

Documentation of assumptions for 2009 LTCCP Household and Population Growth Model

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Background

The purpose of this document is to provide a reference to the process and the assumptions behind the household and population projections and growth model used for the 2009 LTCCP.

It is intended that there is one source of household and population projections for the 2009 LTCCP. These are provided from the CCC Growth Model. The main drivers for sub territorial authority projections has been for the development contributions policy and the infrastructure groups forward planning functions and modelling. As such projection information is provided at territorial authority, area unit and meshblock levels to feed into the processes required for future planning. Note projections at finer spatial scales are likely to have decreased levels of accuracy.

The Growth Model distributes an agreed set of high level projections to finer spatial scales using computer software such as GIS and relational databases. This document covers the household, population and holiday home models. For the LTCCP development contributions there is also a need to produce a business floor area model and impervious surfaces model, these will be released at a latter date.

This is a non technical document is structured along the following topic areas:

- UDS Projections
- Non UDS part of the City Projections
- Household model
- Population model
- Holiday Homes

The LTCCP growth model is consistent with the projections in the Greater Christchurch Urban Development Strategy (UDS)¹. However it should be noted that the UDS area only covers part of the City, with the area of Banks Peninsula beyond the Lyttelton Harbour Basin excluded (Figure 1). A separate set of projections was developed for this area.

UDS Projections

The UDS strategy document that was produced in 2007. This used as it's base a set of population and household projections produced by Statistics New Zealand (SNZ) to an agreed set of assumptions in September 2006 for the UDS management team. These projections were based on a unofficial estimated resident population at June 2006(the official estimated population wasn't due to be released until November 2006), and the Statistics New Zealand sub national population and household projections released in February and October 2005 respectively. The UDS projections used the medium assumptions for fertility and mortality and the high assumption for migration for Christchurch, Waimakariri and Selwyn and was subsequently referred to as the "UDS medium high projection". These projections covered the UDS area of the City.

The reason for using the medium high projections was due to a number of factors which included the recent high level of migration driven growth since 2000. This had lead in the short term to growth exceeding the previous high level projections. There was concern that this level of growth would continue and the need to be conservative and have infrastructure and planning anticipating future growth rather than reacting to growth pressures.

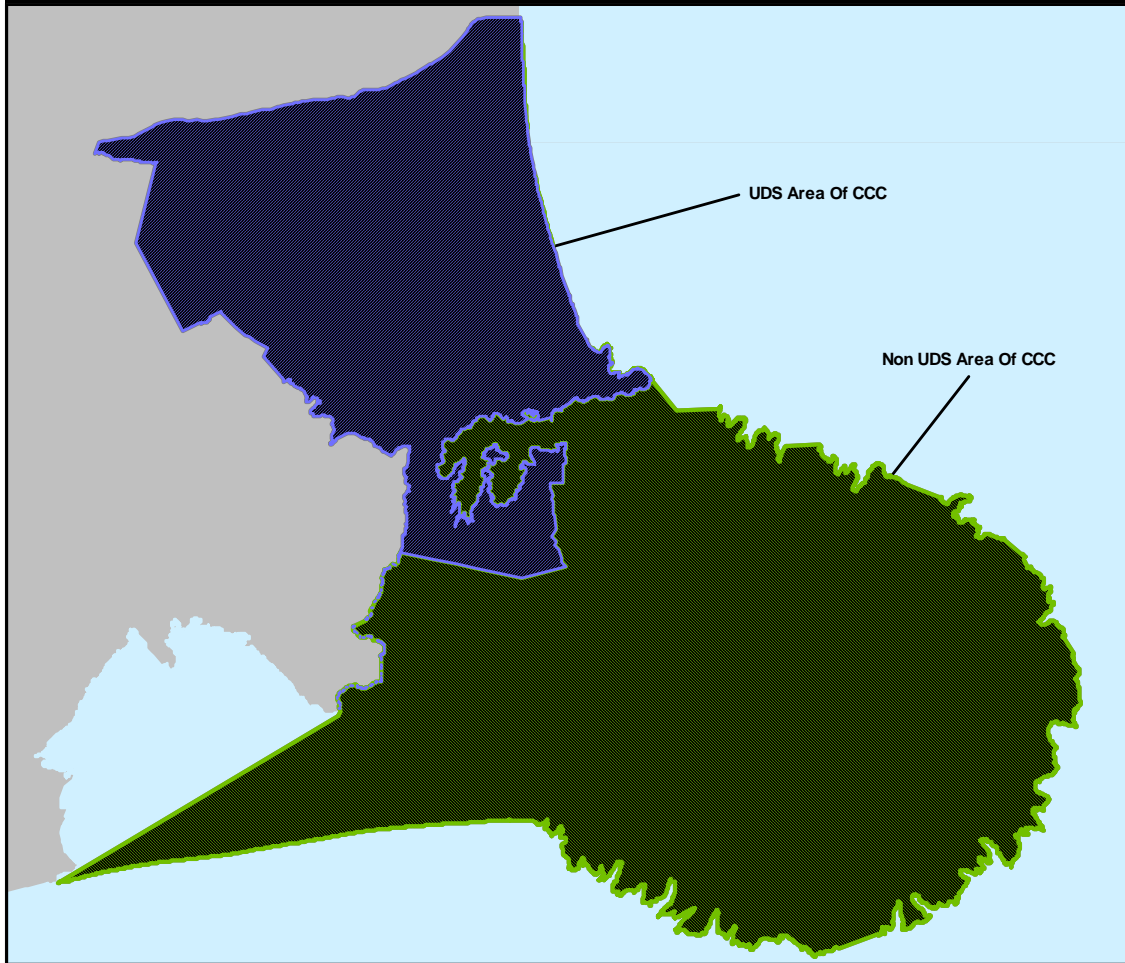
Since the UDS strategy document was produced in 2007, SNZ has produced sub national population projections with a 2006 census base. These were released in December 2007. When these were compared with the 2006 UDS medium high projection, the latest SNZ projection for Christchurch is very similar to the medium high

Table 1. Summary of Population and Household Projections for Christchurch City Council

	2006	2011	2016	2021	2026	2031	2036	2041
Population	361,800	375,018	387,490	402,034	416,725	428,833	440,941	453,049
Households	143,886	151,900	159,343	168,339	177,335	184,028	190,721	197,414

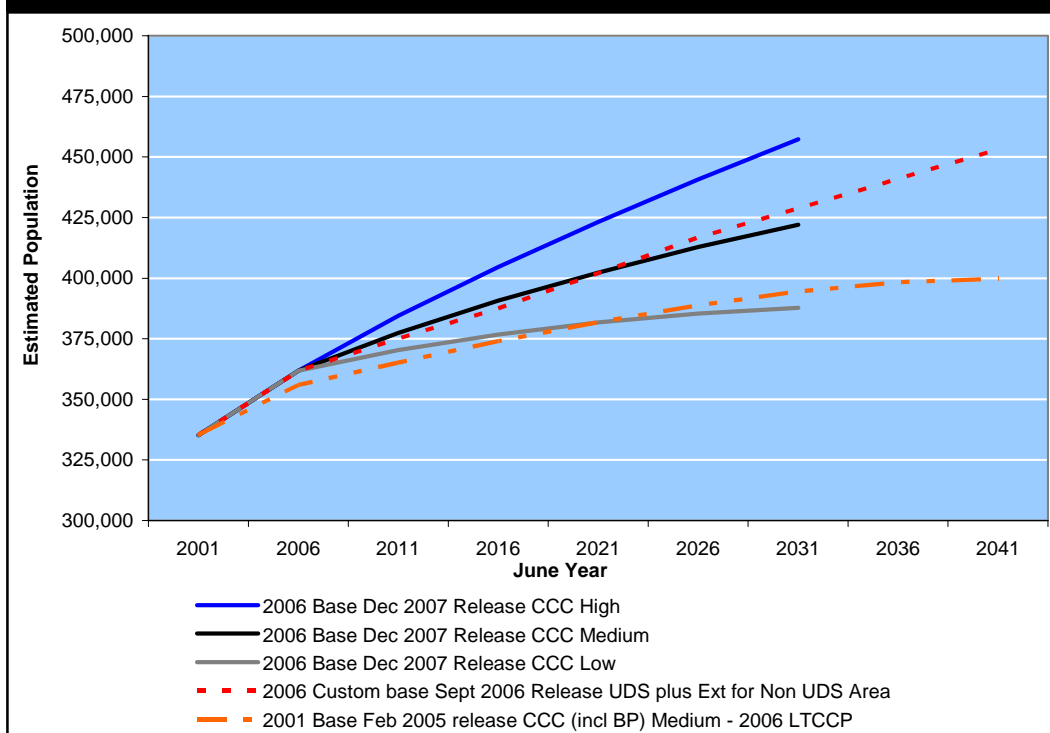
1. UDS Forum, 2007, Greater Christchurch Urban Development Strategy and Action Plan 2007.

Figure 1. Map showing the UDS and Non UDS areas of the Christchurch City Council



projections (figure 2). The reason for this has been the increase in the birth rate in the past five years which has raised the natural increase component of the projections. It should be noted that after 2021 the UDS medium high projection is higher than the SNZ medium projection and continues to increase at a greater rate. Until the UDS management team decides on a different set of projections, we will be using the September 2006 medium high projection. In addition SNZ will not be releasing it's next updated sub national household projections until the

Figure 2. UDS Growth Projections by Area and Type of Development



second half of 2008 which is too late for LTCCP planning.

Projections for the Non UDS part of the CCC.

The non UDS part of the City consists of the census area units of Akaroa, Akaroa Harbour, Port Levy, Little River and Banks Peninsula Eastern Bays. Household projections for these areas were based on the Area Unit household projections produced by Statistics New Zealand in November 2005. These had a 2006 medium projection that very closely matched the 2006 census household count (1250 compared with 1251). These showed growth of between 50 and 70 households in each five year period between 2006 and 2021. These increments were added to the 2006 census households up to 2021 and from this point 50 households for each five year period were added. Due to the small size of the population in this area, unexpected events may have a significant impact on the nature of the household and population growth especially in the short term. Also growth is likely to behave differently to the rest of the CCC area due to it being influenced by rural and lifestyle trends. Note household growth doesn't include holiday homes which have been modelled and will be discussed separately.

Household Model Assumptions

The household model takes the TA level projections from above and allocates it to a finer spatial scale based on a number of factors including:

- UDS aspirational splits between Greenfield and Infill sectors
- Previous trends in development by topography eg on the flat versus the hills or harbour
- The amount of capacity available in each of the above areas at each projection period

The UDS describes (in Table 2 page 43 shown in figure 3 below) the preferred location and nature of new household development in the UDS Area. The "central" area includes the four avenues plus the area of Living 3 zoned land adjacent to the four avenues. The "Rest of City" is all the areas zoned Living 2, plus the Living 3 areas in the suburban focal points. "Ongoing infill" is everywhere else outside the "central" and "rest of City" intensification areas where infill development might occur. "Greenfield" is all the current and future undeveloped areas of the City, which were essentially rural until developed. There are a few greenfield areas remaining within the urban area that are large and undeveloped, but the majority of these are on the periphery of the City.

In addition to the areas described for the UDS development, development in the non UDS area has been split into areas based on geographical similarities and area unit boundaries, and are as follows:

Figure 3. UDS Growth Projections by Area and Type of Development

Table 2: Strategy Household (Hh) Growth Projections, 2006-41*

Area and Type of Development	2006 Total Hh	2026 Total Hh	2041 Total Hh	2007-16 Increase (10 years)	2017-26 Increase (10 years)	2027-2041, Increase (15 years)	2006-41 Total Increase (35 years)
Christchurch City							
1. Intensification Areas:							
a. Central	17638	24638	31628	+3000	+4000	+6990	+13990
b. Rest of City	18056	26056	32566	+3000	+5000	+6510	+14510
2 Ongoing Infill	93623	97623	98613	+2500	+1500	+990	+4990
3. Greenfield Areas**	13483	27583	33163	+6510	+7590	+5580	+19680
Total	142800	175900	195970	+15010	+18090	+20070	+53170
Selwyn District							
3. Greenfield Areas**				+3200	+3400	+2640	+9240
4. Rural Residential				+700	+700	+1050	+2450
5. Rural – rest of Strategy area				+100	+50	+50	+200
Total	7700	15800	19490	+4000	+4200	+3690	+11890
Waimakariri District							
3. Greenfield Areas**				+4150	+2150	+1590	+7890
4. Rural Residential				+500	+500	+510	+1510
5. Rural - rest of Strategy area				+200	+100	+100	+400
Total	13600	21200	23450	+4850	+2750	+2200	+9800
UDS Total	164100	212900	238910	+23860	+25040	+25960	+74860
1 & 2 - Intensification & Infill				+8500	+10500	+14490	+33490
% Share 1 & 2				36%	42%	56%	45%

- Gebbies Pass to Little River
- Akaroa Township
- Akaroa Harbour Basin
- Remainder of Banks Peninsula

These groupings also relate to the nature of household growth over the previous census periods from 1996 to 2006. Each area had unique growth patterns that are likely to continue into the future. The complicating factor in this part of the City is the large proportion of holiday homes and the rates of conversion/use between permanent residences and holiday homes.

In each of the areas described above in the UDS and non UDS part of the City, historical proportions of growth from building consents are allocated to different areas based on topographical element such as:

- The Flat,
- Port Hills,
- Lyttelton Harbour, and
- Rural and Residential areas of Banks Peninsula.

This allows for the fact that although there might be large amounts of vacant residential land on the Port Hills it will not be developed at the same rates as flatter areas for a number of reasons including the increased cost of development.

These high level proportions are then distributed to a meshblock zone level. The meshblock zone is the resulting areas produced when a meshblock is split by different land use zones. This means that if a meshblock is partially residential and business, the residential area is allocated the households and it is only this area that is used to calculate the potential capacity. The assumption being that the majority of growth will occur in the residential zoned areas, the exception being the central city zone. Where there are more than one residential zone the census households are allocated between the different zones based on a set of rules including the number of land parcels in an area. The meshblock zone households are then adjusted to equal the estimated households at territorial authority level. This process isn't a simple percentage adjustment which is the common way of doing these adjustments. We have building consent information for new dwellings and units over the proceeding 6 months to the estimate, these were used to allocate new households to meshblock zones that were likely to have occurred between the census in March and the estimates in June. This was then adjusted pro rata to match the estimated households at June 2006.

The household growth model is also designed to take into account any actual development that has occurred since the census base date. This is from building consent records for each year to June. In the current LTCCP growth model the 2007 year has been calculated as the adjusted household number at 2006 plus the net (new units and dwellings minus the number of demolished units and dwellings) number of new units and dwellings for that June year. The sector projections for each period are then adjusted to allow for this growth so that at the end of the projection period (2041) the number of households is the same as the input projections. Table P5 shows the impact of this for each sector and topography.

For each projection year and meshblock zone the future capacity is then calculated for each June year since the base year using the following:

1. The current zoning,
2. The current number of households,
3. Any future growth areas that may add capacity due to a change in zoning, and
4. Possibly any constraints on development.

Capacity at a point in time is the function of the number of households that can realistically be expected to be built in a zone minus the current number of households. Note, this capacity can be calculated in different ways for different parts of the city. For example, some areas may use the results of a residential capacity analysis that was undertaken for the UDS² or use a target density method, or manually assign the capacity to an area. The methods used to calculate capacity in each sector is described in Table P4.

Once the capacity has been assessed for all the meshblock zones the amount of new households for a given period is allocated to the meshblock zones pro rata on the amount of capacity for each sector and topography. The remaining capacity is then calculated and then the process is repeated for the next projection period.

Projections are calculated annually from 2006 to 2021 and then five yearly to 2026 and then for 2041. In the final tables five yearly projections have been produced between 2026 and 2041, however, these are points along a linear trend between the 2026 and 2041.

2. This uses the base data that was used for the report by Max Barber in 2006 on Residential Capacity Analysis for the UDS area.

Summary of Household Assumptions:

1. Building consent activity in the 6 months to June 2006 give an indication of where the growth has occurred between the census at the beginning of March and the estimate at the end of June.
2. After adjusting for the consented development the remainder of the difference between the census households and the household estimates is calculated at a constant rate throughout the City. This is unlikely to be the case, but there is very little information to include finer spatial variation to this adjustment.
3. In the non urban area the difference between the census count and the June estimates is adjusted by the same amount as the UDS part of the City after the adjustment for building consents.
4. Sector growth will follow the aspirational growth targets set in the UDS for the UDS area. Sector targets outside of the UDS area are based on the latest SNZ area unit household projections and census data.
5. Proportions of growth in each topographical part of the City will be constant into the future and be based on historical building consent trends.
6. Timing of the release of future growth areas is based on the current understanding of when the land is likely to be available for development (excludes impact of proposed airport noise contours).
7. Capacity is assumed to have no restrictions on it and is available to be built on when required. There are a number of market and non market reasons why this may not be the case.

Population Projections

The population projections are calculated based on the household projections and the mean household size in each meshblock zone. In addition to this information the number of people living in non private dwellings eg prisons, hotels, hospital, motor camps etc is factored in. The population of an area at a point in time is calculated as the number of households times the average household size plus the number of people living in non private dwellings (adjusted for the change in population size over time). This total is then adjusted pro rata to equal the projected population for the period at a TA level.

In meshblocks where the average household size has been suppressed due to confidentiality or are zero in the SNZ 2006 meshblock database, these areas have been assigned a value based on the average household size of the surrounding meshblocks. This was calculated using a grid based smoothed Triangulated Irregular Network (TIN) in Mapinfo Vertical Mapper. This assumes that in areas where there currently isn't any households the average household size is likely to be similar to the developed areas surrounding it.

The average household size of each meshblock is decreased at a rate consistent with the rate of change at a Territorial Authority level which was derived from the SNZ household projections produced for the UDS in September 2006. This assumes that all areas of the City will change average household size at the same rate as the whole City, which might not necessarily be true. As such the population in some areas may be projected to decrease even though the number households has increased or stayed constant.

1. Territorial authority population projections where there are annual estimates released by SNZ are set to these estimates (2006 and 2007 at present). For periods beyond the estimates the populations at the TA level are aligned with the UDS population projections.
2. Population change at finer spatial scales are calculated based on the household projections, the average household size and then the number of people living in non private dwellings. These are then adjusted to the TA level projections by pro rata.

Holiday Homes

In the Banks Peninsula area there are a number of dwellings that are used for holiday homes and are not included in the number of households as they do not have permanent residents. These have been modelled separately. Information for holiday home projections are based on the 2006 census non occupied dwellings data at meshblock and area unit level, and the projected number of holiday homes from the ResponsePlanning report "Serviced Areas: Population and Visitor Projections" (March 2005). This report was checked against the census data for 1996, 2001 and 2006.

Generally the number of holiday homes will continue to grow in the Akaroa Township and Harbour, and the Little River area, however in Diamond Harbour the number will decline gradually. In addition, it is expected that in other areas of the Peninsula that the number will stay relatively constant due to the limited opportunities for development. Note, the number of holiday homes is very dependant on the economic conditions at a particular time, with periods of high economic growth increasing the demand for holiday homes and increasing the price and the ability for locals to afford housing and or the locals taking advantage of the demand and selling there houses

while the price is inflated. Table 2 below show the projected number of holiday homes by area unit in the Banks Peninsula area.

1. Holiday home trends in the future will follow historic patterns.

Table 2. Holiday Home Projections by Area Unit on Banks Peninsula									
Area Unit ID	Area Unit Description	2006	2011	2016	2021	2026	2031	2036	2041
596502	Diamond Harbour	366	360	350	340	330	322	313	305
596800	Akaroa	564	594	624	649	674	694	714	734
596901	Akaroa Harbour	459	489	519	539	559	576	593	610
596902	Banks Peninsula Eastern Bays	147	150	150	150	150	150	150	150
597101	Little River	108	115	120	125	130	132	133	135

Appendices

Appendix 1. Summary of Growth Model Components.

Includes tables P1 to P5

Appendix 2. Summary of Building Consent Activity by Sector

Scenario: CCC 2009 LTCCP 2006 Census Base

Version: 4

Date: 22/07/2008 **Date Geo Components Updated:** 23/07/2008

Path: T:\1_Households\NewHouseholdModel\CCC 2009 LTCCP 2006 Census Base\Version

Census Base Year: 2006

Projection:

Description: Updated LTCCP Model based on the Landuse pattern provided for the variation on the RPS in July. This should be used for the 2009 LTCCP until a newer model is developed.

Census Dwelling Description:

Area Covered: CCC

Sector Description: UDS Sectors in the UDS part of the City. In Non UDS area they relate to area unit boundaries due to the different rates of household growth and holiday home growth especially in Akaroa Harbour.

Topography Description: Flat, Hills and Lyttelton Harbour in the UDS area. In Non UDS area split into rural and residential areas based on zoning. This is due to different rates of development in each area.

	Christchurch	Waimakariri	Selwyn
Vacant Land Updated to:	30/06/2007	9/09/9999	9/09/9999
Building Consents Updated to:	30/06/2007	9/09/9999	9/09/9999
Zone Base Date:	30/06/2007	24/08/2005	25/10/2007

Table P1. Sector Projection Summary:

Territorial Authority	Sector	2006	2011	2016	2026	2041
CHRISTCHURCH CITY						
	Akaroa Harbour Basin	349	369	391	424	473
	Akaroa Township	303	306	310	315	322
	Central	16,571	18,071	19,571	23,571	30,561
	Gebbies Pass - Littl	450	486	527	587	676
	Greenfield	19,900	23,155	26,416	34,000	39,580
	Ongoing Infill	86,798	88,048	89,298	90,798	91,788
	Remainder Banks Peni	217	219	220	223	227
	Rest of City - Inten	19,285	20,795	22,295	27,295	33,805
	Rural	3	3	3	3	3
	Total	143,876	151,452	159,031	177,216	197,435

Table P2. Topographic Projection Summary

Territorial Authority	Sector	Flat	Hill	Lyttelton Harbour	Non UDS Residential	Non UDS Rural
CHRISTCHURCH CITY						
	Akaroa Harbour Basin				70	30
	Akaroa Township				100	0
	Central	100				
	Gebbies Pass - Littl				40	60
	Greenfield	86	9	5		0
	Ongoing Infill	93	7			0
	Remainder Banks Peni	0			0	100
	Rest of City - Inten	100				
	Rural	100	0			
	Rural Residential	0				
SELWYN DISTRICT						
	Greenfield	95	0	0		
	Rural	100	0	0		
	Rural Residential	100				
WAIMAKARIRI DISTRICT						
	Greenfield	100				
	Rural	100				
	Rural Residential	100				

Table P3. Growth Area Staging Summary:

AreaCode:	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2026	2041	Total
Christchurch																			
CN1	0	0	0	0	1140	0	0	0	0	0	0	360	0	0	0	0	0	0	1500
CN3	0	0	0	0	0	0	0	0	0	0	0	1525	0	0	0	0	0	387	1912
CN4	0	0	0	0	0	0	0	0	0	0	0	1030	0	0	0	0	0	120	1150
CPH1	0	0	0	0	0	0	0	0	0	0	0	0	180	0	0	0	0	0	180
CSW1	0	0	0	1540	0	0	0	0	0	0	0	350	0	0	0	0	0	0	1890
CSW2	0	0	0	0	0	870	0	0	0	0	0	340	0	0	0	0	0	0	1210
CSW3	0	0	0	0	0	0	175	0	0	0	0	1455	0	0	0	0	0	180	1810
CSW4	0	0	0	0	0	0	0	0	0	0	0	1940	0	0	0	0	0	2060	4000
CSW5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1140	1140
CSW6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1383	1383
CW2	0	0	0	0	0	0	255	0	0	0	0	0	0	0	0	0	0	0	255
Total:	0	0	0	1540	1140	870	430	0	0	0	0	7000	180	0	0	0	0	5270	16430

Table P4. Sector Capacity Method Summary

Christchurch City			
Capacity Type	Sector	ZoneCode:	Target Density:
Exclude from Calculations	Akaroa Harbour Basin		
		CR	
	Akaroa Township		
		TC	
	Gebbies Pass - Littl		
		CR	
		TC	
	Greenfield		
		CR	
		ID	
		LP	
		SP(HOSP)	
		TC	
	Ongoing Infill		
		SP(HOSP)	
Remainder Banks Peni			
	CR		
Automatically Calculated using Vacant Land(Greenfield only)	Greenfield		
		L1	
		L1_DEF	
		L1A	
		L1A_DEF	
		L1B	
		L1E	
		LG	
		LH	
		LH_DEF	
		LHA	
		LHA_DEF	
		LHB	
		LRS	
		LRV	
		LTMB	
		PA	
		R	
		RC	
		Ru	
		RU1	
		RU2	
		RU3	
		RU4	
		RU5	
		RU6	
		RU7	
		RUH	
		RUQ	
		RuR	
		RV	
		SP(AWA)	
	SP(STHH)		
	SP(WIGR)		
	SP(WIGR)B1		
	SP(WIGR)C&		
	SS		
Target Density - Current Density	Akaroa Harbour Basin		
		AH_(d)	2.00
		R	10.00
		Ru	0.02
		RV	

	SS	8.00
	SSt	8.00
Akaroa Township		
	AH	2.00
	R	10.00
	R_(d)	10.00
	RC	10.00
	Ru	0.02
	RV	
Central		
	L3	30.00
	L5	25.00
Gebbies Pass - Littl		
	L	0.00
	Ru	0.02
	RV	
	SS	8.00
Remainder Banks Peni		
	PA	10.00
	Ru	0.02
	RV	
	SS	8.00
Rest of City - Inten		
	L2	30.00
	L3	30.00

Boffa Miskell - Four Aves Capacity Study

Central		
	CC	
	CCE	
	L4A	
	L4B	
	L4C	
	SP(HOSP)	

Residential Capacity Study - Max Barber

Ongoing Infill		
	L1	
	L1A	
	L1B	
	L1D	
	L4B	
	L5	
	LH	
	LHA	
	LHB	

Selwyn District

Capacity Type	Sector	ZoneCode:	Target Density:
Exclude from Calculations			
Greenfield			
		Inner Plains	
		Kingcraft Driv	
		Living 1	
		Living 1 Defer	
		Living 1A	
		Living 1A Def	
		Living 1A1	
		Living 1A2	
		Living 1A3	
		Living 1A4	
		Living 1A5 De	
		Living 1B	
		Living 1B def	
		Living 2	
		Living 2 Defer	
		Living 2A	
		Living 2A (BL	
		Living 2A Def	
		Living X	

		Living X Def	
		RU2	
Rural			
		CR	
		Inner Plains	
		Living 1	
		Living 1A	
		Living 2A	
		Port Hills	
		Railway Corn	
		Raven Drive	
		Rocklands	
Rural Residential			
		Devine Acres	
		Edendale	
		Inner Plains	
		Johnson Road	
		Jowers Road	
		Living 1	
		Living 1A	
		Yorktown	
Waimakariri District			
Capacity Type	Sector	ZoneCode:	Target Density:
Exclude from Calculations			
Greenfield			
		Res1	
		Res2	
		Res4a	
		Res4b	
		Res6	
		Res6a	
Rural			
		Res2	
		Res3	
		Res4a	
		Res4b	
		Res5	
		Rural Pegasus	
		Rural4b	
Rural Residential			
		Res3	
		Res4b	

Table P5. Summary of Original and Adjusted Household Projections by Sector:

Christchurch City

Akaroa Harbour Basin

Non UDS Residential

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	92	92	0	92	0	0
2007	95	106	11	106	0	1018
2008	98	105	7	105	0	1019
2009	100	108	8	107	-1	1018
2010	103	111	8	110	-1	1015
2011	106	114	8	113	-1	1012
2012	109	117	8	116	-1	1009
2013	112	120	8	119	-1	1006
2014	114	123	9	122	-1	1003
2015	117	126	9	125	-1	1000
2016	120	129	9	128	-1	997
2017	122	131	9	130	-1	995
2018	124	132	8	131	-1	994
2019	126	134	8	133	-1	992
2020	128	136	8	135	-1	990
2021	130	138	8	137	-1	988
2026	142	148	6	147	-1	978
2041	176	176	0	175	-1	950

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	257	257	0	257	0	0
2007	258	261	3	261	0	204
2008	259	261	2	261	0	204
2009	261	262	1	262	0	203
2010	262	263	1	263	0	202
2011	263	264	1	264	0	201
2012	264	265	1	265	0	200
2013	265	266	1	266	0	199
2014	267	267	0	267	0	198
2015	268	268	0	268	0	197
2016	269	269	0	269	0	196
2017	270	270	0	270	0	195
2018	271	271	0	271	0	194
2019	272	272	0	272	0	193
2020	273	273	0	273	0	192
2021	274	274	0	274	0	191
2026	278	279	1	279	0	186
2041	293	293	0	293	0	172

Christchurch City

Akaroa Township

Non UDS Residential

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	255	255	0	255	0	0
2007	256	261	5	261	0	766
2008	257	260	3	260	0	767
2009	258	261	3	260	-1	766
2010	259	262	3	261	-1	765
2011	260	263	3	262	-1	764
2012	261	264	3	263	-1	763
2013	262	265	3	264	-1	762
2014	263	266	3	265	-1	761
2015	264	267	3	266	-1	760
2016	265	268	3	267	-1	759
2017	265	268	3	267	-1	759
2018	265	268	3	267	-1	759
2019	265	268	3	267	-1	759
2020	265	268	3	267	-1	759
2021	265	268	3	267	-1	759
2026	267	269	2	268	-1	758
2041	274	274	0	273	-1	753

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	49	49	0	49	0	0
2007	49	49	0	49	0	0
2008	49	49	0	49	0	0
2009	49	49	0	49	0	0
2010	49	49	0	49	0	0
2011	49	49	0	49	0	0
2012	49	49	0	49	0	0
2013	49	49	0	49	0	0
2014	49	49	0	49	0	0
2015	49	49	0	49	0	0
2016	49	49	0	49	0	0
2017	49	49	0	49	0	0
2018	49	49	0	49	0	0
2019	49	49	0	49	0	0
2020	49	49	0	49	0	0
2021	49	49	0	49	0	0
2026	49	49	0	49	0	0
2041	49	49	0	49	0	0

Christchurch City

Central

Flat

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	16571	16571	0	16571	0	0
2007	16871	16985	114	16985	0	19104
2008	17171	17280	109	17280	0	18809
2009	17471	17578	107	17578	0	18511
2010	17771	17875	104	17875	0	18214
2011	18071	18173	102	18173	0	17916
2012	18371	18471	100	18471	0	17618
2013	18671	18769	98	18769	0	17320
2014	18971	19067	96	19067	0	17022
2015	19271	19365	94	19365	0	16724
2016	19571	19663	92	19663	0	16426
2017	19971	20060	89	20060	0	16029
2018	20371	20457	86	20457	0	15632
2019	20771	20854	83	20854	0	15235
2020	21171	21251	80	21251	0	14838
2021	21571	21648	77	21648	0	14441
2026	23571	23630	59	23630	0	12459
2041	30561	30561	0	30561	0	5528

Christchurch City

Gebbies Pass - Littl

Non UDS Residential

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	58	58	0	58	0	0
2007	61	58	-3	58	0	587
2008	64	63	-1	63	0	582
2009	66	66	0	66	0	579
2010	69	69	0	69	0	576
2011	72	72	0	72	0	573
2012	75	75	0	75	0	570
2013	78	78	0	78	0	567
2014	82	81	-1	81	0	564
2015	85	84	-1	84	0	561
2016	88	87	-1	87	0	558
2017	90	89	-1	89	0	556
2018	93	91	-2	91	0	554
2019	95	94	-1	94	0	551
2020	98	96	-2	96	0	549
2021	100	98	-2	98	0	547
2026	112	110	-2	110	0	535
2041	148	148	0	148	0	497

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	391	391	0	391	0	0
2007	395	396	1	396	0	393
2008	399	398	-1	398	0	391
2009	404	402	-2	402	0	387
2010	408	406	-2	406	0	383
2011	412	410	-2	410	0	379
2012	417	415	-2	415	0	374
2013	422	420	-2	420	0	369
2014	426	425	-1	425	0	364
2015	431	430	-1	430	0	359
2016	436	435	-1	435	0	354
2017	440	438	-2	438	0	351
2018	443	442	-1	442	0	347
2019	447	446	-1	446	0	343
2020	450	450	0	450	0	339
2021	454	454	0	454	0	335
2026	472	472	0	472	0	317
2041	525	525	0	525	0	264

Christchurch City

Greenfield

Flat

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	13176	13176	0	13176	0	0
2007	13736	13842	106	13842	0	3724
2008	14296	14398	102	14398	0	3168
2009	14856	14954	98	14954	0	4152
2010	15415	15509	94	15509	0	4736
2011	15975	16065	90	16065	0	4961
2012	16536	16622	86	16622	0	4835
2013	17097	17179	82	17179	0	4278
2014	17657	17736	79	17736	0	3721
2015	18218	18293	75	18293	0	3164
2016	18779	18850	71	18850	0	2607
2017	19431	19498	67	19498	0	8921
2018	20083	20146	63	20146	0	8273
2019	20735	20794	59	20794	0	7625
2020	21386	21442	56	21442	0	6977
2021	22038	22090	52	22090	0	6329
2026	25299	25330	31	25330	0	8328
2041	30098	30098	0	30098	0	3560

Hill

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	4328	4328	0	4328	0	0
2007	4387	4433	46	4433	0	1324
2008	4445	4491	46	4491	0	1266
2009	4504	4548	44	4548	0	1209
2010	4562	4606	44	4606	0	1151
2011	4621	4663	42	4663	0	1094
2012	4680	4720	40	4720	0	1037
2013	4738	4777	39	4777	0	980
2014	4797	4834	37	4834	0	923
2015	4856	4891	35	4891	0	866
2016	4914	4948	34	4948	0	809
2017	4983	5014	31	5014	0	743
2018	5051	5080	29	5080	0	854
2019	5119	5146	27	5146	0	788
2020	5187	5212	25	5212	0	722
2021	5255	5278	23	5278	0	656
2026	5597	5610	13	5610	0	324
2041	6099	6099	0	6099	0	0

Lyttelton Harbour

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	2394	2394	0	2394	0	0
2007	2427	2414	-13	2414	0	2018
2008	2459	2444	-15	2444	0	1988
2009	2492	2477	-15	2477	0	1955
2010	2524	2510	-14	2510	0	1922
2011	2557	2543	-14	2543	0	1889
2012	2589	2576	-13	2576	0	1856
2013	2622	2609	-13	2609	0	1823
2014	2655	2642	-13	2642	0	1790
2015	2687	2675	-12	2675	0	1757
2016	2720	2708	-12	2708	0	1724
2017	2758	2747	-11	2747	0	1685
2018	2796	2786	-10	2786	0	1646
2019	2833	2825	-8	2825	0	1607
2020	2871	2864	-7	2864	0	1568
2021	2909	2903	-6	2903	0	1529
2026	3099	3095	-4	3095	0	1337
2041	3378	3378	0	3378	0	1054

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	2	2	0	2	0	0
2007	2	2	0	2	0	0
2008	2	2	0	2	0	0
2009	2	2	0	2	0	0
2010	2	2	0	2	0	0
2011	2	2	0	2	0	0
2012	2	2	0	2	0	0
2013	2	2	0	2	0	0
2014	2	2	0	2	0	0
2015	2	2	0	2	0	0
2016	2	2	0	2	0	0
2017	2	2	0	2	0	0
2018	2	2	0	2	0	0
2019	2	2	0	2	0	0
2020	2	2	0	2	0	0
2021	2	2	0	2	0	0
2026	2	2	0	2	0	0
2041	2	2	0	2	0	0

Christchurch City

Ongoing Infill

Flat

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	83855	83855	0	83855	0	0
2007	84088	84484	396	84484	0	4390
2008	84320	84700	380	84700	0	4174
2009	84552	84911	359	84911	0	3963
2010	84785	85122	337	85122	0	3752
2011	85018	85333	315	85333	0	3631
2012	85250	85544	294	85544	0	3420
2013	85482	85755	273	85755	0	3209
2014	85715	85966	251	85966	0	2998
2015	85948	86177	229	86177	0	2787
2016	86180	86388	208	86388	0	2576
2017	86320	86515	195	86515	0	2485
2018	86459	86642	183	86642	0	2358
2019	86598	86769	171	86769	0	2231
2020	86738	86896	158	86896	0	2104
2021	86878	87023	145	87023	0	1977
2026	87575	87658	83	87658	0	1370
2041	88496	88496	0	88496	0	532

Hill

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	2943	2943	0	2943	0	0
2007	2960	2979	19	2979	0	929
2008	2978	2991	13	2991	0	917
2009	2996	3008	12	3008	0	900
2010	3013	3025	12	3025	0	883
2011	3030	3042	12	3042	0	866
2012	3048	3059	11	3059	0	849
2013	3066	3076	10	3076	0	832
2014	3083	3093	10	3093	0	815
2015	3100	3110	10	3110	0	798
2016	3118	3127	9	3127	0	781
2017	3128	3137	9	3137	0	771
2018	3139	3147	8	3147	0	764
2019	3150	3157	7	3157	0	754
2020	3160	3167	7	3167	0	744
2021	3170	3177	7	3177	0	734
2026	3223	3227	4	3227	0	684
2041	3292	3292	0	3292	0	619

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2026	0	0	0	0	0	0
2041	0	0	0	0	0	0

Christchurch City

Remainder Banks Peni

Flat						
Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	0	0	0	0	0	0
2007	0	0	0	0	0	0
2008	0	0	0	0	0	0
2009	0	0	0	0	0	0
2010	0	0	0	0	0	0
2011	0	0	0	0	0	0
2012	0	0	0	0	0	0
2013	0	0	0	0	0	0
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	0	0	0	0
2017	0	0	0	0	0	0
2018	0	0	0	0	0	0
2019	0	0	0	0	0	0
2020	0	0	0	0	0	0
2021	0	0	0	0	0	0
2026	0	0	0	0	0	0
2041	0	0	0	0	0	0

Non UDS Residential

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	0	0	0	0	0	0
2007	0	0	0	0	0	301
2008	0	0	0	0	0	301
2009	0	0	0	0	0	301
2010	0	0	0	0	0	301
2011	0	0	0	0	0	301
2012	0	0	0	0	0	301
2013	0	0	0	0	0	301
2014	0	0	0	0	0	301
2015	0	0	0	0	0	301
2016	0	0	0	0	0	301
2017	0	0	0	0	0	301
2018	0	0	0	0	0	301
2019	0	0	0	0	0	301
2020	0	0	0	0	0	301
2021	0	0	0	0	0	301
2026	0	0	0	0	0	301
2041	0	0	0	0	0	301

Non UDS Rural

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	218	218	0	218	0	0
2007	218	219	1	219	0	758
2008	218	219	1	219	0	758
2009	218	219	1	219	0	759
2010	218	219	1	219	0	759
2011	218	219	1	218	-1	760
2012	218	219	1	218	-1	760
2013	218	219	1	218	-1	761
2014	218	219	1	217	-2	761
2015	218	219	1	219	0	758
2016	218	219	1	219	0	759
2017	218	219	1	218	-1	759
2018	218	219	1	218	-1	760
2019	218	219	1	217	-2	760
2020	218	219	1	217	-2	761
2021	218	219	1	216	-3	761
2026	220	221	1	218	-3	759
2041	224	224	0	221	-3	756

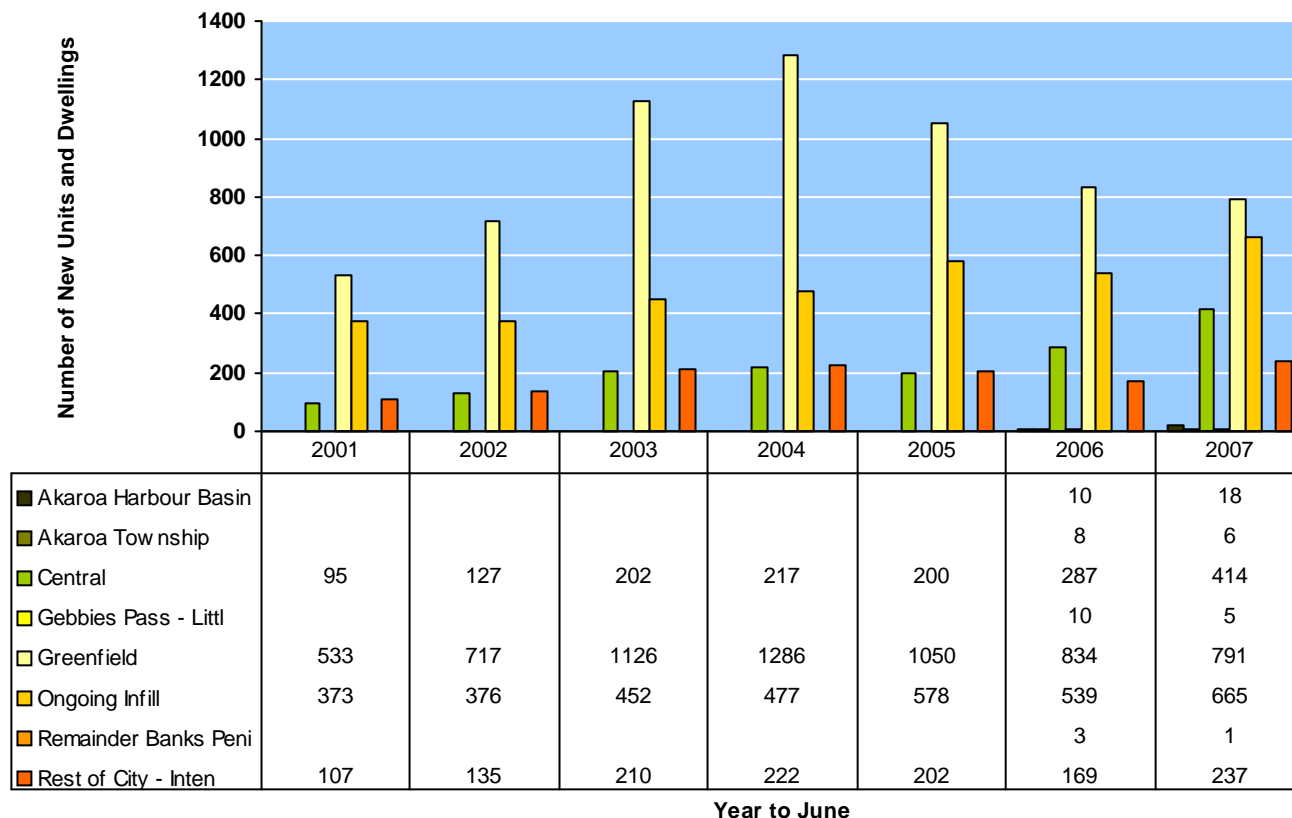
Christchurch City

Rest of City - Inten

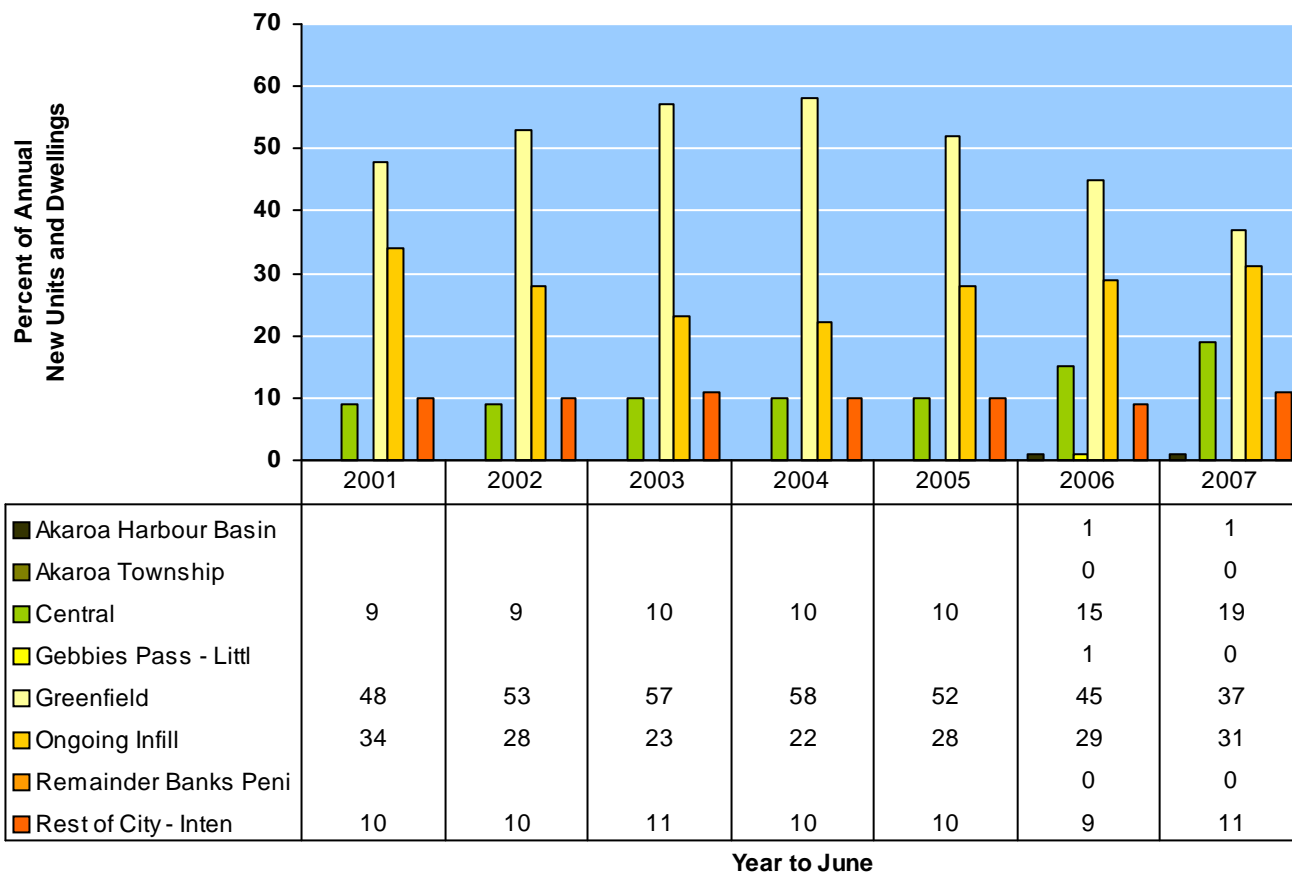
Flat						
Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	19295	19295	0	19295	0	0
2007	19597	19532	-65	19532	0	20159
2008	19899	19838	-61	19838	0	19853
2009	20201	20141	-60	20141	0	19550
2010	20503	20444	-59	20444	0	19247
2011	20805	20747	-58	20747	0	18944
2012	21105	21048	-57	21048	0	18643
2013	21405	21349	-56	21349	0	18342
2014	21705	21650	-55	21650	0	18041
2015	22005	21951	-54	21951	0	17740
2016	22305	22252	-53	22252	0	17439
2017	22805	22754	-51	22754	0	16937
2018	23305	23256	-49	23256	0	16435
2019	23805	23759	-46	23759	0	15932
2020	24305	24261	-44	24261	0	15430
2021	24805	24763	-42	24763	0	14928
2026	27305	27274	-31	27274	0	12417
2041	33815	33815	0	33815	0	5876

Christchurch

Number of New Units and Dwellings by Sector and Year (Net)



Proportion of New Units and Dwellings by Sector and Year (Net)



Note: The net number of new units and Dwellings is the sum of all new units and dwellings minus the number of dwellings that have been removed to allow for the new units or dwellings. For Example, if one house was removed and four new units built on the site then the net number of new units or dwellings would be three (4 - 1 = 3).

Summary of Building Consents by Sector and Topography

Christchurch City	Sector	Topography	Year	Number of Consents	Proportion
Akaroa Harbour Basin					
Non UDS Reside					
			2006	6	
			2007	14	
				20	71
Non UDS Rural					
			2006	4	
			2007	4	
				8	29
				28	
Akaroa Township					
Non UDS Reside					
			2006	8	
			2007	6	
				14	100
				14	
Central					
Flat					
			2001	95	
			2002	127	
			2003	202	
			2004	217	
			2005	200	
			2006	287	
			2007	414	
				1542	100
				1542	
Gebbies Pass - Littl					
Non UDS Reside					
			2006	6	
				6	40
Non UDS Rural					
			2006	4	
			2007	5	
				9	60
				15	

Greenfield

Flat

2001	480	
2002	648	
2003	1043	
2004	1207	
2005	954	
2006	705	
2007	666	
	5703	90

Hill

2001	53	
2002	69	
2003	83	
2004	79	
2005	96	
2006	111	
2007	105	
	596	9

Lyttelton Harbou

2006	18	
2007	20	
	38	1

6337

Ongoing Infill

Flat

2001	347	
2002	350	
2003	409	
2004	435	
2005	541	
2006	494	
2007	629	
	3205	93

Hill

2001	26	
2002	26	
2003	43	
2004	42	
2005	37	
2006	45	
2007	36	
	255	7

3460

Remainder Banks Peni

Non UDS Rural

2006	3	
2007	1	
	4	100

4

Rest of City - Inten

Flat

2001	107	
2002	135	
2003	210	
2004	222	
2005	202	
2006	169	
2007	237	
	1282	100
	1282	
	12682	

Akaroa Harbour Basin	28	0
Akaroa Township	14	0
Central	1542	12
Gebbies Pass - Littl	15	0
Greenfield	6337	50
Ongoing Infill	3460	27
Remainder Banks Peni	4	0
Rest of City - Inten	1282	10

Since: 2001 **12682**

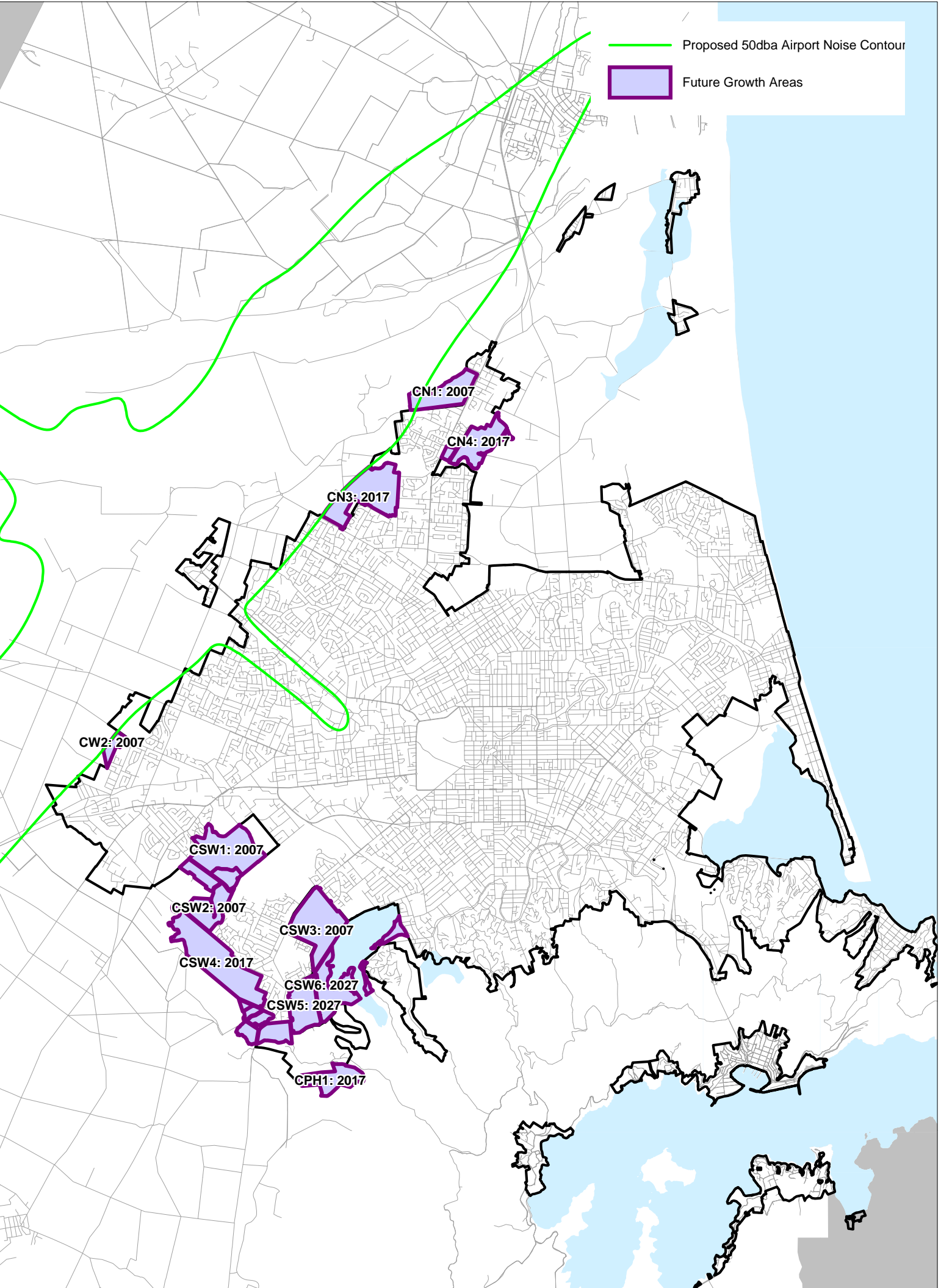
Christchurch City

Rural

Flat

Output Year	Projected Households	Households plus recent development	Difference Between Adjusted and Projected	Allocated Households	Difference between Allocated and Adjusted	Remaining Capacity
2006	3	3	0	3	0	0
2007	3	3	0	3	0	0
2008	3	3	0	3	0	0
2009	3	3	0	3	0	0
2010	3	3	0	3	0	0
2011	3	3	0	3	0	0
2012	3	3	0	3	0	0
2013	3	3	0	3	0	0
2014	3	3	0	3	0	0
2015	3	3	0	3	0	0
2016	3	3	0	3	0	0
2017	3	3	0	3	0	0
2018	3	3	0	3	0	0
2019	3	3	0	3	0	0
2020	3	3	0	3	0	0
2021	3	3	0	3	0	0
2026	3	3	0	3	0	0
2041	3	3	0	3	0	0

Future Growth Pockets



Source: CCC CCC 2009 LTCCP 2006 Census Base Growth Model 6th August 2008
Prepared by CCC, Monitoring and Research Team, 9th September 2008

T:\1_Households\NewHouseholdModel\CCC 2009 LTCCP 2006 Census Base\Version4\Data\FutureGrowthAreas.WOR