement villages or residential care homes. Smaller sites with multiple dwellings are more likely to have dwellings in one of the various multi-unit typologies. In practise, the model will not report these sites as feasible due to high existing capital value generated by multiple dwellings on a single lot. Such sites have been flagged for further analysis on a site-by-site basis (a future piece of work).

6.3 Large redevelopment sites

Larger redevelopment sites were assessed for building feasibility but removed from the results and reported separately. A full assessment of the capacity for development of larger sites requires a more detailed approach that considers land costs in addition to build costs, akin to that completed for greenfield development. In most cases, larger sites are not redevelopment sites but rather highly constrained sites. It was not practicable to complete the level of work required the large number of sites identified (approximately 350).

Large sites do however present a significant plan enabled potential for dwelling yield. As an alternative, a desktop analysis of sites was undertaken to identify site constraints and remove from consideration any sites that were highly constrained for development. This reduced the pool of large sites significantly, mainly leaving large brownfield sites in flat areas of Christchurch. For those that remained the average yield for the zone for the site was used to estimate yield rather than the output of the model. The expected dwelling yield from the low and medium constrained sites is included in the overall redevelopment total (this being 1885 new dwellings).

6.4 Redevelopment — Social and affordable housing mechanisms

The Christchurch City District Plan contains two specific provisions that allow for the specific provision of social housing as a density above that typical of the underlying zones as a restricted discretionary activity (and so, plan enabled), and one mechanism to allow for greater density in the RMD zone:

- The Community Housing Redevelopment Mechanism is an overlay over certain areas of the Residential Suburban zones that essentially provides for medium density development.
- The development of multi-unit housing for social housing within the Residential Suburban zone is a restricted discretionary activity.
- The Enhanced Development Mechanism.

The provision of social housing in the Residential Suburban zone potentially replaces other types of plan-enabled development that may be assessed as feasible. Therefore, it is problematic to report social housing achieved through these mechanisms as part of the overall assessment of feasible housing. Outside the Residential Suburban Zone there is no separate provision for social housing, and feasibility becomes a question of financial feasibility only, but from the perspective of a social housing provider. The Community Housing Redevelopment Mechanism and the Enhanced Development Mechanism have a minimum site rule that in practice will usually require the amalgamation of adjoining small sites. This is a separate step to be considered, costed and completed for future feasibility assessments.

7 Future work for Christchurch City

The following issues are noted as a prompt for additional testing and possible engagement with MBIE/MfE, the development sector and other high growth councils on how the model process may be improved:

- **Development costs:** the MBIE/MfE feasibility tool (Land Development) applies costs in one lump sum (close to the start of the project). In practise, developers of greenfield areas will attempt to stagger the costs to reduce the upfront costs. For example, commonly, staging is used where roads and services are put in place for only a small component of the ODP at a time to match housing development. The structure of the MBIE/MfE feasibility tool would need to be changed to reflect staggered costs.
- **Development revenue:** the MBIE/MfE feasibility tool applies all the project revenue in one lump sum at the end of the project. As with costs, developers tend to use staging to reduce the mismatch between revenue and costs over time. The structure of the MBIE/MfE feasibility tool (land development) would need to be changed to reflect staging of revenues and account for profit that is progressively generated throughout the development sequence.
- **Lot price and time:** the NPS-UDC requires a test of current feasibility. Given that most of the greenfield areas tested are unlikely to be subdivided until the medium to long term (i.e. ten to thirty years), it is almost certain that prices will be different from those of the current market. Therefore, it is reasonable to conclude that the MBIE/MfE feasibility tool (land development) does not provide a realistic picture of feasibility of the greenfield developments that will be developed in the future.
- **Sales price:** further work to estimate sales price across a range of building typologies, sizes and quality factors should be considered. This may start with better information and analysis of sales data to improve the resolution of the information provided (i.e. to report on more than dwelling sales).
- **Construction costs:** further information on the costs associated with different construction techniques and how these may be accounted for in the modelling process. This would help to refine the existing approach and assist with future refinements as building technologies evolve (as an example through factory built panelised construction).
- **Scaled costs and contingencies:** Further opportunities for refinement of the model inputs have been identified around the application of some costs. This includes using the graduated application of real estate costs, and the scaled application of contingencies. These elements require adjustments to the model and further research into the validity of the approaches.
- **Minor Dwellings:** An assessment of capacity and yield from Minor Dwelling Units.
- **Discretionary and non-complying activity:** A wider application of the feasibility modelling to include types of development requiring a more complex resource consent process.
- **Mixed Use zone:** An assessment of capacity of mixed use zones and yield from commercial zones that allow residential activity as a minor activity.
- **Community Housing:** An assessment of potential yield from areas covered by the overlays: the Community Housing Redevelopment Mechanism and the Enhanced Development Mechanism. This mechanisms usually require an element of site amalgamation to occur before development can proceed.

- Site amalgamation: assessment of the potential for site amalgamation to increase land use efficiency. Site amalgamation can be useful in reducing the impact of, or removing, boundary related constraints such as set-backs and recession planes.

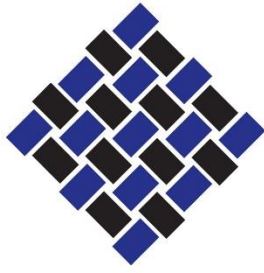
Appendix 1: Feasibility Assessment Methodology

See supporting document

Appendix 2 : Feasibility modelling results for individual Greenfield areas

Margin expectation: 20%								
Greenfield	High Land Cost				Low Land Cost			
	Low Price Range Margin	Yield	High Price Range margin	Yield	Low Price Range Margin	Yield	High Price Range margin	Yield
Awatea	-1%	0	26%	1545	3%	0	30%	1545
Cranford Basin	-28%	0	-9%	0	-25%	0	-5%	0
East Belfast	-11%	0	13%	0	-8%	0	17%	0
Hawthornden Rd	22%	95	54%	95	28%	95	61%	95
Hendersons	-2%	0	25%	924	2%	0	30%	924
Highfield North	-1%	0	26%	705	3%	0	31%	705
Highfield South	0%	0	27%	1133	4%	0	32%	1133
North Halswell	4%	0	33%	1,755	9%	0	38%	1,755
North West Belfast	0%	0	27%	1280	4%	0	32%	1280
Riccarton Park ¹²	20%	600	20%	600	20%	600	20%	600
South East Belfast	-5%	0	21%	620	-1%	0	26%	620
South East Halswell	4%	0	32%	968	9%	0	37%	968
South Halswell	3%	0	30%	537	7%	0	35%	537
South Masham	21%	266	53%	266	27%	266	60%	266
South West Halswell	12%	0	42%	1566	17%	0	48%	1566
Upper Styx	0%	0	27%	1905	5%	0	32%	1905
Yaldhurst	16%	0	47%	444	22%	444	53%	444
		961		14343		1405		14343

¹² Deemed feasible due to rapid progress with development.



**Greater Christchurch
Partnership**

Te Tira Tū Tahi
One Group, Standing Together

Greater Christchurch Housing Capacity

Report 3: Selwyn and Waimakariri Housing Feasibility and Sufficiency Assessment

31 October 2018

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Executive Summary

The National Policy Statement on Urban Development Capacity (NPS-UDC) requires local authorities to complete a housing and business development capacity assessment that estimates the demand for dwellings and the supply of development capacity to meet that demand in the short (three years), medium (ten years) and long (thirty years) term. This report is the third in a series prepared by the Greater Christchurch Partnership to meet the policy requirements of the NPS-UDC, specifically Policy PB3 (c) and (d). Its purpose is to assess the feasibility of housing in terms of land development and redevelopment, and evaluate sufficiency.

Feasibility, as defined in the NPS-UDC, is *'development is commercially viable, taking into account the current likely costs, revenue and yield of developing'*. It fundamentally involves an assessment of profit, and whether that profit is sufficient to mitigate risk. The term *'Commercially viable'* is not further defined in the NPS-UDC. For the purposes of establishing a base assessment approach, a commercial viable development is one that achieves a twenty percent margin using the residual valuation approach to feasibility assessment.

For Selwyn and Waimakariri Districts, the feasibility assessment was completed by consultants Market Economics Ltd. The approach is based on the guidance of the NPS-UDC Guidance document and specifically utilised the MBIE/MfE feasibility tool either directly or as a template for modelling redevelopment. This is one modelling approach to the assessment of commercial feasibility and other alternative approaches may produce alternative results. The context of the analysis is as important as the result. Caution should be applied if relying on the results to inform any required policy response under the NPS-UDC, particularly as a basis to increase the medium and long term supply of commercial feasible dwellings.

A number of generalisations and assumptions have necessarily been made in order for the model to work across a wide variety of sites and site conditions. Ideally, a comprehensive and site specific assessment of feasibility would consider all costs and fees tailored to individual site conditions, and a determined a sales price based on a detailed assessment of current localised market conditions for each site. It is not practical to complete such an assessment across a large number of sites and for a number of potential development typologies. As with any model, the outputs of this modelling process should not to be considered a definitive statement of development capacity. They are an estimate of development capacity based on a range of pre-determined parameters and values applied to the spatial and locational characteristics of development sites, at a single point in time and for a specific set of those inputs.

Land development feasibility - Greenfield areas in Waimakariri and Selwyn Districts were assessed in terms of land development feasibility. For greenfield in Selwyn and Waimakariri districts the methodology also applied the MBIE Land Development Model (MBIE-LDM) directly to assess the commercial feasibility of acquiring and preparing land ready for development to housing. The assessment indicates that all greenfield areas in Selwyn and Waimakariri Districts are not commercially feasible. As a calibration and ground-truthing exercise, the MBIE-LDM was tested against recently completed (and sold) greenfield developments. The model indicated that these realised development are not commercially feasible. Feedback from the development sector suggests that these areas are commercially feasible and therefore the modelled results appear to be at odds with the actual market conditions.

Build (re)development feasibility - For Selwyn and Waimakariri districts, feasibility was also tested by directly applying the MBIE Build Development Model (MBIE-BDM). At the time of this report the MBIE-BDM had only been applied to representative greenfield lots and had not been applied to redevelopment within the existing urban areas. The modelling research for MBIE-BDM was discontinued because of the poor performance of the model for the representative greenfield results. Specifically, as a calibration and ground truthing exercise the MBIE-BDM was tested using recently completed (and sold) new build homes in Selwyn and Waimakariri greenfield areas. The MBIE-BDM performed very poorly, indicating that none of the new builds should have been feasible for development and would have resulted in significant negative returns. Given that these dwellings have been built and on sold it was expected that the MBIE-BDM would find that the majority of these developments would be feasible or at least return a positive profit.

The modelling process undertaken for build development feasibility for the GCP area of Selwyn and Waimakariri has identified some critical issues where refinement of the model inputs are required. Selwyn and Waimakariri consider that there is further research required (in consultation with MBIE) to calibrate the build development models to at least accurately model recent developments. In addition, further work is required to better estimate and verify sales price for new dwellings arising from redevelopment as distinct from the sales price for

existing dwellings being re-sold. Further work is also needed on the potential for amalgamation of smaller sites to produce higher yields and reduce redevelopment costs through economies of scale.

Findings - The process of completing a feasibility assessment for both land development and building development has identified modelling limitations which are reflected in the inconsistent outputs. Consequently, any conclusions in terms of sufficiency of commercially feasible development should be considered uncertain at this time. Testing of the feasibility tools developed by MBIE/MFE and used by Waimakariri and Selwyn indicate that the model process and inputs require further refinement before they may be considered a reliable predictor of feasibility. It is of concern that the application of the MBIE feasibility tool indicates that no plan-enabled development is feasible, which is not supported by recent and historical patterns of development.

An “alternative scenario” (Scenario 2) relax the base model requirements to test the sensitivity of the model. This alternative scenario indicates that whilst Selwyn will have sufficient capacity in the medium term, Waimakariri will have a shortfall. Under the same feasibility scenario and over the long term (2018-2048), both Selwyn and Waimakariri has insufficient commercially feasible capacity.

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Definitions and Abbreviations

The following table defines commonly used terms, acronyms and abbreviations in this document.

Term	Definition
Development Capacity	As defined in the NPS-UDC, means: in relation to housing and business land, the capacity of land intended for urban development based on: <ol style="list-style-type: none"> a) the zoning, objectives, policies, rules and overlays that apply to the land, in the relevant proposed and operative regional policy statements, regional plans and district plans; and b) the provision of adequate development infrastructure to support the development of the land.
Feasible or Feasibility	As defined in the NPS-UDC, means: That development is commercially viable, taking into account the current likely costs, revenue and yield of developing. In this report, feasibility is assumed as a 20% profit margin.
MBIE/MfE feasibility tool	Refers to the feasibility tool provided in excel format to the Greater Christchurch Partnership. The reference may be to part of the tool, indicated as (land development) or (building development).
MBIE-LDM	MBIE/MfE Land development tool
MBIE-BDM	MBIE/MfE Build development tool
NPS-UDC	National Policy Statement on Urban Development Capacity
NPS-UDC Guidance	Refers to the NPS-UDC Guide to Evidence and Monitoring

1 Commercial feasibility capacity assessment for the districts of Selwyn and Waimakariri

1.1 Introduction

For Selwyn and Waimakariri Districts assessment of commercial feasibility for residentially zoned greenfield areas has been undertaken using the approach outlined in the NPS-UDC guidance. Models for greenfield land development and build development were based directly on the custom development feasibility calculated provided by MBIE/MfE for Christchurch - "20170829 NPSUDC Development Feasibility Tool Christchurch Canterbury Final". This tool includes two models, "Land Development" and "Build Development".

The Greater Christchurch Partnership (GCP) commissioned two studies¹ to refine the cost and other variable inputs into the tool. This included determining the costs for each greenfield area in Greater Christchurch and a separate assessment of costs for building development of the existing urban areas. Land value and sales price information was sourced from Council databases, from Quotable Value, and from developers.

A brief summary of the assessment methodology is provided in the report. The feasibility assessment for Selwyn and Waimakariri Districts was completed by Market Economics Ltd.

1.2 Land development feasibility

The MBIE-LDM is intended to test whether development-ready sections are currently commercially feasible to deliver (MBIE-LDM). In brief, the MBIE-LDM calculates if the revenue from selling serviced lots is sufficient to cover all the costs of land development and return a profit acceptable to the developer. The feasibility assessment considered all greenfields in Selwyn and Waimakariri identified by Outline Development Plans that are not developed or have substantial areas remaining to be developed². In total thirteen greenfield ODP areas across Rolleston, Lincoln, Prebbleton, Tai Tapu and Rangiora were included in the assessment. The following data was inputted into the land development model:

- a) Costs Data: was provided by Harrison Grierson (2018) study of each of the greenfield locations.
- b) Council Data: was used for the land area, capital value, last sale value, District Plan rules and likely area on non-developable land (roads, reserves, stormwater etc).
- c) Lot Sale Price: was developed using lot sales data for 2016 and 2017 by location from Quotable Value (2018, for Selwyn and Waimakariri Districts). The sales price was further informed using local developer input (commentary or with reference to published sales information) and recent 224c applications.
- d) Dwelling Sale Price: this was developed using new dwelling sales data for 2016 and 2017 by location from Quotable Value (2018)

Further detail is provided within the methodology report noting that the modelling method is not discussed as there is no variation from the supplied MBIE-LDM.

1.2.1 Land development model results

For Selwyn there are twelve areas (a total of 410 hectares) and for Waimakariri there is one area (at 68 hectares). The assessment completed using the MBIE-LDM model is currently indicating that all areas in Selwyn and Waimakariri Districts are not feasible for development at a twenty percent margin target. Several refinements to each model input has been tested in order to understand their implications. Efforts to refine the MBIE-LDM and test the inputs to better reflect the realities of the development sector have failed to improve these results. This testing process included engagement with developers that are currently active in the Districts land

¹ Undertaken by Harrison Grierson Limited (2018) and WTP Limited (2017)

² For greenfield ODP areas that have been substantially developed, a legal opinion obtained by the GCP has advised that where existing greenfield developments have begun subdivision or applied for RMA S224c, they can be deemed commercially feasible and do not need to be further assessed.

development sector. As is common for most modelling investigations, the MBIE-LDM has been tested using sensitivity analysis (varying the assumptions) and ground-truthing (based on an assessment of two greenfield developments that have been granted RMA S224c certificates of title have been issued). The sensitivity tests show that the land development model results are most sensitive to lot price, followed by non-developable land and then, development sequencing. Local developers (who have been identified PB5 stakeholders) were approached for comment on the inputs into the feasibility assessment. They have confirmed that the assumptions used in the model are reasonable. The MBIE-LDM has also been ground-truthed using two recently developed subdivisions in Rolleston that have been proven to be feasible (S224c certificates have been issued and allotments sold). The results from the MBIE-LDM for these two examples indicated that neither are feasible.

1.3 Build development feasibility

For Selwyn and Waimakariri Districts, the MBIE-BDM was only applied to representative sections derived from greenfield development, had not been applied to redevelopment within the existing urban areas. The modelling research for MBIE-BDM was discontinued because of the poor performance of the model for the representative greenfield results.

The MBIE-BDM is intended to test whether it is currently financially feasible for a developer to buy a lot (or redevelopment site) and build a new dwelling. In brief, the MBIE-BDM tests whether the revenue from selling a dwelling is sufficient to cover all the costs of construction and land purchase while also returning a profit.

Also of importance, is the data on recent dwelling sales prices. This data provides an understanding of the current price achieved, by location and size, for a built dwelling. WDC and SDC collected dwelling sales data from Quotable Value (2018).

The MBIE-BDM was used to test typologies that are currently built in WDC and SDC. This includes detached, semi-detached (duplex) and terraced housing. The apartment and retirement accommodation typologies have not been tested as there are very limited instances of apartments and modelling feasibility would be problematic.

The following data was inputted into the MBIE-BDM:

- a) Costs data: as provided by WTP (2018) for the GCP area, with the modelling assuming a low build cost in SDC and WDC.
- b) Council data: was sourced for the land area, capital value, last sale value, and zone rules.
- c) Dwelling sale price and lot purchase price: was developed using new dwelling sales data for 2016 and 2017 by location and Lot Sales data from Quotable Value (2018).

1.3.1 Build development model results

During the implementation phase the MBIE-BDM was tested on representative sites. The results from this testing showed that none of the representative sites would produce a profit. Market Economics Ltd has concerns about the results from the model and has undertaken further testing, both sensitivity and ground-truthing. The sensitivity test shows that the MBIE-BDM results are most sensitive to the dwelling price, followed by construction costs (ground floor and up) and then sight coverage.

The MBIE-BDM has been ground-truthed using eight recently built dwellings in Rolleston and Rangiora that have been proven to be feasible – i.e. built and sold. For these cases there is a record of the price of the vacant residential lot that was brought by the builder and the sale price of the dwelling that was sold. The results from the MBIE-BDM for these examples indicate that development is not feasible – i.e. there is not enough revenue relative to the costs to generate a sufficient profit. It was expected that the MBIE-BDM would return results that show at the very least a profit for these examples. Therefore, it is concluded that MBIE-BDM performs poorly to replicate the existing market conditions in WDC and SDC.

1.4 Results and conclusions

The outputs of the modelling process are indicating that all 'plan enabled' undeveloped and partially developed greenfield areas in Selwyn and Waimakariri Districts are not feasible to develop. The outputs are considered to be unreliable and efforts to refine the model and test its inputs have failed to improve the results. The results are inconsistent with recent development trends and outcomes, and contrary to potential feasibility reported by the development sector for undeveloped land. As a result of the sensitivity and ground-truth testing it is concluded that the MBIE/MfE feasibility tool does not sufficiently account for the realities of developing plan-enabled greenfield land in Selwyn or Waimakariri Districts. Until these issues are resolved the feasibility of greenfield areas in Selwyn and Waimakariri Districts for development will be assessed against the recent patterns of development and the feedback of the development community (Scenario 2). On this basis all greenfield areas are deemed feasible for development. The results and conclusions of the feasibility assessment for SDC and WDC have been used in the following two scenarios:

1. **Scenario 1:** which is the base line scenario that is compliant with the NPS-UDC and MBIE requirements. In this scenario the SDC and WDC areas are reported as having no feasible capacity.
2. **Scenario 2:** which are the alternative scenarios which relax the NPS-UDC requirements. In this scenario the feasible capacity is reported as the entire enabled capacity in the greenfield areas. As discussed above, in the absence of robust MBIE feasibility tool it is reasonable to assume that greenfield are feasible.

These scenarios are discussed further in Part 3 of the report.

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2 Take-up rates across Selwyn and Waimakariri

This section summaries the rates of take-up over the past 10 years as the basis to then estimate future rates of take-up, as required under policy PB3 (d). This also informs whether the additional margin of feasible development, outlined in PC1 is appropriate or if a higher margin is needed (as required under policy PC2).

Policy PC1 sets out additional margin of feasible development capacity of 20% in the short and medium term, and 15% in the long term. This allows a greater supply of feasible development, which provides for housing choice and for a buffer of feasible development capacity to accommodate where feasible development opportunities are not realised. This additional margin is added to demand before it is compared with capacity.

The rate of take-up for Selwyn and Waimakariri is not currently meeting the average yearly household growth projection rate over the next 10 years if the ten year rate of take up is used. However, the rate of growth is not constant, with the rate of growth expected to be higher in the short-term than in the medium to long-term. Therefore, the additional margins set out in PC1 would seem to be appropriate. Further, ongoing work monitoring the rates of take-up is required to see where take-up is occurring and how this matches with projected demand and supply.

**Table 8: Household Projections for Selwyn and Waimakariri – 2018 to 2048
(without PC1 additional margin)**

Timeframe	Total Household Projection	Average per Year
Short to Medium Term (2018-2028)	12,400	1,240
Long Term (2028-2048)	21,900	1,095

Current rates of take up for Selwyn and Waimakariri are:

Table 9: Take up rates over the past ten years and for the previous financial year

Area	Ten Year Rate of Take up (Per Year)	Rate of Take up (2017/18)
Selwyn	696	953
Waimakariri	465	509
Total	1,167	1,462

3 Selwyn and Waimakariri — Feasible capacity, Sufficiency, Findings and Future Work

This part of the report brings together the feasibility assessments for Selwyn, Waimakariri for comparison with the findings of the demand assessment (Report 1).

3.1 Feasible capacity — overall results

The results of the feasible capacity assessments are combined into two feasibility scenarios that reflect the output of the assessment and also the conclusions drawn from the process.

- Scenario 1: Feasible capacity using, for greenfield in Selwyn and Waimakariri Districts, the approach of the MBIE/MfE feasibility tool, feasible redevelopment capacity output using the base redevelopment scenario and feasible greenfield development (sections only).
- Scenario 2: As Scenario 1 but with all Selwyn and Waimakariri District greenfield ODP areas assumed to be feasible for development. This is to compensate for the apparent inaccuracy of the methodology.

The two scenarios presented here provide a range of possible outcomes. They are not however an exhaustive summary and a range of other potential scenarios may be considered.

Table 10: Selwyn and Waimakariri Summary of feasible dwellings capacity Two scenarios, mixing modelled and deemed feasibility outcomes.		
Area	Scenario 1 Feasible capacity based on raw modelling outputs, least favourable parameters & redevelopment base scenario. No feasible greenfield capacity.	Scenario 2 As scenario 1, with assumed Selwyn and Waimakariri full greenfield feasibility
Selwyn	0	9,717
Waimakariri	0	4,188
Total	0	13,805

3.2 Sufficiency

3.2.1 Summary of results

As expected, the different feasibility scenarios produce a range of outcomes for sufficiency. For feasibility scenario 1 the conclusion is that supply is insufficient in all periods and overall (the 2018 to 2048 period) by the deficit of approximately 40,000 dwellings. Conversely, for scenario 2, the outcome is a shortfall of 26,400 dwellings over thirty years but with sufficient capacity in the short term, and a deficit starting to emerge in the medium term for Waimakariri.

3.2.1.1 Sufficiency tables — overall for Selwyn and Waimakariri

Table 11: Results of Short Term Dwelling Sufficiency

This table shows that in the short-term, under scenario 2 feasible capacity is sufficient to meet overall projected demand both for both Selwyn and Waimakariri. A sufficiency shortfall is only under scenario 1, which assumes no feasible greenfield capacity. Demand figures incorporate a 20% buffer.

		Feasibility Scenario 1		Feasibility Scenario 2	
Area	Demand	Cap.	Suff.	Cap.	Suff.
Selwyn	3,100	0	-3,100	9,717	6,617
Waimakariri	1,700	0	-1,700	4,188	2,488
Total	4,800	0	-4,800	13,805	+4,700

Table 12: Results of Medium Term Dwelling Sufficiency

This table shows that in the medium-term, under scenario 2, feasible capacity is sufficient to meet overall projected demand for Selwyn while a shortfall is shown for Waimakariri. A sufficiency shortfall is shown under scenario 1 for all areas, noting that this scenario assumes no feasible greenfield capacity. Demand figures incorporate a 20% buffer.

		Feasibility Scenario 1		Feasibility Scenario 2	
Area	Demand	Cap.	Suff.	Cap.	Suff.
Selwyn	8,600	0	-8,600	9,717	1,117
Waimakariri	6,300	0	-6,300	4,188	-2,112
Total	14,900	0	-14,900	13,805	-1,095

Table 13: Results of Long Term Dwelling Sufficiency

This table shows that in the long-term, under scenario 2, feasible capacity is insufficient to meet overall projected demand for all areas, individually and combined. Demand figures incorporate a 20% buffer.

		Feasibility Scenario 1		Feasibility Scenario 2	
Area	Demand	Cap.	Suff.	Cap.	Suff.
Selwyn	24,200	0	-24,200	9,717	-14,483
Waimakariri	16,000	0	-16,000	4,188	-11,812
Total	40,200	0	-40,200	13,805	-26,395

3.3 Conclusions, discussion and sensitivity testing

3.3.1 Feasible capacity results and sufficiency of supply

Under Scenario 1, there is no feasibility development supply capacity returned by the feasibility assessment. The Selwyn and Waimakariri District Councils considers that this result is, at the very least, inconsistent with the current operation of the market and that it would be questionable to conclude that there is no feasible housing supply in these districts. On this basis caution should be exercised in relying on the results to inform policy making and the planning response to the Housing Capacity Assessment.

Through the process of undertaking the feasibility assessment a number of issues have been identified with the suggested modelling approach. Furthermore, the constraints placed on the feasibility assessment by some of the definitions contained within the NPS-UDC limit the extent to which the approach may be adapted to improve the reliability of the overall assessment. These issues are discussed in more detail below.

3.3.2 Modelling process discussion

It is clear the modelling process has performed poorly in estimating feasible development capacity for greenfield development. The results for Selwyn and Waimakariri greenfield areas are inconsistent with recent patterns of development, currently proceeding development and indicated developer intentions. Under the base line NPS-UDC assessment there is no feasible capacity in the greenfield areas.

3.3.2.1 Identified weaknesses in the approach

The approach to assessing feasibility produced results that were not consistent with real-world development examples. Application of the approach to recently completed examples of development (completed, so assumed feasible) reported these developments as not feasible. Analysis has revealed some of the inputs and process steps that may be contributing to the inconsistent outcomes. Uncertainty is apparent in:

- For greenfield, establishing a correct value for site acquisition. This is in particular an issues for greenfield ODP areas that are in multiple ownership lots of varying size with a variety of existing land use activities (e.g. life-style blocks with high-value improvements vs. land still in rural use with no or low value improvements).
- For greenfield, correctly attributing holding costs, the payment of development costs and interim sales revenues in multi-stage developments. The suggested feasibility approach does not account for this.
- For greenfield incorporating the building component, the need to set a margin target for both the land development and building development component.
- For greenfield development, a fixed margin expectation of 20% after tax across all development typologies, locations and developers.

3.3.2.2 Suggested areas for collaboration on modelling approaches

The following issues are noted as a prompt for additional testing and possible engagement with MBIE/MfE, the development sector and other high growth councils on how the model process may be improved:

- Development costs: the MBIE/MfE feasibility tool (Land Development) applies costs in one lump sum (close to the start of the project). In practise, developers of greenfield areas will attempt to stagger the costs to reduce the upfront costs. For example, commonly, staging is used where roads and services are put in place for only a small component of the ODP at a time to match housing development. The structure of the MBIE/MfE feasibility tool would need to be changed to reflect staggered costs.
- Development revenue: the MBIE/MfE feasibility tool applies all the project revenue in one lump sum at the end of the project. As with costs, developers tend to use staging to reduce the mismatch between

revenue and costs over time. The structure of the MBIE/MfE feasibility tool (land development) would need to be changed to reflect staging of revenues and account for profit that is progressively generated throughout the development sequence.

- Lot price and time: the NPS-UDC requires a test of current feasibility. Given that most of the greenfield areas tested are unlikely to be subdivided until the medium to long term (i.e. ten to thirty years), it is almost certain that prices will be different from those of the current market. Therefore, it is reasonable to conclude that the MBIE/MfE feasibility tool (land development) does not provide a realistic picture of feasibility of the greenfield developments that will be developed in the future.
- Sales price: further work to estimate sales price across a range of building typologies, sizes and quality factors should be considered. This may start with better information and analysis of sales data to improve the resolution of the information provided (i.e. to report on more than dwelling sales).
- Construction costs: further information on the costs associated with different construction techniques and how these may be accounted for in the modelling process. This would help to refine the existing approach and also assist with future refinements as building technologies evolve and develop.

3.3.3 Sensitivity

The scenario outputs show that for greenfield areas feasibility was measured as zero using the unaltered inputs into the modelling process (Scenario 1). Refinement and alterations to the inputs failed to improve profitability to achieve a feasible margin for Selwyn and Waimakariri.

Notwithstanding the above, the analysis of the greenfield assessment found that the feasible capacity model was most sensitive to sales price, land value and build costs. It was less sensitive to fees, development contributions and other ancillary costs. Ancillary costs altered as single values had little impact on overall feasibility but were influential if considered as a group. Issues with the process of modelling tending to compound the weight of some ancillary costs and understate the effect of revenue streams for greenfield development.

3.4 Future work

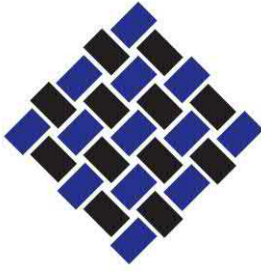
In addition to the further work on refinement of the existing model outlined above, areas for further work on feasibility capacity assessment have been identified. These include:

For Selwyn and Waimakariri District:

- Further modelling (include the potential use of alternative approaches to the MBIE/MFE feasibility tool) and recalibration of both land and build development models to ensure that outputs can at least correctly predict current developments as being feasible.
- An assessment of infill capacity (after calibration above is completed).
- An assessment of future feasibility based on economic process that change feasibility.
- An assessment of the role of non-market supply – specifically Kiwi build, Housing New Zealand and other dwelling providers.

Areas for further work for sufficiency analysis includes:

- Further analysis is required to understand sufficiency in terms of price ranges and typology, in order to fully understand how supply is meeting demand.



**Greater Christchurch
Partnership**

Te Tira Tū Tahi
One Group, Standing Together

Greater Christchurch Urban Development Capacity Assessment

Housing and Business Interactions

28 March 2018: Version 4

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Executive Summary

Housing and business land use patterns, coupled with their integration with the transport network, help determine the degree to which an urban area is well-functioning and accessible. The land use patterns that characterise the Greater Christchurch area are the result of historic trends and previous planning decisions that have shaped the spatial distribution of housing and business areas across the sub-region.

This report considers the spatial interactions between housing and business areas in Greater Christchurch, and their effects on transport and accessibility. It also identifies some of the potential opportunities and barriers for urban development and change in the sub-region. This report meets the requirements of Policy PB1(c) of the National Policy Statement on Urban Development Capacity.

The key findings from this report include:

- Greater Christchurch's urban form has been shaped by the creation and expansion of the settlements laid-down in the 19th century. During the latter part of the 20th century, the pattern of development was influenced by the change in dominant transport mode from foot, bicycle and tram to the private car.
- The availability of significant areas of flat land that were fairly easy to subdivide and service meant the Greater Christchurch area has grown with lower densities than other New Zealand cities.
- The impact of the earthquakes has seen the relocation of households and businesses from damaged central and eastern areas of the City, and eastern Kaiapoi, to areas to the west. These changes have had a major impact on land use patterns and travel movements across the sub-region.
- Housing preferences relate to the homes and locations that suit people's lifestyles and financial circumstances. They are determined, at least in part, by where people work, their choice of school and their desire to access different services and amenities. People are often required to consider the trade-offs between various housing and locational choices.
- For many people, a detached house on a large section with private space remains representative of housing in Greater Christchurch. However, this type of housing may not suit, or be affordable, for all households. A changing population will also affect future housing preferences in the sub-region.
- Access to the strategic transport network is an important factor for the locational choices of industrial activities, while proximity to a nearby workforce and customer base is important for office and retail activities. Locating near associated business activities also influences the locational preferences of businesses.
- Development capacity enabled through plans seeks to support locational choice within an integrated urban form that provides suitably located greenfield and intensification opportunities. This capacity reinforces the role of the central city and key activity centres as focal points for people to shop, work, meet, relax and often live.
- Access to jobs in Greater Christchurch is highest in the central and western areas of the City. Access to activity centres is fairly high for much of the sub-region, although accessibility is generally lower for people travelling by public transport, bicycle and walking.
- Accessibility influences the socio-economic opportunities of communities in the sub-region. Reduced access to jobs, coupled with a range of other social and economic factors, has placed some areas in the City's eastern suburbs within the top 5% most deprived in New Zealand.
- Current land use patterns mean trips originate from a range of locations and terminate at a range of destinations. Greater Christchurch has high private car usage and low public transport patronage compared to other New Zealand cities. The reasonable ease of travel in the sub-region has allowed people to live further from their workplace and the activity centres.
- Most working residents in Christchurch City are employed in the City, although there are significant commuting flows between different areas of the City. The share of working residents in Selwyn and Waimakariri employed in the districts is much lower, with more than 40% travelling into the City for work. The average trip length in the sub-region has risen between 5 and 10% over the last decade.
- Key transport challenges for Greater Christchurch relate to post-earthquake disruptions. Increased congestion and delays, weaker journey time reliability and the reliance on the private car constrains the ability of the network to move people and goods efficiently, and has led to pinch points and low corridor productivity.

- Greater Christchurch's transport network could experience substantial increases in travel demand and traffic if the projected population growth was to eventuate. This would result in more delays, although any potential effects would vary across the sub-region. The increase in travel times from the western areas of Christchurch City, Selwyn and Waimakariri into the central city would likely be much worse. Travel time delays would also likely vary day-to-day, making it difficult for people to plan their journeys.
- There could be significant cost to the economy from increased travel times, as freight will take longer to transport, including to and from the airport, port, distribution centres and warehouses.
- The location of future land use growth could significantly affect the distribution of trips and the resulting levels of congestion in Greater Christchurch, with marginally better average speeds and travel times in the sub-region projected based on a higher share of growth being accommodated in the City.
- Based on feedback from Greater Christchurch Partnership officials, there are a number of potential opportunities for and barriers to urban development and change in Greater Christchurch. This includes a range of spatial and non-spatial opportunities and barriers that can be investigated in further detail as part of the Future Development Strategy.

Options to manage the effects of population growth and increased travel demand on the transport system in Greater Christchurch will be a key consideration of the Future Development Strategy. Land use and transport planning will need to consider how to maximise positive interactions between housing and business areas, and the transport network, and minimise negative interactions related to reduced travel time reliability, safety and accessibility across the network, as well as incompatible land uses generating reverse sensitivities. An integrated planning approach will support a more economically, socially and environmentally sustainable pattern of development in Greater Christchurch.

Definitions

The following table defines commonly used acronyms and abbreviations in this document.

Term	Definition
CAST	Christchurch Assignment and Simulation Traffic Model
CCC	Christchurch City Council
CRPS	Canterbury Regional Policy Statement 2013 (Revised 2017)
CSM2	Christchurch Southern Motorway Stage 2
CTM	Christchurch Transportation Model
GCTS	Greater Christchurch Transport Statement 2012
IMD	New Zealand Index of Multiple Deprivation 2013
LURP	Land Use Recovery Plan 2013
MBIE	Ministry of Business, Innovation and Employment
NPS-UDC	National Policy Statement on Urban Development Capacity 2016
NZTA	New Zealand Transport Agency
RMA	Resource Management Act 1991
UDS	Greater Christchurch Urban Development Strategy 2007

1. Background

This report has been prepared to consider the spatial interactions between housing and business land use activities in Greater Christchurch, in order to meet the requirements of Policy PB1(c) of the National Policy Statement on Urban Development Capacity 2016 (NPS-UDC). This assessment accompanies the housing and business capacity assessments undertaken for Greater Christchurch that respectively meet the requirements of Policy PB1(a) and Policy PB1(b) of the NPS-UDC.

1.1 Purpose and Scope

The NPS-UDC provides direction to decision makers under the Resource Management Act 1991 (RMA) on planning for sustainable development in urban environments.¹ It recognises the national significance of well-functioning urban areas, with a focus on ensuring that local authorities, through planning, both:

- enable urban environments to grow and change in response to the shifting needs of communities and future generations; and
- provide enough space for their population to happily live and work, which can be through both allowing development to go 'up' by intensifying existing urban areas and 'out' by releasing greenfield land.

The NPS-UDC directs local authorities to provide sufficient development capacity in their resource management plans to meet the demand for housing and business growth, recognising that connectivity and mobility between both are important to achieving well-functioning urban environments. In the context of this report, the NPS-UDC requires local authorities to develop an evidence and monitoring base that supports their planning decisions for urban areas. This includes Policy PB1, which requires that local authorities (that have part, or all, of either a medium or high growth urban area in their district or region)²:

"...shall, on at least a three-yearly basis, carry out a housing and business development capacity assessment that:

- a) Estimates the demand for dwellings, including the demand for different types of dwellings, locations and price points, and the supply of development capacity to meet that demand, in the short, medium and long-terms; and*
- b) Estimates the demand for the different types and locations of business land and floor area for businesses, and the supply of development capacity to meet that demand, in the short, medium and long-terms; and*
- c) Assesses interactions between housing and business activities, and their impacts on each other."*

This assessment has been prepared to meet the requirements of Policy PB1(c), which focuses on the spatial interactions between housing and business land use activities. This report, coupled with the related housing and business capacity assessments, provide an evidence base that will guide and inform the development of a Future Development Strategy for Greater Christchurch, which is also a requisite of the NPS-UDC.

This assessment aims to meet the requirements of Policy PB1(c) by:

- providing information about the positive and negative spatial interactions between housing and business capacity in Greater Christchurch, as well as their impacts on accessibility and transport; and
- analysing the key opportunities and challenges for development and change in Greater Christchurch.

It should be noted that the guidance for the NPS-UDC also recommends that assessments meeting the requirements of Policy PB1(c) should reconcile the housing and business capacity assessments to ensure capacity is not double counted, or under- or over-estimated. This requirement is not addressed in this report, but considered as a part of the related housing and business capacity assessments for Greater Christchurch.

In this context, the current strategic direction for Greater Christchurch in terms of planning for a well-integrated and functioning urban environment is set out in a number of documents that align to the vision for the sub-region. These strategies and plans have been produced to guide and manage urban development, including providing for housing and business land, social, health and recreational facilities, and transport infrastructure. A summary of the key takeaways from several of these documents is outlined in Appendix A.1.

¹ Sustainable development, as defined and described in the 1987 Brundtland Report, is about 'meeting the needs of the present without compromising the ability of future generations to meet their own needs'.

² Although only Stats NZ's 'Christchurch Urban Area' (i.e. the City and the townships of Prebbleton and Kaiapoi) is classified as a high growth area, for the purposes of the capacity assessments, the whole of the Greater Christchurch area is considered a high growth area and the relevant policy requirements are applied to this wider area.

2. Evolution of Greater Christchurch

This section describes the key trends that have helped shape the urban form of Greater Christchurch, in order to understand the basis for the spatial distribution of housing and business land uses across the sub-region. This section draws extensively on the research undertaken in the Contextual Historical Overview of Christchurch City report produced on behalf of Christchurch City Council (CCC).³

2.1 Early Settlement

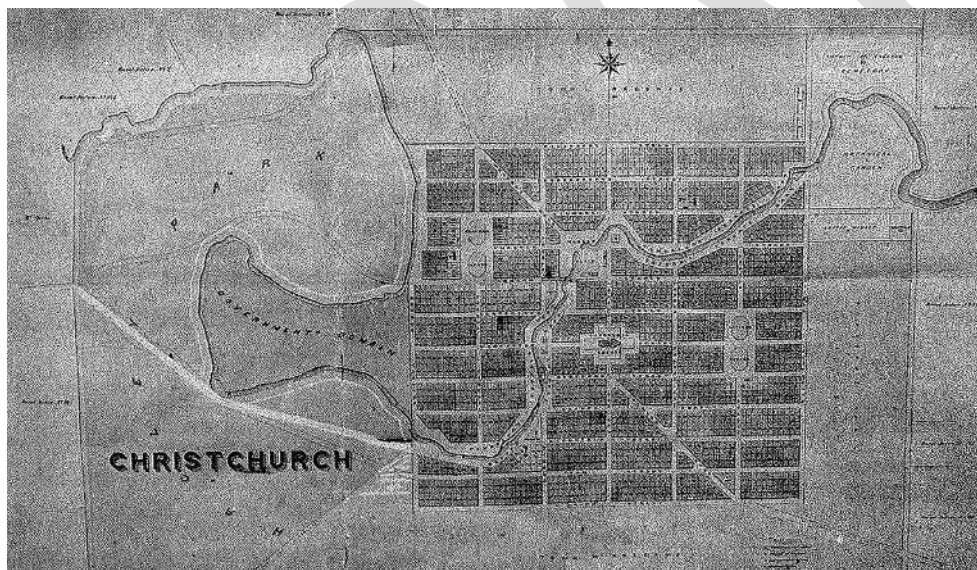
Early archaeological sites provide evidence that Maori frequented the Christchurch area in the earliest years of Maori occupation of New Zealand seven or eight hundred years ago. The area would have been known to subsequent iwi, including Waitaha, Ngati Mamoe and Ngai Tahu, but Christchurch gains a history only with Ngai Tahu. Tracks crossed the country on which the City was built, which lay between Ngai Tahu's pa at Kaiapoi and the population centres on Banks Peninsula and around Te Waihora (Lake Ellesmere).

The swamplands and seashore in the Christchurch area were productive eco-systems for Maori inhabitants, with permanent or semi-permanent settlements established on the margin of the estuary and, like the city of Christchurch itself, along the Avon and Heathcote Rivers.

In 1848, the Canterbury Association sent out Captain Thomas, accompanied by surveyors, to prepare a site for settlement in Canterbury. Thomas originally placed the principal town in Lyttelton Harbour, but when he realised there was insufficient flat land there to meet their requirements, he relocated Christchurch to a point on the Avon River where those coming up the river first encountered higher, drier ground.

The plan for Christchurch was the standard rectangular grid of colonial settlement, with the grid originally laid out between Salisbury, St Asaph, Barbadoes Streets and Rolleston Avenue/Park Terrace. Land was also set aside between the northern, eastern and southern sides of the grid, and the town belts (later renamed the avenues), for later expansion (Figure 2.1).

Figure 2.1 Surveyor's Plan of Christchurch, 1850



Source: Contextual Historical Overview of Christchurch City

Although the ideals of the Association harked back to an earlier England, Christchurch was unmistakably a mid-19th century colonial town with a layout more like that of towns established during the expansion of the United States. Similar plans to that of Christchurch were also prepared for Auckland, Dunedin and parts of Wellington, but it was only on Christchurch's flat, expansive site that a regular grid was feasible.

2.2 Residences

In the 1850s, most of Christchurch's residents lived within the four avenues. Even within the four avenues, residences almost all conformed to the standard of a detached, single family dwelling. By the 1930s, there

³ <https://www.ccc.govt.nz/culture-and-community/heritage/heritage-in-the-city/historical-overview>

were a number of apartment or flat developments in the central city. The construction of new apartments from the 1960s and the conversion of former commercial buildings to residential use from the 1980s helped grow the central city population, which had seen a trend of depopulation resulting from the encroachment of commercial premises on residential areas.

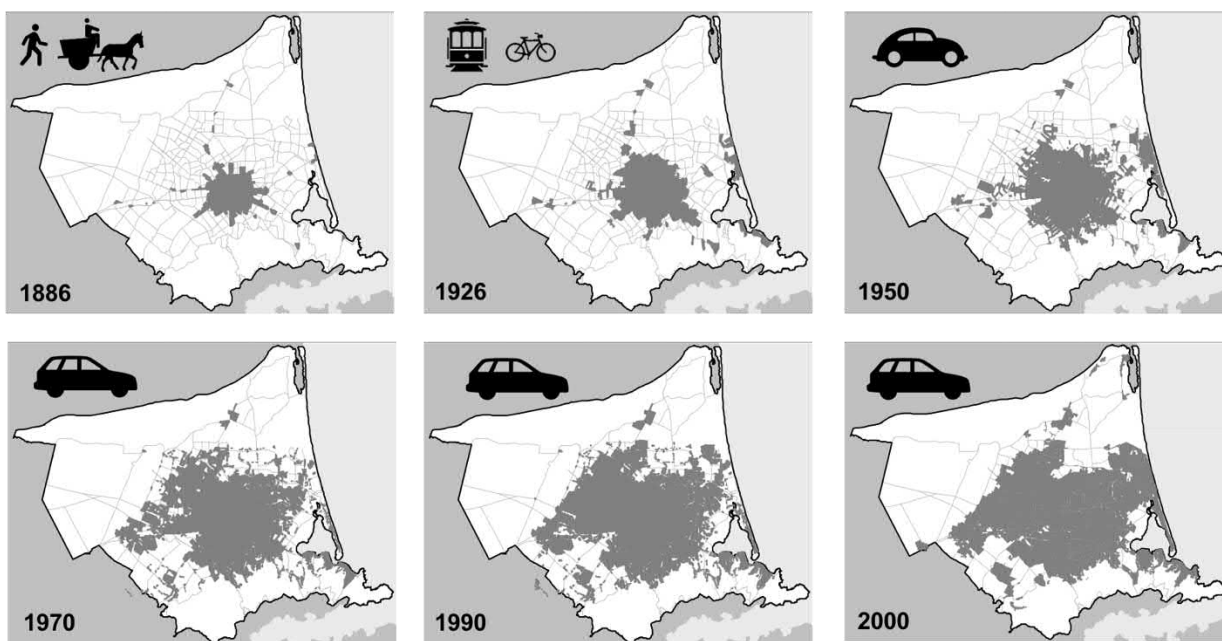
By the late 1870s, the distribution of the City's population had changed markedly. Nearly as many people were living in the early suburbs and on rural sections as within the central city. Important early suburbs were Sydenham, Addington and St Albans, while Richmond, Linwood, Sumner and New Brighton also became early centres of population. Woolston developed as a residential, commercial and industrial area along Ferry Road, which was the main route linking the central city to the wharves on the Heathcote River.

Although the Port Hills have been described as a southern barrier to growth in Christchurch, forcing development north and west, residences had begun to appear on the hills by the end of the 19th century. Hill suburbs continued to develop through the 20th century, spurred by the extension of the tramline. Opawa, St Martins, Beckenham, Thornington and Lower Cashmere were also built-up in the first half of the 20th century.

After World War I, a large number of bungalows were built in the City. These bungalow suburbs formed a further ring outside the early villa suburbs, with large tracts of bungalows built in outer St Albans, Spreydon, Beckenham, Shirley, Richmond and Linwood. Many of these bungalow suburbs were served by tram lines. After World War II, developments dominated by 'later' bungalows formed a further ring outside the inter-war bungalow suburbs, with these suburbs mostly developed in the northern and western fringes of the City.

The pattern of development in Christchurch during the 20th century was influenced, especially on the flat, by the change in dominant transport mode from foot, bicycle and tram to the private car. Growth in the latter part of the 20th century was mostly focused on the north-western and north-eastern flanks of the City, while by the early 21st century, housing developments had closed the gap between the outer fringe of the City and Belfast to the north and Halswell to the south-west (Figure 2.2).

Figure 2.2 Urban Expansion of Christchurch, 1896 - 2000



Source: Christchurch City Council

Christchurch's history of detached residences on large sections was partly determined by the availability of significant areas of flat land that were relatively easy to subdivide and service. This pattern of development means the City has had lower densities than other New Zealand cities.

In the early 1970s, plans were made to create a new town at Rolleston that was to be connected to Christchurch by a commuter rail link. Although the plan was scrapped, Rolleston did eventually develop as a large new commuter town later in the 20th century, becoming economically and socially an outlier of the City despite being in the district of Selwyn. Other satellite towns in Selwyn that have been important population centres since the 19th century include Lincoln and Prebbleton, while West Melton has had substantial growth during the first part of the 21st century.

Starting in the 1850s as a sawmill town, Rangiora became the administrative and commercial centre for a large area of farms and orchards in the Waimakariri district, as well as the most significant population centre.

The town has attracted residents who commute to Christchurch for work, with the population more than doubling between the 1970s and the 2000s. The other principal town in Waimakariri is Kaiapoi, situated just north of the City and close to the large Ngai Tahu pa built in the 1700s. Kaiapoi was developed in the 1850s, with a busy port supporting the town from the 1860s and a railway line reaching the town from the 1870s.

2.3 Industry and Commerce

2.3.1 Industrial

In the 19th century, most of Christchurch's industry was located either within the four avenues or the early suburb of Sydenham. Industrial activity was focussed in these areas until about the 1960s. Woolston was also an early focus of industry due to its proximity to the Heathcote River.

Woolston was at the eastern end and Islington at the western end of what became a major industrial corridor in Christchurch based initially on access to the Lyttelton and Main South railway lines. For much of its length, the corridor also had road access from Moorhouse Avenue and Blenheim Road, with the latter transformed from a country lane and stock route to a four lane highway in the 1950s. After the Blenheim Road upgrades, a broad wedge between the road and the railway line was developed for industrial and warehouse uses. This meant that industry remained concentrated in this corridor even after road transport made inroads on rail in the second half of the 20th century.

Much of the development of Christchurch's industry in the second half of the 20th century occurred in areas that had been zoned by planners for industrial activity. This reflected deliberate efforts to confine industry to areas remote from the City's commercial centre and residential areas. In this context, industrial activities moved steadily west from Addington, primarily along the southern side of Blenheim Road between the road and the railway line, through Middleton and Sockburn to Hornby. Hornby has now become a key distribution hub for both Greater Christchurch and the wider South Island.

Other subsidiary industrial zones also became more important in the second half of the 20th century as industry moved out of the central city and became less reliant on rail transport. With the economic recession of the 1970s and 1980s, more flexible approaches to zoning for businesses in the City also started to evolve.

The Izone Business Hub at Rolleston developed rapidly in the 21st century, attracting businesses due to its geographic location at the crossroad of State Highway 1, the Main Trunk Line and Midland Line and its offer of reasonably priced land. The 370ha of developed or zoned land at the park incorporates the Port of Tauranga's Metroport and Port of Lyttelton's Midland Ports, which facilitates freight movements between the Lyttelton and Timaru Ports, and the wider economy across the South Island.

Smaller industrial areas have also been established in Rangiora and Kaiapoi, while industrial, warehouse and logistic uses have increasingly located along the western edge of the City adjacent to State Highway 1 near Christchurch Airport. There is also an industrial area in Bromley that has developed adjacent to Dyers Road, which is now State Highway 74.

2.3.2 Offices

Until well beyond the middle of the 20th century, people from all over Christchurch travelled into the central city to access professional services. However, the practice of professional services exclusively operating in large, central premises began to change towards the end of the 20th century as offices were increasingly opened in key activity centres, suburban shopping areas and industrial zones, reflecting the shift of retail activity away from the central city.

The central city remained largely unchanged between 1914 and 1960, reflecting a period of depression, war and post-war recovery. Beginning in the 1960s through until the stock market crash of 1987, several large, modern high rise office blocks were built, usually on sites that had been occupied by older commercial stock. Zoning and plan provisions came to have an influence on the City's development from the 1950s, although the process of replacing the older commercial stock was mostly driven by economic factors.

The significant rebuilding in the central city through this period was driven by demand for higher quality office space. After the stock market collapse of 1987, the City was over-supplied with office space, so as the tourist industry grew, some office buildings were converted for use as hotels.

In the 1970s, a technology park was established in Russley that was enabled under a planning framework, at the time, encouraging higher technology uses. It has subsequently developed as a cluster of primarily offices, attracting a range of office based companies. This was the first sizeable cluster of office development outside the central city.

A number of factors have led to the dispersal of office activities in Christchurch over the last decade, which have been exacerbated by the earthquakes (see Section 2.5).⁴ This has resulted in the development of standalone office buildings and dispersed office based employment across the City, including in light industrial zones. In the 2000s, commercial employment grew by more than 120% in industrial zones, which was much higher than the overall growth of 40% in the City during the same period.⁵

The formation of office parks at Show Place, Canterbury Technology Park, Airport Business Park and other locations in Christchurch during the last two decades has also led to a greater concentration of office based employment in suburban locations and associated changes in travel patterns.

Smaller office markets have also developed in some satellite towns in Selwyn and Waimakariri, including in Rangiora, Rolleston, Kaiapoi and Lincoln. Lincoln also accommodates Lincoln University and a number of Crown Research Institutes. Businesses occupying office space in these towns primarily include small, local professional services or businesses supporting the wider agricultural industry.

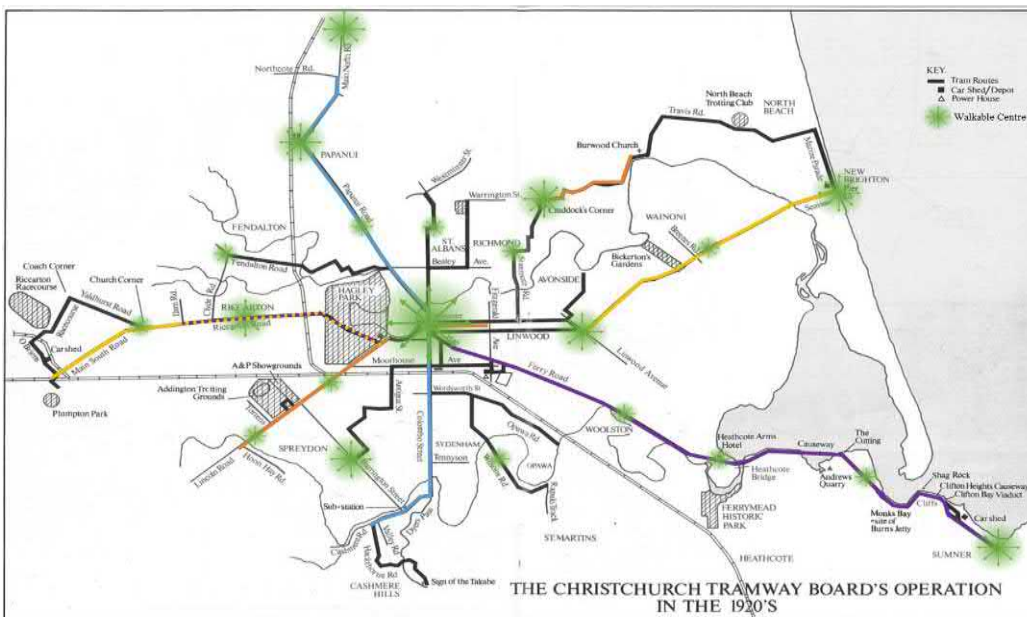
2.3.3 Retail

The earliest shops in Christchurch appeared along High, Cashel and Colombo Streets. This area has remained the heart of central city retailing, enjoying a heyday from about 1900 to 1960, which coincided with a peak reliance on a public transport network that radiated out to the suburbs. Market (later Victoria) Square was the other focus of shopping and trading in early Christchurch.

Starting in the 1960s, retailing shifted substantially into the suburbs with the development of suburban shopping centres. Associated with this was a decline in use of public transport and an increase in use of the private motor car. However, the central city survived as a shopping area with continued custom from people working in the central city, tourists and locals drawn to speciality shops.

As the City expanded at its edges, suburban shopping centres developed, often at important intersections or tram termini (Figure 2.3). Some of the older suburban shopping centres eventually became part of long lines of shops on major roads leading out of the central city, such as along Riccarton and Lincoln Roads.

Figure 2.3 Commercial Centres and Tram Routes in Christchurch, 1920s



Source: Christchurch Transport Strategic Plan / Contextual Historical Overview of Christchurch City

A key event inaugurating the major changes in retailing in Christchurch was the opening of the Hays store at Church Corner in 1960. This, along with the Bishopdale shopping centre, marked the beginning of a change towards significant retail developments that provided off-street car parking, a marked contrast from people

⁴ Factors that have attracted office based companies to industrial zones include proximity to residences for owners or workers, accessibility, car parking and price.

⁵ Property Economics analysis, 2014

taking a tram or bus to a central city store. Construction of the first suburban mall began in 1965 in Riccarton. The pre-eminence of malls and mega shopping centres is now a feature of retail shopping in the City.

From 1999, the City Plan enabled retail activities in commercial and light industrial areas without significant limitations, resulting in the dispersal of retail businesses across the City, including the development of large format retail centres (e.g. Tower Junction).⁶ There was also major expansion of larger suburban centres, including Northlands, Riccarton, The Palms and Eastgate. Associated with these trends was greater use of private motor cars to access shops, particularly large format centres that were less accessible by public transport.

A new planning framework has subsequently been introduced that seeks greater consistency with the overarching growth strategy for the City, and to enable assessment of proposals for large retail development outside the central city and suburban centres, in order to restrict the scale of retail activity in industrial areas.⁷ While reducing the extent of dispersed retail activity across the City, the share of retail employment in the central city continued to decline between 2000 and 2011, and was significantly disrupted by the earthquakes in 2010 and 2011 (Figure 2.4).

Figure 2.4 Retail Employment in Christchurch, 2000 - 2012

Year	Identified Retail Centres	Christchurch CBD	Balance of Christchurch
2000	39%	31%	32%
2001	39%	31%	31%
2002	39%	31%	30%
2003	39%	31%	31%
2004	40%	29%	32%
2005	41%	29%	31%
2006	42%	28%	31%
2007	41%	27%	33%
2008	42%	27%	32%
2009	42%	27%	32%
2010	43%	26%	32%
2011	44%	24%	34%
2012	46%	12%	43%

Source: Proposed Christchurch City District Plan: Commercial and Industrial Chapters Economic Analysis

During the period leading up to the earthquakes in 2010 and 2011, planning initiatives were pursued to help restore the vitality of the central city and make it more attractive to workers, residents and visitors. However, the dispersal of retail activity has continued in the City during the post-earthquake period (see Section 2.5).

The satellite towns in Selwyn and Waimakariri are also served by their own cluster of shops and services. As populations in these towns have increased, the retail offer providing for the local shopping needs of residents has also grown, with the more substantial offering in Rangiora, Rolleston, Kaiapoi and Lincoln reflecting the larger relative sizes of these towns.

⁶ <http://archived.ccc.govt.nz/council/proceedings/2004/july/cnclcover29th/regulatoryconsents/varn86.pdf>

⁷ <http://archived.ccc.govt.nz/council/proceedings/2004/july/cnclcover29th/regulatoryconsents/varn86.pdf>

2.4 Transport

2.4.1 Lyttelton Port, Inland Ports and the Airport

The first transport problem that had to be solved if Christchurch was to thrive was access to Lyttelton Harbour from the City. With the arrival of the settlers, a track was developed over the hills behind Lyttelton to Heathcote. However, most settlers chose to send their heavy baggage to Christchurch via sea in boats small enough to cross the Sumner bar and navigate the shallow estuary and rivers.

The practice of bringing goods from Lyttelton to the Heathcote River by boat contributed to the construction of Christchurch's first public steam railway line. This line from Ferrymead to the central city was opened in 1863, but became redundant once the Lyttelton rail tunnel was opened in 1867, eliminating the need to use small vessels to and from Lyttelton. A road tunnel linking Lyttelton to the City was also opened in 1964.

The small area of flat land in Lyttelton has restricted the scale of the port. This has contributed to the development of an inland port in Woolston, enabling expanded container services and reducing congestion at the port, while facilitating the movement of freight by containers via road and railway line. As stated earlier, the establishment of two inland ports at Rolleston, serving the Lyttelton and Timaru Ports, provides for future growth in the movement of freight.

In 1940, the municipal airport at Harewood in the City's north-west was officially opened. By 1950, it was the first international airport in New Zealand. Industrial, warehousing and logistic activities have been developed near Christchurch Airport in recent years. However, the extent of the airport noise contour, which covers a large area of land to the north-west of the City (see Section 2.6), and its associated restrictions has limited urban growth in this part of the City.

2.4.2 Rail and Roads

The building of railway lines to Ferrymead and Lyttelton was followed by lines to the south, west and north of the City. These lines linked Christchurch to its expanding farming hinterland and provided long distance links to other parts of New Zealand. Commuter trains ran to Lyttelton, Burnham and Rangiora until the 1970s.

The line south and the line to Lyttelton formed a continuous route that ran east-west across the southern side of the central city. This corridor influenced the development of the City. As the rail network expanded, a growing population settled close to the central city station on the line to and from Sydenham, while industrial developments occurred in Addington, Woolston and on Moorhouse Avenue, where sidings were provided.

The building of the new railway station at Addington in 1993 and the transfer of rail passenger services away from the central city station reflected the changing status of rail travel in the City. The closure of the central city station and Addington workshops, and the consolidation of marshalling yards at Middleton, combined with the closure of the Addington saleyards, opened the way for zoning changes on large areas of ex-railway land along the rail corridor for new business and residential development.

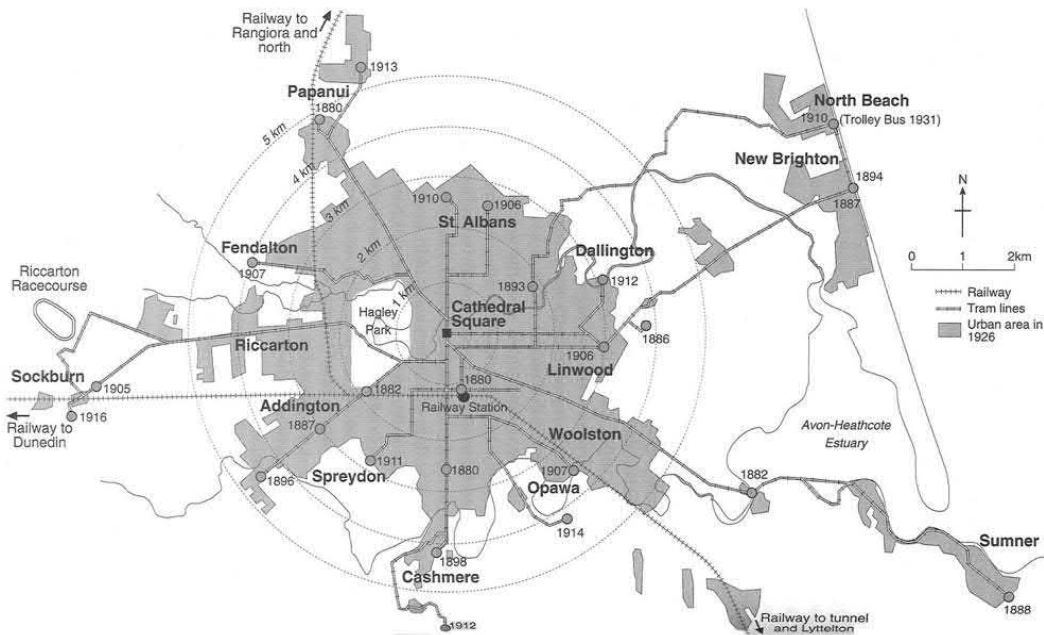
As with the railway lines, main roads leading north, west and south connected Christchurch to its agricultural hinterland. However, until the mid-20th century, these roads were less important than the railway lines. The main roads south and west diverged at Upper Riccarton, while subsidiary routes linking Selwyn and Banks Peninsula to the City went down Springs, Lincoln and Halswell Roads. The main road north led out to Papanui where again two roads diverged. Harewood Road was a key route north but ceased being a main road when the Waimakariri River was bridged between Belfast and Kaiapoi. The bridge ensured the other road that diverged at Papanui would become the 'Main North Road'.

A motorway was built north of Belfast in the late 1960s, while congestion along Riccarton Road prompted the transformation of Blenheim Road from a country lane to a four lane highway in the 1950s. Over subsequent years, plan changes that permitted 'big box' retail along Blenheim Road degraded the strategic function of the corridor, which in turn led to the development of the Southern Motorway Extension. This development is part of the Christchurch Motorways Project initiated by the New Zealand Transport Agency (NZTA) to help alleviate pressure on state highway routes north and south of the City, and provide better links between Christchurch, Selwyn and Waimakariri.

2.4.3 Trams, Buses, Bicycles and Cars

The first transport revolution in Christchurch came with construction of the tramways in the 1880s. In 1880 itself, the first tram line opened between Cathedral Square and the railway station. By the end of the year, the tram line ran between Sydenham and Papanui. By the end of the 19th century, the tramway system extended to other parts of the City, including Addington, Woolston, Sumner and New Brighton (Figure 2.5).

Figure 2.5 Railway and Tram Lines in Christchurch, 1926



Source: Contextual Historical Overview of Christchurch City

After electric trams were introduced in 1905, the City's tramway system grew significantly. This made travel over longer distances more affordable and allowed people to reside further from their workplace, spurring the peripheral residential growth of the City. Shopping centres developed at some tram termini, but because tram lines radiated out from Cathedral Square, they also had a centripetal effect. The period that trams were a pivotal part of the transport system coincided with the period the central city attracted its largest numbers of people from the suburbs to work, shop or seek entertainment.

By 1914, the tramway system had reached its maximum extent. Trams now also ran to Riccarton, St Albans Park, Cranford Street, Spreydon, Fendalton, St Martins, Opawa, Northcote, Dallington and Cashmere Hills. The system was the largest in New Zealand, although because the City was so dispersed, the patronage of the tram system was lower per route kilometre than other New Zealand tram systems.

By the end of World War II, the tram system was badly run down and facing competition from the private car, and was eventually replaced by buses. Buses had started to be used on some routes in the 1920s, with the last tram run in 1954. The buses generally followed the same routes as the trams, although the routes to the north, west and south-west were steadily extended further out as the City expanded at its edges.

All bus routes continued to run through the central city until 1999 when the Orbiter service was inaugurated so that those using public transport no longer had to travel into the central city and out again to move around the circumference of the City. This allowed people to better access activity centres across the City. However, even with this service, the public transport network was overwhelmingly radial, which no longer reflected the patterns of movement and living of most Christchurch residents.

The bicycle also has a special place in Christchurch's transport history. The first velocipedes appeared in the late 1860s and the first safety bicycles in the 1880s. Christchurch gained a reputation, for a time, of having more bicycles per head of population than any other City in the world, except for perhaps Copenhagen. The popularity of cycling stemmed from the fact that the City is predominately flat. However, cycle use also went into steep decline with the increasing uptake of the private motor car.

The motor car first appeared in Christchurch in 1898. Car numbers grew steadily but remained relatively low until after World War II, then expanded dramatically in the 1950s and 1960s. Making provisions for people to journey by car became a key consideration for town planners from the 1950s. The rising use of private cars also unshackled the need for developments to be at least fairly close to a tram line or bus route.

The use of private cars has now become a defining feature of Christchurch, providing people with flexibility when travelling across the City. This preference of transport mode has contributed to the trend of suburban growth in both the City and the surrounding satellite towns in Selwyn and Waimakariri.

2.5 Effects of the Earthquakes

A series of earthquakes struck Greater Christchurch in 2010 and 2011 that caused substantial damage to land, buildings and infrastructure. The impact of the earthquakes was felt in the availability of housing and business space, as well as the functionality of the transport system.

The earthquakes caused some form of damage to most of the housing stock in Greater Christchurch with an estimated 167,500 homes receiving damage, of which about 24,000 had extensive damage.⁸ Between 10,000 and 15,000 homes in Christchurch City alone became uninhabitable.⁹ The residential red zone in the east of the City, the Port Hills, and the Kaiapoi area in the south of Waimakariri, accounted for most of the uninhabitable residences in the sub-region.

The disruption to residential areas changed the population distribution in Greater Christchurch, with a large migration of people from the damaged central and eastern areas of Christchurch City to the west and south-west of the City, and the surrounding districts. Between 2010 and 2012, the City's population fell by over 21,000, or 6% of its population, as people moved to areas in Selwyn and Waimakariri or beyond the Greater Christchurch area altogether. The migration of people from the City has contributed to higher growth in the districts during the post-earthquake period (Table 2.1).

Table 2.1 Population Change by Territorial Authority, 2010 - 2016

	2010	2012	2016	Population Change (2010 - 2012)		Population Change (2010 - 2016)	
				Total	Percentage	Total	Percentage
Christchurch City	376,300	355,100	375,000	- 21,200	- 6%	- 1,300	- 0 %
Selwyn	41,000	44,400	56,200	+ 3,400	+ 8%	+ 15,200	+ 37%
Waimakariri	47,600	50,500	57,800	+ 2,900	+ 6%	+ 10,200	+ 21%

Source: Stats NZ, Sub-National Population Estimates

The parts of Greater Christchurch that had the most significant population losses after the earthquakes included the area units of Dallington, Burwood, Avondale and Bexley in the City's north-east, which each lost more than 1,700 residents between 2010 and 2016 (Figure 2.6). Kaiapoi East and Courtenay in Waimakariri, and Burwood and Dallington in the City, each lost over half of their population bases during this period.

The parts of Greater Christchurch that had the most significant population gains after the earthquakes included area units in and around the satellite towns in Selwyn and Waimakariri, including in Rolleston, West Melton, Lincoln, Pegasus, Rangiora and Kaiapoi. Wigram and Aidanfield in the City's south-west also had large population growth during this post-earthquake period (Figure 2.6). Much of the residential development occurred on land that had been planned, and in most cases rezoned, for greenfield development.

The earthquakes also damaged business premises and land in Greater Christchurch, especially in the central and eastern parts of Christchurch City. Many businesses were forced to relocate, which affected the movement of people and goods across the sub-region. This was most noticeable in the central city, which was partly cordoned off for a time after the earthquakes for the health and safety of residents and workers.

Many central city businesses moved to the City's suburbs, including to industrial zones in these areas, which heightened concerns relating to conflicting expectations around amenity levels and exacerbated the trend of dispersed office and retail activity over the preceding decade. The relocation of businesses was made easier due to the availability of vacant land and facilitated by changes to legislation after the earthquakes permitting, albeit on a temporary basis, commercial activities in residential premises.

The employment base in the central city fell by about 20,000 between 2010 and 2016 (Figure 2.6). However, businesses have started to return to the central city, reflecting the area's rejuvenation and the availability of new, higher grade commercial premises. The first to move back into the central city have predominately been central and local government agencies, professional services, and businesses in retail and hospitality.

By October 2017, about 202,000sq.m of new office floorspace had been developed in the central city since 2011, of which about 83% had been leased. This significant new development has helped the central city's office stock in 2017 recover to about 70% of its pre-earthquake level. Other developments projected to be completed in 2018 will increase the central city's office stock to about 80% of its pre-earthquake level.¹⁰

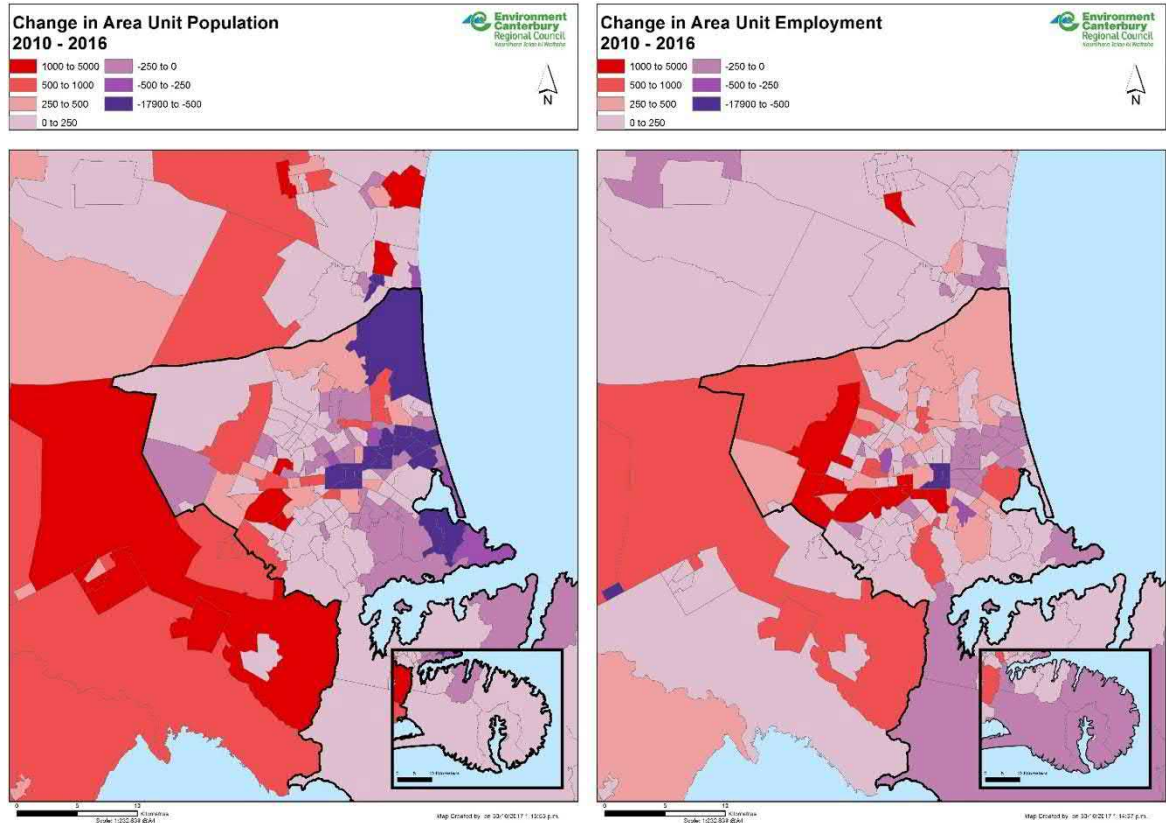
⁸ CERA, Canterbury Wellbeing Index, June 2015

⁹ Independent Hearings Panel, Decision 1 Strategic Directions and Strategic Outcomes, 2015

¹⁰ Independent Hearings Panel, 2015, Decision 1 Strategic Directions and Strategic Outcomes

The area units that had the largest employment gains between 2010 and 2016 included Middleton, Riccarton and Riccarton South, Wigram, Islington and Addington in the south-west of the City, and Yaldhurst in the west of the City around Christchurch Airport. Each of these area units gained more than 2,000 employees over this period, with Middleton gaining almost 5,000 employees. Some employment growth has also occurred in parts of Selwyn and Waimakariri since the earthquakes, but not to the same degree as in the City (Figure 2.6).

Figure 2.6 Population and Employment Change in Greater Christchurch, 2010 - 2016



Source: Stats NZ, Sub-National Population Estimates and Business Demography Statistics

The changes to the spatial distribution of land use activities across Greater Christchurch, coupled with the damage to roads and other infrastructure from the earthquakes, have had a major impact on transport across the sub-region. This includes altered travel patterns resulting in greater traffic volumes from the surrounding districts to the City, which has contributed to more congestion and delays on the road network, particularly on routes connecting satellite towns to the north, south and west of the City.

The public transport system has also seen a decline in the number of people using buses, with patronage in Greater Christchurch falling by around 35% after the earthquakes. Although bus patronage has risen since the post-earthquake low in 2011/12, the number of people using buses has plateaued over recent years and remains about 20% below pre-earthquake levels. It should be noted that some routes perform substantially better than others in the sub-region, with some routes constrained by a lack of capacity to meet higher demand.

2.6 Constraints on Urban Expansion

At present, there is 17,000ha of rural zoned land (i.e. non-urban land) within the Christchurch district boundary, which excludes Banks Peninsula as most of the peninsula is not within the Greater Christchurch area. While this quantum of land may seem substantive in terms of the potential opportunities for further expansion of Christchurch’s urban area, large tracts of this land is constrained by a range of environmental, planning and physical factors. This includes high flood hazard areas, residential development restrictions in the airport noise contour, business and residential restrictions in the aquifer protection zone (Figure 2.7), operational and un-remediated quarry sites, and areas of high landscape value (e.g. the Port Hills).

Figure 2.7 Limits on Urban Development in Greater Christchurch



Source: Greater Christchurch Urban Development Strategy

The availability of flat, rural land that is conducive to residential and business development characterises much of the land that surrounds the satellite towns in the surrounding districts, including Rolleston, Lincoln, West Melton and Prebbleton in Selwyn, and Rangiora, Kaiapoi and Pegasus in Waimakariri. Fewer environmental, planning and physical constraints on this land has supported major growth at these satellite towns in recent periods, and especially after the earthquakes when readily available land for development was required to help meet the demand from residents and businesses displaced from other parts of the Greater Christchurch area.

In this context, some environmental and planning factors do limit urban development around these towns. The main limits to unconstrained development around the satellite towns in Selwyn and Waimakariri include the need to protect versatile soils that support primary production, and to manage intensification of the rural environment that may undermine landscape values and create amenity and reverse sensitivity conflicts with legitimately established activities (e.g. airport noise contour, quarrying, agricultural research farms, strategic infrastructure and government facilities).

There are also pressures on water resources in the districts, including its availability to service expanding urban areas and support intensive farming operations, and the impacts these activities are having on surface and ground water quality. Consideration also needs to be given to recognising, protecting and enhancing the ancestral lands, water resources, wāhi tapu and wāhi taonga of Te Rūnunga o Ngāi Tahu across the Greater Christchurch area.

3. Interactions between Housing and Business Land Uses

This section describes the spatial interactions between housing and business land use activities in Greater Christchurch, coupled with the transport network, to understand the potential for complementary land uses that support a well-integrated and accessible urban environment.

3.1 Drivers of Locational Preferences

The drivers of locational preferences differ for different housing and business land use activities. Developing a better understanding of the preferences for different types of households and businesses can be useful when devising planning responses as it might identify opportunities to provide capacity for different activities.

Households

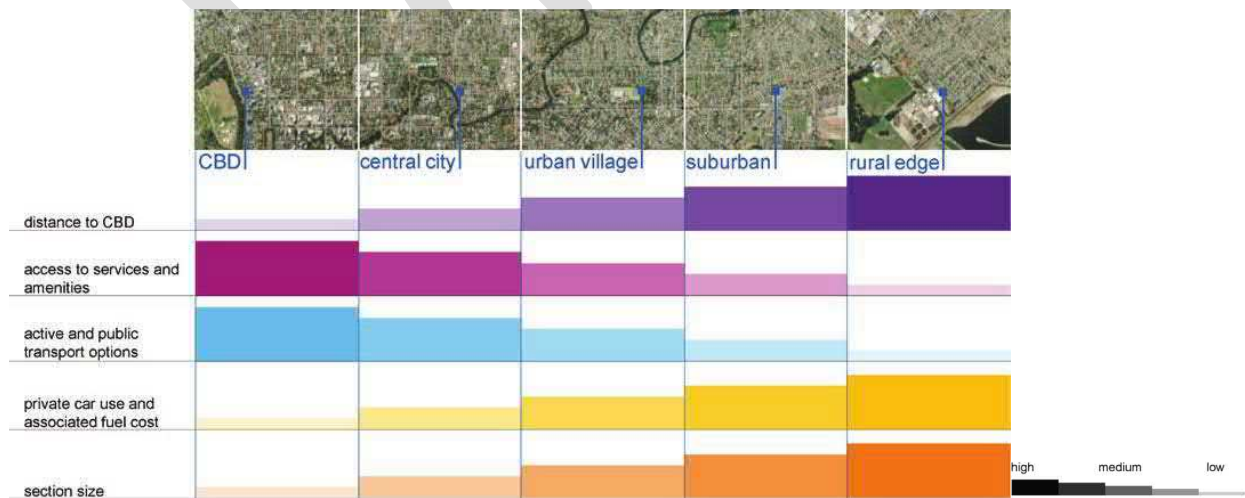
The Exploring New Housing Choices for Changing Lifestyles document was prepared by CCC to look at new housing solutions in response to the changing lifestyles and urban growth challenges of the 21st century.¹¹ This document recognises that people’s housing needs are diverse and varied, and reflect their individual circumstances. Generally, people move into homes that suit their lifestyle, meaning a ‘one size fits all’ approach to housing is not appropriate for the sub-region.

As described in Section 2, Greater Christchurch has a diverse tradition of housing with varying types of homes built in different historic periods. Early developments featured houses that vary in size between large estate homes and small cottages in ‘worker’ or ‘affluent’ suburbs. As well as private homes, both central and local government have also developed housing in the sub-region that ranges from houses to flats.

In more recent years, apartments and townhouses have been increasingly built near the central city, but for many people, a detached house on a large section with private, open space remains representative of housing in Greater Christchurch. This model will continue to be an important part of meeting future housing need, but it is important to note that while these properties are particularly suited to the needs and lifestyles of many people, they may not suit, or be affordable, for everyone.

The varying housing locations in Greater Christchurch from the satellite towns to the rural edge to the central city offer different levels of access to amenities and services. Although living near shops, schools, parks and workplaces is generally something people desire, this often requires a trade-off with other factors, such as the affordability and size of homes. Houses and lifestyle bocks at or beyond the urban fringe of the City, and in the towns in Selwyn and Waimakariri, provide more private space but may not have convenient access to as many services and community facilities (Figure 3.1). The degree to which people are willing to trade-off between these factors will reflect individual preferences and circumstances, including the importance residents place on having good access to different types of services and amenities.

Figure 3.1 Trade-Offs for Different Residential Locations in Greater Christchurch



Source: Exploring New Housing Choices for Changing Lifestyles

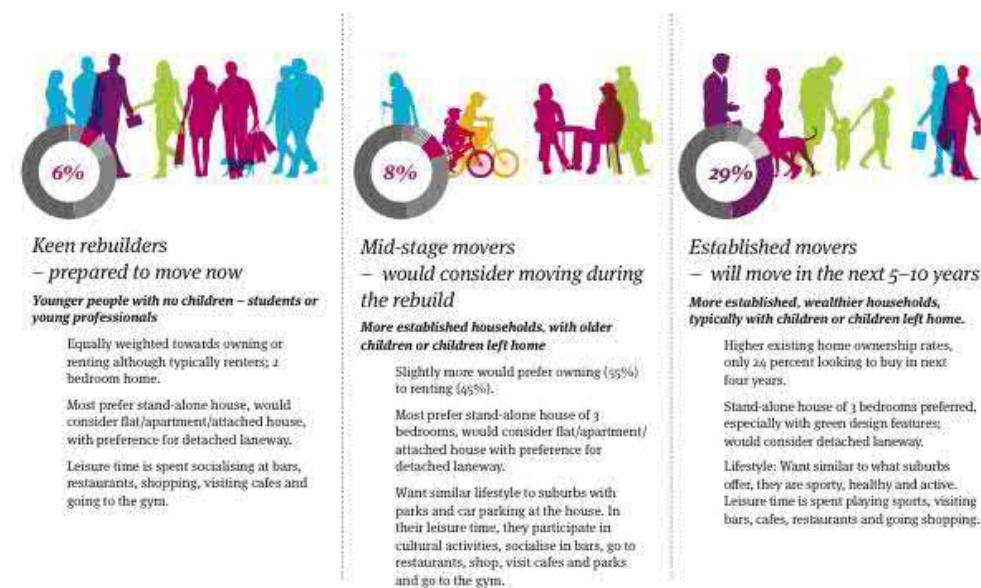
¹¹ This document is not based on survey findings but provides general commentary on the diverse housing needs of people.

In this context, the national problem of housing affordability has also become more pronounced in the Greater Christchurch area over recent years, which substantially restricts the housing choices people can make regardless of their preferences. It is therefore essential that good quality housing is provided for not only all stages and ages of life, but also for households that fall into different socio-economic groups in the sub-region. For many people in the sub-region, the core driver of where they choose to live relates to the affordability of different residential areas.

Alongside the Exploring New Housing Choices for Changing Lifestyles document, other research has been undertaken to consider housing preferences in Greater Christchurch, with the focus of the research on who might want to live in the central city and their particular housing preferences.¹²

Research conducted by IPSOS and CCC indicated about half of those surveyed would consider moving into the central city at some stage, with the majority of these survey respondents only likely to consider moving into the central city once it has been rebuilt. Younger people with no children and more established households with older children or children that have left home were more likely to consider moving into the central city during the rebuild period (Figure 3.2).

Figure 3.2 People Who are More Likely to Consider Moving into the Central City



Source: Developing the Central City as a Place to Live

Respondents of this survey showed a clear preference for central city living that provided neighbourhoods that had a sense of community now and in the future, that are pet friendly, safe and secure, and close to amenities, as well as providing a wide range of good quality housing options. The survey also highlighted that poorly managed developments, and having to sacrifice security and safety for the vitality and fun of central city living, would deter people from moving into the central city.

For survey respondents who indicated they are unlikely to ever consider living in the central city, the key reasons given for wanting to stay in the suburbs included the desirability of large, open spaces that allowed outdoor living and play areas, the peace and quiet of the suburbs and outskirts of the City, and the fact that suburban locations provided them with access to the amenities that satisfied their lifestyle needs.

Although previous research provides some insights into the drivers of housing preferences in Greater Christchurch, in particular for central city living, further research would support a better understanding of the core drivers across the sub-region. This would help ensure planning responses considered as part of the Future Development Strategy met the needs of all people and households. In addition, it will be important to consider the information from the 2018 Census to identify the key trends for the Greater Christchurch area since the last census in 2013.

It is also important to note that the housing preferences that currently characterise the Greater Christchurch area may not be the preferences that characterise the future population of the sub-region. It is therefore important that changing preferences in the sub-region are suitably considered as part of any future planning responses.

¹² Central city living research includes Testing Successful Central City Living in Christchurch (2013) prepared by Opus International Consultants and Developing the Central City as a Place to Live (2013) prepared by IPSOS and Christchurch City Council.

Businesses

In the absence of an evidence base on the drivers of locational preferences for business activities in Greater Christchurch, the criteria adopted in the business capacity assessment to consider the feasibility of areas for industrial and commercial development can be used to provide some insight into business preferences.

The criteria used for the feasibility assessment was determined through consultation with a focus group that comprised Property Council members, developers and real estate experts for the Greater Christchurch area. The focus group identified the relative importance they placed on each factor influencing the feasibility of industrial and commercial developments in the sub-region (Table 3.1)

Table 3.1 Factors Important to the Feasibility of Business Developments in Greater Christchurch

	Necessary	Very Important	Somewhat Important
Industrial	<ul style="list-style-type: none"> Transport accessibility 	<ul style="list-style-type: none"> Planning constraints Natural hazard constraints Land assembly 	<ul style="list-style-type: none"> Land remediation Private infrastructure requirements
Commercial (Retail / Office)	<ul style="list-style-type: none"> Proximity to residential areas and local population Planning constraints 	<ul style="list-style-type: none"> Visibility Transport accessibility Natural hazard constraints Land assembly 	<ul style="list-style-type: none"> Land remediation Private infrastructure requirements

Source: Greater Christchurch Partnership, Business Capacity Assessment

In terms of industrial activities, the feedback from the focus group was that access to the transport network was a necessary factor influencing the commercial feasibility of an area for industrial development. This includes access to the strategic road network, rail network, airport and ports. A location with minimal risk of reverse sensitivity issues and natural hazard constraints were also considered very important factors for industrial activities in Greater Christchurch.

In terms of commercial activities, a location that has good proximity to residential areas and a critical mass of people is considered a necessary factor for the feasibility of an area for retail and office developments. This relates to the need for these activities to have a nearby workforce and customer base to sustain business. The visibility and amenity of an area, as well as car parking availability and public transport links, were also considered very important factors for commercial activities. As with industrial activities, the risk from natural hazards was seen as a very important factor influencing the relative feasibility of areas in Greater Christchurch for commercial uses.

The importance of agglomeration and clustering of similar or related business activities is also a core driver of where businesses choose to locate in Greater Christchurch, whether it be for industrial or commercial activities. This is reflected in the primacy of certain industrial zones, office locations and key activity centres in the sub-region.

Further information on the process and results of the assessment of feasibility for industrial and commercial developments in Greater Christchurch is included in the business capacity assessment. Further research into the drivers of business preferences in Greater Christchurch would help ensure planning responses best meet the requirements of businesses across the sub-region as part of the Future Development Strategy.

3.2 Location of Development Capacity

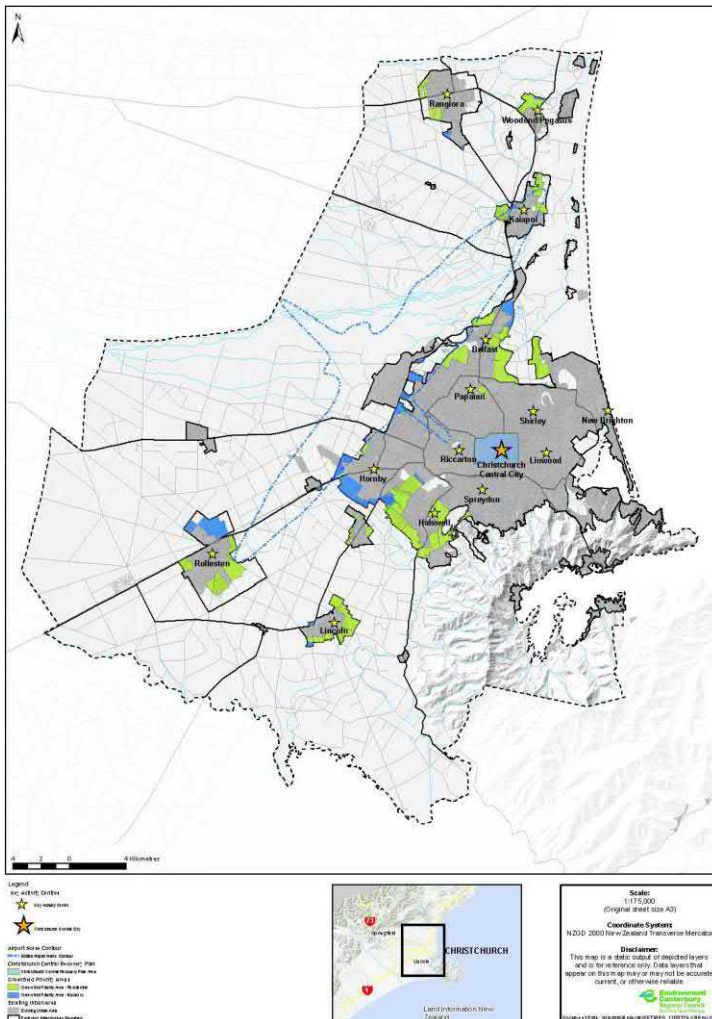
Map A of the Canterbury Regional Policy Statement 2013 (Revised 2017) (CRPS) shows the existing urban areas and priority areas for housing and business development in Greater Christchurch. These areas were identified as required to provide sufficient land zoned for urban purposes to enable recovery and rebuilding through to 2028. The key activity centres in the existing urban area are also indicated on Map A, which provide a focus for commercial activities and residential intensification (Figure 3.3).

The greenfield priority areas are generally clustered to the north, west and south-west of the existing urban areas. These areas are situated close to existing infrastructure corridors that connect to the growth areas in the City's north and Waimakariri district, and to the City's south and on to Selwyn district. The growth areas were included in the CRPS as they have the best potential to support residential and business growth while achieving a consolidated urban form, and an efficient and orderly provision of infrastructure.

In this context, the CRPS indicates that commercial developments should be focused on reinforcing the central city and key activity centres across the sub-region, as well as the network of neighbourhood centres, while the provision of new business land should be focused around existing infrastructure to minimise public

costs and achieve integration with the transport network. Locating business land close to existing and future residential development supports a broader range of travel options and reduces energy usage. Greater self-sufficiency of employment in districts, suburbs and settlements is also crucial for community development and social sustainability.

Figure 3.3 Greenfield Priority Areas in Greater Christchurch



Source: Canterbury Regional Policy Statement

Accommodating the demand for households in Greater Christchurch is achieved in two ways: greenfield expansion into priority areas and intensification in existing urban areas. To support a sustainable urban form, the CRPS indicates that residential intensification should be located around the central city, key activity centres and neighbourhood centres, consistent with their scale and function, and public transport routes. The CRPS also identifies mixed-use areas and brownfield sites as important opportunities for residential intensification in the sub-region.

In order to effectively use the greenfield priority areas to accommodate residential developments, the CRPS indicates that minimum densities should be achieved. This will help create a compact urban form that supports existing activity centres and can be served efficiently by infrastructure, including public transport. The greenfield areas should also contribute to increased housing supply and choice in Greater Christchurch, including providing affordable options, and support recovery and growth in the sub-region.

Overall, the capacity for housing and business development in Greater Christchurch has been identified based on providing sufficient land to support the future growth needs of the sub-region, while contributing to an urban form that achieves consolidation and intensification of existing urban areas, and avoids unplanned expansion into the surrounding rural areas.

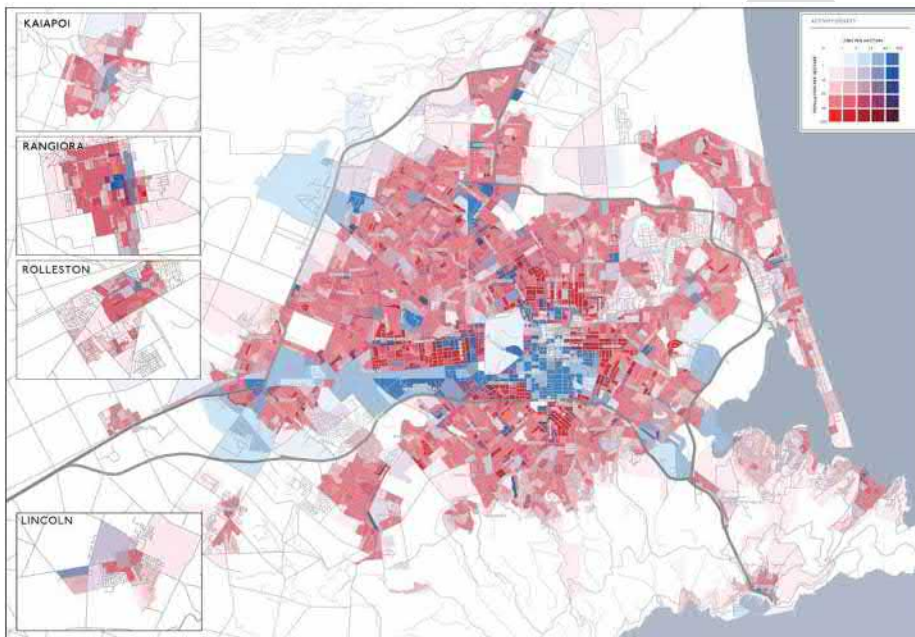
3.3 Positive Spatial Interactions

3.3.1 Urban Form and Accessibility

The evolution of the Greater Christchurch area (see Section 2) has resulted in the spatial distribution of housing and business land use activities that characterise the sub-region today. Greater Christchurch is, for the most part, a medium density urban area, with most residential areas supporting between 20 and 40 people per hectare. However, there are some higher density areas in the sub-region, including in Addington and Riccarton in the west of the City (Figure 3.4).¹³

Employment in the sub-region is mainly concentrated in and around the central city, along Blenheim Road to the west and in satellite business areas located on the strategic road network (Figure 3.4). As described in Section 2.5, the central city experienced substantial disruption as a result of the earthquakes and is only now starting to recover as the rebuild progresses.

Figure 3.4 Population and Employment Densities in Greater Christchurch, 2013



Source: Christchurch Transit Alternatives Report

There are few significant mixed-use areas in Greater Christchurch that have a dense combination of both residential population and employment. Christchurch City is fairly unique as it currently has a low central city population relative to other New Zealand cities due to the earthquakes. These current land use patterns mean that trips originate from a range of locations and terminate at a range of destinations across the sub-region, although the central city remains a key destination. In this context, Greater Christchurch has the highest rate of car ownership and usage compared to other New Zealand cities, with the relatively low public transport usage in part reflecting the settlement pattern in the sub-region.¹⁴

The CRPS recognises that land use patterns that are integrated with transport infrastructure minimise energy use through network optimisation, and provide for the social and economic wellbeing of the community, and people's health and safety. Land use patterns that are integrated with transport support shorter journey times for all modes and enables greater travel mode choice. This includes integrating housing and business areas with current or planned public and active transport routes to support these travel options in the sub-region.

In this context, access to jobs in Greater Christchurch is highest in the central and western areas of Christchurch City, which reflects the concentration of jobs in this part of the sub-region (Figure 3.5). Access to this concentration of jobs has contributed to population growth in the western parts of the sub-region over time. In addition, the level of access to key activity centres in the City is also fairly high for much of the City (Figure 3.5), which suggests that the services and facilities provided in these activity centres are reasonably accessible to a significant share of the City's population.

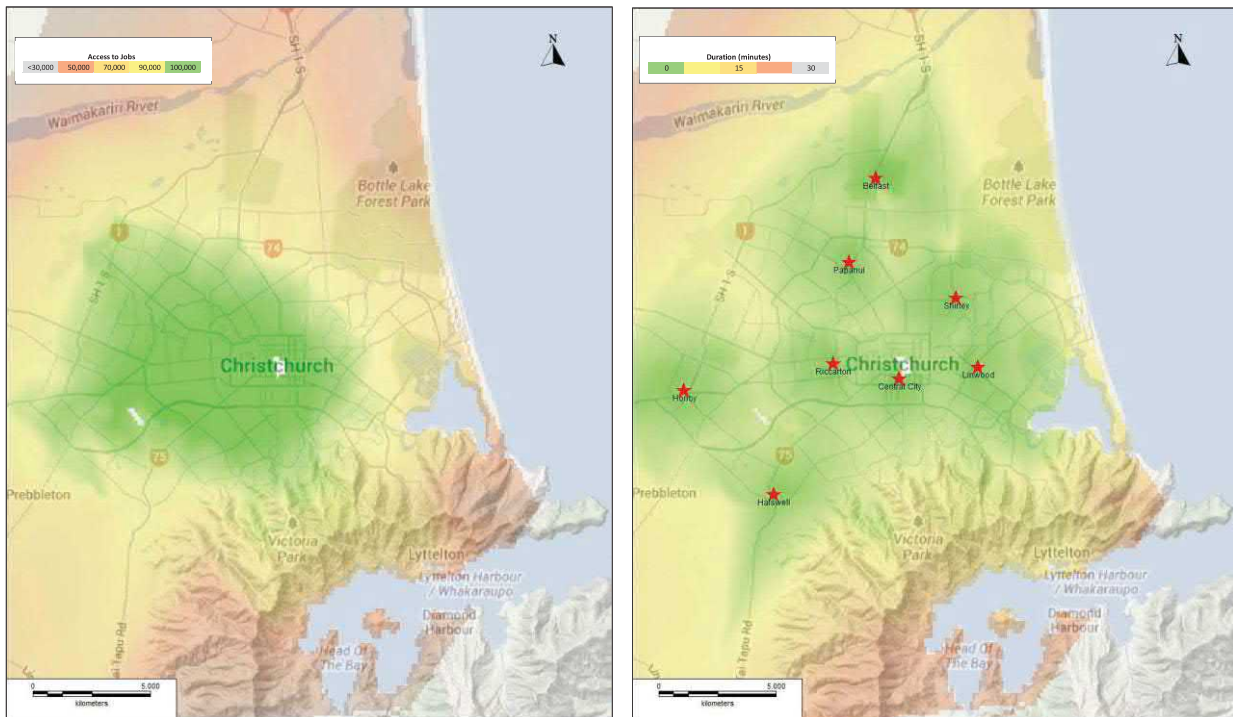
¹³ Draft Strategic Case for the Future of Public Transport in Christchurch, February 2017

¹⁴ Draft Strategic Case for the Future of Public Transport in Christchurch, February 2017

Similar levels of access to activity centres will be evident for the satellite towns in Selwyn and Waimakariri, which are each served by a grouping of shops and services that are consistent with the scale of the resident population. Although access to jobs in the districts will be lower than in the City, an increasing employment base in some of these towns, such as Rolleston and Rangiora, will increasingly provide job opportunities to local working residents.

It should be noted that these accessibility measures are based on people that travel by private car in Greater Christchurch, which is currently the dominant mode of transport in the sub-region. The level of access to jobs and activity centres will be lower for people that travel by public transport, cycling and walking. Improving accessibility for public and active transport should continue to be a key consideration when developing future planning responses in the sub-region, in order to support increased modal choice for all people and communities.

Figure 3.5 Access to Jobs and Key Activity Centres by Private Motor Car in the AM Peak, 2016



Source: Integrated Transport Assessment Guidelines

3.3.2 Activity Centres

To achieve a well-integrated and functioning urban environment, the Greater Christchurch Urban Development Strategy (UDS) identifies the importance of activity centres as focal points for services, employment and social interactions, and where people shop, work, meet, relax and often live. The central city is the main activity centre in Greater Christchurch, followed by Riccarton, Papanui-Northlands, Shirley-The Palms and Linwood-Eastgate. The various district activity centres and town centres includes Rangiora, Rolleston, Lincoln and Kaiapoi, as well as Barrington and Hornby in the City’s suburbs (Figure 3.6).

The CRPS gives effect to the UDS in recognising the importance of maintaining the existing network of activity centres in Greater Christchurch, including the central city, as focal points for commercial, community and service activity in the sub-region. This reflects the investments that have been made in these places and their preference as a location for future commercial development. By virtue of their density, mix of activities and location along strategic transport networks, activity centres also support provision of public transport and residential intensification. The CRPS indicates that inappropriate development outside of these centres may undermine the investments made in the centres, and weaken the range and viability of the services they provide to communities.

It is important to note that activity centres in the sub-region are not homogeneous, with the extent that business and residential intensification should be directed to occur in these centres dependent on their scale and function. The role of neighbourhood centres is also recognised in terms of the opportunities they provide to local communities, and as a location for appropriate business development.

Figure 3.6 Activity Centres in Greater Christchurch



Source: Greater Christchurch Urban Development Strategy

In this context, several activity centres located strategically along arterial roads in Christchurch City have been selected as consolidation focal points in the UDS, identifying them as areas where intensification could be achieved over the period to 2041.¹⁵ These activity centres are well served by the public transport network and are surrounded by higher density residential areas, making them fitting locations for concentrations of public and private services.

Overall, the role of activity centres in Greater Christchurch is to create positive spatial interactions between housing and business activities, and the transport network, by supporting a mix of land uses in a quality built environment that provides access for all modes of travel (Figure 3.7). This close proximity of housing and business activities support two-way interactions, whereby a higher population density around activity centres support the commercial and community services in the centre, while these commercial and community services support the resident population and make it an appropriate place to live.

Figure 3.7 Prosperous Activity Centres in Greater Christchurch



Source: Greater Christchurch Urban Development Strategy

¹⁵ Consolidation focal points selected in the UDS include the activity centres of Riccarton, Papanui-Northlands and Linwood-Eastgate, and the district activity centres of Halswell, Barrington and Hornby.

The UDS also identifies several growth issues for activity centres in Greater Christchurch, which could be considered as part of preparing the Future Development Strategy, that includes:

- maintaining and promoting self-sufficient activity centres;
- providing certainty for existing activity centres to ensure sustainable investment and growth;
- locating public and private services and facilities in activity centres;
- ensuring activity centres enhance community character and identity;
- providing effective multi-modal transport access to key activity centres;
- designing and developing activity centres in a way that contributes to surrounding environments; and
- supporting higher density housing around key activity centres.

3.4 Negative Spatial Interactions

3.4.1 Disadvantaged Communities

The New Zealand Index of Multiple Deprivation 2013 (IMD) is a set of tools developed by the University of Auckland for identifying concentrations of deprivation in New Zealand. It measures deprivation at a local level using routinely collected data from government departments and the census, and using methods comparable to international deprivation indices.

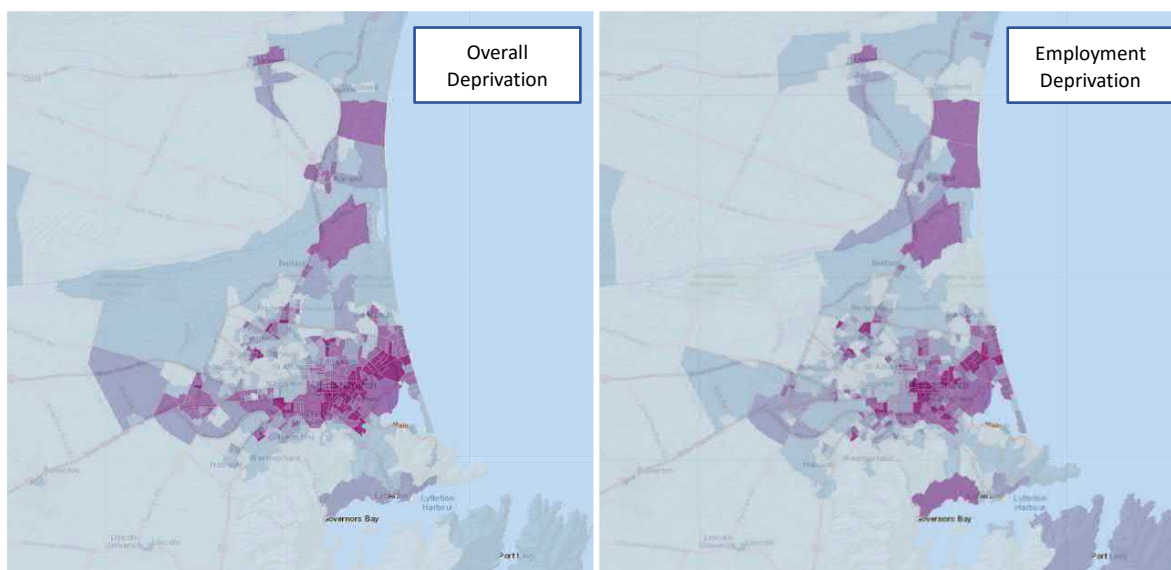
The IMD is comprised of indicators grouped into seven domains of deprivation: employment, income, crime, housing, health, education and access to services. These seven domains can be used, either individually or in combination, to explore the geography of deprivation, and its association with socio-economic outcomes. The domains of deprivation that are of interest for the purposes of this analysis includes employment, education and access to services.

An overview of the indicators used under each of the seven domains of deprivation is set out in Appendix A.2, as well as the weight given to each domain to create an overall IMD score for each local area.

In overall terms (i.e. a synthesis of the seven domains of deprivation), the IMD indicates that parts of Greater Christchurch are ranked in the top 20% most deprived local areas in New Zealand. These deprived areas of the sub-region are mostly in the eastern suburbs of Christchurch City. Some parts of the sub-region are also ranked in the top 5% most deprived in the country, with these highly deprived areas found in Aranui, Avonside and Phillipstown in the east of the City, and Hillmorton in the south-west (Figure 3.8).

The more deprived areas of Greater Christchurch in overall terms also display higher deprivation in terms of employment accessibility and participation. Although the extent of employment deprivation in the sub-region is less significant than the overall levels of deprivation, parts of Christchurch City are still ranked in the top 5% most deprived in New Zealand for employment deprivation, with these deprived areas found in the eastern suburbs of Phillipstown, Aranui and Linwood (Figure 3.8).

Figure 3.8 Overall and Employment Deprivations in Greater Christchurch, 2013



Source: University of Auckland, New Zealand Index of Multiple Deprivation 2013

The higher levels of employment deprivation in the eastern parts of Christchurch City largely mirrors the spatial distribution of jobs in the sub-region, with the greatest concentration of jobs in the central and western areas of the City (Figure 3.5). Barriers to people in the City's eastern suburbs accessing jobs in other parts of the sub-region will have affected the socio-economic opportunities of these communities.

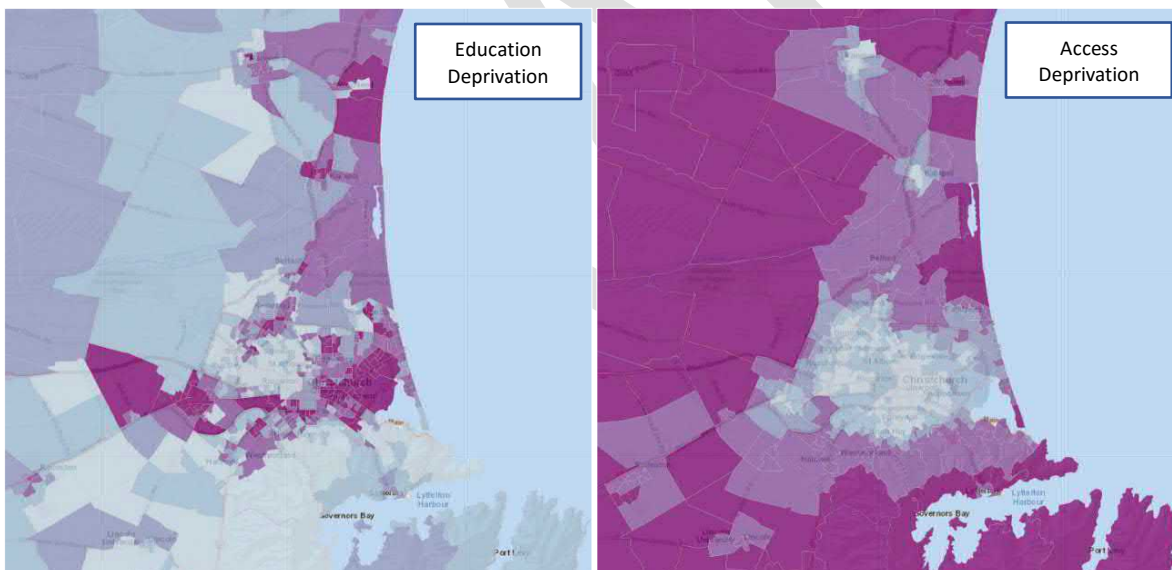
In contrast, the extent of education deprivation in Greater Christchurch is greater than the overall deprivation levels. The highest concentration of education deprivation is found in the eastern and central parts of Christchurch City, while fairly significant education deprivation is also evident in other parts of the sub-region, especially in the City's south-west and in parts of Waimakariri district. In this context, a number of areas in the City are ranked in the top 5% most deprived in the country for education deprivation (Figure 3.9).

The more deprived areas in Greater Christchurch under the access domain are those rural locations where people need to travel longer distances to access health, education and care facilities, and shops and services. In so far as urban areas in the sub-region, there are indications of some access deprivation in the outer suburbs of the City, the fringes of the satellite towns in Waimakariri, and areas within and around the satellite towns of Rolleston and Lincoln in Selwyn.

In this context, it is important to note that several developments have been progressed in the satellite towns in Selwyn and Waimakariri since 2013, in part as a response to their high population growth, which are likely to have improved these areas under the access to services domain. Examples include a new supermarket and health clinic in Rolleston, development of new town centre and neighbourhood shops, and investment in new or expanded primary and secondary schools.

It should also be noted that this measure is based on a period of major disruption in Greater Christchurch after the 2010 and 2011 earthquakes. As described in Section 2.5, there was significant movement of people and businesses across the sub-region post-earthquakes, which will have affected people's ability to access a range of services and amenities. Recent developments will have helped address some of the accessibility issues across the Greater Christchurch area.

Figure 3.9 Education and Access to Services Deprivations in Greater Christchurch, 2013



Source: University of Auckland, New Zealand Index of Multiple Deprivation 2013

Overall, the IMD indicates that some communities in Greater Christchurch are disadvantaged in terms of their ability to access and participate in employment and education, and their proximity to key services and facilities. This particularly relates to communities in the City's eastern suburbs. Although a number of factors will be influencing levels of deprivation in these areas, it will be important to consider as part of the Future Development Strategy the types of planning responses that could enable increased opportunities and better outcomes for these communities.

3.4.2 Reverse Sensitivities

The concept of reverse sensitivity is the situation where an existing land use has deliberately located away from other land uses that may be sensitive to their activities, but is subsequently encroached on, resulting in pressure for that activity to cease or change the way it operates. This could include, for example, residential areas encroaching on activities that produce odours (e.g. airports or certain industries).

Most adverse effects can be avoided if land use activities that discharge to air are not located near established land uses that will be incompatible with these activities, or conversely, if sensitive land uses (e.g. homes, health facilities and schools) are not placed near established areas where incompatible activities are undertaken (e.g. industrial zones).

In this context, Policy 6.1.2 of the CRPS recognises that there are environmental challenges to the recovery, rebuild and redevelopment of the Greater Christchurch area that need to be provided for through a clear planning framework. This includes addressing any “*conflicts between legitimately established activities and sensitive activities which seek to locate in proximity to these (reverse sensitivity)*”.

Policy 14.3.5 also states in relation to the proximity of discharges to air and sensitive land uses that:

1. *To avoid encroachment of new development on existing activities discharging to air where the new development is sensitive to those discharges, unless any reverse sensitivity effects of the new development can be avoided or mitigated.*
2. *Existing activities that require resource consents to discharge contaminants into air, particularly where reverse sensitivity is an issue, are to adopt the best practicable option to prevent or minimise any actual or likely adverse effect on the environment.*
3. *New activities which require resource consents to discharge contaminants into air are to locate away from sensitive land uses and receiving environments unless adverse effects of the discharge can be avoided or mitigated.*

To give effect to Policy 14.3.5, the CRPS indicates that territorial authorities will set out objectives and policies, and may include methods in districts plans, to ensure that:

- activities discharging contaminants to air are appropriately located; and
- provision is made to protect established activities discharging contaminants to air from adverse reverse sensitivity impacts resulting from the encroachment of sensitive land uses, if the established activity has adopted the best practicable option to prevent or minimise any actual or likely adverse impacts.

In this context, the district plans for Christchurch City, Selwyn and Waimakariri have provisions to address reverse sensitivity issues related to incompatible land uses in Greater Christchurch. For example, residential land at Awatea Park in Wigram has been rezoned on the basis that it cannot be developed until the Christchurch Kart Club has moved. A resource consent application has been made to relocate the Kart Club to the McLeans Island area, with a funding allocation in CCC’s long term plan assisting with the relocation.

Although there are some isolated complaints about reverse sensitivity issues in Greater Christchurch, which generally relate to the interaction between residential neighbourhoods and legacy industrial zones, these incidents are considered to be more localised issues that don’t require a major planning response as part of the Future Development Strategy. As noted above, these issues are largely addressed in the district plans, including addressing issues related to:

- Noise, odour and pollution from industrial areas;
- Noise, dust and traffic from quarrying;
- Noise, odour and sprays from agriculture;
- Noise from airport (noise contours) (see Section 2.6), port, and busy road and rail corridors; and
- Noise from late time commercial activities affecting residential areas.

3.5 Transport and Accessibility

3.5.1 Travel Patterns

The settlement pattern that characterises Greater Christchurch, coupled with its integration with the transport network, currently provides reasonable ease of travel across the sub-region. This relative ease of travel has allowed people to live further from their workplace and the key activity centres, and has supported recent development being focused in the outskirts of the City, and in the satellite towns in Selwyn and Waimakariri.

The 2013 Census provides data on where people usually lived and worked at the time the Census was undertaken, which can be used to build a picture of the commuting patterns in Greater Christchurch after the earthquakes. It should be noted that these commuting patterns will have evolved since the Census given the ongoing recovery of the sub-region, particularly the growing number of workers returning to the central city.

A summary of the data showing where people usually lived and worked in Christchurch City, Selwyn and Waimakariri at the time of the 2013 Census is provided in Appendix A.3.¹⁶

Based on the 2013 Census data, the share of workers living in the same area as their employment differs in the sub-region.¹⁷ The most local workforce was in Waimakariri where about 80% of workers employed in the district also lived in the district, while Selwyn was at a slightly lower share at about 70%. In so far as Christchurch City, the most local workforce was in the City's north-east (51%), while the City's south-west had the least local workforce (33%). A negligible share of central city workers lived in the central city in 2013, reflecting the major rebuild activity underway in this part of the sub-region at the time of the Census.

These commuting patterns indicate that most workers employed in Christchurch City did not live in the same part of the City as their place of work in 2013, meaning people had to travel across the sub-region, to varying degrees, to get to work. The most significant flow of commuters was to the City's south-west, with about 36,000 workers travelling into this area for their employment from elsewhere in the sub-region. This reflects the large number of jobs supported in such areas as Hornby, Wigram, Middleton and Addington in the south-west of the City. About 74% of these workers lived in other parts of the City, while about 14% lived in Selwyn and 8% in Waimakariri. The large commuter flows to the City's south-west has contributed to greater traffic volumes and congestion on this part of the network.

Other significant commuting flows in 2013 were to the City's north-west, south-east and central city, with more than 18,500 workers travelling into each of these areas to access their workplace from elsewhere in the sub-region. The flow of workers to the City's north-east was somewhat less at around 12,000, while less than 5,000 workers travelled into Selwyn and Waimakariri respectively from elsewhere in the sub-region.

In this context, the City is characterised as being a significant net importer of labour in the sub-region, with a net inflow of around 7,400 workers from Selwyn and 8,600 workers from Waimakariri in 2013 (Figure 3.10).

Figure 3.10 Commuting Flows between Christchurch City, and Selwyn and Waimakariri, 2013



Source: Stats NZ, 2013 Census

While the above analysis considers what share of workers live in the same area as their workplace, it is also possible to consider what share of working residents are employed in the same area as where they live. This shows the self-containment level for an area. In this context, Census data indicates most working residents in Christchurch City were employed in the City in 2013. However, the level of self-containment in Selwyn and Waimakariri were much lower at about 44%, with almost half of all working residents in these districts commuting into the City for work (Figure 3.11).

¹⁶ The commuting flows data for Banks Peninsula is provided in Appendix A.3, but not included as part of the analysis in this section given the smaller scale of these commuting flows.

¹⁷ The areas that comprise Greater Christchurch in this analysis include the north-east, north-west, south-east, south-west and central city of Christchurch City, and the districts of Selwyn and Waimakariri.

Figure 3.11 Workplace Address for Residents in Christchurch City, Selwyn and Waimakariri, 2013

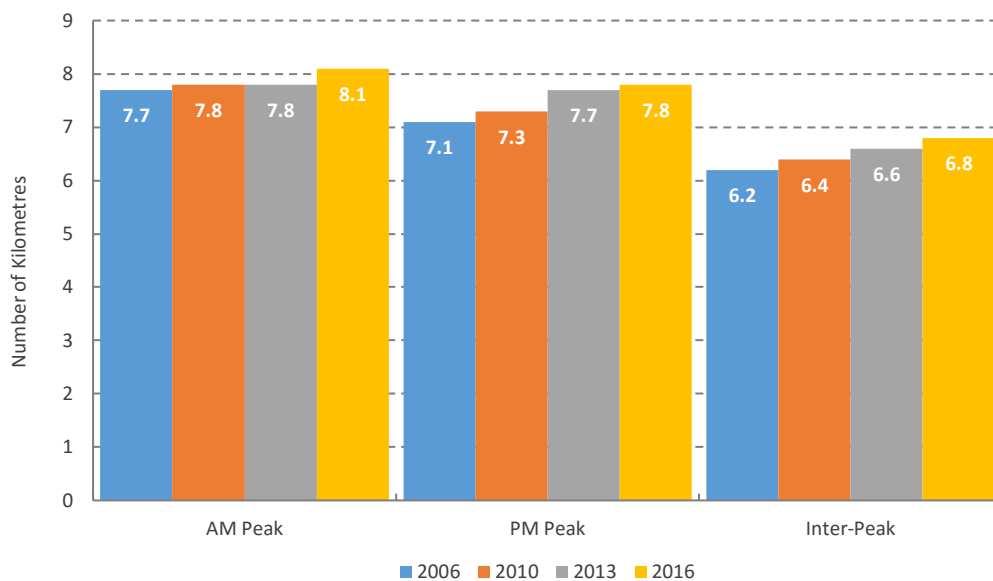


Source: Stats NZ, 2013 Census

This analysis of the Census data provides an insight into the travel patterns for Greater Christchurch by showing where people lived and worked in the sub-region in 2013. Although the analysis indicates a sizeable share of the population do not live and work in the same area of the sub-region, in some cases a movement between one area to another may not actually represent a major trip in terms of distance (e.g. a person living and working on either side of a boundary line). In addition, this analysis has not provided any information on the mode of transport used to commute to work. Although many trips in Greater Christchurch are currently made by private car, some will be taken by public and active transport, and there will be opportunities to increase this share as part of future planning responses.

In this context, the Christchurch Assignment and Simulation Traffic Model (CAST) indicates that the average trip length for light vehicles in Greater Christchurch grew across all time periods from 2006 to 2016. The most significant increase was over the PM peak and inter-peak periods, with average trip lengths growing by about 10%. The increase over the AM peak period was less significant at about 5%, although the longest average trip length was still undertaken during this part of the day (Figure 3.12).

Figure 3.12 Average Trip Length for Light Vehicles in Greater Christchurch, 2006 - 2016



Source: Christchurch Assignment and Simulation Traffic Model 2016

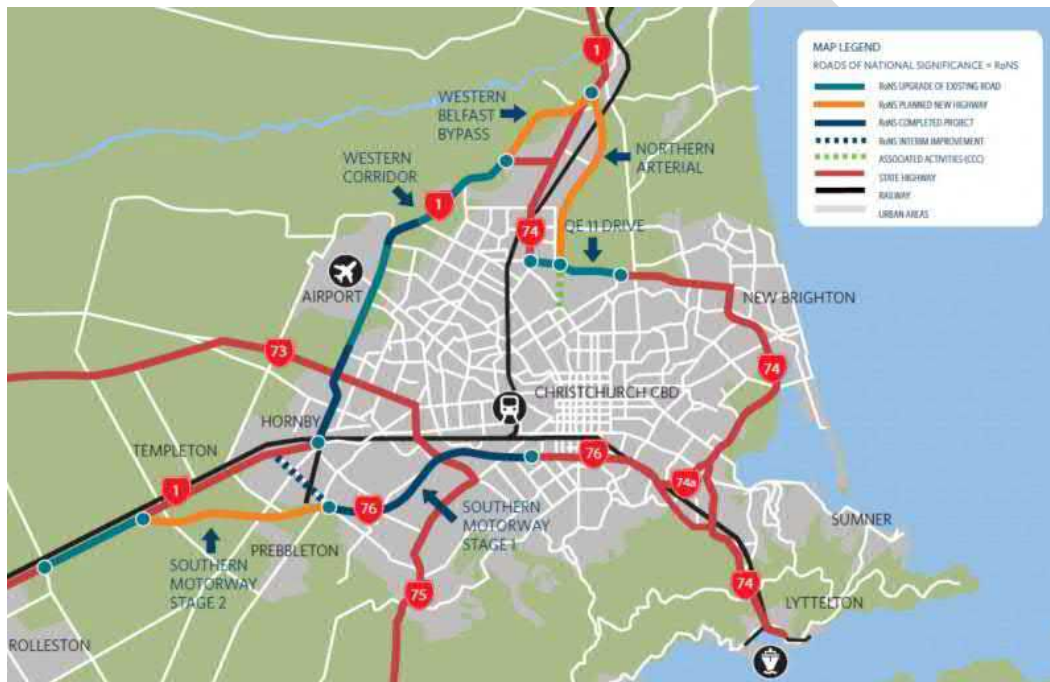
The longer travel distances reflect the changing land use patterns in Greater Christchurch over this period, with large-scale residential development on the urban fringe of Christchurch City, and in the satellite towns in Selwyn and Waimakariri, resulting in an increased share of the population travelling further to access the economic and social opportunities concentrated in the City. In addition, people are travelling to a wider range of destinations across the City. A key consideration of the Future Development Strategy therefore relates to the capacity of the transport network to support these travel movements (see Section 3.5.2).

3.5.2 Transport Network Constraints

Current Constraints

The road network facilitates the movement of people and freight into, out of and within Greater Christchurch (Figure 3.13). An efficient, safe and sustainable road network is therefore vital for connecting Christchurch City with the surrounding Selwyn and Waimakariri districts, and beyond, and ensuring the sub-region is an accessible and well-functioning urban area.

Figure 3.13 Strategic Road Network in Greater Christchurch

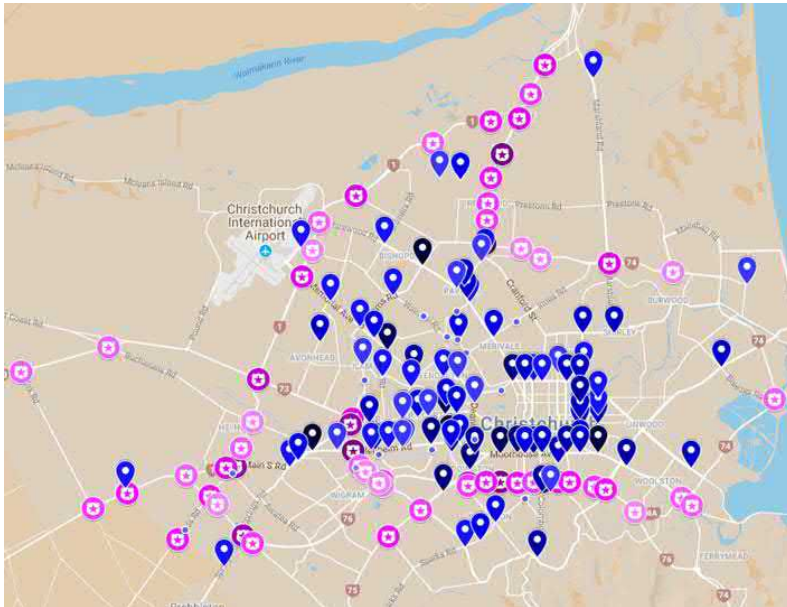


Source: NZTA, <https://www.nzta.govt.nz/projects/christchurch-motorways/>

The agencies responsible for transport in Greater Christchurch have collectively reviewed the opportunities and challenges for integrated transport solutions in the sub-region. The key transport challenges relate to the disruption to travel patterns after the earthquakes. The impact of land use changes and development on travel patterns has resulted in increased congestion and delays on parts of the network, and weaker journey time reliability. The reliance on private cars in the sub-region has also constrained the ability of the transport system to move people and goods efficiently, and has led to localised pinch points and low corridor productivity. Road safety also remains a key challenge for the network.

In this context, the agencies responsible for transport in Greater Christchurch have reviewed the safety, reliability and accessibility problems for the sub-region to identify the critical issues to be addressed in the short to medium term. The critical (i.e. high or very high) problem locations on the road network in the City were identified through this evidence analysis (Figure 3.14), as well as the key issues for other parts of the road network in the Greater Christchurch area (Figure 3.15).

Figure 3.14 Critical Problem Locations on the Road Network in Christchurch City



Source: Christchurch Transport Investment Story

Note: Pink locations are on the state highway network and blue locations are on the Council's network. The darker shade shows more severe issues.

Figure 3.15 Key Issues for the Road Network in Greater Christchurch



Source: Christchurch Transport Investment Story

In addition to the issues identified in Figures 3.14 and 3.15, a business case has also been prepared for the state highway network between Ashley River and Belfast in the north of the City, and in Waimakariri district. Reliability, safety and access issues were also identified for this part of the strategic road network in Greater Christchurch, while downstream impacts for travel into the City were also identified.

Future Constraints

The Greater Christchurch Partnership jointly owns the Christchurch Transportation Model (CTM). The model uses fixed land use inputs to identify future travel demands and potential impacts on the transport system.

Previous projections indicated a population of around 550,000 in the Greater Christchurch area by 2041. The latest Stats NZ population projections have increased the forecast population in the sub-region to 640,000 by 2048, and by comparison, forecasts that the population will reach 550,000 by about 2028 (i.e. thirteen years earlier than the previous projections).

In order to understand the potential effect of additional demand on the transport network from this projected population growth, the revised population projections for 2028 and 2048 have been modelled in the CTM. This was undertaken by simply scaling previous projections, rather than doing a detailed land use allocation exercise. This means that travel demand was modelled based on the population projections and was not constrained by whether there was zoned land capacity to accommodate the growth (Table 3.2).

An additional sensitivity test for 2048 was also modelled to test the extent to which the location of growth has an impact on the transport network. The same projected population growth for Greater Christchurch was used, but a higher share of the residential and employment growth was allocated to the City, in line with previous UDS and CRPS targets (i.e. 70% of the additional population growth in the sub-region distributed to the City), rather than in Selwyn and Waimakariri, which had experienced significant increases in growth post-earthquakes (Table 3.2). The transport networks used in the model are based on the existing transport system and the currently planned network improvements.

Table 3.2 Scenarios Modelled through the Christchurch Transportation Model

Model Scenario	Year Modelled	Method for distributing the additional population in Greater Christchurch amongst territorial authorities	Share of the additional population in Greater Christchurch distributed to each territorial authority		
			Christchurch City	Selwyn	Waimakariri
GCP3-28	2028	As per the latest Stats NZ projections	51%	31%	18%
GCP3-48	2048	As per the latest Stats NZ projections	51%	31%	18%
ST1-48 (sensitivity test)	2048	As per the target in the UDS	70%	19%	11%

Source: Christchurch Transportation Model 2017

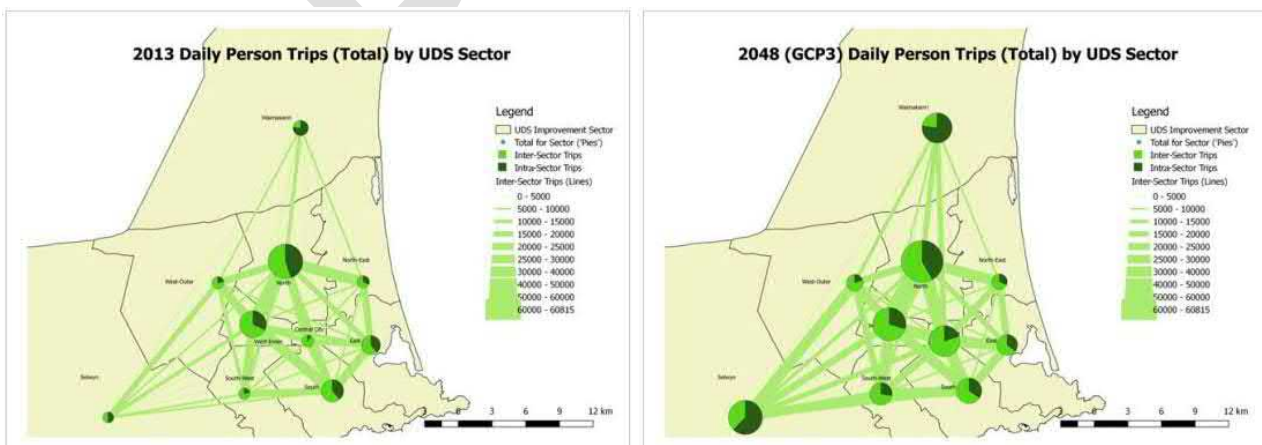
The modelling shows the potential changes in the location (i.e. origins and destinations) and volume (i.e. demand) of daily trips in Greater Christchurch by 2028 and 2048. The results can be compared with 2013 to show the possible changes under each modelled scenario (Table 3.3) (Figure 3.16), while some of the likely key trip demands for each territorial authority can also be identified (Table 3.4).

Table 3.3 Summary of Land Use and Travel Demand Changes by Modelled Scenario, 2013 - 2048

	2013	GCP3-28 (2028)	GCP3-48 (2048)	ST1-48 (2048)
Population	428,025	547,898	639,858	639,858
Employment	217,437	285,864	334,050	334,050
Daily person trips	1,947,650	2,510,616	2,930,958	2,927,781
AM peak trips	242,338	314,798	366,103	365,689

Source: Christchurch Transportation Model 2017

Figure 3.16 Daily Person Trips between Sub-Regional Sectors in Greater Christchurch, 2013 - 2048



Source: Christchurch Transportation Model 2017

Table 3.4 Summary of Land Use and Travel Demand Changes by Territorial Authority, 2013 - 2048

	2013	2048 (GCP3-48)	Percentage Growth	Sensitivity Test (ST1-48)
Selwyn				
Trips originating in Selwyn	116,174	354,442	205% (Note that 62% are internal trips by 2048)	299,497 (Note that 59% are internal trips by 2048)
Selwyn households	11,862	37,830	219%	30,391
Selwyn to Christchurch trips	59,850	132,778	120% (Note that 26,611 trips are during AM peak 2 hours)	120,479
Waimakariri				
Trips originating in Waimakariri	155,745	305,748	96% (Note that 77% are internal trips by 2048)	272,045
Waimakariri households	15,423	32,401	110%	27,599
Waimakariri to Christchurch trips	36,170	64,789	67% (Note that 14,281 trips are during AM peak 2 hours)	60,982
Christchurch City				
Trips originating in Christchurch	1,549,031	2,116,575	37% (Note that for all sub-sectors in the City, more than 50% of trips are to sectors outside the local area)	2,200,158
Christchurch households	138,637	193,223	39%	205,465

Source: Christchurch Transportation Model 2017

The modelled scenarios for Greater Christchurch all show that population growth could result in some significant increases in traffic and travel demand in the sub-region during the next thirty years (Table 3.5).

Table 3.5 Changes in Daily Trips by Transport Mode and Territorial Authority, 2013 - 2048

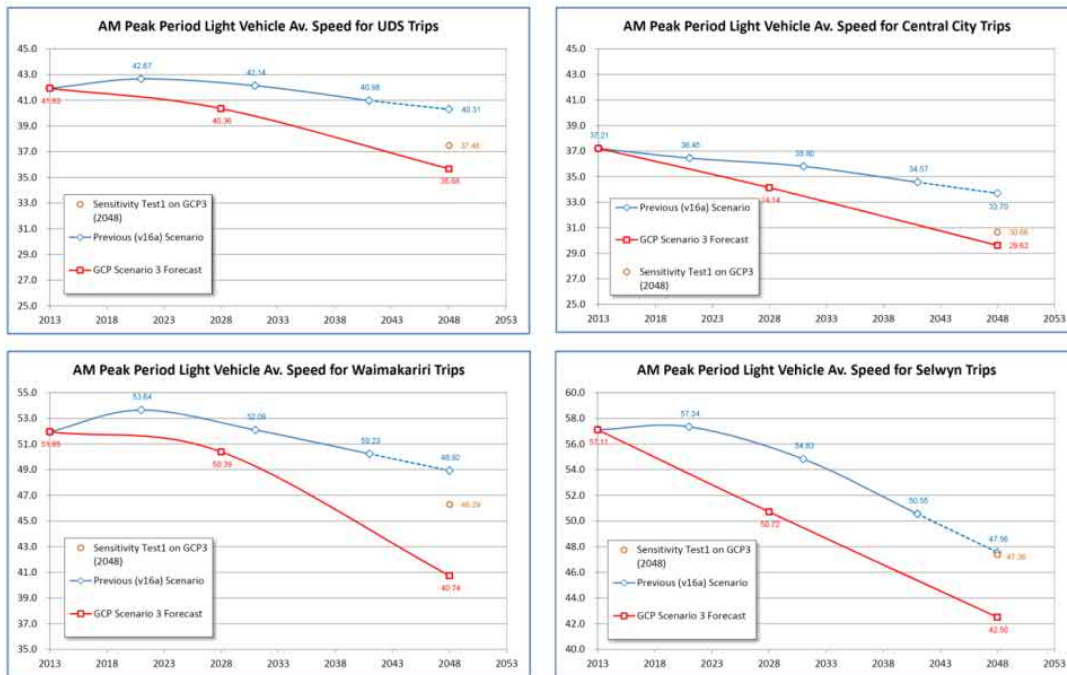
Daily Trips	GCP3-48	ST1-48 (sensitivity test)
Total vehicle trips (light vehicle and heavy vehicle trips)	+ 52%	+ 51.5%
Total public transport passenger trips	+ 54%	+ 64%
Total bike trips	+ 50%	+ 56%
Total trips from Selwyn	+ 208%	+ 160%
Total trips from Waimakariri	+ 97%	+ 76%

Source: Christchurch Transportation Model 2017

Both scenarios show that additional trips could result in more vehicles on the transport network, with associated increased delays and reduced average speeds in the sub-region. The impacts would likely be most significant in areas located closer to population centres. Average travel speeds in the morning peak are forecast to decline by over 6km/h during the next thirty years (i.e. from 42km/h in 2013 to 36km/h in 2048). This means that journeys at peak times could take about 15% longer by 2048 than they do now. This is more substantial than under the previous population projections, which projected a less than 1km/h drop by 2041, or about 2% longer travel times (i.e. shown by the 'previous (v16a) scenario' line in Figure 3.17).

In this context, it should be noted that the assumed future infrastructure in place was developed in line with the previous population projections, so it is not surprising that there is some potential degradation in travel speeds given the increases in the number of person trips and no corresponding capacity increases by any mode. This has also been exacerbated by the changes in land use and travel patterns in the post-earthquake environment.

Figure 3.17 Modelled Light Vehicle Travel Speeds (km/h) in Greater Christchurch in the AM Peak, 2013 - 2048



Source: Christchurch Transportation Model 2017

Such delays would be noticeable for all people and purposes of travel, be that commuters to work or school, or commercial, freight and emergency service trips. However, the delays would also likely vary greatly across the sub-region. The increase in travel times from the western areas of the City, Selwyn and Waimakariri into the central city could be much worse than the average increases, with travel times potentially being 60% longer by 2048 than they are now. The travel time delays are also likely to vary significantly from day-to-day, which could make it difficult for people to know how long their journey will be each day (Table 3.6).

Table 3.6 Average Travel Times (Minutes) to the Central City from the Sub-Regional Sectors in the AM Peak, 2013 - 2048

Model Scenario	From Selwyn	From Waimakariri	From Christchurch City						
			From North	From North East	From East	From South	From South West	From West Inner	From West Outer
2013	26.3	32.8	11.7	15.0	12.1	10.0	12.6	10.8	17.6
2028 (GCP3-28)	32.8 (+ 6.5)	35.6 (+ 2.8)	14.3 (+ 2.6)	16.7 (+ 1.7)	13.2 (+ 1.1)	12.1 (+ 2.1)	17.6 (+ 5.0)	14.9 (+ 4.1)	23 (+ 5.4)
2048 (GCP3-48)	44.4 (+ 18.1)	52.6 (+ 19.8)	16.3 (+ 4.6)	18.4 (+ 3.4)	13.7 (+ 1.6)	13.4 (+ 3.4)	23.1 (+ 10.5)	17 (+ 6.2)	28.2 (+ 10.6)
2048 (sensitivity test)	38.2 (+ 11.9)	43.1 (+ 10.3)	15.9 (+ 4.2)	18.2 (+ 3.2)	14.2 (+ 2.1)	13.7 (+ 3.7)	21.3 (+ 8.7)	16.9 (+ 6.1)	26.4 (+ 8.8)

Source: Christchurch Transportation Model 2017

There could be substantial cost to the regional economy from increased travel times, as freight takes longer to transport around Greater Christchurch, including to and from the airport, port, distribution centres and warehouses. The cost to the economy from this increase in congestion could be approximately \$200 million per year. In the absence of targeted interventions, increased travel demands could also result in increased vehicle emissions, increased crash risk and negative social impacts for sectors of society without good access to goods and services.

In this context, the sensitivity test that was modelled for Greater Christchurch through the CTM demonstrates that the location of land use growth can significantly impact the distribution of trips and the resulting levels of congestion. Due to the high level, first cut nature of this exercise, the model has not included changes to transport infrastructure to reflect a system that may better support a denser Christchurch City (e.g. increased public transport, walking and cycling capacity, and less investment in the economically inefficient storage of vehicles in carparks). The cost to the regional economy under this scenario could be about \$150 million.

The modelling also indicates that the mode split of the modelled person trips (i.e. by private car, public transport and bicycle) is projected to remain fairly constant over time under all the scenarios tested, although there was a marginal increase in public transport and cycling mode share under the sensitivity test. This will be largely due to the model calibration being based upon the surveyed preferences of people to use private cars to travel around the Greater Christchurch area.

The model does not adjust for changing personal preferences over time, such as greater use of bicycles and other possible social transport changes (e.g. the potential for lower car ownership amongst younger people, or alternative ownership and lease models that may transpire due to the roll-out of smart vehicle technology).

In this context, it is important to note that this modelling provides a high level strategic view and is presented to show how travel demands and movements between sectors of the sub-region change over time. It is not suitable to analyse the outputs of the model in any more detail at this time due to both the strategic nature of the modelling tool and the coarse nature of the land use input update. Finer grained transport models that cover Christchurch City, as well as specific townships outside the City, are available to investigate more specific aspects when this level of detail is required.

Options to manage the effect of population growth and increased travel demand on the transport network will be a key consideration of the Future Development Strategy. Integrated transport and land use planning responses will need to consider how to maximise positive interactions between housing and business areas, and the transport network, and minimise negative interactions related to reduced travel time reliability, safety and accessibility. This will include planning for a transport system that positively influences land use patterns and behaviours that are economically, socially and environmentally sustainable.

4. Future Urban Development and Change

This section considers the opportunities for and barriers to urban development and change in the Greater Christchurch area, taking account examples of areas in the sub-region that have undergone processes of change in the past.

4.1 Examples of Past Urban Change

Urban areas can undergo processes of change in response to the shifting needs of people and communities. In this context, Section 2 provides an overview of some of the key trends that have shaped the Greater Christchurch area over time, which includes a description of areas that have experienced a process of change, such as the rezoning of ex-railway land during the latter parts of the 20th century for new business and residential development. Examples of other areas in the sub-region that have undergone changes in the past include Woolston and Wigram.

Woolston

The suburb of Woolston in the south-east of Christchurch City was one of the first industrial areas established in the City. This is due to its proximity to the Heathcote River and Ferry Road, which were main entry points for people and goods arriving into Canterbury after European settlement. Industries also located along the river because of the availability of water and its convenience as a sewer. When the river lost its importance as a transportation route after the Lyttelton Rail Tunnel opened in the 1860s, Woolston remained a significant industrial area due to the railway line between the City and Lyttelton passing through the area.

The Woolston tanneries were one of the key industries that established in the area during the mid to late 19th century, occupying a landmark site along the banks of the river. By the 1910s, the tanneries were processing a million sheep pelts a year, converting over 1,000 hides per week into leather and employing about 200 people. Many of these workers also lived locally, helping to foster a strong working class identity in Woolston.

Industries began closing or moving away from Woolston in the 1950s, including the tannery site which closed in 1959. Many of the older tannery buildings were subsequently demolished in the 1970s, with small factories erected at the site. During the 1990s, some of the older buildings began to be restored and vacant land at the site was developed. A multi-unit complex that offered new apartment space and small business units was also built at the site during the early 2000s.

The former industrial site now supports a rich mix of old and new buildings that are occupied by a variety of uses, creating an attractive mixed-use environment at the heart of the Woolston suburb. However, the introduction of non-industrial land uses in the area has generated some reverse sensitivity issues related to the discharges to air from factories, which highlights the challenge of an evolving urban area and the divergent expectations of different land uses.

Wigram

Wigram Air Base, originally named Sockburn Airport, was opened in the south-west of Christchurch City in 1916 as home to the Canterbury Aviation Company. This large airfield was used as a private flying school to train pilots for both World War I and entry into Britain's Royal Flying Corps, as well as to pioneer commercial aviation in the region. After the end of World War I, the Government purchased the site and converted it to a military base, renaming it Wigram Aerodrome.

The aerodrome continued to expand after the Government took over the base in 1923. It was initially used to continue training pilots and aircraft mechanics, before two technical schools were also established at the site to provide training for photographers, aviation technicians, cooks, librarians and administrators. New accommodation and recreational facilities were also built at the 275ha site.

The base closed to air force training in 1995, and after more than ninety years in operation, closed to commercial air traffic in 2009. This former air base is now being redeveloped to accommodate a new master planned community that will be home to approximately 4,000 people and provide a range of leisure, recreational, retail and community services for residents in the south-west of the City. The history of the land as a former flight school and air force base has been incorporated into the design of the new community, reflected in the Air Force Museum, historic buildings and naming of the streets.

4.2 Industrial Zone Differentials

Industrial zone differentials are price efficiency indicators developed by the Ministry of Business, Innovation and Employment (MBIE) to compare land values in industrial zones with those in adjacent commercial, residential or rural zones. These differentials are focused on small areas situated on either side of industrial zone boundaries, taking account land parcels within 250m of these boundaries.

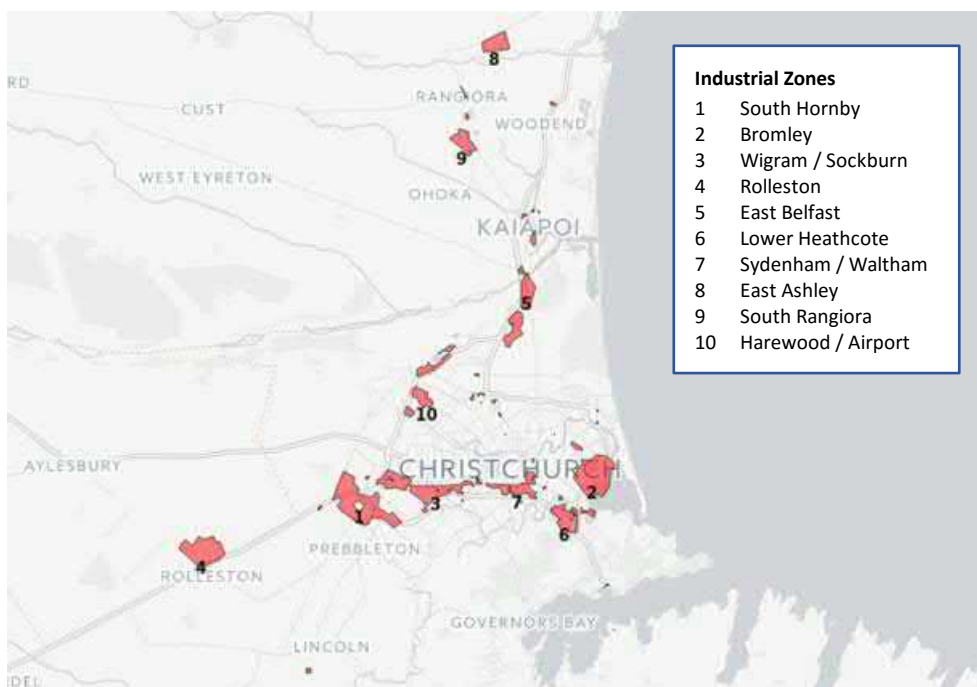
The purpose of the industrial zone differentials is to provide information about how well zoning and other regulations support demand for industrial land uses relative to other land use activities in any given location.

Significant differences in land values across industrial zone boundaries could indicate that there is a mismatch between zoning and the relative demand for different land uses in an area. Such price differentials might reflect insufficient capacity, either in the local or sub-regional context, to meet the demand for one land use relative to another land use.

A mismatch in the zoning and relative demand for different land uses can occur as the natural growth of an urban area generates sectoral and spatial changes that make old zoning patterns less relevant. For example, legacy industrial sites in central cities are often ripe for redevelopment given the higher values associated with other land use activities that are attracted to central city areas, such as commercial and residential uses.

In this context, the Urban Development Capacity Dashboard produced by MBIE provides industrial zone differentials for ten industrial locations across Greater Christchurch (Figure 4.1). These price differentials can be used to understand whether current zoning and regulations are meeting the relative demand for land uses in various parts of the sub-region.

Figure 4.1 Key Industrial Zones in Greater Christchurch



Source: Ministry of Business, Innovation and Employment, Urban Development Capacity Dashboard

A detailed summary of the price differentials for the key industrial zones in Greater Christchurch is provided in Appendix A.4, including the relative value of commercial, residential and rural land uses adjacent to each industrial zone.

Based on the MBIE data, the differences in industrial and commercial land values around industrial zones in Greater Christchurch are limited, except for the statistically significant differences around the industrial zones in Wigram/Sockburn and Sydenham/Waltham. At the boundary of these industrial zones, commercial land values are significantly greater than the industrial land values, with industrial land only achieving around 78% of the value of commercial land in Wigram/Sockburn and around 66% in Sydenham/Waltham.

The highly competitive commercial land values around these industrial zones are likely to reflect their more central location when compared to other industrial zones in the sub-region, which boosts their attraction for commercial uses seeking a location close to the central city.

The data also indicates that values for residential land are higher than similarly located industrial land in many locations across Greater Christchurch, which could point towards a relative shortage in the capacity for new housing in these parts of the sub-region. The largest statistically significant difference in industrial and residential land values is around the industrial zone in East Belfast, where industrial land values are less than half the value of the residential land. Other statistically significant differences in residential and industrial land values are evident in South Hornby, Harewood/Airport, Rolleston and Wigram/Sockburn.

Interestingly, the value of industrial land in the South Rangiora and Sydenham/Waltham industrial zones are higher than the adjoining residential land, which could indicate a shortfall in capacity to meet the demand for industrial space in these locations relative to the capacity for residential uses.

The MBIE data also indicates that there could be scope at a number of industrial zones across Greater Christchurch to rezone rural land to industrial given their higher relative values in these areas. This includes around industrial zones in South Rangiora, Rolleston, Harewood/Airport and South Hornby, where industrial land values are four to nine times higher than the adjacent rural land. No statistically significant difference in rural and industrial land values around the industrial zones in East Belfast, Lower Heathcote and East Ashley indicates there may be sufficient capacity in these areas to meet the relative demand for industrial space.

Overall, industrial zone differentials offer an insight into where opportunities may exist to rezone land in and around the industrial zones in Greater Christchurch to better meet the relative demand for different land use activities. However, it will be necessary to undertake further testing of the industrial price differentials, as well as the other price efficiency indicators supplied by MBIE, to understand the degree to which they align with known market conditions in the sub-region.

For example, the industrial zone differentials indicate that there is a statistically significant difference in the value of industrial and rural land in South Hornby, which means there could be an opportunity to rezone rural land to industrial to better meet the relative demand for these land use activities in the area. However, it is known that there is a sufficient supply of industrial land in South Hornby to meet demand, meaning to rezone more industrial land in the area would not appropriately reflect the underlying market conditions.

Further consideration of what the price efficiency indicators mean for planning responses in the sub-region will be an important part of preparing the Future Development Strategy. It will be necessary to consider the indicators in both the context of the capacity assessment findings and local knowledge of land markets.

4.3 Opportunities and Barriers

In order to identify some of the key opportunities and barriers to urban development and change in the Greater Christchurch area, a workshop was held with Greater Christchurch Partnership officials to consider the key issues for the sub-region. The feedback from this workshop included a range of spatial and non-spatial opportunities and barriers for the sub-region that can be investigated in further detail as a part of the Future Development Strategy.

A summary of the key feedback received from the official's workshop in relation to the opportunities for and barriers to urban development and change in the Greater Christchurch area is provided in Appendix A.5.

Key Opportunities

Based on the workshop feedback, the key potential opportunities for development and change in Greater Christchurch can be grouped under four main themes: integrating land use and infrastructure planning, redeveloping land and buildings, incentivising preferred patterns of development and removing the key barriers to development. These four themes from the workshop are described in more detail below.

- **Integrate land use and infrastructure planning:** Delivering higher density residential developments that support a more compact urban form, with developments focused around activity centres and along transport corridors. Rezoning activity centres and transport corridors for higher density housing supports a transit-oriented development approach that offers greater choice in travel mode. Investment in infrastructure that unlocks the future development potential of areas also provides opportunities for the sub-region. This includes the opportunity to invest in enhanced passenger transport services.
- **Redevelop land and repurpose buildings:** Ensuring planning and regulatory conditions encourage under-utilised land and buildings to be redeveloped for more efficient uses, especially in the central city where sites and buildings have not been put back into full use since the earthquakes. This requires close working with the development sector. There might be other opportunities for redeveloping land to more efficient uses, with ideas from the workshop including opportunities for large open spaces in the sub-region to be partially redeveloped for housing.

- **Incentivise urban development and change:** Encouraging patterns of development that align with the vision for the sub-region in terms of achieving desired outcomes for future growth. Such incentives could include the configuration of developer contributions, investments in public spaces and key technologies, and different funding models to deliver projects. These tools would be particularly useful to incentivise developments in areas of the sub-region that are currently less commercially feasible (e.g. the central city and eastern parts of the City).
- **Remove barriers to urban development and change:** Addressing underlying issues affecting the commercial feasibility of development in the sub-region to help unlock areas for new development. Key feasibility issues relate to high land values and building costs, and low sales prices in parts of the sub-region. Reducing planning constraints could open up prospects for new development in the sub-region. For example, reconfiguring the airport noise contour could make land in the western areas of the sub-region available for residential and business development. However, any changes to the planning constraints in the sub-region would need to be considered in the context of promoting sustainable development.

Key Barriers

In the same way as the feedback on the key opportunities for Greater Christchurch, the official's workshop provided feedback on some of the key barriers to urban development and change in the sub-region. Based on this feedback, the key barriers can be grouped under four themes: environmental and planning limits on development, capacity of infrastructure networks, development costs and feasibility, and perceptions and attitudes of people. These four themes from the workshop are described in more detail below.

- **Environmental and planning limits on development:** Environmental and planning factors limit urban development in the sub-region, with the City generally more constrained by such factors than satellite towns in Selwyn and Waimakariri. Key environmental constraints include areas at risk from natural and geotechnical hazards, such as flooding, inundation and liquefaction. These issues are most significant in the eastern parts of the City. Restrictions associated with the airport noise contour, and to a lesser extent the aquifer protection zone, represent development barriers in the west of the sub-region.
- **Capacity of infrastructure networks:** Existing land use patterns have resulted in more dispersed housing and business land use activities in the sub-region. A potential barrier to future development in the sub-region relates to the capacity of the transport network, as well as other infrastructure networks, to support the future growth of the sub-region. This includes the cost of delivering new infrastructure to support and service new and expanding housing and business areas.
- **Development costs and feasibility:** High land values and construction costs reduce the commercial feasibility of new developments in the sub-region, particularly in terms of delivering new residential developments. Such issues are especially significant for the central city, which has higher land values in part due to land banking, and for the eastern parts of the City, which achieve low sale prices when compared to other parts of the sub-region. The workshop feedback reinforced that development of greenfield sites generally benefit from lower and more certain costs than brownfield sites.
- **Perceptions and attitudes:** Poor understanding and perceptions of certain typologies of housing, especially for higher density living, can act as a barrier to some types of housing being brought to the market in the sub-region. These perceptions have often been affected by developments in the past being of inferior quality. Some areas of the sub-region also suffer from perception issues, which limits the likelihood that private investment is focused in these areas. A limited understanding of people's preferences and circumstances also reduces the ability of councils to plan for the type and location of housing that is most desired by local people.

Further Investigation

As noted above, these key potential opportunities and barriers to urban development and change in Greater Christchurch can be considered, alongside other possible opportunities and barriers for the sub-region, in further detail as part of preparing the Future Development Strategy. This would include further consideration of the key priorities for the sub-region over the short, medium and long term, and what opportunities can be exploited, and barriers addressed, to help deliver the desired outcomes for the sub-region.

It will also be important that the Greater Christchurch Partnership continues to engage with stakeholders involved in the development sector in Greater Christchurch to identify the best way forward for delivering future urban development and change in the sub-region.

Appendices

A.1 Greater Christchurch Strategic Framework

A.1.1 Greater Christchurch Urban Development Strategy 2007

The Urban Development Strategy (UDS) was developed to consider the complexity and inter-relationships between land use, transport and infrastructure planning in Greater Christchurch, taking account a range of social, health, cultural, economic and environmental values.

The UDS is underpinned by principles that shape and guide its planning decisions, with the overarching principle being 'sustainable prosperity'. This recognises that our day-to-day activities simultaneously affect our economy, environment and communities, meaning a sound understanding of the systems that support life in an urban environment is essential.

Several principles are recognised as contributing to 'sustainable prosperity' in Greater Christchurch, including improved integration, with the UDS stating (page 14):

"Sustainable prosperity will be achieved through integrating environmental, land-use, infrastructure, social, cultural, economic and governance goals in all decision-making, policies, plans and activities by recognising the connections between systems, giving effect to the regional and local metropolitan context."

To achieve a well-integrated and functioning urban environment, the UDS identifies the importance of activity centres as focal points for services, employment and social interactions, and where people shop, work, meet, relax and often live.

Several activity centres located strategically along arterial roads in Christchurch City are selected as consolidation focal points in the UDS; identifying them as areas where intensification could be achieved over the period to 2041.¹⁸ These activity centres are well served by the public transport network and are surrounded by higher density residential zones, making them fitting locations for concentrations of public and private services.

The UDS also identifies the importance of linking demand for land with infrastructure planning and funding to achieve successful growth management. This was recognised as a particular challenge for Christchurch City, with a shortage of zoned and serviced land on the edge of the City resulting in a significant amount of development spilling into settlements in Selwyn and Waimakariri. Unless infrastructure is provided in a timely manner, the UDS indicates that there will be ongoing pressure on smaller settlements beyond Christchurch City to accommodate a disproportionate share of growth.

In this context, the UDS anticipates that the delivery of necessary road infrastructure will continue to be vital in terms of supporting the movement of people and goods around Greater Christchurch, albeit with a shift to more integrated transport corridors that cater for all modes of travel.

A central tenet of the UDS is the integration and parallel development of land uses with the transport system, in order to reduce impacts from increased traffic volumes and congestion. This includes the need for improved walking, cycling and public transport networks as attractive and sustainable alternatives to private motor vehicle use, and their integration throughout and between communities in Greater Christchurch. In this way, transport is fundamental to achieving a well-integrated and functioning urban form, and improving the quality of life in Greater Christchurch.

Overall, the UDS sets out an approach to managing growth in Greater Christchurch to 2041 that includes:

- providing 70% of the anticipated residential growth in Christchurch City;
- providing the remaining 30% of the anticipated residential growth in Selwyn and Waimakariri;
- growing the share of housing provided through intensification (i.e. from 23% in 2006 to 60% in 2041);
- giving residents easy access to employment, education, leisure, health and community facilities;
- creating employment opportunities in new growth areas and revitalising Christchurch's central city;
- ensuring that new growth areas are well connected to wider road and rail networks; and
- providing a range of transport choices, including public transport, cycling and walking.

¹⁸ Consolidation focal points selected in the UDS include the activity centres of Riccarton, Papanui-Northlands and Linwood-Eastgate, and the district activity centres of Halswell, Barrington and Hornby.

A.1.2 Greater Christchurch Urban Development Strategy Update 2016

A partial update of the UDS was undertaken in 2016 to develop a roadmap for Greater Christchurch from recovery to regeneration following the 2010/11 earthquakes, recognising that the sub-region has many environmental, social, cultural and economic challenges and opportunities. The UDS Update allowed the extensive recovery work completed through the post-earthquake period to be integrated into the Strategy.

As part of the update, the strategic directions from the 2007 Strategy were updated, with the new strategic goals for Greater Christchurch in the UDS Update grouped under four key themes: healthy communities, enhanced natural environments, prosperous economies, and integrated and managed urban development.

In this context, the UDS Update provides an approach to achieving integrated and managed urban development in Greater Christchurch to 2041 that includes:

- clearly defined and maintained boundaries for urban development, with the urban area consolidated through redevelopment and intensification;
- new development is well-integrated with existing urban areas, with sufficient land available to meet the need for regeneration and future land uses;
- a network of activity and neighbourhood centres complement Christchurch's central city; incorporating mixed-use and transport-oriented development, supporting increased housing density and choice, and providing access to community facilities;
- an efficient, reliable, safe and resilient transport system that reduces dependency on private motor vehicles, promotes active and public transport, and improves accessibility;
- key public transport corridors and routes are identified and protected; and
- infrastructure is comprehensively integrated with land use planning.

A.1.3 Land Use Recovery Plan 2013

The Land Use Recovery Plan (LURP) was developed following the significant disruption of the earthquakes to provide direction for residential and business land use development in Greater Christchurch over a fifteen year period to 2028.

The principal focus of the LURP is the recovery of the built environment, with the goal to “*develop resilient, cost-effective, accessible and integrated infrastructure, buildings, housing and transport networks*” (page 11).

To support recovery in Greater Christchurch, the LURP identifies the need for greater housing choice and the revitalisation of activity and neighbourhood centres. This includes encouraging more intensive housing in existing urban areas to allow people to live closer to established communities and facilities, support recovery of suburban centres and Christchurch's central city, and make best use of existing infrastructure networks.

In addition to intensification of existing residential areas, the LURP recognises the potential to promote the mixed-use redevelopment of brownfield sites (e.g. former business sites) in neighbourhood, suburban or key activity centres, or other appropriate locations. This offers the opportunity to develop integrated communities, although planning controls will be necessary to avoid amenity conflicts with surrounding land uses and to address site-specific issues (e.g. contaminated land).

Some households also want to locate on the urban edge in greenfield developments, meaning intensification alone will not provide for all housing demand in Greater Christchurch over the period to 2028. In this context, the LURP indicates that greenfield housing requires suitable planning, design and investment to deliver and maintain the necessary infrastructure, services and facilities. Certainty about the location and timing of future greenfield developments, and coordination of infrastructure and land uses, is therefore critical to enabling investor confidence, efficient resource use and minimising development costs.

The LURP also aims to revitalise Greater Christchurch as the heart of a prosperous regional economy. This includes delivering commercial floorspace outside Christchurch's central city in a way that complements the new compact city core, with commercial development in key activity and neighbourhood centres aiming to:

- support an efficient transport network;
- meet community needs for revitalised centres;
- protect industrial areas from being undermined by higher value land uses; and
- avoid conflicts over noise, odour or other environmental issues.

Well-functioning infrastructure is also recognised as critical to the recovery of Greater Christchurch, with the LURP indicating that the location and timing of infrastructure works must take account the needs of housing and business development in both existing urban areas and greenfield priority areas.

This includes recognising that changing travel patterns since the earthquakes have placed significant stress on Greater Christchurch's transport infrastructure. A shift from private motor vehicle use to other forms of transport is therefore crucial to reducing the impacts of traffic, and supporting a compact urban form by making it easy for people to cycle, walk and use public transport. In this context, the LURP identifies the importance of public transport for maintaining accessibility to business and residential areas, and supporting the recovery of the central city, and suburban and satellite centres. Key activity centres are integral to the public transport network for Greater Christchurch, with their accessibility to main transport routes also supporting their opportunities for housing intensification.

A.1.4 Greater Christchurch Transport Statement 2012

The Greater Christchurch Transport Statement (GCTS) provides an overarching framework that supports an integrated approach to planning and managing the transport network in Greater Christchurch, with the focus of the Statement on the strategic links between key places in the sub-region.

The GCTS identifies several strategic transport issues for Greater Christchurch that require short term action, including addressing public transport operations and growth, northern and south-western accessibility given future growth and changing land use patterns, and central city linkages to other key locations, amongst others.

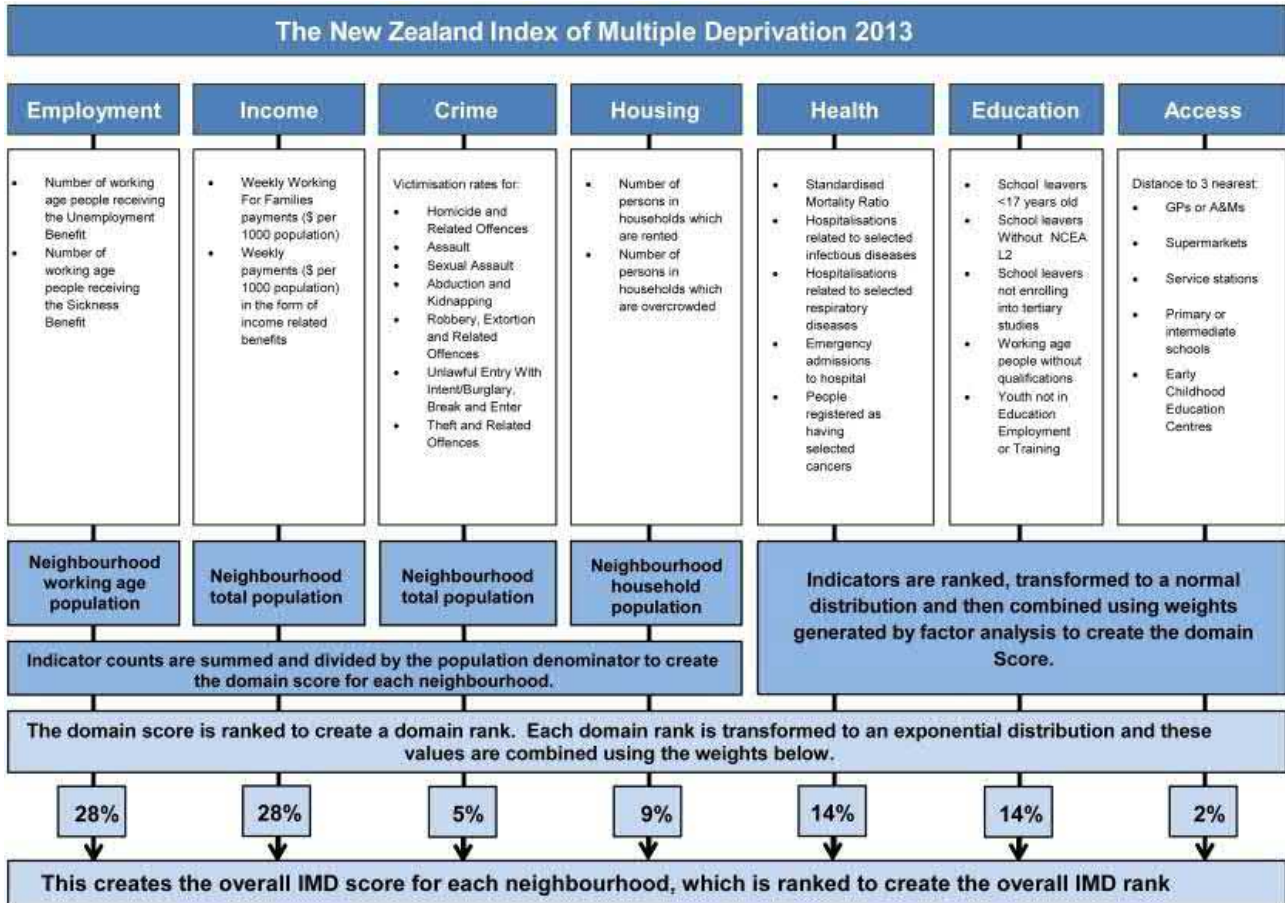
In planning and developing an effective 'one-network' transport system for Greater Christchurch, the GCTS aims to achieve the best possible outcomes and objectives using a strategic approach. In this context, a key transport outcome identified in the Statement is to improve links between people and places, which includes improving connectedness, resilience, reliability, efficiency and travel choice.

The GCTS outlines the following objectives in relation to improving links between people and places:

- integrate land use activities with transport solutions, enabling ease of movement between places;
- optimise the use of existing transport assets through managing travel demand and networks;
- provide safe, efficient and resilient links to connect people and places;
- ensure efficient and predictable travel time between key places; and
- provide more options for people to walk, cycle and use public transport.

A.2 New Zealand Index of Multiple Deprivation 2013

The New Zealand Index of Multiple Deprivation 2013 is comprised of indicators grouped into seven domains of deprivation: employment, income, crime, housing, health, education and access to services. It is the combination of these deprivation domains that can be used, either individually or in combination, to consider the geography of deprivation, and its association with socio-economic outcomes.



Source: University of Auckland, New Zealand Index of Multiple Deprivation 2013

A.3 Travel to Work Flows

The 2013 Census provides data on where people usually lived and worked at the time the Census was undertaken, which can be used to build a picture of the commuting patterns in Greater Christchurch after the earthquakes. It should be noted that these commuting patterns will have evolved since the Census given the ongoing recovery of the sub-region, particularly the growing number of workers returning to the central city.

			WORKPLACE ADDRESS								
			Christchurch City							Waimakariri	Selwyn
			Central City	North-East	North-West	South-East	South-West	Banks Peninsula	Christchurch City Total		
USUAL RESIDENCE	Christchurch City	Central City	860	200	310	350	550	-	2,270	30	50
		North-East	4,510	11,590	6,880	6,640	8,680	40	38,340	940	610
		North-West	3,400	2,890	13,340	3,140	8,960	40	31,780	460	890
		South-East	4,440	2,860	3,780	14,020	8,340	90	33,520	310	690
		South-West	3,710	2,120	5,160	4,800	18,100	50	33,940	300	1,470
		Banks Peninsula	180	60	160	290	370	1,430	2,500	20	90
		Christchurch City Total	17,100	19,730	29,630	29,240	45,010	1,640	142,350	2,070	3,810
	Waimakariri	1,180	2,060	2,280	1,590	2,880	10	10,010	11,440	280	
	Selwyn	1,150	590	2,350	1,290	4,960	40	10,390	130	10,810	

Source: Statistics New Zealand, 2013 Census

A.4 Industrial Zone Price Differentials

Industrial zone differentials are price efficiency indicators developed by the Ministry of Business, Innovation and Employment to compare land values in industrial zones with those in adjacent commercial, residential or rural zones. These price differentials are focused on small areas on either side of industrial zone boundaries; taking account land parcels within 250m of the zone boundary.

Industrial Zone	Industrial Land Value (per sq.m)	Adjacent Land Use	Adjacent Land Value (per sq.m)	Land Value Ratio	Statistically Significant Difference?
1 South Hornby	\$249	Commercial	\$259	0.96	No
	\$125	Residential	\$204	0.61	Yes
	\$130	Rural	\$35	3.76	Yes
2 Bromley	\$150	Residential	\$177	0.85	No
3 Wigram / Sockburn	\$294	Commercial	\$375	0.78	Yes
	\$282	Residential	\$302	0.93	Yes
4 Rolleston	\$125	Residential	\$177	0.71	Yes
	\$88	Rural	\$12	7.13	Yes
5 East Belfast	\$107	Residential	\$246	0.44	Yes
	\$40	Rural	\$17	2.40	No
6 Lower Heathcote	\$244	Commercial	\$259	0.94	No
	\$147	Residential	\$193	0.76	No
	\$141	Rural	\$32	4.36	No
7 Sydenham / Waltham	\$463	Commercial	\$703	0.66	Yes
	\$420	Residential	\$393	1.07	Yes
8 East Ashley	\$6	Rural	\$4	1.39	No
9 South Rangiora	\$297	Residential	\$187	1.59	Yes
	\$68	Rural	\$8	8.56	Yes
10 Harewood / Airport	\$350	Commercial	\$364	0.96	No
	\$277	Residential	\$448	0.62	Yes
	\$184	Rural	\$37	4.96	Yes

Source: Ministry of Business, Innovation and Employment, Urban Development Capacity Dashboard

A.5 Official's Workshop Feedback

Key opportunities for and barriers to urban development and change in the Greater Christchurch area were discussed at a workshop held with Greater Christchurch Partnership officials. Feedback from this workshop included a wide range of potential spatial and non-spatial opportunities and barriers for the sub-region that require further investigation as part of the Future Development Strategy.

Potential Opportunities

Theme	Key Workshop Feedback
Integrate land use and infrastructure planning	<ul style="list-style-type: none"> • Enable infrastructure-led development as opposed to reactionary infrastructure delivery • Reinforce the role of activity centres that benefit from good access to the transport network • Rezone activity centres and transport corridors for higher density housing • Transit-oriented development that encourages passenger and active modes of travel • Achieve the objectives of An Accessible City in terms of aspirations for mode share • Develop light rail or bus express lanes running along key transport corridors, with park and ride facilities linking to suburbs and satellite towns • Undertake early structure and master planning for key growth areas to deliver enhanced development outcomes that minimise adverse effects
Redevelop land and repurpose buildings	<ul style="list-style-type: none"> • Encourage the redevelopment of under-utilised land and buildings • Rezone areas that could support higher density housing and reduce the need for car use • Remodel suburban commercial buildings into apartments (e.g. Addington) • Relocate and redevelop large event areas for housing (e.g. Riccarton Racecourse) • Redevelop fragments of larger parks and reserves for housing (e.g. McFarlane Park, Burnside Park, Avonhead Park) • Redevelop Council owned land and brownfield areas • Consider areas submitted for rezoning as part of the review of the Christchurch District Plan
Incentivise urban development and change	<ul style="list-style-type: none"> • Incentivise the development of existing capacity, including in the City's eastern suburbs • Support central city housing that is suitable and attractive to different types of households • Assistance from central government for unlocking opportunities for new development (e.g. purchasing areas of land) • Configure developer contributions to encourage preferred patterns of development • Create financial incentives for buying and upgrading homes that are comparable to the incentives for building new homes • Invest in appropriate transport technologies that support sustainable growth • Promote joint funding models that unlock key infrastructure (e.g. stadium) • Invest in public space and streetscape improvements • Explore the potential for affordable cooperative housing options • Explore the potential for land swaps
Remove barriers to urban development and change	<ul style="list-style-type: none"> • Address key development feasibility issues, including high land values and building costs • Reconfigure the airport noise contour to unlock land in western areas • Invest in technologies that reduce noise issues in noise exclusion zones • Investigate where existing barriers to development could be removed over time • Investigate the barriers to development for zoned land on greenfield areas
Other key considerations	<ul style="list-style-type: none"> • Encourage neighbourhood planning in the local context • Support increased community interactions and cohesiveness • Incorporate a component of social and affordable housing in developments • Understand the lifestyle needs and demands of future generations • Create appropriate jobs in more deprived areas, including the City's eastern suburbs • Encourage dwellings to be used by local residents as opposed to be used as holiday rentals

Potential Barriers

Theme	Key Workshop Feedback
Environmental and planning limits on development	<ul style="list-style-type: none"> • Natural hazard risks (e.g. sea level rise, flooding, inundation), especially in eastern areas • Geotechnical hazard risks (e.g. rockslides, liquefaction), especially in eastern areas • Restrictions in the airport noise contour and aquifer protection zone • Need to maintain the floodplain and land drainage capacity • Protection of ground water and surface water quality • Protection of fertile agricultural land in western areas • Location of land use activities with high impact on communities (e.g. reverse sensitivity issues related to quarries, state highways and industrial areas) • Height limits on new buildings, especially in the central city
Integration of land use and infrastructure planning	<ul style="list-style-type: none"> • Existing land use patterns, with dispersed housing and business activities • Longer distances travelled to access the workplace, and key services and facilities • Capacity of the transport network to provide increased connectivity and travel choice, including constraints on key strategic transport corridors (e.g. Brougham Street) • Ability of the public transport system to be an efficient travel option for some communities • Continued investment in infrastructure that make private transport more convenient • Integrating and sequencing infrastructure delivery to achieve efficiencies • Insufficient existing and planned infrastructure to support growth • Limited transport connections across the Waimakariri River
Market conditions reducing the feasibility of development	<ul style="list-style-type: none"> • Costs of construction • High land values, especially in the central city • Land values artificially maintained through car park use in the central city • Costs of remediating land with geotechnical or contamination issues • Development feasibility issues in certain areas, including in eastern areas • Ability to privately deliver a range of commercially feasible housing options • Ability to deliver social and affordable housing in the absence of government intervention • Spatial differences in the relative cost of development, with lower costs for greenfield land • Spatial differences in the externalities of development to the wider area not reflected in pricing structures • Inflexible financing support for developments • Cost of delivering new servicing infrastructure • Market uncertainty resulting in conservative approaches by developers
Perceptions and behaviour of residents	<ul style="list-style-type: none"> • Willingness to commute longer distances to live in higher quality, new build homes • Poor understanding of certain neighbourhoods (e.g. Spreydon, Somerfield) and different housing typologies • Perception issues for certain areas due to the quality of the existing housing stock • Limited incentives for landlords to improve the quality of rental homes • Desirability of living in suburban areas • Poor quality developments affect local perceptions of higher density living • Inability of first home buyers and owner-occupiers to compete with investors

Version Control

Date: 28 February 2018
Version: Draft V4.0
Contributors: Housing Capacity Team, CCC, ECAN, SDC and WDC
Purpose: Greater Christchurch Urban Development Capacity Assessment
Owner: Greater Christchurch Partnership

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