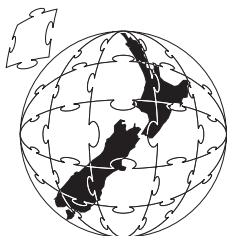


DEMOGRAPHIC TRENDS  
AND PROJECTIONS  
FOR THE WELLINGTON REGION  
1981-2021

WORKING DOCUMENTATION  
v1.0, 19 June 1998



**MERA**

*Monitoring and Evaluation Research Associates Ltd*

Prepared by

for the WELLINGTON REGIONAL COUNCIL

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Prepared by James Newell

Monitoring and Evaluation Research Associates Limited, Wellington

for the Wellington Regional Council (1998)

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# 1 . INTRODUCTION

This paper provides notes on key demographic trends and current projections for the Wellington Region by Local Authority over the period 1981 to 2021. This report will be updated over the next few months as results come available from the "Wellington Region Local Area Population / Land Use Behavioural Modelling" datalab project. This paper is intended as an evolving working reference for releasing results to the wider technical group working with the Wellington Regional Council. A more formal publication of these results would be envisaged once projection systems have been linked to the outputs from the datalab system.

This work relies in the first instance on new systems being built on the 1981 through to 1996 Census of Population and Dwellings masterfiles. The interim results presented here are based on the best that has been possible to achieve so far from distillation of statistical already supplied by Statistics NZ such as Supermap III and earlier purchases.

The recent changes shown to be taking place over the region such as the population boom and residential revitalisation of inner Wellington are an indicator of major changes in lifestyle and lifecycle patterns. It will be of value to understand these better. A much better understanding of these major recent in residential development and thus "settlement patterns" should be realisable from the datalab results.

The results from this work are of three kinds.

There are results in terms of **system development**. Systems consist of two sorts. There are **historical statistical attributes of the region** such as will be derived from the Census of Population and Dwellings "datalab" project. **Models, submodels and conversion systems** designed to process statistical inputs and emulate various aspects of the development of the region using the statistical data are the second types of systems. A realisable outcome of the "datalab project" is an easily updated, robust, appropriately adjusted series of statistical indicators tracking population, employment, household formation and infrastructure changes of the neighbourhoods of the Region over the 1981 to 1996 period. This will be realised at all levels including for a range of spatial frameworks customised to Council activities - transport zones for instance. The efforts to do this have been compromised in the past by the evolution of administrative, operational and statistical boundaries over time.

In the second place, there will be results in terms of the **analysis of dynamic processes underlying changes in demographic indicators and predicted parameters**. For example, the migration behaviour of individuals and households needs to be analysed more ecologically. The migration history needs to be described in terms of the lifecycle migration behaviour of different birth cohorts and the household/family types that people find themselves over the different stages of their lifecycle. This approach has been found to have a great deal of predictive power in terms of future population changes. Good examples of this approach are shown in Davey (Tracking Social Change in New Zealand, From Birth to Death IV, 1998) and also in the work of the Demographic Transitions Programme carried out by the University of Waikato and its partners.

The third sort of result will be demographic projections and related household, employment and school roll scenarios.

## **2. STATISTICAL BASE**

At this point in the project, the principal statistical sources used are as follows :

Supermap 1, II and III

Selected custom tables or special statistical series commissioned from the 1996 Census.

Statistical series purchased for previous rounds of this modelling programme.

The cadastral database from Terralink supplied to the Wellington Regional Council and derivatives of that system.

Births, Building Permit and Business Directory data series.

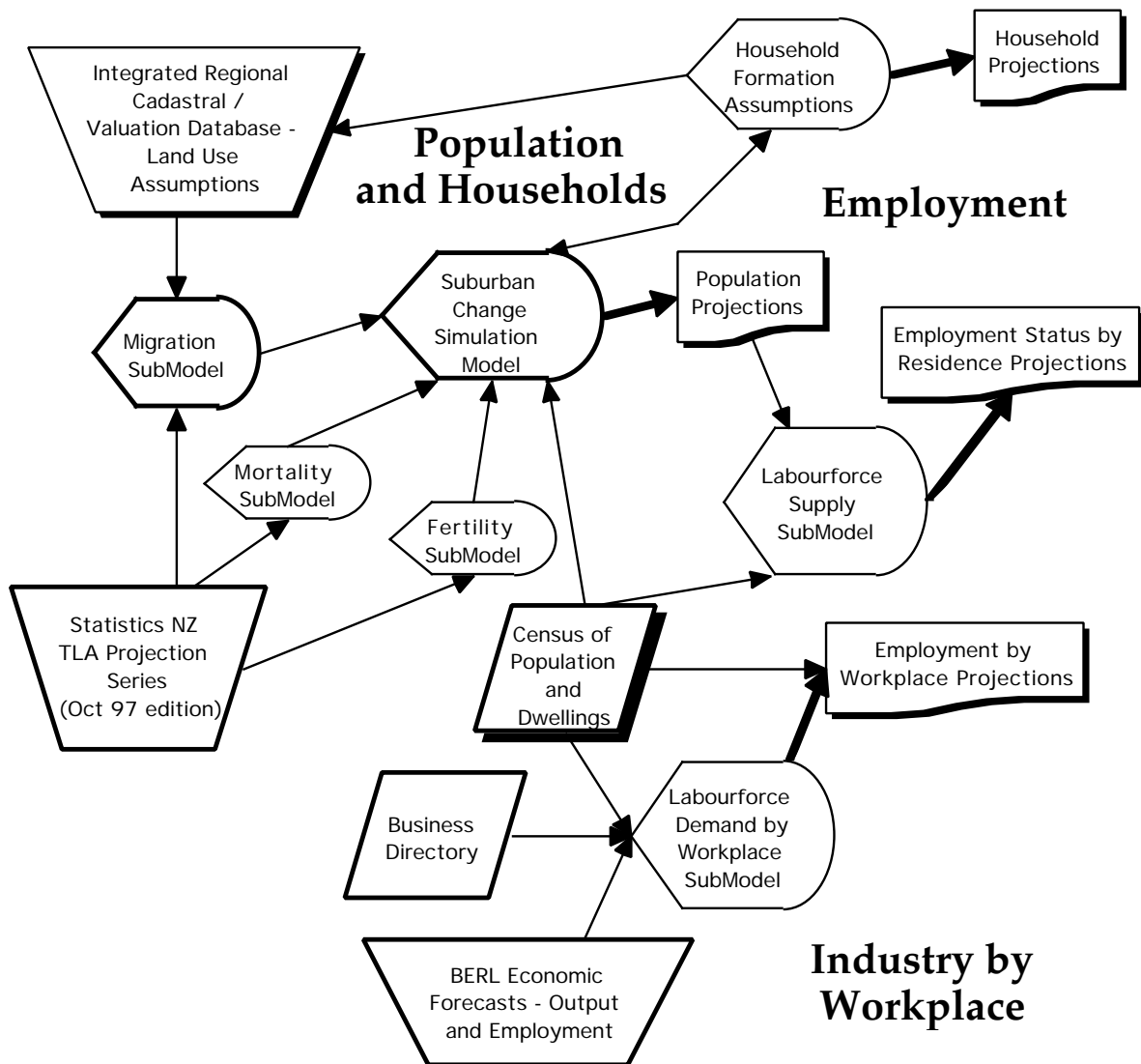
Secondary sources supplied by other participants in the modelling programme.

Indicators from these systems are usually at area unit level. The analysis and modelling has usually been done at the 1991 Statistical Area Unit level at this time. More recent 1996 Census data has been rebased on 1991 boundaries until "datalab project" makes it possible to remaster key systems on a 1996 Census Area Unit basis. Where results are produced for larger units, this is mainly by aggregation or conversion of summarised data from 1991 Area Units. The "datalab project" will make it possible to rebase statistical series accurately on each different spatial framework such as Wellington Region Transport Zones.

Much of the statistical base will be revised from the "datalab project".

### 3. PROJECTIONS AND SCENARIO MODELLING SYSTEMS

The projections are based on a suite of linked models and submodels designed to prepare an internally consistent set of development scenarios for the Region and Local Authority level. This computer based modelling environment is illustrated in Figures 1 and 2.



**Figure 1 : Wellington Region Local Area Development Projections : Current Model Structure**

### 3.1 POPULATION PROJECTIONS

The local authority level population projection adopted as the basis for this growth trends projection are generally the Statistics NZ October 1997 local authority series projections. This provides corresponding low, medium and high scenarios for the period 1996 to 2021. The projection series used here diverges from Statistics NZ projection assumptions for the Wellington City area. The Statistics NZ projection for Wellington City reflects in large measure the mean over the 1986-96 period. The Wellington City projection used here is still conservative but gives a higher weight to the 1991-96 period. This is for two reasons. 1986-91 is considered to have been an exceptional period of restructuring for the City and not a good baseline for long term projections. secondly, the high density development and redevelopment that has been observed in inner Wellington over the 1991 to 1996 period is considered to be a new long term part of the Wellington Region's development dynamic, although the projection used assumes that this rate of development will slow substantially.

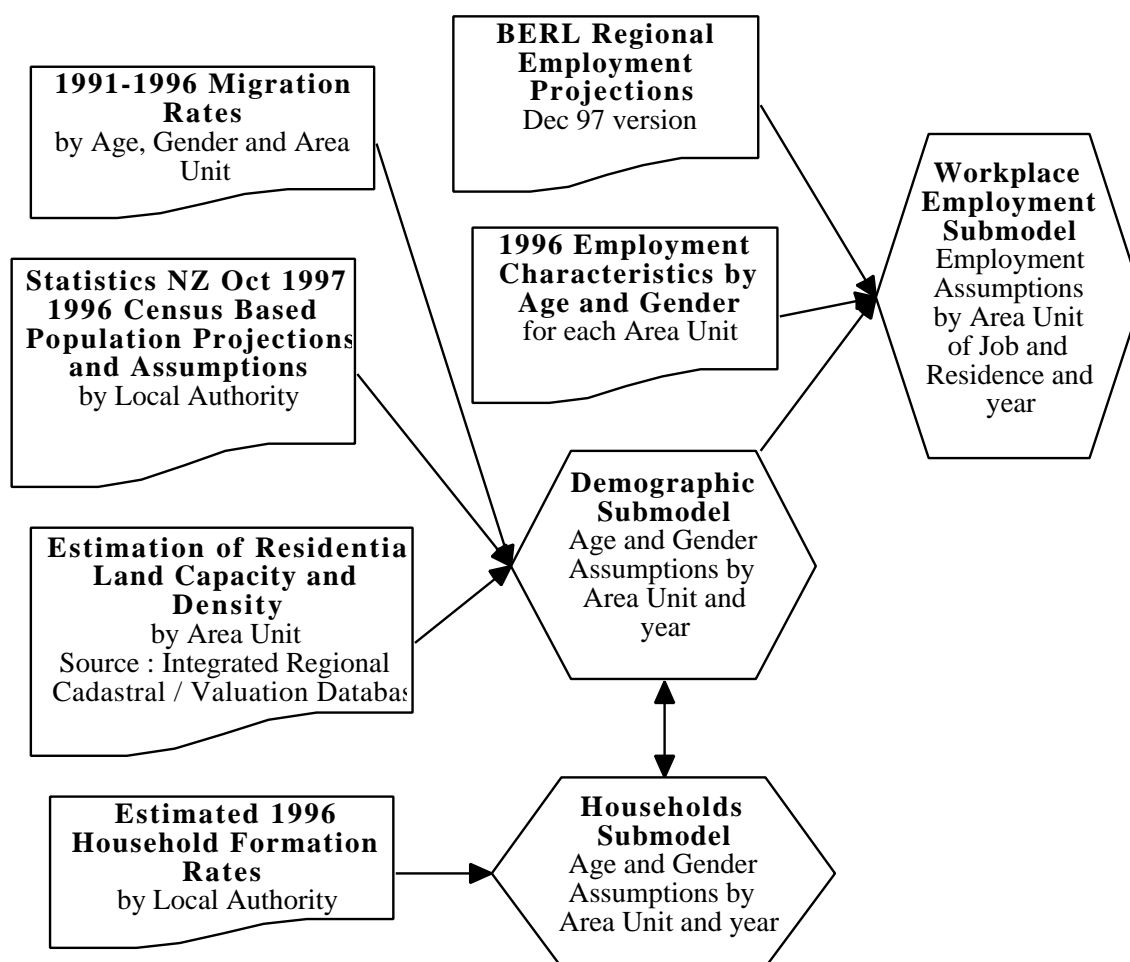


Figure 2 : Growth Projection Process Summary

Apart from this variation, the projection series used adopted the migration, fertility and mortality assumptions of the October 1997 Statistics NZ local authority projection series. The local authority population projections so derived were then used as the envelope within which corresponding area unit level development scenario assumptions were constrained. The final migration, fertility and mortality figures for the local authorities will however differ in minor ways as a result of rounding errors and fitting tolerances from the Statistics NZ projections where used.

Local census area unit population projection scenarios were the prepared using a standard “cohort-component” population projection method. The area unit level population projections involved making appropriate migration, fertility and mortality assumptions for each area unit for each period. The fertility and mortality assumptions used at census area unit level were assumed to be the same as those for each local authority as a whole for any particular age and gender group, projection, or period. The migration assumptions were developed by reconciling various area unit level and local authority level constraints which included :

- \* The sum of the census area unit level migration by age and gender would equal or be close less than 1% deviation) from those adopted in the October 1997 local authority projection series prepared by Statistics NZ or stated variations on the assumptions for such projections.
- \* The rate and character of population change at an area unit level (specifically migration by age and gender group) reflects the recent 1991-96 migration pattern into each area where consistent with other constraints.
- \* The vacant residential capacity of each area unit acts as a constraint on the capacity able to be accommodated in each area.
- \* The residential development stage or character of each area unit also influences its role in accommodating the population changes in the District.

### **3.2 LAND CAPACITY ASSUMPTIONS**

The migration assumptions for each area and age group were checked against broad capacity constraints for each area and scaled down where capacity limitations were clearly exceeded. The land use assumptions used in this set of projections are based on an estimate of the vacant residential capacity in for each area prepared from analysis of property records in the Regional Council's cadastral database linked with the valuation records for each area. These land use assumptions are shown in Appendix 1. For the Kapiti Coast District, it has been assumed that some rezoning of land to residential will be needed to accommodate projected residential development over the projection period.

The types of suburb used in this model included “young greenfield”, “growing greenfield”, “developed”, “shrinking”, “high density” and “special”. The typing of each area was determined for each year by the model based on the actual estimated characteristics of each area and on the level of demand for new residential properties as a result of changes in population. “young greenfield” were those areas with an estimated net migration over the previous period of less than 100 and more than 10% of residential land vacant. “Growing greenfield” areas were those with more than 10% vacant

residential and more than 100 net migration for the previous period. "Shrinking" suburbs are those that appear to have had significant net out migration over recent years. "High density" suburbs are inner urban areas which have had major high density residential redevelopment over the last few years. "Developed" suburbs were those with less than 2% vacant residential land.

When recent migration trends and capacity limitations were taken into account, the difference between actual and initially projected migration was in the first instance accommodated by adjusting the rate of development of the "growing greenfield" areas. Where the growing greenfield areas were having difficulty accommodating the overspill "young greenfield" areas were then brought in and reclassified as "growing greenfield" and the rate of migration to those areas increased to help to accommodate the overspill. The areas brought in first were those with the highest growth rates for the previous period.

### **3.3 HOUSEHOLD PROJECTIONS**

The household projections were derived from the population projections by estimating the proportion of each age group in private dwellings and then applying historical household formation rates to each agegroup. The household formation assumptions are based on an adjustment to 1991 household formation rates at this stage adjusted up or down to reflect the actual numbers of households recorded for 1996. The household formation rates are assumed to remain constant for each age and gender group for the projection period as the rate of change in household formation to smaller household sizes has now slowed considerably.

### **3.4 WORKPLACE EMPLOYMENT PROJECTIONS**

The workplace employment projections are based on a variation of the December 1997 regional workplace employment projection prepared by BERL for the Wellington Regional Council. The BERL projection provides output and full time equivalent employment growth assumptions at a regional level for the 1996-2016 period. This has been extended to 2021 and adjusted slightly as shown in Table 1.

The regional employment projection was used as an envelope to calibrate the local breakdown of the employment projection. The 1996 starting year base employment numbers by industry and workplace area unit were adjusted to fit BERL subregional base year employment assumptions. These subregional base year estimates were based on Business Directory data in the main.

The local allocation of employment brought together information on base year workplace employment by industry and area unit, BERL regional projections, Local Authority level population projections and local authority level full time / part time employment ratios for 1996 by local authority for 1996 into a workplace employment allocation model as represented in Figure 3.

The approach used to allocate employment to area unit level was specific to each sector. The projected regional growth rate was applied uniformly to base year local employment projections for the primary sector (agriculture forestry and fishing major industry group), mining, utilities (electricity gas and water), and Transport and Communications. The local authority level population projections were used as an indicator of the differential share in local employment growth rate received by each area unit for Manufacturing and Construction. The Wellington CBD followed the regional growth rate but other areas of the Wellington Urban Area grew at relative rates that reflected

### 3. PROJECTIONS AND SCENARIO MODELLING SYSTEMS

The projections are based on a suite of linked models and submodels designed to prepare an internally consistent set of development scenarios for the Region and Local Authority level. This computer based modelling environment is illustrated in Figures 1 and 2.

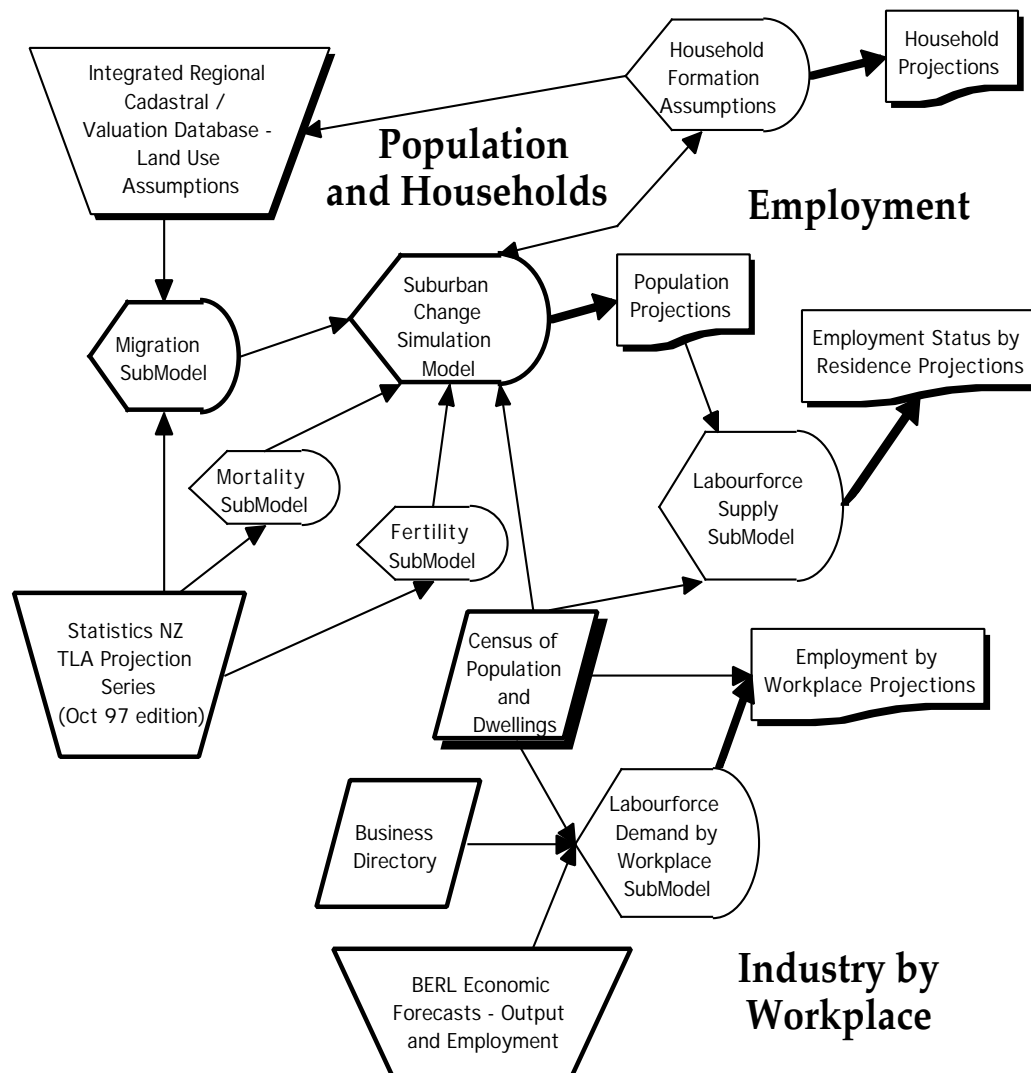


Figure 1 : Wellington Region Local Area Development Projections : Current Model Structure

#### 3.1 POPULATION PROJECTIONS

the local authority population projection for the Wholesale, Retail, Restaurants and Hotels and Financial and Business Services Major Groups. Finally, local allocation of employment for the Social, Community and Personal Services was based on a 50% weighting each of population and uniform allocation of growth approaches.

The above method provided full time equivalent projections at a local level but the full time and part time breakdown of this employment was based on local authority full time / part time employment by industry for each local authority.

**Table 1 : Recent and Projected Percent Per Annum Change in Wellington Region Full Time Equivalents by Major Industry Group**

Sources : Historical Estimates based on the Census of Population and Dwellings data, Projections based on MERA variation on December 1997 BERL projections

	Historical Trend	Adjusted* Trend	Projection for 1996-2001			Projection for 2001-2021		
	1986-91	1991-96	high	base	low	high	base	low
Agriculture Forestry or Fishing	4.06	1.16	0.258	0.118	-0.069	0.425	0.187	-0.010
Mining	-1.10	-15.31	0.000	0.000	0.000	0.000	0.000	0.000
Manufacturing	-8.64	-1.35	0.073	0.073	-0.422	-0.220	-0.356	-0.359
Utilities	-5.45	-6.55	0.000	0.000	0.000	0.000	0.000	0.000
Construction	0.30	-2.59	0.750	0.700	0.060	1.125	0.503	0.285
Wholesale Retail etc	-1.31	1.72	2.075	1.500	0.705	2.075	1.282	0.705
Transport Storage & Communications	-6.29	-3.23	2.914	2.553	1.396	2.725	1.622	1.529
Financial & Business Services	5.54	2.99	1.063	0.600	0.570	1.067	1.063	0.570
Community Social & Personal Services	-0.40	-0.58	0.711	0.546	0.376	0.784	0.715	0.437
Total Industry (approximately)	-1.24	0.24	1.1	0.9	0.4	1.2	0.8	0.5

\* The 1996 Census values were adjusted upwards to account for a much higher proportion of not specified industry compared with 1991 results

## 4. ANALYSIS OF DEMOGRAPHIC TRENDS

### 4.1 OVERALL WELLINGTON REGION TRENDS

Over the 1991-96 period, the rate of growth in the Wellington Region population increased over the 1981-91 trend (refer Tables 2 and 3). The annual % change in usually resident population for the region was 0.68%, compared with 0.35-0.40% per annum over the 1981-91 period. There were sharp differences in the rate of population change and the sort of change in growth pattern for different local authorities within the Region when the 1991-96 period is compared with 1981-91.

**Table 2 : Historical and Projected Usually Resident Population by Local Authority for the Wellington Region 1981-2021**

Sources : Historical Population Estimates based on the Census of Population and Dwellings, Projections based on MERA variation of Statistics NZ Local Authority Projection Series, October 1997 release

	1981	1986	1991	1996	2001	2016	2021
Kapiti Coast District	26,271	29,385	34,926	39,304	41,912	48,814	51,062
Porirua City	42,516	45,885	46,542	46,617	47,980	45,350	43,730
Upper Hutt City	36,822	36,720	36,894	36,714	36,930	33,390	31,850
Lower Hutt City	95,664	95,202	94,911	95,889	98,340	94,820	92,970
Wellington City*	147,018	147,576	148,413	157,647	168,750	177,340	179,280
Masterton District	22,092	22,008	22,560	22,761	22,880	20,970	20,050
Carterton District	6,537	6,432	6,870	6,813	6,800	6,160	5,900
Sth Wairarapa District	8,691	8,847	9,150	8,943	9,050	8,440	8,140
Wellington Region (excluding Rara)	385,608	392,103	400,275	413,976	432,600	435,040	432,700

\* The Statistics NZ projection for Wellington City has been boosted as the original projection was considered too conservative and inconsistent with recent trends for the City

**Table 3 : Summary of Wellington Region Per Annum Percent Population Trends and Projections by Local Authority : 1981 – 2021**

Sources : Historical Population Estimates based on the Census of Population and Dwellings, Projections based on Statistics NZ Local Authority Projection Series, October 1997 release

	1981-86	1986-91	1991-96	1996-2001	2001-2016
Kapiti Coast District	2.28	3.51	2.01	1.64	0.99
Porirua City	1.56	0.26	0.04	0.58	-0.38
Upper Hutt City	-0.04	0.07	-0.09	0.12	-0.67
Lower Hutt City	-0.09	-0.07	0.21	0.51	-0.24
Wellington City	0.1	0.1	1.21	1.37	0.33
Masterton District	-0.07	0.49	0.18	0.1	-0.58
Carterton District	-0.32	1.33	-0.17	-0.04	-0.66
Sth Wairarapa District	0.36	0.69	-0.47	0.24	-0.46
Wellington Region	0.35	0.4	0.68	0.88	0.04

Underlying the burst of population growth in the region was a wave of increased live births. This reflects a large population cohort reaching peak child bearing age and delayed births by an earlier population cohort.

Keys to understanding the change in population over the 1991-96 period and its implications for future population growth are the migration pattern by age and gender shown in Figure 4 and the changes in employment patterns over the period illustrated in Table 4.

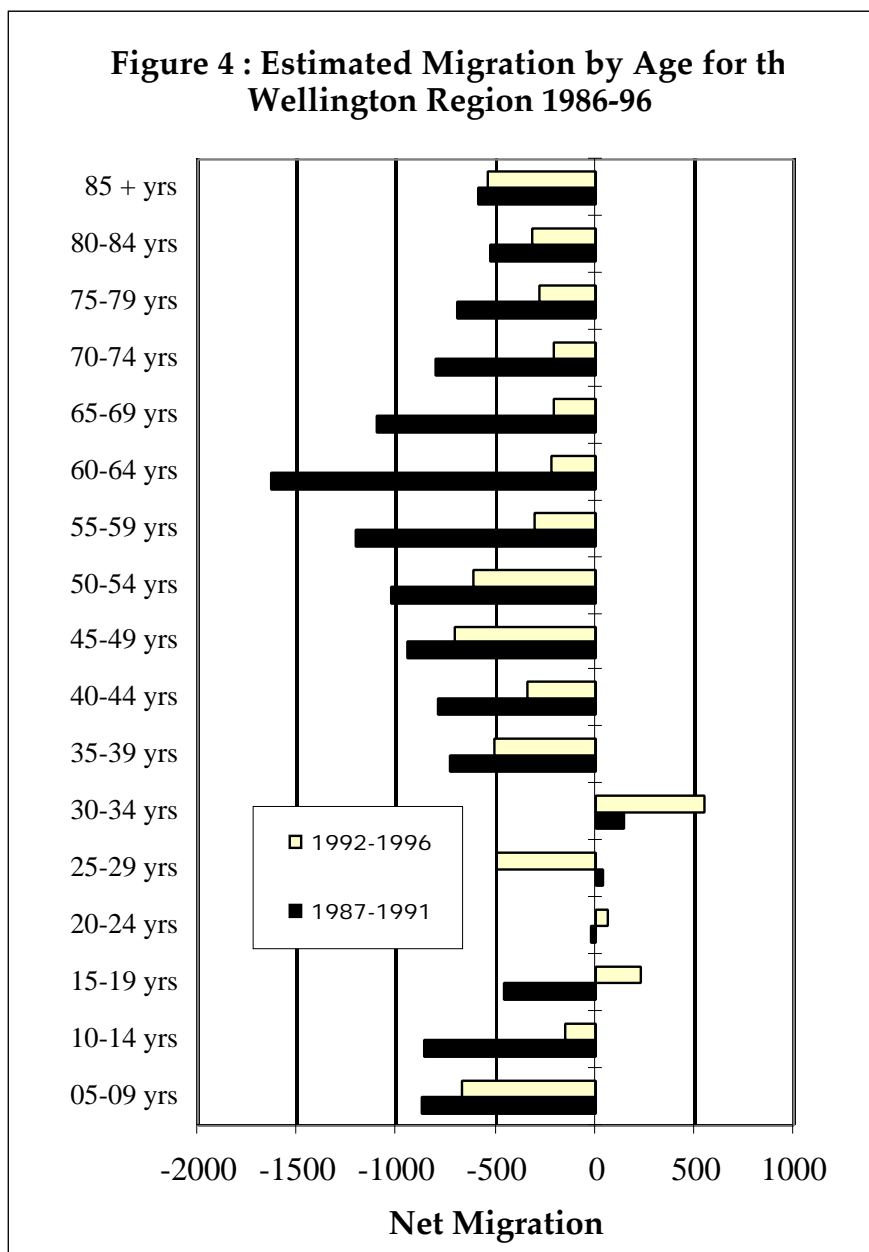
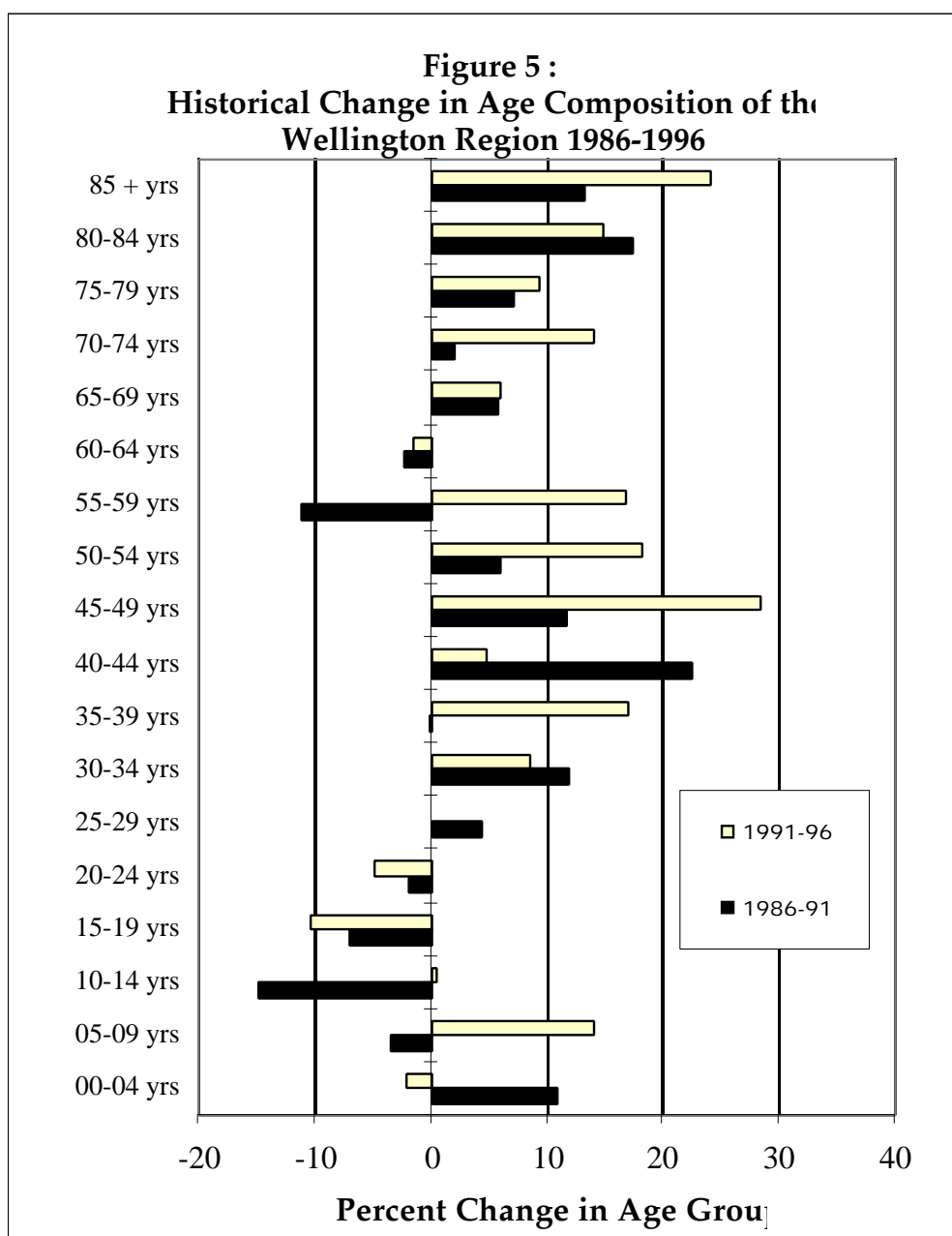


Figure 6 compares the estimated net migration by agegroup for the Wellington Region over 1986-91 and 1991-96. The net numbers of Wellington Region residents leaving the region decreased sharply for most age groups between 1986-91 and 1991-96 and there was an increase in the rate of net in migration of those aged 15-19 years and 30-34 years. More 25-29 year olds in net left the region over the period which probably ties in with increased international mobility of that age group and

may also reflect increased numbers of people coming to Wellington for post-secondary education and training.



It is the net change in the numbers in each age group that are the basis of demand for services and infrastructure. This is the net result of births, net migration and aging of large birth/migration cohorts such as the “baby boomers” and the more recent “baby blippers” (large birth generation groups). The net effect of these is illustrated by the percentage change in the composition of the Wellington Region population by agegroup over the 1986-96 period shown in Figure 5. The large percentage increase in the 45-59 year age group over 1991-96 within the region is a good example of this net effect and will have had major implications for the demand for services used by that age group. This group is one that has a high level of ownership and usage of cars and this will have been reflected in changes

in traffic loading on road systems in the region.

**Table 4 : Estimated Historical Numbers of Paid Jobs by Workplace Area for the Wellington Region 1986-1996**

Source : Estimates from Census of Population and Dwellings 1986-96 data

		1986	1991	1996	1986-91	1991-96
Full-Time Jobs	Kapiti Coast District	4,839	5,901	6,456	4.1	1.8
	Porirua City	9,537	9,246	8,184	-0.6	-2.4
	Upper Hutt City	9,087	8,088	7,623	-2.3	-1.2
	Lower Hutt City	32,418	30,228	28,020	-1.4	-1.5
	Wellington City	90,942	80,391	78,993	-2.4	-0.4
	Wairarapa Area	12,189	13,092	10,392	1.4	-4.5
	Wellington Region	159,012	146,946	143,187	-1.6	-0.5
Part-Time Jobs	Kapiti Coast District	1,458	2,250	3,288	9.1	7.9
	Porirua City	1,788	2,394	2,874	6.0	3.7
	Upper Hutt City	1,920	2,094	2,808	1.8	6.0
	Lower Hutt City	5,187	6,069	7,713	3.2	4.9
	Wellington City	11,433	11,808	17,646	0.7	8.4
	Wairarapa Area	2,640	3,156	3,843	3.6	4.0
	Wellington Region	24,423	27,768	39,084	2.6	7.1
Total Jobs	Kapiti Coast District	6,297	8,151	9,744	5.3	3.6
	Porirua City	11,325	11,640	11,058	0.6	-1.0
	Upper Hutt City	11,007	10,182	10,431	-1.6	0.5
	Lower Hutt City	37,605	36,297	35,733	-0.7	-0.3
	Wellington City	102,375	92,199	96,639	-2.1	1.0
	Wairarapa Area	14,829	16,248	14,235	1.8	-2.6
	Wellington Region	183,435	174,714	182,271	-1.0	0.9

Total jobs increased by 0.9% per annum over the 1991-96 period compared with a net loss of 1.0% per annum over 1986-91. Full-time jobs continued to drop, but the loss of full-time jobs slowed and the rate of growth in part time jobs increased sharply to 7% per annum over 1991-96 from 2.6 per annum over 1986-91. The change in net migration and population in the region over the 1991-96 period compared with 1986-91 is a reflection in part of the changes in job growth.

**Table 5 : Annual Percentage Change in Paid Employment Full Time Equivalents by Industry and Locality for the Wellington Region 1991-1996**

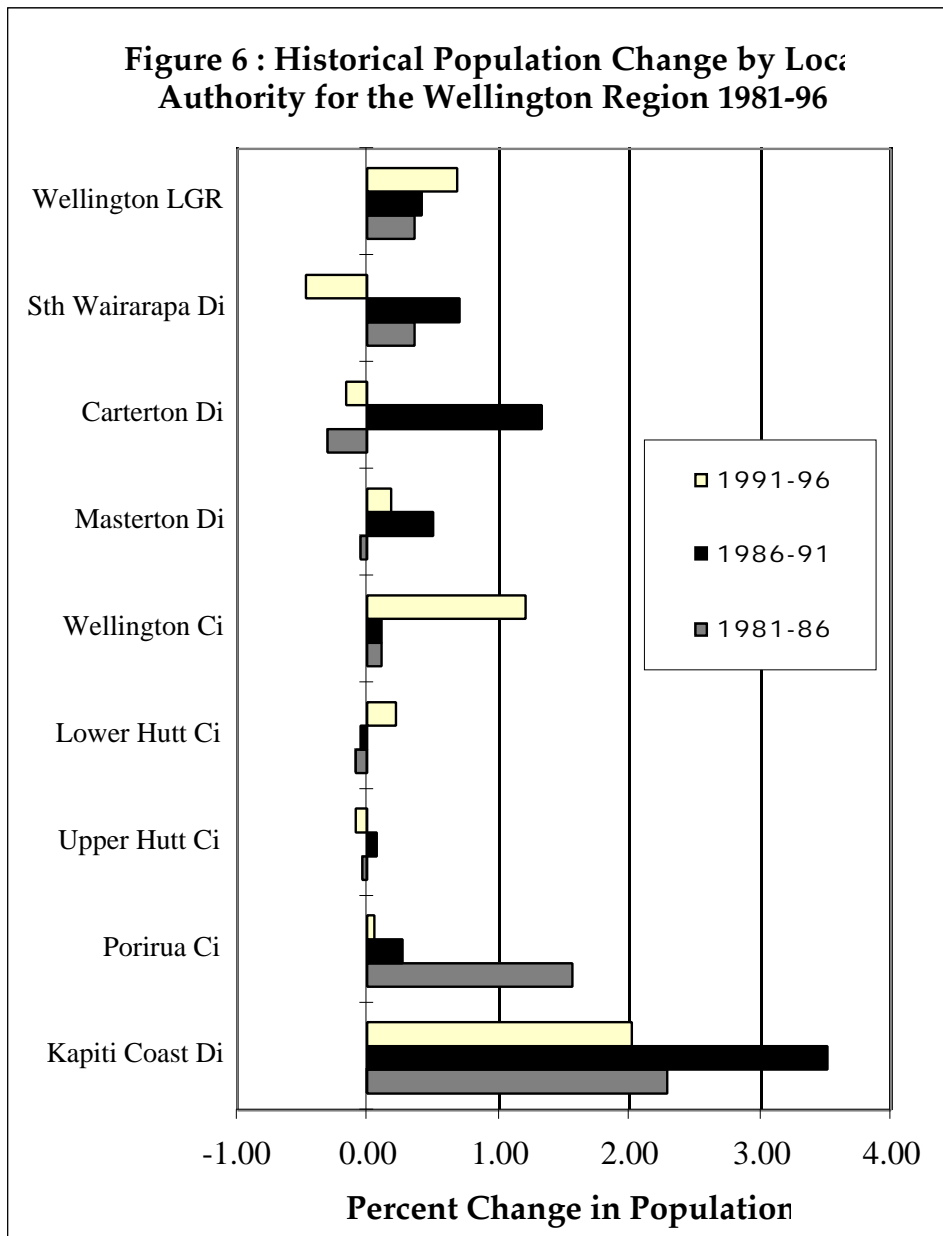
Source : Estimates from Census of Population and Dwellings 1991 and 1996 data

	Kapiti Coast District	Porirua City	Upper Hutt City	Lower Hutt City	Wellington City	Wairarapa Area	Wellington Region
Agriculture Forestry or Fishing	1.4	-2.52	7.78	-4.11	1.53	0.19	1.16
Mining	-7.22	14.87	0	-11.48	-28.75	-7.22	-15.31
Manufacturing	-1.58	-7.61	-4.48	-1.6	0.57	-0.32	-1.35
Utilities	-19.73	-7.03	-2.47	-8.33	-4.96	-13.16	-6.56
Construction	2.69	-2.84	-3.33	-2.21	-2.08	-19.71	-2.59
Wholesale Retail etc	5.23	-0.7	2.81	0.46	1.41	1.63	1.72
Transport Storage & Communications	0.19	-4.18	0.17	-4.41	-3.41	-18.87	-3.23
Financial & Business Services	4.34	5	3.7	4.96	2.22	-0.76	2.99
Community Social & Personal Services	3.75	-0.48	-1.28	-2.51	-0.56	-3.54	-0.58
<b>Total Industry</b>	<b>2.91</b>	<b>-1.62</b>	<b>-0.24</b>	<b>-0.84</b>	<b>0.35</b>	<b>-3.47</b>	<b>0.23</b>

Note: the figures have been adjusted proportionately to take into account the higher proportion of missing industry type values recorded in the 1996 Census

#### 4.2 SIGNIFICANT LOCAL AUTHORITY LEVEL TRENDS

As shown in Figure 6, the growth rates of different areas within the region varied greatly over the 1991-96 period.



The **Wairarapa** had a period of low or negative growth over 1991-96. Masterton District's population growth slowed to just above maintenance, but other areas of the Wairarapa experienced a slight net loss of population. That part of the region is undoubtedly suffering from the affects of changes in the local employment base. The most recent period saw significant drops in total employment in utilities, transport and communications services, public administration and community

services, and construction. Increased net out-migration from the local authorities in the Wairarapa was the net result.

**Table 6 : Estimated Historical Numbers of Paid Jobs and Per Annum Change by Industry for the Kapiti Coast District 1986-1996**

Source : Estimates from Census of Population and Dwellings 1986-96 data

	1986	1991	1996	1986-91	1991-96
Not Specified Industry	51	81	264	9.7	26.7
Agriculture, Forestry, Fishing	348	669	732	14.0	1.8
Mining	15	24	18	9.9	-5.6
Manufacturing	1,164	1,188	1,101	0.4	-1.5
Utilities	42	45	15	1.4	-19.7
Construction	516	684	771	5.8	2.4
Wholesale Trade	237	252	423	1.2	10.9
Retail Trade	1,119	1,419	1,839	4.9	5.3
Restaurants or Hotels	390	501	594	5.1	3.5
Transport or Storage	210	198	201	-1.2	0.3
Communications	183	96	111	-12.1	3.0
Financial institutions	129	234	210	12.7	-2.1
Insurance real estate or busns services	336	672	930	14.9	6.7
Public Admin and Defence	123	231	228	13.4	-0.3
Social and related cmnty services	981	1,338	1,659	6.4	4.4
Recreational and cultural services	144	219	231	8.8	1.1
Other services	315	303	429	-0.8	7.2
Total Jobs	6,297	8,151	9,744	5.3	3.6

**Table 7 : Estimated Historical Numbers of Paid Jobs and Per Annum Change by Industry for Wellington City 1986-1996**

Source : Estimates from Census of Population and Dwellings 1986-96 data

	1986	1991	1996	1986-91	1991-96
Not Specified Industry	405	597	1,512	8.1	20.4
Agriculture, Forestry, Fishing	357	267	294	-5.6	2.0
Mining	219	150	27	-7.3	-29.0
Manufacturing	9,744	5,676	5,868	-10.2	0.7
Utilities	801	606	477	-5.4	-4.7
Construction	4,194	3,528	3,201	-3.4	-1.9
Wholesale Trade	8,364	5,301	5,625	-8.7	1.2
Retail Trade	7,608	7,464	8,511	-0.4	2.7
Restaurants or Hotels	3,873	3,954	4,485	0.4	2.6
Transport or Storage	7,140	4,551	3,558	-8.6	-4.8
Communications	5,214	2,997	2,925	-10.5	-0.5
Financial institutions	7,020	6,690	6,111	-1.0	-1.8
Insurance real estate or busns services	13,461	18,249	22,209	6.3	4.0
Public Admin and Defence	14,217	13,056	11,901	-1.7	-1.8
Social and related cmnty services	13,191	13,344	11,325	0.2	-3.2
Recreational and cultural services	3,300	3,033	3,351	-1.7	2.0
Other services	3,273	2,739	5,232	-3.5	13.8
Total Jobs	102,381	92,202	96,612	-2.1	0.9

**Porirua City**, like many other areas experienced a sharp drop in employment in local manufacturing industries over 1986-91 period. The loss of manufacturing had a major effect on one socio-economic / demographic group and particular suburbs of the City. Although loss in total jobs manufacturing was balanced by growth in other industries these new jobs have catered to different demographic groups and fostered growth in other areas of the City. Total local employment levels have remained stable as has the population but the composition of the City is changing as those unable to gain local employment seek opportunities elsewhere leaving some areas with shrinking populations while others are growing at a modest rate. The changes in population distribution are probably also heightened by changes in property rents and tenure arrangements for large areas of former state rental properties.

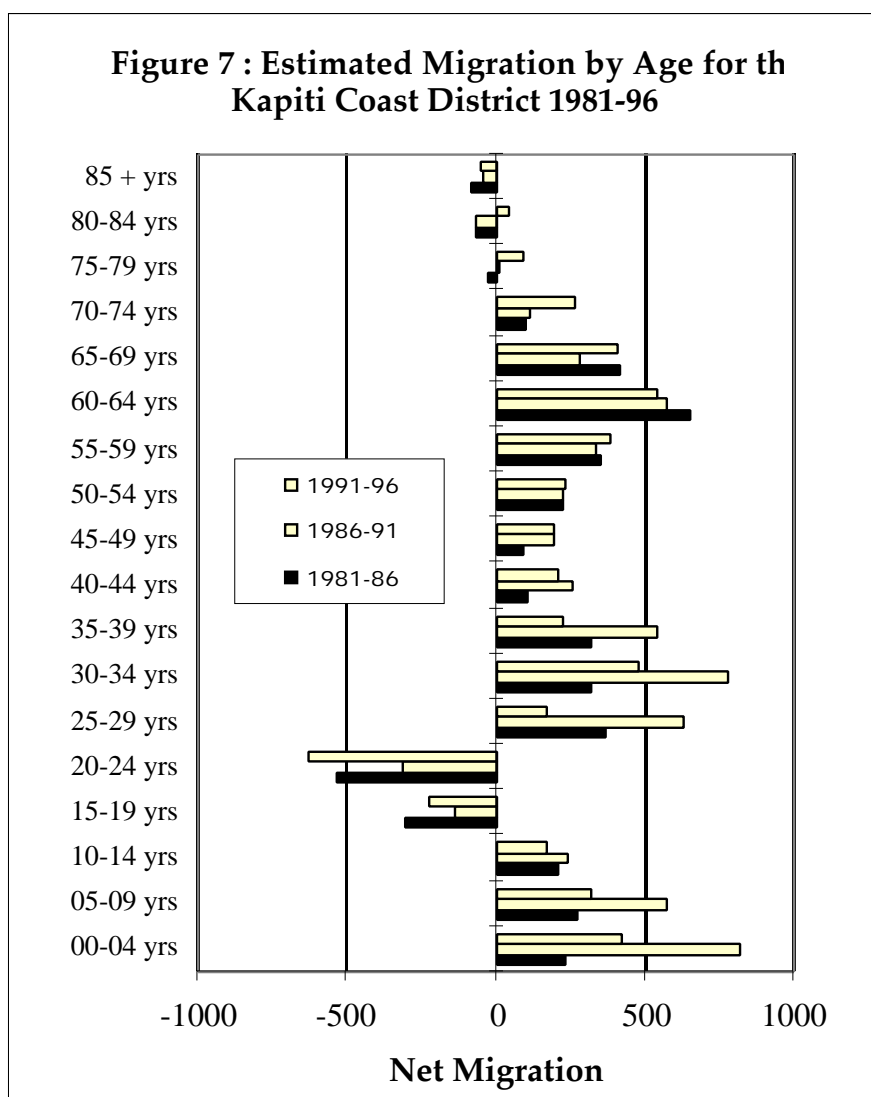
**Lower Hutt City** has shifted from experiencing a net loss of population of 0.07-0.09 per annum over the 1981-91 period to gaining 0.2% per annum over the 1991-96 period. Lower Hutt City experienced a sharp drop in manufacturing employment compensated only in part by increased employment in other sectors over 1986-96. Jobs in the City have continued to drop slowly over the 1986-96 period. It seems that there has been a shift in preference for Lower Hutt particularly by family/household groups in the 25-39 year occupier range with accompanying children. This appears to reflect increased preference by those working in Wellington City for areas in the south west corner and Petone area of the Hutt Valley – these areas appear to be serving more as a “dormitory” area for some demographic groups who work in Wellington City.

**Table 8 : Change in Total Jobs in Wellington City  
1986-1996**

Source : Estimates from Census of Population and Dwellings 1986-96 data

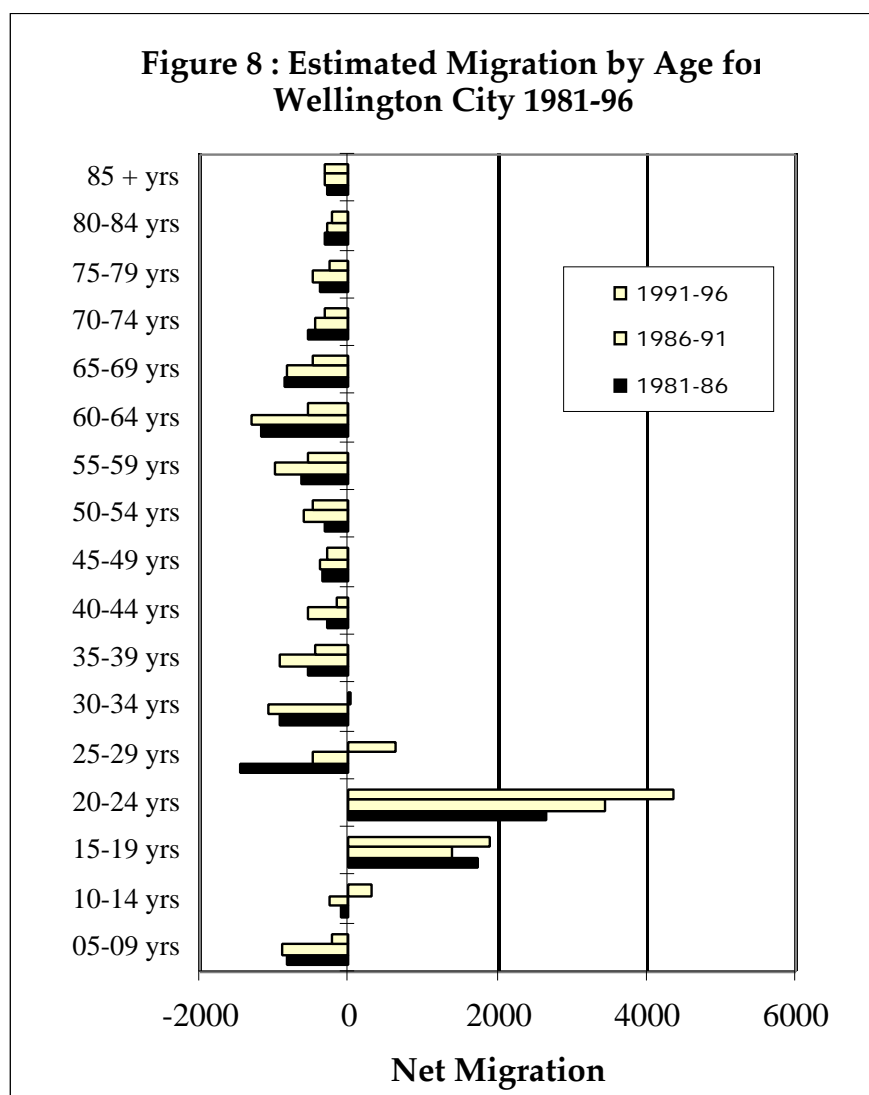
	1986-91	1991-96	1986-96
Agriculture, Forestry, Fishing	-90	27	-63
Mining	-69	-123	-192
Manufacturing	-4,068	192	-3,876
Utilities	-195	-129	-324
Construction	-666	-327	-993
Wholesale Trade	-3,063	324	-2,739
Retail Trade	-144	1,047	903
Restaurants or Hotels	81	531	612
Transport or Storage	-2,589	-993	-3,582
Communications	-2,217	-72	-2,289
Financial institutions	-330	-579	-909
Insurance real estate or business services	4,788	3,960	8,748
Public Administration and Defence	-1,161	-1,155	-2,316
Social and related community services	153	-2,019	-1,866
Recreational and cultural services	-267	318	51
Other services	-534	2,493	1,959
Total Jobs	-10,176	4,440	-5,736

**Upper Hutt City** has maintained a stable population over the 1981-96 with little net change up or down although there have been shifts in distribution of change of population within the City. Upper



Hutt was affected by the drop in manufacturing over the 1986-91 period which has continued balanced by growth in other employment sectors. The area appears to have gained in total jobs over the 1991-96 period but like other areas part time work makes up a growing share of the whole. The 1991-96 period saw a small drop in the City’s population of –0.09% per annum.

The 1981-96 period saw sustained and strong growth in the population of the **Kapiti Coast District**. The rate of growth peaked at 3.5% per annum over the 1986-91 period when there was a temporary increase in the rate of net in-migration of those aged 25-39 years old and children to the District (Figure 7). The pattern over the 1991-96 period has reverted to the longer term pattern characterised by sustained high rates of net migration of retirees and assumed higher income post family households / demographic groups and growth of 2.0% per annum. Employment in the District continues to grow strongly, but growth slowed from 5.3% per annum over 1986-91 to 3.6% per annum over 1991-96 as shown in Table 5. This is still a very high rate of growth and the highest rate of population growth in the Region.



**Wellington City** was the area with the most significant change in pattern of population growth within the region over the 1991-96 period. The rate of growth of the City's population increased from 0.1% per annum over 1981-91 to 1.2% during 1991-96. Given the size of the City compared with other local authorities in the region, this represents a very major shift in pattern of population distribution. The big change in the rate of population change was in part due to increased in-migration of 20-24 year olds, a shift from a net loss to a major net gain of 25-29 year olds, and decreased net out-migration of 35-44 year olds, and 55-69 year olds (Figure 8).

This change is accompanied by a big jump in inner city living with multi-unit and apartment style accommodation growing exponentially through conversion of commercial premises in the first instance but also construction of new apartment style residential blocks within the inner area of the City. Infill development has also accelerated sharply within the inner perimeter of residential suburbs in the City. The growth in these areas has been at the expense of reduced population growth in the more remote peripheral residential suburbs such as Johnsonville and Tawa.

Total jobs in Wellington City dropped by 2% per annum over the 1986-91 period but grew by 0.9% per annum over the most recent period (Table 7). Wellington City experienced a sharp drop in

manufacturing employment over 1986-91 as for other areas, but also lost large numbers of jobs in Wholesaling, Transport, Storage and Communications Services (Table 8). Over the most recent period a large drop in employment in Social and Related Community Services has been more than made up for by increased employment in Insurance, Real Estate and Business Services, Retailing, Restaurants and Accommodation Services (Table 8).

## **5 PROJECTIONS**

### **5.1 DISCUSSION OF THE BASIS FOR LOCAL AUTHORITY LEVEL POPULATION PROJECTIONS**

The starting point for the base population projections prepared for the Wellington was the October 31 1997 local authority projections prepared by Statistics NZ. The projections prepared for the Wellington Region differ in several important ways from Statistics NZ projections.

The migration assumptions used by Statistics NZ were compared with the 1986-96 demographic trends by local authority revealed by Census of Population and Dwellings data as illustrated in Figures 9 and 10.

For the region as a whole, the migration assumptions made in the Statistics NZ October 1997 projection assume a net loss from migration of about 8,100 over the 1997-2001 period. Over the 1987-92 period estimated migration loss from the region was 10,800 dropping to 4,800 over 1992-96 as shown in Figure 9. The big difference between recent historical and projected Statistics NZ Oct 1997 projected migration assumptions for the 1997-2001 period is for Wellington City as shown in Figure 10. Over the 1987-92 period it is estimated that Wellington City lost in net 4,300 population due to migration but gained 3,300 over the 1992-96 period. The Oct 97 Statistics NZ projection assumes a net loss of 500 due to migration over the 1997-2001 period and similar figures for subsequent periods. The major differences by age group were that the Statistics NZ projection for Wellington City assumes a net loss of 25-34 year olds whereas the most recent period saw a net gain from migration of these age groups and of children associated with those adult age cohorts. The recent period also saw a much lower level of net out-migration of 60-69 year olds than Statistics NZ has assumed in the projection.

One factor that is likely to have figured in the recent boost in net migration to Wellington City's population is a change in the pattern and preference for residential location in favour of inner urban areas and high density apartment style living. This very recent phenomenon started with the conversion of surplus commercial blocks into apartment style residential accommodation and was followed by purpose built apartment style / townhouse developments. There has also been a big increase in infill type development in the inner ring of residential suburbs close to the central city. The increase in Wellington City inner urban employment over the 1991-96 compared with other periods shown in Table 8 also encouraged and perhaps is also a result of the increase in inner city population.

It seems likely that there has been a fundamental and long term change towards greater preference

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by families in the Wellington Region for inner city rather than the traditional “suburban quarter acre section” type living. Much of this change over 1991-96 is likely to be one-off, catering to pent up demand and making use of the large amount of underutilised commercial space that existed in the late 1980’s and early 1990’s for residential redevelopment. However, this is likely to be reflected in an ongoing change in patterns of migration such that there is less urban to suburban migration at age 25-34 year when first household formation often takes place.

The decrease in outmigration of retirement age population may be a long term change but it is hard to assess the reasons behind it and what longer term implications it has without further information.

It seems likely that at least part of the 1992-96 period trend is likely to be sustained and will result in a higher rate population growth due to decreased loss of post 25 year olds to the Wellington population than

## 5.2 REVISED PROJECTIONS

**Table 9 : Projected Change in Population by Local Authority for the Wellington Region 1996-2021**

Sources : Projections except Wellington City based on Statistics NZ October 1997 Local Authority Projection Series. Wellington City MERA variant. Wellington Region made up as sum of TLA projections

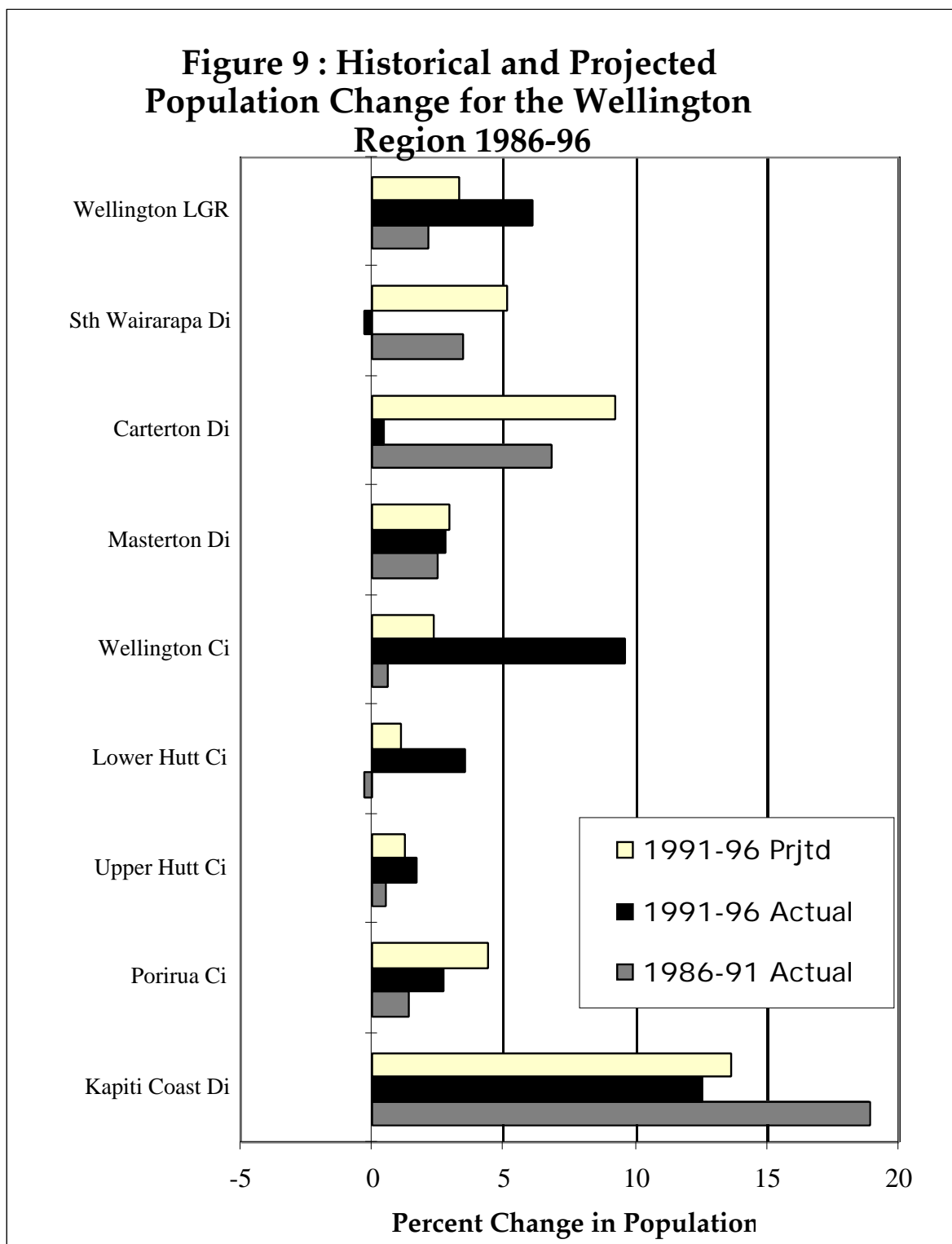
	1996	2001	2006	2011	1991-96	1996-2001	2001-2016
Kapiti Coast District	39,300	41,870	48,570	50,780	2.39	1.27	0.99
Porirua City	47,820	47,980	45,350	43,730	0.54	0.07	-0.38
Upper Hutt City	37,510	36,930	33,390	31,850	0.33	-0.31	-0.67
Lower Hutt City	98,250	98,340	94,820	92,970	0.69	0.02	-0.24
Wellington City	162,617	170,159	186,158	191,159	1.84	0.91	0.60
Masterton District	23,200	22,880	20,970	20,050	0.56	-0.28	-0.58
Carterton District	6,900	6,800	6,160	5,900	0.09	-0.29	-0.66
Sth Wairarapa District	9,120	9,050	8,440	8,140	-0.07	-0.15	-0.46
Wellington Region	424,717	434,009	443,858	444,579	1.19	0.43	0.15

MERA considers that the Wellington City projections prepared by Statistics NZ give too much weight to the long term historical trend. The most recent trends in Wellington City population are considered to reflect a change in development form that is likely to have longer term implications for population change in the city. MERA decided to prepare a projection that weighted the most recent trend twice as heavily as the 1986-91 period migration pattern in deriving alternative migration assumptions to be used in a Wellington City projection as an interim measure until further study of the pattern of migration in the region provides better assumptions.

The MERA variant of the Statistics NZ October 1997 projections for Wellington City results in net in-migration to the City of 800 compared with a net out-migration of 500 between 1996 and 2001 under the Statistics NZ assumptions. The contrasting migration assumptions by age group are illustrated in Figure 11. The net effect on the population of Wellington City is illustrated in Figure 12. Under the medium projection this results in a 2021 Wellington City population of 191,200 compared with 179,300 under the Statistics NZ projection assumptions.

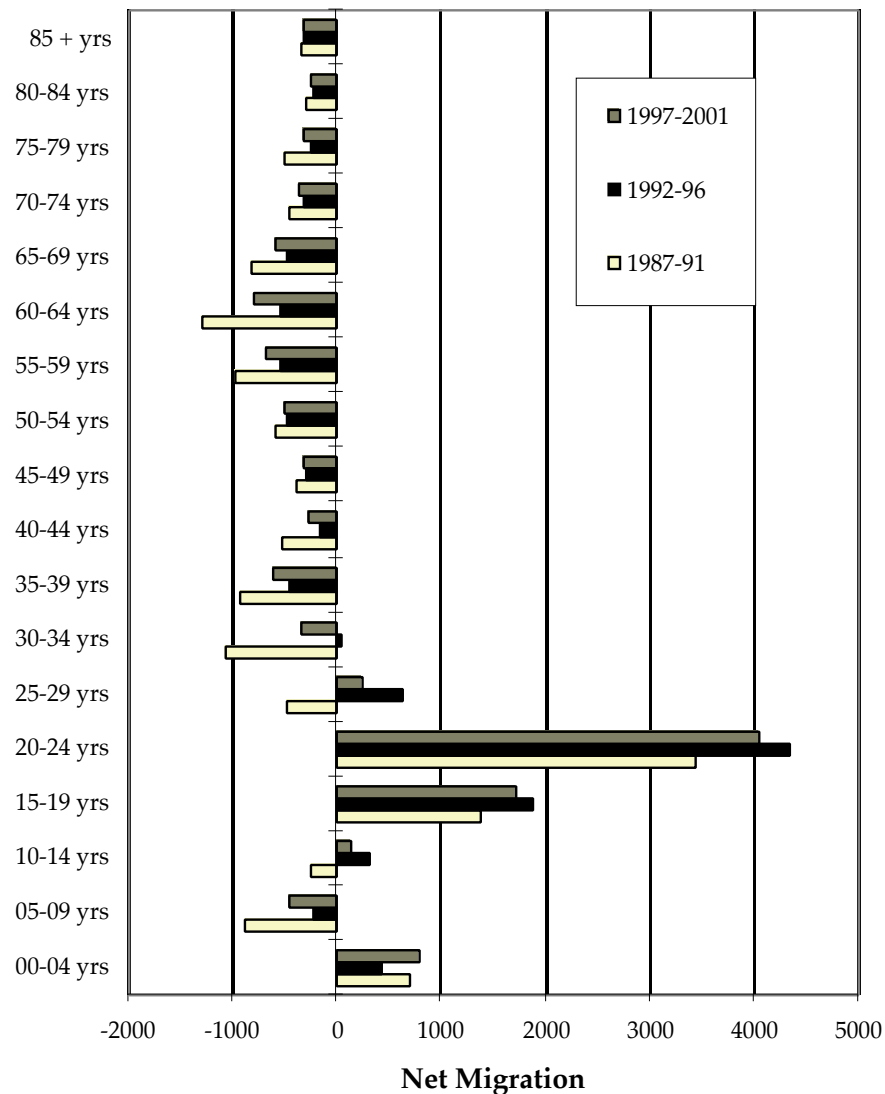
The effect of this revised Wellington City projection on the future population of the region is

illustrated in Figure 13, and is compared with the status quo Statistics NZ projection for the Region in Figure 14. The projected population by local authority and the annual percentage change in population by local authority for the region is presented in Table 9.

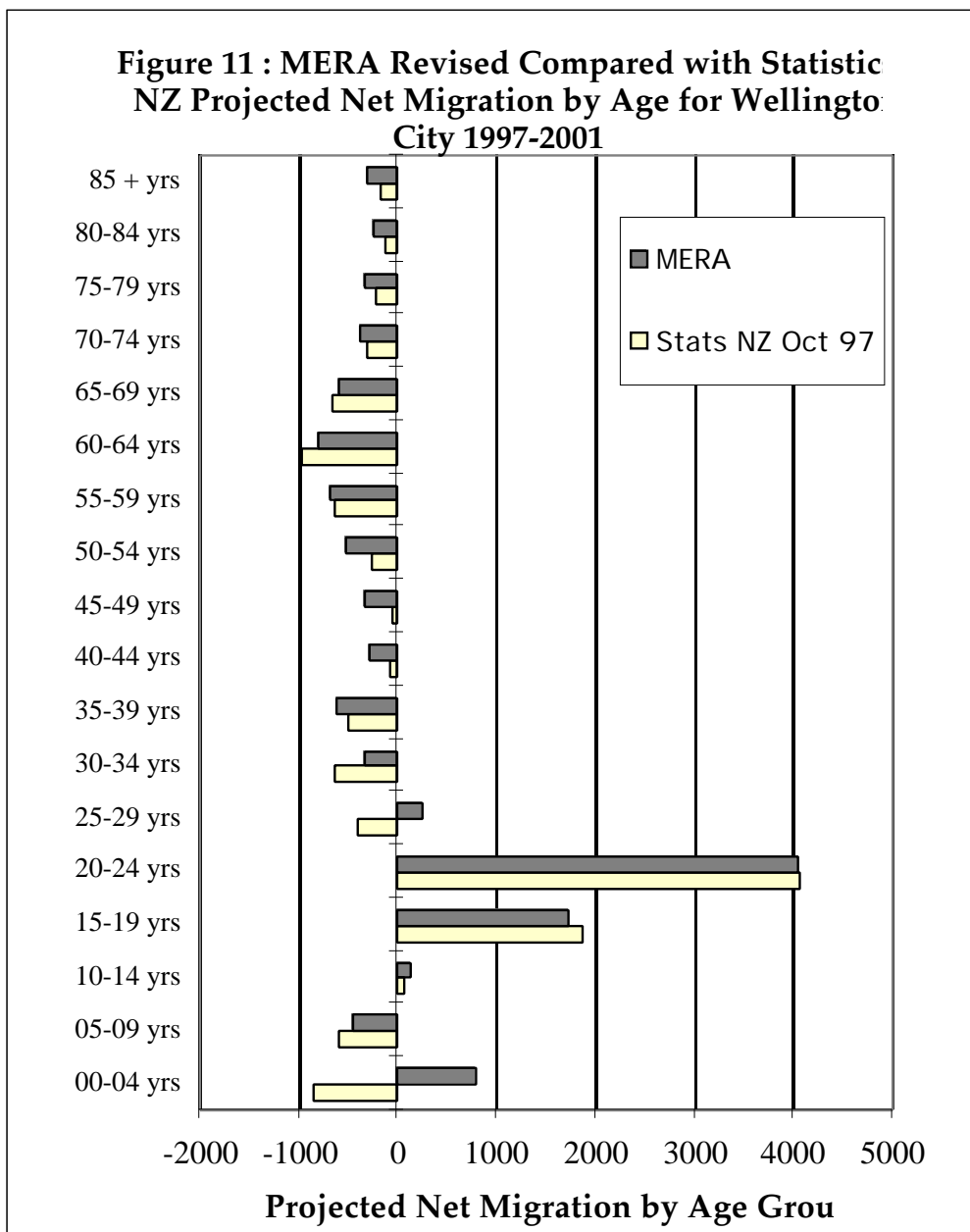


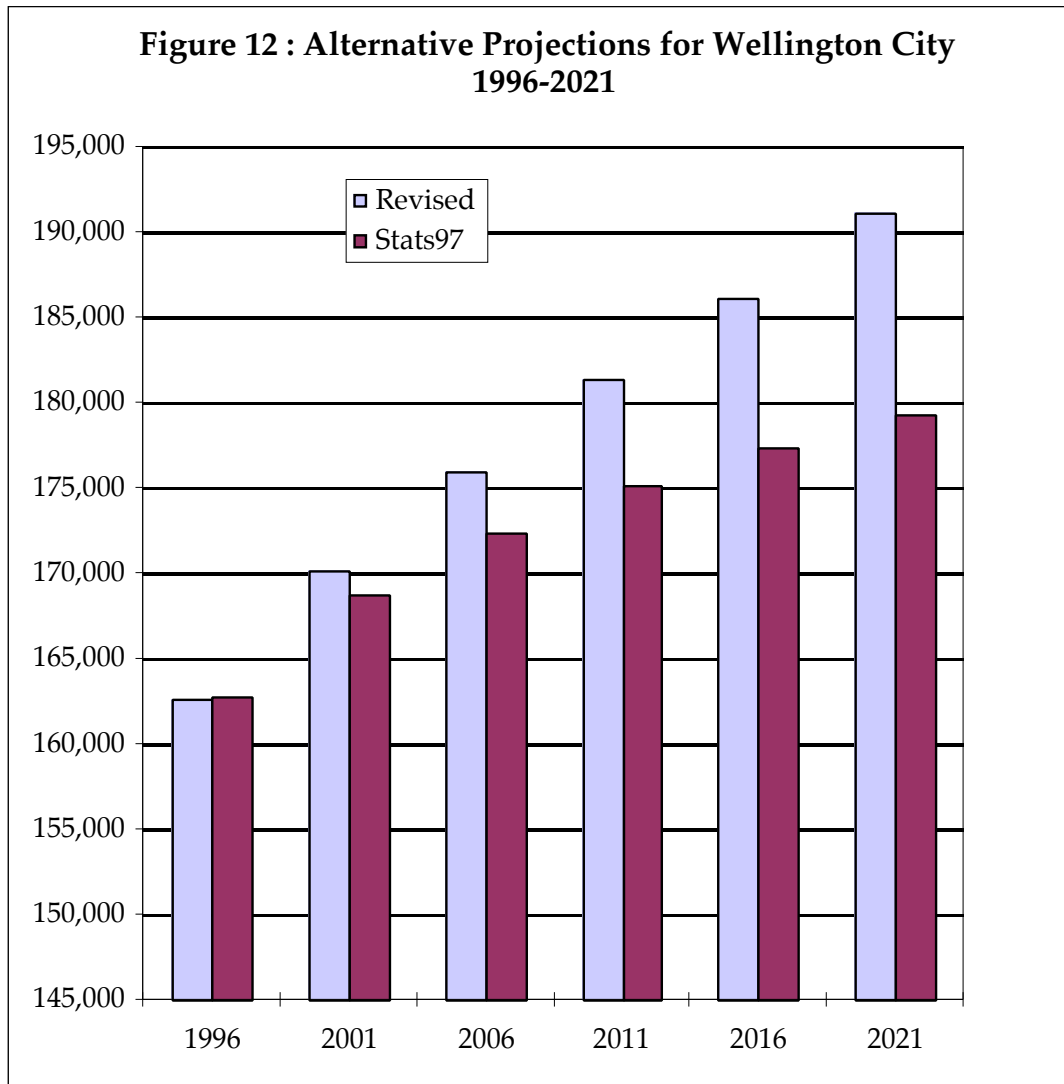
The net effect of the projected change in population on the change in age composition (Figure 15) will probably be more significant than changes in overall population size. The aging of the population will result in major changes in patterns of population distribution and consumption of goods and services.

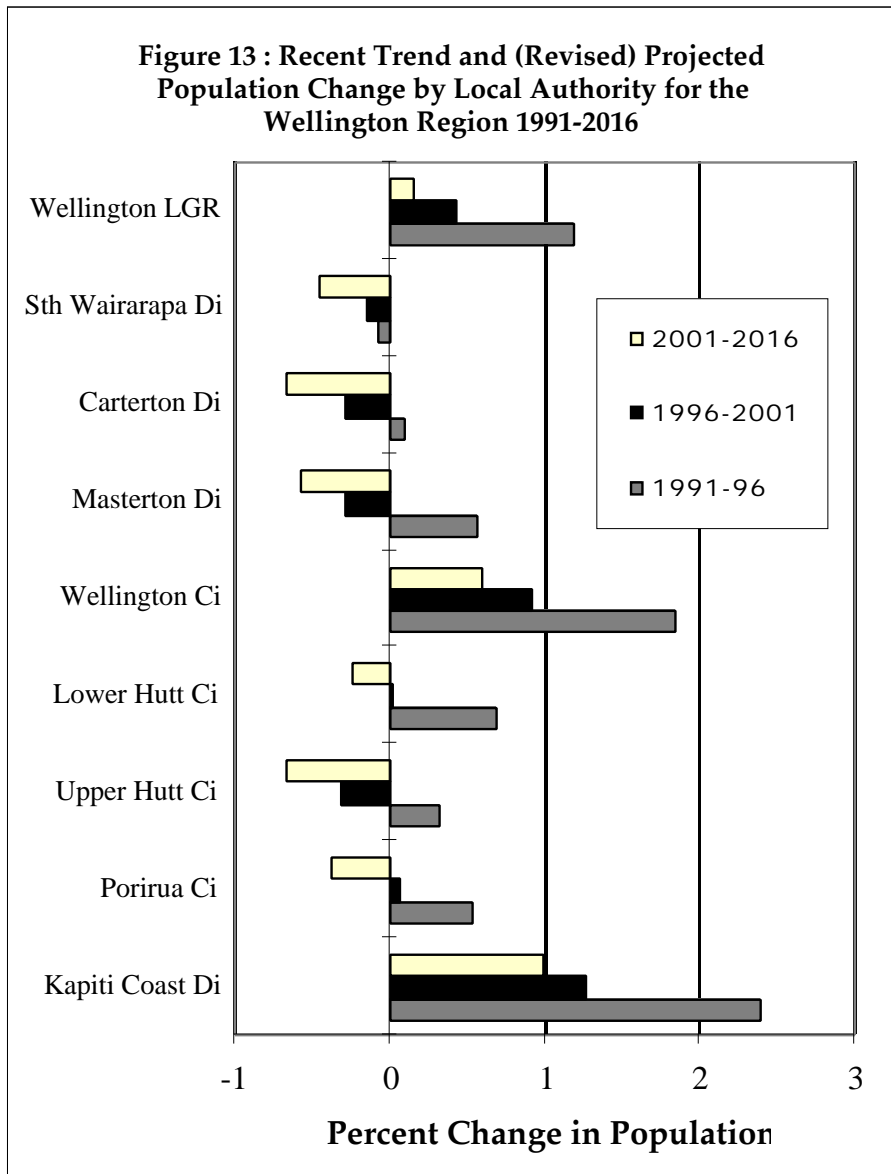
**Figure 10 : Historical and Projected Migration by Age for Wellington City 1986-2001**

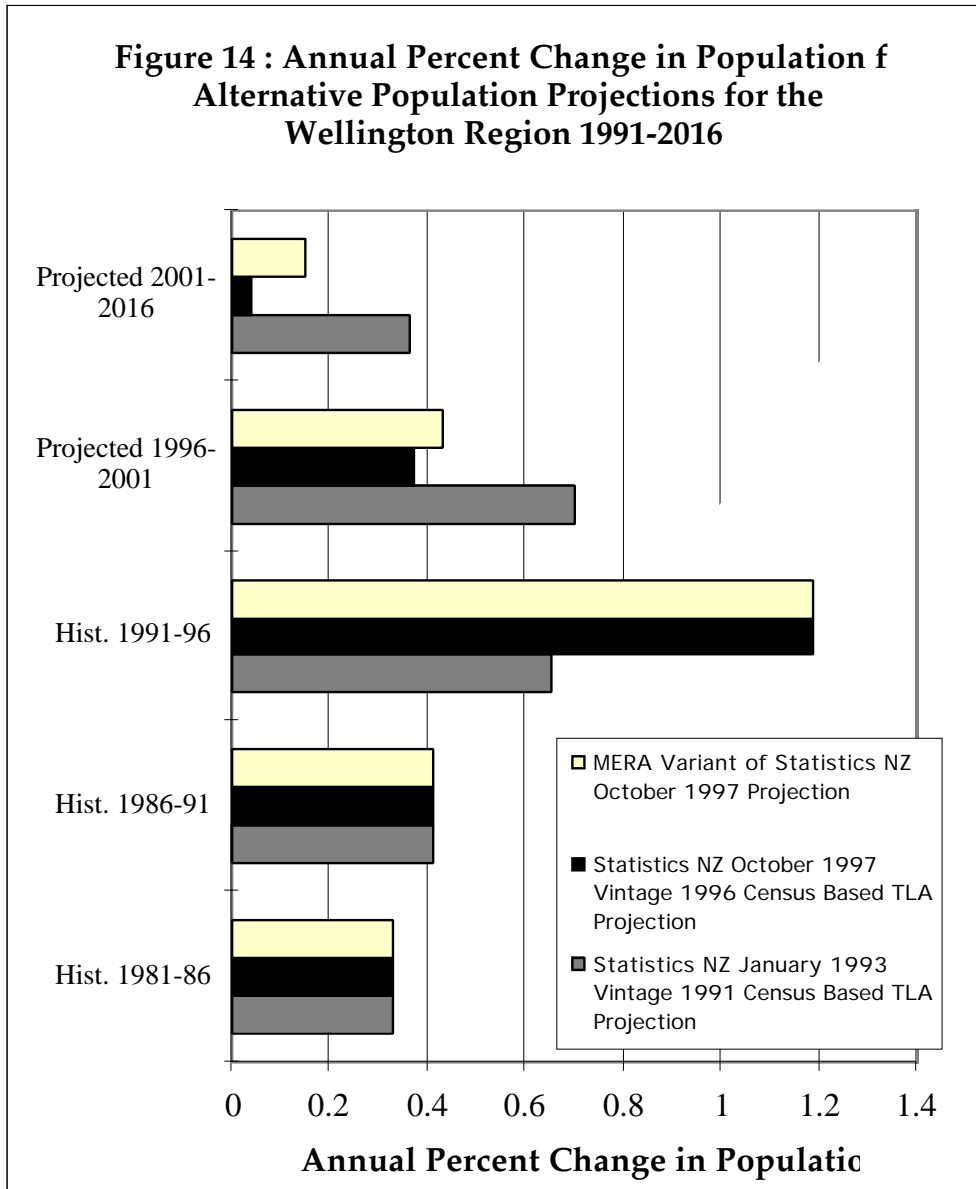


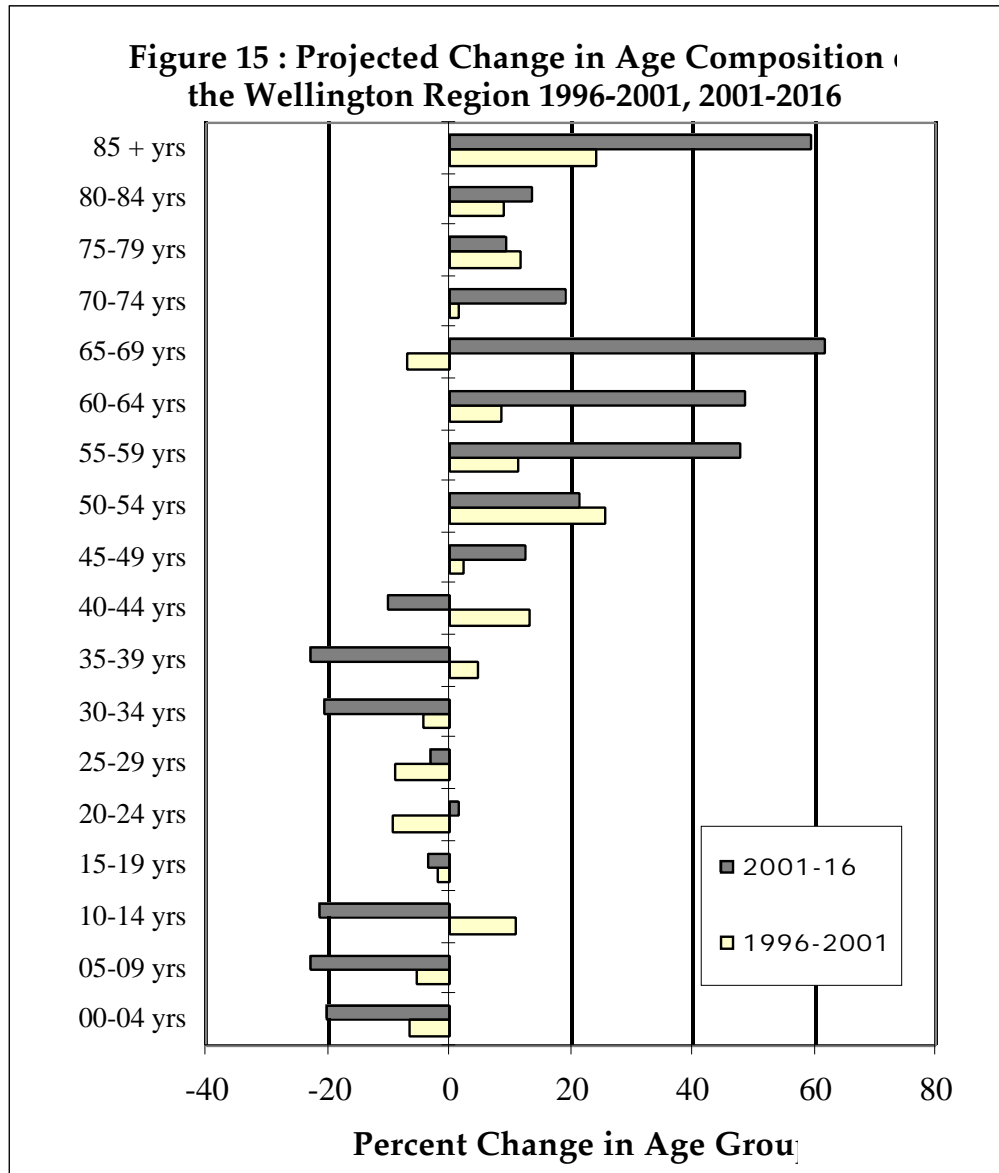
**Figure 11 : MERA Revised Compared with Statistic NZ Projected Net Migration by Age for Wellington City 1997-2001**











## Appendix 1 : 1996 Starting Land Use Assumptions by 1991 Area Unit

Sources : Historical data based on analysis of property records held by Kapiti Coast District and Wellington Regional Councils.

1996 Census Area Unit	Suburb Type	Hectares / Household	Occupied Residential Land (hectares)	Vacant Residential Land (hectares)	Residential Area
Waikanae Beach	growing greenfield	0.089	129.9	29.5	159.4
Waikanae Central	growing greenfield	0.093	312.5	38.3	350.7
Waikanae East	growing greenfield	0.101	99.3	40.0	139.3
Kaitawa	young greenfield	0.522	135.9	30.2	166.1
Otaki Forks	growing greenfield	0.680	86.8	12.8	99.6
Te Horo	young greenfield	0.170	36.4	19.3	55.7
Otaki	growing greenfield	0.101	251.6	60.0	311.6
Paraparamu Beach North	growing greenfield	0.059	83.8	25.2	109.0
Otaihanga	young greenfield	0.292	100.1	24.8	124.9
Paraparamu Beach South	growing greenfield	0.055	124.2	27.1	151.3
Paraparamu Central	growing greenfield	0.089	239.6	96.1	335.6
Raumati Beach	growing greenfield	0.071	163.6	36.8	200.4
Raumati South	young greenfield	0.097	139.9	26.3	166.2
Paekakariki	developed	0.082	59.5	0.7	60.2
Kapiti Island	developed	0.082	0.0	0.0	0.0
Maungakotukutuku	young greenfield	0.917	37.8	236.0	273.8
Pauatahanui	young greenfield	0.297	21.2	82.9	104.1
Endeavour	growing greenfield	0.085	56.3	106.9	163.2
Resolution	normal	0.099	11.5	0.9	12.4
Adventure	young greenfield	0.089	38.0	4.7	42.6
Paekakariki Hill	developed	1.278	9.7	0.0	9.7
Titahi Bay North	shrinking	0.050	58.0	2.1	60.1
Onepoto	shrinking	0.069	43.7	0.9	44.6
Titahi Bay South	shrinking	0.066	81.6	41.6	123.2
Elsdon-Takapuwahia	shrinking	0.063	85.1	2.2	87.3
Porirua Central	shrinking	0.073	2.5	0.0	2.5
Porirua East	shrinking	0.061	48.7	1.7	50.3
Ranui Heights	young greenfield	0.056	29.4	4.2	33.5
Cannons Creek North	shrinking	0.040	55.5	1.2	56.7
Cannons Creek South	shrinking	0.058	29.4	1.3	30.6
Cannons Creek East	shrinking	0.042	56.3	29.4	85.7
Waitangirua	shrinking	0.046	62.9	1.1	64.0
Papakowhai	young greenfield	0.061	48.9	14.1	63.0
Ascot Park	shrinking	0.062	46.2	10.8	56.9
Pukerua Bay	shrinking	0.100	64.1	14.8	78.9
Plimmerton	growing greenfield	0.085	59.8	31.1	90.8
Mana-Camborne	normal	0.066	54.8	2.9	57.7
Paremata-Postgate	shrinking	0.080	72.9	15.9	88.8
Discovery	shrinking	0.066	61.8	0.6	62.3
Mana Island	developed		0.0	0.0	0.0

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1996 Census Area Unit	Suburb Type	Hectares / Household	Occupied Residential Land (hectares)	Vacant Residential Land (hectares)	Residential Area
Inlet-Porirua Harbour	developed		0.0	0.0	0.0
Heretaunga Park	normal	0.077	39.7	1.5	41.2
Trentham South	developed	0.070	0.0	0.0	0.0
Pinehaven	shrinking	0.184	210.5	102.4	312.9
Nabhra	young greenfield	15.563	62.4	251.2	313.6
Te Marua	young greenfield	0.873	248.6	36.2	284.8
Akatarawa	normal	1.292	308.3	14.0	322.3
Emerald Hill	shrinking	0.062	63.6	16.1	79.8
Maoribank	shrinking	0.133	121.9	9.5	131.4
Clouston Park	shrinking	0.059	60.8	43.9	104.7
Totara Park	shrinking	0.049	55.6	2.7	58.3
Ebdentown	developed	0.036	46.4	0.4	46.8
Upper Hutt Central	developed	0.047	6.6	0.0	6.6
Maidstone	developed	0.074	3.5	0.0	3.5
Wallaceville	developed	0.035	46.2	0.1	46.3
Elderslea	shrinking	0.054	71.8	0.6	72.3
Moonshine	shrinking	0.061	56.7	0.2	56.9
Brentwood	shrinking	0.049	42.7	0.0	42.7
Trentham North	shrinking	0.034	48.3	0.3	48.6
Heretaunga-Silverstream	shrinking	0.071	97.3	0.3	97.6
Cloustonville	young greenfield	10.353	532.0	211.8	743.8
Mangaroa	young greenfield	2.576	270.6	139.0	409.6
Glendale	shrinking	0.108	125.2	127.3	252.5
Parkway	shrinking	0.058	61.9	2.2	64.1
Fernlea	shrinking	0.101	70.3	5.3	75.7
Arakura	shrinking	0.105	105.2	10.1	115.3
Homedale West	shrinking	0.072	68.1	2.2	70.4
Homedale East	shrinking	0.134	145.7	13.4	159.0
Pencarrow	normal	4.340	43.4	4.2	47.6
Tawhai	young greenfield	0.075	96.5	124.4	220.8
Holburn	shrinking	0.068	49.8	2.4	52.2
Delaney	shrinking	0.084	73.1	22.1	95.2
Manuka	shrinking	0.137	88.2	63.1	151.3
Taita North	shrinking	0.047	49.0	0.3	49.2
Taita South	developed	0.045	56.3	0.1	56.4
Naenae West	developed	0.040	41.6	0.3	41.9
Naenae North	shrinking	0.050	88.0	4.8	92.8
Naenae South	shrinking	0.060	83.1	16.5	99.6
Boulcott-Avalon	developed	0.043	94.9	1.3	96.2
Epuni West	developed	0.037	56.2	0.3	56.4

## Appendix 1 : 1996 Starting Land Use Assumptions by 1991 Area Unit

Sources : Historical data based on analysis of property records held by Kapiti Coast District and Wellington Regional Councils.

1996 Census Area Unit	Suburb Type	Hectares / Household	Occupied Residential Land (hectares)	Vacant Residential Land (hectares)	Residential Area
Epuni East	shrinking	0.044	64.6	5.6	70.3
Waterloo	developed	0.049	111.5	1.1	112.6
Waiwhetu North	developed	0.039	25.6	0.1	25.7
Waiwhetu South	developed	0.038	43.8	0.6	44.4
Gracefield	developed	0.869	8.1	0.1	8.2
Moera	shrinking	0.031	18.9	0.2	19.1
Woburn North	developed	0.053	29.4	0.0	29.4
Woburn South	developed	0.027	6.6	0.0	6.6
Hutt Central	developed	0.047	79.1	0.8	79.9
Melling	normal	0.031	10.2	0.2	10.4
Alicetown	developed	0.034	32.5	0.0	32.5
Normandale	shrinking	0.139	107.1	20.4	127.5
Maungaraki	shrinking	0.063	95.1	21.8	116.8
Belmont	growing greenfield	0.210	240.4	82.9	323.3
Kelson	shrinking	0.115	127.8	64.5	192.2
Haywards-Manor Park	young greenfield	0.070	10.6	4.0	14.5
Korokoro	young greenfield	0.100	49.8	13.7	63.5
Petone Central	developed	0.031	11.9	0.1	12.0
Esplanade	developed	0.025	29.6	0.2	29.8
Wilford	developed	0.029	46.6	0.6	47.2
Eastbourne	normal	0.113	223.3	20.3	243.6
Tawa South	shrinking	0.068	79.6	6.4	86.0
Central Tawa	shrinking	0.070	113.0	8.7	121.7
Linden	shrinking	0.049	82.7	2.6	85.3
Greenacres	normal	0.077	27.2	1.7	28.8
Thorndon-Tinakori Road	high density	0.015	23.2	0.8	24.0
Lambton	high density	0.010	15.6	0.4	16.0
Willis St-Cambridge Terrace	high density	0.005	1.6	0.0	1.6
Aro Street-Nairn Street	high density	0.015	23.0	2.1	25.2
Mt Cook-Wallace Street	high density	0.016	19.5	0.5	20.0
Mt Victoria West	high density	0.012	24.5	0.3	24.8
Churton Park	growing greenfield	0.077	142.0	33.7	175.7
Grenada	growing greenfield	0.179	146.5	97.2	243.6
Johnsonville North	developed	0.049	40.8	0.6	41.4
Johnsonville South	developed	0.036	52.2	1.0	53.1
Johnsonville East	shrinking	0.057	50.9	1.5	52.4
Newlands North	shrinking	0.047	83.6	3.4	87.0
Newlands South	shrinking	0.058	81.2	2.9	84.0
Raroa	normal	0.048	58.9	3.0	61.9
Khandallah Park	normal	0.058	58.7	4.8	63.5

## Appendix 1 : 1996 Starting Land Use Assumptions by 1991 Area Unit

Sources : Historical data based on analysis of property records held by Kapiti Coast District and Wellington Regional Councils.

1996 Census Area Unit	Suburb Type	Hectares / Household	Occupied Residential Land (hectares)	Vacant Residential Land (hectares)	Residential Area
Rangoon Heights	young greenfield	0.055	52.1	40.7	92.8
Te Kainga	normal	0.068	98.0	4.8	102.8
Awarua	shrinking	0.054	78.0	7.1	85.1
Ngaio	shrinking	0.059	68.6	6.0	74.6
Kaiwharawhara	young greenfield	0.037	0.5	7.0	7.5
Wadestown	young greenfield	0.060	70.7	8.2	78.8
Wilton-Otari	shrinking	0.045	88.9	4.5	93.4
Johnston Hill	shrinking	0.068	61.7	1.1	62.8
Karori Park	young greenfield	0.053	95.4	50.2	145.6
Karori East	developed	0.057	68.2	0.7	68.9
Wright Hill	growing greenfield	0.048	77.1	8.6	85.7
Northland	normal	0.043	43.7	2.8	46.5
Kelburn	developed	0.036	44.0	0.3	44.4
Taitville	normal	0.039	6.4	0.5	6.9
Mitchelltown	normal	0.055	13.1	1.0	14.1
Brooklyn	growing greenfield	0.050	62.3	7.0	69.2
Vogeltown	young greenfield	0.051	36.2	5.1	41.3
Kingston	normal	0.052	53.5	4.2	57.7
Happy Valley-Owhiro Bay	growing greenfield	0.434	410.7	121.4	532.0
Island Bay West	young greenfield	0.053	55.7	40.8	96.5
Island Bay East	normal	0.049	61.2	4.7	65.9
Melrose	high density	0.063	81.7	19.9	101.6
Berhampore	developed	0.020	17.1	0.1	17.2
Newtown West	normal	0.021	25.7	0.7	26.4
Newtown East	developed	0.020	31.1	0.4	31.5
Adelaide	developed	0.009	4.0	0.0	4.0
Oriental Bay	normal	0.014	8.6	0.6	9.2
Roseneath	normal	0.037	27.3	1.4	28.7
Hataitai	normal	0.038	62.2	2.4	64.6
Kilbirnie East	developed	0.027	31.6	0.5	32.1
Kilbirnie West	developed	0.030	40.2	0.2	40.4
Lyll Bay	developed	0.026	39.2	0.0	39.2
Strathmore Park	normal	0.044	78.5	3.8	82.3
Miramar South	developed	0.044	52.7	1.0	53.7
Miramar North	normal	0.040	85.7	2.1	87.8
Karaka Bay-Worser Bay	normal	0.072	32.7	0.8	33.5
Seatoun	young greenfield	0.057	41.6	6.8	48.4
Maupuia	normal	0.036	41.4	0.9	42.3
Makara-Ohariu Community	normal	9.930	740.6	19.6	760.1