Wellington City Council

POPULATION AND HOUSEHOLD FORECASTS

Ohariu - Makara - Makara Beach

Wellington City Council population and household forecasts are designed to inform community groups, Council, investors, business, students and the general public.

Forecasts have been produced for the years, 2006 to 2031.

The data in this report was last reviewed and updated on 29/09/2011.

Contents:

Date created: 28/11/2011

Key drivers of change

Historical migration flows, Wellington City, 2001 to 2006

Auckland

Wanganui

Hamilton

Palmerston North

Kapiti

Porirua

-1,300

+1,070

Hastings

-1,100

Napier

New Plymouth

Wellington City

Lower Hutt

Overseas

+4,350

Net migration
(movement of persons)

175 to 349
350 to 699
700 +

Dotted line denotes outflow

Dunedin

Christchurch
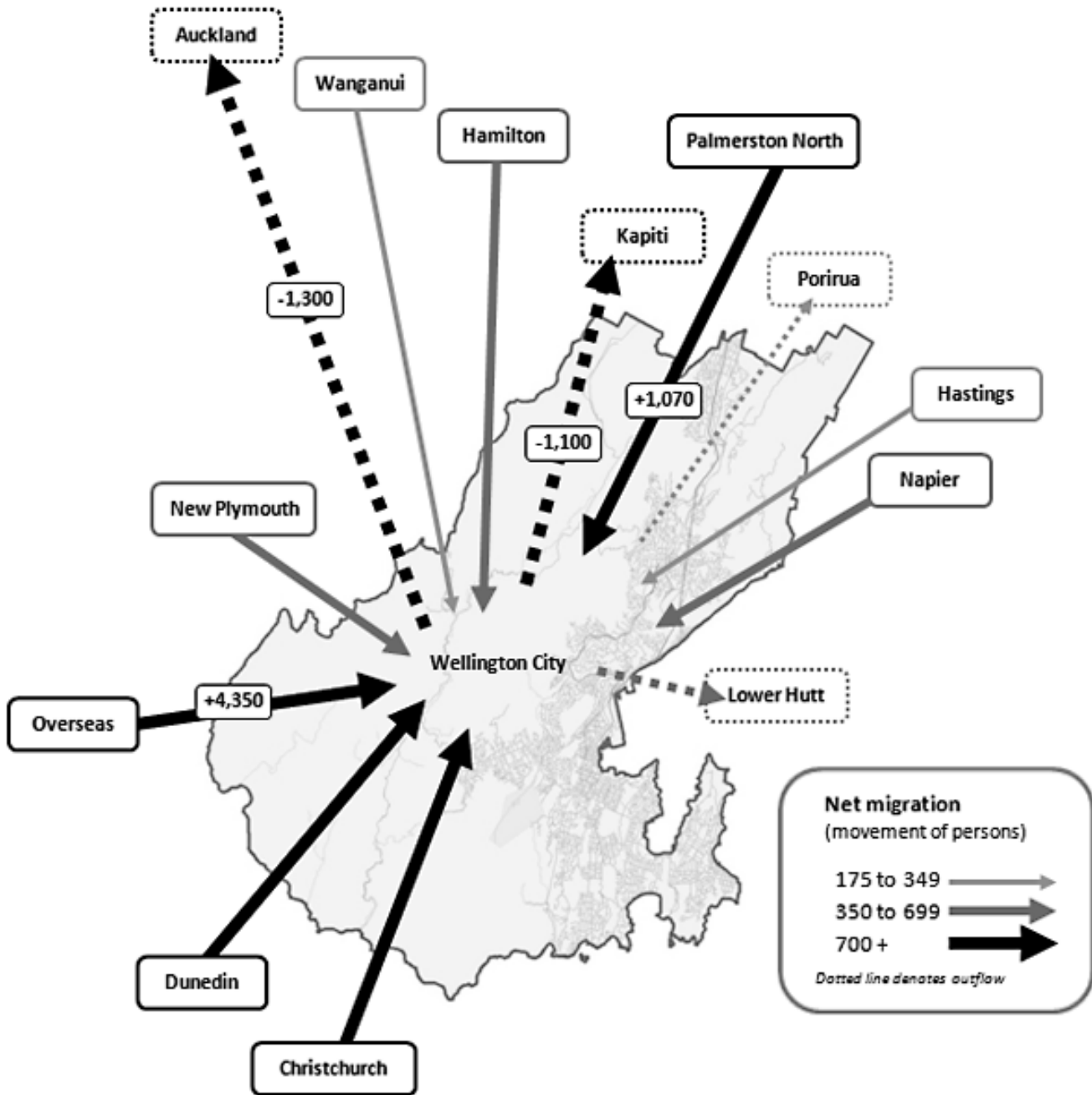
Note: The migration flows depicted above do not represent future or forecast migration flows. The arrows represent migration flows to the TA as a whole and do not indicate an origin or destination for any specific localities within the TA.

Wellington City is the capital of New Zealand. Wellington City is located at the south-western tip of New Zealand's North Island. Wellington City is bounded by Porirua City in the north, Lower Hutt City in the north-east, Wellington Harbour in the south-east, Cook Strait in the south, and the Tasman Sea in the west. Wellington City features both urban and rural areas. The urban areas include residential, commercial and industrial land use. Rural land is used largely for farming, particularly sheep and cattle grazing. Wellington City encompasses a total land area of about 290 square kilometres, including substantial areas of coastline, parkland and bushland.

The original inhabitants of the Wellington area were the Taranaki Whanui and Ngati Toa Maori people. European settlement dates from 1840, when a township was established in the Lambton Harbour area. In 1855 an earthquake struck the area, raising the

coastline and creating flat land for settlement in and around the harbour. Land was reclaimed to form what is now the central city. Rapid residential development took place from the 1880s into the 1920s, spurred by commercial and industrial growth and improved access. Growth slowed from the 1930s. Further expansion took place from the post-war years. Development spread to the northern areas from the 1970s. Gentrification and renovation of the inner city took place from the late 1970s, including transformation of the waterfront. The estimated resident population of the City increased from the mid 1990s, rising from 163,400 in 1996 to 187,700 in 2006, due largely to an increase in the number of dwellings, particularly medium density housing. The City contained 40% of the Wellington Region's population at 2006. Population growth is expected to continue, particularly in the central and northern suburbs.

As New Zealand's capital city, Wellington has a vibrant and diverse economy as well as a significant population of students. The city is a desired destination of young adults and students attracted to the employment and educational opportunities on offer as well as entertainment and lifestyle qualities.
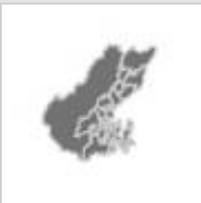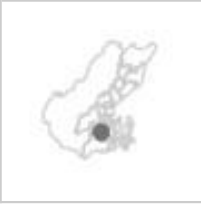
Demand is relatively strong for inner suburbs in the City. New greenfield development has been focussed in the northern suburbs, although long term opportunities for further growth in the area will be constrained by topography.
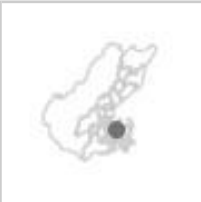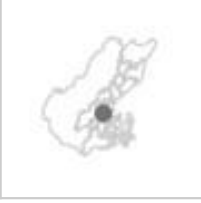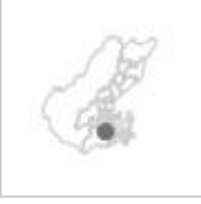
With the variety of residential locations, different areas within Wellington City have developed different roles within the housing market. Areas on the outskirts of Wellington City such as Churton Park and Woodridge are attractive to young families. Inner suburbs such as Te Aro, Mt Victoria, Newtown, Berhampore and Aro Valley attract large numbers of students and young adults due to their access to universities, employment and entertainment. Many suburban areas of the City such as Karori, Tawa, Ngaio and Seatoun lose young adults as they seek employment and educational opportunities in inner suburbs. The variety of function and role of the small areas in Wellington City means that population outcomes differ significantly across the area.
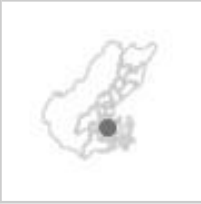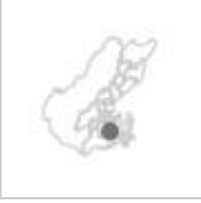
There are also significant differences in the supply of residential property within the City which will also have a major influence in structuring different population and household futures over the next five to ten years. New 'greenfield' opportunities have been identified in Churton Park, Woodridge, Ngauranga. Inner suburbs and Wellington Central are also expected to have growth in dwellings, but based predominantly on more intense use of land and development around activity centres or 'areas of change'.

APPENDIX 1
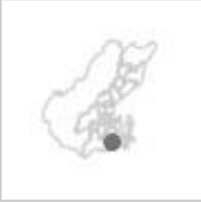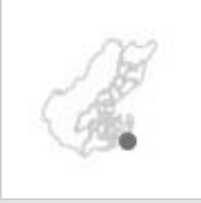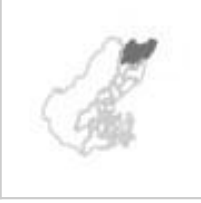
Population summary

In 2031, the population of Wellington City will be 230,614, an increase of 42,915 persons (22.86%) from 2006. This represents an average annual growth rate of 0.83%.

Wellington City Council's areas		Forecast year						Change between 2006 and 2031	
Location	Area name	2006	2011	2016	2021	2026	2031	number	Avg. annual % change
	Wellington City	187,699	198,743	206,880	214,911	222,733	230,614	42,915	0.83
	Aro Valley - Highbury	3,445	3,613	3,616	3,645	3,721	3,806	361	0.40
	Berhampore	3,875	3,976	4,013	4,108	4,310	4,537	662	0.63
	Brooklyn	6,330	6,616	6,816	7,073	7,287	7,365	1,035	0.61
	Churton Park - Glenside	6,157	6,654	6,962	7,716	8,544	9,319	3,162	1.67
	Grenada Village - Paparangi - Woodridge - Horokiwi	4,914	5,308	5,873	6,271	6,391	6,493	1,579	1.12

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APPENDIX 1

Hataitai	6,395	6,713	6,801	6,888	6,940	6,957	562	0.34
Island Bay - Owhiro Bay	8,621	8,814	9,009	9,146	9,253	9,290	669	0.30
Johnsonville	9,703	10,132	10,523	10,807	11,080	11,362	1,659	0.63
Kaiwharawhara - Khandallah - Broadmeadows	9,733	10,265	10,470	10,564	10,684	10,850	1,117	0.44
Karori	14,671	15,133	15,129	15,134	15,360	15,708	1,037	0.27
Kelburn	4,114	4,787	4,851	4,930	5,034	5,152	1,038	0.90
Kilbirnie - Rongotai - Moa Point	5,296	5,442	5,599	6,281	6,715	7,150	1,854	1.21
Kingston - Mornington - Vogeltown	3,113	3,217	3,305	3,346	3,383	3,422	309	0.38

Lyall Bay	2,790	2,813	2,878	2,912	2,923	2,937	147	0.21
Miramar - Maupuia	11,351	11,433	11,661	11,785	11,998	12,139	788	0.27
Mt Cook	7,120	7,708	8,013	8,228	8,566	8,973	1,853	0.93
Mt Victoria	5,155	5,416	5,599	5,741	5,858	5,984	829	0.60
Newlands - Ngauranga	7,234	7,384	7,828	7,970	8,035	8,131	897	0.47
Newtown	8,104	8,646	9,302	9,867	10,445	11,032	2,928	1.24
Ngaio - Crofton Downs	6,985	7,291	7,389	7,434	7,505	7,602	617	0.34
Northland - Wilton	5,496	5,652	5,685	5,723	5,738	5,754	258	0.18

APPENDIX 1

	Ohariu - Makara - Makara Beach	732	743	755	773	794	819	87	0.45
	Roseneath - Oriental Bay	3,218	3,417	3,555	3,674	3,802	3,931	713	0.80
	Seatoun - Karaka Bays - Breaker Bay	3,694	3,897	4,053	4,147	4,187	4,233	539	0.55
	Southgate - Houghton Bay - Melrose	3,781	3,799	3,891	3,969	4,068	4,147	366	0.37
	Strathmore Park	3,908	3,950	4,048	4,100	4,124	4,151	243	0.24
	Tawa - Grenada North - Takapu Valley	14,372	14,453	14,949	15,268	15,827	16,297	1,925	0.50
	Te Aro	6,703	9,348	11,325	13,121	14,435	15,746	9,043	3.48
	Thorndon - Pipitea	4,138	4,404	4,664	5,092	5,701	6,494	2,356	1.82

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Wadestown	3,720	3,807	3,971	4,106	4,243	4,331	611	0.61
Wellington Central	2,831	3,912	4,347	5,092	5,782	6,502	3,671	3.38

Summary & key results
How many will live here in future?

‣ Ohariu - Makara - Makara Beach

Ohariu - Makara - Makara Beach is bounded by Porirua City in the north-east, generally by the suburbs of Tawa, Churton Park, Johnsonville, Broadmeadows, Khandallah, Ngaio, Crofton Downs, Wilton, Karori and Owhiro Bay in the east, Cook Strait in the south, and the Tasman Sea in the west.
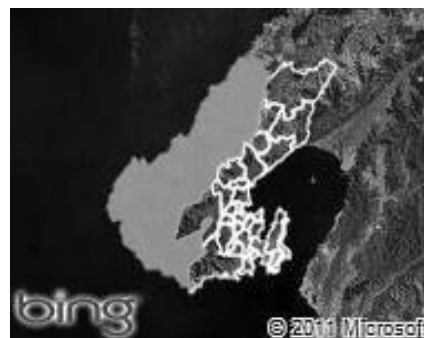
Ohariu - Makara - Makara Beach	Forecast year					
	2006	2011	2016	2021	2026	2031
Population	732	743	755	773	794	819
Change in Population (5yrs)		11	12	18	21	25
Average Annual Change (%)		0.3	0.32	0.47	0.54	0.62
Households	249	257	267	276	284	291
Average Household Size (persons)	2.93	2.89	2.83	2.8	2.79	2.81
Population in non private dwellings	1	1	1	1	1	1
Dwellings	297	307	317	327	337	347
Dwelling occupancy rate	83.84	83.71	84.23	84.4	84.27	83.86

This summary analyses data for the period 2006 to 2021, as the short to medium term is most appropriate for planning purposes. Please note that this data is available for all years between 2006 and 2031.

In 2006, the total population of Ohariu - Makara - Makara Beach was estimated at 732 people. It is expected to experience an increase of over 40 people to 773 by 2021, at an average annual growth rate of 0.36% per annum over 15 years. This is based on an increase of over 20 households during the period, with the average number of persons per household falling from 2.93 to 2.80 by 2021.

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Forecast population, households and average household size, Ohariu - Makara - Makara Beach

Forecast population, households and average household size, Ohariu - Makara - Makara Beach
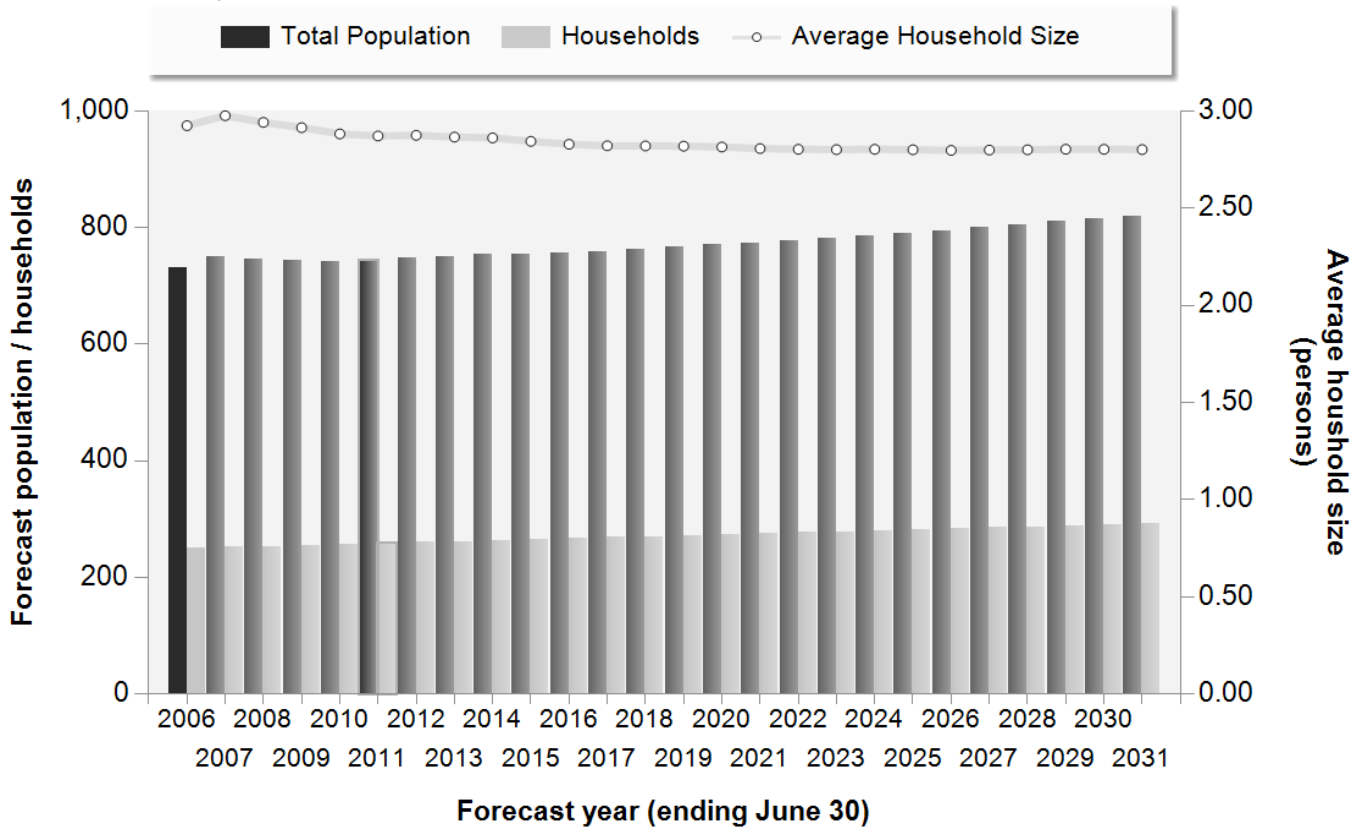
Summary & key results

How old will we be?

▸ **Ohariu - Makara - Makara Beach**

Ohariu - Makara - Makara Beach is bounded by Porirua City in the north-east, generally by the suburbs of Tawa, Churton Park, Johnsonville, Broadmeadows, Khandallah, Ngaio, Crofton Downs, Wilton, Karori and Owhiro Bay in the east, Cook Strait in the south, and the Tasman Sea in the west.

In 2006, the most populous age group in Ohariu - Makara - Makara Beach was 45-49 year olds, with 84 persons. In 2021 the most populous forecast age group will be 50-54 year olds, with 78 persons.

The number of people aged under 15 is forecast to decrease by 23 (-14.4%), representing a decline in the proportion of the population to 17.7%. The number of people aged over 65 is expected to increase by 23 (50.0%), and represent 8.9% of the population by 2021.

The age group which is forecast to have the largest proportional increase (relative to its population size) by 2021 is 60-64 year olds, who are forecast to increase by 145.8% to 59 persons.

Forecast age structure, Ohariu - Makara - Makara Beach (Persons)
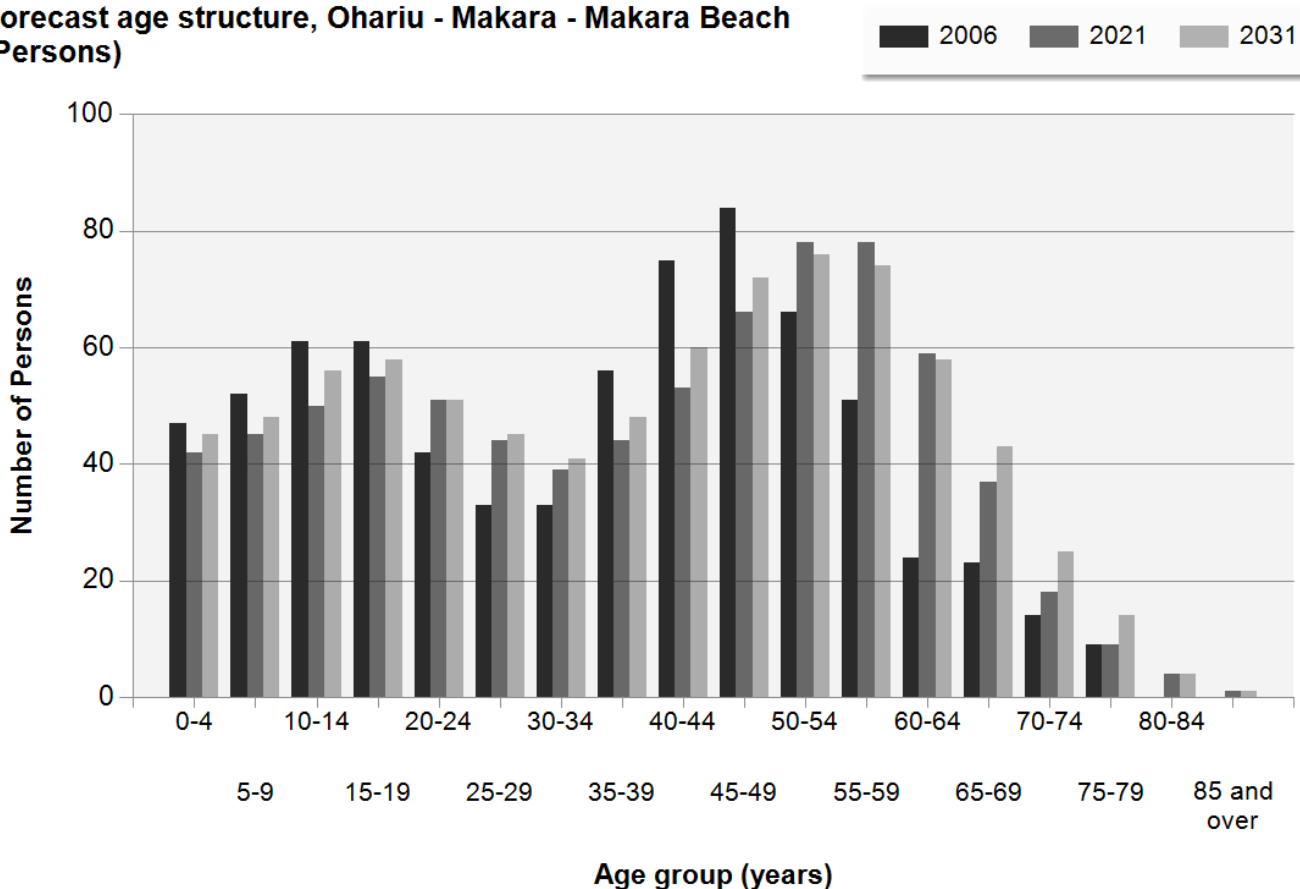
Summary & key results
What type of households will we live in?

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In 2006, the dominant household type in Ohariu - Makara - Makara Beach was Couple families with dependents, which accounted for 50.0% of all households.

The main changes in household type between 2006 and 2021 are forecast to be:

The largest increase is forecast to be in One parent family, which will increase by 7 households, comprising 2.9% of all households, compared to 0.4% in 2006.

In contrast Lone person households is forecast to decrease by 2 households, to comprise 6.9% of all households in 2021, compared to 8.4% in 2006.

Forecast Households, Ohariu - Makara - Makara Beach
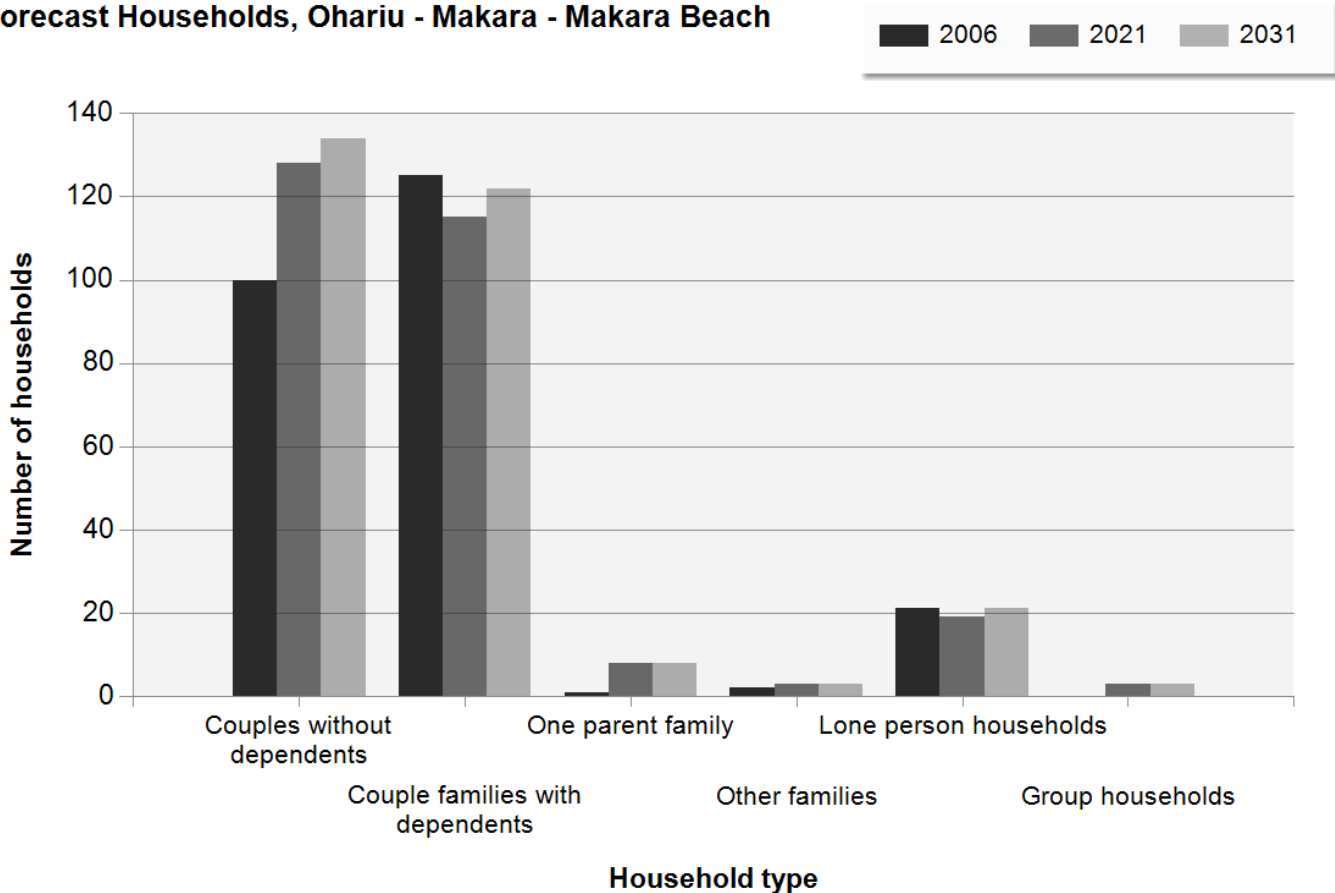
Assumptions

Residential development

> ### ▸ Ohariu - Makara - Makara Beach

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List of forecast land developments and infill assumptions:

2006-2011 dwelling additions are based on an assessment of major site activity and building approvals, lagged by 12-18 months. Assumptions concerning development over the forecast period include:

- No major sites identified
- Low level of infill development (2 dwellings per annum)

Forecast residential development, Ohariu - Makara - Makara Beach
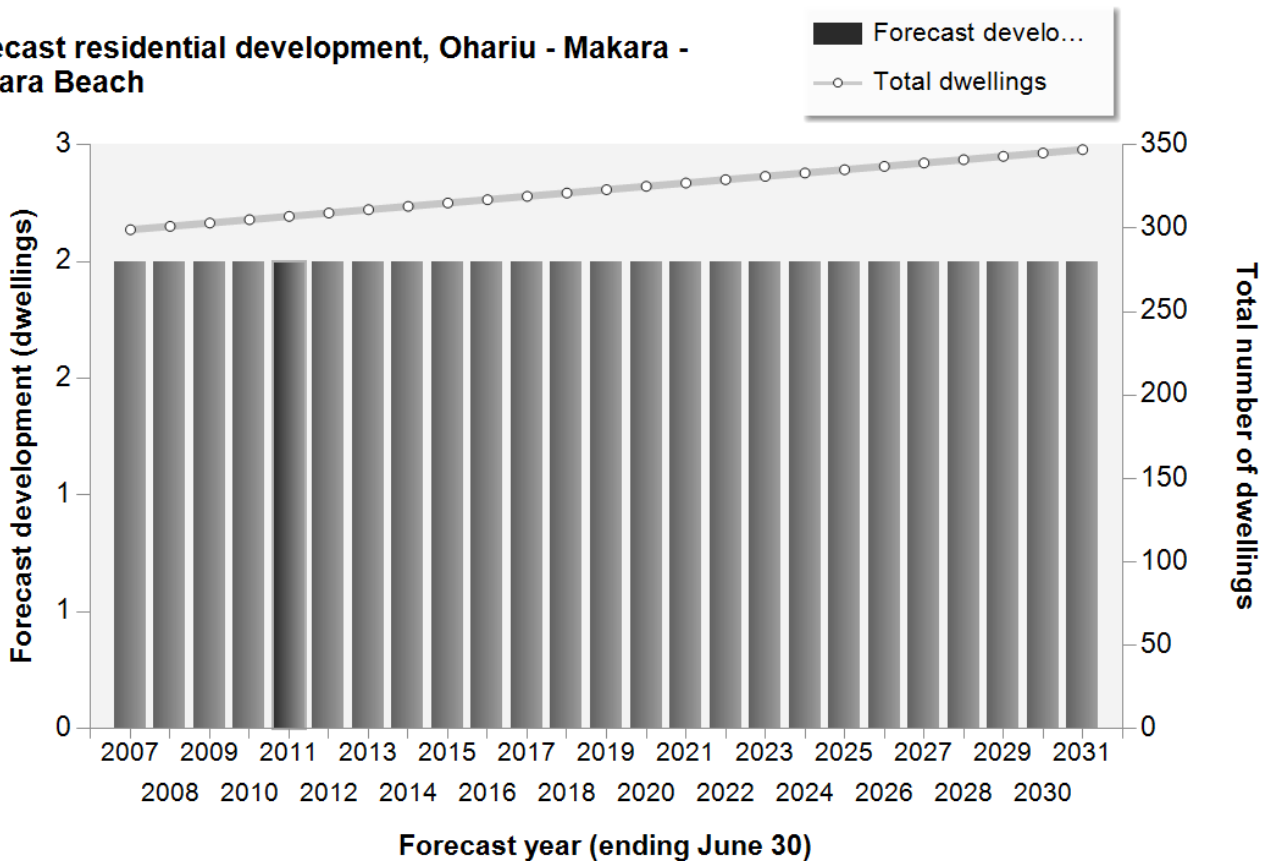
Assumptions
Births and deaths

▸ **Ohariu - Makara - Makara Beach**

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Fertility (birth) rates:

The fertility rate in Ohariu - Makara - Makara Beach is derived from historic age-specific birth rates in the area, modified based on the forecast age structure at each year of the forecast.

Death rates

The death rates are based on historical estimates for Wellington City, which have been extrapolated into the future, assuming an increase in expectation of life in all age groups (except 85+). Although women are still forecast to outlive men, the increase in expectation of life over time for men is expected to be higher.

Assumptions

Non-private dwellings

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The overall number of persons in non-private dwellings is assumed to remaining stable from 1 in 2006 to 1 in 2031.

Assumptions
Migration

▸ Ohariu - Makara - Makara Beach

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Major migration assumptions:

- Relatively stable migration profile expected across the 2006-2021 period
- Gain in older families (5-14 and 30-54 years)
- Some loss of adults in twenties and early thirties (some family forming with children)
- Some loss of retiree age groups (55-74 years)

Forecast net migration by age group, Ohariu - Makara - Makara Beach

Detailed data

Age structure

▸ **Ohariu - Makara - Makara Beach**

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Forecast age structure, Ohariu - Makara - Makara Beach (Persons)	2006		2021		2031		Change
Age group	number	%	number	%	number	%	2006 to 2031
0-4 years	47	6.4	42	5.4	45	5.5	-2
5-9 years	52	7.1	45	5.8	48	5.9	-4
10-14 years	61	8.3	50	6.5	56	6.8	-5
15-19 years	61	8.3	55	7.1	58	7.1	-3
20-24 years	42	5.7	51	6.6	51	6.2	9
25-29 years	33	4.5	44	5.7	45	5.5	12
30-34 years	33	4.5	39	5.0	41	5.0	8
35-39 years	56	7.7	44	5.7	48	5.9	-8
40-44 years	75	10.2	53	6.9	60	7.3	-15
45-49 years	84	11.5	66	8.5	72	8.8	-12
50-54 years	66	9.0	78	10.1	76	9.3	10
55-59 years	51	7.0	78	10.1	74	9.0	23
60-64 years	24	3.3	59	7.6	58	7.1	34
65-69 years	23	3.1	37	4.8	43	5.3	20
70-74 years	14	1.9	18	2.3	25	3.1	11
75-79 years	9	1.2	9	1.2	14	1.7	5
80-84 years	0	0.0	4	0.5	4	0.5	4
85 years and over	0	0.0	1	0.1	1	0.1	1
Total Persons	**731**	**99.9**	**773**	**100.0**	**819**	**100.0**	**88**

Forecast age structure, Ohariu - Makara - Makara Beach (Persons)

Legend: 2006, 2021, 2031

Number of persons (y-axis, 0 to 100)

Age group (years) (x-axis): 0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85 and over

Forecast change in age structure, Ohariu - Makara - Makara Beach (Persons)

Legend: 2006 to 2021, 2021 to 2031

Number of persons (y-axis, -40 to 40)

Age group (years) (x-axis): 0-4, 5-9, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75-79, 80-84, 85 and over

Detailed data
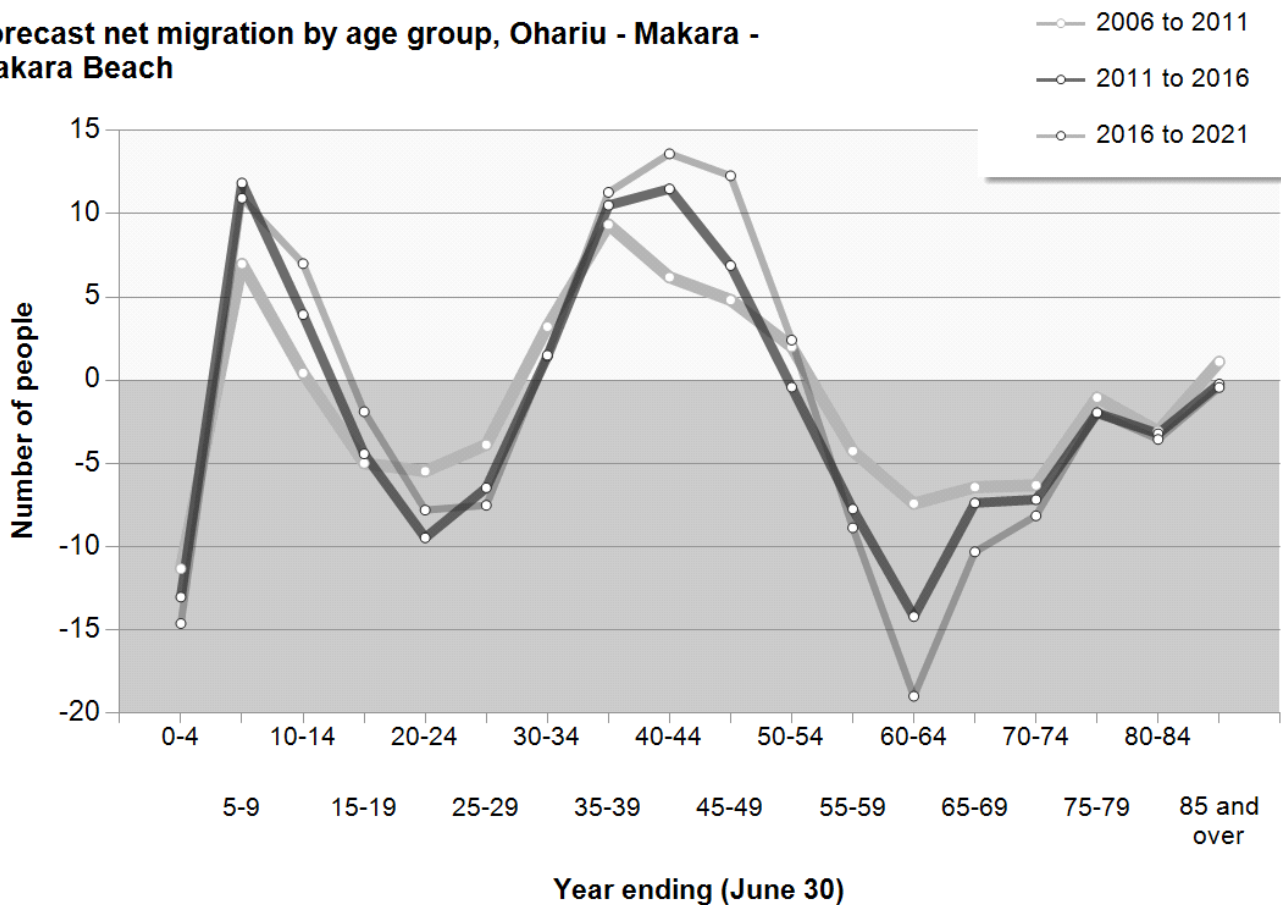Households

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Forecast households, Ohariu - Makara - Makara Beach	2006		2021		2031		Change
Type	number	%	number	%	number	%	2006 to 2031
Couples without dependents	100	40.0	128	46.5	134	45.9	34
Couple families with dependents	125	50.0	115	41.8	122	41.8	-3
One parent family	1	0.4	8	2.9	8	2.7	7
Other families	2	0.8	3	1.1	3	1.0	1
Lone person households	21	8.4	19	6.9	21	7.2	0
Group households	0	0.0	3	1.1	3	1.0	3
Total households	**249**	**99.6**	**276**	**100.4**	**291**	**99.7**	**42**

Forecast household types, Ohariu - Makara - Makara Beach

APPENDIX 1

Forecast change in household types, Ohariu - Makara - Makara Beach

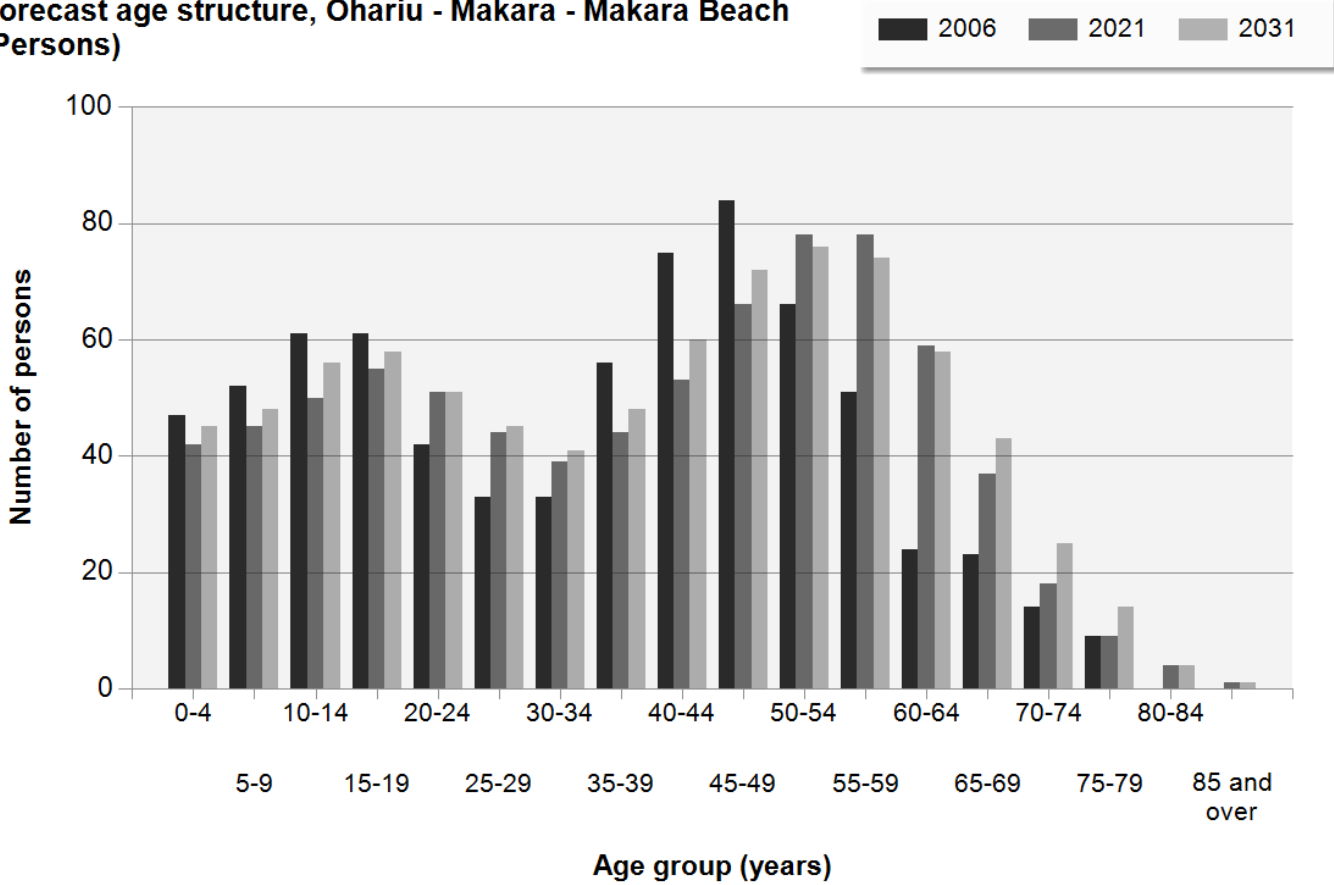|	
■	2006 to 2021
■	2021 to 2031
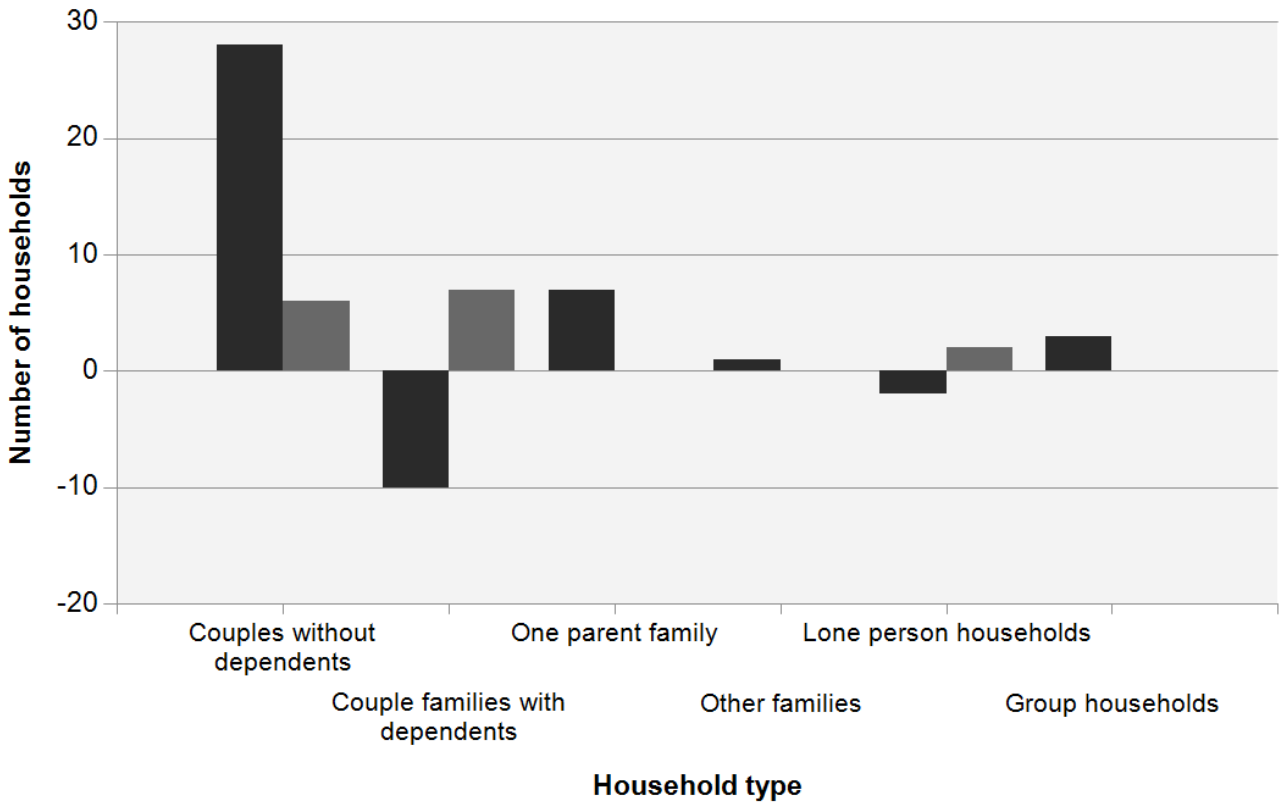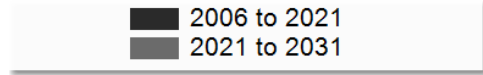
Detailed data
Residential development

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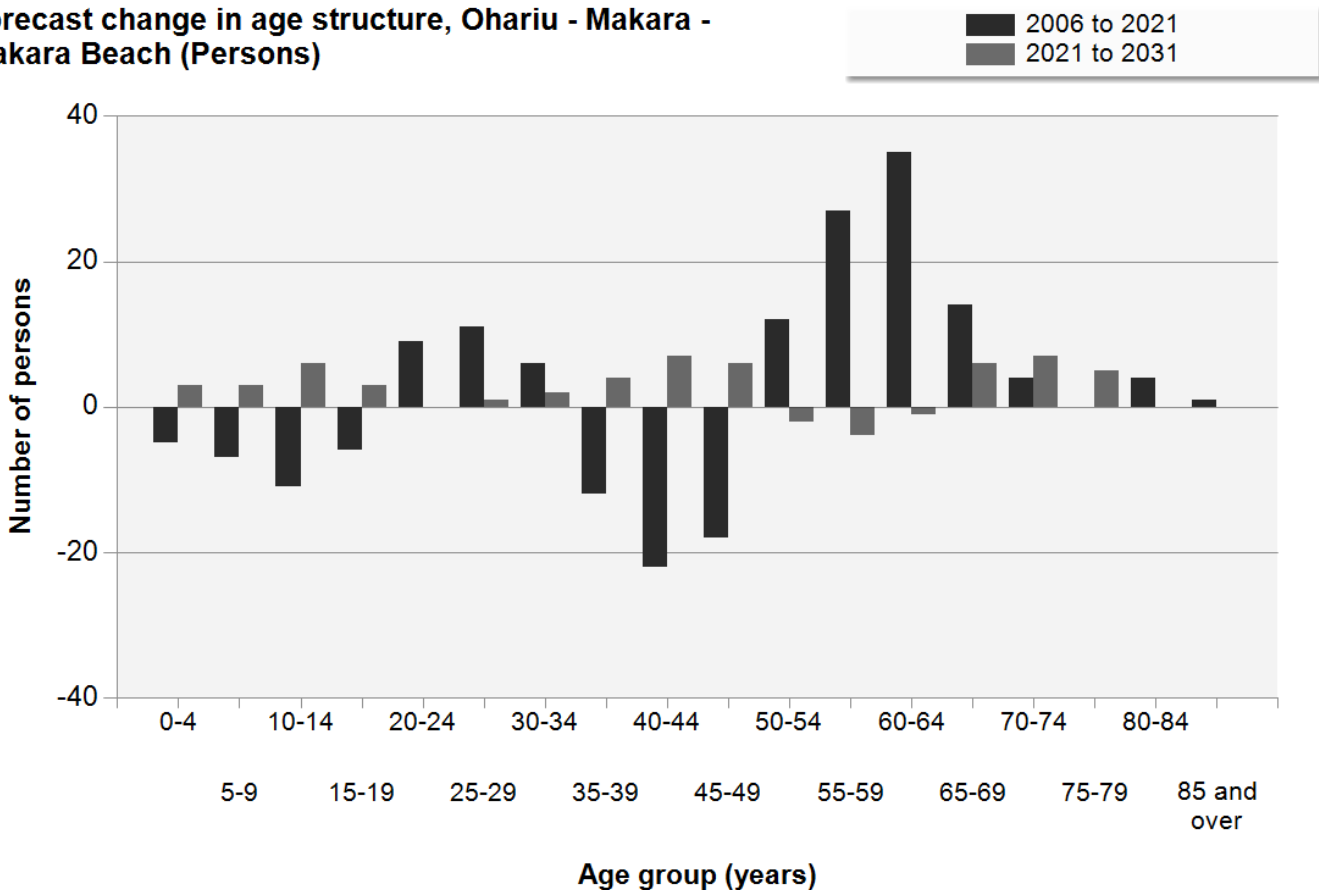
Residential development and structural private dwellings, Ohariu - Makara - Makara Beach			
Year	Dwelling commencements	Structural private dwellings (inc. commencements)	% change from previous year
2007	2	299	0.7
2008	2	301	0.7
2009	2	303	0.7
2010	2	305	0.7
2011	2	307	0.7
2012	2	309	0.7
2013	2	311	0.6
2014	2	313	0.6
2015	2	315	0.6
2016	2	317	0.6
2017	2	319	0.6
2018	2	321	0.6
2019	2	323	0.6

Residential development and structural private dwellings, Ohariu - Makara - Makara Beach			
Year	Dwelling commencements	Structural private dwellings (inc. commencements)	% change from previous year
2020	2	325	0.6
2021	2	327	0.6
2022	2	329	0.6
2023	2	331	0.6
2024	2	333	0.6
2025	2	335	0.6
2026	2	337	0.6
2027	2	339	0.6
2028	2	341	0.6
2029	2	343	0.6
2030	2	345	0.6
2031	2	347	0.6

Forecast residential development, Ohariu - Makara - Makara Beach
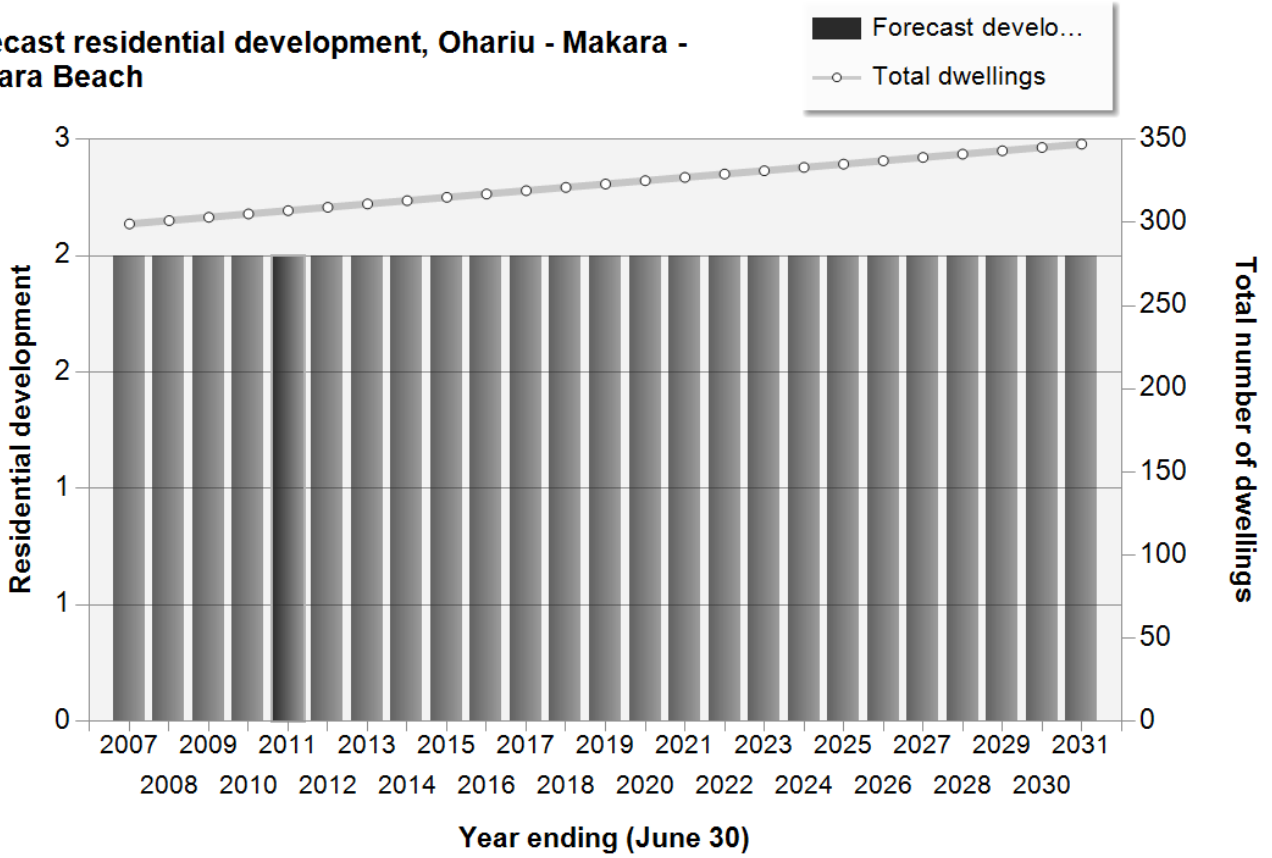
Detailed data
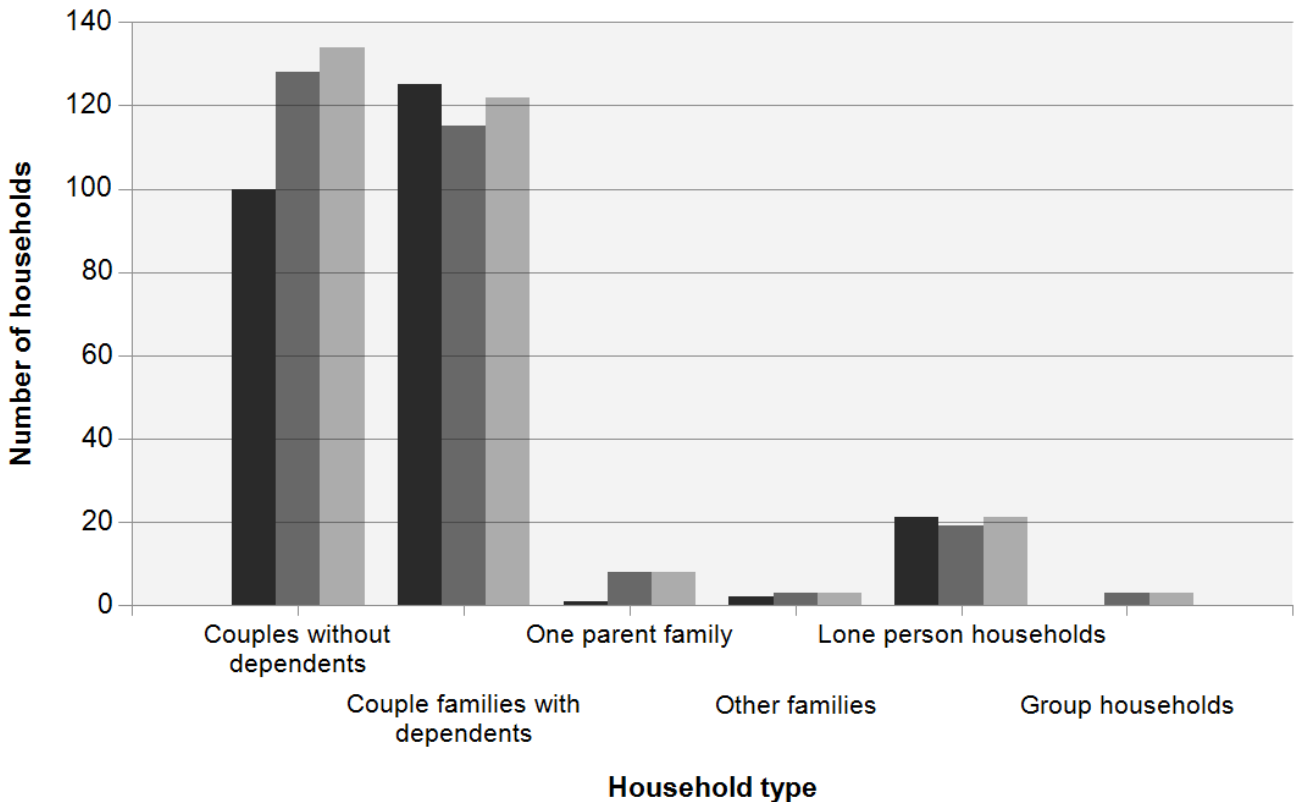
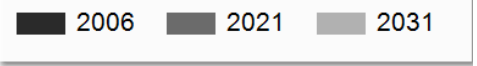Components of population change

▸ Ohariu - Makara - Makara Beach

Ohariu - Makara - Makara Beach is bounded by Porirua City in the north-east, generally by the suburbs of Tawa, Churton Park, Johnsonville, Broadmeadows, Khandallah, Ngaio, Crofton Downs, Wilton, Karori and Owhiro Bay in the east, Cook Strait in the south, and the Tasman Sea in the west.

Components of population change, Ohariu - Makara - Makara Beach	Forecast period				
	2007 to 2011	2012 to 2016	2017 to 2021	2022 to 2026	2027 to 2031
Births	41	53	54	56	58
Deaths	11	11	11	12	12
Net Migration	-20	-30	-25	-23	-21
Net Population Change	11	13	18	21	25

Forecast population change, Ohariu - Makara - Makara Beach
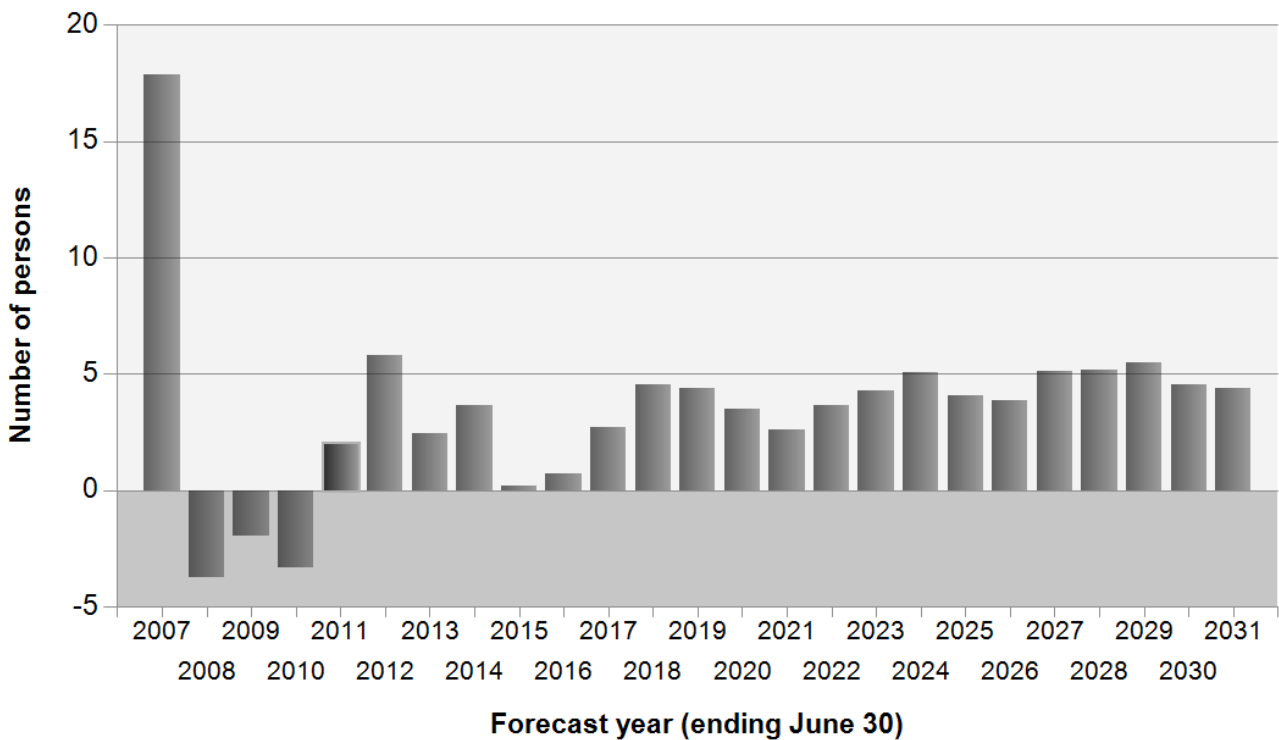
Forecast birth, deaths and natural increase, Ohariu - Makara - Makara Beach
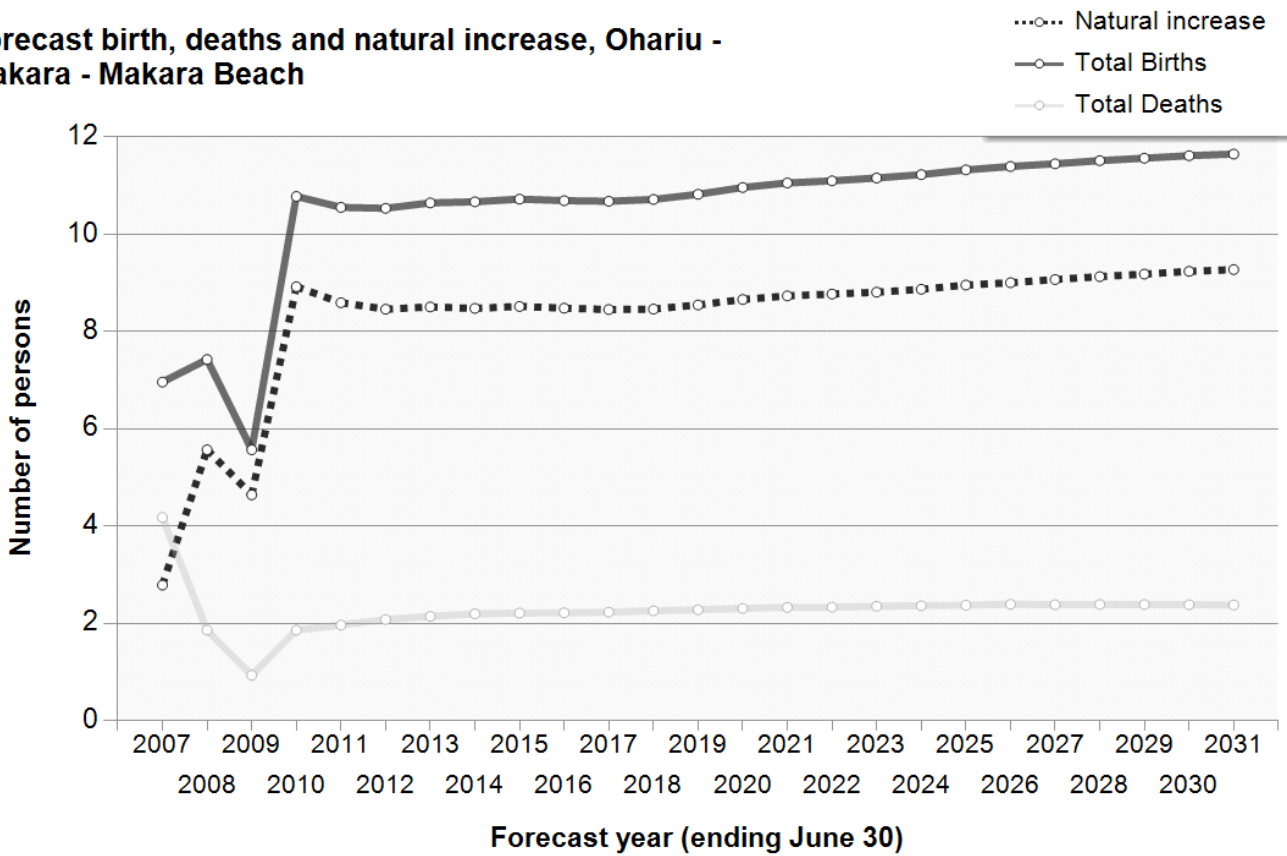
Forecast in, out and net migration, Ohariu - Makara - Makara Beach
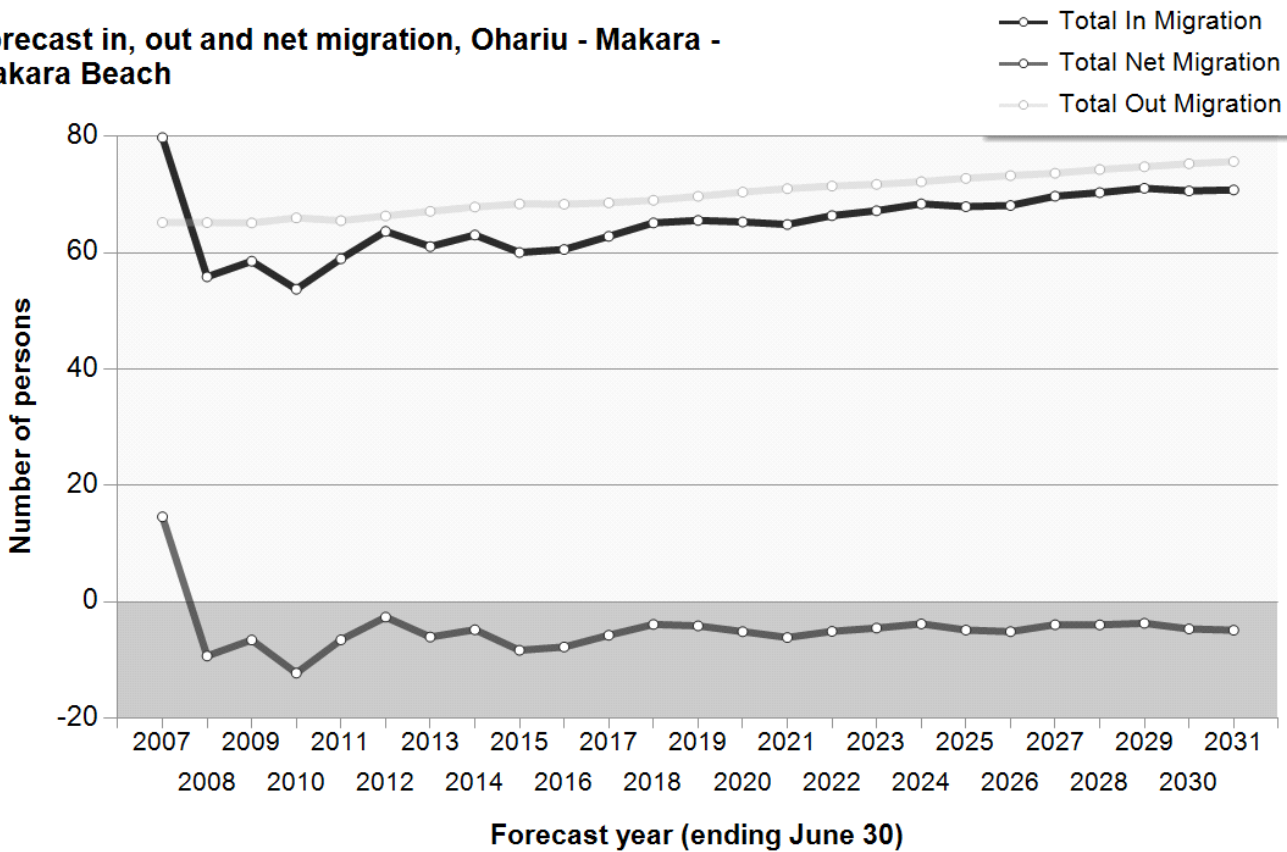
Supporting info
What factors contribute to population change?

At the small area level, the primary drivers of population change are the age structure of the existing population, the housing markets attracted to and away from an area and their associated demographic characteristics (fertility patterns, household types etc.) and the supply of dwellings and mix of housing stock in the area.

Base Population (2006)
- age, and gender
- household types
- households
- dwellings

Drivers
- dwellings additions
- current age structure
- birth and death rates
- household structure
- migration profile
- household markets

Projected Population
- age and gender
- household types
- households
- dwellings

Dwelling additions

The addition of dwellings is the major driver of population growth, providing opportunities for new households (such as young people leaving the family home and divorces) or households relocating from other areas.

Current age structure

The age structure of the local population impacts on Wellington City's household types and size, the likelihood of the local population having children and to die, as well as the propensity for people to move. Age specific propensities for a population to have children or die are applied to each small area's base population. An older population will have fewer births, more deaths, while a younger population will have vice versa.

Birth rates

Birth rates are especially influential in determining the number of children in an area, with most inner urban areas having very low birth rates, compared to outer suburban or rural and regional areas. Birth rates have been changing, with a greater share of women bearing children at older ages or not at all. This can have a large impact on the population profile with comparatively fewer children than in previous periods.

Death rates

Death rates are influential in shaping the numbers of older people in an area's population. Death rates too have been changing with higher life expectancy at most ages, with men gaining on women's greater life chances.

Migration

Migration is one of the most important components of population change. While births and deaths are relatively easy to predict due to reliable age specific behaviour, migration is volatile, often changing due to housing market preferences, economic opportunities and changing household circumstances. Migration patterns vary across New Zealand and change across time, but most moves tend to be short and incremental in nature. Regional areas have larger moves due to the distances between towns and cities, where people often move for economic reasons, mainly the availability of employment or education and training opportunities.

The most mobile age groups in the population are the young adults. They tend to move to attend educational institutions, seek work and express a change in lifestyle. It is for this reason that young people often move the greatest distances and sometimes move against pre-established patterns. Market research has shown that empty nesters are more likely to move to smaller accommodation if appropriate and affordable alternative housing is supplied in the local area that is accessible to established social networks.

Supporting info
How did we do the forecasts?

Approach

The diagram below describes the general approach used by .id in its population and household forecasts. An analysis of the current population and household structure often reveals the role and function of an area and the degree to which an area may be going through some form of demographic transition.

Demographic changes, such as birth, death and migration rates are applied to the base population. At the same time, scrutiny of urban development drivers is undertaken (residential development opportunities, vacancy rates etc.). The combination of varied assumptions about these inputs results in forecast population and households by type.
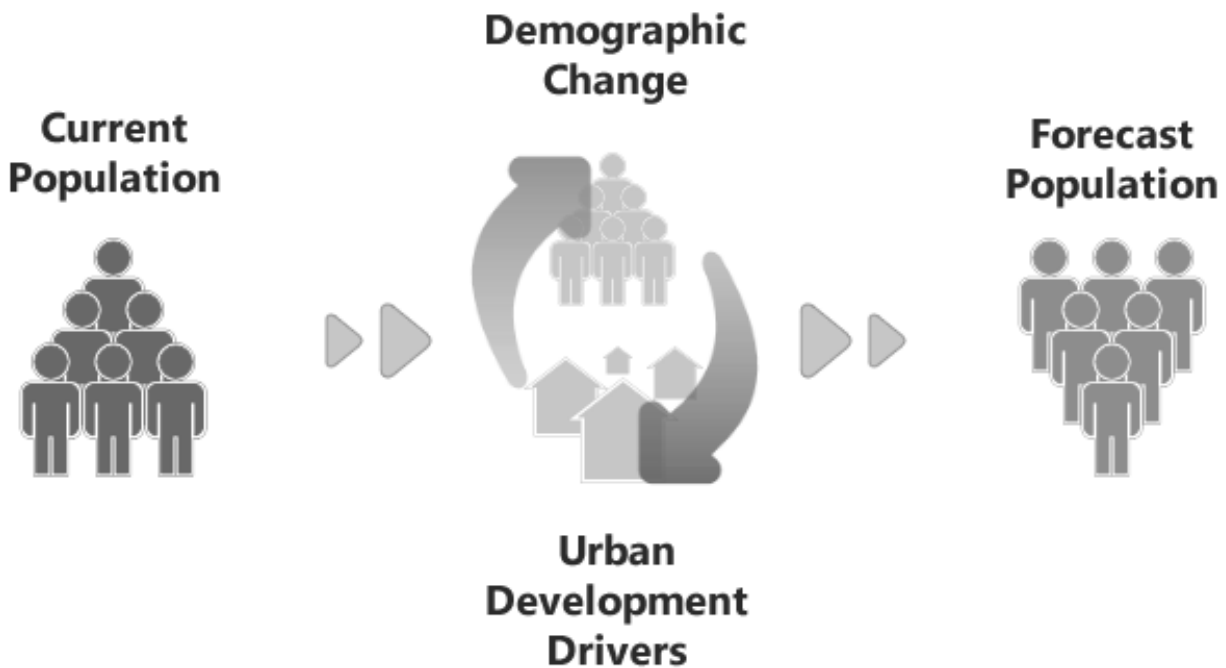
Modelling process

The modelling process used for producing the small-area forecasts is based on a 'bottom-up' approach, with all assumptions being derived from a local perspective. The components of the model are derived exclusively from housing and demographic assumptions. The drivers of the forecasts are predominantly based on levels of new residential development and demographic assumptions, such as in and out migration rates from the local areas. The diagram below describes the detail of the modelling process used by .id in its population and household forecasts.

- Base year population by age
- Base year population by gender
- Fertility rates
- Death rates
- Migration rates

- Household relationship by five year age group and sex
- Household type by size
- Average number of children per one and two parent family

- Base year dwellings & households
- Residential building activity & demolitions
- Base year population in non-private & private dwellings

Inputs   *Inputs*   *Inputs*

Cohort component model   **Household propensity model**   **Housing unit model**

Outputs
Forecast population and households

- Population by single year of age and sex
- Births, deaths and age specific migration
- Total dwellings and households
- Households by type and average household size

The population forecasts are based on a combination of three statistical models. They include a cohort component model, a housing unit model and a household propensity model. Each of the models has a series of inputs, which when linked to the other models gives the forecast outputs. The models are further explained below.

Cohort Component Model

The cohort component model is a standard demographic model used for population forecasts. It takes a base population by single year of age and sex and makes assumptions about future levels of births, deaths and migration, with the result being a forecast population by age and sex.

Each year the population ages by one year, with additions to population through in-migration and births. Births are derived by multiplying age specific fertility rates of women aged 15-49 by the female population in these age groups for all years during the forecast period. The population decreases are based on out-migration and deaths. Deaths are derived by multiplying age and sex specific mortality rates for all age groups for all years during the forecast period.

In and out migration is based on multiplying the population in each age group by a migration matrix. The base year population is derived from 2006 Census counts and then adjusted to an estimated resident population by small area. Each year through the forecast period, the population is run against age-specific birth, death and migration rates to create new population figures.

Housing Unit Model

The housing unit model is used to forecast future levels of residential development in areas and the resulting impact on the total population and the number of households. This model is critical in giving population forecasts credibility, especially in areas where there are residential development constraints and where historical migration patterns would be expected to change.

The housing unit model is based on forecasting a number of variables. These include total population living in private and non-private dwellings, the number of households and the number of dwellings. The share of housing stock that does not contain households is known as the vacancy rate. The population living in private dwellings divided by the number of households is known as the average household size.

These variables have changing relationships over time, as households undergo normal demographic processes, such as family formation and ageing. Levels of residential development, vacancy rates and average household size (see housing propensity model below) are used as the drivers of the model. Every year there is an assumption about the level of residential development activity, which adds to the stock of dwellings in an area. This stock of dwellings is multiplied by the vacancy rate, which gives the total number of vacant dwellings and the total number of occupied private dwellings (households). Households are multiplied by the assumed average household size for the year to derive the new number of persons living in private dwellings. The average household size is derived from the household propensity model (see below).

Population in non-private dwellings is modelled separately. A non-private dwelling is a form of housing, which is communal in nature. Examples of non-private dwellings include rest homes, student accommodation, nursing quarters, military barracks and prisons. In forecasting the number of persons in non-private dwellings, the population is analysed according to the different types of living arrangements. Decisions about future changes may be based on local knowledge through consultation with institutions or local government if there are a large number of people living in non-private dwellings.

Household Propensity Model

This model is used to integrate the cohort component and housing unit models to ensure consistency between the outputs of both models. The model works by assuming that the age structure of the population is an indicator of household size and type. These differences are assumed at the local area based on the household type and size from the 2006 Census.

The population is divided into household types based on five year age groups and sex. Each of these household types has an associated household size. From this relationship, all the household forming population (adults and any non-dependents) effectively represent a share of a household. Dependents in a household (children) represent no share of a household, although their departure frequently drives demand for housing in the region. Lone persons represent 1 or 100% of a household. Couples with dependents represent 50% of household. Couples without dependents represent almost 50% of a household (as they can include related adults). Lone parents represent 100% of a household. Group household members' and other household members' shares vary according to the region (20%-45%, 5 persons to 2.5 persons per household)

These relationships are extrapolated forward from 2006 with some adjustments, depending on the type of area. While the overall trend assumes that a greater share of the population will live in smaller households at all age groups in the future, many areas will go against this trend, depending on their place within the life cycle of suburbs. The projected decrease in the fertility rate and resulting likelihood of smaller families reinforces the assumption that a greater share of the population will live as couples and alone in the future.

Supporting info
Household & suburb life cycle

Household life cyles

The sorts of households that people live in and changing preferences over time affects the way in which a population changes. As people grow from children to adults and into old age, they change the sorts of households that they live in. The traditional path has been to start as a child in a family household, move into a group or lone person household as a youth, becoming a part of a couple relationship within 5-10 years. Rearing of children is followed by an 'empty-nester' period and ultimately being a lone person, as partners die.

Understanding the changes that people make at different ages in their life, and the different types of housing they are likely to consume at those life stages is an important factor in forecasting future population and household types. The life stage which the majority of households in an area are going through gives an insight into its location in the suburb life-cycle (see below), and the likely life-path of those households in the future.
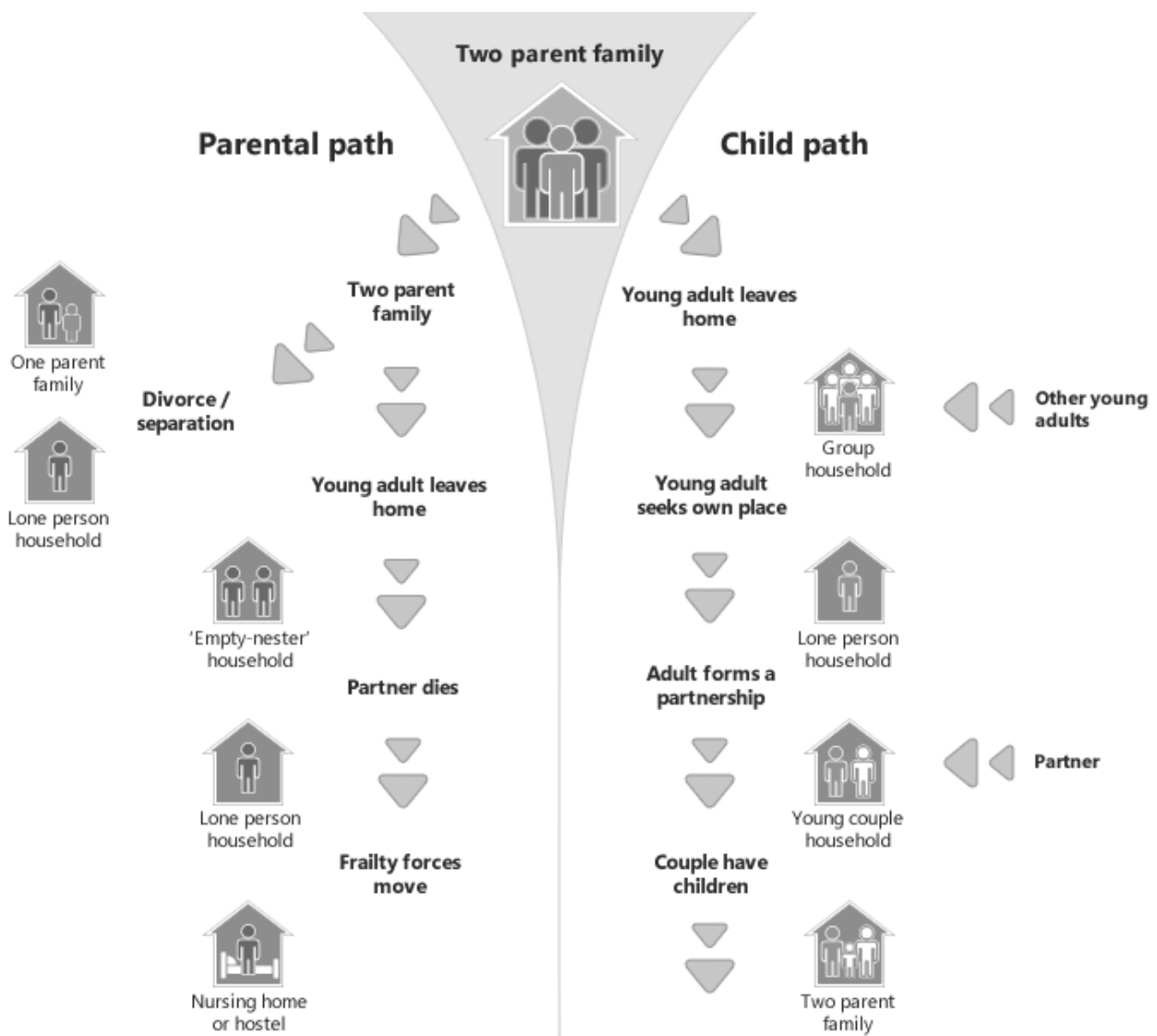

Suburb life cycles

The dominant household types present in a suburb or town - where the majority of the populations sit in the household life path - dictate in part the role and function of the area. This is shown by its place in the "suburb life cycle".

New areas are typically settled by young households (young couples and young families, perhaps some mature families). As the families grow and mature, household size increases. After initial rapid development, most households "age in place", with slowly shifting demand for services, facilities and dwelling types.

As households age further and children begin to leave home, the average household size decreases, resulting in more empty nester (two person) households, often still living in large family homes. Family breakups can also result in single parent families and lone person households. If a suburb can't attract young families back to the area, it slowly becomes populated by older couples whose children have left home and older lone persons whose partners have died, resulting in declining population for some time.

Alternatively, if a suburb is in a location close to economic drivers of change, it may be able to attract families to move back into the older dwellings in the area, increasing household size and population again. This will generally happen sooner, with less loss of services if the area has a diversity of housing options suiting a wide variety of household types. Empty nesters are likely to downsize into lower maintenance properties, freeing up larger format housing for families to move into, and continue the cycle again. The loop in the diagram represents the process of sustainability of a town or suburb, if it can attract families back into older housing in the area. Depending on the proximity of an area to work and education it may also attract young lone persons and group households. The attractiveness of an area to family groups, group and lone person households is shown in the migration assumptions section.

Generally, more diverse communities are more sustainable in the long term, as they are able to maintain a range of services and facilities useful to all age groups. Certain policy responses can influence the suburb life cycle in different directions.

APPENDIX 1
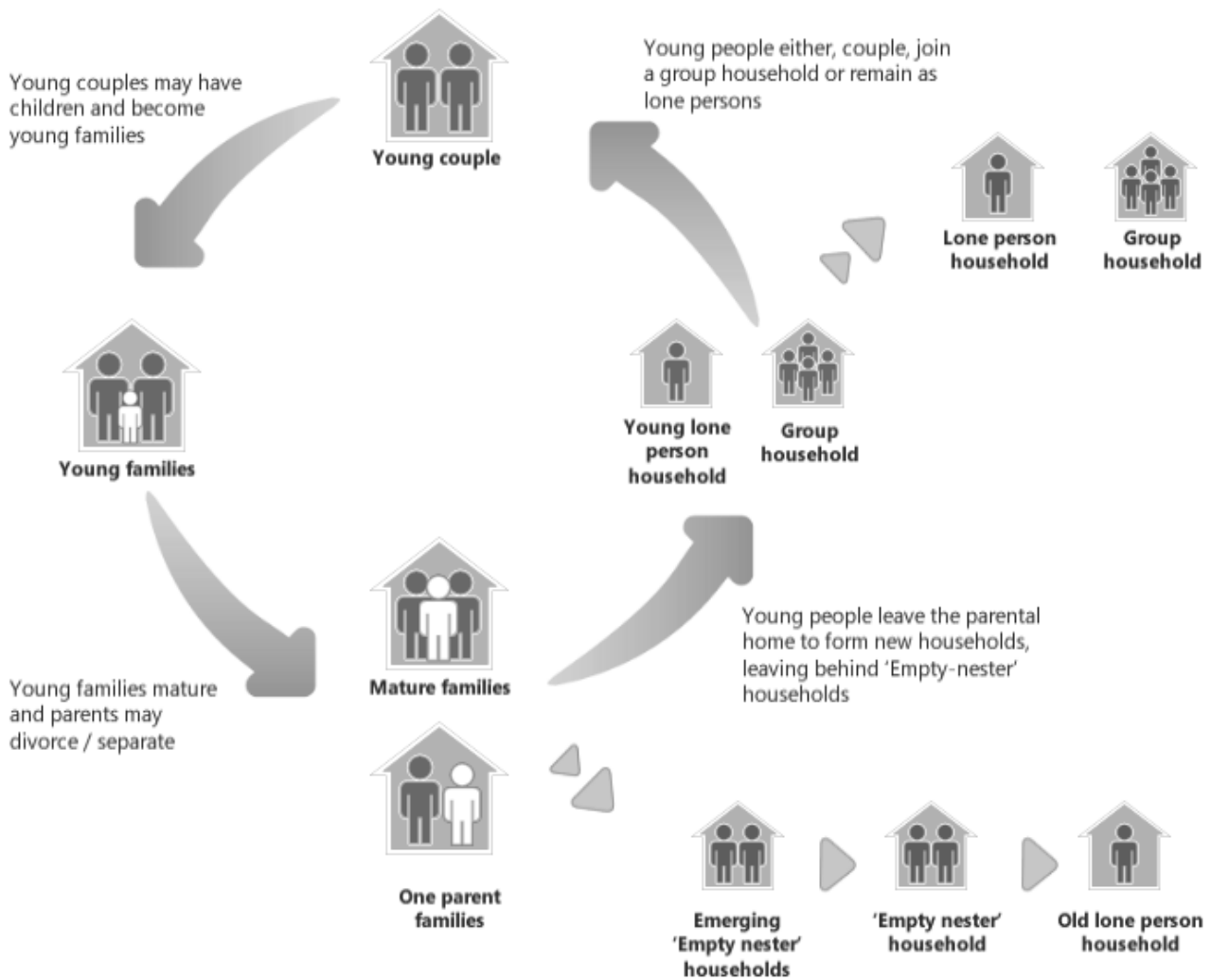
Supporting info
Data notes

Base population estimates

The population figures used in the forecasts for 2006 are derived from estimated resident population from Statistics New Zealand. These figures are published at Territorial Area and Urban Area Level, by sex and 5-year age group and at Area Unit Level 5-year aggregated sex at 5-year age group. This allows the extrapolation of population by sex and 5-year age group to Area Units, which are then aggregated to the chosen small area, sometimes splitting Area Units if necessary.

These figures are subject to change or updating from time to time, most notably after census release (usually one to two years after the census is conducted).

Base household estimates

The household estimates used in the forecasts for 2006 were based on age and sex-specific population propensities by different household types. Usual residents' estimates by Area Unit were extrapolated to Estimated Resident Population and then multiplied by household factors to give estimated 'Resident Households'.

The multiplying factor varies depending on the household type (and the area), such as a factor of 1 for persons living in lone person households to 0.5 for an adult in couple families with dependent households. Children and other dependents, such as elderly parents, are not assumed to 'form' households.

- Statistics New Zealand, 2006 Census of Population and Housing.
- Statistics New Zealand, Population Estimates at 30 June 2006.

Supporting info

Glossary

▸ **Age Specific Propensities (birth and death)**

This relates to the modelling of births and deaths. At each year of age, there is a certain statistical likelihood of a person dying or giving birth. These age specific propensity rates are applied to the base and forecast population for each year of the forecast period.

▸ **Ageing in Place**

This refers to an existing resident population ageing in their current location, as distinct from other impacts on future population such as births, deaths and in and out migration.

▸ **Average annual percentage change**

A calculation of the average change in total population for each individual year.

▸ **Average household size**

The average number of persons resident in each occupied private dwelling. Calculated as the number of persons in occupied private dwellings divided by the number of occupied private dwellings. This excludes persons living in non-private dwellings, such as prisons, military bases, rest homes etc.

▸ **'Bottom up' forecast**

Population forecast based on assumptions made at the local area level. Local drivers of change such as land stocks and local area migration form the basis.

▸ **Broadhectare Land or Sites**

Broadhectare land refers to undeveloped land zoned for residential development on the fringe of the established metropolitan area. These areas are generally used for rural purposes until residential subdivision takes place. This type of land is also referred to as 'greenfield'.

▸ **Commencement**

The construction of a new dwelling (or beginning of).

▸ **Dwelling**

A habitable residential building.

▸ **Dwelling Stock**

The supply of dwellings (either occupied or unoccupied) in a given geographic area.

▸ **Empty Nesters**

Parents whose children have left the family home to establish new households elsewhere.

▶ **Estimated Resident Occupied Private Dwellings (EROPD)**

This measure attempts to increase the scope of Occupied Private Dwellings definition to include an estimate of SPD's that were temporarily unoccupied at the time of the Census (i.e. the resident was away for an extended period of time and did not fill in a Census form). This measure is not available from the Census and is estimated through the processes described in the most recent Victorian Department of Planning & Community Development population forecasts for Victoria. This measure yields much higher estimates of occupancy rates than the usual OPD measure.

▶ **Estimated Resident Population (ERP)**

This is the estimate of the population based on their usual residence. The ERP at the time of the Census is calculated as the sum of the enumerated (counted) population plus persons temporarily absent less persons who are non-permanent (visitor) residents. An undercount of population by small area at Census time is also accounted for. The ERP used in these forecasts is then backdated to June 30. The ERP for forecast years are based on adding to the estimated population the components of natural increase and net migration.

▶ **Forecast Period**

In this report, the forecast period is from 2006 to 2031. Most data on the website has focused on the period from 2006 to 2021.

▶ **Household**

One or more persons living in a structural private dwelling.

▶ **In-centre development**

Residential development based on increasing dwelling densities around suburb and town centres. Usually around existing transport nodes and service infrastructure, rather than developing previously undeveloped land on the urban fringe.

▶ **'Infill' Development**

Residential development, usually of a relatively small scale, on redevelopment sites in established urban areas. This usually takes place on land previously used for another urban purpose such as industry or schools. Also referred to as 'intensification' of existing areas.

▶ **Mature families**

One and two parent families with older children, generally of secondary and tertiary school age.

▶ **Migration**

The movement of people or households from one location to another.

▶ **Natural Increase**

The increase in population based on the births minus deaths, not including the impact of migration.

▶ **Net Household Additions**

The overall increase in occupied dwellings, determined by the level of new dwelling construction that is permanently occupied, or conversion of non-permanently occupied dwellings to permanently occupied minus demolitions.

▸ **Non-private dwellings**

These dwellings include persons resident in establishments such as prisons, student or nurses' accommodation, rest homes, military facilities, and hospitals.

▸ **Occupancy Rate**

The proportion of structural private dwellings that are occupied by a household.

▸ **Occupied Private Dwellings (OPD)**

These are all Structural Private Dwellings (SPD's) that are occupied by a household. Excluded are dwellings that were under construction, being demolished or where the house was temporarily vacant.

▸ **Private dwellings**

Self contained dwelling including houses (attached or detached), flats, townhouses etc. Retirement village units are also private dwellings as are houses or flats rented from the government.

▸ **Redevelopment Sites**

These are sites in already established areas not originally developed for residential uses, but identified for conversion to residential use. Examples include former school sites, quarries, derelict industrial land, former petrol stations and the like.

▸ **Structural Private Dwellings (SPD)**

This is the stock of houses, flats, and other dwelling types. The SPD is the usual base stock from which commencements are added and demolitions deducted.

▸ **'Top down' forecast**

Population forecast based on assumptions made at the State and National level and allocated into smaller regions e.g. Local Government Areas, suburbs.

▸ **Visitor population forecasts**

Visitor population forecasts are based on 'non-event' affected, mid-week visitor levels. The 2006 base figures are sourced from Census, with an adjustment for undercount similar to that applied to the resident population (see Estimated Resident Population). Overall forecast levels are based on long term trends in visitor population growth in the Shire, with specific reference to current proposals for the purposes of allocation in the short-term. Visitor population forecasts have been included as they are a significant component of total population and may require specific servicing arrangements pertinent to resource allocation within Council.

▸ **Young families**

One and two parent families with young children, generally of pre and primary school age.